Mechanical Standard Components for FA Catalog Picture Index (1)

How to Use Catalog

- How to Use the Catalog (P.83)
- Guide of Marks (P.85)
- MISUMI's Environmental Awareness and RoHS Compliancy (P.86)
- General Ordering Information (P.87)
- Delivery Times, Express Orders (P.88)
- Item Number Configuration (P.89)
- Alterations (P.90)

Shafts





Page	81~98	Product Name	Shafts -Straight Type-	-One End Tapped / Both Ends Tapped-
		Page	107	109~116







-Both Ends Threaded-	-One End Threaded / One End Tapped-	-Stepped and Tapped-
133~142	143~150	151~162-167









-One End Two Tapped Holes Type-	-Retaining Ring Grooved-	-Keyway Type-	-Tapered-
175	177	179	181







-Shaft Ends Configurable Type-	Hollow Shafts -Shaft Ends Configurable Type-	Washers for Linear Shafts
193	195	196





-Flanged Mount- Slit	-Flanged Mount- Compact
205-206	207







T-Shaped Precision Casting	-T-Shaped (Machined)-
210~212	213





-T-Shaped Split (Machined)-	-Compact (Machined) - Set Screw / Side Slit / Split
216	217

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Full Length Hardness Guaranteed Shafts -Full Length Hardness Guaranteed Type- 117



Shafts -Set Screw Grooved- 119



-Tapped Pilot- 121

Addition
Standard / Precision



Price Reduction

-One End Threaded- 123~132

Addition
Standard / Precision



Price Reduction

-Stepped and Threaded- 163~166

Precision type



Precision Shafts -Stepped and Tapped / Threaded- 169



Shafts -Surface Treatment Fully Plated- 171



-Hexagon Socket Type- 173



Price Reduction

Hollow Shaft 183



-Tapped / Threaded - 183~188



-Stepped- 189~191



Shafts -Continuous Support - Predrilled and Tapped- 192

Shaft Supports



Price Reduction



Product Name	-Flanged Mount- Standard	-Flanged Mount- Thick Sleeve
Page	201-202	203-204





-Flanged Mount- End Mount / With a Keyway / Split 207-208

Standard / Wide



Price Reduction

Flanged (Precision Cast) 209



-T-Shaped (Machined)- 213

Standard / Wide



-T-Shaped Slit (Machined)- 214

Standard / Wide



-T-Shaped Side Slit (Machined)- 215



T-Shaped (Machined) - With Clamp Lever 219





Hinged Type (Machined) 220



L-Shaped Type (Precision Cast)	L-Shaped Type (Machined)
221-222	223-224



Side Mount Type (Machined)
229-230



Set Screw -Holes / Tapped-	Slit -Holes / Tapped-	Wedge -Holes / Tapped-	Split -Holes / Tapped-
243	244~246	247	248

Standard / Compact



For Bearing Fixing	With Thread Inserts (Lightweight)	Threaded Bore
251~254	255	256



Compact Wedge Type with Clamp Lever -D Cut-	Compact Wedge Type with Clamp Lever -Side Mount-	Two-Flats
261	261	262

Linear Bushings / Ball Splines



Product Name	Linear Bushings -Various Grease Application Services-	Linear Bushings with Lubrication Unit MX -Straight-
Page	272	274



Linear Bushings with Lubrication Unit MX -Flanged with Pilot-	Linear Bushing Housing Units with Lubrication Unit MX -Tall Block Type	Linear Bushing Housing Units with Lubrication Unit MX -Wide Block Type
276	277	277

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.






Bottom Mount Type (Machined)
225-226

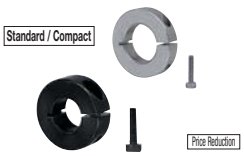




Bottom Mount Type (Machined)
227-228

Shaft Collars







Product Name	Set Screw -Standard-	Clamp -Standard Type-	Split -Standard Type-
Page	237-238	239-240	241-242




Keyless Bushing Type
249



With Urethane
250




Hinged Type	-One Touch Standard / Mount Hole Type-
257	257




With Key Escapement Groove	With Clamp Lever
258	259-260





Side Mount Hole Type	D Cut Type
263-264	265-266




Flanged Linear Bushings with Lubrication Unit MX	Center Flanged Linear Bushings with Lubrication Unit MX
274	275

Addition





Straight Type	Linear Bushings Straight Compact
278-279-281	280



Price Reduction
Addition


Flanged Linear Bushings Medium Type	Flanged Linear Bushings Single	Flanged Linear Bushings Compact Single
281-282	283	284




Price Reduction
Addition



Spacers	Fixing Plates	Flanged Linear Bushings Single with Pilot	Flanged Linear Bushings Compact Single with Pilot	Flanged Linear Bushings Single with Tapped Hole
288	288	289	290	290

Addition



Addition

Price Reduction

Flanged Linear Bushings Compact	Flanged Linear Bushings with Tapped Mounting Holes	Flanged Linear Bushings Long with Pilot	Linear Bushings with Tall Blocks
294	294	295-296	297~299

Addition

Price Reduction




Linear Bushings with Wide Blocks	Linear Bushings with Tall Blocks with Clamp Lever	Linear Bushings with Wide Blocks with Clamp Lever	Flanged Linear Bushings with Clamp Lever
303-304	305	306	307

Addition
Changed

NEW

NEW

NEW

Addition
Changed


-One End Stepped-	-Both Ends Stepped and Threaded-	-Both Ends Stepped and Tapped-	-One End Stepped and Threaded-	-One End Stepped and Threaded / One End Tapped-
314	315	315	316	316

Oil Free Bushings


Price Reduction
5%

Price Reduction
5%


Product Name	Oil Free Bushings -Copper Alloy Straight Type-	-Copper Alloy with Shoulder-	-Copper Alloy Thrust Type-
Page	331-332	333	334






Oil Free Bushings -Bronze Straight Type-	-Bronze Shoulder Type-	-Bronze Standard Flanged Type-	Oil Free Bushings with Threaded Housing
337	337	338	338

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.


Price Reduction

Flanged Linear Bushings Double 285

Addition



Flanged Linear Bushings Compact Double 286



Flanged Linear Bushings with Grease Fitting 287



Mini-Flanged Linear Bushings 287



Height-Adjusting Spacers for Flanged Linear Bushings 288


Price Reduction

Flanged Linear Bushings Double with Pilot 291

Addition



Flanged Linear Bushings Compact Double with Pilot 292



Flanged Linear Bushings Double with Pilot and Tapped Holes 292


Price Reduction

Center Flanged Type 293



Linear Bushings with Compact Tall Blocks 297-298

NEW



Shaft-sliding Linear Bushings with Pillow Blocks 300



Linear Bushings with Tall Blocks with Dowel Holes 301



Linear Bushings with Wide Blocks with Dowel Holes 302



Linear Ball Bushings 308

Addition
Changed



Ball Splines-Standard- 312

Addition
Changed



-Both Ends Tapped- 313

NEW



-One End Tapped- 313

NEW



-Both Ends Stepped- 314



Miniature Ball Bearing Guide Sets 317~319



Shafts for Miniature Ball Bearing Guides 319-320



Miniature Ball Guide Bushings 321-322



Ball Sliders 322



Needle Roller Guide Set 324



Flange Integrated Oil Free Bushings -Copper Alloy Standard Flanged- 335



-Pilot Flanged- 336



-Center Flanged- 336


Price Reduction
5%

Oil Free Copper Alloy Washers 336


Price Reduction
20%

Standard Flanged Oil Free Bushings -Compact- 339



-Standard- 340

NEW



-With Dust Seals- 340


Price Reduction
5%

Flanged Oil Free Bushings Pilot Type -Compact- 341

1 2

Mechanical Standard Components for FA Catalog Picture Index (4)







Reference: Cut-away View Photo



Flanged Oil Free Bushings Pilot Type -Standard-	Center Flanged Oil Free Bushings	Small Flanged Oil Free Bushings	Oil Free Bushing Housing Units -Flanged Type-
342	343	343	344











Oil Free Bushings -Casting Straight / Shoulder Type-	Oil Free Bushing Housing Units -Casting Type-	Flange Integrated Oil Free Bushings -Casting Type-	Oil Free Bushings -Multi-Layer LF Type-	Thrust Washers
347	347	347	348	348











Oil Free Bushings -Polyacetal Resin Type-	-PTFE Resin Type-	Oil Free Resin Washers	Flanged Oil Free Bushings -Built-in Resin Bushing Type-	Oil Free Bushing Housing Units -Built-in Resin Bushing Type-
351	351	352	352	352







Single Axis Robots RSDG1 / 2 / 3	Single Axis Robots Clean Room Specification RS1C / 2C / 3C	Single Axis Robots Clean Room Specification RSH1C / 2C / 3C
375~380	381~386	387~392



Price Reduction 15% / 25%



Price Reduction 15% / 25%

Single Axis Actuators LX20 / 26 / 30 / 45 Standard Type without Bracket	Single Axis Actuators LX20 / 26 / 30 / 45 Cover Type without Bracket
409, 415, 421, 427	411, 417, 423, 429





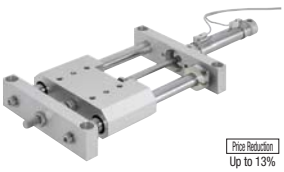


Linear Encoders (Linear Scales)	Motor Driven Single Axis Actuator LX Standard Type	Motor Driven Single Axis Actuator LX Cover Type
438	441, 445, 449, 453	443, 447, 451, 455





Price Reduction Up to 13%



Price Reduction Up to 13%

Single Axis Units -Rolled / Precision Ball Screw Type with Cover-	Pneumatic Module Units (Vertical)	Pneumatic Module Units (Horizontal)
469~472	475	477

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Oil Free Bushing Housing Units -Tall Block Type- 344



-Tall Block Compact / Wide Block Compact- 345



-Tall Block / Wide Block- 346



Oil Free Bushings -High Precision Type- 349



Flanged Oil Free Bushings -Built-in Multi-Layer MD Bushing Type- 349



Oil Free Bushing Housing Units -Built-in Multi-Layer MD Bushing Type- 350

Single Axis Robots / Actuators

Addition



Addition



NEW



Product Name	Single Axis Robots RS1 / 2 / 3	Single Axis Robots RSH1 / 2 / 3	Single Axis Robots RSD1 / 2 / 3
Page	363~368	369~374	375~380

Addition



Single Axis Robot Controllers 393

Addition



Single Axis Robot Options 395

Addition



Single Axis Robot Maintenance Items 396

NEW



Single Axis Actuator LX Motor Folded Type 433~436



Jigs for Motor Mount for LX 413, 419, 425, 431



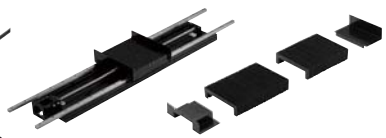
Two Axes Mounting Brackets for LX 437



Options for LX with Motor 457



Cables for LX with Motor 460

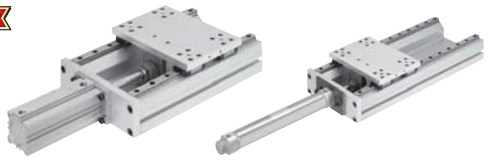


Single Axis Units - Rolled Ball Screw Type - w/Bellows- 467



Single Axis Units -Rolled / Precision Ball Screw Type- 463~466

NEW



Pneumatic Module Units (Linear Guides) 479

Addition



Manually Operated Units -Standard / High Load Capacity Type- 481



Price Reduction 20%

Manually Operated Units - Symmetrical Action Dual Carriage 483

1 2



Manually Operated Units -with Position Indicator- 485



Manually Operated Units -Handwheel Direction Configurable Type- 485



Manually Operated Units -Elevator Type- 487~489

Linear Guides



Low Temperature Black Chrome Plating 508



Miniature Linear Guides -Short Blocks- 509



Short Blocks with Dowel Holes 511



Miniature Linear Guides -Long Blocks- 521~524



Long Blocks with Dowel Holes 525



Wide Long Blocks 527



Extra Long Blocks for Miniature Linear Guides 529



Miniature Linear Guides -Wide Rail Long Blocks- 539~542



Wide Rail with Dowel Holes, Long Blocks 543



Wide Rail, Wide Long Blocks 545



For Medium / Heavy Load with Lubrication Unit 553~566



Medium and Heavy Load, Dust Prevention 553~556



Price Reduction Up to 3%

Medium and Heavy Load 557~562

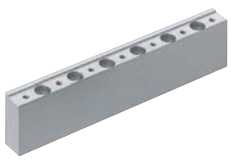


Stopper Clamps for Miniature Linear Guides 581



Stopper Clamps for Medium / Heavy Load Linear Guides 582

Addition



Height Adjusting Blocks for Linear Guides 583~585



Rail Push Plates 586



Linear Locks 587



Linear Lock Plates 588



Linear Guide Lock Units 588



Linear Guide Lock Plates 588

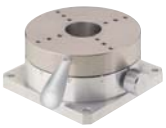
NEW : New products added

Change : Products whose part numbers have been changed.

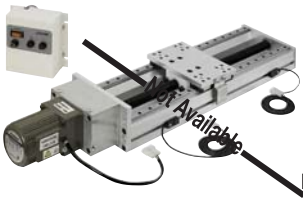
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.

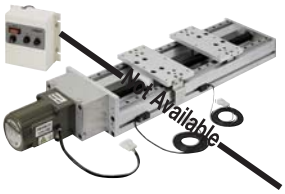


Manually Operated -Rotary Tables- 490



Price Reduction 16%

Motor Driven Units 491



Price Reduction 19%

Motor driven Units – Symmetrical Action Dual Carriage 493



Miniature Linear Guides -Standard Blocks- 513~516



Standard Blocks with Dowel Holes 517



Wide Standard Blocks 519



Miniature Linear Guides -Wide Rail Standard Blocks- 531~534



Wide Rail with Dowel Holes, Standard Blocks 535



Wide Rail, Wide Standard Blocks 537



Miniature Linear Guides -Heat Resistant- 547



With Lubrication Unit 549



Miniature Dust Prevention 551



Medium and Heavy Load with Dowel Holes 563~566



Medium and Heavy Load with Plastic Retainers 567~570, 573~576



Extra Heavy Load, Extra Super Heavy Load, With Plastic Retainers 571, 577~580



Stopper Bolts 586



Linear Guide Block Stopper Plates 586



Linear Guide Mounting Hole Caps (Package) 586

Changed



Cross Roller Tables 591-592

Changed



Cross Roller Guides 593



Ball Slide Guides 594



Pneumatically Driven Linear Guides 597~600

Slide Rails / Cable Carriers






Product Name	Telescopic Slide Rails -Aluminum / Steel / Stainless Steel-
Page	605~612




Price Reduction Up to 3%


Price Reduction Up to 4%


Roller Slide Rails	V Guides System -90°Type-
620	623-624


Price Reduction Up to 4%


Addition

Price Reduction Up to 2%


Oil Free Slide Plates -Dimension Selectable / Configurable-	-Multi-Layer Resin, Configurable-	Gibs	Cable Carriers -Slit Type-	-Compact Type-
632~634	635	636	639	641

Ball Screws / Support Units



Price Reduction Up to 26%


Price Reduction Up to 26%

Product Name	Rolled Ball Screws -Shaft Diameter 8, Lead 2, 4-	-Shaft Diameter 10, Lead 2, 4, 10-
Page	655	657



Price Reduction Up to 28%


Price Reduction Up to 28%

-Shaft Diameter 20, Lead 5, 10, 20-	-Shaft Diameter 25 Lead 5, 10, 25-
663	665






Precision Ball Screws -Shaft Ø 6, Lead 1-	-Shaft Diameter 8, Lead 1, 2-	-Shaft Diameter 10, Lead 2, 4, 10-	Precision Ball Screws -Shaft Ø 12, Lead 2, 4, 5, 10-
673	673	675	677


Price Reduction Up to 4%

Price Reduction Up to 5%

Price Reduction Up to 2%


-Fixed Side Economy Type-	-Fixed Side Standard with Dowel Hole-	-Fixed Side Radial Bearing Type-	-Support Side-
687	688	688	689

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Linear Rails -Preloaded Type- 614



Price Reduction Up to 4%

Linear Rails Stainless Steel, With Ball Bearings 616



Price Reduction Up to 4%

Aluminum, With Ball Bearings 615-617



Steel, With Ball Rollers 618



Price Reduction Up to 2%

Oil Free 619





V Guides System -70°Type- 626



Price Reduction Up to 8%



Price Reduction Up to 8%

Gibs -Dimension Selectable / Configurable- 628-629



Price Reduction Up to 6%

Gibs 630



Gibs -Block- 631











-Flap Open / Close- 642 | **-Flap Open/Close Full Cover Type-** 643 | **Low Particulate / Low Noise** 644 | **Low Friction / Low Noise** 645 | **Cable Carrier Support Channels** 646





Price Reduction Up to 26%

-Shaft Diameter 12, 14 Lead 4, 10- 659





Price Reduction Up to 25%

-Shaft Diameter 15 Lead 5, 10, 20- 661



Price Reduction Up to 28%

-Shaft Diameter 28, 32 Lead 10, 32- 667



Price Reduction Up to 22%

-Block Nut, Lead 5- 669



Price Reduction Up to 22%

-Block Nut, Lead 10- 669



Rolled Ball Screws -Shaft Ends Configurable Type- 671



-Shaft Diameter 15, Lead 5, 10, 20, 40- 679



-Shaft Diameter 20, Lead 5, 10, 20, 40- 681



-Shaft Diameter 25, Lead 5, 10, 20- 683



Price Reduction Up to 5%

Support Units - Fixed Side Standard 687



Stoppers for Ball Screws 689



Support Units - Fixed Side with Damper 690



-Support Side with Damper- 690



Precision Collars for Support Units 690

1 2



Support Units -Square, Fixed Side Compact- 691

Addition



-Fixed Side Low Profile- 691



-Fixed Side Mounting Hole Narrow Pitch- 691



-Support Side Compact- 692



Price Reduction Up to 3%

-Fixed Side Economy Type- 694



Price Reduction Up to 4%

-Fixed Side Radial Bearing Type- 694

Addition



Brackets for Ball Screw Nuts -Block Type- 695



Joint Units 696



Price Reduction Up to 2%

-One End Stepped / One End Double Stepped- 711



-Both Ends Double Stepped- 713



-Straight Type- 715



Nuts for Lead Screws -Flanged- 717



-Compact Type- 717



Price Reduction 30% Max.

-High Strength Flanged Resin Type- 720



-Resin Type- 720



Price Reduction Up to 3%

-Tall Block- 721



Price Reduction Up to 4%

-Wide Block- 721



Brackets for Lead Screws 722



Clamp Plates for Large Position Indicator 728



Stop Plates for Lead Screws-Flanged with Bearing- 729



-Round Flanged- 729

NEW



-Square - 2 Screws- 730

Rotary Shafts

Addition



Product Name Rotary Shafts-Straight-

Page 735



-Straight with Keyway- 737

Addition



-Retaining Ring Grooves on Both Ends- 739



-Both Ends Tapped with Keyways- 749



-One End Stepped- 751



-One End Stepped, One End Tapped- 753



-One End Stepped, One End Threaded- 755

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.

Addition



-Support Side Low Profile- 692



-Support Side Mounting Hole Narrow Pitch- 692



Price Reduction Up to 4%

Support Units -Round, Fixed Side Standard Type- 693



Price Reduction Up to 8%

-Support Side- 693

Lead Screws / Slide Screws

NEW



Lead Screws -For Lead Screw Support Units- 703

NEW



Lead Screw Support Units 705-706



Price Reduction Up to 2%

Lead Screws -Both Ends Stepped- 707



Price Reduction Up to 2%

-One End Stepped - One End Double Stepped- 709

Product Name / Page



-Piloted / Tapped Holes / Slotted Holes- 717



RoHS Compliant Nuts -with Round Flange- 718



-No Backlash Type- 718



-Oil-free Flanged- 719



-Straight Type- 719

NEW



Spacers for Wide Block 722



Digital Position Indicators Compact 725



Digital Position Indicators Large 726



Clamp Plates for Compact Position Indicator 727



-Square- 730



Price Reduction Up to 27%

-Miniature Slide Screws - One End Stepped / Both Ends Stepped- 731



Price Reduction Up to 27%

-Straight Type- 732



Nut Bracket 732



-Retaining Ring Grooves on Both Ends with Keyway- 741



-One End Tapped- 743



-One End Tapped with Keyway- 745

Addition



-Both Ends Tapped- 747



-One End Stepped, One End Threaded, One End Tapped- 757



-One End Stepped and Tapped- 759



-One End Stepped, Both Ends Tapped- 761



-Both Ends Stepped Type- 763

1 2



-Both Ends Stepped and Threaded- 765



-Both Ends Stepped and Tapped- 767



-One End Stepped with Retaining Ring Grooves- 769



-Both Ends Stepped with Retaining Ring Grooves- 769

Addition



Rotary Shafts-D-Cut- 775



Shaft for Tension-Pull - Retaining Ring Groove- 776

NEW



-Push Type / Pull Type- 777



Rotary Shaft-End Shape Selectable- 779



-One End Stepped, One End Double Stepped- 787



-With Flange- 789



-One End Stepped with Flange- 791



-Pilot - Threaded with Tapped End- 803



-Pilot - Threaded with Threaded Ends- 805



-Screw Mount with Retaining Ring Groove- 807



-Screw Mount, with Tapped End- 809



Pivot Pins -Split Pins- 819



-Straight Retaining Ring- 820



-Split Pins with Flange- 821



-Retaining Ring with Flange- 822



-Tapped - Hexagon Socket Head with Flange- 826



-Both Ends Tapped- 827



-Both Ends Threaded- 827



-Keyway Type- 828



-End Shape Selectable- 831



Diameter Tolerance Selectable 833



Fulcrum Pins -Standard / Configurable- 835-836

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



-Both Ends Stepped, One End Threaded- 771



-Both Ends Stepped, One End Threaded, One End Tapped- 771



-Both Ends Double Stepped- 773



Hollow Rotary Shafts-Straight- 774



Driving Shaft-Straight- 781



-One End Stepped- 783



-Both Ends Stepped- 785

Cantilever Shafts / Pivot Pins / Fulcrum Pins









Product Name	Cantilever Shafts -Threaded with Retaining Ring Groove-	-Threaded with Tapped End-	-Threaded with Threaded Ends-	-Pilot - Threaded with Retaining Ring Groove-
Page	795	797	799	801



-Screw Mount with Threaded End- 811



-Heavy Load- 813



-Flanged- 815



-For Tension- 817



-Lock Nut with Flange- 823



-Lock Nut with Hexagon Socket Head- 824



-Lock Nut with Extra Low Hexagon Socket Head- 825



-Tapped with Flange- 826



Keys for Precision Pivot Pins 828



Pivot Pins -Set Screw Flat- 829



-Flanged with Set Screw Flat- 829



-D Cut- 830



Fulcrum Pins -Low Head Stepped with Lock Nut- 837



Precision Pivot Pins -Retaining Rings- 838



-Tapped Ends- 838

1
2

Bearings with Housings / Bearings






Product Name	Bearings with Housings-Small Flanged-	-With Retaining Ring-	-Standard with Pilot - Retained-	-Direct Mount Non-retained-
Page	842	843	845	847








-Double Bearings with Pilot - Non-retained, L Selectable / Configurable-	-Long Double Bearings-	Low Particulate Grease Bearings with Housings	Bearings with Housings - L-Shaped-
863~866	867	869-870	871







Low Particulate Grease Bearings with Housings-T-Shaped-	-T-Shaped Double Bearings with Datums-	Bearings with Housings-Block-	-Block - Double Bearings-	-Bottom Mount-
879	880	881	882	883





Price Reduction Up to 46%
NEW


Angular Contact Bearings with Housing-Flanged-	-Angular Contact + Deep Groove / Flanged-	-Angular Contact + Deep Groove / With Pilot-	Deep Groove Ball Bearings -Double Shielded-	-Economy Type-
892	893	895	897-898	899


Price Reduction 34%
NEW


Price Reduction Up to 41%




Small Deep Groove Ball Bearings -Rubber Sealed-	Small Deep Groove Ball Bearings -Open-	-Double Shielded with Flanged-	Low Particulate Grease Bearings	1.4301 Ball Bearings for Special Environments
909	910	911-912	913-914	915


Price Reduction 38%

Price Reduction Up to 10%
NEW


Price Reduction Up to 21%


Price Reduction 20%

Thrust Ball Bearing	Thrust Bearings -With Inner Ring-	One-way Clutch	Angular Contact Bearings	Grease Seal Rings	Self-aligning Ball Bearings
920	921	922	923-924	924	925



Price Reduction 25%
NEW



Price Reduction 21%

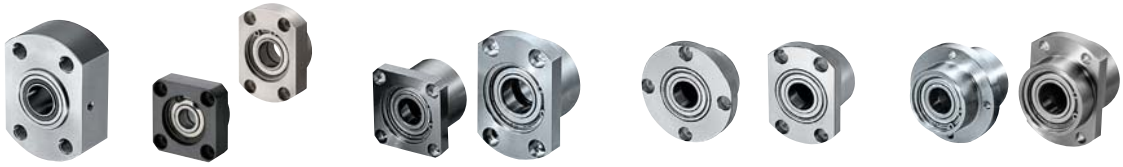
Price Reduction 21%

-Cast Iron Housings with Pilot / Take-ups-	-Economy Type-	End Caps for Shafts	Steel Plate Ball Bearing Units -Flanged / Cast Pillow Blocks-
930	931-932	933	933-934

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



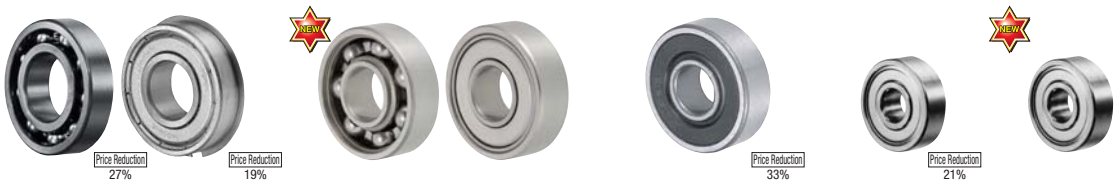
-Thrust Bearings-	-Short Double Bearing Retained-	-Double Bearing Retained - Standard / Configurable-	-Double Bearing Non-retained - Standard / Configurable-	-Double Bearings with Pilot - Retained - Standard / Configurable-
849	850	851~854	855~858	859~862



-T-Shaped Short, Double, Bearings-	-T-Shaped, Base Mount-	-T-Shaped Double Bearings with Datums-	-T-Shaped with Datums-	-T-Shaped Double Bearings with Datums-
872	873	875	877	878



-Bottom Mount Double Bearings-	-Front Mount Type-	-Outer Ring Captured-	-Outer Ring Fixed with Pilot-	-Outer Ring Fixed, T-Shaped-
884	885-886	888	889	890



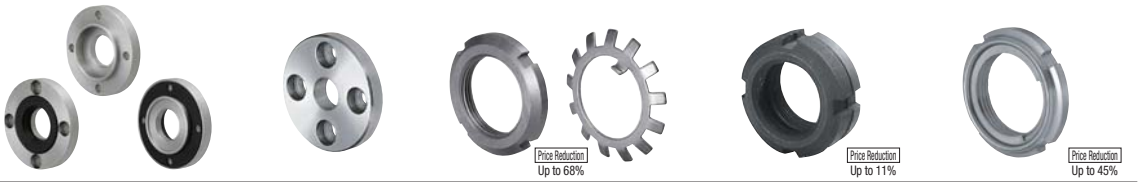
Deep Groove Ball Bearings -Open / With Retainer Ring-	-Single Shielded / Double Shielded with C3 Clearance-	Deep Groove Ball Bearings -Rubber Sealed-	Small Deep Groove Ball Bearings	-Economy Type-
900~902	903-904	905	907-908	909



Non-grease, Non-oil Ball Bearings for Special Environments	Plastic Bearings	Heat-Resistant Grease Filled Ball Bearings	Bearings with Set Screw Shaft Sleeve	Thrust Needle Roller Bearings
915	916	917-918	918	919



Stainless Steel Deep Groove Bearings	Ball Bearing Units -Cast Pillow Blocks / Diamond Shape Flanged-	-Cast Pillow Blocks / Bottom Mount-	-Cast Iron Housings Flanged-
926	927	928	929



Bearing Covers -Compact / Sealed-	-Standard Type-	Lock Nuts and Toothed Lock Washers for Bearings	Hard Locking Bearing Nuts	Fine U Nuts®
935	936	937	938	938


Price Reduction 25%

Precision Lock Nut	Hook Spanners for Bearing Lock Nuts	Bearing Lock Nuts	Bearing Spacer	Bearing Shaft Screws
939	939	940	941	943


Price Reduction






Price Reduction



-Hexagon Socket Type-	-Hexagon Socket on Screw-	Guide Followers	Solid Eccentric Cam Followers	Miniature Cam Followers
949	950	951	951	952











Brackets for Cam Followers	Roller Followers-Separate / Solid-	Roller Followers Urethane Type	Roller Follower Pins
956	957	958	958


For Servo Motors


For Servo Motors


For Servo Motors


For Servo Motors

-Disk Clamping-	-HiB12gh Rigidity Disc Both Side Keyless Clamping-	-Both Sides Keywayed-	-High Rigidity Disc Clamping-
965	966-968-970	966-967-969	967-969









Spacers (for MCO__MCOC__)	-High Rigidity Oldham, Clamping-	Oldham, Large Shaft Diameter -Set Screw / Clamping-	Spacers (for MFJ__, MFJC__)
975	978	979	979


Price Reduction Max.14%


Price Reduction Max.14%


Price Reduction Max. 23%





-Oldham, Green, Short, Clamping-	Spacers (for CPO, CPOC, CPOCG)	N Couplings	Chain Couplings
982	981	983	983




For Servo Motors


Price Reduction Up to 5%


Price Reduction Up to 11%

-Jaw & Spider Type - Set Screw	-Extra Super Duralumin Set Screw, Clamping-	-Slit Set Screw-	-Slit Clamping-
987	988	989	990

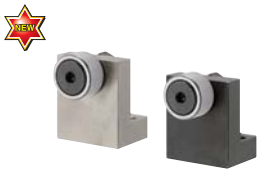
NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Bearing Shaft Screws w/Retaining Rings 944



Cam Followers with Bracket -L-Shaped- 945



-Blocks Retained- 946



Cam Followers-Standard- 947



-With Tapped Hole for Grease Fitting- 948



Resin Cam Followers 953



-With Retaining Rings- 953



Cam Followers Urethane Type 955



Bracket for Cam Followers -L-Shaped- 956



-Blocks- 956

Couplings / Motors

For Servo Motors



For Servo Motors



For Servo Motors



For Servo Motors



Product Name	High Positioning Accuracy Disc -Clamping / Both Sides Keywayed-	-High Rigidity Disc Clamping-	-High Torque Disk Clamping-
Page	963	963	964



Standard Torque Disc -Set Screw / Clamping- 971-972



High Torque Disc -Set Screw / Clamping- 973-974



-Oldham, Set Screw- 975



-High Rigidity Oldham, Set Screw- 976



-High Rigidity Oldham, Large Shaft Diameter Set Screw- 980



-High Rigidity Oldham, Large Shaft Diameter Clamping- 980



-Super Short, Oldham, Clamping- 981



-Oldham, Green, Set Screw- 982

For Servo Motors



-Jaw Set Screw Type / Clamping Type- 984



-Jaw Set Screw- 985



-Jaw Clamping- 986



-Sleeved, Set Screw- 987



-Rigid Set Screw- 991



-Rigid Clamping- 991



-Rigid Split- 992



- Bellows Type- 993

1 2







-Resin / Short Resin-	Universal Joints	- Induction Motors / Reversible Motors / Gear Heads
994	995-996	999

Roller Conveyance Components







Product Name	TM Magnetic Transmission Drive (Parts for Non-contact Magnetic Force Transmission)	-Economy Type-	Rollers -Straight / Crowned-	Rollers Tapped -Straight / Crowned-	Vertical Guide Rollers
Page	1012	1012	1013	1015	1016









Rollers -Set Screw Hole-	-Press-Fit Straight-	-Press-Fit Bearing-	Aluminum Rollers	Pipe Rollers -Straight-	-Bearing-
1022	1023	1024	1024	1025	1026







Knurled Urethane Rollers with Set Screw Holes at One End	Urethane Rollers Bearing Type	Urethane Rollers with Collars -Set Screw Holes at One End-	Knurled Urethane Rollers	Urethane Rollers with Shafts
1031	1032	1032	1032	1033









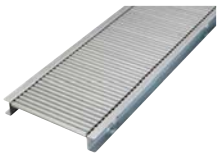
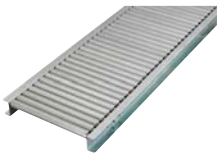

Urethane Mold Bearings – Inner Wheel Protruded Type–	Threaded Bearings	Shafts for Urethane Mold Bearings	Eccentric Bushings	Engineered Plastic Bearings -Flat-	-Arc Type-
1039	1040	1040	1040	1041	1041








Motor Rollers	Conveyor Rollers	Conveyor Roller Shafts as sets	Plastic Conveyor Rollers	Conveyer Roller Shafts
1046	1047	1048	1048	1049




Roller Conveyors -Roller Dia. 19mm-	-Roller Dia. 28mm-	-Roller Dia. 38mm-	Ball Rollers -Hexagon Bolt-	-Press Fit-
1056	1057	1058	1059	1059

NEW : New products added

Change : Products whose part numbers have been changed.

Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



- Variable Speed Motor Units / Gear Heads 1001



- Motors w/Electromagnetic Brakes / Gear Heads 1005



Compact Geared Motor Brackets (Alteration) 1007



Medium Geared Motors 1008



Rollers with Oil Free Bushings 1016



Rollers -Bearing- 1017



-Urethane Thickness Selectable- 1019



Groove Rollers 1020



-Bearing Type- 1020



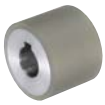
Plastic Rollers 1021



-Set Screw- 1027



Long Pipe Rollers -Bearing- 1028



Rollers with Keyway 1029



-With Keyway / Tapped Type- 1029



Pipe Rollers with Shafts 1030



Urethane Rollers with Collars 1031



-Both Ends Threaded- 1033



-Urethane Thickness Configurable- 1034



Silicon Rubber / Urethane Mold Bearings 1035



-Arc Type- 1036



-Threaded Flat- 1037



-Threaded Crown- 1038



-With Bracket- 1042



-U Grooved- 1042



-V Grooved- 1042



-One Side Flanged- 1042









Guide Rollers -V Groove 60°/ V Groove 90°/ For Wire / Flat / Double Flanged- 1043~1044



Mini-Rollers for Conveyors 1049



Conveyor Wheels 1050



Plastic Conveyors Wheels 1050



Roller Carriers -Roller Width 7~50mm- 1051~1054



-Insertion / Adhesive- 1059



Plunger Type Ball Rollers -Press-Fit- 1059



-Threaded- 1059



Ball Rollers -Lock Nut / Flange Mounting- 1060



-Set Screw- 1060



-Rigid Clamping- 1060

1 2

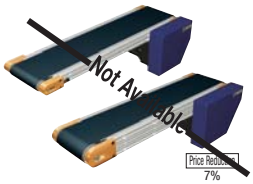


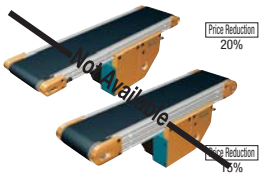




-Rigid Clamping-	Ball Rollers -Machining-	Pressed-in Bearing Type
1061	1062	1062

Conveyors



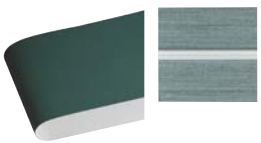






Product Name	Miniature Conveyors -Flat Belt Single Track Single Lane Head Drive-	-Single Track Center Drive-	-Built-in Single Track Motor-	Chain Conveyors -Dual Track Head Drive-
Page	1073~1074	1075~1076	1077	1078

Flat Belts / Round Belts / Pulleys / Idlers


Product Name	Flat Belts	-With Meandering Prevention Crosspiece-	Pulleys for Flat Belts -Width T=6~32-
Page	1087	1088	1089








Pulleys for Flat Belts Economy Type -Width L=110~500	Idlers for Flat Belts Economy Type -Width L=110~500-	Pulleys for Flat Belts -Width L=110~500-	Idlers for Flat Belts -Width L=110~500-
1093	1094	1095	1096










Idlers for Flat Belts-Width L=100~300-	Polyurethane Round Belts	Pulleys for Round Belts -Set Screw / Trapezoid Grooves-	-Set Screw / U Groove-	-Clamping / Trapezoidal Groove-
1100	1101~1102	1103	1103	1104

Timing Pulleys / Belts / Mecha Locks






Product Name	High Torque Timing Pulleys -2GT / 3GT / 5GT / 8YU-	Timing Pulleys -MXL / XL / L / H-	High Torque Timing Pulleys -S2M / S3M / S5M / S8M-	-S14M-
Page	1113~1120	1121~1128	1129~1136	1137







Keyless Timing Pulleys -XL / L / H Type-	-L / H Type (Mechanical Lock Standard Type incorporated)-	Keyless High Torque Timing Pulleys -S3M / S5M / S8M-	-S3M / S5M / S8M Type (Mechanical Lock Standard Type incorporated)-	-P5M / P8M-
1154, 1155, 1157	1156, 1158	1159, 1161, 1163	1160, 1162, 1164	1165, 1166

NEW : New products added

Change : Products whose part numbers have been changed.

Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Price Reduction 3%

Abrasion Resisting Polymer Guide Rails 1063



Abrasion Resisting Polymer Guide Rails 1065



Slide Tapes / Strong Double-Sided Tapes 1066



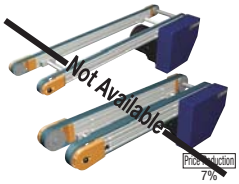
Guide Rails 1066



Stainless Steel Sliding Plates 1067

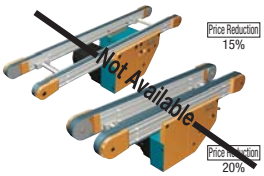


Product Chute Thin Plates 1069



Price Reduction 7%

Miniature Conveyor -Timing Belt Dual Track Head Drive 1079~1080



Price Reduction 15%

Price Reduction 20%

-Dual Track Center Drive- 1081~1082



Conveyor Guide Rails 1083



Price Reduction 20%

Guide Rail Brackets 1083



Conveyor Support Stands 1083



Idlers for Flat Belts -Width T=6~32- 1090



Pulleys for Flat Belts -Width L=25~100- 1091



Idlers for Flat Belts -Width L=25~100- 1092



Pulleys for Flat Belts with Urethane -Width L=25~100- 1097



Pulleys for Flat Belts Economy Type with Urethane -Width L=110~500- 1098



Shaft Pulleys for Flat Belts -Width L=25~100- 1099



Idlers for Flat Belts -Width L=38~90- 1100



-Clamping / U Groove- 1104



Idlers for Round Belts -Narrow- 1105



-Wide- 1106



Pulleys for Round Belts -Double Grooves- 1107



Idlers for Round Belts -Double Grooves- 1108



Non-Backlash Timing Pulleys -S8M- 1139



Price Reduction Up to 15%

High Torque Timing Pulleys -P2M / P3M / P5M / P8M- 1141~1146

Addition



Timing Pulleys -T5 / T10- 1147~1150



-AT5 / AT10- 1151



Keyless Timing Pulleys -T5 / T10- 1167, 1169



-T5 / T10 Type (Mechanical Lock Standard Type incorporated)- 1168, 1170



Clamping High Torque Timing Pulleys -S3M / S5M / S8M- 1171



Timing Pulleys -Width Configurable- 1173



Bar-Shaped Timing Pulleys 1174





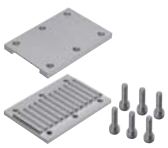

Flanged Idlers with Teeth -MXL / XL / L / H-	-S2M / S3M / S5M / S8M / S14M-	-P2M / P3M / P5M / P8M / 2GT / 3GT / 5GT / 8YU-	-T5 / T10 / AT5 / AT10-
1175~1178	1179~1182	1183	1185

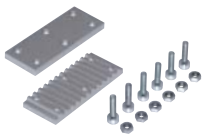





Price Reduction
Up to 50%

High Torque Timing Belts -S2M / S3M / S5M / S8M / S14M-	-P2M / P3M / P5M / P8M-	Super High Torque Timing Belts-MTS8M / UP5M / UP8M-	Timing Belts -T5 / T10-
1195	1197	1199	1200




Timing Belts Guides	Metal Fittings for Timing Belts -Overpressure Prevention Type-	-Overpressure Prevention Metal Fittings Hole Position Configurable Type-	-Nut Fitting Type-	-Bottom Metal Short Type-
1207	1209	1210	1211	1212

Gears





Product Name	Induction Hardened & Ground Spur Gears -Module 1.0/1.5/2.0/2.5/3.0-	Spur Gears -Module 0.5 / 0.8 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0-	Bonded Plastic Spur Gears -Module 1.0 / 1.5 / 2.0 / 2.5 / 3.0-
Page	1223	1225~1236	1237






Spur Gears Bearing Built-in Type–Module 1.0/1.5/2.0–	Round Rack Gears	Worm	Worm Wheel
1245	1246	1246	1246

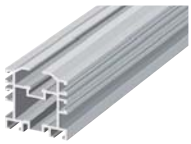
Sprockets / Chains





Price Reduction
Up to 21%

Product Name	Sprockets / Chains / Oil-free Chains	Keyless Sprockets	Sprockets 2-Row Type
Page	1253~1259	1260	1260







Frames for Double Speed Chain	Return Guides	Engineered Plastic Block Chains 1-Row Type	Engineered Plastic Block Chains 2-Row Type	Sprockets for Engineered Plastic Block Chains 2-Row Type
1264	1264	1265	1265	1265

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.


Price Reduction 20% Max.

Idlers -Backside Tension- 1187


Plastic 1188


Idler Shafts 1188

NEW

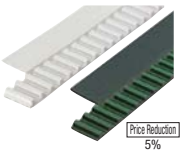

Timing Belts -2GT / 3GT / EV5GT / EV8YU- 1189~1192


Price Reduction Up to 15%

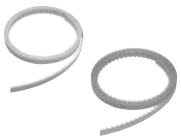
-MXL / XL / L / H- 1193


Timing Belts with Attachments 1201


Long Timing Belts-Iron Rubber®- 1203


Price Reduction 5%

-Polyurethane- 1204


Addition


Open End Belts-Iron Rubber®- 1205

-Polyurethane / Chloroprene Rubber- 1206


Mecha Locks -Thin Type- 1214


-Compact Type- 1215


-Standard Type- 1217


-Straight Type- 1219


-Easy Mounting (Nut) Type- 1220


-Straight Type for High Torque- 1220


Resin Spur Gears-Module 0.5 / 0.8 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0- 1239

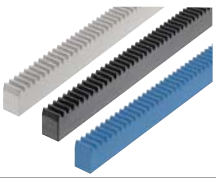

Spur Gears -Teeth Width, Hub Dimensions Configurable-Module 0.5 / 0.8 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0- 1241


Keyless Hub Spur Gears -Module 1.0 / 1.5 / 2.0 / 2.5 / 3.0- 1243

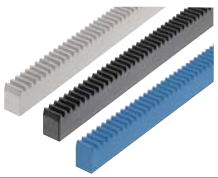

Bevel Gears-Module 1.0/1.5/2.0- 1247


Helical Gears-Module 1.0 / 1.5 / 2.0 / 2.5 / 3.0- 1248

Addition


Rack Gears - L Dimension Fixed 1249

Addition

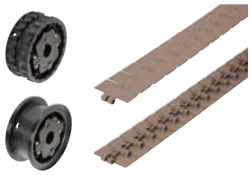

Rack Gears -L Dimension Configurable (One End Machined) 1250


Chains / Sprockets for Small Conveyors - Double Pitch Type - 1261


Chains for Small Conveyors -With Attachments- 1262


Double Speed Chains 1263


Sprockets for Double Speed Chain 1263


Top Chains 1266


Idler Sprockets 1267


Idler Pins 1268


Idler Sprockets with Hub 1269-1270

1 2





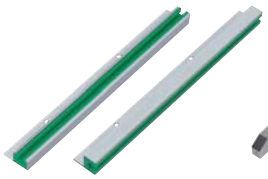
•Idler is optional.



•Idler is optional.



Small Idlers	Tensioner Units	Tensioners-Link Bars Type-	Slide Plates for Tensioning
1270	1271	1272	1272









-Mount Flange-	Steel Chain Guides	Turnbuckles	Turnbuckle Components
1276	1276	1277	1278

Addition



Addition



Addition







-Bolt Fixings Standard / Compact-	Small Head -Standard, Tapped-	-Configurable Taper Angle / D and P Tolerance Selectable-	-Large Head / Small Head, Set Screw-	Large Head Round Tapered
1292	1293~1296	1297	1298	1299~1302

Addition













-Spherical Large / Small Head - Set Screw-	Large Head Flat -Standard, Tapped-	-Threaded-	-Side Locating-	Small Head Flat -Standard, Tapped-	Pilot Shape Selectable -Standard-
1320	1321~1324	1325~1327	1328	1329~1334	1335

Addition



Addition







Addition



-Taper Angle / D and P Tolerance Selectable-	Shoulder Thickness Configurable / Shoulder 0, Shoulder Thickness Configurable-	-Set Screw-	With Shoulder -Pilot Shape Selectable-	Straight Tapered Type
1342	1343-1344	1345	1346	1347





NEW



Addition



Addition



Addition



-With Base-	-Shouldered-	Locating Pins -Nonmagnetic-	-With Plastic Head-	Locating Pins -Large Head Plastic-	-Small Head Plastic-
1354	1355-1356	1357	1358	1359	1360











-Screw Mounted-	-With Pilot-	-Large Diameter - Screw Mounted-	-Eccentric-	Flanged -Flat-
1365	1365	1365	1366	1366

NEW : New products added

Change : Products whose part numbers have been changed.

Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



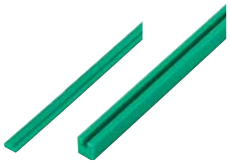
Chain Tensioners-idler Set Type- 1273



Chain Guide Tensioners 1274



Chain Guides -C-Channel Raised Track / Channel- 1275



-Raised Track / Channel- 1275

Locating Pins / Bushings for Jigs

Addition



Product Name: Locating Pins Large Head -Standard, Tapped- | Page: 1283~1286



-Threaded- 1287

Addition



-Configurable Taper Angle / D and P Tolerance Selectable- 1289



-Threaded / With Hexagon Socket- 1291



Small Head Round Tapered 1303-1304



Large Head Bullet Nose Shaped 1305

Addition



Spherical Large Head -Standard, Tapped- 1307~1310



-Threaded- 1311~1314

Addition



Spherical Small Head -Standard, Tapped- 1315~1319



-Standard Tapped / Straight Tapped- 1336



-Threaded- 1337



-Tip Length Configurable - Threaded- 1338

Addition



With Shoulder -Standard, Tapped- 1339-1340



-Threaded- 1341

NEW



Straight Sphere Type 1348

NEW



Full Thread Type 1349

NEW



Marker Pins 1350

NEW



Locating Pins for Height Adjusting 1351

Addition



Small Ø Locating Pins -Standard- 1352

Addition



-Small Head- 1353



-Small Head Plastic- 1361



-Screw Mounted Plastic- 1361



Work Pusher Pins -Straight- 1362



-Small Head- 1362



Locating Pins -With Air Vent- 1363



Locating Pilot Pins 1363



Locating Pins -Double Stepped- 1364

NEW



Flanged -Mount- 1367



Height Adjusting Blocks 1367



Locating Pins for Grippers 1368



Plate Centering Pins 1368



Feed Pins -Straight- 1369


Feed Pins -With Shoulder- 1370


-Height Adjusting Pins, Threaded -Hexagon- 1371


-With Shoulder, Round, Width Across Flats- 1371-1372


-Press-Fit Type- 1373

Addition


-Counterbored- 1373


Tapped -Hexagon- 1374


-Configurable Stepped- 1378


-Flat / Tip Set Screw- 1379


-Tip Shape Selectable- 1380


Hexagonal Support Pins -Stepped- 1381


-Flat Type- 1382


-Configurable with Shoulder, Set Screw- 1387


-Configurable No Shoulder, Threaded- 1388


-Configurable No Shoulder, Set Screw- 1388


-Standard with Shoulder, Threaded- 1389-1390


-Standard with Shoulder, Set Screw- 1389-1390


-Long, No Shoulder- 1395


-Screw Mounted, No Shoulder- 1396


-Screw Mounted, With Shoulder- 1396


Locating Pins for Jigs -Shading Arc, With Shoulder- 1397


-Shading Arc, No Shoulder- 1397


-Cannonball Shape, With Shoulder- 1398


Detecting Pins (Sensor Embedded) 1402


-Work Detection Unit- 1402


Pedestal Pins 1403


Height Adjusting Pins for Jigs 1403


Height Adjusting Washer 1404


Locating Pin Holders for Jigs 1404


-Oval- 1410


-Copper Alloy Straight / Shoulder- 1411


-Straight / Shoulder- 1412


-Flanged- 1413-1414


Brackets for Stopper Screws 1421


Threaded Stopper Blocks -Standard, Counterbored- 1422


Price Reduction Up to 8%
-L-Shaped / T-Shaped / Side Counterbored / Two Hole- 1423-1424


Stop Pins -Press-Fit / Screw / Spherical / Press-Fit Urethane / Screw with Urethane / Wrench Hole- 1425-1426

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



-Round, Width Across Flats- 1374



-Small Head- 1375



Height Adjusting Pin 1375



Height Adjusting Caps 1375



Holders for Locating Pins 1376



Support Pins -Stepped- 1377



-Precision with Shoulder, Threaded- 1383-1384



-Precision with Shoulder, Set Screw- 1383-1384



-Precision No Shoulder, Threaded- 1385-1386



-Precision No Shoulder, Set Screw- 1385-1386



-Configurable with Shoulder, Threaded- 1387



-Standard No Shoulder, Threaded- 1391-1392



-Standard No Shoulder, Set Screw- 1391-1392



-Standard Short Set Screw, With Shoulder- 1393-1394



-Standard Short Set Screw, No Shoulder- 1393-1394



-Long, With Shoulder- 1395



-Cannonball Shape, No Shoulder- 1398



-Diamond Shape, With Shoulder- 1399



-Diamond Shape, No Shoulder- 1399



-Oval, With Shoulder- 1400



-Oval, No Shoulder- 1400



-Alumina Coated Pins- 1401

Addition



Bushings for Locating Pins -Straight Standard- 1405-1406

Addition



-Standard Shoulder- 1407-1408



-Retaining- 1409



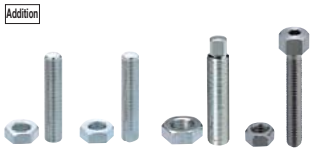
-Flanged, Retaining- 1409



-Notched- 1409

Locating and Guide Components

Addition



Addition



Price Reduction
Up to 8%

Product Name	Adjusting Stopper Screws -Hexagon Sockets / Wrench Flats / Wrench Flats with Hexagon Sockets / Hexagon Bolts-	Adjusting Stopper Screws with Knurled Knobs	Locating Bolts	Stopper Bolts	Stopper Screws	Threaded Stopper Blocks
Page	1417-1418	1418	1419	1420	1420	1421

NEW



Stopper Bolts -With Urethane, Polyacetal, Silicon and MC Nylon- 1427-1428

Addition

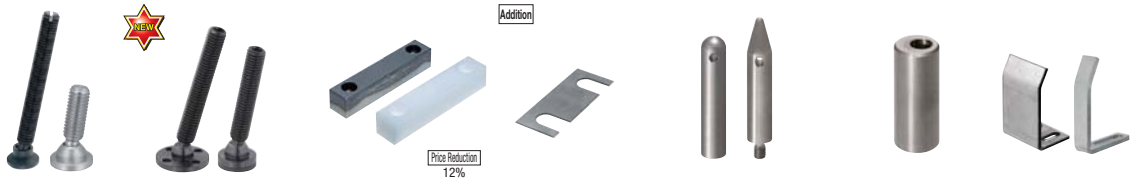


Shock Absorption Stoppers 1429

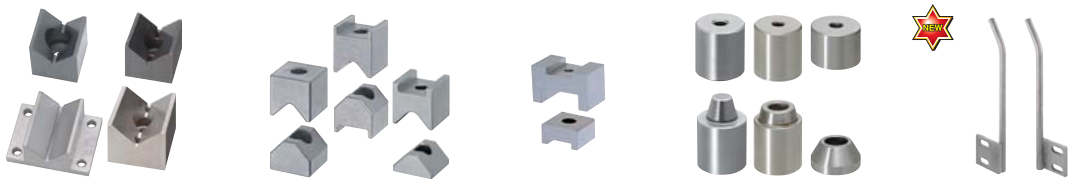
-Stoppers with Screw, Washer, and Plates- 1430


Price Reduction 12%

Stopper Blocks	Stopper Blocks with Urethane	Adjust Screws	Blocks for Adjusting Bolts	Adjusting Pins	Screw Jacks	Leveling Screws
1431	1432	1433-1434	1435-1436	1436	1437	1437


Addition
Price Reduction 12%

Grub Screw Sets	-Rubber Pads Type/Flanged Type-	Clamp Plates	Shims for Clamp Plates	Basic-Guide Pins -Tip Shape Selectable-	-Eccentric-	Basic Guides
1443	1444	1444	1444	1445	1445	1446



V Blocks -Standard / Precision-	-V-Shaped Locating Blocks-	U/T-shaped Locating Block Sets	Tapered Pin Locating Block Sets	Basic Guides for Welding Jigs -Round Pole-
1450	1451-1452	1453	1454	1455


Addition
Addition
Price Reduction 15%

Workpiece Detection System	Roller Pushers -Low Particulate Generation Type-	Point Pads	Lift Pins	Feed Fingers	-Economy Type-	Auto-latch
1460	1461	1461	1462	1463	1465	1466


Price Reduction 6%

-Long / L Dimension Selectable Long-	Wrenches for Ball Plunger	-Screw Tip Type-	-Flanged Type-	Ball Buttons	Press-Fit Plungers	-Roller Type-	Ball Buttons -Screw Head-
1472-1473	1473	1474	1474	1474	1475	1475	1475


Addition

Micro Spring Pins	Spring Plungers -Tapped Tip-	-With Hexagon Socket Tip-	-Hexagon Nose-	-Flat Tip-	-For Slope Surface-
1482	1482	1483	1483	1484	1484


Price Reduction 5%

-Long-	-With Precision Pilot-	-Press-Fit / Knob-	-Knob-less-	-Coarse / Fine Thread Lever Types-	-Switch Lever-
1488	1489	1489	1490	1491	1492

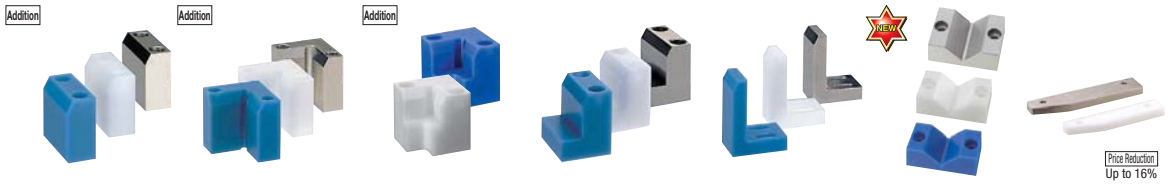
NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



-Large Holes for Adjustment / Wrench Flat Type-	Leveling Bolts	-Wrench Flats Thick-	Lock Nut	Clamping Screws	High-Lock Screws	Clamping Screws	Hexagon Head Clamping Screws
1437	1438	1438	1438	1439-1440	1440	1441-1442	1442



Guides -Straight / L-Shaped / Height Adjusting / Pedestal / Angle / V-Shaped / Plates-
1447~1449



-Plate Type-	-Ribbed Type-	Guide Plates	Round Stoppers	Flat Stoppers	Blocks for Shim Adjustment of Welding Jigs -Straight / L-Shaped-
1455	1456	1456	1457	1458	1459

Plungers



Product Name	Ball Plungers -Economy / Standard / Stainless Steel-	-Roller Type-	-Load Adjustable-	-Plastic / Fine Thread / Short-
Page	1469-1470	1470	1470	1471



Roller Plungers	Spring Plungers -Steel / Stainless Steel-	Wrenches for Plungers	Long Sleeve Plungers	Short Spring Plungers -Steel / Stainless Steel-	Micro Spring Plungers
1476	1477-1478	1478	1479	1480	1481



-Flanged Type-	Indexing Plungers -Standard-	-Flanged Type-	-Tip Tapped Type-	Short Thread Type	-Compact Type-
1484	1485	1486	1486	1487	1488



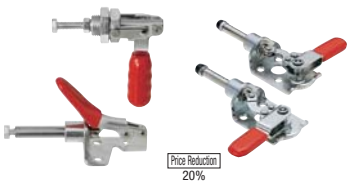
-Push Type-	-Plate Mount-	-Fine Thread, Coarse Thread-	Ball Lock Pins -Spring Type-	-Push Type-
1492	1492	1493	1494	1494

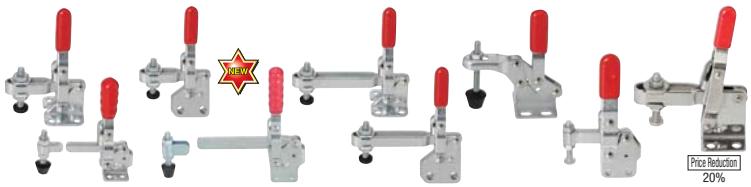
Clamp Units / Toggle Clamps





Product Name	Spring Clamps	Spring Side Clamps / Tip Attachments
Page	1497	1498





-Push-Pull Type, Horizontal Handle-	-Vertical Handle-
1507	1508~1513



-Push-Pull Type-
1516~1519

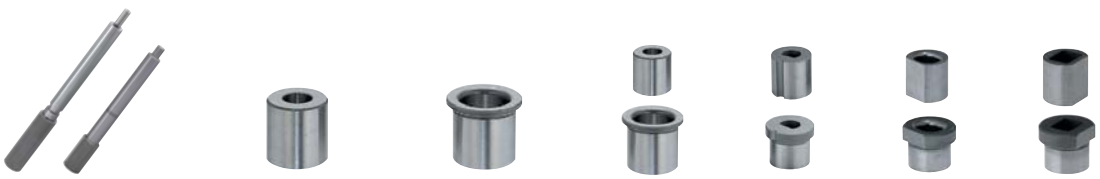
Inspection Jigs



Product Name	Slot Pins for Inspection Jigs -Straight-	-Stepped Straight-	-Stepped Diamond, Straight-	-Oval Straight-	-Stepped D-Shape-
Page	1527	1528	1529	1531	1533



-Tapered with No Step-	Tapped Pins for Inspection Jigs	-Diamond, Taper-	Marking Pins	Slot Pins for Inspection Jigs -Stepped Straight, Threaded-	-Threaded Pins-
1537	1538	1539	1541	1543	1544



Slot Pins for Inspection Jigs -With Groove-	Bushings for Inspection Jigs -Straight-	-Straight with Shoulder-	-Stepped Straight-	-D-Shape-	-Oval-	-Square-
1548	1549	1550	1551	1552	1553	1554



-Round-	Height Adjusting Pins -Standard-	-Threaded-	Hinge Units for Jigs Bases	Slide Units for Jigs Bases
1560	1560	1560	1561	1561

NEW : New products added

Change : Products whose part numbers have been changed.

Addition : Products with additional specifications.

About Reduced Prices

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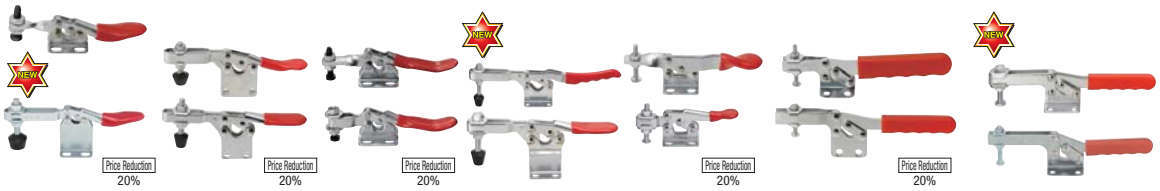
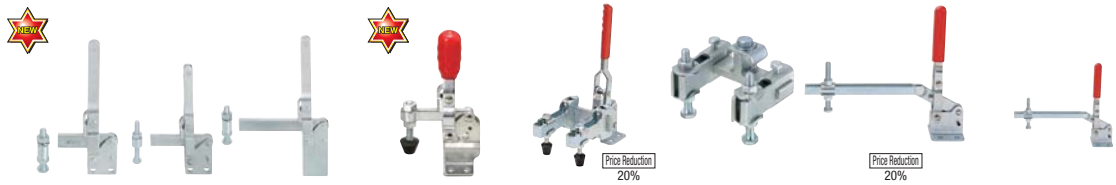


Toggle Clamps -Hold Down, Horizontal Handle-
1501~1506



Vertical Handle, Welded Tip Type-	-High Arm Type-	-2-Pronged Type-	2-Pronged Metals	-Long Arm Type-	-Long Arm, Small Type-
1514	1514	1515	1515	1515	1515



-Smooth Stroke-	Welding Clamps	Metal Heads for Clamps	Components for Toggle Clamps-Two-pronged Clamp Arms-	-Clamp Arm Extension Kits-	-Clamp Brackets-
1519	1520	1521	1522	1522	1522



-Stepped Large Diameter-	-Small-	-Straight Long-	-Stepped Straight Long-	-Threaded Straight Long-	-Tapered-
1534	1534	1535	1535	1536	1537



-Threaded Taper, Round-	-Threaded Taper with No Step-	-Threaded Taper, Revolving Diamond-Shape-	-Straight Clamp-	-Taper Clamp-	GO / NO-GO Pins -Reversible-
1545	1545	1546	1547	1547	1548



-Stepped and Threaded / For Straight Pin / Taper Pin-	-Retaining Thread Bushings-	-Clip Detaching Blocks for Plastic Panels-	-Threaded Bushings-	-For Plastic Panels-	Shim Plates -Square-
1555-1556	1557	1558	1559	1559	1560



Hinge Units for Jigs -Vertical-	Angle Plate Sets for Jigs -For Horizontal / Vertical Rest Position-	Angle Plate Support Stands / Plates	Clamp Plates	-L Pins / T Pins-
1562	1563	1564	1565	1566


Jig Locating Kits 1567


Addition
-Construction Balls, Covers, Pads- 1567


-Pin Clips- 1568


-Wires and Chains for Pins- 1568


-Self-Retractable Wires for Slot Pin- 1568


One Structure Contact Probes 1583-1584


Switch Probes 1585


Terminals for Probes 1585


Heat / Shrink Tubes 1585


Circuit Board Guide Pins / Circuit Board Pusher Pins 1586


Circuit Board Rough Guides 1586


[Simplified Adjustment] X Axis Push Screw Standard Type 1594

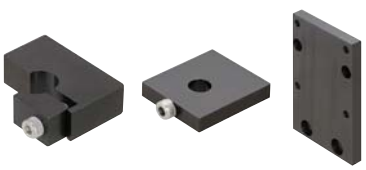

Price Reduction 15%
[Simplified Adjustment] X Axis Feed Screw Compact Type 1595

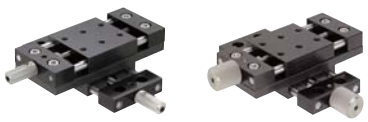
Addition

[Simplified Adjustment] X Axis Feed Screw Selectable Stroke Type 1595


[Simplified Adjustment] X Axis Left / Right Screw Width Adjust Unit 1596


[Simplified Adjustment] Z Axis Medium Load Capacity 1601


[Simplified Adjustment] Dispenser Mounting Accessory 1602

Addition

[Simplified Adjustment] XY Axes Feed Screw Type 1603

Standard / High Precision Positioning Stages

NEW

[Standard] Dovetail Rack & Pinion 1614~1619

NEW


Price Reduction Up to 5%
[Standard] Cross Roller 1620~1621

Addition

[High Precision] Dovetail Rack & Pinion 1622~1630


Knob Covers 1638

NEW

[High Precision] Cross-Roller Feed Screw High Rigidity 1640


Price Reduction Up to 10%

[High Precision] Linear Ball Slide 1641~1645



[High Precision] Cross Roller 1647

NEW

[High Precision] XY Axes Dovetail Groove Feed Screw 1657

NEW

Price Reduction Up to 10%

[High Precision] XY Axes Linear Balls 1658~1661


[High Precision] ZY Axes Cross Roller 1662~1663


[High Precision] Z Axis Dovetail Groove Rack & Pinion Type 1664~1667

NEW

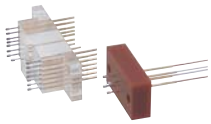
[High Precision] Z Axis Feed Screw 1668~1671

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.

Contact Probes



Addition


Product Name	Contact Probe Assembly Service	Double Tipped Probes	Probes / Receptacles -Min. Mounting Pitch 0.5mm~4.5mm Series-
Page	1571	1572	1573~1581

Simplified Adjustment Units

Addition



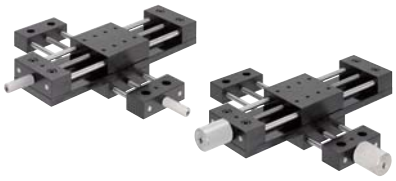
NEW


Product Name	[Simplified Adjustment] X Axis Feed Screw Standard/Configurable	[Simplified Adjustment] X Axis Feed Screw Large Lead Type
Page	1589~1592	1593


NEW




[Simplified Adjustment] X Axis Rack and Pinion Standard Type	[Simplified Adjustment] Z Axis Rack and Pinion Scaled Post Units	[Simplified Adjustment] Z Axis Feed Screw Standard Type	[Simplified Adjustment] Z Axis Push Screw Standard Type
1597	1598	1599	1600

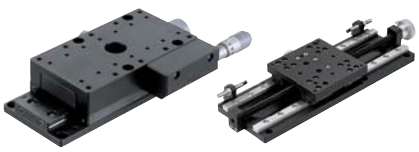

NEW



[Simplified Adjustment] XY Axes Rack and Pinion Standard Type	[Simplified Adjustment] XY Axes Feed Screw Large Lead Type	[Simplified Adjustment] XY Axes Push Screw Standard Type
1604	1605	1606

Addition




[High Precision] Dovetail Groove Feed Screw Lead 4.2mm	Post Locating Stages	[High Precision] Dovetail Slide Feed Screw
1631~1633	1635	1635~1639



Price Reduction
Up to 5%
NEW


[High Precision] Long Stroke	[High Precision] XY Axes Dovetail Groove Rack & Pinion Type	[High Precision] XY Axes Dovetail Groove Feed Screw
1648	1651~1653	1654~1656

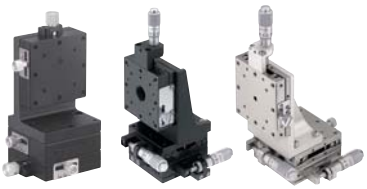

Price Reduction
Up to 7%



NEW




[High Precision] Z Axis Linear Balls / Cross Roller	[High Precision] Horizontal Z Axis
1672-1673	1674~1678

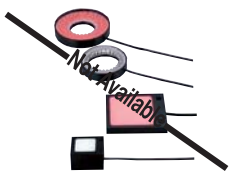

Price Reduction Up to 8%

Price Reduction Up to 8%


[High Precision] XZ Axes	[High Precision] XYZ Axes	[High Precision] Combined Stages
1681~1684	1685~1688	1689






Stage Maintenance Parts	X-Axis Motorized Stages	Peripherals for Motorized Stages
1697-1698	1701~1705	1706







LED Lamps for Image Processing	Power Controller for LED Lamps	Free Guides / Free Angles / Flexible Arms
1714-1715	1716	1718~1720

Sensor Switches



Addition

Price Reduction Up to 25%

Price Reduction Up to 25%



Product Name	Photoelectric Sensors with built-in Amplifier	Brackets for Sensor with Stands	Clamps / Bases for Sensor Mounting	Proximity Sensors -Standard-	Proximity Sensors -Metal (IP68)-
Page	1727~1732	1733-1734	1735-1736	1737	1739





Price Reduction


Photomicrosensors	Cams for Photo Sensor	Rails for Switch & Sensor -Aluminum-	Bar Nuts
1746~1748	1749	1750~1757	1757







Limit Switch Flags	Compact Contact Switches	High Precision Touch Switches	Contact Switches -Cylinder, L-Shaped Cylinder-	-Bolt / L-Shaped-
1761	1771	1772	1773	1774








-Bolt, Spherical Contacts, One-Signal, Water-Resistant, Hexagon Head-	Heat-Resistant Switches	Plunger Switches	Contact Switches -Non Contact Point Type-
1779-1780	1781	1782	1784

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Price Reduction
Up to 8%

[High Precision] Revolving Stages	[High Precision] Goniometer Stages
1691~1694	1695~1696

Image Processing/ Connecting Parts for Measurement Instruments



Product Name	Macro Lenses	Objective Lenses / Auto Extension Rings	Mega-pixel CCTV Lenses / CCTV Lenses / Auto Extension Rings	Setscrews	Rear Convertor Lenses
Page	1709	1709	1711	1711	1711

Addition



Price Reduction
8% in average

Magnetic Bases	Shaft Mounts	Dial / Indicator Fittings	Dial Holders
1721	1721	1722	1722



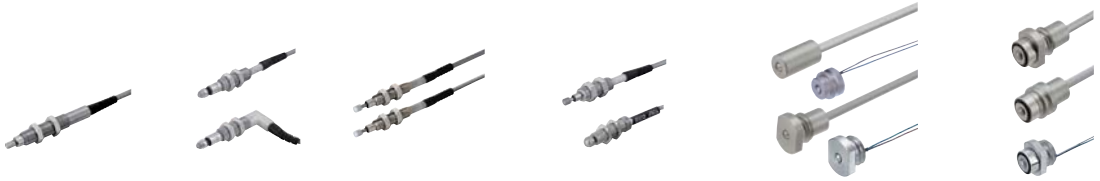
Price Reduction
16%

-Heat-Resistant (IP67)-	-Mini (IP67)-	-Square-	Proximity Sensor Attachments	Sensor Flags / Brackets	Proximity Sensor Flags
1739	1739	1741	1743	1743	1744



Price Reduction
Up to 75%

Rails for Photomicrosensors	Rails for Switch and Sensor -Steel-	-DIN Rails L Dimension Fixed Type-	C-Shaped Rails / Simple Stays / Grounding Blocks
1757	1758	1759	1760



-Long Stroke Type-	-Water-Proof (IP67)-	-With Plastic Tip (IP65)-	-Tip Shape Selectable / Wide Contact Angle Type-	Switches with Stoppers -Mini, Drip-Proof-	-Mini, Water-Proof-
1774	1775	1775	1776	1777	1778

Posts / Strut Clamps / Stands



Product Name	Hexagonal Posts / Attachment Blocks for Hexagonal Posts	Circular Posts	Square Posts	Spacer Blocks
Page	1788~1798	1799~1808	1809	1811








Posts for Stands	Caps for Pipe Posts	Posts for Stands -Calibrated Pipe-	-Calibrated, Length Configurable-	-Square Bars / Pipes-	-Calibrated Square Pipes, Length Configurable-
1814	1814	1815	1815	1816	1816







Brackets for Stands -Side Mount-	-Side Mounting with Dowel Holes-	-Side Mount Space Saving Type-	-Square Holes-	-Side Mount, Square Holes-
1829~1831	1829-1830	1831	1832	1832







-Vertical / Parallel Tapped with a Wing Knob / Clamp Lever-	-Tapped-	-Round / Square Holes, Perpendicular / Parallel, Tapped-
1845-1846	1847~1852	1851

Gussets / Angle Plates / Welded Steel Stands






Product Name	Precision Casting Economy Gussets	Gussets - Through Hole & Counterbored Hole, Hole Position Fixed -	-Through Hole, Counterbore Hole, Hole Position Configurable-	Gussets -Tapped, Hole Position Fixed / Configurable-
Page	1864	1865	1866	1867








- Hole Position Configurable Type -	- Side A (Base Surface) Machining Configurable Type -	- Opposite Angle Dowel Type / Wide Type -	Welded Angle Plates -Compact, No Hole Type-	- No Hole Type and Hole Position Configurable Type -
1875	1877	1878	1879	1880

Technical Data

International System of Units (SI)	1887	Ball Screw Selection	1893
Quantifiers / Unit Symbols / Chemical Symbols / Element Symbols	1889	Linear System Life Calculations	1901
Volume and Weight Calculations	1889	Single Axis Actuator Selection	1905
Physical Properties of Materials	1889	Radial Bearing (Class 0) Tolerances and Allowances	1909
Area / Center of Gravity / Area Moment of Inertia Calculations	1890	IP Rating Codes of Position Sensor Switches	1909
Surface Roughness Ranges of Various Processes	1891	How to use coil springs and precautions	1910
Geometrical Tolerance Indication Methods	1892	Spring Calculations	1911

1885~1978

Index

Alphabetical Order	P.1987
Product Name Index	P.2045

1985~

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Device Stands 1817~1824



Price Reduction

Stand Brackets 1825~1828



Strut Clamps -Perpendicular Configuration / With a Wing Knob / With Clamp- 1834



-Perpendicular- 1835~1841



Price Reduction



-Parallel- 1842



Strut Clamps -Slotted Holes- 1853



–Arm– 1854

Bar Clamps 1854



Flexible Clamps 1855~1856



Pipe Stands 1858~1859



-Threaded Pipes Welded- 1859



Price Reduction Up to 7%

Rotary Connectors 1861~1862



-Lightweight Type / Bridge Type- 1869~1870



Angle Plates -Cast Iron, Dimension Fixed Type- 1871



Aluminum / Stainless Steel / Dimension Fixed Type - 1872



Price Reduction 15%

- Mounting Holes Selectable / Holes Position Fixed Type - 1873



- Mounting Surface Tapped Holes and Mounting Holes Position Specified - 1874



Price Reduction 20%

Welded Steel Stands–Shaped Steel Type– 1881



Welded Steel Stands–Shape Steel Height Specified- 1882



Price Reduction 20%

- Shape Steel Lower Wide Type - 1883



-Plate Type- 1884

Chain Power Transmission Mechanism Design	1913~1920	Iron Rubber® Belt Selection	1943
Double Speed Chain / Top Chain Selections	1921	Technical Data -Synchronous Pulley- -Machine Keys and Keyway-	1947~1968
Flat Belt Selection	1922		
Power Transmission -Synchronous Belt Selection	1923~1939	Metal Table EN - JIS	1795
Conveyance Synchronous Belt Selection	1940	Metal Table JIS - EN	1800
Synchronous Belt Reference Information	1941	Plastic Table	1805
Synchronous Belt Replacement Signs	1942	Surface Treatments	1809

How to Use Catalog

- How to Use the Catalog (P.83)
- Guide of Marks (P.85)
- MISUMI's Environmental Awareness and RoHS Compliancy (P.86)
- General Ordering Information (P.87)
- Delivery Times, Express Orders (P.88)
- Item Number Configuration (P.89)
- Alterations (P.90)

Washers / Collars / Shims



Page	81~98	Product Name	Metal Washers -Standard / Precision-	101~109	-With Flange-	110



Slotted Hole Washers	Thin-Walled Metal Collars	Pipe Collars	Spacers	Simultaneous Grinding Spacers	Stepped Spacers
115	116	116	116	117	118



Resin Washers –Counterbore–	Resin Collars –Tapped–	Resin Collars –Standard–	Resin Collars –Flanged–	Resin Collars -With Guide-
132	132	133	135	137



Square Resin Washers	Shim Rings / Shim Rings (Pack)	Precision Shim Rings / Wave Washers	Shims -Split-
142	143~144	145	146

Screws / Washers / Nuts



Product Name	Bolts (Box)	Nuts (Box)	Washers (Box)	Retaining Rings (Box)	Inserts (Box)	Hexagon Socket Head Cap Screws
Page	157~168	169	170	171	172	173~176



Socket Head Cap Screws - with Threadlocker Adhesive	Hexagon Socket Cap Screws with Hole	Tapped Socket Head Screws	Hexagon Socket Head Cap Screws -Fine Thread / Left-Hand Thread-	Cover Caps	Hexagon Socket Button Head Cap Screws	Hexagon Socket Flat Head Cap Screws / Pack
181	181	181	182	182	183~185	185



Small Head Cap Screws	Screws with Through Hole -Extra Low Head / Low Head / Hexagon Socket-	Screws with Through Hole –Hexagon / Full Thread Type–	Long Knurled Screws	Cover Screws -Hexagon Socket Head / Knurled / Button Head Cap Screw–
192	193	193	194	195~196

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.

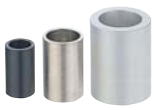






-Counterbored Type- 111 | Metal Washers -Tapped- 113 | –Countersunk– 114 | –With Screw Holes– 114 | Metal Washers -Shape Selectable- 115

Addition




Addition



Price Reduction Up to 15%




Metal Collars -Standard / Precision- 119~126 | -Flanged / Standard- 127 | Resin Washers / Resin Collars 130 | Resin Washers -Flanged Solid / Flanged- 131





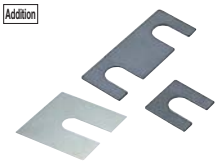
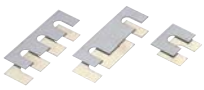
NEW




Price Reduction 30%

Thermal Insulation / Fluororesin / PPS 138 | Ceramic Washers / Sheets / Collars 139 | Thermal Insulation Washers / Collars 140 | Extra Thin Resin Washers -Abrasion Resistance- 141 | Extra Thin Resin Washers / Sheets 141

Addition


Addition




Price Reduction 9%

Square Shims –Adjustment– 147-148 | Square Shims -Slotted- 149-150 | Square Shims -With Round Hole- 149-150 | Shim Plates –Standard / Configurable– 151-152 | Shim Tape 152

Addition



Price Reduction 35%




Addition



Addition



Addition




Hexagon Socket Head Cap Screws -Full Thread- 177 | -High Strength Stainless Steel- 177 | –Configurable Length– 177 | Washer Assembled Hexagon Socket Head Cap Screws 178 | SUS316 Hexagon Socket Head Cap Screws / Hexagon Screws / Nuts / Washers 179 | Hexagon Socket Head Cap Screws -Titanium / Aluminum- 180

Addition

Price Reduction 15% on average





Addition



Addition



NEW



Price Reduction Up to 80%



Hexagon Bolts Extra Low Head Hexagon Screws 187 | 188 | Hexagon Screws with Hole 188 | Hexagon Socket Low Head Cap Screws 189 | Hexagon Socket Extra Low Head Cap Screws 190 | Ultra Low Head Cap Screws -Hexalobular / Hexagon Socket- 191 | Special Wrenches 191








Cover Screws-Extra Low Head / Low Head / Recessed / Long knurled 197-198 | Hexagon Socket Cap Screws with Retaining Ring Groove 198 | Stepped Screws –Extra Low Head / Low Head / Button Head Cap Screw / Cross Recessed– 199 | Full Thread 200



Stud Bolts 200



Addition

Configurable Length Screws with Hexagon Sockets 201



Addition

Configurable Length Screws 202



Full Thread Screws with Scale 203



Flanged Brackets –Bracket– 203



Configurable Length Screws with Hexagon Sockets –Tip Shape Selectable– 204



Large Head Shoulder Screws 210



Low Head Shoulder Screws 211



Reamer Bolts 212



Plastic Hexagon Socket Cap Screws / Set Screws 213

NEW



Plastic Hexagon Socket Head Cap Screws -No Knurling- 214



Low Head Plastic Hexagon Socket Cap Screws / Extra Low Head Plastic Screws (Pack) 214



Washer Assembled Cross Recessed Hexagon Head Screws 224



Precision Machine Screws (Package) 225



Ornamental Screws / Washers 225

NEW



Self Tapping Screws 226

Addition

Price Reduction 22% on average



Nuts 227

Addition



Compact Nuts 228

Price Reduction 22% on average



Ring Nuts 228



Hard Lock Nuts 231

Price Reduction Average 27%

Changed



Washers 232



Quick-Tight Nuts 233



Tab Washers (Package) 233



Serrated Conical Disc Spring Washers 233



Conical Spring Washers 233



Square Washers / Nuts 234

NEW



Tapered Machine Keys with Gib Head 242



Dowel Pins / General Purpose Pins 243~248



Dowel Removal Jigs 248



Dual–Fit Dowel Pins 249



–Hollow, Tapped– 249



Stepped Dowel Pins 250



Insulating Dowel Pins 250

Addition



Split Pins 254



Price Reduction Up to 40%

Thread Inserts 255



Tools for Thread Inserts 255



Tangless Inserts 256



Hand Taps for Tangless Inserts·Tools 256



Self-Tapping Inserts 256



Bubble Levels –Surface Mounting Type– 260

-Embedded Type- 260

Grease Fittings 260

Hardened Precision Balls 260

Loss-Proof Stainless Steel Chains 261

NEW : New products added
Change : Products whose part numbers have been changed.
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About Reduced Prices

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Hexagon Socket Set Screws	Hexagon Socket Cap Screws -with Soft Tips-	Set Pieces	Hexagon Socket Screws -Dog Point	Lifting Eye Bolts	Plastic Hexagonal Spacers	Shoulder Bolts
205-206	206	206	207	208	208	209-210



Plastic Cross Recessed Pan Head Screws (Pack)	Wing Screws / Wing Nuts	Tamper Proof Button Head Cap Screws / Hex Wrenches	Thumb Screws (Resin Head)	Cross-recessed Head Machine Screws	Phillips Low Head Screws / Binding Screws	Washer Assembled Cross Recessed Pan Head Screws
215	216	216	216	217~220	221-222	223



Tall Nuts	Knurled Nuts	Flanged Nuts	Cylindrical Nuts	Quick-Tight Nuts	T-Nuts	Taper Washers / Taper Nuts	U-Nuts®
228	228	229	229	230	230	230	231

Small Parts / Magnets



Product Name	Parallel Keys -Configurable-	-With Counterbores / With Tapped Counterbores-	-With Counterbore and Tapped Hole Type-	–With Pull-Out Tapped Hole–	- Blank Type -
Page	237-238	239	240	240	241



Plastic Dowel Pins	Spring Pins	Screw Plugs	Retaining Rings –C Type (External)–	(E-shaped) Retaining Rings	Retaining Rings –C Type (Internal)–	Hair Pin Cotters
250	251	252	253	253	254	254



Hand Tools for Self-Tapping Inserts	Scale Plates and Pointer Plates	Angle Scales –Plate Type–	-Double-sided Adhesive Tape-	Scale Tapes
256	257	259	259	259



Loss-Proof Chains	Loss-Proof Wires	Metal Joints	Mounting Brackets	Connecting Parts –Double Ring–	Temperature Sensing Labels
261	262	262	262	262	263

2
2








Addition

Price Reduction
Up to 41%

Arrow Sign Stickers	Arrow Sign Plates	Open / Closed Sign Plates	Stickers	Magnets–Round–	–Ring–
264	264	264	265-266	268	269







Price Reduction
Up to 7%

Price Reduction
Up to 27%

–Oval Holder–	Urethane Coated Magnets	Threaded Magnets with Holders	Magnets with Holders	Magnets with Holders -Tolerance h7 Type-
272	273	273	274	275-276

Round Bars / Rods / Pipes / Resin Rods







Product Name	[Material Shop 24 Round Bars and Pipes Website]	Rods -1.1191 / 1.0038 / 1.7220-	Rods -Stainless Steel / Aluminum / Brass / Pure Titanium Class 2-	Precision Rods (Tolerance h7/g6) -1.1191 / 1.4305 / 1.4301-
Page	282	283	285	287







Price Reduction
4% on average

Price Reduction
4% on average

Thick-Walled Stainless Steel Pipes -Straight / Threaded / Tapped-	Thin-Walled Stainless Steel Pipes -Precision Inner / Outer Ø Type-	Stainless Steel Pipes with Bending Alteration	Resin Rod Exterior Surface Unfinished	Resin Rods -Outer Dia. Finished-
294-295	296	297	298	299

Springs / Shock Absorbers / Gas Springs







Product Name	Tension Springs	Tension Springs -Hook Free-	Tension Springs -Long Medium Load-	hook	Tension Springs -Hook Insertion-
Page	309~312	313	314	314	314








Addition

Addition

Constant Force Springs / Brackets for Constant Force Springs	Round Wire Springs -Outer/Inner Ø Standard / L Configurable-	Round Wire Springs -Stainless Steel-	Washers for Compression Springs -Standard-
322	323~331	332~339	340

Addition



Addition




Stopper Nuts	Shock Absorbers -Coolant Resistant / Economy Type-	Gas Springs
345	347-348	350~354

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

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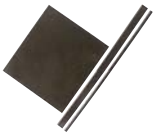






–Square–	Rubber Magnets -Super Strong Type-	Rubber Magnets -Strong Type-	Rubber Magnets -Standard Type-	–With Countersink–	Magnets -Countersink with Holder-
269	270	270	270	271	272








Hex Head Bolts with Magnets (Regular)	Magnet Blocks with Three-Side Attraction	Screw Stoppers with Magnet	Electromagnetic Holders -Standard / Tapped Through Hole / Rectangular / Cord Vertical-	Rectifiers for Electromagnetic Holders
277	278	278	279	280





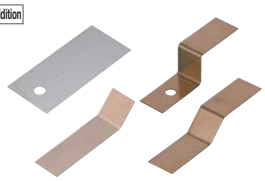

Mini Rods -Tip Shape, Outer Ø Tolerance Selectable, Outer Ø Configurable-	Hexagon Material	Inner Ø Selectable Steel Pipes / Wall Thickness Selectable Stainless Steel Pipes	Pipes -Welded, Thin Walled / Drawn Pipes
288~290	291	292	293






Precision Resin Rods	Ceramics Rods	Transparent Resin Rods / Pipes	Resin Pipes -Inner/Outer Dia. Unfinished/Finished-
301	302	302-303	303-304






Posts for Tension Springs	Disk Springs	Flat Springs	Torsion Springs
315~317	318	319	320







Washers for Compression Springs -Tapped-	Washers for Coil Springs	Shock Absorbers	Eccentric Angle Adapters
340	340	343~344	345

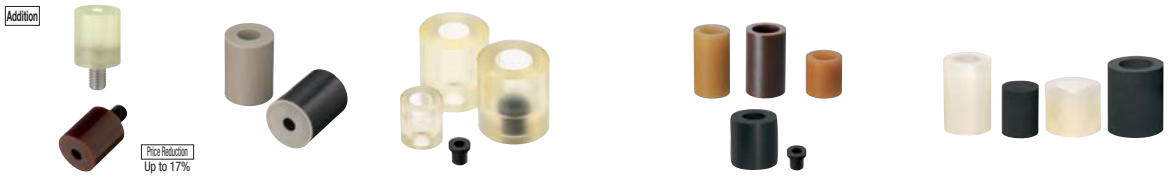
Urethane / Rubbers / Sponge / Felt








Product Name [Material Shop 24 Urethane, Rubber, Sponge Website]	Urethane / Antistatic Urethane Washers	Abrasion Resistant / Heat Resistant Urethane Washers	Rubber Washer	Sponge Washers	Urethane Bumpers
Page 357	361	362	363	364	365~368



Threaded Urethane / Rubber Bumpers	Bumpers with Metal Washer	Urethane Bumpers -Counterbore L Standard / L Configurable-	Urethane Bumpers -Counterbore Hole Configurable- / Flanged Collars for Urethane Bumpers	Rubber Bumpers / Counterbored Rubber Bumpers
369	370	371	372-373	374



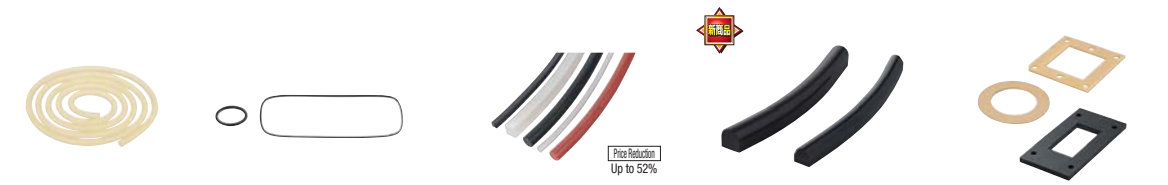
Shock Absorbing Bumpers -Tapped / Threaded-	Shock Absorbing Bumpers -Plate Type /Holder Type-	Urethane Sheets	Highly Abrasion Resistant / Heat Resistant Urethane Sheets	Urethane Sheets with Oil-Resistant Adhesives
379	380	381~384	385	387



Silicon / High Strength Silicon Rubber Sheets	Low Elasticity (Hanenaito®) Rubber Sheets	TPE Sheets / TPE Washers & Bumpers	Metal-Plated Urethane Sheets	Urethane / Rubber Blocks
397	399	401	403	404



Urethane / Rubber Sponge Sheets	Low Elasticity / Antistatic Low Rebound / Low Strain Sponge Sheets	EPT SEALER® Sponge	Felt Sheets	Felt Bumpers
409	411	412	413	414



Round Cord - Sealing Elastomer	Urethane - Rubber Round Strings -Ring Type-	Rubber / Rubber Sponge Strings -Round / Square-	Round Dome / Trapezoidal Dome Rubber	Urethane / Rubber / Sponge Gaskets
420	420	421	422	423~426



Antivibration Gel-Threaded/Plate Stopper Type-	Antivibration Gel Bushings	Antivibration Gel Sheets	-Antivibration Gel Rubber Coat Type-	Wire Rope Isolators	Antivibration Pads (Non-Staining Rubber / Natural Rubber)
436	436	437	437	438	439



Rubber Feet / Attachments	Sponge Tapes	Rubber Bumpers	Shock Absorbing Form
449-450	451	452	452

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

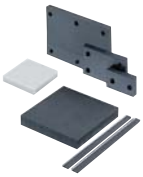
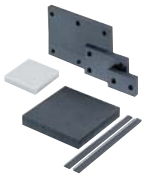
Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.

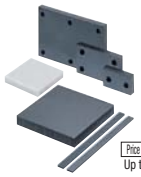


Price Reduction Up to 26%




Urethane / Rubbers -Spherical Tip-	Urethane / Rubbers -Tapered Tip-	Urethane / Rubbers -Pilot Type-	Urethane / Rubbers -Cap Type-	Extra Low Hardness Urethane Bumpers / Sheets
375	375	376	377	378

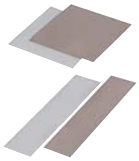





Price Reduction Up to 40%

Antistatic Urethane Sheets / Low Rebound Urethane Sheets	Nitrile Rubber Sheets	Chloroprene / Non-Staining Chloroprene Rubber Sheets	Ethylene Rubber Sheets / Butyl Rubber Sheets / Amber Color Rubber Sheets	Fluorine Rubber Sheets
388	389	391	393	395

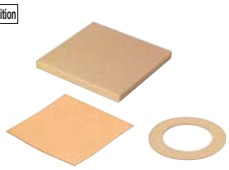







Anti-Skid Rubber Sheets	Nonskid Rubber Sheets	Silicon Gel Sheets	Low Friction Rubber Sheets -Nitrile / Silicon-	Resin Sheets	Fluororesin Tapes
405	406	406	407	408	408

Addition








Heat Insulation Sponge (Polyimide) Sheets / Washers	Heat Insulation Sheets	Heat Insulation Tapes	Heat Sinks	Heat Radiation Gel Sheets	Sponge Tapes
415-416	417	417	418	418	419

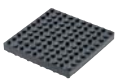
Antivibration / Soundproof / Antistatic Measures / Brushes

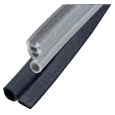



Price Reduction Max. 23%


Product Name	Antivibration Rubber -Stainless Steel Core Rod (Conductive Rubber / Chloroprene Rubber)-	Antivibration Rubber Mounts	Antivibration Gel -Both Ends Threaded-
Page	431-432	433-434	435

Addition



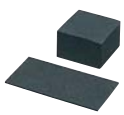


Antivibration Pads - RUBLOC® (Low Frequency Compatible)	Sound Proofing Materials	Trims	Trim Seals	Trim Compacts	Adhesives
440	441~444	445	446	447	448






Safety Protection Materials	Antistatic Rubber Sheets	Highly Conductive Rubber Sheets	Grounding Plates	Antistatic Sponge Sheets
453-454	455	456	456	457



Antistatic Sponge Sheets
458



Ionizers - Fan Type
459-460



Blow Type
461



Nozzle Attachments for Ionizers - Blow Type / Bar Type
462



Neutralization Brushes
463

Aluminum Extrusions Extrusions & Brackets



Aluminum Extrusions 20, 25, 40mm Square -HFS5 Series-
477~482



Brackets
483~496



Sheet Metal Plates / Brackets
497



Pre-assembly Fitting Nuts
500~502



Post-Assembly Insertion Nuts
503~505



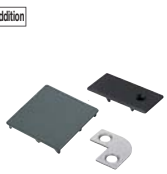
Pre-assembly Fitting Nuts
543~545



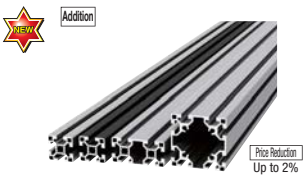
Post-Assembly Insertion Nuts
546~548



Nuts
549~550



Extrusion End Caps
551-552



Aluminum Extrusions 40, 80mm Square -HFS8 Series-
553~562



Brackets
563~578



Brackets
601~612



Sheet Metal Plates / Brackets
613



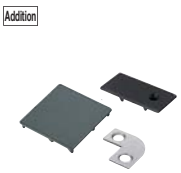
Pre-assembly Fitting Nuts
615~617



Post-Assembly Insertion Nuts
618~620



Nuts
621-622



Extrusion End Caps
623-624



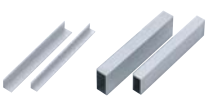
Aluminum Bracket Extrusions
660



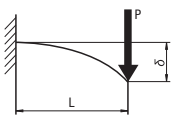
Flat Aluminum Extrusions
661~664



Fence Extrusions
665



Aluminum Extrusions
667-668



Technical Data for Aluminum Extrusions
669~680



Latch Magnets with Adhesive Tape
690



One-Sided Rollers for Aluminum Extrusions / Rollers for Aluminum Extrusions
691



Conveyor Roller Shaft Holders / Plastic Covers
692



Sliders for Aluminum Extrusions
693



Cable Covers / Cable Clamps
701



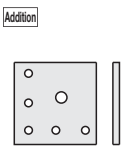
Hooks
702



Casters & Leveling Mounts Assembly
703-704



Plates with Casters / Leveling Mounts
705



Plates
706



Foot Bases
707

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Copper Foil Tape 463



Neutralization Tapes 463



Channel Brushes 465



Attachments for Brush 465



Roll Brushes 466



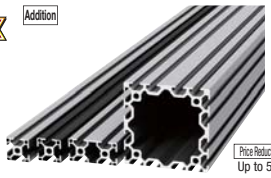
Nuts 506-507



Nuts (Package) 508



Extrusion End Caps 509



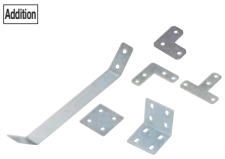
Aluminum Extrusions 30, 60mm Square -HFS6 Series- 511~522

Price Reduction Up to 5%

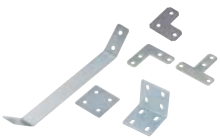


Brackets 523~540

Price Reduction Up to 10%



Sheet Metal Plates / Brackets 541



Sheet Metal Plates / Brackets 579



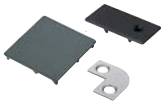
Pre-assembly Fitting Nuts 581~583



Post-Assembly Insertion Nuts 584~586



Nuts 587-588



Extrusion End Caps 589-590

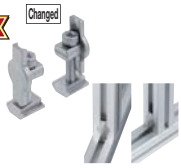


Price Reduction Up to 2%

Aluminum Extrusions 45, 50, 60, 90, 100mm Square -HFS8-45 Series- 591~600



Aluminum Extrusions with Built-in Joints 625

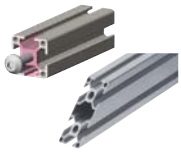


Blind Joint Components 627~640



Price Reduction 4% on average

Screws for Aluminum Extrusions 641~644



Alterations for Aluminum Extrusions 645~658



Aluminum Extrusions 15mm Square/Brackets/Square Nuts 659

Accessories for Aluminum Extrusions / HEPA Filters



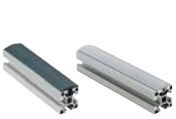
Cover Attachment Brackets 683



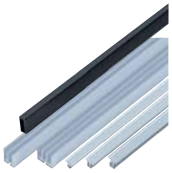
Panel Clamps / Post-Assembly Panel Holders 685-686



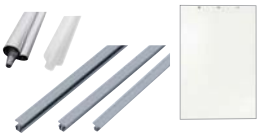
Slot Covers 687-688



Non-Slip Covers / Seal Covers / Protection Covers 689



Slide Rails / Spacers -Resin Type- 694



Sheets / Sheet Holders / Curtains 695~697



Fluorescent Light Units 698



Holders for Aluminum Extrusions / Clamps 699-700



Pads for Aluminum Extrusions / Foot Bases for 40 and 45 Squares 708



Casters for Aluminum Extrusions 709



Casters for Aluminum Extrusions - Threaded 710



Foot Mount Brackets 710



Mounting Plates for Casters and Leveling Mounts 710



–With Mounting Plate– 711



Casters for Aluminum Extrusions -with Adjuster- 712



Floor Stoppers / Leveling Mounts for Aluminum Extrusions 713-714



Caster Kits for Doors 715



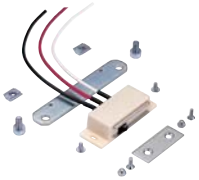
Anchors / Stands for Aluminum Extrusions 716~718



Latch Magnets for Aluminum Extrusions 729-730



Latch Magnets with Sensor for Aluminum Extrusions 731



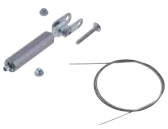
Latch Magnets for Panels 732



Latches / Slide Bolt Sets for Aluminum Extrusions 734



Safety Door Switches / Locks for Aluminum Extrusions 735



Tensioners for Aluminum Extrusions / Stainless Steel Wires 747



Assembly Jigs / Drilling Jigs 748



Repair Pen 748



HEPA and ULPA Filter Units / Brackets 751-752



Clean Exhaust Units 754

Addition

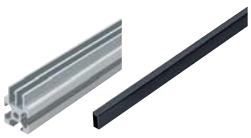


Folding Door Units / Sliders 763-764

Addition



Sliding Door Units 765



Aluminum Extrusions for Sliding Doors / Slide Spacers 766

Addition



Aluminum Extrusions Standard Units - Temporary Assembling Service 767~776

2
2

Factory Frames / Pipe Frames



Product Name: Factory Frames / Joints / Accessory Parts



Door Parts for Factory Frames



Pipe Frames

Page: 788~792 | 793~796 | 799



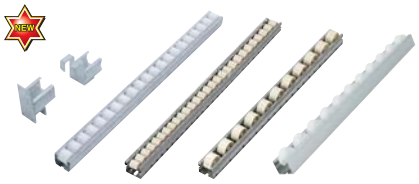
Plastic Joints 804



Plastic Joints 805



Plastic Joints 806



Wheel Conveyor Assembly / Connecting Parts 807



Casters for Pipe Frames 811



Caster Attachment Parts 812



Stainless Steel Pipe Frames / Joints / Accessory Parts 813

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Hinges -Aluminum / Resin- 719~722



Hinges / Hinge Nuts 723~726



Aluminum Long Hinges 727



Torque Hinges 728



Slide Locks 737



Hooks 737



Aluminum Handles / Reinforcing Covers 738



Handles 739~744



Components for Sliding Doors 745-746

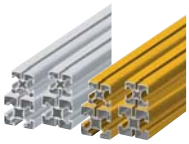
Aluminum Extrusions Units - Assembly & Sipping Service



Safety Mesh Fence Units 757-758



Extrusions for Safety Fence 759

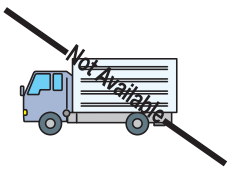


Door Units 761

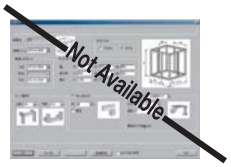


Extrusion Components for Doors 762

Product Name	Safety Mesh Fence Units	Extrusions for Safety Fence	Door Units	Extrusion Components for Doors
Page	757-758	759	761	762



Assembling and Delivery Services 777



Aluminum Extrusions - Design Support Software 783



Curved Pipe Frames 799



Aluminum Pipe Frames 800



Metal Joints 802



Adhesive 803



Skid Pipes / Connecting Parts 808



Lifting Table Units 808



Accessory Parts 809



Adjusting Bolts 810



Pipe Frame Standard Units 816~818



Cutters 819



Spare Cutter Blades 819



Deburring Tools 819



Spare Cutter Blades 819

2
2

Cover Panels / Boards

Addition





Product Name	Aluminum Panels / Diamond Tread Plates	Stainless Steel Panels / Steel Panels
Page	823	825

Addition











-Ventilation Hole-	Baked Finish Steel Panels-Left Door / Right Door / Double Doors-	-Selectable Shapes-
833	834	835





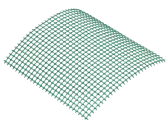


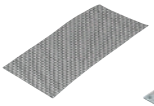


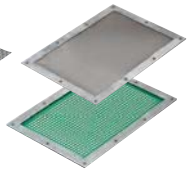


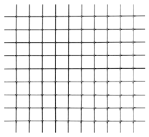
Perforated Metals-Framed-	-Standard Circular-	-Framed Circular-	-L-Shaped Retained-	-U-Shaped-
840	841	841	842	842

Addition









Addition



Addition



Net Plates	Fence Nets	Folding Nets	Framed
850	851-852	853	854





Price Reduction
Up to 12%





Acrylic Plates Economy	Polycarbonate Plates	Resin Sheets	Resin Cover Plates -L-Shaped / U-Shaped-
875	877	881	883

Addition







Price Reduction
13% on average



Price Reduction
20% Max.



Price Reduction
Up to 10%

Glass Plates -Square / Round-	Flange Base for Observation Port / Flange Set	Epoxy Glass Plates	Bakelite Plates - Paper Based / Fabric Based	MC Nylon® Plates
889-890	891-892	893	895	901









ABS Plates	PBT Plates	Unilate® (Free-Cutting Resin) Plates	Precision Resin Plates
917	919	919	921

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

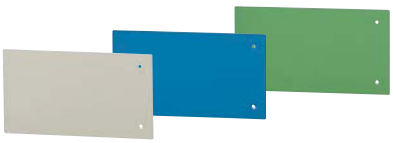
About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.

Addition



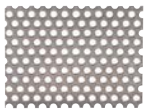
Cover Panels -(Compound Plates)- 829



Baked Finish Steel Panels 831

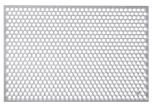


Baked Finish Steel Panels -Keyhole- 831

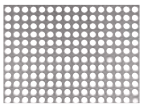


Perforated Metals-Standard- 837

NEW



Perforated Metals with Flames 838



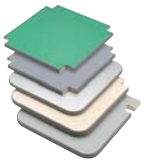
-Round Hole Parallel / Slot Hole- 839



Double-Sided Melamine Glued Laminated Plywoods / Particle Boards 843



Single-Sided Rubber Glued Laminated Plywoods-Standard / Antistatic- 845



Soft Edge Laminated Plywoods / End Tape Glued Laminated Plywoods 847

NEW



Stainless Steel Panels with Protective Sheet 849

Transparent Resin / Glass / Mirror / Resin Plates

NEW



Product Name [Material Shop 24 Resin Plates Website] 857

Addition



Price Reduction 20% Max.

PET Plates 865

Addition



Antistatic PVC Plates 869

Addition

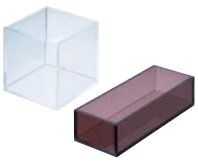


Price Reduction Up to 15%

Acrylic (Resin) Plates 871



Resin Circular Plates 885



Acrylic Cases 886



Mirror Plates (Glass Type / Acrylic Type) 887

Fused Silica Plates Square / Round 888



Price Reduction Up to 15%

Polyacetal Plates 905



Ultra High-molecular-weight Polyethylene Plates 909



Price Reduction Up to 15%

Fluororesin Plates 911



Price Reduction Up to 10%

PEEK Plates 913



PPS Plates 917



Resin Blocks 922



Resin Circular Plates -Standard / Precision- 923-924

Ceramics Plates 925



Ceramics Circular Plates 926

LED Lamp for Cabinetry



Product Name	Standard Type	Economy Type	Thin Type	Wide Type
Page	929	930	931	932

Casters / Adjustment Pads



Product Name	Economy Casters	Casters	-Electrically Conductive- Casters	-Stainless Steel-	-Light / Medium Load Type-	-Medium Load Type-
Page	943	945	946	946	947	948



-Super Heavy Load Type-	-Super Heavy Load Low Profile-	Screwed-on Casters	Ball Casters
954	954	955~959	959



-Heavy Load, Stainless Steel Type-	Casters with Adjustment Pads -Light Load Type-	-Lightweight Type-	-Antivibration Type-	-Space Saving Type-	Casters with Adjustment Pads -Light Load Type-	-Medium Load Type-
964	965	965	965	966	966	967



Cast Frame Casters-Standard Type-	-Trailer Use Type-	-Heavy Load-	Replacement Wheels for Casters	Wheel Shafts	Floor Stoppers	Floor Locks
973	973	974	975	976	977	978



-Heavy Load / Steering Wheel Type-	-Antivibration Type-	Attachments for Antivibration	Fixing Plates for Adjustment Pads -Thick Type-	Protection Caps	Adjustment Pads -Space Saving Type-	-Rotary Short Type-
982	983	983	984	984	985	986



-Separate / Knurled Type-	Lifting Units -Standard Type-	Foot Jack Bolts	Anchor Brackets -Standard Type-	-Ribbed Type-	Seating Plates -Standard Type-
991	992	993	995	995	996

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Embedding Type 933



Water Resistant Hard Glass Tube Type 934



Large Spot Type 935



Compact Spot Type 936



-Swivel Lockable Type- 949



-Double Locking- 949



Casters –Low Floor / Stainless Steel Type– 951



-Ultra Low Profile- 952



-Medium to Heavy Load Type- 953



Casters –Heavy Load Type– 953



Nylon Casters 960



Foot Mount Brackets 960



Design Casters 961



Dual Wheel Casters 961~963



-Dual Wheel, Medium Load- 964



-Heavy Load Type- 964



-Heavy Load Integrated Type- 967



-Large Diameter Wheel- 968



Casters & Leveling Mounts Assembly 969



With Integrated Plate and Adjustment Pads-Wheel Material Selectable- 970



Vibration Insulating Casters 971



Casters for Clean Environment 972



Adjustment Pads-Standard Type- 979

Addition



Adjustment Pads -Nonslip Type- 980

Price Reduction 30% Max.



–Fixed– 981

Price Reduction 30% Max.



- 2-Hole Type - 981



Adjustment Pads -Space Saving Type- 981



Economy Adjustment Pads 981



-Heavy Load- 982



-Tapped Socket Type- 986



Adjuster Feet –Rotary Type– 987



Adjustment Feet -Resin Rubber Type- 987



Rubber Base Adjustment Pads 988



Antivibration Pads 989



Anti-Vibration Mounts 990



Table-Top Bases 991

Levers / Handwheels / Knobs

Addition



Price Reduction 10% on average

Clamp Levers -Baking Finish- 999



-Stainless Steel / Chrome Plating / Nickel Plating- 1000



Miniature Clamp Levers 1001



Flat Clamp Levers 1001

Y-shaped Clamp Levers 1002

2
2



Wing-Shaped Clamp Levers	Clamp Levers with Captured Washers	Push Button Clamp Levers	Clamp Levers with Pad / with SR Tip	Resin Clamp Levers	Resin Clamp Levers	Miniature Resin Clamp Levers
1002	1002	1003	1003	1004	1004	1004



Tension / Safety Tension Levers	Stationary Handles	-Offset Levers-	Ball Knobs	Stationary Handles	Stationary / Revolving Stainless Steel Handles
1008	1008	1009	1009	1010	1010



Square Hole Handles - Folding Grip	Square / Round Bore Handwheels	Crank Handles	Plastic Offset Handwheels	Solid Disk Handwheels	Adjusting Collars
1013	1013	1013	1014	1015	1015



Thick Knurled Knobs	Knurled Knobs with Captured Washers	Large Diameter Knurled Knobs	Small Diameter Knurled Knobs	Stepped Knobs - Not Knurled	Hexagon Socket Knurled Knobs	Checker Knurled Knobs
1020	1021	1021	1021	1021	1022	1022



Checker Knurled Clamp Knobs	Stainless Steel Knobs	Knurled Knob Screws with Captured Washers	Knurled Knob Screws with Tip Pads	Plastic Clamp Knobs	Knurled Knobs	Plastic Knurled Handwheels
1025	1025	1026	1026	1026	1027	1027



Star Knobs	Cross Knobs	Five Lobed Knobs	Six Lobed Knobs	Seven Lobed Knobs	Super Knobs
1030	1030	1030	1030	1031	1031

Handles / Hinges / Door Parts



Product Name	Round Handles / Round Handles with Washer	Handles with Rubber	Washers for Handle	Oval Handles	Square Handles / Square Handles L Dimension Configurable Type
Page	1037	1038	1038	1040	1040

NEW : New products added
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Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.


Push Type Resin Clamp Levers 1005


Secured Resin Clamp Levers 1005


Ratcheting Clamping Levers 1006


Quick Levers 1006


Flat Tension Levers 1007


-Hexagon Socket Head- 1007


Price Reduction 20% Max.
Revolving Handles 1010

Addition

Folding Revolving Handles 1011


Flat-top Revolving Handles 1012


Miniature Revolving Handles 1012


Stainless Miniature Revolving Handles 1012


Revolving Ball Knobs 1012


Folding Handwheels 1016

NEW

Flat Handwheels 1016

Addition

Five Spoked Handwheels 1017


Two Spoked Handwheels 1018

Addition

Knurled Aluminum / Stainless Handwheels 1019


Knurled Knobs 1020


Drop-proof Knurled Knobs 1022


Knurled Knobs - with H.S.C.S 1023


Knurled Knobs with Tip Pads 1023

Price Reduction Up to 21%

Knurled Knobs -Slit- 1023


Knurled Knob Screws / SR Tip 1024


Knurled Clamp Knobs 1025


Knurled Knobs -Diamond Cut Type- 1028


Large Ø Knurled Knobs 1028


Mushroom Shaped Knobs 1029


Wing Shaped Knobs 1029


Wing Knobs 1029


Three Lobed Knobs 1029


Adjustment Screws with Knobs 1031


Hex Socket Head Cap Knobs 1031

NEW

Hooks 1032


Drop-prevention Chains for Knobs 1032

NEW

Designer Handles -Tapped- 1041


-Phenol Handles- 1041


Handles - Nylon, Tapped 1042


Handles for Plates / Guides for Sliding Doors 1042


–Rubber Handles– 1042


T-Shaped Handles 1042

Handles - Welded Round Bar 1043

2
2



Handles for Aluminum Extrusions - Plate Mounted	-Oval Grip Handles-	Aluminum Handles	Handles - Sheet Metal	Handles (External Fixing) -U-Shaped-	Designer Handles -External Fixing-	Cast Handles
1043	1043	1044	1044	1044	1045	1045



Handles - Offset	-Casting Offset-	Aluminum Pipe Handles	Small Ø Aluminum Pipe Handles	Small Resin External Handles	Handles - Nylon 6	Mounting Plates for Handle
1048	1048	1048	1048	1049	1049	1049



Handles for Welding	Spring Loaded Handles	Stainless Steel Rotary Handles	Embedded Handles	Stainless Steel Embedded Handles	Folding Embedded Handles	TPE Embedded Handles
1052	1052	1052	1053	1053	1054	1054



Aluminum Hinges with Tabs	Aluminum Flag Hinges / Aluminum Flag Hinges for Different Shape Frames	Stop Hinges	Stainless Steel Hinges for Heavy Load	Hinges with Slotted Holes	Aluminum Hinges with Slotted Holes	Plastic Hinges
1058	1059	1059	1060	1060	1060	1061



Damper Hinges	Hinge Dampers	Stainless Steel Detachable Hinges	Aluminum Detachable Hinges	Aluminum Detachable Hinges	Detachable Hinges for Heavy Loads	Stepped Detachable Hinges
1064	1064	1065	1066	1066	1066	1067



Magnetic Catches - High Strength	Latch Magnets	Latch Magnets	Thin Magnet Catches	Ultrathin Magnetic Catches
1070	1070	1070	1071	1071



Magnetic Catches with 3 Wires	Magnet Catches with Sensors - Lead Wire Connected	Magnetic Catches with Switch	Ball Catches	Snap Locks	Covered Snap Locks
1073	1074	1074	1074	1075	1076

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

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-Folding Handles-	Handles with Caps	Aluminum Pipe Handles	Small Ø Aluminum Pipe Handles	Handles - Welded Round Bar	Handles - with Pedestal - Offset	Aluminum Handles - with Plate - Offset
1046	1046	1046	1046	1047	1047	1047



Phenol Handles - Counterbored	Cantilever Handles	Resin Handles with Cap	Folding Handles	-Threaded Type-	Handles - Side Mount	T-Shaped Handles
1050	1050	1050	1051	1051	1051	1051



Embedded Handles	Hinges -Stainless Steel / Steel	Stainless Steel Hinges	Stainless Steel Hinges	Hinge Nuts	Aluminum Hinges / Aluminum Hinges for Different Size Frames	Aluminum Hinges - for Extra Low Head Cap Screws
1054	1055	1056	1056	1056	1057	1057



Compact Plastic Hinges	Low Particulate Hinges	Hinges - Offset Mounting Holes	Stepped Hinges	Stepped Hinges - Stainless Steel	Spring Loaded Hinges	Torque Hinges
1061	1061	1062	1062	1062	1062	1063



Vertical Detachable Hinges	Detachable Welded Hinges	Welded Hinges - Stainless Steel	Welded Steel Hinges	Welded Hinges for Heavy Loads	Long Stainless Steel Hinges	Latch Magnets
1067	1067	1068	1068	1068	1068	1069



Adjustable Magnet Catches	Dust-Proof Latch Magnets	Low Particulate Generation Thin Magnetic Catches	Resin Catches	Door Limit Switches –Terminal Attached–
1071	1072	1072	1072	1073	1073



Snap Locks for Medium Loads	Adjustable Snap Locks	Corner Snap Locks	Key Locks	Large Cabinet Locks	Hinges - With Slide Bolts	Square Latches
1076	1077	1077	1077	1078	1078	1078

Addition



Airtight Latches 1078



Latches 1079



Canopy Latches 1079

NEW



Small Canopy Latches 1079



Latches with Catch Mechanisms 1080

NEW



Rotary Latches 1080



Spring Loaded Latches 1080



Manifold Blocks - Hydraulic 1089~1099



Manifold Blocks - Pneumatic 1090~1100





Manifold Blocks - Hydraulic / Pneumatic, Two Circuit 1101



Terminal Blocks - Hydraulic 1109



Terminal Blocks - Pneumatic 1110



Manifold Blocks - Pneumatic 1111



Manifolds with Magnets 1111



Pipe Manifolds 1115



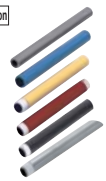
Pipe Manifolds -Socket Selectable- 1116



-1 Direction Type (90° & 180°)- 1117~1119

Pipes / Joints / Hoses / Valves

Addition



Product Name / Page

Steel Pipes 1125



–Wrench Flat Type– 1127

Addition



L-Shaped Angles for Steel Pipes 1128



Price Reduction Up to 6%

Pipe Supports 1129~1131

NEW



Price Reduction Up to 75%

High Pressure Steel Pipe Fittings 1137-1138

Changed



Screw Fittings -Brass / Unequal Dia.- 1139

NEW



-Unequal DIA. Pipe Threads- 1140-1141



Extension Joints 1142

NEW



PVC Joints -TS Joints- 1147~1158

NEW



PVC Joints -HI Joints- 1149-1150

NEW



Compound Joints 1151

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.

Manifolds





Product Name	Manifold Blocks - Hydraulic	Manifold Blocks - Pneumatic	Manifold Blocks -Hydraulic / Pneumatic
Page	1084-1085	1084-1085-1087-1088	1086






Manifold Blocks -Hydraulic / Pneumatic, Two-Series-	-Lateral Through Hole-	Terminal Blocks - Hydraulic	Terminal Blocks - Pneumatic
1102	1103-1104	1105~1107	1105~1107






Manifold Blocks–Hydraulic / Pneumatic–Selectable Thread Size–	Manifold Blocks - Pneumatic	Aluminum Frame Manifolds	Rotary Manifolds
1112	1113	1113	1114






Sockets for Pipe Manifolds	Plates with Fittings	Simplified Manifolds	Brackets with Fittings
1117-1119	1121	1121	1122



Price Reduction Up to 82%

Price Reduction Up to 70%

Low Pressure Screw Fittings -Seal Coating Type-	-Equal Dia.-	-Unequal Dia.-
1132	1133~1135	1136

Addition





Steel Pipe Fittings - Threaded Couplings	Screw Conversion Joints -L-Shaped / T-Shaped-	Heat, Cold Retention Pipe Covers	PVC Pipes
1143	1144	1145	1146





Price Reduction 20% Max.

Welded Joints -Butt Welding Type-	Accessories for Plumbing Clamps	Plumbing Terminals	Screw Plugs
1152	1153-1154	1155	1156



Copper Pipes / Copper Pipe Fittings
1157-1158



Copper Pipe Fittings
1159



Annealed Copper Pipes / Fittings for Annealed Copper Pipes
1160



Flexible Hoses -High / Medium / Low Pressure Type-
1172-1173



Fluoro Resin Flexible Hoses
1174



Oil Hydraulic / Water Hydraulic Couplings
1175~1178



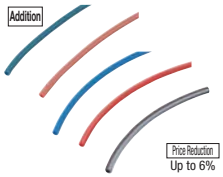
Hoses for Food
1181



Couplings for Hoses
1187~1189



Coil Hoses
1190



Price Reduction
Up to 6%

Air Hoses
1190



Price Reduction
Up to 70%

Hose Bands
1191



Plumbing Parts for Aluminum Duct Hoses
1199~1201



Duct Boxes
1202



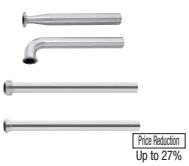
Ball Valves
1203-1204



Compact Ball Valves
1208-1209



Needle Valves
1209-1210



Price Reduction
Up to 27%



-One Side Welded-
1217

-Both Sides Welded-
1217



-Branching Tees Type / One Side Welded / Both Sides Welded-
1219



Price Reduction
up to 35%

Sanitary Adapter Fittings
1224



One-touch Clamp / Gasket for Mounting Accessories
1225-1226



Arm Lock Couplings
1226



Price Reduction
Up to 16%

Butterfly Valves
1227



Price Reduction
Up to 16%

Flange Ball Valves
1227

: New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Stainless Steel Pipes / Stainless Steel Pipe Fittings 1161~1164



Steel Pipes for Hydraulics / Bite Type Fittings 1165-1166



Hydraulic Rubber Hoses -Quick Calking- 1169-1170



Hydraulic Resin Hoses 1171



Silicone Hoses 1182



Non-PVC Hoses 1183



Fluoro Resin Flexible Hoses 1184



Resin Hoses for Ordinary Purposes 1185



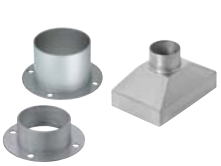
Hose Fixing Connectors 1186



High Pressure Blowers 1192



Duct Hoses 1194~1196



Parts for Duct Hoses 1197



Duct Hoses -Aluminum / Heat Resistant- 1198-1199



Globe Valves 1205



Check Valves 1205



Strainers 1205



Oil Hydraulic Valves 1205



Compact Ball Valves 1206-1207

Sanitary Pipes / Vacuum Plumbing Parts / Tanks



Sanitary Pipes -Standard Type / Welded with Low-neck Type- 1214



Welded Sanitary Pipes-Standard Type- 1215



-Branching Type- 1216



Sanitary Pipe Fittings -Ferrule x Welded Fittings- 1221



-Double Ferrules- 1222



-Welded /Welded Thread Type- 1223



Sanitary Adapter Fittings 1224



Sanitary Ball Valves 1228



Sanitary Sight Glasses 1229



Sanitary Tube Strainers 1230



Sanitary Pressure Gauges 1231

2
2



Shower-Balls
1231



Pressure Tanks -Simplified Type-
1233



Pressure Tanks - Standard Type
1234



Pressure Tanks -Wide Mouth-
1235



Pressure Tanks -Narrow Mouth-
1236



Regulators for Pressure Tank
1240



Low Level Float Switches
1240



Relief Valves
1240



Standard Type Open-Top Tanks
1242



Covers for Open-Top Tank -Standard / Seal-able Type-
1246



Gaskets for Sealing Cover
1246



Stands for Open-Top Tanks
1246



Open Tanks -Hopper Type-
1247

2
2

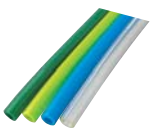
Tubes / Fittings Suction Parts / Nozzles



Product Name	Tubes -Polyurethane-
Page	1258



	-Nylon-
	1258



	-Flat-
	1259



	-Water Resistant Spiral-
	1259



	-Multi-Spiral-
	1259



	-Silicon-
	1261



	-Spiral-
	1261



	-Soft Tube Inserts-
	1261



	Flexible Tubes
	1262



	Tube Cutters
	1262



	Tube Clips
	1262



Free Angle Fittings
1269



Miniature One-Touch Coupling Connectors
1270



All Stainless Steel, 1-Touch Couplings
1271



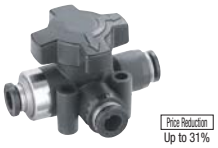
One Touch Couplings - Heat Resistant / High Heat Resistant
1272



Ball Valves - One Touch Coupling Type
1276



Hand Valves
1277



Change Valves
1278

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

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Pressure Tanks with Safety Function
1237-1238





Lids for Pressure Tank
1239



O-Rings
1239



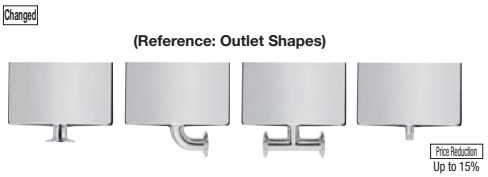
Tank Clamps
1239



Seal-able Open-Top Tanks
1244



Seal-able Open-Top Tanks - Outlet Shape Selectable
1243-1245



Outlet Shape Selectable
1243-1245



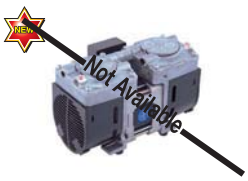
Vacuum Plumbing Parts -Flexible Tubes-
1249



Both Sides Welded Vacuum Pipes
1250



Vacuum Plumbing Parts
1251



Vacuum Pumps
1254



-Slit Spiral-
1259

-Sputter Resistant-
1259



-Vacuum / Antistatic / Polyolefin-
1259-1260



-Fluororesin-
1260



-Fluoro Rubber-
1261



Compact Air Fittings
1263



One-Touch Couplings
1264~1269



One-Touch Couplings For Clean Applications
1273-1274



Rotary Joints
1275



High Rotary Joints
1275



Check Valves
1278



Flow Rate Controllers
1279-1280



Valves with Adjusting Dial
1280



-Stainless Steel Type-
1281

2
2


Price Reduction Up to 19%

-Heat-resistant- 1281


Price Reduction Up to 12%

-Clean Type- 1281


Price Reduction Up to 26%

Throttle Valves 1282



Miniature Couplings 1283


Price Reduction Max. 23%

Quick Exhaust Valves 1289


Price Reduction Up to 16%

Pressure Gauges 1289


Price Reduction Up to 12%

Regulators 1290-1291



Digital Pressure Sensors 1292

Addition


Price Reduction Up to 15%

Air Filters 1296


Price Reduction Up to 15%

Air Regulators 1296



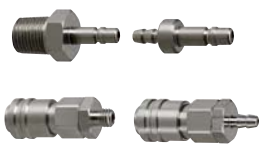
One-Touch Articulated Connectors 1297


Price Reduction Up to 50%

Resin Connectors 1297


Price Reduction Up to 24%

Quick Couplings 1305-1306



Air Couplers -High Chemical Resistant Type- 1307



High Chemical Resistant Products / High Heat Resistant Seals 1308



O-Ring 1309~1313

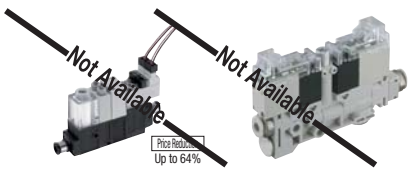


Price Reduction Up to 6%

Vacuum Pressure Sensors 1319


Price Reduction Up to 29%

Vacuum Filters / Elements for Replacement 1320



Price Reduction Up to 64%

Vacuum Ejectors 1321-1322



Vacuum Fittings / Suction Cups 1326


Price Reduction Up to 56%

Suction Cups -Standard Type / Deep Type / Small Type- 1327-1328


Price Reduction Up to 57%

-Sponge Type / Bellows Type- 1329-1330

NEW



Air Nozzles -90 Degree Type- 1336



Air Nozzles -Economy Type- 1337



-Round Type- 1337



Nozzle Joint 1338

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Price Reduction
Up to 29%


Joints with Tube Insert	Couplings for Tubes	Fluororesin Couplings / Valves
1284	1285-1286	1287-1288




Price Reduction
14% in Average

Price Reduction
3%


Pressure Switches	Moisture Traps	Service Units	Air Regulators with Filter	Lubricators
1293	1293	1294	1295	1295



Price Reduction
Up to 51%

Price Reduction
Up to 5%


Price Reduction
Up to 15%

Air Couplers	-Branching Type-	-Lightweight Type-	-Miniature Type-
1298~1301	1302	1303	1304



Price Reduction
Up to 18%




Price Reduction
Up to 22%

Large Diameter O-Rings	Oil Seals / Oil Free Seals	Seal Plugs	Seal Washers	Vacuum Generators
1314	1315-1316	1317	1317-1318	1319



Price Reduction
Up to 61%

Price Reduction
Up to 15%



Vacuum Generators with Vacuum Break Function	Special Vacuum Filters	Fall Prevention	Holders for Mini Suction Cup	Mini Suction Cups
1323	1323	1324	1325	1325



Price Reduction
Up to 65%


Price Reduction
Up to 61%


-Soft Type / Soft Bellows Type-	-Oval / Thin Object Type-	Air Nozzles -Flat Type-
1331-1332	1333-1334	1335






Point Nozzles	Steel Pipes for Air Nozzles	Steel Pipe Nozzles Slit Type	Steel Pipe Nozzles
1338	1339	1339	1340

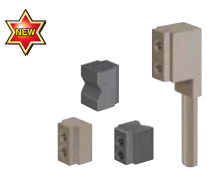




Nozzles for Pipe Cleaning	Terminals for Nozzles	Air Blow Nozzles
1341	1341-1342	1343-1344




Adjusting Hoses / Installation Tools	Connectors, Valves, Hoses
1349	1350


Nailed Arms -Direct Mounting Type-	Nail Ends -Flat, V Shape, Internal Ø Grip Type-	Attachments for Air Grippers -Flat, V Shape, Internal Dia. Grip Type-
1362	1363-1364	1365~1367






Brackets for Compact Cylinders -Foot, Clevis Mount-	Cylinders Trunnion Plates	Small Cylinders	–Sensor Slot Type–
1373	1374	1375	1376



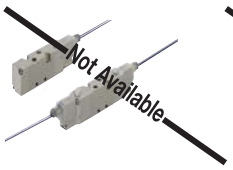
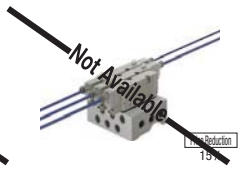
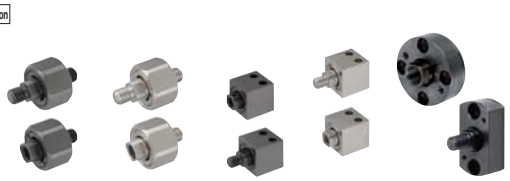



Brackets for Rotary Clamp Cylinders	Clamp Cylinders	Tie Rod Kits / Mounting Bracket Kits	Arms for Clamp Cylinders
1386	1388	1388	1389-1390






Step Switch Valves	Manual Switching Valve -Panel Mount Type-	-Grip-	-Miniature Type-
1394	1395-1396	1397	1397

Electromagnetic Valves -5 Port Direct Plumbing-	–5 Port Base Plumbing–	Floating Connectors-Threaded, Block Mount Type, Flange-
1401	1402	1403~1405

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Air Blow Nozzles 1345



Two-Fluid Nozzles 1346

Addition



Spray Nozzles 1347-1348

Grippers / Cylinders / Connecting Components



Mechanical Grippers -4, 6mm for Stroke- 1355



Mechanical Grippers -3, 4mm for Stroke- 1357



Attachments for Air-grippers 1358



Nails for Air Grippers Direct Mounting Type -Flat, V Shape, Internal Ø Grip Type- 1359~1361-1365~1367



Mounting Brackets for Work Grip 1367



Brackets 1368



Price Reduction Up to 10%

Compact Cylinders 1371



Price Reduction Up to 34%

Cylinder Sensors / Auto Switches 1356-1372-1380-1382



Cylinders with Guide 1379



Guides for Rotary Clamp Cylinders 1383



Arms for Rotary Clamp Cylinders 1384



Guides for Rotary Clamp Cylinders 1385



Brackets -Plate Type- 1391



Hinge Plates 1392



Air Cylinders -Pen-Shaped- 1393



Price Reduction Up to 32%

–Panel Mount Single-Acting– 1393



-Lever Type- 1398

Addition

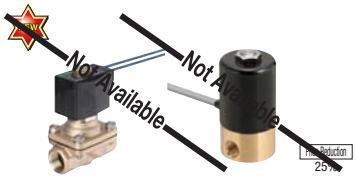


Price Reduction Up to 41%

Silencers 1398



Multilex Valves 1399



Price Reduction 25%

2 Port Solenoid Valves 1399



-Mount Flange / Cylinder Connector Sets- 1406-1407-1411-1412



Backing Plates 1408-1413-1414



-Mount Flanges- 1409



–Cylinder Connectors– 1410-1413



-Mount Flange -Flat Connector Sets / Flat Connector- 1411



- Both Sides Fixable Flange - Two Width Across Flats Cylinder Connector Set-	-Mount Flanges-	–Cylinder Connectors–	-Low Hardness / Low Hardness Thin-	-Slide Type-	Floating Connectors
1412	1412	1413	1414	1415	1419-1420

Changed Changed Changed Changed



-Bolt Mount Type-	–Separate Threaded Type–	Compact Floating Joints	-Extension Rod, Tapped / Threaded-	-Circular Tapped Type / Circular Threaded Type-	Holders -Compact-
1423	1424	1425	1426	1427	1428

Addition



-B Dimension Selectable-	-Tapped and Configurable Type-	-Threaded and Configurable Type-	Pushers for Cylinder with Guide	Pushers -MC Nylon / Polyacetal / Fluorine / Low Hardness / Urethane / Silicon-
1433	1434	1435	1437	1437~1441



Price Reduction Up to 34%

Price Reduction 7%

Spherical Bearing Holder Sets	Rod End Bearings	-Link Ball Type with Thread-	Rod End Coupling Rods -Both Ends Threaded / Both Ends Tapped / One End Threaded, One End Tapped-
1446	1447	1448	1449

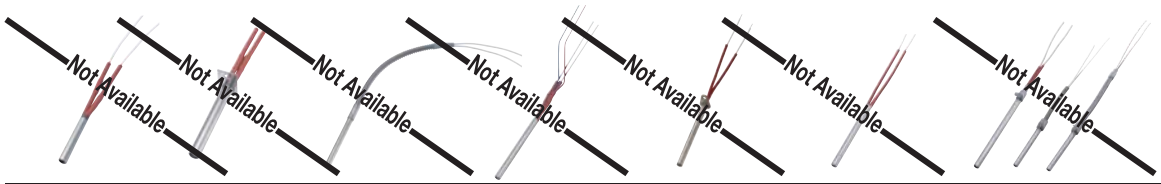
NEW



-General Purpose Type-	Clamp Links	-2 Clamps Type-	-Split Type-	Joint Plate	Hinge Bases	Hinge Bases -A Dimension Compact Type-
1459	1460	1460	1461	1461	1462	1463



–Center Fulcrum Type–	Thick Hinge Bases -With Oil Free Bushings-	-Convex Type-	-Concave Type-	Hinge Bolt
1471	1472	1473~1475	1476~1479	1480



-Configurable L, W and F-	-Flanged-	-Flexible Hose-	-With Sensor-	Cartridge Heaters -Lead Wire, Flange Selectable-	-Break Resistant, Internal Connection-	-Lead Wire Protection Type with Knurled Flange-
1493	1494	1495	1496	1497	1498	1499

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



-T Groove Type-	-Tapped Ends-	-Threaded Type-	Floating Joints -Standard-	-Compact Threaded Type-	-Sheet Metal Holder Set-	-Split Type-
1416	1417	1418	1421	1422	1422	1423



-L-Shaped Retained-	-Side Mount Flange / Bar-	-Top / Bottom Mount, Flange/Bar-	Knuckle Joints –Extra Short–	-Tool-less-	–Fixed–
1428	1429	1430	1431	1431	1432



Resin Pushers -Fixed / Configurable-	Metal Pushers	Urethane Caps for Liner Shafts	Pushers for Air Leak Inspection	Conversion Adaptor for Screws	Spherical Bearings
1442	1443	1443	1444	1445	1446

Price Reduction 2%



Link	–Bearing Embedded–	-Oil Free Bushings Press-Fit-	-Notched Type-	-Slot Type-	Link Bars
1451~1454	1455	1456	1457	1457	1458



Hinge Bases Mounting Hole in the Center Type	Narrow Type	Thick Wall Hinge Bases	-L-Shaped Retained-	–Center Fulcrum Type–	Hinge Bases -L-Shaped-
1464	1465	1466-1467	1468	1469	1470

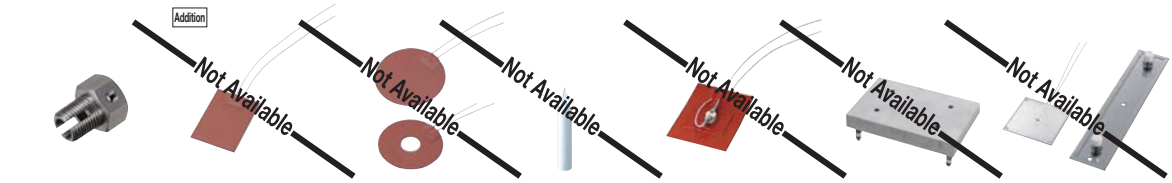
Heaters / Temperature Controllers / Heat Insulating Plates



Product Name	Cartridge Heaters -Standard / Configurable L & W-	Anti-seize Agent	Thermal Conductive Grease	Cartridge Heater -High Temperature-	-High Temperature / Configurable L & W-	-Lead Wire Protection / Internal Connection-
Page	1487	1488	1488	1489	1491	1492



-Uniform Heating-	-L-Shaped Retained-	-L-shaped Knurled Flanged-	-L-shaped Reinforcement-	-Heat Generating Part, Length Configurable-	Hot Plate	Cooling Plates
1500	1501	1502	1503	1504	1505	1505



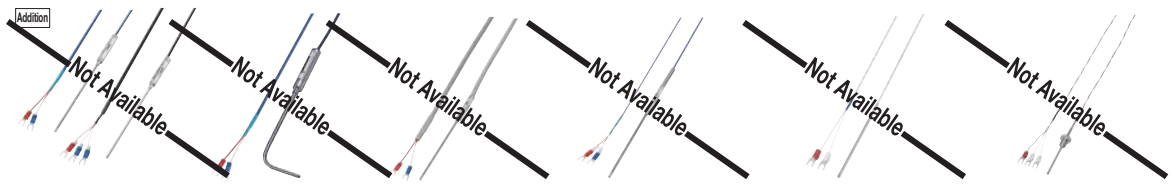
Mounting Bolts for Cartridge Heaters	Rubber Heaters-Square-	-Round-	Adhesives for Rubber Heater	Rubber Heaters -Square (With Thermostat)-	Cast-in Heaters	Plate Heaters
1506	1508	1509	1509	1510	1510	1511



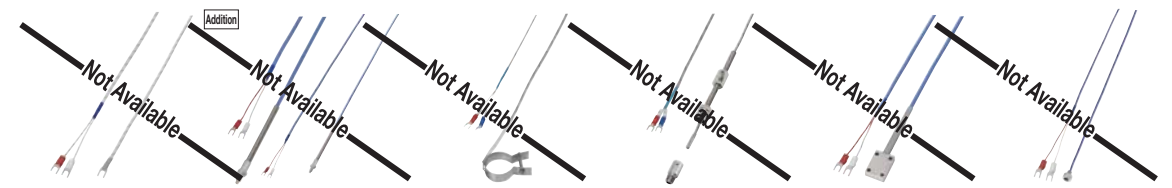
Heat Resistant Duct Hoses for Hot Air Generating Units	Piping Parts for Duct Hoses	Hot Air Generating Unit	-Hot Air Circulation Unit-	Sheathed Heaters for Liquid Heating -With Plug-	-With Overheating Prevention-
1518	1518	1519	1520	1523	1523



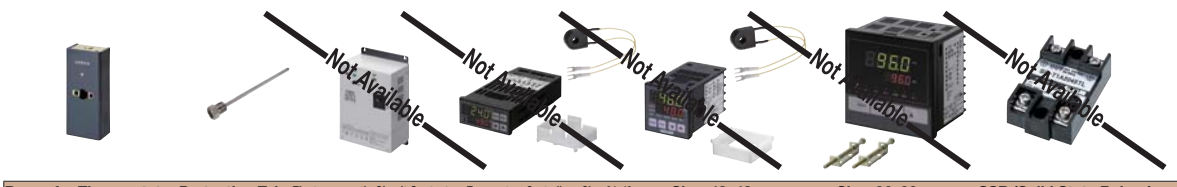
Cord Heater	Heat Resistant Tapes	Micro Heaters	Silicon Belt Heater	Silicon Rubber Heaters for Pipes	Band Heaters
1529	1529	1530	1530	1530	1531



Temperature Sensors -Standard-	-L-Shaped Retained-	-Lead Wire Protection-	-Heat-resistant-	-Compact Type-	-Taper Screw Type-
1538	1540	1540	1540	1541	1541



-Y-shape Terminal Tip Type-	-Threaded-	-Band Temperature Sensors-	Temperature Sensors with Spring	Surface Temperature Measuring Type	Surface Temperature Measuring Magnetic Type
1544	1545	1545	1546	1546	1546



Boxes for Thermostats	Protection Tube	Electromagnetic Circuit Contactor	Temperature Controllers -Size: 24x48-	-Size: 48x48-	-Size: 96x96-	SSR (Solid State Relays)
1549	1549	1550	1553	1554	1554	1555



Heat Insulating Plates -Standard Grade-	-Heat Resistant Grade-	-High Strength Grade-	-High Temperature Resistant Grade-	-High Temperature Insulating Grade-	-High Temperature Super Insulating Grade-	- Very High Temperature Insulating Grade -
1561	1561	1561	1563	1565	1565	1567

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

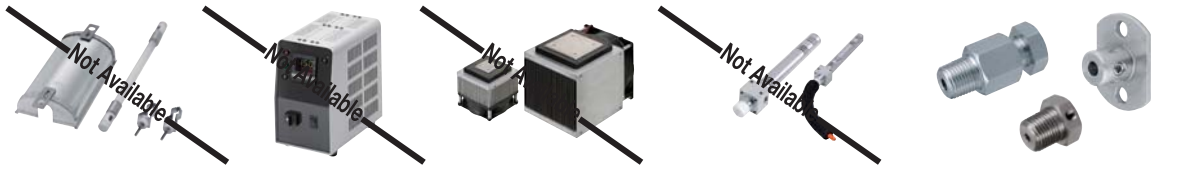
Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



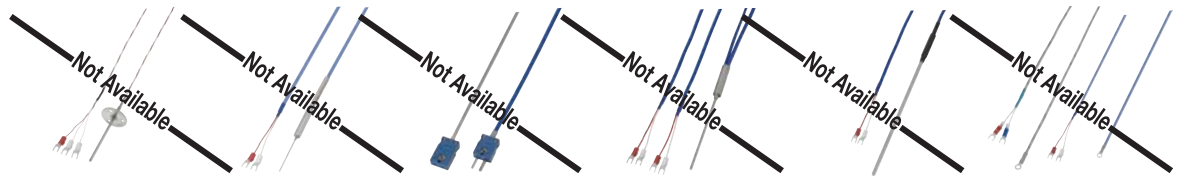
Small-Size Ceramic Plate Heaters	Air Sheathed Heaters -Configurable Type-	–Fixed–	Finned Pipes	Air Sheathed Plug Heaters	Small Hot Air Generator
1512	1515	1516	1516	1517	1517



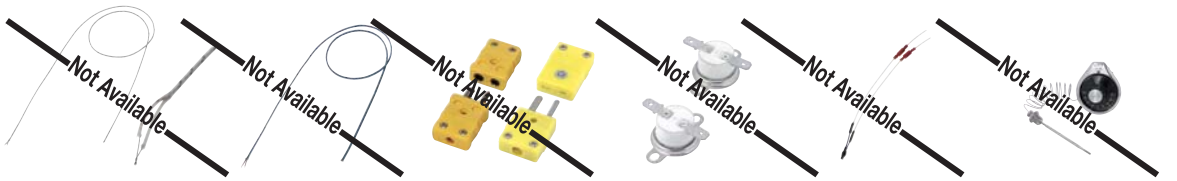
Connecting Parts for Heater	Float Switch	Sheathed Heaters for Liquid Heating -Standard U, M-	-Straight One Terminal-	Ribbon Heater	Far Infrared Ceramic Plate Heaters / Far Infrared Plate Heaters	Drum Heater -Economical Type-
1524	1524	1525	1525	1526	1527	1528



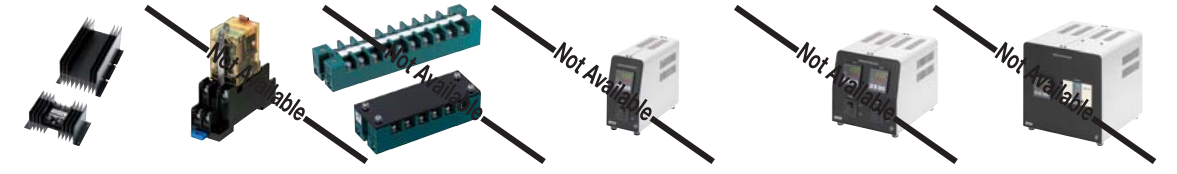
Quartz Far Infrared Heaters	Peltier Cooling Unit Controller	Peltier Cooling Unit	Jet Air Coolers	Plugs, Holes, Bolts for Mounting Temperature Sensor
1531	1532	1533	1535	1537



-Flanged-	-Configurable Sheath Diameter Type-	-Connector Type-	-Double Element Type-	-Chemical Resistant Type-	-Round Thermal Tip Sensors-
1542	1542	1543	1543	1543	1544



Sheathed Thermocouples	Compensation Lead Wires	K Thermocouple Connectors	Bimetal Thermostat	-Lead Wire-	Thermostat
1547	1547	1548	1548	1548	1549



Heat Sink	Universal Relays	Terminal Blocks	Temperature Controllers -Universal / Compact-	-Universal / Two Channel Type-	-Universal / High Current Type-
1555	1556	1556	1558	1558	1558



-Free Cutting Grade-	Thermal Plates	Insulating Papers	High Temperature Insulation Sheets	Heat Insulating Plates -Circular Type-	Machined Resin Plates
1569	1569	1570	1571	1572	1573

Metal Plates





Addition 1.0038/S235JR 1583~1588
Addition 1.1206/C50E 1589~1594
EN AW-5052/AlMg2,5 1595
EN AW-5052 High Precision 1596
EN AW-2017/AlCu4MgSi 1597

Product Name	Material Shop 24 Metal Plate Website	Dimension Fixed Plates
Page	1581	1583~1597



Structural / Carbon Steel

1.0038/S235JR 1621 Price Reduction Up to 6%
1.0038 Carbon Steel 1631 Price Reduction 3% in Average
Annealed Material 1635 Price Reduction Up to 6%
1.1206/C50E 1643
1.1203/C55E

Specialty Steel

JIS SKS93 (For Oil-Quenching) 1645
Addition 1.2510, 1.2379, DC53® (Daido Steel) 1647 Price Reduction Up to 15%
New Product 1.7220/34CrMo4 1651
New Product 1.3343/S6-5-2 1653
Pre-Hardened Steel (1.2085, 1.2316, NAK55® (Daido Steel)) 1655 Price Reduction 3% in Average

Material Shop 24 Premium Plates	Configurable Plates
1617	1621~1697



High Precision Blocks (1.0038, 1.1206, 1.2316, NAK55® (Daido Steel)) 1698
Standard Type (1.0038, 1.1206, 1.1206 Thermal Refined, 1.4305, 1.4301) 1699
Long Type (1.0038, 1.1206) 1701
Aluminum Blocks EN AW-5052, EN AW-2017, EN AW-A7075 1702

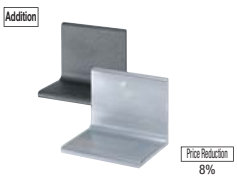


Addition Cold-rolled Flat Bars (1.0038, 1.1191, 1.4301-D, EN AW-6063) 1703
6F Equivalent Plates (1.0038, 1.1206) 1703
Square Steels (1.0038, 1.1191, 1.4301-D, EN AW-6063) 1705

Blocks (Guaranteed Perpendicularity of All Angles)	Flat Bars / Cold-rolled Flat Bars
1698~1702	1703~1706

Angles / Section Steels







Product Name	"Material Shop 24 Angles / Section Steels site"	L-Shaped Angles -Machined-	L-Shaped Angles -Resin, Equal Sides-	L-Shaped Angles -Mill Finished-
Page	1718	1719~1720	1720	1721~1728

Mounting Plates / Brackets -For Motors / Cylinders / Sensors-











Product Name	Online Configuration and Ordering Service	Machined Sheet Metals –Plate Type–	–Disk Type–	–Bent Type–	–Angle Type–
Page	1737	1741	1743	1745	1747

Technical Data

International System of Units (SI) 1765
Quantifiers / Unit Symbols / Chemical Symbols 1767
Volume and Weight Calculations 1767
Physical Properties of Materials 1768
Surface Roughness Ranges of Various Processes 1769
Geometrical Tolerance Indication Methods 1770
Spring Calculations 1771
How to use coil springs 1773
General Tolerances of Machining Dimensions 1774
Technical Data: Basic of Fit Selections -Machine Keys and Keyways- 1775~1794

1763~1804

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Alphabetical Order P.1813
Product Name Index P.1871

1811~

NEW : New products added
Change : Products whose part numbers have been changed.
Addition : Products with additional specifications.

About Reduced Prices

Items applicable to reduced prices vary depending on the type and size of products. Please refer to the corresponding pages.



Addition 1.0038/S235JR **1598~1600** Price Reduction 10% on average
Addition 1.1206/C50E **1601~1604** Price Reduction 10% on average
1.4305/X10CrNiS18-9 **1605**
1.4301/X5CrNi18-10 **1606**
EN AW-5052/AlMg2,5 **1607**
EN AW-5052 High Precision **1608**
EN AW-2017/AlCu4MgSi **1609**
Tough Pitch Copper **1610**
Oxygen Free Copper **1610**
EN AW-5052 Aluminum Cut Plates **1611**
EN AW-5052 High Precision Aluminum Cut Plates **1613**
EN AW-2017 Precision Cut Plates **1615**

A Dimension Configurable Plates

1598~1616

■ Stainless Steel

1.4305/X10CrNiS18-9 **1657** Price Reduction Up to 6%
1.4301/X5CrNi18-10 **1661** Price Reduction Up to 6%
1.4305, 1.4301 Annealed **1665** Price Reduction 3% in Average
New Product 1.4401, 1.4404 **1667** Price Reduction Up to 3%
1.4016/X6(8)Cr17 **1669** Price Reduction 3% in Average
1.4125/X105CrMo17 **1671** Price Reduction 3% in Average

■ Aluminum Alloy

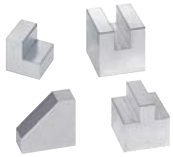
EN AW-5052/AlMg2,5 **1673** Price Reduction Up to 6%
EN AW-5052 High Precision **1679**
New Product EN AW-6061/EN AW-AlMg1SiCu **1681**
EN AW-2017/AlCu4MgSi **1683** Price Reduction Up to 6%
ANP79 **1689**
EN AW-7075/AlZn5,5MgCu **1691** Price Reduction Up to 6%

■ Brass / Pure Titanium Class 2

New Product Titanium Class 2 (3.7035/Ti99.5 (Ti2)-H) **1694**
Copper / Brass (Tough Pitch Copper / Oxygen Free Copper / Chrome Copper / Brass) **1695**

Addition





L-Shaped Blocks **1709**
U-Shaped Blocks **1711**
T-Shaped Blocks **1712**
Inclined Blocks **1713**

Price Reduction 8% in average



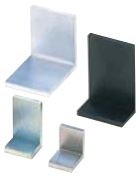
Price Reduction 4% on average



Price Reduction 4% on average

Material Shop 24 Shape Machining Website **1707**
Shape-Machined Blocks **1709~1713**
Circular Plates **1714**
Machined Circular Plates **1715**

NEW



L-shaped Surface Treated Angles **1729**

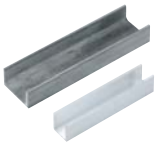
NEW



L-Shaped Machined Angles **1731**



L-Shaped Welded Angles **1733**



Lightweight Channel Steels **1734**



Metal Boxes **1734**



Machined Metal Plates **1749**



–Flat Bar Type– **1751**



Machined L-Shaped Brackets –Standard Type– **1753**

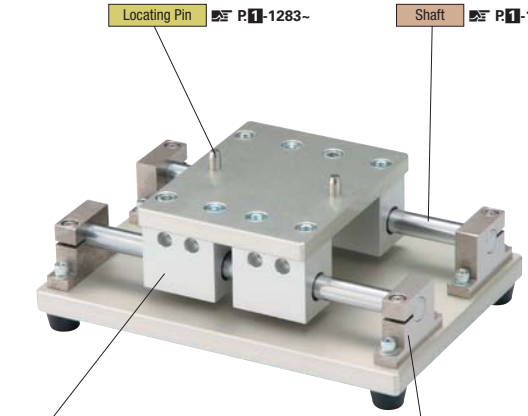


–Shape of Material Type– **1753**

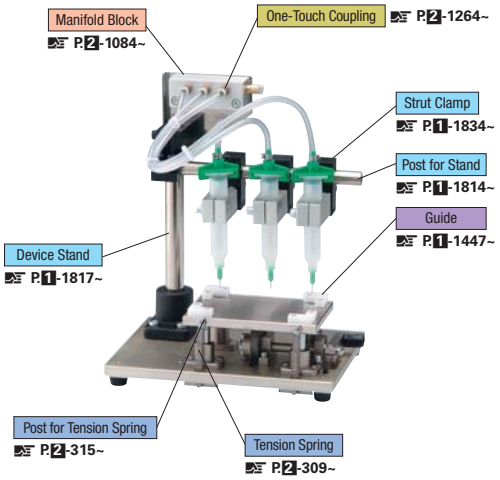
Metal Table EN - JIS **1969**
Metal Table JIS - EN **1974**
Plastic Table **1979**
Surface Treatments **1983**

Example of Use 1: Standard Components

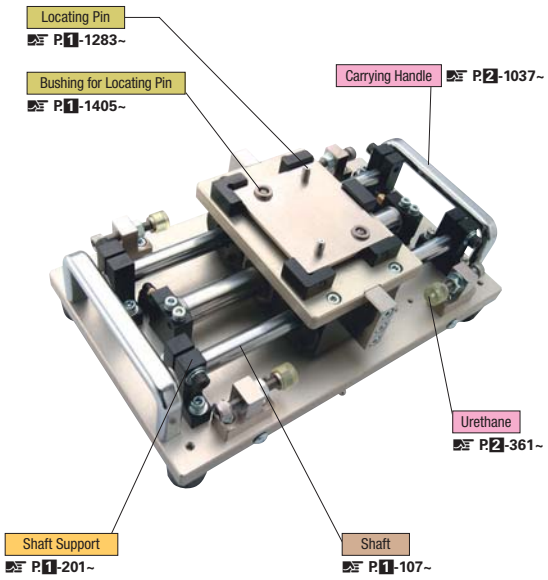
Oil Free Bushing Sliding Unit



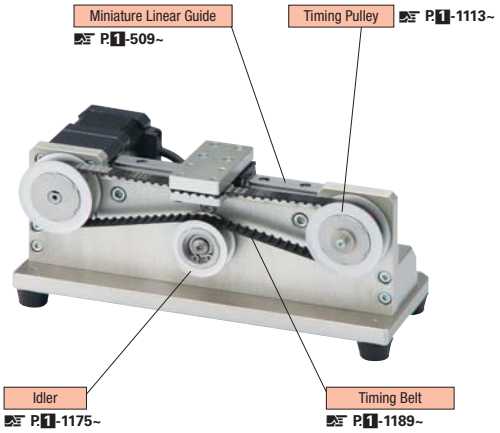
Dispense Unit



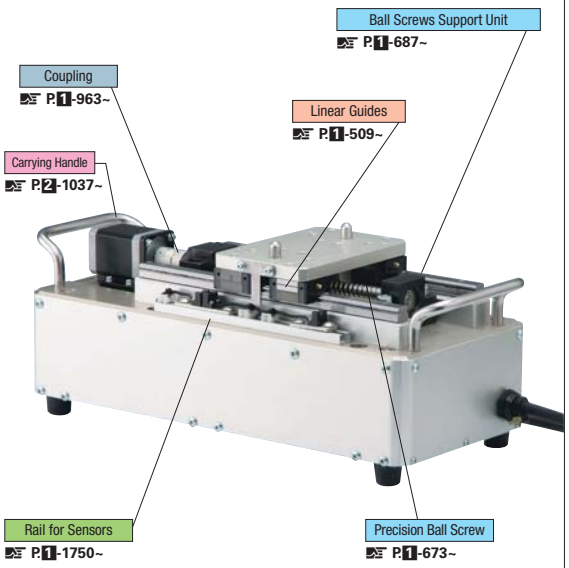
Cylinder-Driven Stage



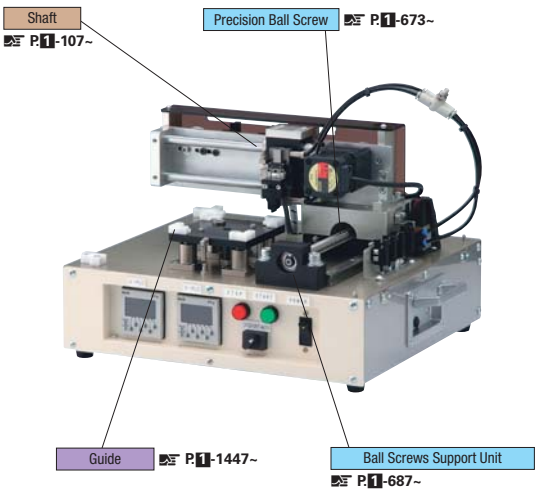
Belt-Driven Shuttle Unit



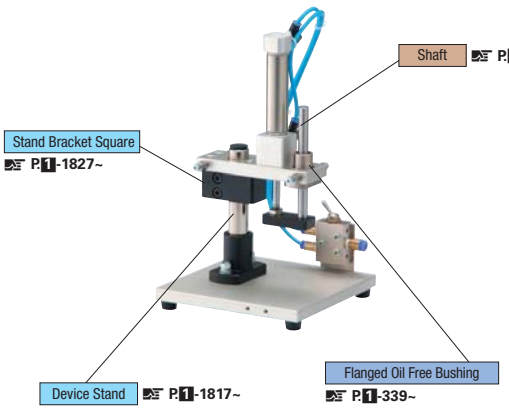
Ball Screw Linear Motion Unit



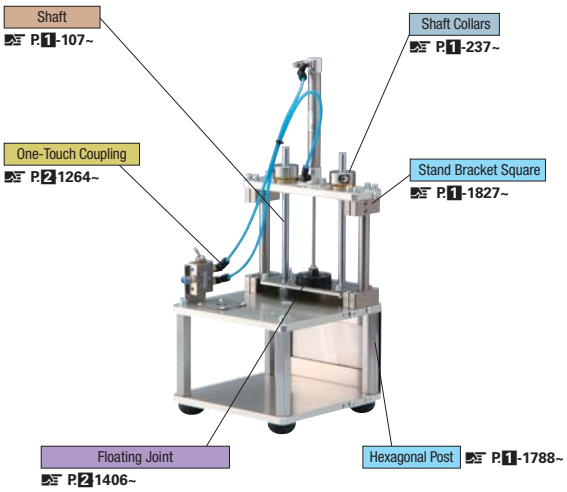
IC Chip Transfer Equipment



Vertical Movement Unit

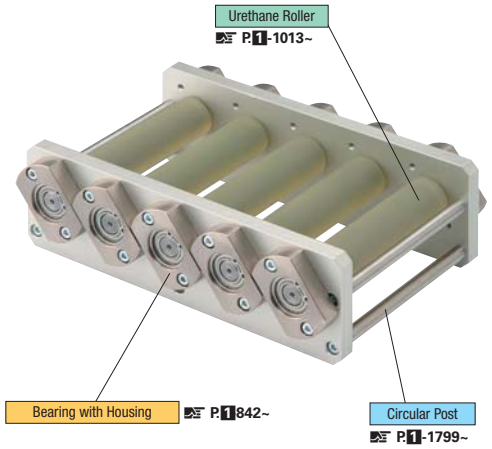


Shutter

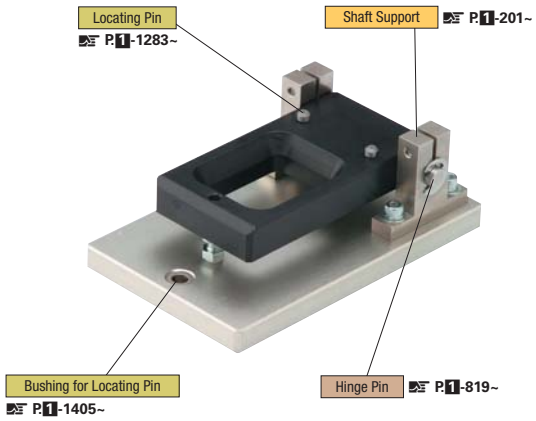


Example of Use 2: Standard Components

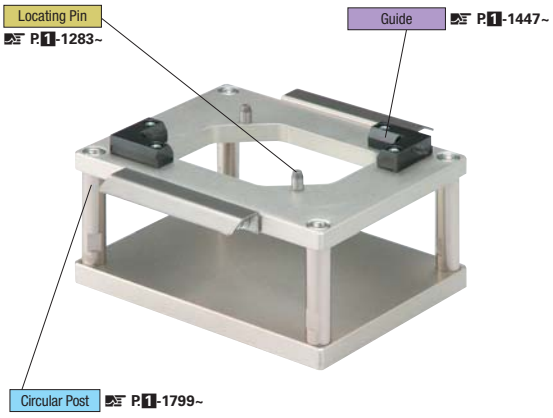
Urethane Roller Conveyor



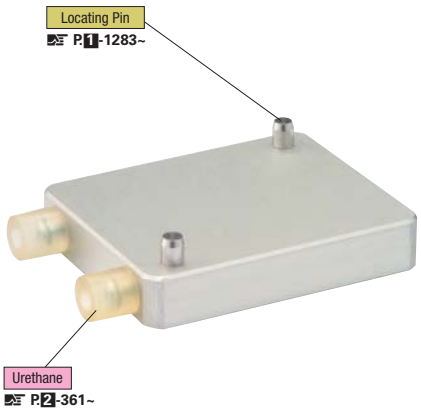
Assembly Jig



Positioning Jig



Pallet



Aluminum Extrusions







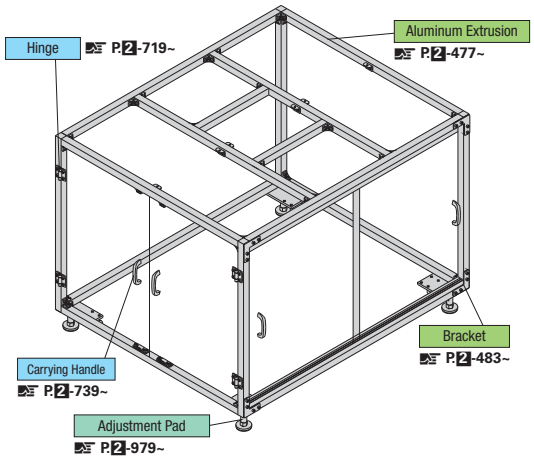
Pipe Frames

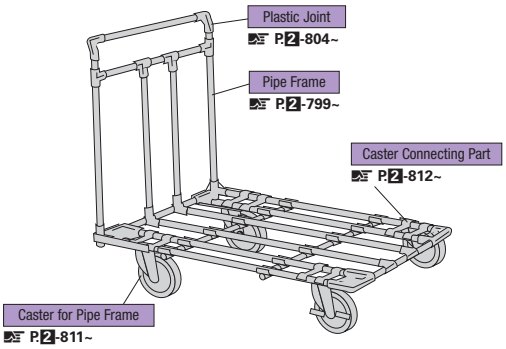


Factory Frames



Frame-relevant Components





■ **Aluminum Extrusions Standard Design Support Software** P.2-783~

Designing, load calculation, DXF data, component list and order form can be created easily on your PC. Available for free.

■ **3D Structure Conformational Analysis Software**

Warpage of the structure composed of aluminum extrusions can be analyzed. BMP, CSV and DXF Export compliant. (Paid software)

■ **Pipe Frames Standard Design Support Software**

DWG data and the order form can be created by simply selecting the shape, dimensions and components on your PC. Available for free.









How to Use the Catalog

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•Guide of Marks ····· 85
•MISUMI's Environmental Awareness and RoHS Compliancy ····· 86
•General Ordering Information ····· 87
•Delivery Times, Express Orders ····· 88
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•WOS Explanation ····· 91

How to Use Catalog

Product Name

Part Number

Product Photograph

Material

- Our products are manufactured from materials according to the Japanese Industry Standard (JIS) For better understanding,the materials are given in the catalog according to EN or DIN. Comparison table.

Specifications

Drawing

Specification Table

- The Product Number is made up of variable sizes (blue or green letters on white background).
  It is composed in steps from the Catalog Number and its selected size, from left to right.
- All the dimensions are therefore contained in the catalog number.
  Sizes from blue highlighted tables are fixed sizes and are not used in the catalog numbers.

Price

- Prices are set and shown based on quantity 1.
- Volume discount rates are available for most products.

  <Calculation Example>
  The unit price for ordering 20 pieces of linear shafts
  SFJ12–300
  6,80×0.85=5,78 Euro per pc.
- Volume discount rate does not apply to alteration fees.

Page

1-107

How to Find the Product

To find the Product Shape, Part Number., Delivery Time, and the detail page,

- Use the Picture Index····· P.1
- Use the Part Number Index ····· P.1987
- Use the Product Name Index····· P.2045

Add. Spec. Shafts -Straight Type-

Shaft length can be specified in 1mm increments.

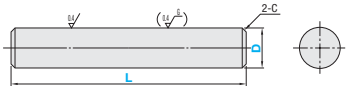
RoHS



Type			M Material	H Hardness	S Surface Treatment
D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFJ	SFU	-	1.3505	Induction Hardening Effective Hardening Depth P.104	-
SSFJ	SSFU	-	1.4125		
PSFJ	PSFU	-	1.3505		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFJ	PSSFU	-	1.4125	1.3505 58HRC~	
RSFJ	-	-	1.3505	1.4125 equivalent 56HRC~	LTBC
-	-	PSFG	1.1191	-	
-	-	PSSFG	1.4301		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.

D	D Tolerance g6	h5	f8
3	-0.002 -0.008	0 -0.004	-
4			
5	-0.004 -0.012	0 -0.005	-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

Without Surface Treatment



Features of LTBC P.118
For Circularity and Straightness P.103

Part Number Type	D	L 1mm Increments	C
(D Tolerance g6) SFJ SSFJ PSFJ PSSFJ RSFJ (D≤30, L≤500) / (D Tolerance h5) SFU SSFU PSFU PSSFU	3	10~ 400	0.2 or less
	4	10~ 400	
	5	10~ 400	
	6	20~ 600	0.5 or less
	8	20~ 800	
	10	20~ 800	
	12	20~1000	
	13	25~1000	
	15	25~1000	
	16	30~1200	
	18	30~1200	
	20	30~1200	1.0 or less
	25	35~1200	
	30	35~1500	
	35	35~1500	
	40	50~1500	
	50	65~1500	

Part Number Type	D	L 1mm Increments	C
(D Tolerance f8) PSFG PSSFG	6	20~ 600	0.5 or less
	8	20~ 800	
	10	20~ 800	
	12	20~1000	
	13	25~1000	
	15	25~1000	
	16	30~1200	
	18	30~1200	
	20	30~1200	1.0 or less
	25	35~1200	
	30	35~1500	
	35	35~1500	
	40	50~1500	
	50	65~1500	

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
SFJ SFU	3・4・5	1,59	2,38	3,17	3,96	5,98	7,20	-	-	-	-	-	-
	6	1,23	1,80	2,45	3,03	4,61	5,55	6,84	8,14				
	8	1,23	1,88	2,45	3,10	4,76	5,62	7,13	8,50	11,31	-	-	-
	10	1,30	1,95	2,60	3,24	4,90	5,91	7,35	8,79	11,81			
	12	1,44	2,09	2,81	3,53	5,26	6,27	7,92	9,44	16,64	19,80		-
	13	1,44	2,24	2,96	3,60	5,48	6,48	8,14	9,72	17,07	20,31		
	15・16	1,52	2,31	2,96	3,75	5,62	6,77	8,36	10,01	17,43	20,81	24,99	
	18・20	1,59	2,38	3,17	3,96	5,98	7,20	8,93	10,73	18,29	21,82	25,42	
	25	1,95	2,96	4,04	4,97	7,49	9,08	11,38	13,54	22,04	26,57	31,11	
	30	2,24	3,46	4,54	5,69	8,57	10,23	12,82	15,41	24,48	29,74	39,96	49,97
	35	2,74	4,25	5,55	6,99	10,52	12,60	15,77	18,94	29,16	35,43	41,76	52,20
	40	3,32	5,12	6,84	8,50	12,75	15,34	19,16	23,04	34,71	42,48	49,90	62,36
	50	-	6,84	9,08	11,38	17,00	20,31	25,42	30,60	44,64	55,01	64,88	81,08
SSFJ SSFU	3	2,09	3,24	4,25	5,33	8,00	9,65	-	-	-	-	-	-
	4・5	2,09	3,10	4,18	5,19	6,84	7,71						
	6	2,38	3,60	4,83	6,05	7,92	8,79	11,38	14,12				
	8	2,38	3,60	4,83	6,05	7,92	8,79	11,38	14,12	18,87	-	-	-
	10	2,38	3,60	4,83	6,05	7,92	8,79	11,38	14,12	18,87			
	12・13	3,03	4,47	6,05	7,49	9,87	10,95	14,33	17,72	25,20	31,90		-
	15・16	3,75	5,62	7,49	9,44	12,89	14,76	17,14	19,37	27,72	35,00	41,98	
	18・20	4,25	6,20	8,36	10,44	14,19	16,06	18,65	21,24	32,26	38,38	48,32	
	25	4,61	7,06	9,44	11,74	16,42	19,01	22,04	25,06	35,36	44,93	56,74	
	30	5,26	8,07	10,73	13,40	18,72	21,60	24,99	28,30	40,25	51,12	64,73	80,93
	35	5,98	9,15	12,17	15,27	21,32	24,77	31,11	37,44	51,63	64,30	76,90	96,20
	40	8,57	13,18	17,50	21,89	28,01	30,75	38,60	46,37	63,87	79,56	95,19	118,95
	50	-	17,57	23,48	29,31	38,60	43,13	54,08	64,95	90,58	113,04	135,36	169,35

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFJ PSFU	3	1,59	2,38	3,17	3,96	5,98	7,13						
	4	1,52	2,16	2,96	3,60	5,48	6,56	-	-	-	-	-	-
	5	1,52	2,16	2,96	3,60	5,69	7,06						
	6	1,52	2,31	3,03	3,82	5,62	6,77	8,50	10,16				
	8	1,59	2,31	3,17	3,89	5,84	6,99	8,79	10,59	13,97	-	-	-
	10	1,66	2,38	3,24	4,04	6,12	7,35	9,08	10,80	14,55			
	12	1,73	2,67	3,53	4,40	6,56	7,85	9,72	11,67	20,52	24,41		-
	13	1,80	2,67	3,60	4,47	6,77	8,07	10,08	12,03	21,10	25,06		
	15・16	1,88	2,74	3,68	4,61	6,92	8,28	10,30	12,39	21,60	25,78	30,96	
	18・20	2,02	2,96	3,89	4,90	7,35	8,79	11,09	13,32	22,68	27,00	31,47	
	25	2,38	3,75	4,97	6,20	9,36	11,24	13,97	16,71	27,29	32,84	38,60	
	30	2,74	4,25	5,62	7,06	10,66	12,68	15,92	19,08	30,32	36,80	49,47	61,85
	35	3,24	4,97	6,63	8,21	12,32	14,69	18,44	22,18	34,20	41,69	52,35	65,52
	40	3,89	6,05	8,00	10,01	14,98	18,00	22,47	26,93	40,61	49,90	58,54	73,16
	50	-	8,00	10,66	13,25	19,88	23,84	29,88	35,93	52,42	64,52	76,18	95,12
PSSFJ PSSFU	3	3,32	4,97	6,70	8,36	12,53	14,98						
	4	3,17	4,68	6,20	7,85	11,74	14,04	-	-	-	-	-	-
	5	3,17	4,68	6,20	7,85	10,66	12,03						
	6	3,03	4,61	6,20	7,84	10,16	11,38	11,96	12,53				
	8・10	3,53	5,26	6,99	8,79	11,52	12,89	16,85	20,74	27,65	-	-	-
	12・13	4,40	6,63	8,79	11,02	14,48	16,06	21,03	26,00	37,08	46,88		
	15・16	5,55	8,28	11,09	13,83	19,01	21,75	25,06	28,52	40,68	51,41	61,71	
	18・20	6,20	9,22	12,24	15,34	20,81	23,69	27,44	31,18	47,38	56,38	71,00	
	25	6,70	10,23	13,76	17,21	24,05	27,72	32,33	36,87	51,84	65,88	83,24	
	30	7,64	11,81	15,77	19,66	27,51	31,76	36,65	41,62	59,12	75,03	95,04	118,88
	35	8,36	12,89	17,21	21,53	30,24	35,14	44,07	53,00	73,23	91,08	108,94	136,23
	40	12,03	18,51	24,77	30,89	39,68	43,49	54,65	65,74	90,58	112,76	134,93	168,63
	50	-	24,92	33,20	41,48	54,72	61,20	76,61	92,02	128,38	160,29	191,88	239,91

CAD Data

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500
RSFJ	3 - 4 - 5	7,49	8,28	9,08	9,87	11,88	13,11	-
	6	7,13	7,71	8,36	8,93	10,52	12,32	13,61
	8	7,13	7,78	8,36	9,87	11,52	13,25	15,63
	10	7,20	7,85	9,36	10,01	13,40	15,20	17,50
	12	7,35	8,86	11,31	12,03	14,55	17,28	20,60
	13	7,35	9,00	10,59	12,10	15,63	18,36	21,68
	15	8,28	9,94	11,45	13,90	17,50	21,17	25,28
	16	8,28	9,94	12,24	13,90	19,16	22,90	27,00
	18	8,36	10,88	13,32	20,88	21,24	25,85	30,96
	20	10,23	13,18	17,57	19,80	23,76	29,24	31,25
	25	10,44	14,84	19,30	23,62	29,09	36,44	42,05
	30	12,39	17,86	23,98	26,57	37,37	41,40	48,60

Part Number Type	D	€ Unit Price Min. L 100	L101 200	L201 400	L401 600	L601 800	L801 1000	L1001 1200	L1201 1500
PSFG	6	1,44	2,38	4,76	7,13	-	-	-	-
	8	1,52	2,45	4,90	7,35	9,80			
	10	1,52	2,52	5,04	7,56	10,16			
	12	1,66	2,67	5,48	8,14	14,33	17,07		
	13	1,66	2,81	5,55	8,43	14,62	17,56		
	15 - 16	1,73	2,96	5,76	8,57	15,05	17,86	21,53	
	18 - 20	1,88	3,10	6,20	9,22	15,77	18,80	21,89	
	25	2,31	3,82	7,85	11,67	19,01	22,97	26,79	
	30	2,67	4,40	8,86	13,25	21,10	25,64	34,42	43,06
	35	3,24	5,48	10,80	16,28	25,06	30,60	36,00	45,00
	40	3,96	6,63	13,18	19,80	29,88	36,65	42,99	53,72
	50	5,26	8,79	17,50	26,28	38,52	47,38	55,88	69,84
PSSFG	6	3,39	5,55	8,86	14,33	-	-	-	-
	8	3,39	5,55	9,08	14,62	19,59			
	10	3,39	5,55	9,08	14,62	19,59			
	12	4,25	6,99	11,38	18,36	26,14	33,05		
	13	4,25	6,99	11,38	18,36	26,14	33,05		
	15 - 16	5,26	8,79	15,27	20,16	28,80	36,29	43,49	
	18 - 20	5,84	9,72	16,64	21,96	33,41	39,82	50,12	
	25	6,56	10,88	19,66	26,00	36,65	46,52	58,76	
	30	7,49	12,53	22,40	29,38	41,76	53,00	67,11	83,96
	35	8,50	14,19	25,64	38,81	53,50	66,60	79,71	99,72
	40	12,24	20,45	31,83	48,10	66,32	82,52	98,72	123,41
	50	16,49	27,36	44,72	67,32	93,89	117,22	140,33	175,54

Alterations — Part Number SFJ30 - L - 250 - (LKC / SC...etc.) LKC

10 Days (RSFJ is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010. Please specify new part numbers; SFU, SSFU, PSFU and PSSFU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
LKC	LKC	L Dimension Tolerance Changes (Precision) Order number LKC When using LKC, L dimensions can be specified in 0.1 increments. ℗ L<200 ···›L±0.03; 200≤L<500 ···›L±0.05; L≥500 ···›L±0.1	4,00
SC	SC	Adds a set of wrench flats. Order number SC5 Application Notes Applicable to D = 6 and over SC=1mm Increment ℗ SC+ℓ₁≤L ℗ SC=0 or SC≥1 ⊗ can not be used with WSC	4,00
WSC	WSC	Add wrench flats at two locations Order number WSC12-X8 Application Notes Applicable to D = 6 and over Specify WSC/X in 1mm increments ℗ WSC+X+ℓ₁x2<L ℗ WSC (X)=0 or WSC (X)≥1 ⊗ Cannot be machined on the same plane. Can not be used with SC.	8,00
FC	FC	Add Set Screw Flat at one location Order number FC10-A8 Specify FC and A in 1mm increments. ℗ FC≤3xD ℗ When 1.5xD<FC, FC≤L/2 ℗ A=0 or A ≥ 2 ⊗ Can not be used with WFC	2,00
WFC	WFC	Add Set Screw Flats at two locations Order number WFC10-A8-E20 Specify WFC, A and E in 1mm increments ℗ WFC≤3xD ℗ When 1.5xD<FC, 2WFC≤L/2 ℗ A (E) = 0 or A (E) ≥ 2 ⊗ Cannot be machined on the same plane. Cannot be combined with FC.	4,00

D	W	ℓ₁
6	5	8
8	7	
10	8	
12	10	10
13	11	
15	13	
16	14	
18	16	15
20	17	
25	22	
30	27	
35	30	20
40	36	
50	41	

D	h
3~ 5	0.5
6~18	1
20~40	2
50	3

Alterations	Code	Spec.	Price Adder
DKC	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Not applicable for RSFJ, PSFG and PSSFG are not applicable.	-
RC	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Can not be used with WRC	5,00
WRC	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
VC	VC	Add V groove at one location Ordering Code VC6 Application Notes Applicable to D = 6 and over ⊗Can not be used with WVC	2,00
WVC	WVC	Two V-grooves. Ordering Code WVC180-F8 Application Notes Applicable to D = 6 and over ⊗Can not be used with VC	4,00
KC	KC	One keyway is added. Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30.	5,00

For details, please see Alterations Overview P.105

℗Please see Alteration Guides for details if provided. P.105
℗For more than one alteration, 2mm or more separation required between machined sections. P.106
℗Alterations may lower hardness. P.104

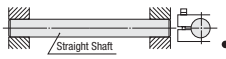
Order Example — Part Number SFJ20 - L - 75

Degreasing Service P.83

Days to Ship: 8 Days; - RSFJ 13 Days; 5 Days

Express A 8,00 EUR/unit
℗A Express Charge of 21,60 EUR for 3 or more pieces of identical products.

Example



Liability Exclusion

This catalog was put together with great care and all information checked for accuracy.
All information is based on the current level of knowledge at the time of publication and is not binding.
For any erroneous or incomplete information, or any damage possibly occurring from them, no liability is accepted.
Subject to change.
For most updated information related to our product range please refer to our homepage www.misumi-europe.com

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Copying or distributing are, even as extracts (pictures, graphics, text, etc), only allowed with our previous approval in writing.
Otherwise our standard business conditions apply.

CAD Data Mark

•Shows that CAD Data are available.

Index

Order Example

•Example catalog number shows exactly which fields are required and how each field is written

Example

•Shows an application example of each component.

Delivery Time

•Number of working days needed for shipping (beginning with the first working day after your order date). P.87

2 Days	9 Days
5 Days	10 Days
6 Days	11 Days
7 Days	≀
8 Days	15 Days

How to Use Catalog
–Guide of Marks–

Symbol	Meaning	Description Example
	NEW PRODUCTS	New products added from previous catalog.
	ADDITIONAL SPECIFICATION	Additional specifications are shown in red characters.
	DELIVERY TIME, IMPROVED	Production Time has been shortened from previous catalog.
	Part Number AND SPECIFICATION CHANGED	Part Number and specification shown in purple characters have been changed.
	MATERIAL	M 1.3505/100Cr6
	HARDNESS	H 58~60HRC
	SURFACE TREATMENT	S Black Oxide
	ACCESSORIES	A NETW2
	TOLERANCE	T $^{+0.005}_{0}$
	NOTE: WARNING	WFC≤3D
	NOT AVAILABLE	Indicates that specific sizes or items are not available. ⊗ D3~8(Not available for D3~8)
	REFER TO CATALOG PAGE	P.234
	IF A, ···› B	L $^{+0.02}_{0}$ (L>200 ···› L $^{+0.05}_{0}$) The standard tolerance of length L $^{+0.02}_{0}$ changes to ($^{+0.05}_{0}$) when L is over 200.

Symbol	Meaning	Description Example
(1) (2) (3)	UNIT No.	Number applied to each part of a unit product
	EXAMPLE PART NUMBER	Order Example Part Number – L MS 6 – 50
	DELIVERY TIME	Days to Ship 6 Days
	DELIVERY TIME	2 Days: Delivery Time is 2 workdays 5 Days: Delivery Time is 5 workdays 6 Days: Delivery Time is 6 workdays 15 Days: Delivery Time is 15 workdays
	EXPRESS SERVICE	Express A / Express B / Express C Express Delivery Services are available, to shorten required production time.
	PRICE (Euro)	Price
	UNIT PRICE	Unit Price
	EXAMPLE	Example
	ALTERATION	Alteration which can be ordered without drawings.

MISUMI's Environmental Awareness and RoHS Compliancy

■Green Procurement

MISUMI has formulated Green Procurement Guidelines to observe the legal restrictions, and other requirements concerning environmental chemicals, and to help build up a recycling society. By preparing Green Procurement Guidelines and continuously striving to improve our environmental preservation and environmental chemicals management activities, we seek to eliminate environmental chemicals from our products. We ask our customers and business partners for their cooperation with these efforts.

Please refer to our website for details regarding the MISUMI Green Procurement Guidelines.
http://www.misumi.co.jp/about_e/environment/green/index.html

■What is RoHS?

Official Name : Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
RoHS is the directive to speculate and restrict the use of certain hazardous substances in electrical and electronic equipments.
It aims to minimize the hazards on environment and health through the life cycles of products from production to disposal.

■RoHS Restricted Substances (Compliant with EU Directive came into force on 1 July 2006)

Substances			Subject Items and Application	Threshold value *	
1	Cadmium (Cd) and Its Compounds		Cadimum contained in alloys with zinc content (brass, zinc, diecast, lead-free solder, etc.), plating, plastic, rubber, oating, etc.	100 ppm or less	For packing materials, less than 100 ppm combined of cadmium, lead, mercury and hexavalent chromium
		Exemption	Cadmium and its compounds in electrical contacts and cadmium plating except for the uses prohibited under 91/338/EEC which is a revision of the EU directive 76/769/EEC	–	
2	Lead (Pb) and Its Compounds		Lead contained in all types of alloys, solder, all items other than the following exemptions	1,000 ppm or less	
		Exemption	Lead which is alloyed with steel	3,500 ppm or less	
			Lead which is alloyed with aluminum	4,000 ppm or less	
			Lead which is alloyed with copper	40,000 ppm or less	
			Lead used in solder which contains more than or equal to 85% of lead	–	
3	Mercury (Hg) and Its Compounds		Mercury contained in all items aside from small fluorescent light bulbs and straighttube fluorescent light bulbs	1,000 ppm or less	
4	Hexavalent chromium (Cr6+) and Its Compounds		All Hexavalent chromium in chromate treatment, plating, coating, etc.. Chromium metal and chrome in metal alloys are exempted.	1,000 ppm or less	
5	Polybrominated Biphenyls (PBBs)		Flame retardant	1,000 ppm or less	
6	Polybrominated Diphenylethers (PBDEs)		Flame retardant	1,000 ppm or less	

*Threshold value is, whether consciously or not, the maximum concentration value set for each homogeneous material which cannot be mechanically disjointed into different materials.

General ordering information

1 How to Order

For customers from Europe & Africa:
Customers can contact our Customer Service directly under +49 (0) 61 96 / 77 46 – 0
or by using our website www.misumi-europe.com under „Services“.
Existing Customers may send their order, including item name, item number and quantity directly by fax to +49 (0) 61 96 / 77 46 – 3 60, by E-Mail to sales@misumi-europe.com or use our „online service“ at www.misumi-europe.com under “eCatalog/WOS”.

2 Quantity

No minimum order quantity! Misumi accepts 1-piece orders without surcharge.

3 Delivery Times

The respective delivery time in working days for each product can be seen by the delivery times symbol.
Please notice that items which are marked as stock items are available for quick delivery.
For deliveries outside of Germany the delivery time can be slightly extended due to the respective customs clearance.
Orders which are made Mon. to Thurs. before 4:00 pm and Fri. before 3:00 pm are processed the same day.

4 Express Deliveries

To shorten delivery time we offer an express delivery service.
For more information please contact our customer service.

5 Terms of Delivery

Deviating from our general terms of delivery (see T&C):
Other shipment modes can be used depending on size, weight and dimensions of the shipment .
For truck deliveries the customer is responsible for ensuring that a Fork Lift Truck or Pallet Truck is available.

6 Changes or Cancellation of an Order

Orders may be changed or cancelled on the same day as initiated.
For changes or cancellation of an order on the next day, please contact our customer service.

7 Returning Items

Items which are on stock may be returned after contact with us.
We cannot accept returns of items which were not on stock, unless they were delivered with defects.
For individual cases please contact our customer service.

8 Claims

We make every attempt to guarantee the quality of our products irrespective of the quantity ordered by our customers.
If you believe that the delivered items do not fulfill the expected quality requirements, have the wrong dimensions or are of incorrect quantity, please contact our customer service.
We will find a solution for YOU.

Delivery times, Express Orders

3 Delivery Times

What is the „Delivery Time“?

Delivery Time Delivery time means the number of workdays needed until delivery.

(from the first workday after your order is received).

Symbols for Delivery Time

Delivery Time is 2 workdays ···› Delivery time **2 Days**

Delivery Time is 5 workdays ···› Delivery time **5 Days**

Delivery Time is 6 workdays ···› Delivery time **6 Days**

≀

Delivery Time is 15 workdays ···› Delivery time **15 Days**

If „on inquiry“ is indicated in the quantity table, the offer also has a delivery date. In certain cases the delivery date can change with the quantity ordered, even if „on inquiry“ is not indicated.

Volume Discount P.87

No. pieces	1~3	4~7	8~10	11~29	50~
Discount	Price List	5%	10%	15%	on inquiry

4 Express Deliveries

Express Service

For your urgent orders we are offering an express service for many products.
Our express service is avaible for products, wich are marked by one of the following symbols.

2 Days

8 Days Express **A**

10 Days Express **B**

13 Days Express **C**

The avaibility of this service depends on the dimensions and the specification of the article and on the country of origin of the customer.
Different receipt date of orders, in some cases have a small effect on delivery schedule.
For detailed information please ask our customer service.

Delivery time reductions of 1-3 days are typical.

Expresscharge

8 Days

Express **A** 2,00 EUR/piece

A flat charge of 5,40 EUR for 3 or more identical pieces
The term flat charge designates the maximum amount, wich has to be paid independently of the number of items for a supply by express.

Example:
1 pieces = 2,00 euro surcharge
2 pieces = 4,00 euro surcharge
3 pieces = 5,40 euro surcharge
10 pieces = 5,40 euro surcharge

Remaining delivery terms (carriage free within Germany) remains unaffected.

Item number configuration

Shafts -Standard Type / Precision Type-
-Both Ends Stepped and Female Thread / Both Ends Stepped-

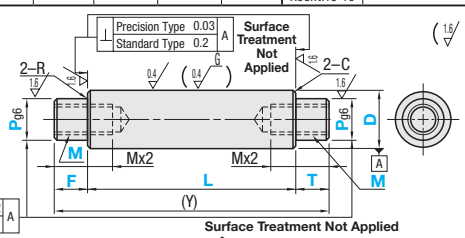
RoHS



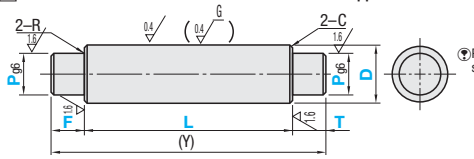
Type							Material	Hardness	Surface Treatment
Both Ends Female Thread				Both Ends Stepped					
Precision type	Standard			Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFAH	SFAH	SFUH	-	SFAJ	SFUJ	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth ☞P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFAH	SSFAH	SSFUH	-	SSFAJ	SSFUJ	-	1.4125/ equivalent		
VPFAH	PSFAH	PSFUH	-	PSFAJ	PSFUJ	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFAH	PSSFAH	PSSFUH	-	PSSFAJ	PSSFUJ	-	1.4125/ equivalent		
VRAH	RSFAH	-	-	RSFAJ	-	-	1.3505/100Cr6		Raydent
VSRAH	-	-	-	-	-	-	1.4125/ equivalent		
-	-	-	PSFGH	-	-	PSFGJ	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGH	-	-	PSSFGJ	1.4301/ X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

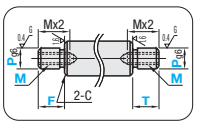
Both Ends Female Thread



Both Ends Stepped



Features of Precision Type
Concentricity is ◎ Ø0.02,
Squareness is ⊥ 0.03

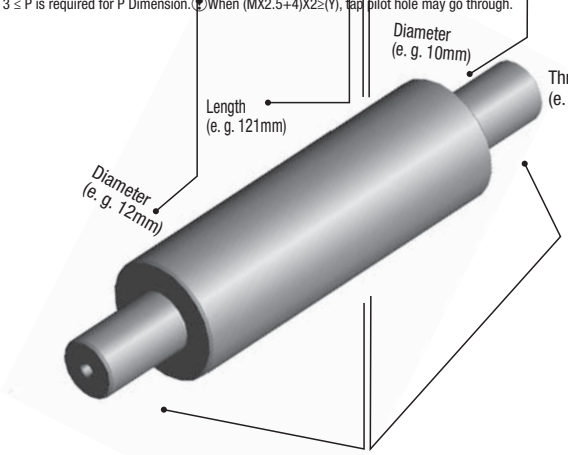


Precision shafts have grinding undercuts at stepped sections (max. width 1mm / max. depth 0.1mm).

Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. ☞P.104
Changes in circularity, straightness, perpendicularity, coaxiality and hardness ☞P.103
Features of Raydent ☞P.118

Part Number Type				D	1mm Increments L	F / T	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Standard Type				8	25~796		6	3	800		
Both Ends Female Thread (D Tolerance g6)	(D Tolerance h5)	Both Ends Stepped (D Tolerance g6)	(D Tolerance h5)	10	25~796		6~8	3 4 5	800		
SFAH	SFUH	SFAJ	SFUJ	12	25~996		6~10	3 4 5 6	1000		
SSFAH	SSFUH	SSFAJ	SSFUJ	13	25~996		6~11	3 4 5 6 8	1000		0.5 or less
PSFAH	PSFUH	PSFAJ	PSFUJ	15	25~996		6~13	3 4 5 6 8 10	1000	0.3 or less	
PSSFAH	PSSFUH	PSSFAJ	PSSFUJ	16	25~1196	2≤F≤Px4	6~14	3 4 5 6 8 10	1200		
RSFAH (D≤30, L≤500) (D Tolerance f8)		RSFAJ (D≤30, L≤500) (D Tolerance f8)		18	25~1196		8~16	4 5 6 8 10 12	1200		
PSFGH		PSFGJ		20	25~1196	2≤T≤Px4	8~17	4 5 6 8 10 12	1200		1.0 or less
PSSFGH		PSSFGJ		25	25~1196		8~22	4 5 6 8 10 12 16	1200		
				30	25~1496		9~27	5 6 8 10 12 16 20 24	1500		
				35	25~1496		9~32	5 6 8 10 12 16 20 24	1500	0.5 or less	
				40	25~1496		11~37	6 8 10 12 16 20 24 30	1500		
				50	25~1496		11~47	6 8 10 12 16 20 24 30	1500		

- Both Ends Female Thread: M + 3 ≤ P is required for P Dimension. When (MX2.5+4)X2≥(Y), tap pilot hole may go through.



Specification of :
Tolerance
Material
Hardness
Surface

Product Number: SSFAH12-121-F24-P10-M6-T30

Alterations

Options and special models

Options can be ordered without drawings

With the aid of our Alterations service you can select additional product characteristics and tolerances.
To order an alteration simply add the desired alteration code to the catalog number as illustrated.
You do not need to create a drawing for us.

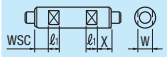
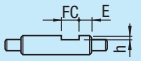
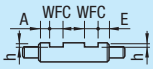
There is no discount applicable for alterations.

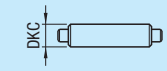
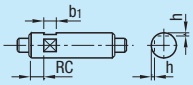
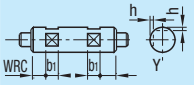
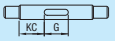
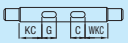
An example of the Option Service (Steel shafts for linear movements)

Alterations

Part Number	-	L	-	F	-	P	-	M	-	T	-	(LKC · WSC...etc.)
SFAH20	-	400	-	F25	-	P16	-	M10	-	T20	-	LKC

Please notice the changed delivery times for options

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. Ⓟ L<200 ···→L±0.03 200≤L<500···→L±0.05 L≥500 ···→L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. Ⓟ WSC+X+ℓ1x2<L Ⓟ WSC (X)=0 or WSC (X)≥1 ⊗Not available on the same plane. D W ℓ1: 8 7 8; 10 8 8; 12 10 10; 13 11 10; 15 13 10; 16 14 10; 18 16 10; 20 17 10; 25 22 10; 30 27 15; 35 30 15; 40 36 20; 50 41 20	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. Ⓟ FC≤3xD Ⓟ When 1.5xD<FC, FC≤L/2 Ⓟ E=0 or E≥2⊗Can not be used with WFC D h: 8~18 1; 20~40 2; 50 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments Ⓟ WFC≤3xD Ⓟ When 1.5xD<FC, 2WFC≤L/2 Ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D h: 8~18 1; 20~40 2; 50 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance f8 shafts and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
-Keyway at one location :KC  -Keyways at two locations :WKC 	KC WKC	Keyway Ordering Code KC10-G10 WKC10-C8-KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	KC 5,00 WKC 10,00

MISUMI 24/7 e-Commerce
-How does it work?-



Step 1:
Product search

You can search for MISUMI products by product name or part number under the product search tab. You can search the entire site by key phrase under the website tab.



Step 2:
Configure / check prices

You can automatically generate a part number by selecting parameters with our configurator. Check price & delivery date on the spot.



Step 3:
2D / 3D CAD data download

You can download FREE 2D/3D CAD data.
We have more than 30 different data formats.



Step 4:
Quote / Order

You can quote/order MISUMI products online and check the results immediately.



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Register

The registration occurs online (**www.misumi-europe.com**) by using the respective form. After completing all required information, you will receive a PDF document which you need to print out, sign and send back to MISUMI Europa GmbH. Subsequently, we will activate your account. The registration might require up to two working days.

In order to register successfully, please agree to the MISUMI privacy policy as well as our terms and conditions . If you are already registered as standard-user you can get a free upgrade to premium-user without having to fill in the customer registration form again. This upgrade is possible at any time. Please contact our customer service team by phone at +49 (0) 6196 7746 0 or mail at:sales@misumi-europe.com“.

Two account options are available:

FUNCTIONALITY	STANDARD	PREMIUM	
Search for standard, purchased and custom-made components	•	•	
Configure standard, purchased and custom-made components	•	•	TECHNICAL
Prices online	•	•	
Delivery time online	•	•	
Download 2D/3D models	•	•	
Upload bill of material	•	•	
Create a quote	•	•	
Quote managing and quote history	•	•	
Order online	x	•	
Order managing and order history	x	•	E-SHOP
Registration for customers **within** the European Union (EU) or Switzerland	Registration	Registration	
Registration for customers **outside** the European Union (EU) or Switzerland	Registration	Registration	





MISUMI Tutorial videos

Why MISUMI?

- ···› Easily realisable solutions
- ···› Configurable components in 1mm increments
- ···› All in one catalogue
- ···› more components than you could ever imagine

Are you also struck by the 3.000 pages of the catalogue and do you have difficulties finding the required components quickly? MISUMI now provides you with a helpful tool.



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Here you can find a guide for the use of our eCatalog/ WOS system as **PDF file**. If you prefer the brochure as a **hardcopy**, you can write us an e-Mail via sales@misumi-europe.com or order it by phone at +49 (0) 6196 7746 0.

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or download helpful PDF-documents.

MISUMI Catalogue One for All

Our main catalogue provides all technical and commercial component information at a glance!



- ···› Details on tolerances, materials and coatings
- ···› All information regarding dimensions and configuration including options
- ···› Component drawings and sample applications
- ···› Delivery times and prices with bulk discounts, surcharges for additional optional extras or express delivery
- ···› To request a catalogue (DE/EN/IT/FR/CZ), please go to **www.misumi-europe.com**

MISUMI Info DVD

This DVD contains comprehensive information about MISUMI. The DVD contains:



- ···› Catalogue “Mechanical Components for Assembly Automation” (DE/EN/IT/FR/CZ) (PDF)
- ···› Catalogue “Standard Components for Plastic Mold & Diecast” (EN) (PDF)
- ···› Catalogue “Standard Components for Press Dies” (EN) (PDF)
- ···› Company presentation (DE/EN/IT/FR/CZ) (Powerpoint)
- ···› Video tutorials (DE/EN/IT/FR/CZ)

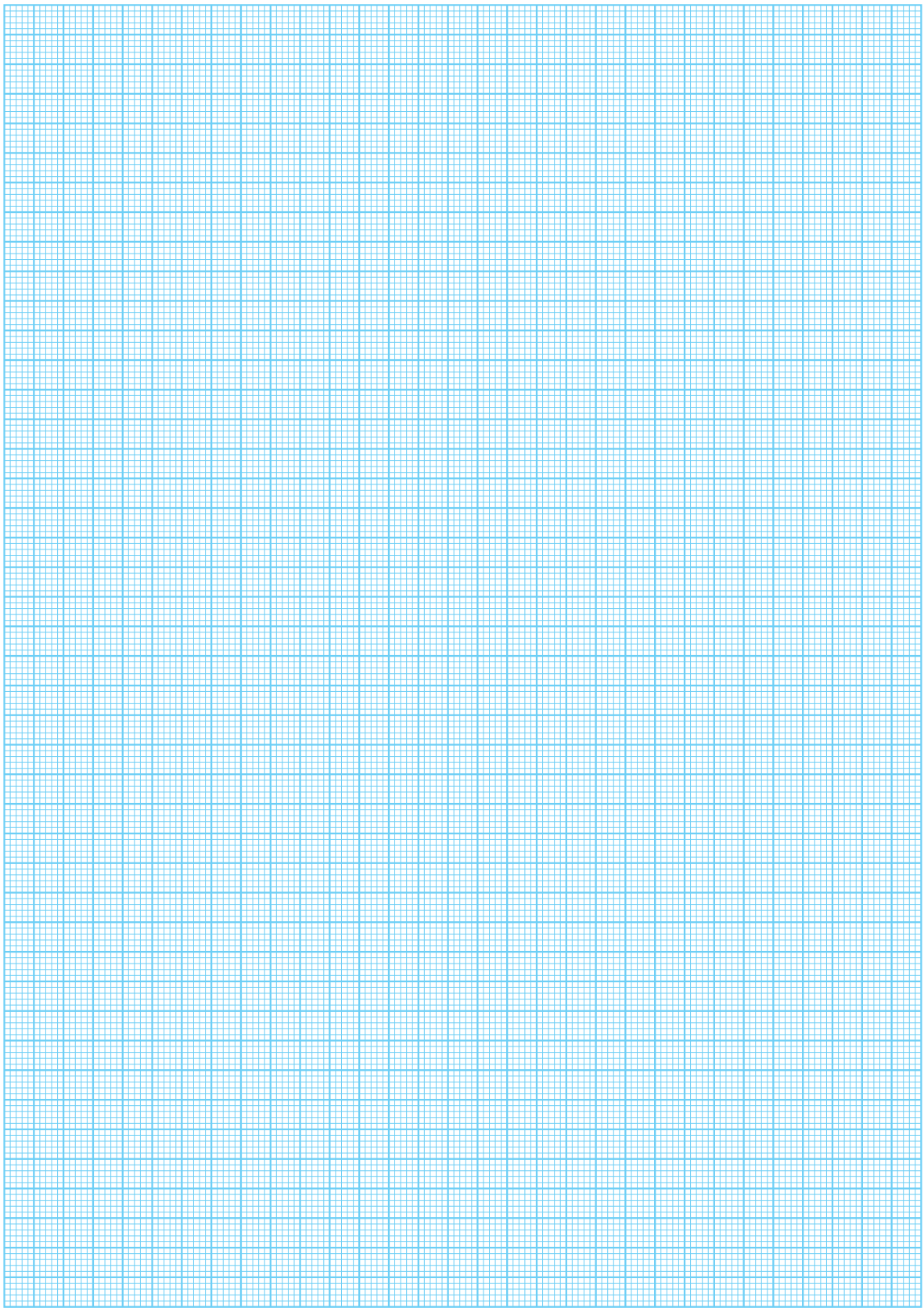
Product Brochures

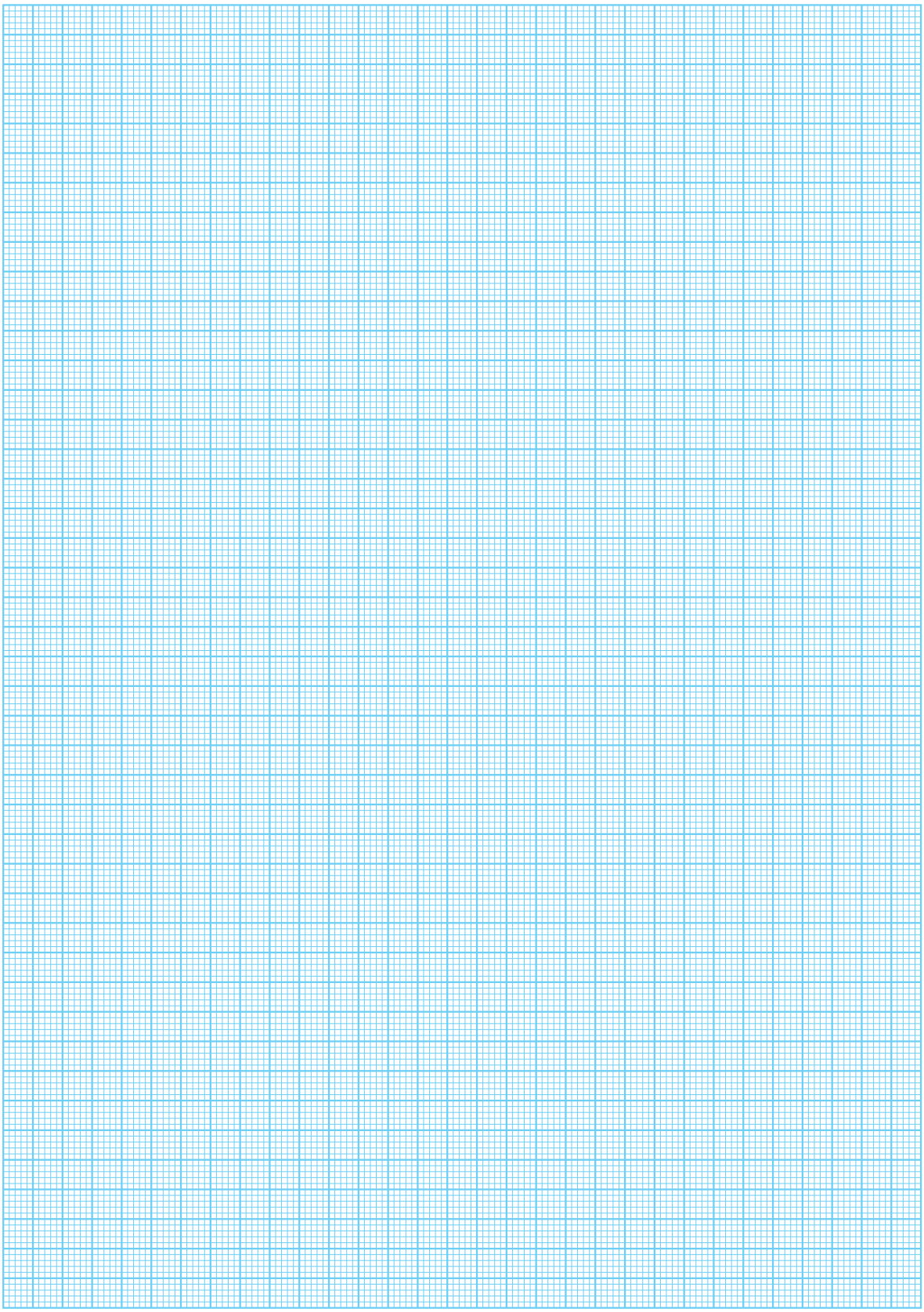


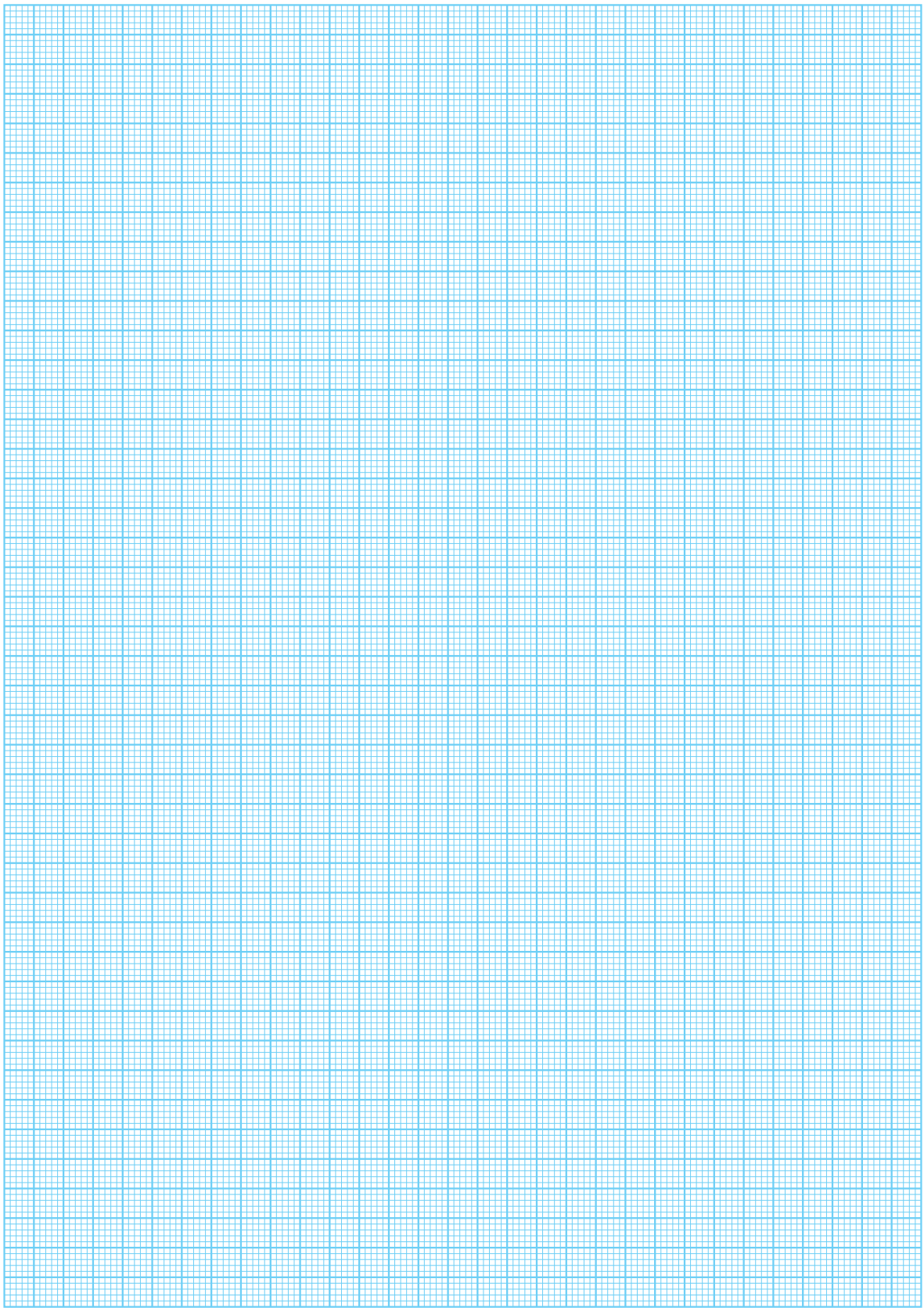
Product Brochures can be downloaded as PDF files. Some of the brochures are also available as printed versions. Send an informal e-mail to **insales@misumi-europe.com**



We have gathered information on some selected products of our extensive product portfolio. Here you can find brochures with detailed information on these selected parts which can be downloaded as PDF files. Some of the brochures are also available as printed versions. For example: Linear units LX/KUA, linear unit RS, Toggle clamps, XY stages, G-Manifold, Aluminum frame etc.







Shafts

Shafts






Product Name	Shafts -Straight Type-	One End Female Thread Shaft	-One End Female Thread w/Wrench Flats / One End Female Thread w/Cross-drilled Hole-	-Both Ends Female Thread-
Page	107	109	111	113






-Both Ends Female Thread w/Wrench Flats/w/Cross-drilled Hole-	Full Length Hardness Guaranteed Shafts	-One End Female Thread / Both Ends Female Thread Short Type-	-Set Screw Grooved- -Female Thread Pilot-
115	117	119	121






-One End Male Thread with O.D. same as Shaft O.D.-	-One End Male Thread-	-One End Male Thread w/Wrench Flats - w/Cross-drilled Hole-	-One End Male Thread with Undercut-
123	125	127	129






One End Male Thread w/Undercut and Wrench Flats / One End Male Thread w/Undercut and Cross-drilled Hole	-Both Ends Male Thread with O.D. same as Shaft O.D.-	-Both Ends Male Thread-	-Both Ends Male Thread w/ Wrench Flats w/Cross-drilled Hole-
131	133	135	137





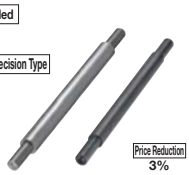

Price Reduction 3%

-Both Ends Male Thread w/Undercuts-	-Both Ends Male Thread w/Undercuts and Wrench Flats / Both Ends Male Thread w/Undercuts and Cross-drilled Hole	-One End Male Thread / One End Female Thread-	-One End Male Thread and One End Female Thread w/Wrench Flats / One End Male Thread and One End Female Thread w/Cross-drilled Hole
139	141	143	145






-One End Male Thread / One End Female Thread with Undercut-	-One End Male Thread and One End Female Thread w/Undercut and Wrench Flats / One End Male Thread and One End Female Thread w/Undercut and Cross-drilled Hole	-One End Stepped and Female Thread / One End Stepped-	-One End Stepped and Female Thread with Wrench Flats-
147	149	151	153






Price Reduction 3%

-Both Ends Stepped and Female Thread / Both Ends Stepped-	-Both Ends Stepped and Female Thread with Wrench Flats-	-One End Stepped and Both Ends Female Thread / One End Stepped and One End Female Thread	-One End Stepped / Both Ends Female Thread with Wrench Flats-
155	157	159	161

Newly Added



-One End Stepped and Male Thread / One End Female Thread-
163

Newly Added



-One End / Both Ends Stepped and Male Thread-
165

Newly Added



Price Reduction
3%

-One End Stepped and Female Thread - One End Male Thread / One End Stepped and Male Thread- Precision Shafts
167



-One End Stepped and Male Thread-
169



High Precision Shafts / Both Ends Stepped and Male Thread-
169



High Precision Shafts
169



-One End Stepped and Male Thread / One End Male Thread- Shafts -Surface Treatment Fully Plated-
171



-Hexagon Socket Type-
173



-One End Two Female Thread Holes Type-
175

Newly Added



Price Reduction
3%

-Retaining Ring Groove Type-
177

Newly Added



-Keyway Type-
179

Newly Added



-One End Tapered / One End Female Thread-
181



-One End Tapered / One End Stepped and Female Thread-
181

Newly Added



-One End Tapered / One End Male Thread-
181



-Shaft Hollow Type-
183



Price Reduction
Up to 12%

-One End Female Thread Hollow Shafts / Wrench Flats Type-
183



-Both Ends Female Thread Hollow / Wrench Flats Type-
185



-One End Male Thread Hollow Shafts / Wrench Flats Type-
185



-Both Ends Male Thread Hollow Shafts-
187



-One End Male Thread Hollow Shafts-
188



-One End Stepped Hollow Shafts-
189



-Both Ends Stepped Hollow Shafts-
190



-One End Stepped / One End Female Thread Hollow Shafts-
191



-Continuous Support - Predrilled and Female Thread-
192

Newly Added



-Shaft Ends Configurable Type-
193



Hollow Shafts -Shaft Ends Configurable Type-
195

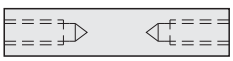
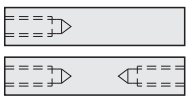
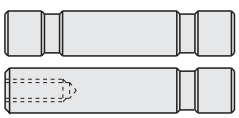


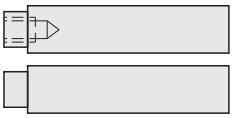
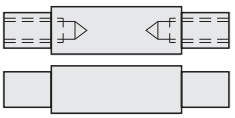
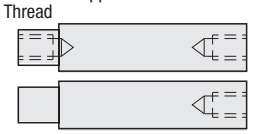
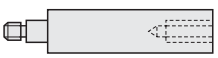
Washers for Linear Shafts
196

Shafts - Selection Guide

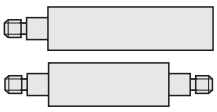
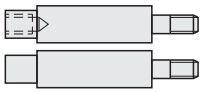
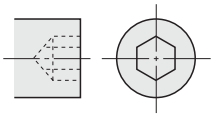
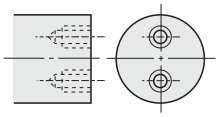
■Shaft Type Selection Chart

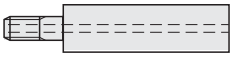
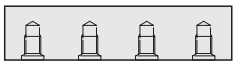
Please use hardened shafts (g6 / h5) for linear bushings, and plated shafts (f8) for oil-free bushings.

Shape			Page
Straight 		Standard	P.107
One End Female Thread 	w/o wrench flats	Precision type	P.109
	With wrench flats	Standard	P.111
	With cross-drilled holes.	Standard	P.111
Both Ends Female Thread 	w/o wrench flats	Precision type	P.113
	With wrench flats	Standard	P.115
	With cross-drilled holes.	Standard	P.115
One End Female Thread - Both Ends Female Thread Short Type (Full Length Hardness Guaranteed Shafts) 	w/o wrench flats	Standard	P.117
Set Screw Grooved 	w/o wrench flats	Standard	P.119
Female Thread Pilot 	w/o wrench flats	Standard	P.121
One End Male Thread 	w/o wrench flats	Precision type	P.123 P.125
	With wrench flats	Standard	P.127
	With cross-drilled holes.	Standard	P.127
One End Male Thread with Undercut 	w/o wrench flats	Precision type	P.129
	With wrench flats	Standard	P.131
	With cross-drilled holes.	Standard	P.131

Shape			Page
Both Ends Male Thread 	w/o wrench flats	Precision type	P.133 P.135
	With wrench flats	Standard	P.137
	With cross-drilled holes.	Standard	P.137
Both Ends Male Thread with Undercuts 	w/o wrench flats	Precision type	P.139
	With wrench flats	Standard	P.141
	With cross-drilled holes.	Standard	P.141
One End Male Thread - One End Female Thread 	w/o wrench flats	Precision type	P.143
	With wrench flats	Standard	P.145
	With cross-drilled holes.	Standard	P.145
One End Male Thread - One End Female Thread with Undercut 	w/o wrench flats	Precision type	P.147
	With wrench flats	Standard	P.149
	With cross-drilled holes.	Standard	P.149
One End Stepped and Female Thread - One End Stepped 	w/o wrench flats	Precision type	P.151
	With wrench flats	Standard	P.153
Both Ends Stepped and Female Thread / Both Ends Stepped 	w/o wrench flats	Precision type	P.155
	With wrench flats	Standard	P.157
One End Stepped - Both Ends Female Thread One End Stepped - One End Female Thread 	w/o wrench flats	Precision type	P.159
	With wrench flats	Standard	P.161
One End Male Thread and Stepped / One End Female Thread 	w/o wrench flats	Precision type	P.169
	With wrench flats	Standard	P.163

When used as rotary shafts, please see Rotary Shafts P.733~792
When used as a post, please see Posts P.1785~1862

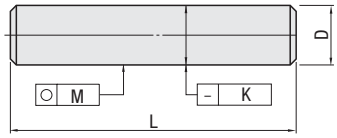
Shape			Page
One End / Both Ends Stepped and Male Thread 	w/o wrench flats	Precision type	P.169
	With wrench flats	Standard	P.165
One End Stepped and Female Thread - One End Male Thread One End Stepped / One End Male Thread 	w/o wrench flats	Standard	P.167
Surface Treatment Fully Plated Type Plating is also applied to shaft ends.		Standard	P.171
With a Hexagonal Socket on One End 		Standard	P.173
Two Female Thread Holes on One End 		Standard	P.175
With Retaining Ring Grooves 		Standard	P.177
Keyway 		Standard	P.179
With Taper 		Standard	P.181
Hollow Straight Shaft 	w/o wrench flats	Standard	P.183

Shape			Page
One End Female Thread Hollow Shafts 	w/o wrench flats With wrench flats	Standard	P.183
Hollow, Both Ends Female Thread 	w/o wrench flats With wrench flats	Standard	P.185
Hollow One End Male Thread 	w/o wrench flats With wrench flats	Standard	P.185
Hollow, Both Ends Male Thread 	w/o wrench flats	Standard	P.187
Hollow, One End Male Thread - One End Female Thread 	w/o wrench flats	Standard	P.188
Hollow, One End Stepped 	w/o wrench flats	Standard	P.189
Hollow, Both Ends Stepped 	w/o wrench flats	Standard	P.190
One End Stepped - One End Female Thread Hollow Shafts 	w/o wrench flats	Standard	P.191
Predrilled and Female Thread Radial Holes for Continuous Support 		Standard	P.192
Shaft End Configurable Type Wide variety of shaft-end configurations are available.		Standard	P.193
Hollow Shaft End Configurable Type Wide variety of shaft-end configurations are available.		Standard	P.195

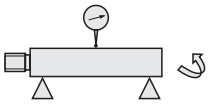
Shafts - Precision Standards

Accuracy Standards

Circularity · Straightness · L Dimension Accuracy



Straightness Measuring Method



Shaft ends are supported on V-blocks and turned 360 degrees to measure shaft runout using a dial indicator. 1/2 of measured runout is defined as the straightness.

O.D. g6/h5 Shafts (Hardening)

D Section Circularity

D		Circularity M
Over	Less than	
2	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

L · Y Dimension Tolerance

Dimension		Dimension Tolerance
Over	Less than	
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	1000	±0.8
1000	1500	±1.2

Straightness

D	L	Straightness K
3 · 4	N, A,	(L/100)x0.05 or less
5	N, A,	(L/100)x0.03 or less
6~50	100 or less	0.01 or less
	Over 100	(L/100) x 0.01 or less

O.D. Tolerance f8 Shafts (Annealing)

D Section Circularity

D		Circularity M
Over	Less than	
5	10	0.011
10	18	0.014
18	30	0.017
30	50	0.020

L · Y Dimension Tolerance

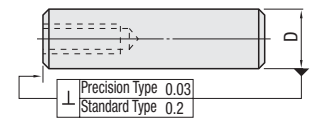
Dimension		Dimension Tolerance
Over	Less than	
3	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	1000	±0.8
1000	1500	±1.2

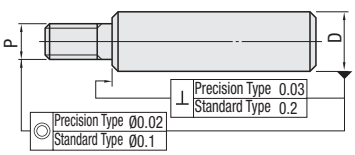
Straightness

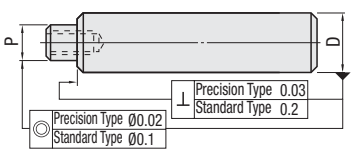
Condition L	Straightness K
L≤100	0.025 or less
L>100	(L/100)x0.025 or less

Concentricity · Perpendicularity

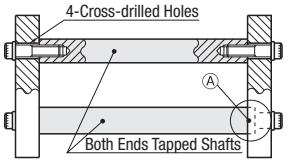
Precision Type Features: Straightness is ⊥ 0.03 , and coaxiality (Male Thread and Stepped) is ◎ Ø0.02







ex **Example**



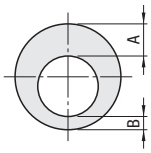
-Unlike Precision Type, A does not require stepped machining and has advantages at installation.

About Hollow Shaft Wall Thickness Deviations

Unit: mm

Outer Diameter (D)	1.3505/ 100Cr6 Wall Thickness Deviation Value	1.4125/ X105CrMo17 Wall Thickness Deviation Value
6	0.3 or less	-
8	0.4 or less	1.5 or less
10		4.0 or less
12		
13		
16		
20		
25	0.6 or less	
30	1.0 or less	
35		-
40	1.5 or less	
50		

As hollow shaft interior surfaces are not treated with plating, it may cause rust.



Deviation Value=A-B

Male Thread Relief Dimensions (PC · QC) (Reference Values)

Outer diameter tolerance g6·h5 Shafts (hardened)
· Outer diameter tolerance f8 Shafts (treated with plating)

When specifying Shafts with thread undercuts or adding thread undercut alterations (PC/QC), PC and QC dimensions are as the table below. When B (S) is specified, undercut width (g) is F-B (T-S).
Refer to the table below for the dimensions of PC and QC when combined with Fine Thread alterations (PMC, PMS, QMC, QMS, MMC, MMS, NMC and NMS).

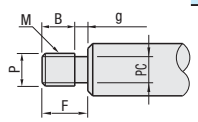
- For Coarse Threads

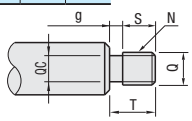
P(=M) Q(=N)	PC QC	F-B (T-S)
6	4.4	2
8	6.0	3
10	7.7	
12	9.4	4
16	13.0	
20	16.4	5
24	19.6	
30	25.0	

- When Combined with Fine Thread Alterations

PMC · MMC QMC · NMC	PC QC	F-B (T-S)
6	4.8	2.0
8	6.4	
10	8.4	
12	10.4	
15	13.4	
17	15.4	
20	18.4	
25	22.7	3.0
30	27.7	

PMS · MMS QMS · NMS	PC QC	F-B (T-S)
10	8.0	3.0
12	9.7	
14	11.7	
18	15.7	





Shaft Material · Hardness · Surface Treatment

M Material	Outer Diameter Tolerance	H Hardness	S Surface Treatment
1.3505/100Cr6	g6 · h7	Induction Hardening 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
1.4125/X105CrMo17 equivalent			
1.3505/100Cr6			Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
1.4125/X105CrMo17 equivalent			
1.3505/100Cr6	g6		LTBC Plating Thickness: 1 ~ 2μ
1.4125/X105CrMo17 equivalent			
1.1191/C45E	f8	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
1.4301/X5CrNi18-10			

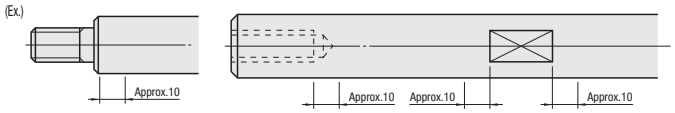
Effective Hardening Layer Depth of Shafts (hardened) with Outer Diameter Tolerance g7 · h5

Outer Diameter (D)	Effective Hardening Depth	
	1.3505/100Cr6	1.4125/X105CrMo17 equivalent
3	Over 0.5	Over 0.5
4		
5		
6~10		
12 / 13	0.7 or more	Over 0.5
15~20		0.7 or more
25~50	1.0 or more	

Notes on Hardening and Surface Treating.

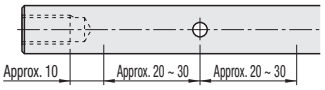
Reduced Hardness around Machined Areas

Alterations will be applied after base materials are case hardened.
In the example below, annealing required for machining may result in reduced hardness of the machined area +10mm fore and aft.



Annealing required for machining may lower hardness of following parts:
- All threaded shafts
- All stepped shafts
- Female Thread holes: if M≥D/2, RC threads, two tapped holes on ends, hard chrome plated 1.4125/X105CrMo17 products.
- Retaining ring grooves, keyway, tapers, hexagonal socket holes, wrench flats, set screw grooves
- Keyway, flats, 90-deg. flats, V-grooves
- Shaft Ends Configurable Type (G · H shape), Hollow Shafts (lateral hole on one side)

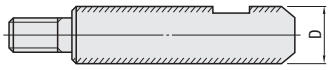
(Note) Excluding "Full Length Hardness Guaranteed Type"



-For 1.3505/100Cr6 material Shafts with cross-drilled holes and 20mm around 1.4125/X105CrMo17 material machined area, annealing may lower hardness in the range of 30mm around machined area.

Surface Treatment Plating Layers

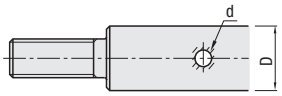
Machining is applied after the base material is surface treated.
For the case below, only D area ////// is treated with hard chrome plating and LTBC plating.
Hard chrome plating or LTBC plating will be removed from stepped, tapered and machined areas.
For features of LTBC, please see **P.118**
As hollow shaft interior surfaces are not treated with plating, it may cause rust.



Other above-said plating finished shapes are:
- Male Thread and tapped shafts
- Retaining ring grooves, keyway, tapers, hexagonal socket holes, wrench flats, set screw grooves
- Keyway, flats, 90-deg. flats, V-grooves

Fully Plated Shafts will have the plating on the entire shaft except centering holes and tapped sections.

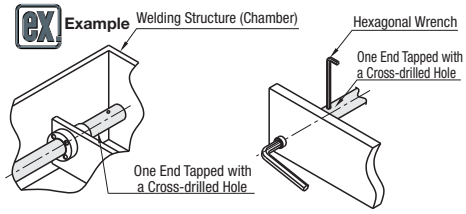
Cross-drilled Hole Dimension Details.



D	d
8	3
10	
12	
13	4
15	
16	

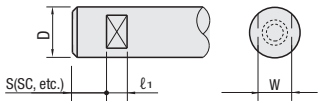
D	d
18	6
20	
25	7
30	

Cross-drilled hole areas may be out of O.D. tolerances due to annealing-induced deformation.
Hard chrome plating layers around machined area may be flaked by deburring. (////// area)
Hole position can be specified arbitrary to the other alterations.



-Shafts with cross-drilled holes are suitable for narrow work space.

Shafts: Detailed Wrench Flats Dimensions



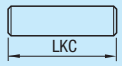
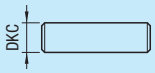
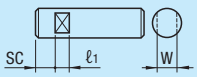
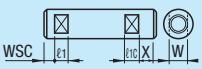
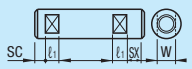
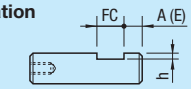
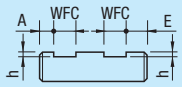
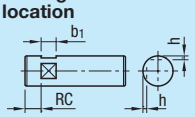
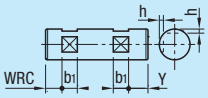
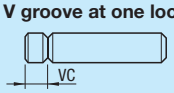
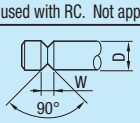
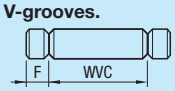
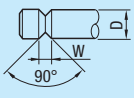
D	W	ℓ1
6	5	8
8	7	
10	8	
12	10	10
13	11	
15	13	
16	14	

D	W	ℓ1
18	16	10
20	17	
25	22	
30	27	15
35	30	
40	36	20
50	41	

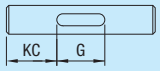
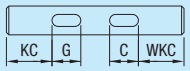
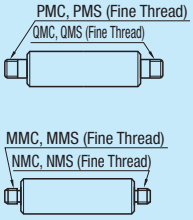
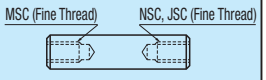
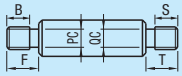
S (SC, etc)=1mm Increment
S (SC etc.)+ℓ1≤L
S (SC etc.) = 0 or S (SC etc.) ≥ 1
Cannot be machined on the same plane.
Hole position can be specified arbitrary to the other alterations.
⊗Not applicable to D = 3, 4, 5

Shaft Alteration Guide

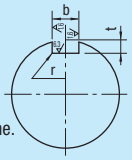
■Shaft alteration guide

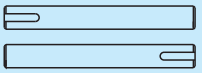
Alteration Type	Alterations	Code	Spec.	Price Adder
Tolerance Change	**L Dimension Tolerance Changes (Precision)** 	LKC	Changes "L Tolerance" to a higher precision level. Ⓟ L<200 ···› L±0.03 Ordering Code LKC 200≤L<500 ···› L±0.05 When using LKC, L dimensions can be specified in 0.1 increment L≥500 ···› L±0.1 Application Notes See each product page for details.	4,00
	Change to h5 O.D. tolerance 	DKC	Outer diameter tolerance is altered to h5. Ordering Code DKC Application Notes ⊗ DKC alterations are only applied to Hollow Shafts from June 2010 onwards. Please specify new part numbers on related page for orders. D: 6 → h5 Tolerance 0 -0.005; D: 8 · 10 → 0 -0.006; D: 12~16 → 0 -0.008; D: 20~30 → 0 -0.009; D: 35~50 → 0 -0.011	2,00
Wrench Flats	**Add a set of wrench flats.** 	SC	Wrench flat is added at one location. Ordering Code SC5 Ⓟ SC=1mm Increment Ⓟ SC+ℓ1≤L Ⓟ SC=0 or SC≥1 Application Notes Applicable to D = 6 and over ⊗Can not be used with WSC E D dimensions in ( ) are only applied to Shaft End Configurable Type P.193 D: 6 (7) W: 5 ℓ1: 8; 8 (9) 7; 10 8; 12 10; 13 11; (14) 15 13 10; 16 (17) 14; 18 (19) 16 D: 20 (22) W: 17 ℓ1: 10; (24) 25 (26) 22; (28) 30 (31 · 32) 27 15; 35 30; (38) 40 (45) 36 20; 50 41	4,00
	Add wrench flats at two locations 	WSC	Add wrench flat at two locations. Ordering Code WSC12-X8 Ⓟ Specify WSC/X in 1mm increments. Ⓟ WSC+X+ℓ1x2<L Ⓟ WSC (X)=0 or WSC (X)≥1 Application Notes Applicable to D = 6 and over ⊗Cannot be machined on the same plane. Can not be used with SC and SX E D dimensions in ( ) are only applied to Shaft End Configurable Type P.193 D: 6 (7) W: 5 ℓ1: 8; 8 (9) 7; 10 8; 12 10; 13 11; (14) 15 13 10; 16 (17) 14; 18 (19) 16 D: 20 (22) W: 17 ℓ1: 10; (24) 25 (26) 22; (28) 30 (31 · 32) 27 15; 35 30; (38) 40 (45) 36 20; 50 41	8,00
	Add wrench flats at two locations 	SX	Adds a second set of wrench flats. Ordering Code SX15 Ⓟ Specify SX in 1mm increments Ⓟ SC+SX+ℓ1x2<L Ⓟ SX = 0 or SX ≥ 1 Application Notes Applicable to D = 6 and over, only with wrench flats. ⊗Cannot be machined on the same plane. Can not be used with WSC. D: 6 W: 5 ℓ1: 8; 8 7; 10 8; 12 10; 13 11; 15 13 10; 16 14 D: 18 W: 16 ℓ1: 10; 20 17; 25 22; 30 27 15; 35 30; 40 36 20; 50 41	4,00
Set Screw Flat	**Add set screw flat at one location**  Ⓟ For specified FC locations, reference point varies depending on products. Please check the details in each section.	FC	Adds one set screw flat. Ordering Code FC10-A8, FC10-E8 Ⓟ Specify FC and A (E) in 1mm increments. Ⓟ FC≤3xD Ⓟ When 1.5XD<FC, FC≤L/2 Ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Cannot be used in combination with WFC, not applicable to Precision Type. D: 3~ 5 h: 0.5; 6~18 1; 20~40 2; 50 3	2,00
	Add set screw flats at two locations 	WFC	Adds 2 set screw flats. Ordering Code WFC10-A8-E20 Ⓟ Specify WFC, A and E in 1mm increments Ⓟ WFC≤3xD Ⓟ When 1.5xD<FC, 2WFC≤L/2 Ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Not available on the same plane. Not for use in combination with FC. Not applicable to precision type. D: 3~ 5 h: 0.5; 6~18 1; 20~40 2; 50 3	4,00
	Add 90-deg. set screw flat at one location 	RC	Adds 90-deg. set screw flats. Ordering Code RC10 Ⓟ RC=Specify in 1mm Increments Ⓟ RC+b1≤L Ⓟ RC≥2 Application Notes Applicable to D=10 ~ 30 ⊗Cannot be used with WRC, Not applicable to Precision Type D: 10 b1: 6 h: 0.5; 12~20 6 1.0; 25 10 1.0; 30 12 1.0	5,00
	2 x 90-deg. set screw flats 	WRC	Adds 2 sets of 90-deg. set screw flats. Ordering Code WRC10-Y10 Ⓟ Specify WRC in 1mm increments. Ⓟ WRC+b1≤L Ⓟ WRC (Y)≥2 Application Notes Applicable to D=10 ~ 30 ⊗Cannot be machined on the same plane. Can not be used with RC. Not applicable to Precision Type. D: 10 b1: 6 h: 0.5; 12~20 6 1.0; 25 10 1.0; 30 12 1.0	10,00
V-groove	**Add V groove at one location** 	VC	Adds one V-groove. Ⓟ VC=Specify in 1 mm Increments Ⓟ VC>W Application Notes Applicable to D = 6 and over ⊗Different from VC Hollow Shafts  D: 6 · 8 W: 2; 10~18 4; 20~25 6; 30~35 8; 40~50 12	2,00
	Two V-grooves. 	WVC	Two V-grooves. Ordering Code WVC180-F8 Ⓟ WVC/F=Specify in 1mm increments Ⓟ F>W Application Notes Applicable to D = 6 and over ⊗Different from WVC Hollow Shafts  D: 6 · 8 W: 2; 10~18 4; 20~25 6; 30~35 8; 40~50 12	4,00

■Shaft alteration guide

Alteration Type	Alterations	Code	Spec.	Price Adder
Keyway	**Keyway** Ⓟ A wide variety of Shafts with keyway alterations is available on Rotary Shaft pages. P.733~792 **Keyway at one location : KC**  **Keyways at two locations: WKC**  Ⓟ For specified KC locations, reference point varies depending on products. Please check the details on related pages.	**KC** **WKC**	KC: Keyway is added at one location Ordering Code KC10-G10 WKC: Keyways are added at two locations Ordering Code WKC10-C8-KC10-G10 Ⓟ KC / WKC / G / C=Specified in 1 mm Increment Ⓟ 4≤G / C≤30Ⓟ G / C≤L/3 Ⓟ 2≤KC / WKC≤L/3 Ⓟ G+C≤L/3Ⓟ Mx2<KC+F Ⓟ Only One End / Both Ends Stepped and Female Thread Mx2<KC+F Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗For WKC, keyways can not be added at two locations on the same plane. Not applicable to precision type Ⓟ When KC=0, keyway is shaped as the drawing on right. Ex.) Ⓟ When KC+G≥L, keyway is shaped as the drawing on right. Ex.)	KC :5,00 WKC: 10,00
Thread modifications	**Change to fine threads.** 	**PMC** **PMS** **QMC** **QMS** **MMC** **MMS** **NMC** **NMS**	Changes the threads to Fine Threads shown in the table below. (PMC / QMC / MMC / NMC → Applicable for Bearing nut fine threads) (PMS / QMS / MMS / NMS → Applicable for Cylinder fine thread pitches) Ordering Code PMC15Ⓟ Ex.) When requesting M15 with D20 and 1.0 bearing nut fine thread pitch, Ⓟ D dimensions in () are only applied to Shaft End Configurable Type. *marked sizes are not applicable for Precision Type. P.193	3,00
	Change to fine thread tap. 	**MSC** **NSC** **JSC**	Female Thread thread changed to fine thread listed in the table below. Ordering Code MSC14Ⓟ Ex.) When requesting M14 with D20 and 1.5 fine thread pitch, Application Notes Applicable to D = 6 or more ⊗Not applicable to precision shafts 35 and over.	3,00
	Undercut 	**PC** **QC**	PC: Add undercut(s) on P dimension area QC: Add undercut(s) on Q dimension area Ordering Code PC Ⓟ For detailed undercut dimensions, please see P.103 Application Notes Applicable to M = 6 or more ⊗Not applicable to D=Q and D=P	Free of charge

Shaft Diameter	b Nominal Dimension	b Tolerance (N9)	t Nominal Dimension	t Tolerance	r
12	4	0 -0.03	2.5	+0.1 0	0.08~0.16
16	5		3.0		
20	6		3.5		0.16~0.25
25	8	0 -0.036	4.0	+0.2 0	
30					





D	PMC · QMC · MMC · NMC									PMS · QMS · MMS · NMS			
*3	3												
*4	3	4											
5	3	*4	*5										
6 (7)	3	4	*5	*6									
8 (9)	3	4	5	6	*8								
10		4	5	6	8	*10				*10			
12			5	6	8	10	*12			10	*12		
13			5	6	8	10	*12			10			
15			5	6	8	10	12	*15		10	12		
(14) 16 (17)			5	6	8	10	12	*15		10	12	14	
18 (19)			5	6	8	10	12	15	*17	10	12	14	*18
20 (22)				6	8	10	12	15	17 *20	10	12	14	18
(24) 25 (26)					8	10	12	15	17 20 *25	10	12	14	18
(28) 30 (31 · 32)					8	10	12	15	17 20 25 *30	10	12	14	18
*35						10	12	15	17 20 25 30	10	12	14	18
(38) * 40 (45)							12	15	17 20 25 30		12	14	18
*50								15	17 20 25 30			14	18
Pitch	0.35	0.5	0.75	1.0					1.5	1.25	1.5		

D	MSC · NSC · JSC			
12 · 13	8			
15 · 16	8	10		
18	8	10	12	
20	8	10	12	14
25~35	8	10	12	14 18
40		10	12	14 18
50			12	14 18
Pitch	1.0	1.25	1.5	

■ Cautions for Alteration Selections

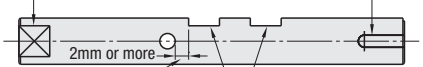
Ⓟ Alterations may lower hardness. P.104

Ⓟ When selecting multiple alteration additions, more than 2mm is needed between each feature to be added. (See below)

Ex.1

Wrench Flats (SC)
Ⓟ When the flats are to start from the ends, specify as "SC0".

Keyway Alteration (KC)
Ⓟ See Rotary Shaft pages for more variations. P.733~P.792 (Rotary Shaft Index)



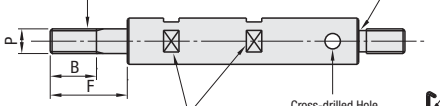
When Selecting Multiple Alterations
Ⓟ 2mm or more separation is required between machined sections.

Set Screw Flat
Ⓟ Not available on the same plane.
- WFC (Set Screw Flat)
-WSC (Wrench Flats)
-WRC (90-deg. Set Screw Flats)
-WKC (Keyway Alteration)

Ex.2

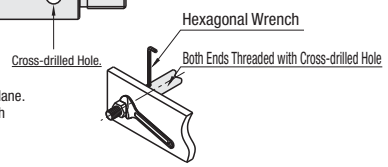
Threads
Ⓟ Correlation between F and B
When P≤6, B≤F-2
When P=8/10, B≤F-3
When P≤6, B≤F-5

Ⓟ F length 5≤F≤Px5
Ⓟ B length B≥Pitchx3



90-deg. Set Screw Flats (RC)
Ⓟ Not available on the same plane.
Ⓟ Recommended to use with Shaft Collars P.237

Male Thread Relief (PC · QC)
Ⓟ PC and QC alterations were previously available. Please select on the following pages.
One End Male Thread with Undercut
P.129-131-147-149
Both Ends Male Thread with Undercuts
P.139-141



- Shafts with cross-drilled holes are suitable for limited work spaces.

Shafts
-Straight Type-

Shaft length can be specified in 1mm increments.

RoHS

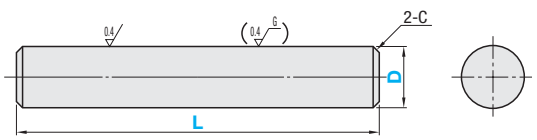


Features of LTBC P.118
For Circularity and Straightness, P.103

Type			M	H	S
D Tolerance g6	D Tolerance h5	D Tolerance f8	Material	Hardness	Surface Treatment
SFJ	SFU	-	1.3505	Induction Hardening Effective Hardening Depth P.104	-
SSFJ	SSFU	-	1.4125		
PSFJ	PSFU	-	1.3505	58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFJ	PSSFU	-	1.4125	56HRC~	
RSFJ	-	-	1.3505		LTBC
-	-	PSFG	1.1191	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	PSSFG	1.4301		

D Tolerance			
D	g6	h5	f8
3	-0.002 -0.008	0 -0.004	-
4			
5	-0.004 -0.012	0 -0.005	-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

Without Surface Treatment



Part Number Type	D	L 1mm Increments	C
(D Tolerance g6) SFJ SSFJ PSFJ PSSFJ RSFJ (D≤30, L≤500) / (D Tolerance h5) SFU SSFU PSFU PSSFU	3	10~ 400	0.2 or less
	4	10~ 400	
	5	10~ 400	
	6	20~ 600	0.5 or less
	8	20~ 800	
	10	20~ 800	
	12	20~1000	
	13	25~1000	
	15	25~1000	
	16	30~1200	
	18	30~1200	
	20	30~1200	1.0 or less
	25	35~1200	
	30	35~1500	
	35	35~1500	
	40	50~1500	
	50	65~1500	

Part Number Type	D	L 1mm Increments	C
(D Tolerance f8) PSFG PSSFG	6	20~ 600	0.5 or less
	8	20~ 800	
	10	20~ 800	
	12	20~1000	
	13	25~1000	
	15	25~1000	
	16	30~1200	
	18	30~1200	
	20	30~1200	1.0 or less
	25	35~1200	
	30	35~1500	
	35	35~1500	
	40	50~1500	
	50	65~1500	

Price

■Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
SFJ SFU	3・4・5												
	6												
	8												
	10												
	12												
	13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												
SSFJ SSFU	3												
	4・5												
	6												
	8												
	10												
	12・13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFJ PSFU	3												
	4												
	5												
	6												
	8												
	10												
	12												
	13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												
PSSFJ PSSFU	3												
	4												
	5												
	6												
	8・10												
	12・13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												

Part Number		€ Unit Price						
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSFJ	3 · 4 · 5							
	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1500
PSFG	6								
	8								
	10								
	12								
	13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFG	6								
	8								
	10								
	12								
	13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

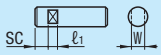
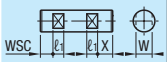
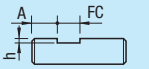
Alterations

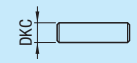
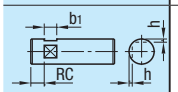
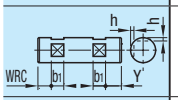
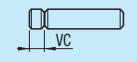
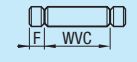
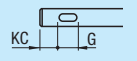
Part Number - L - (LKC / SC...etc.)
SFJ30 - 250 - LKC

10 Days (RSFJ is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFU, SSFU, PSFU and PSSFU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	L Dimension Tolerance Changes (Precision) Order number LKC When using LKC, L dimensions can be specified in 0.1 increments. Ⓟ L<200 ···L±0.03 200≤L<500···L±0.05 L≥500 ···L±0.1	4,00
	SC	Adds a set of wrench flats. Order number SC5 Application Notes Applicable to D = 6 and over SC=1mm Increment Ⓟ SC+ℓ1≤L Ⓟ SC=0 or SC≥1 Ⓧ can not be used with WSC D / W / ℓ1: 6/5/8; 8/7/8; 10/8/8; 12/10/10; 13/11/10; 15/13/10	4,00
	WSC	Add wrench flats at two locations Order number WSC12-X8 Application Notes Applicable to D = 6 and over Specify WSC/X in 1mm increm Ⓟ WSC+X+ℓ1x2<L Ⓟ WSC (X)=0 or WSC (X)≥1 Ⓧ Cannot be machined on the same plane. Can not be used with SC. D / W / ℓ1: 16/14/10; 18/16/10; 20/17/10; 25/22/10; 30/27/15; 35/30/15; 40/36/20; 50/41/20	8,00
	FC	Add Set Screw Flat at one location Order number FC10-A8 Specify FC and A in 1mm increments. Ⓟ FC≤3xD Ⓟ When 1.5xD<FC, FC≤L/2 Ⓟ A=0 or A ≥ 2 Ⓧ Can not be used with WFC D / h: 3~ 5 / 0.5; 6~18 / 1; 20~40 / 2; 50 / 3	2,00
	WFC	Add Set Screw Flats at two locations Order number WFC10-A8-E20 Specify WFC, A and E in 1mm increments Ⓟ WFC≤3xD Ⓟ When 1.5xD<FC, 2WFC≤L/2 Ⓟ A (E) = 0 or A (E) ≥ 2 Ⓧ Cannot be machined on the same plane. Cannot be combined with FC. D / h: 3~ 5 / 0.5; 6~18 / 1; 20~40 / 2; 50 / 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes Ⓧ Not applicable for RSFJ, PSFG and PSSFG are not applicable.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 Ⓧ Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 Ⓧ Cannot be used in combination with RC. Ⓧ Not available on the same plane.	10,00
	VC	Add V groove at one location Ordering Code VC8 Application Notes Applicable to D = 6 and over Ⓧ Can not be used with WVC	2,00
	WVC	Two V-grooves. Ordering Code WVC180-F8 Application Notes Applicable to D = 6 and over Ⓧ Can not be used with VC	4,00
	KC	One keyway is added. Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30.	5,00

For details, please see Alterations Overview P.105

Ⓟ Please see Alteration Guides for details if provided. P.105
Ⓟ For more than one alteration, 2mm or more separation required between machined sections. P.106
Ⓟ Alterations may lower hardness. P.104

Order Example

Part Number - L
SFJ20 - 75

Degreasing Service P.83

Days to Ship

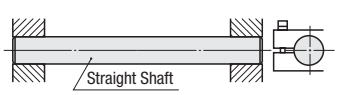
8 Days

5 Days

- RSFJ
13 Days

Express A 8,00 EUR/ unit
Ⓟ A Express Charge of 21,60 EUR for 3 or more pieces of identical products.

Example



Shafts -Standard Type / Precision Type-

One End Female Thread

NEW

For Shafts with wrench flats and cross-drilled holes, please see P.111



RoHS

Type				M Material	H Hardness	S Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFJT	SFJT	SFUT	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104	-
VSFJT	SSFJT	SSFUT	-	1.4125/X105CrMo17 equivalent		
VPFJT	PSFJT	PSFUT	-	1.3505/100Cr6	58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFJT	PSSFJT	PSSFUT	-	1.4125/X105CrMo17 equivalent	56HRC~	
VRJT	RSFJT	-	-	1.3505/100Cr6		LTBC
-	-	-	PSFGT	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGT	1.4301/X5CrNi18-10		

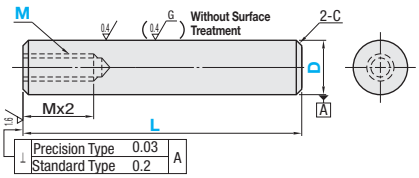
D Tolerance			
D	g6	h5	f8
4	-0.004 -0.012	0 -0.005	-
5			-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

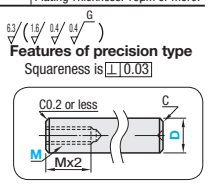
Full Length Hardness Guaranteed Shafts P.117

Changes in circularity, straightness, perpendicularity and hardness P.103

Features of LTBC P.118



When Mx2.5+4≥L, tap pilot hole may go through.



Precision Type has center holes at the end faces.

Part Number Type	D	L 1mm Increments	M (Coarse Threads) Selection	C
Precision type (D Tolerance g6) VFJT VSFJT VPFJT VPSFJT VRJT	4	25~200	2	0.2 or less
	5	25~300	2.6 3	
	6	25~300	3	0.5 or less
	8	25~300	3 4 5	
	10	25~350	3 4 5 6	
	12	25~350	4 5 6 8	
	13	25~350	4 5 6 8	
	15	25~350	4 5 6 8 10	
	16	25~350	4 5 6 8 10	
	18	25~350	4 5 6 8 10 12	
	20	30~450	4 5 6 8 10 12	1.0 or less
	25	30~450	4 5 6 8 10 12 16	
	30	30~450	6 8 10 12 16 20	

Part Number Type	D	L 1mm Increments	M (Coarse Threads) Selection	C
Standard Type (D Tolerance g6) SFJT SSFJT PSFJT PSSFJT RSFJT (D≤30, L≤500) (D Tolerance h5) SFUT SSFUT PSFUT PSSFUT (D Tolerance f8) PSFGT (D≥6) PSSFGT (D≥6)	4	20~ 300	2	0.2 or less
	5	20~ 400	2.6 3	
	6	20~ 600	3	0.5 or less
	8	20~ 800	3 4 5	
	10	20~ 800	3 4 5 6	
	12	20~1000	4 5 6 8	
	13	25~1000	4 5 6 8	
	15	25~1000	4 5 6 8 10	
	16	30~1200	4 5 6 8 10	
	18	30~1200	4 5 6 8 10 12	
	20	30~1200	4 5 6 8 10 12	1.0 or less
	25	35~1200	4 5 6 8 10 12 16	
	30	35~1500	6 8 10 12 16 20	
	35	35~1500	8 10 12 16 20 24	
	40	50~1500	10 12 16 20 24 30	
	50	65~1500	12 16 20 24 30	

Price

Volume Discount (Round down to one Cent.) P.88

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
SFJT SFUT	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFJT SSFUT	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
PSFJT PSFUT	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFJT PSSFUT	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

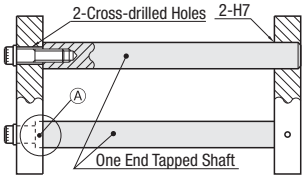
Part Number		€ Unit Price						
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFJT	4							
	5							
	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFGT	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFGT	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Part Number		€ Unit Price				
Type	D	Min. L ~ 50	L51~100	L101~200	L201~300	L301~450
VFJT	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VSFJT	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VRJT	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

Part Number		€ Unit Price				
Type	D	Min. L ~ 50	L51~100	L101~200	L201~300	L301~450
VPFJT	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VPSFJT	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

Example



-Precision Type A requires no steps and is effective for assembly.

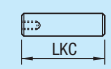
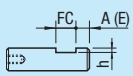
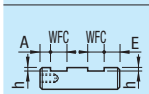
Alterations Part Number - L - M (MSC) - (LKC...etc.)
SFJT30 - 250 - M12 - LKC

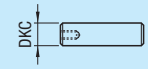
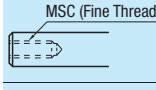
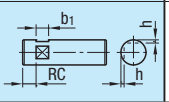
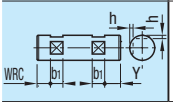
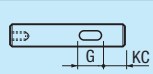
Keyway machining (KC) only.

10 Days
(RSFJT is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUT, SSFUT, PSFUT and PSSFUT on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type When using LKC, L dimensions can be specified in 0.1 increments. Ⓨ L<200 ···→L±0.03 200≤L<500 ···→L±0.05 L≥500 ···→L±0.1	4,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. Ⓨ FC≤3xD Ⓨ When 1.5xD<FC, FC≤L/2 Ⓨ E=0 or E≥2 ⊗ Can not be used with WFC D: 4~5 → h: 0.5; 6~18 → 1; 20~40 → 2; 50 → 3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments Ⓨ WFC≤3xD Ⓨ When 1.5xD<FC, 2WFC≤L/2 Ⓨ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Cannot be combined with FC.	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance and Not applicable to LTBC Plated Shafts.	-
	MSC	Change to fine thread tap. Ordering Code MSC14 (M is changed to MSC) Application Notes Applicable for D = 6 or more	3,00
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	KC	One keyway is added. Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	5,00

Ⓨ Please see Alteration Guides for details if provided. P.105
Ⓨ For more than one alteration, 2mm or more separation required between machined sections. P.106
Ⓨ Alterations may lower hardness. P.104

Order Example
Part Number - L - M
VFJT8 - 200 - M4
RSFJT20 - 325 - M8

Days to Ship
8 Days | Express A | 8,00 EUR/unit | 5 Days | P.88
Ⓨ A Express Charge of 21,60 EUR for 3 or more pieces of identical products.

- VFJT · VSFJT · VPFJT · VPSFJT · VRJT
10 Days | Express B | 8,00 EUR/unit | P.88
Ⓨ A Express Charge of 21,60 EUR for 3 or more pieces of identical products.
⊗Express is not available for VRJT.

- RSFJT
13 Days

Degreasing Service P.83

Shafts -Standard Type / Precision Type-

One End Female Thread with Wrench Flats / One End Female Thread with Cross-drilled Hole-

For Shafts w/o wrench flats or cross-drilled holes, please see P.109



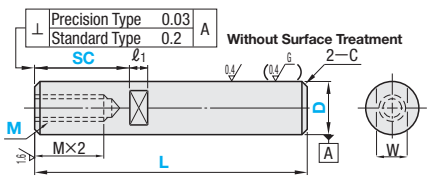
Type						Material	Hardness	Surface Treatment
With Wrench Flats			With Cross-drilled Holes					
Precision Type	Standard							
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8			
VFJC	SFJC	SFUC	-	SFHC	-	1.3505	Induction Hardening Effective Hardening Depth P.104	-
VSFJC	SSFJC	SSFUC	-	SSFHC	-	1.4125		
VPFJC	PSFJC	PSFUC	-	PSFHC	-	1.3505	1.3505/100Cr6 58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~Plating Thickness:5μ or more
VPSFJC	PSSFJC	PSSFUC	-	PSSFHC	-	1.4125	1.4125/X105CrMo17 equivalent 56HRC~	
VRJC	RSFJC	-	-	RSFHC	-	1.3505		LTBC
-	-	-	PSFGC	-	PSGHC	1.1191	-	Hard Chrome Plating Plating Hardness: HV750 ~Plating Thickness: 10μm or more.
-	-	-	PSSFGC	-	-	1.4301		

D Tolerance			
D	g6	h5	f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

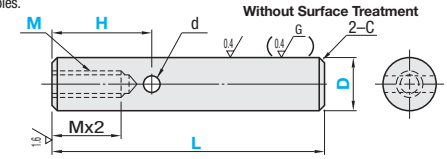
- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104
- Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.
- Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103
- Features of LTBC P.118

When Mx2.5+4≥L, tap pilot hole may go through.

With wrench flats

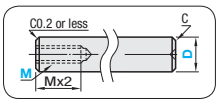


With cross-drilled holes. (8≤D≤30, L≤500)



Features of Precision Type

Squareness is ⊥ 0.03



Precision Type has center holes at the end faces.

Part Number Type	D	L 1mm Increments	M (Coarse Threads) Selection	Wrench Flats Dimensions W	Wrench Flats Dimensions ℓ1	C
Precision Type (Shafts with Wrench Flats) (D Tolerance g6) VFJC VSFJC VPFJC VPSFJC VRJC	6	25~300	3	5	8	0.5 or less
	8	25~300	3 4 5	7		
	10	25~350	3 4 5 6	8		
	12	25~350	4 5 6 8	10		
	13	25~350	4 5 6 8	11		
	15	25~350	4 5 6 8 10	13		
	16	25~350	4 5 6 8 10	14	10	
	18	25~350	4 5 6 8 10 12	16		
	20	30~450	4 5 6 8 10 12	17		
	25	30~450	4 5 6 8 10 12 16	22		1.0 or less
	30	30~450	6 8 10 12 16 20	27	15	

SC=1mm Increment
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Part Number Type	D	L 1mm Increments	M (Coarse Threads) Selection	Wrench Flats Dimensions W	Wrench Flats Dimensions ℓ1	Cross-drilled Hole Dimensions H	Cross-drilled Hole Dimensions d	C
Standard Type (Shafts with Wrench Flats) (D Tolerance g6) SFJC SSFJC PSFJC PSSFJC RSFJC(D≤30, L≤500) (D Tolerance f8) PSFGC PSSFGC	6	20~600	3	5	8	-	-	0.5 or less
(D Tolerance h5) SFUC SSFUC PSFUC PSSFUC	8	20~800	3 4 5	7			3	
(Shafts with Cross-drilled Holes) 8≤D≤30, L≤500 (D Tolerance g6) SFHC SSFHC PSFHC PSSFHC RSFHC (D Tolerance f8) PSGHC	10	20~800	3 4 5 6	8				
	12	20~1000	4 5 6 8	10				
	13	25~1000	4 5 6 8	11				
	15	25~1000	4 5 6 8 10	13				
	16	30~1200	4 5 6 8 10	14	10	H=Specified in 1mm Increments L≥H+d/2+2 H≥Mx2.5+d/2+6	4	
	18	30~1200	4 5 6 8 10 12	16				
	20	30~1200	4 5 6 8 10 12	17			6	
	25	35~1200	4 5 6 8 10 12 16	22				
	30	35~1500	6 8 10 12 16 20	27	15		7	1.0 or less
	35	35~1500	8 10 12 16 20 24	30				
	40	50~1500	10 12 16 20 24 30	36	20	-	-	
	50	65~1500	12 16 20 24 30	41				

SC=1mm Increment
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
SFJC	6												
	8												
	10												
	12 · 13												
SFUC	15 · 16												
	18 · 20												
SFHC	25												
	30												
	35												
	40												
	50												
SSFJC	6												
	8												
	10												
	12 · 13												
SSFUC	15 · 16												
	18 · 20												
SSFHC	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
PSFJC	6												
	8												
	10												
	12 · 13												
PSFUC	15 · 16												
	18 · 20												
PSFHC	25												
	30												
	35												
	40												
	50												
PSSFJC	6												
	8												
	10												
	12 · 13												
PSSFUC	15 · 16												
	18 · 20												
PSSFHC	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤500)

Part Number		€ Unit Price						
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFJC / RSFHC	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price						
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFGC / PSGHC	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFGC	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

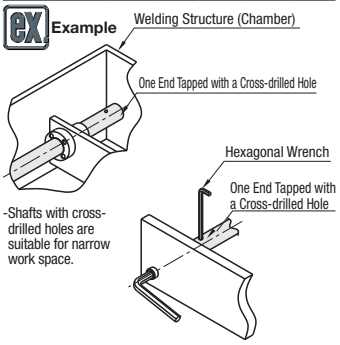
Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 450
VFJC	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VSFJC	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VRJC	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 450
VPFJC	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VPSFJC	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

Price Deductions for Shafts with Cross-drilled Holes

D	Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

Example



-Shafts with cross-drilled holes are suitable for narrow work space.

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤50)

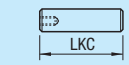
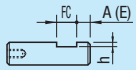
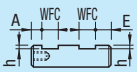
Alterations

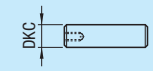
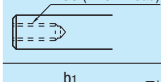
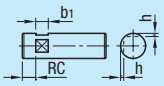
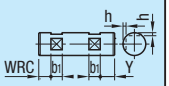
Part Number - L - M (MSC) - SC - H - (LKC...etc.)
SFJC30 - 250 - M12 - SC10 - LKC

Keyway machining (KC) only.
10 Days
(RSFJC and RSFHC are to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010. Please specify new part numbers; SFUC, SSFUC, PSFUC and PSSFUC on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type When using LKC, L dimensions can be specified in 0.1 increments. L<200 ···L±0.03 200≤L<500 ···L±0.05 L≥500 ···L±0.1	4,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. FC≤3xD When 1.5xD<FC, FC≤L/2 E=0 or E≥2 ⊗ Can not be used with WFC D: 6~18 h:1; 20~40 h:2; 50 h:3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E2 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments WFC≤3xD When 1.5xD<FC, 2WFC≤L/2 A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D: 6~18 h:1; 20~40 h:2; 50 h:3	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Only applicable for Shafts with Wrench Flats Specify SX in 1mm increments SC+SX+ℓ1x2<L SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D: 6 W: 5 ℓ1: 8; 8 7; 10 8; 12 10; 13 11; 15 13; 16 14 ℓ1: 10 D: 18 16; 20 17; 25 22; 30 27; 35 30; 40 36; 50 41 ℓ1: 10; 15; 20	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Shaft with Cross-drilled holes, Precision Type, D Tolerance f8, Not applicable to LTBC Plated Shafts.	-
	MSC	Change to fine thread tap. Ordering Code MSC14 (M is changed to MSC) Application Notes Applicable for D = 6 or more	3,00
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	KC	One keyway is added. Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	5,00

For details, please see Alterations Overview P.105

Please see Alteration Guides for details if provided. P.105
For more than one alteration, 2mm or more separation required between machined sections.
Alterations requires more than 2mm separation between wrench flats and cross-drilled holes.
Alterations may lower hardness. P.104

Order Example

Part Number - L - M - SC - H
VFJC10 - 200 - M5 - SC6
SFHC20 - 425 - M8 - H20

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VFJC- VSFJC · VPFJC · VPSFJC · VPJC
10 Days — Express B 8,00 EUR/unit P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRJC.

- RSFJC · RSFHC
13 Days

Degreasing Service P.83

Shafts -Standard Type / Precision Type-
-Both Ends Female Thread-

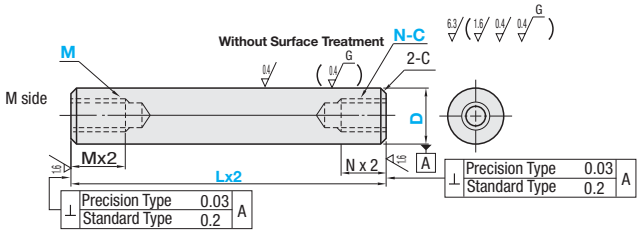
For Shafts with wrench flats and cross-drilled holes, please see P.115

RoHS



Type				M Material	H Hardness	S Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFJW	SFJW	SFUW	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFJW	SSFJW	SSFUW	-	1.4125/X105CrMo17 equivalent		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPFJW	PSFJW	PSFUW	-	1.3505/100Cr6		
VPSFJW	PSSFJW	PSSFUW	-	1.4125/X105CrMo17 equivalent		LTBC
VRJW	RSFJW	-	-	1.3505/100Cr6		
-	-	-	PSFGW	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGW	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
4	-0.004 -0.012	0 -0.005	-
5			-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Full Length Hardness Guaranteed Shafts P.117

Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103

Features of LTBC P.118

L needs to be M x 2 + N x 2 ≤ L When Mx2.5+4+Nx2.5+4≥L, tap pilot hole may go through.

Part Number Type	D	L 1mm Increments	M (Coarse Threads) / N (Coarse Threads) Selection	C
Precision Type (D Tolerance g6) VFJW VSFJW VPFJW VPSFJW VRJW	4	25~200	2	0.2 or less
	5	25~300	2.6 3	
	6	25~300	3	
	8	25~300	3 4 5	
	10	25~350	3 4 5 6	
	12	25~350	4 5 6 8	
	13	25~350	4 5 6 8	
	15	25~350	4 5 6 8 10	
	16	25~350	4 5 6 8 10	
	18	25~350	4 5 6 8 10 12	
	20	30~450	4 5 6 8 10 12	
	25	30~450	4 5 6 8 10 12 16	
	30	30~450	6 8 10 12 16 20	

Part Number Type	D	L 1mm Increments	M (Coarse Threads) / N (Coarse Threads) Selection	C
Standard Type (D Tolerance g6) SFJW SSFJW PSFJW PSSFJW RSFJW(D≤30, L≤500) (D Tolerance h5) SFUW SSFUW PSFUW PSSFUW (D Tolerance f8) PSFGW PSSFGW	4	20~ 300	2	0.2 or less
	5	20~ 400	2.6 3	
	6	20~ 600	3	0.5 or less
	8	20~ 800	3 4 5	
	10	20~ 800	3 4 5 6	
	12	20~1000	4 5 6 8	
	13	25~1000	4 5 6 8	
	15	25~1000	4 5 6 8 10	
	16	30~1200	4 5 6 8 10	
	18	30~1200	4 5 6 8 10 12	
	20	30~1200	4 5 6 8 10 12	1.0 or less
	25	35~1200	4 5 6 8 10 12 16	
	30	35~1500	6 8 10 12 16 20	
	35	35~1500	8 10 12 16 20 24	
	40	50~1500	10 12 16 20 24 30	
	50	65~1500	12 16 20 24 30	

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
SFJW SFUW	4												
	5												
	6												
	8												
	10												
	12 • 13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												
SSFJW SSFUW	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFJW PSFUW	4												
	5												
	6												
	8												
	10												
	12 • 13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												
PSSFJW PSSFUW	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

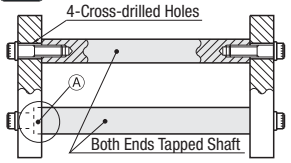
Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFJW	4							
	5							
	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFGW	6								
	8								
	10								
	12 • 13								
	15 • 16								
	18 • 20								
	25								
	30								
	35								
	40								
	50								
PSSFGW	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 450
VFJW	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VSFJW	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VRJW	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 450
VPFJW	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VPSFJW	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

Example



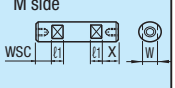
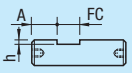
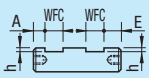
-Unlike Type A, Precision Type requires no steps and is effective for assembly.

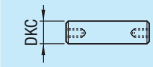
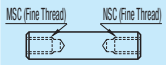
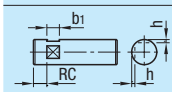
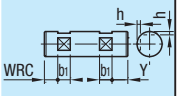
Alterations Part Number - L - M (MSC) - N (NSC) - (LKC...etc.)
SFJW30 - 500 - M8 - N10 - LKC

Days to Ship

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUW, SSFUW, PSFUW and PSSFUW on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code: LKC Application Notes: Applicable when L=200 or less for precision type When using LKC, L dimensions can be specified in 0.1 increments. (P) L<200 ····L±0.03 200≤L<500····L±0.05 L≥500 ····L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code: WSC12-X8 Application Notes: Applicable to D = 6 and over Specify WSC/X in 1mm increments. (P) WSC+X+ℓ1x2<L (P) WSC (X)=0 or WSC (X)≥1 ⊗ Not available on the same plane. ⊗ Cannot be combined with FC.	8,00
	FC	Add set screw flat at one location Ordering Code: FC10-A8 Application Notes: ⊗Not applicable to precision type Specify FC and A in 1mm increments. (P) FC≤3xD (P) When 1.5xD<FC, FC≤L/2 (P) E=0 or A≥2 ⊗ Can not be used with WFC	2,00
	WFC	Add set screw flats at two locations Ordering Code: WFC8-A8-E2 Application Notes: ⊗Not applicable to precision type Specify WFC, A and E in 1mm increme (P) WFC≤3xD (P) When 1.5xD<FC, 2WFC≤L/2 (P) A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC.	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code: DKC Application Notes: ⊗Not applicable for Precision Type, Shafts with D tolerance f8 and LTBC plating.	-
	MSC NSC	Change to fine thread tap. Ordering Code: MSC14 (M is changed to MSC) NSC14 (N is changed to NSC) Application Notes: Applicable to D = 6 or more	3,00
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code: RC10 Application Notes: Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code: WRC10-Y10 Application Notes: Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00

For details, please see Alterations Overview P.105

(P)Please see Alteration Guides for details if provided. P.105
(P)For more than one alteration, 2mm or more separation required between machined sections. P.106
(P)Alterations may lower hardness. P.104

Price Part Number - L - M - N
VFJW8 - 200 - M4 - N4
SSFJW20 - 500 - M6 - N10

Degreasing Service P.83

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P. 88
(P)A Express Charge of 21,60 EUR for 3 or more pieces of identical products.
- VFJW · VSFJW · VPFJW · VPSFJW · VRJW

10 Days — Express B 8,00 EUR/unit P. 88
(P)A Express Charge of 21,60 EUR for 3 or more pieces of identical products.
⊗Express is not available for VRJW.

- RSFJW
13 Days

Shafts -Standard Type / Precision Type-

-Both Ends Female Thread with Wrench Flats / Both Ends Female Thread with Cross-drilled Holes-

For Shafts w/o wrench flats or cross-drilled holes, please see P.113



Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104
Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.
Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103
Features of LTBC P.118

Type						M Material	H Hardness	S Surface Treatment
With Wrench Flats				With Cross-drilled Holes.				
Precision type	Standard							
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8			
VFJZ	SFJZ	SFUZ	-	SFHZ	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104	-
VSFJZ	SSFJZ	SSFUZ	-	SSFHZ	-	1.4125/ equivalent		
VPFJZ	PSFJZ	PSFUZ	-	PSFHZ	-	1.3505/100Cr6	58HRC ~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFJZ	PSSFJZ	PSSFUZ	-	PSSFHZ	-	1.4125/ equivalent	1.4125/X105CrMo17 equivalent 56HRC ~	LTBC
VRJZ	RSFJZ	-	-	RSFHZ	-	1.3505/100Cr6		
-	-	-	PSFGZ	-	PSGHZ	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGZ	-	-	1.4301/X5CrNi18-10		

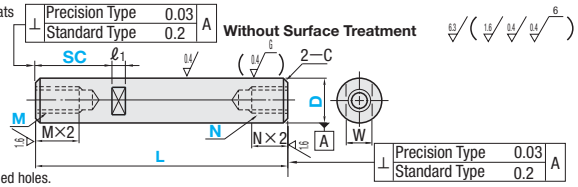
D Tolerance			
D	g6	h5	f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

L needs to be M x 2 + N x 2 ≤ L When Mx2.5+4+Nx2.5+4≥L, tap pilot hole may go through.

With wrench flats

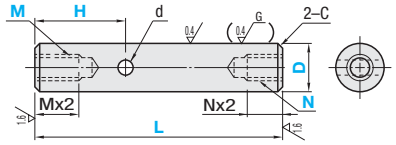
Precision Type	0.03	A
Standard Type	0.2	

Without Surface Treatment



With cross-drilled holes.
(8≤D≤30, L≤500)

Without Surface Treatment



Part Number Type	D	L 1mm Increments	M (Coarse Threads) / N (Coarse Threads) Selection	Wrench Flats Dimensions W	Wrench Flats Dimensions ℓ1	C
Precision Type (Shafts with Wrench Flats) (D Tolerance g6) VFJZ VSFJZ VPFJZ VPSFJZ VRJZ	6	25~300	3	5	8	0.2 or less
	8	25~300	3 4 5	7		
	10	25~350	3 4 5 6	8		
	12	25~350	4 5 6 8	10		
	13	25~350	4 5 6 8	11		
	15	25~350	4 5 6 8 10	13		
	16	25~350	4 5 6 8 10	14	10	
	18	25~350	4 5 6 8 10 12	16		
	20	30~450	4 5 6 8 10 12	17		
	25	30~450	4 5 6 8 10 12 16	22		
	30	30~450	6 8 10 12 16 20	27	15	

SC=1mm Increment
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Part Number Type	D	L 1mm Increments	M (Coarse Threads) / N (Coarse Threads) Selection	Wrench Flats Dimensions W	Wrench Flats Dimensions ℓ1	Cross-drilled Hole Dimensions H	Cross-drilled Hole Dimensions d	C
Standard Type (Shafts with Wrench Flats) (D Tolerance g6) SFJZ SSFJZ PSFJZ PSSFJZ RSFJZ (D≤30, L≤500) (D Tolerance f8) PSFGZ PSSFGZ	6	20~600	3	5	8	-	-	0.5 Less than
	8	20~800	3 4 5	7				
(Shafts with Cross-drilled Holes) 8≤D≤30, L≤500 (D Tolerance h5) SFUZ SSFUZ PSFUZ PSSFUZ (D Tolerance g6) SFHZ SSFHZ PSFHZ PSSFHZ RSFHZ (D Tolerance f8) PSGHZ	10	20~800	3 4 5 6	8			3	
	12	20~1000	4 5 6 8	10				
	13	25~1000	4 5 6 8	11				
	15	25~1000	4 5 6 8 10	13		H=Specified in 1mm Increments L≥H+d/2+Nx2.5+6 H≥Mx2.5+d/2+6	4	
	16	30~1200	4 5 6 8 10	14	10			
	18	30~1200	4 5 6 8 10 12	16			6	
	20	30~1200	4 5 6 8 10 12	17				
	25	35~1200	4 5 6 8 10 12 16	22			7	1.0 Less than
	30	35~1500	6 8 10 12 16 20	27	15			
	35	35~1500	8 10 12 16 20 24	30				
	40	50~1500	10 12 16 20 24 30	36	20	-	-	
	50	65~1500	12 16 20 24 30	41				

SC=1mm Increment
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
SFJZ SFUZ SFHZ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFJZ SSFUZ SSFHZ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
PSFJZ PSFUZ PSFHZ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFJZ PSSFUZ PSSFHZ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.
For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤500)

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSFJZ / RSFHZ	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 450
VFJZ	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VSFJZ	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VRJZ	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 450
VPFJZ	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					
VPSFJZ	6					
	8					
	10					
	12					
	13					
	15 · 16					
	18					
	20					
	25					
	30					

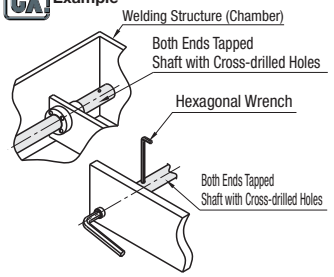
Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1500
PSFGZ / PSGHZ	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFGZ	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤50)

Price Deductions for Shafts with Cross-drilled Holes

D	Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

Example



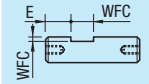
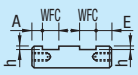
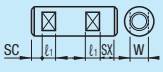
-Shafts with cross-drilled holes are suitable for narrow work space.

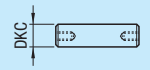
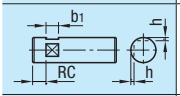
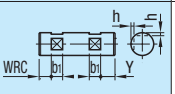
Alterations

Part Number - L - M (MSC) - N (NSC) - SC - H - (LKC...etc.)
SFJZ30 - 500 - M8 - N10 - SC10 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUZ, SSFUZ, PSFUZ and PSSFUZ on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type When using LKC, L dimensions can be specified in 0.1 increments. L<200 ···→L±0.03 200≤L<500···→L±0.05 L≥500 ···→L±0.1	4,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-A8 Application Notes ⊗Not applicable to precision type Specify FC and A in 1mm increments. FC≤3xD When 1.5xD<FC, FC≤L/2 A=0 or A ≥ 2 ⊗ Can not be used with WFC D: 6–18 h:1; 20–40 h:2; 50 h:3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E2 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments WFC≤3xD When 1.5xD<FC, 2WFC≤L/2 A (E) = 0 or A (E) ≥ 2 ⊗Cannot be machined on the same plane. Cannot be combined with FC. D: 6–18 h:1; 20–40 h:2; 50 h:3	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Applicable to "Shafts with Wrench Flats" only. Specify SX in 1mm increments SC+SX+ℓ1x2<L SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D: 6 W:5; 8 W:7; 10 W:8; 12 W:10; 13 W:11; 15 W:13; 16 W:14; ℓ1=10 D: 18 W:16; 20 W:17; 25 W:22; 30 W:27; 35 W:30; 40 W:36; 50 W:41; ℓ1=8; 10; 15; 20	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Shaft with Cross-drilled holes, Precision Type, D Tolerance f8, Not applicable to LTBC Plated Shafts.	-
	MSC NSC	Change to fine thread tap. Ordering Code MSC14 (M is changed to MSC) NSC14 (N is changed to NSC) Application Notes Applicable to D = 6 or more	3,00
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00

For details, please see Alterations Overview P.105

Please see Alteration Guides for details if provided. P.105
For more than one alteration, 2mm or more separation required between machined sections.
Alterations requires more than 2mm separation between wrench flats and cross-drilled holes.
Alterations may lower hardness. P.104

Order Example

Part Number - L - M - N - SC - H
VFJZ10 - 200 - M5 - N5 - SC10
SSFHZ20 - 500 - M6 - N10 - H20

Degreasing Service P.83

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VFJZ · VSFJZ · VPFJZ · VPSFJZ · VRJZ

10 Days — Express B 8,00 EUR/unit — 5 Days P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRJZ.

- RSFJZ · RSFHZ

13 Days

Full Length Hardness Guaranteed Shafts

-One End / Both Ends Female Thread Short Types-

Feature: Other shaft products may suffer from lowered hardness areas due to annealing required for tapping.
The "Full Length Hardness Guaranteed" shafts maintain the case hardness over the entire length, well suited for short stroke applications.

RoHS

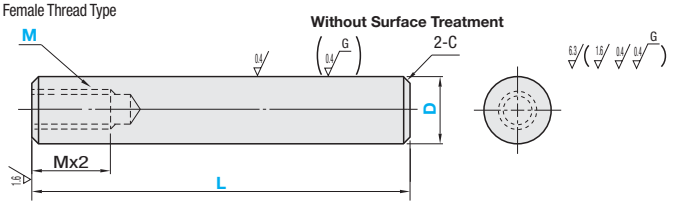


Features of LTBC P.118
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness.
P.104

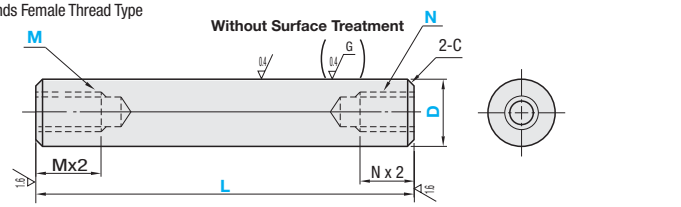
Type		D Tolerance	M Material	H Hardness		S Surface Treatment
One End Female Thread	Both Ends Female Thread					
SFAT	SFAW	g6	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104		-
SSFAT	SSFAW		1.4125/X105CrMo17 equivalent			
RSFAT	RSFAW		1.3505/100Cr6	1.3505/100Cr6	58HRC ~	LTBC
				1.4125/X105CrMo17 equivalent	56HRC ~	

D	D Tolerance
6	-0.004 -0.012
8	-0.005 -0.014
10	
12	-0.006 -0.017
13	
15	
16	
18	
20	-0.007 -0.020

One End Female Thread Type



Both Ends Female Thread Type



Part Number Type	D	L 1mm Increments	M (Coarse Threads) / N (Coarse Threads) Selection						C
One End Female Thread Type / Both Ends Female Thread Type	6	20~150	3						0.5 or less
	8	20~150	3	4	5				
	10	20~150	3	4	5	6			
	12	20~150		4	5	6	8		
SFAT SFAW	13	25~150		4	5	6	8		
SSFAT SSFAW	15	25~150		4	5	6	8	10	
RSFAT RSFAW	16	30~150		4	5	6	8	10	
	18	30~150		4	5	6	8	10	12	
	20	30~150		4	5	6	8	10	12	1.0 or less

L needs to be M x 2 + N x 2 ≤ L
When Mx2.5+4+Nx2.5+4≥L, tap pilot hole may go through.

Order Example

Part Number	-	L	-	M	-	N
SFAT20	-	80	-	M6		
SFAW15	-	100	-	M6	-	N10

Days to Ship

8 Days
5 Days
-RSFAT · RSFAW
13 Days

Express A 8,00 EUR/ unit P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Degreasing Service P.83

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount rates	€ Unit Price	5%	10%	15%

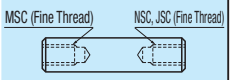
Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L ~ 40	L41~60	L61~80	L81~100	L101~125	L126~150
SFAT	6						
	8						
	10						
	12						
	13						
	15 · 16						
	18 · 20						
SSFAT	6						
	8 · 10						
	12 · 13						
	15 · 16						
	18 · 20						
RSFAT	6						
	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						

Part Number Type	D	€ Unit Price Min. L ~ 40	L41~60	L61~80	L81~100	L101~125	L126~150
SFAW	6						
	8						
	10						
	12						
	13						
	15 · 16						
	18 · 20						
SSFAW	6						
	8 · 10						
	12 · 13						
	15 · 16						
	18 · 20						
RSFAW	6						
	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						

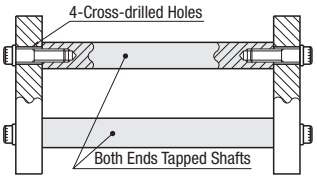
Alterations

Part Number	-	L	-	M (MSC)	-	N (NSC)	- (LKC)
SSFAW16	-	120	-	MSC8	-	NSC10	

Alterations	Code	Spec.	€
	LKC	L Dimension Tolerance Changes (Precision) Ordering Code LKC When using LKC, L dimensions can be specified in 0.1 increments. L<150···L±0.03	
	MSC NSC	Change to fine thread tap. Applicable to D=12 or more Ordering Code MSC14 (M is changed to MSC) NSC14 (N is changed to NSC) M(N) dimensions are equal to MSC (NSC).	

D	MSC · NSC			
12 / 13	8			
15 / 16	8	10		
18	8	10	12	
20	8	10	12	14
Pitch	1.0	1.25	1.5	

Example

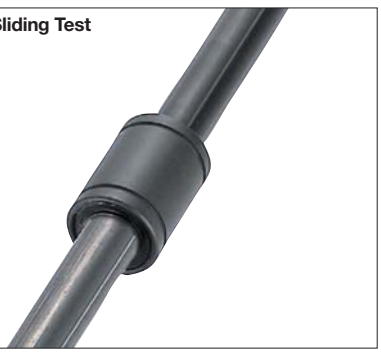


As Full Length Hardness Guaranteed shafts cause no hardness loss, they are well suited for short stroke sliding.

■ LTBC plating on linear shafts:

Type: LTBC plating without fluoropolymer layer.
Thickness: 1μm~2μm thick. Shaft outer diameter tolerance remains g6 after LTBC plating is applied.
Corrosion protection: Normal rust prevention effect (better than black oxide, and less than LTBC with fluoropolymer layer on top and suitable in normal environment.
Material benefits: Chemically deposited at low temperature without any change in material structure.
Peeling: The coating is resistant to cracking from extreme and repeated bending. Even hairpin-shaped bending won't cause cracks. Plating won't be exfoliated by repeat bending (Any superficial coating particles that may come off the rolling contact surfaces are mixed in with the grease and remain its lubricity).
Optical benefits: Less reflections (suitable for places where light reflections are undesirable when used in combination with LTBC plated linear bushings (**P. 1-278**).)

Shaft after Sliding Test



Order Example See each product page for details.

Days to Ship **10 Days** **13 Days**

Alterations See each product page for details.

Sliding Test Conditions
Linear Bushings :LMUR12
Shafts :RSFJ12
50km sliding test was conducted on Linear Bushings under 412N load.

LTBC Plated Shafts (regular products): Shipped on the 13th day after order

Material	Applicable shaft diameter	Applicable Shaft Length
1.3505/100Cr6	Ø3~Ø30	Up to 500

Full Length Hardness Guaranteed Shafts: Shipped on the 13th day after order

Material	Applicable shaft diameter	Applicable Shaft Length
1.3505/100Cr6	Ø6~Ø20	Up to 150

Precision Shafts: Shipped on the 10th day after order

Material	Applicable Shaft Diameter	Applicable Shaft Length
1.3505/100Cr6	Ø4~Ø30	Up to 448
1.4125/X105CrMo17 equivalent		

(Note 1) Wiping LTBC plated products with solvents may result in loss of color but its anti-rust property will be unaffected.
Color will settle over a month and become resistant to discoloration.
(Note 2) Female Thread threads will not be coated with LTBC.
(Note 3) LTBC plated shafts may have centering holes on the ends for surface treatment.

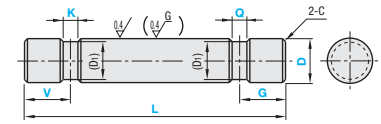
Shafts
-Set Screw Grooved-

RoHS

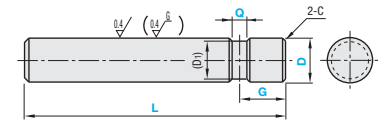


Type					M Material	H Hardness	S Surface Treatment
Straight Both Ends Grooved	Straight One End Grooved	One End Female Thread	One End Male Thread	One End Male Thread / Thread O.D. = Shaft O.D.			
SFJQ	SFJS	SFTS	SFNS	SFQS	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6, 58HRC~ 1.4125/X105CrMo17 equivalent, 56HRC~	-
SSFJQ	SSFJS	SSFTS	SSFNS	SSFQS	1.4125/X105CrMo17		
PSFJQ	PSFJS	PSFTS	PSFNS	PSFQS	1.3505/100Cr6		Hard Chrome PlatingPlating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFJQ	PSSFJS	PSSFTS	PSSFNS	PSSFQS	1.4125/X105CrMo17		

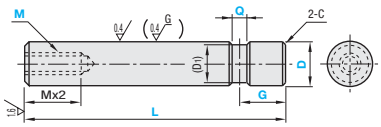
Straight Both Ends Grooved — Surface Treatment Not Applied



Straight One End Grooved — Surface Treatment Not Applied

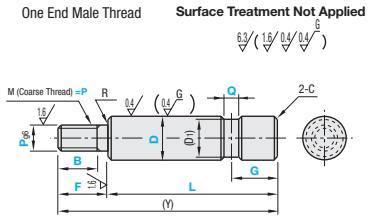


One End Female Thread — Surface Treatment Not Applied

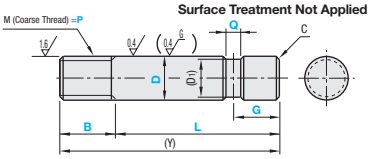


When Mx2.5+4≥L, tap pilot hole may go through.

One End Male Thread — Surface Treatment Not Applied



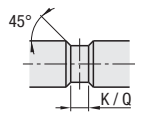
One End Male Thread - Thread O.D. = Shaft O.D. — Surface Treatment Not Applied



L does not include incomplete threads.

D Tolerance	
D	g6
6	-0.004 -0.012
8	-0.005 -0.014
10	
12	
13	
15	-0.006 -0.017
16	
18	
20	
25	-0.007 -0.020
30	

- Groove Drawing



Set Screw Grooved / Shaft End Machined Area (Effective Thread Length + approx. 10mm) Annealing could reduce hardness.
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness.
P.103

Straight - One End Female Thread

Part Number Type	D	L 1mm Increments	One End Female Thread Selections M (Coarse Threads)	Slot Dimensions V / G (0.1mm Increments)	K / Q (Selections)	D1	C
Straight Both Ends Grooved	6	20~600	3	5~18	4	5	0.5 Less than
SFJQ	8	20~800	3 4 5	5~24	4 5	7	
SSFJQ	10	20~800	3 4 5 6	5~30	4 5	9	
PSFJQ	12	20~1000	4 5 6 8	5~36	5	10	
PSSFJQ	13	25~1000	4 5 6 8	5~39	5	11	
Straight One End Grooved	15	25~1000	4 5 6 8 10	5~45	5 6	13	
SFJS	16	30~1200	4 5 6 8 10	5~48	5 6	14	
SSFJS	18	30~1200	4 5 6 8 10 12	5~54	5 6	16	
PSFJS	20	30~1200	4 5 6 8 10 12	6~60	6 7	18	1.0 Less than
PSSFJS	25	35~1200	4 5 6 8 10 12 16	6~75	6 7	23	
One End Female Thread Type	30	35~1500	6 8 10 12 16 20 24	6~90	7	28	
SFTS							
SSFTS							
PSFTS							
PSSFTS							

Coarse thread dimensions	
M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

V+K/2+1≤L/2 or G+Q/2+1≤L/2 is required. For One End Female Thread, G≤L-MX2-QX2 is required.

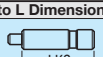
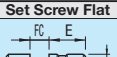
Male Thread - Thread O.D. = Shaft O.D.

Part Number Type	D	1mm Increments L	F	B (Male Thread)	B (Male Thread - Thread O.D. = Shaft O.D.)	Selection P	Slot Dimensions G (1mm Increments)	Q (Selection)	D1	(Y) Max.	R	C
Male Thread Type.	*6	25~598	2≤F ≤Px5	(When P≤6) B≤F-2	Pitchx3≤B≤Mx5	3 4 5 6	5~18	4	5	600	0.3 Less than	0.5 Less than
SFNS	*8	25~798				3 4 5 6 8	5~24	4 5	7	800		
SSFNS	*10	25~798		(When P=8・10) B≤F-3	*sizes are only available for Thread O.D. = Shaft O.D. L dimensions have priority, thus the effective thread length will be B-(Pitchx2).	4 5 6 8 10	5~30	4 5	9	800		
PSFNS	*12	25~998				5 6 8 10 12	5~36	5	11	1000		
PSSFNS	13	25~998				5 6 8 10 12	5~39	5	11	1000		
Male Thread - Thread O.D. = Shaft O.D.	15	25~998				5 6 8 10 12	5~45	5 6	13	1000		
SFQS	*16	25~1198				5 6 8 10 12 16	5~48	5 6	14	1200		
SSFQS	18	25~1198				5 6 8 10 12 16	5~54	5 6	16	1200		
PSFQS	*20	25~1198				6 8 10 12 16 20	6~60	6 7	18	1200		1.0 Less than
PSSFQS	25	25~1198		(When P<12) B≤F-5		8 10 12 16 20 24	6~75	6 7	23	1200		
*	*30	25~1498		B≥Pitchx3		8 10 12 16 20 24 30	6~90	7	28	1500		

V+K/2+1≤L/2 or G+Q/2+1≤L/2 is required. *sizes are only available for Thread O.D. = Shaft O.D.

Alterations Part Number - L - M - F - B - P (PMC / PSC) - V - K - G - Q - (LKC / SC / FC)
PSFNS8 - 650 - F10 - B8 - P4 - G18 - Q4 - LKC

Alterations may lower hardness. P.104
For alterations, 2mm or more interspace is required between set screw grooves. For more than one alteration, 2mm or more separation required between machined sections. P.106

Alterations	Alteration to L Dimension Tolerance	Wrench Flats	Set Screw Flat
			
Code	LKC	SC	FC
Spec.	Changes "L Tolerance". Ordering Code LKC L<200 ···▸L±0.03 200≤L<500···▸L±0.05 L≥500 ···▸L±0.1 L dimension can be specified in 0.1mm increments for LKC. Not applicable to One End Male Thread when D-P≤2. Not applicable to One End Male Thread Shafts - Thread O.D. = Shaft O.D Type	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤LSC=0 or SC≥1 D / W / ℓ1: 6/5/8; 8/7/8; 10/8/8; 12/10/10; 13/11/10; 15/13/10; 16/14/10; 18/16/10; 20/17/10; 25/22/10; 30/27/15 Not applicable to Straight Type	Add screw flats. Ordering Code FC10-E8 Specify FC and E in 1mm increments. FC≤Dx3 When 1.5xD<FC, FC≤L/2 E=0 or E≥2 D / h: 6~18/1; 20~30/2
Price Adder	4,00	4,00	2,00

CAD Data

Order Example

Part Number	-	L	-	M	-	F	-	B	-	P	-	V	-	K	-	G	-	Q
SFJQ16	-	100									-	V10	-	K5	-	G10	-	Q5
SSFTS20	-	500	-	M10											-	G10	-	Q7
PSFNS8	-	650			-	F10	-	B8	-	P4					-	G20	-	Q4

Days to Ship

8 Days — Express A — 8,00 EUR/unit — P. 88

Price

■Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

■Straight Both Ends Grooved

Part Number		€ Unit Price											
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
SFJQ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
SSFJQ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
PSFJQ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
PSSFJQ	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												

■Straight One End Grooved

Part Number		€ Unit Price											
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
SFJS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
SSFJS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
PSFJS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
PSSFJS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												

■One End Female Thread

Part Number		€ Unit Price											
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
SFTS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
SSFTS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
PSFTS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
PSSFTS	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												

■One End Male Thread
■One End Male Thread - Thread O.D. same as Shaft O.D.

Part Number		€ Unit Price											
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1498
SFNS (SFQS)	*6												
	*8												
	*10												
	*12 · 13												
	15 ·*16												
	18 ·*20												
	25												
	*30												
SSFNS (SSFQS)	*6												
	*8												
	*10												
	*12 · 13												
	15 ·*16												
	18 ·*20												
	25												
	*30												
PSFNS (PSFQS)	*6												
	*8												
	*10												
	*12 · 13												
	15 ·*16												
	18 ·*20												
	25												
	*30												
PSSFNS (PSSFQS)	*6												
	*8												
	*10												
	*12 · 13												
	15 ·*16												
	18 ·*20												
	25												
	*30												

(*marked sizes are only available for One End Male Thread Shafts - Thread O.D. = Shaft O.D. Type.

NEW

Shafts

-Female Thread Pilots-

RoHS

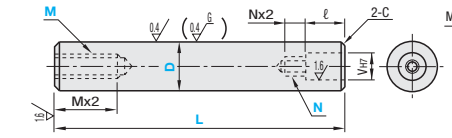


Type				M Material	H Hardness	S Surface Treatment
One End Female Thread	One End Stepped Female Thread	One End Male Thread	One End Male Thread Thread O.D. = Shaft O.D.			
SFIT	SFIG	SFIN	SFIQ	1.3505	Induction Hardening Effective Hardening Depth ☞P.104	-
SSFIT	SSFIG	SSFIN	SSFIQ	1.4125		
PSFIT	PSFIG	PSFIN	PSFIQ	1.3505	58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFIT	PSSFIG	PSSFIN	PSSFIQ	1.4125	1.3505/100Cr6 1.4125/X105CrMo17 equivalent 56HRC~	

D Tolerance D	g6
12	-0.006 -0.017
13	
15	
16	
18	
20	-0.007 -0.020
25	
30	

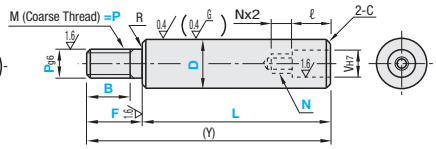
One End Female Thread

Surface Treatment Not Applied



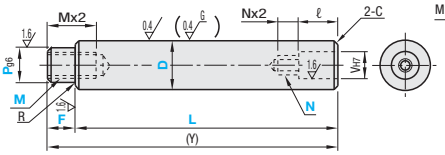
One End Male Thread

Surface Treatment Not Applied



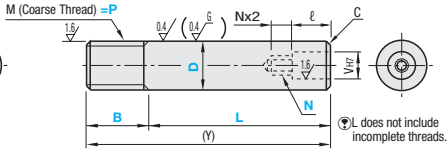
One End Stepped and Female Thread

Surface Treatment Not Applied



One End Male Thread - Trued O.D. = Shaft O.D.

Surface Treatment Not Applied



※Shaft End Machined Area (Effective Thread Length + approx. 10mm) Annealing could reduce hardness.

※Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. ☞P.103

※L does not include incomplete threads.

■One End Female Thread and One End Stepped and Female Thread

Part Number Type	D	1mm Increments L	F	P	Selection M Coarse (Female Thread)	Selection M Coarse (Stepped)	Pilot Dimensions N (Selection)	V Hole Diameter	ℓ Hole Depth	(Y) Max.	R	C
Female Thread Type	12	25~1000	2≤F≤Px4	6~10	4 5 6 8	4 5 6	4	8	9	1000	0.3 Less than	0.5 Less than
SFIT	13	25~1000		6~11	4 5 6 8	4 5 6 8	4 5	10	11	1000		
SSFIT	15	25~1000		6~13	4 5 6 8 10	4 5 6 8 10	4 5			1000		
PSFIT	16	30~1200		6~14	4 5 6 8 10	4 5 6 8 10	4 5 6	12	13	1200		
PSSFIT	18	30~1200		8~16	4 5 6 8 10 12	4 5 6 8 10 12	4 5 6			1200		1.0 Less than
Stepped and Female Thread	20	30~1200		8~17	4 5 6 8 10 12	4 5 6 8 10 12	5 6 8 10	16	17	1200		
SFIG	25	35~1200		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	6 8 10 12	20	21	1200		
SSFIG	30	35~1500		9~27	6 8 10 12 16 20 24	6 8 10 12 16 20 24	6 8 10 12			1500		
PSFIG												
PSSFIG												

※L (Y)>MX2.5+4+ℓ+NX2.5+4 is required to have effective thread length.-One End Stepped and Female Thread ※M + 3 ≤ P is required for P Dimension.

Coarse Thread Dimensions M	Pitch
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

■One End Male Thread / Thread O.D. = Shaft O.D.

Part Number Type	D	1mm Increments L	F	B (Male Thread)	B (Male Thread - Thread O.D. = Shaft O.D.)	Selection P	Pilot Dimensions N (Selection)	V Hole Diameter	ℓ Hole Depth	(Y) Max.	R	C
Male Thread Type.	*12	25~998	2≤F≤Px5	(When P≤6) B≤F-2	2≤B≤Px5	5 6 8 10 12	4	8	9	1000	0.3 Less than	0.5 Less than
SFIN	13	25~998				5 6 8 10 12	4 5	10	11	1000		
SSFIN	15	25~998				5 6 8 10 12	4 5			1000		
PSFIN	*16	25~1198		(When P=8・10) B≤F-3	※sizes are only available for Thread O.D. = Shaft O.D. L dimensions have priority, thus the effective thread length will be B-(Pitchx2).	5 6 8 10 12 16	4 5 6	12	13	1200		
PSSFIN	18	25~1198				5 6 8 10 12 16	4 5 6			1200		
Male Thread - Thread O.D. = Shaft O.D.												
SFIQ	*20	25~1198		(When P≤12) B≤F-5		6 8 10 12 16 20	5 6 8 10	16	17	1200		1.0 Less than
SSFIQ	25	25~1198				8 10 12 16 20 24	6 8 10 12	20	21	1200		
PSFIQ	*30	25~1498		※B≥Pitchx3		8 10 12 16 20 24 30	6 8 10 12			1500		
PSSFIQ ※												

※sizes are only available for Thread O.D. = Shaft O.D.

※Overall length L requires NX3+ℓ≤L.

Price

■Volume Discount (※Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

■One End Female Thread

Part Number Type	D	€ Unit Price Min.L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
SFIT	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												
SSFIT	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												
PSFIT	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												
PSSFIT	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												

■One End Stepped and Female Thread

Part Number Type	D	€ Unit Price Min.L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1500
SFIG	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												
SSFIG	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												
PSFIG	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												
PSSFIG	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												

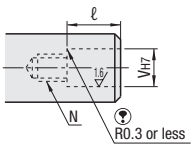
■One End Male Thread
■One End Male Thread - Thread O.D. same as Shaft O.D.

Part Number Type	D	€ Unit Price Min.L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1498
SFIN SFIQ	*12												
	13												
	15												
	*16												
	18												
	*20												
	25												
	*30												
SSFIN SSFIQ	*12												
	13												
	15												
	*16												
	18												
	*20												
	25												
	*30												
PSFIN PSFIQ	*12												
	13												
	15												
	*16												
	18												
	*20												
	25												
	*30												
PSSFIN PSSFIQ	*12												
	13												
	15												
	*16												
	18												
	*20												
	25												
	*30												

*marked sizes are only available for One End Male Thread Shafts - Thread O.D. = Shaft O.D. Type.

Example

■Cautions
-Pilot Drawing



-Pilot Part

D	N (Selection)	V Hole Diameter	ℓ Hole Depth
12	4	8	9
13	4 5	10	11
15	4 5		
16	4 5 6	12	13
18	4 5 6		
20	5 6 8 10	16	17
25	6 8 10 12	20	21
30	6 8 10 12		

Precision pilot hole is made to R0.3 or less.
Mating parts require C0.4 or more for installation.

Order Example

Part Number	L	F	B	P	M	N
SFIT12	500				M4	N4
PSSFIG30	1000	F4		P10	M6	N10

Days to Ship

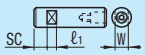
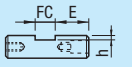
8 Days — Express A 8,00 EUR/unit P.88

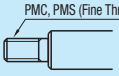
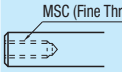
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number	L	F	B	P (PMC / PSC)	M (MSC)	N	(LKC / SC / FC...etc.)
PSSFIG30	1000	F4		P10	M6	N10	LKC

For more than one alteration, 2mm or more separation required between machined sections. P.106
Alterations may lower hardness. P.104

Alterations	Code	Spec.	Price Adder
	LKC	Changes "L Tolerance". Ordering Code LKC L<200 ···L±0.03 200≤L<500···L±0.05 L≥500 ···L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments. ⊗Not applicable to One End Male Thread when D-P≤2 ⊗Not applicable to One End Male Thread Shafts - Thread O.D. = Shaft O.D Type	4,00
	SC	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤LSC=0 or SC≥1 SC machining is not applicable to pilot machined areas SC≤L-ℓ1-ℓ-2 D / W / ℓ1: 12 10 / 13 11 / 15 13 / 16 14 → 10; 18 16 / 20 17 / 25 22 / 30 27 → 10; 15	4,00
	FC	Add screw flats. Ordering Code FC10-E8 Specify FC and E in 1mm increments. FC≤Dx3 When 1.5xD<FC, FC≤L/2 E=0 or E≥2 FC machining is not applicable to pilot machined areas E≤ℓ+2 D / h: 12~18 → 1; 20~30 → 2	2,00

Alterations	Code	Spec.	Price Adder
	PMC / PMS	Changes the threads to Fine Threads shown in the table below. (PMC → Applicable to Bearing nut fine threads) (PMS → Applicable to Cylinder fine thread pitches) Ordering Code PMC17 Applicable to "One End Male Thread" type only. D / PMC: 12 5 6 8 10 / 13 5 6 8 10 12 / 15 5 6 8 10 12 / 16 5 6 8 10 12 15 / 18 5 6 8 10 12 15 17 / 20 6 8 10 12 15 17 / 25 8 10 12 15 17 20 / 30 8 10 12 15 17 20 25 / Pitch 0.5 0.75 1.0 1.5 Please replace P dimensions with PMC (PMS) to specify. P dimension is equal to PMC (PMS).	3,00
	MSC	Female Thread thread changed to fine thread listed in the table below. Ordering Code MSC14 Only applicable to One End Female Thread. D / MSC: 12 / 13 8 / 15 / 16 8 10 / 18 8 10 12 / 20 8 10 12 14 / 25~30 8 10 12 14 18 / Pitch 1.0 1.25 1.5 Specify using MSC in place of M. M dimension is equal to MSC.	3,00

Shafts -Standard Type-

-One End Male Thread with O.D. same as Shaft O.D.-

For One End Male Thread Shafts with different diameters, please see P.125

RoHS



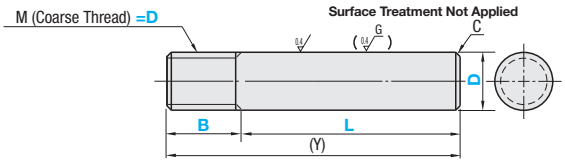
For Shaft End Machined Area (Effective Thread Length + approx. 10mm) Annealing could reduce hardness. P.104

For Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103

For Features of LTBC P.118

Type			M Material	H Hardness	S Surface Treatment
Standard					
D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFAQ	SFUQ	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
SSFAQ	SSFUQ	-	1.4125/X105CrMo17 equivalent		
PSFAQ	PSFUQ	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFAQ	PSSFUQ	-	1.4125/X105CrMo17 equivalent		
RSFAQ	-	-	1.3505/100Cr6		LTBC
-	-	PSFGQ	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	PSSFGQ	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
3	-0.002 -0.008	0 -0.004	-
4			
5	-0.004 -0.012	0 -0.005	-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
16			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
30			



L does not include incomplete threads.

Part Number Type	D	1mm Increments L	1mm Increments B	M	(Y) Max.	C
(D Tolerance g6) (D Tolerance h5) SFAQ SFUQ	3	25~197	3~15	3	200	0.2 or less
SSFAQ SSFUQ	4	25~296	4~20	4	300	
PSFAQ PSFUQ	5	25~396	4~25	5	400	
PSSFAQ PSSFUQ	6	25~595	5~30	6	600	0.5 or less
RSFAQ(L≤500)	8	25~793	7~40	8	800	
(D Tolerance f8)	10	25~792	8~50	10	800	
PSFGQ	12	25~991	9~60	12	1000	
PSSFGQ	16	25~1190	10~80	16	1200	
	20	25~1187	13~100	20	1200	1.0 or less
	30	25~1482	18~150	30	1500	

Coarse Thread Dimensions	
M	pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
30	3.5

L dimension has priority, thus B dimensions should be B-(Pitch x 2).

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for 50 or more LTBC plated Shafts.

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1482
SFAQ SFUQ	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												
SSFAQ SSFUQ	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												119,04

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1482
PSFAQ PSFUQ	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												
PSSFAQ PSSFUQ	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												

For D tolerance h5, 2,00 EUR is added to the prices above.

CAD Data

Part Number		€ Unit Price						
Type	D	Min. L ≀ 50	L51 ≀ 100	L101 ≀ 150	L151 ≀ 200	L201 ≀ 300	L301 ≀ 400	L401 ≀ 500
RSFAQ	3							
	4							
	5							
	6							
	8							
	10							
	12							
	16							
	20							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ≀ 100	L101 ≀ 200	L201 ≀ 400	L401 ≀ 600	L601 ≀ 800	L801 ≀ 1000	L1001 ≀ 1200	L1201 ≀ 1482
PSFGQ	6								
	8								
	10								
	12								
	16								
	20								
	30								
PSSFGQ	6								
	8								
	10								
	12								
	16								
	20								
	30								

Alterations

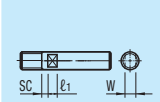
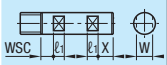
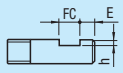
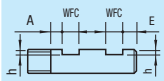
Part Number - L - B - (SC...etc.)
SFAQ12 - 500 - B20 - SC10

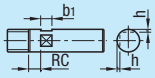
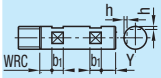
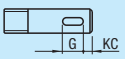
Keyway machining (KC) only.

10 Days (RSFAQ is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUQ, SSFUQ, PSFUQ and PSSFUQ on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	SC	Adds a set of wrench flats. Ordering Code SC5 Application Notes Applicable to D = 6 and over SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥2 ⊗can not be used with WSC D: 6, 8, 10, 12, 13, 15 — W: 5, 7, 8, 10, 11, 13 — ℓ1: 8	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Application Notes Applicable to D = 6 and over Specify WSC/X in 1mm increments. WSC+X+ℓ1x2<L WSC (X)=0 or WSC (X)≥2 ⊗Machining on the same plane is not applicable. Can not be used with SC. D: 16, 18, 20, 25, 30 — W: 14, 16, 17, 22, 27 — ℓ1: 10, 15	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Specify FC and E in 1mm increments. FC≤3xD When 1.5XD<FC, FC≤L/2 E=0 or E≥2 ⊗Can not be used with WFC D: 3~5, 6~18, 20~30 — h: 0.5, 1, 2	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC10-A8-E20 Specify WFC, A and E in 1mm increments WFC≤3xD When 1.5xD<FC, 2WFC≤L/2 A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D: 3~5, 6~18, 20~30 — h: 0.5, 1, 2	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Not applicable to shafts with diameter f8 tolerance and LTBC plating.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	KC	Keyway is added at one location Ordering Code KC10-G10 Application Notes Only applicable to D=12 / 16 / 20 / 30	5,00

For details, please see Alterations Overview P.105

Please see Alteration Guides for details if provided. P.105
For more than one alteration, 2mm or more separation required between machined sections.
Alterations may lower hardness. P.104

Order Example

Part Number	-	L	-	B
SFAQ12	-	500		B20
RSFAQ8	-	500	-	B15

Days to Ship

8 Days
5 Days
- RSFAQ
13 Days

Express A 8,00 EUR/ unit P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Shafts -Standard Type / Precision Type-
-One End Male Thread-

For One End Male Thread - Thread O.D. = Shaft O.D., please see P.123 For Shafts with wrench flats and cross-drilled holes, please see P.127

RoHS

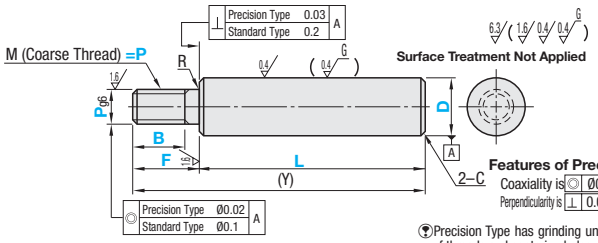


Shaft End Machined Area
(Effective Thread Length + approx. 10mm)
Annealing could reduce hardness.
Features of LTBC P.118
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103

Type				M Material	H Hardness	S Surface Treatment
Precision type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFBN	SFAN	SFUN	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC ~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
VSFBN	SSFAN	SSFUN	-	1.4125/ X105CrMo17 equivalent		
VPFBN	PSFAN	PSFUN	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μm or more
VPSFBN	PSSFAN	PSSFUN	-	1.4125/ X105CrMo17 equivalent		
VRBN	RSFAN	-	-	1.3505/100Cr6		LTBC
-	-	-	PSFGN	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGN	1.4301/X5CrNi18-10		

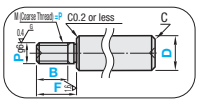
For O.D. tolerance f8 type, D needs to be 6 or more

D	D Tolerance g6	h5	f8
4	-0.004 -0.012	0 -0.005	-
5			
6			-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Features of Precision Type
Coaxiality is Ø0.02
Perpendicularity is 0.03

Precision Type has grinding undercut at the bottom of threads and centering holes on end faces.



Part Number Type	D	1mm Increments L	F	B	P Selection	(Y) Max.	R	C
Precision Type (D Tolerance g6) VFBN VSFBN VPFBN VPSFBN VRBN	5	25~296	2≤F≤Px5	(When P≤6) B≤F-2	3	300	0.2 or less	0.2 or less
	6	25~296			3 4	300	0.3 or less	0.5 or less
	8	25~296			3 4 5 6	300		
	10	25~345			4 5 6 8	350		
	12	25~345		(When P=8 / 10) B≤F-3	5 6 8 10	350		
	13	25~345			5 6 8 10	350		
	15	25~345			5 6 8 10 12	350		
	16	25~345		(When P≤12) B≤F-5	5 6 8 10 12	350		
	18	25~345			5 6 8 10 12 16	350		
	20	25~445		B≥Pitchx3	6 8 10 12 16	450		1.0 or less
	25	25~443			8 10 12 16 20	450		
	30	25~443			8 10 12 16 20 24	450		

Coarse Thread Dimensions M	pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

Part Number Type	D	1mm Increments L	F	B	P Selection	(Y) Max.	R	C
Standard Type (D Tolerance g6) SFAN SSFAN PSFAN PSSFAN RSFAN (D≤30, L≤500) (D Tolerance h5) SFUN SSFUN PSFUN PSSFUN (D Tolerance f8) PSFGN (D≥6) PSSFGN (D≥6)	4	25~298	2≤F≤Px5	(When P≤6) B≤F-2	3	300	0.2 Less than	0.2 Less than
	5	25~398			3 4	400	0.3 Less than	0.5 Less than
	6	25~598			3 4 5	600		
	8	25~798			3 4 5 6	800		
	10	25~798			4 5 6 8	800		
	12	25~998		(When P=8 / 10) B≤F-3	5 6 8 10	1000		
	13	25~998			5 6 8 10 12	1000		
	15	25~998			5 6 8 10 12	1000		
	16	25~1198			5 6 8 10 12	1200		
	18	25~1198		(When P≤12) B≤F-5	5 6 8 10 12 16	1200		
	20	25~1198			6 8 10 12 16	1200		1.0 Less than
	25	25~1198		B≥Pitchx3	8 10 12 16 20 24	1200		
	30	25~1498			8 10 12 16 20 24	1500		
	35	25~1498			10 12 16 20 24 30	1500	0.5 Less than	
	40	25~1498			12 16 20 24 30	1500		
	50	25~1498			16 20 24 30	1500		

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1498
SFAN SFUN	4												
	5												
	6												
	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAN SSFUN	4												
	5												
	6												
	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1498
PSFAN PSFUN	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAN PSSFUN	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

CAD Data

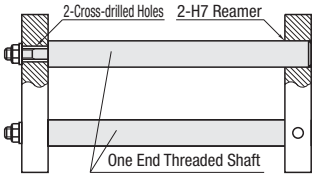
Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAN	4							
	5							
	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1498
PSFGN	6								
	8								
	10								
	12 • 13								
	15 • 16								
	18 • 20								
	25								
	30								
	35								
	40								
	50								
PSSFGN	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 445
VFBN	5						
	6						
	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VSFBN	5						
	6						
	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VRBN	5						
	6						
	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 445
VPFBN	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFBN	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Example



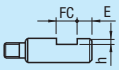
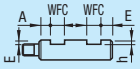
Alterations

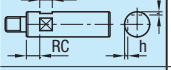
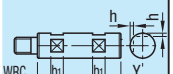
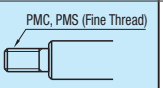
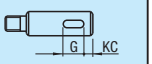
Part Number - L - F - B - P (PMC / PSC) - (LKC...etc.)
SFAN30 - 250 - F40 - B30 - P10 - LKC

Keyway machining (KC) only. 10 Days (RSFAN is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUN, SSFUN, PSFUN and PSSFUN on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type When using LKC, L dimensions can be specified in 0.1 increments. Ⓨ L<200 ···L±0.03 200≤L<500···L±0.05 L≥500 ···L±0.1 ⊗Not applicable when D-P≤2	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. Ⓨ FC≤3xD Ⓨ When 1.5XD<FC, FC≤L/2 Ⓨ E=0 or E≥2 ⊗Can not be used with WFC D / h: 4~5 / 0.5; 6~18 / 1; 20~40 / 2; 50 / 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments Ⓨ WFC≤3xD Ⓨ When 1.5xD<FC, 2WFC≤L/2 Ⓨ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 4~5 / 0.5; 6~18 / 1; 20~40 / 2; 50 / 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	PMC	Change to fine threads. Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMSC)	3,00
	KC	Keyway is added at one location Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	5,00

For details, please see alterations overview P.105

Ⓨ Please see Alteration Guides for details if provided. P.105
Ⓨ For more than one alteration, 2mm or more separation required between machined sections.
Ⓨ Alterations requires more than 2mm separation between wrench flats and cross-drilled holes.
Ⓨ Alterations may lower hardness. P.104

Order Example

Part Number	L	F	B	P
SFAN12	500	F20	B15	P6
VFBN8	150	F20	B15	P6

Degreasing Service P.83

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days — P. 88
Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VFBN · VSFBN · VPFBN · VPSFBN · VRBN
10 Days — Express B 8,00 EUR/unit — P. 88
Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRBN.

- RSFAN
13 Days

Add. Spec. Shafts -Standard Type / Precision Type-

-One End Male Thread with Wrench Flats / One End Male Thread with Cross-drilled Hole-

For Shafts w/o wrench flats or cross-drilled holes, please see P.125

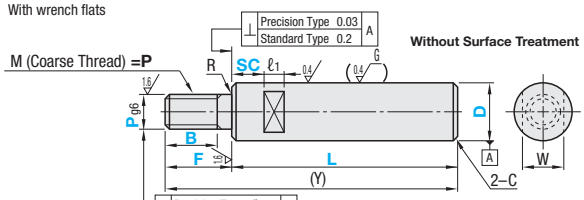
RoHS



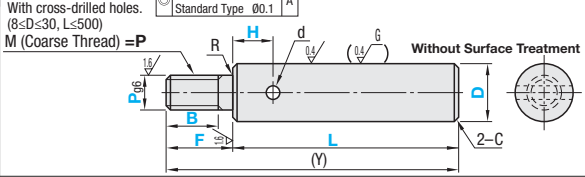
Type						M Material	H Hardness	S Surface Treatment
With Wrench Flats				With Cross-drilled Holes.				
Precision type	Standard							
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8			
VFBS	SFAS	SFUS	-	SFHN	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 JIS SUJ 58HRC ~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
VSFBS	SSFAS	SSFUS	-	SSFHN	-	1.4125/X105CrMo17 equivalent		Hard Chrome Plating Plating Hardness: Hv750 ~ Plating Thickness 5µ or more
VPFBS	PSFAS	PSFUS	-	PSFHN	-	1.3505/100Cr6		
VPSFBS	PSSFAS	PSSFUS	-	PSSFHN	-	1.4125/X105CrMo17 equivalent		
VRBS	RSFAS	-	-	RSFHN	-	1.3505/100Cr6		LTBC
-	-	-	PSFGS	-	PSGHN	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: Hv750 ~ Plating Thickness: 10µm or more.
-	-	-	PSSFGS	-	-	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12			
13	-0.006 -0.017	0 -0.008	-0.016 -0.043
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

With wrench flats



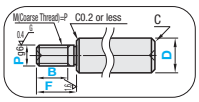
With cross-drilled holes. (8≤D≤30, L≤500)



Features of Precision Type

Coaxiality is ◎ Ø0.02

Perpendicularity is ⊥ 0.03



Precision shafts have centering holes at the ends and grinding undercut at the bottom of threads.

Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.

Changes in circularity, straightness, perpendicularity, coaxiality and hardness. P.103

Features of LTBC P.118

Part Number Type	D	1mm Increments L	F	B	P Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
Precision Type	6	25~296			3 4	5		300		
	8	25~296		(When P≤6) B≤F-2	3 4 5 6	7	8	300		
(Shafts with Wrench Flats)	10	25~345			4 5 6 8	8		350		0.5 Less than
	12	25~345		(When P=8 / 10) B≤F-3	5 6 8 10	10		350		
(D Tolerance g6)	13	25~345			5 6 8 10	11		350	0.3 Less than	
VFBS	15	25~345	2≤F≤Px5		5 6 8 10 12	13		350		
VSFBS	16	25~345		(When P≤12) B≤F-5	5 6 8 10 12	14	10	350		
VPFBS	18	25~345			5 6 8 10 12 16	16		350		
VPSFBS	20	25~445			6 8 10 12 16	17		450		1.0 Less than
VRBS	25	25~443		B≥Pitchx3	8 10 12 16 20	22		450		
	30	25~443			8 10 12 16 20 24	27	15	450		

SC=1mm Increment

SC+ℓ1≤L

SC=0 or SC≥1

Details of Wrench Flats P.104

Coarse Thread Dimensions M	pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

Part Number Type			D	1mm Increments L	F	B	P Selection	Wrench Flats Dimensions W	ℓ1	Cross-drilled Hole Dimensions H	d	(Y) Max.	R	C
Standard Type			6	25~598			3 4 5	5		-	-	600		
(Shafts with Wrench Flats)		(Shafts with Cross-drilled Holes)	8	25~798		(When P≤6) B≤F-2	3 4 5 6	7	8		3	800		0.5 Less than
		8≤D≤30, L≤500	10	25~798			4 5 6 8	8				800		
(D Tolerance g6)	(D Tolerance h5)	(D Tolerance g6)	12	25~998			5 6 8 10	10				1000		
SFAS	SFUS	SFHN	13	25~998		(When P=8 / 10) B≤F-3	5 6 8 10 12	11		H=Specified in 1mm Increments	4	1000	0.3 Less than	
SSFAS	SSFUS	SSFHN	15	25~998			5 6 8 10 12	13		L≥H+d/2+2		1000		
PSFAS	PSFUS	PSFHN	16	25~1198	2≤F≤ Px5		5 6 8 10 12	14	10	H≥d/2+2		1200		
PSSFAS	PSSFUS	PSSFHN	18	25~1198			5 6 8 10 12 16	16			6	1200		
RSFAS		RSFHN	20	25~1198			6 8 10 12 16	17				1200		
(D≤30, L≤500)			25	25~1198		(When P≤12) B≤F-5	8 10 12 16 20 24	22			7	1200		1.0 Less than
(D Tolerance f8)			30	25~1498			8 10 12 16 20 24	27	15			1500		
PSFGS		(D Tolerance f8)	35	25~1498			10 12 16 20 24 30	30				1500	0.5 Less than	
PSSFGS		PSGHN	40	25~1498			12 16 20 24 30	36	20	-	-	1500		
			50	25~1498		B≥ Pitchx3	16 20 24 30	41				1500		

SC=1mm Increment

SC+ℓ1≤L

SC=0 or SC≥1

Details of Wrench Flats P.104

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1498
SFAS	6												
SFUS	8												
SFHN	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAS	6												
SSFUS	8												
SSFHN	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1498
PSFAS	6												
PSFUS	8												
PSFHN	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAS	6												
PSSFUS	8												
PSSFHN	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above. For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤500)

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSFAS / RSFHN	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VFBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

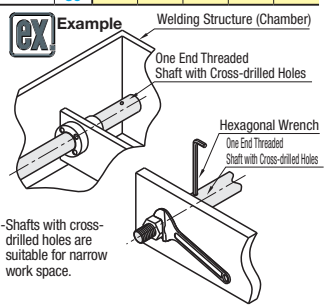
Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VPFBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFBS	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1498
PSFGS / PSGHN	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFGS	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

■ Price Deductions for Shafts with Cross-drilled Holes

D	Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

Example



-Shafts with cross-drilled holes are suitable for narrow work space.

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤50)

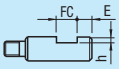
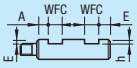
Alterations

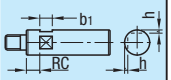
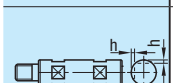
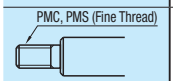
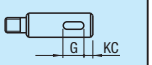
Part Number - L - F - B - P (PMC / PSC) - SC - H - (LKC...etc.)
SFAS30 - 250 - F40 - B30 - P10 - SC10 - LKC

Keyway machining (KC) only. 10 Days (RSFAS and RSFHN are to be shipped on the 13 th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUS, SSFUS, PSFUS and PSSFUS on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less to precision type When using LKC, L dimensions can be specified in 0.1 increments. L<200 ···L±0.03 200≤L<500···L±0.05 L≥500 ···L±0.1 ⊗Not applicable when D-P≤2	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. FC≤3xD When 1.5XD<FC, FC≤L/2 E=0 or E≥2 ⊗Can not be used with WFC D: 6~18 h:1; 20~40 h:2; 50 h:3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments WFC≤3xD When 1.5xD<FC, 2WFC≤L/2 A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D: 6~18 h:1; 20~40 h:2; 50 h:3	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Only applicable to Shafts with Wrench Flats Specify SX in 1mm increments SC+SX+ℓ1x2<L SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D: 6 W:5 ℓ1:8; 8 W:7; 10 W:8; 12 W:10; 13 W:11; 15 W:13; 16 W:14; 18 W:16; 20 W:17 ℓ1:10; 25 W:22; 30 W:27 ℓ1:15; 35 W:30; 40 W:36; 50 W:41 ℓ1:20	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Shafts with Cross-drilled Hole / Precision Type / Not applicable to shafts with diameter f8 tolerance and LTBC plating.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	PMC	Change to fine threads. Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMSC)	3,00
	KC	Keyway is added at one location Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	5,00

For details, please see Alterations Overview P.105

Please see Alteration Overview for details. P.105
For more than one alteration, 2mm or more interspace is required between machined sections.
For alterations, more than 2mm separation is required between wrench flats and cross-drilled holes.
Alterations may lower hardness. P.104

Order Example

Part Number - L - F - B - P - SC - H
VFBS12 - 200 - F20 - B15 - P8 - SC5
SFHN18 - 450 - F40 - B25 - P12 - H10

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VFBS · VSFBS · VPFBS · VPSFBS · VRBS
10 Days — Express B 8,00 EUR/unit P.88

- RSFAS · RSFHN
13 Days

A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRBS.

Degreasing Service P.83

Shafts -Standard Type / Precision Type-
-One End Male Thread with Undercut-

For Shafts with wrench flats P.131



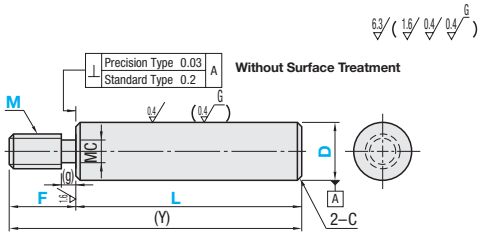
Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103

Features of LTBC P.118

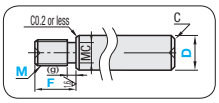
Type				M Material	H Hardness	S Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VAFN	SAFN	SFNU	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSAFN	SSAFN	SSFNU	-	1.4125/ X105CrMo17 equivalent		
VPAFN	PSAFN	PSFNU	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSAFN	PSSAFN	PSSFNU	-	1.4125/ X105CrMo17 equivalent		
VRFN	RSAFN	-	-	1.3505/100Cr6		LTBC
-	-	-	PSAGN	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSAGN	1.4301/ X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Features of Precision Type

Squareness is ⊥ 0.03



Precision shafts have centering holes at the ends.

Part Number Type	D	1mm Increments L	F	Selection M (Coarse Threads)	(Y) Max.	C
Precision Type (D Tolerance g6) VAFN VSAFN VPAFN VPSAFN VRFN	8	25~295	5≤F≤Mx3	6	300	0.5 or less
	10	25~345		6 8	350	
	12	25~345		6 8 10	350	
	13	25~345		6 8 10	350	
	15	25~345		6 8 10 12	350	
	16	25~345		6 8 10 12	350	
	18	25~345		6 8 10 12 16	350	
	20	25~445	F-(g)≥Pitchx3	6 8 10 12 16	450	1.0 or less
	25	25~443		8 10 12 16 20	450	
	30	25~443		8 10 12 16 20 24	450	

Undercut Dimensions (Coarse Threads)			
M	Pitch	MC	(g)
6	1.0	4.4 (4.2)	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

MC dimensions in () are for Precision Type M6 (Coarse).

Part Number Type	D	1mm Increments L	F	Selection M (Coarse Threads)	(Y) Max.	C
Standard Type (D Tolerance g6) SAFN SSAFN PSAFN PSSAFN RSAFN(D≤30, L≤500) (D Tolerance h5) SFNU SSFNU PSFNU PSSFNU (D Tolerance f8) PSAGN PSSAGN	8	25~795	5≤F≤Mx3	6	800	0.5 or less
	10	25~795		6 8	800	
	12	25~995		6 8 10	1000	
	13	25~995		6 8 10 12	1000	
	15	25~995		6 8 10 12	1000	
	16	25~1195		6 8 10 12	1200	
	18	25~1195		6 8 10 12 16	1200	
	20	25~1195		6 8 10 12 16	1200	1.0 or less
	25	25~1195		8 10 12 16 20 24	1200	
	30	25~1495		8 10 12 16 20 24	1500	
	35	25~1495		10 12 16 20 24 30	1500	
	40	25~1495		12 16 20 24 30	1500	
	50	25~1495	F-(g)≥Pitchx3	16 20 24 30	1500	

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.
Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1495
SAFN SFNU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSAFN SSFNU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1495
PSAFN PSFNU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSAFN PSSFNU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

CAD Data

Part Number		€ Unit Price						
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSAFN	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price						
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1495
PSAGN	8								
	10								
	12・13								
	15・16								
	18・20								
	25								
	30								
	35								
	40								
	50								
PSSAGN	8								
	10								
	12・13								
	15・16								
	18・20								
	25								
	30								
	35								
	40								
	50								

Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 445
VAFN	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFN	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFN	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 445
VPAFN	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSAFN	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

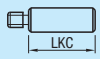
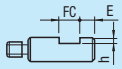
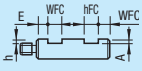
Alterations

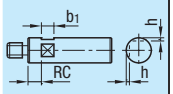
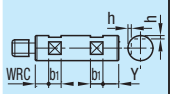
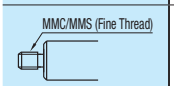
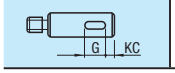
Part Number - L - F - M (MMC / MMS) - (LKC...etc.)
SAFN30 - 250 - F20 - M10 - LKC

Keyway machining (KC) only. 10 Days (RSAFN is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFNU, SSFNU, PSFNU and PSSFNU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less to precision type When using LKC, L dimensions can be specified in 0.1 increments. Keyway L<200 ···▸L±0.03 200≤L<500 ···▸L±0.05 L≥500 ···▸L±0.1 ⊗Not applicable when D-M≤2	4,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. Keyway FC≤3xD Keyway When 1.5xD<FC, FC≤L/2 Keyway E=0 or E≥2 ⊗Can not be used with WFC D: 8~18 h: 1; 20~40 h: 2; 50 h: 3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments Keyway WFC≤3xD Keyway When 1.5xD<FC, 2WFC≤L/2 Keyway A (E) = 0 or A (E) ≥ 2 ⊗Cannot be machined on the same plane. Cannot be combined with FC. D: 8~18 h: 1; 20~40 h: 2; 50 h: 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS	Change to fine threads. Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MSC)	3,00
	KC	One keyway is added. Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	5,00

For details, please see Alterations Overview P.105

Please see Alteration Guides for details if provided. P.105
For more than one alteration, 2mm or more separation required between machined sections.
Alterations may lower hardness. P.104

Order Example

Part Number	-	L	-	F	-	M
VAFN13	-	200	-	F20	-	M10
SAFN13	-	800	-	F23	-	M10

Degreasing Service P.83

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VAFN · VSAFN · VPAFN · VPSAFN · VRFN

10 Days — Express B 8,00 EUR/unit P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.
Express is not available for VRFN.

- RSAFN

13 Days

NEW

Shafts -Standard Type / Precision Type-

-One End Male Thread with Undercut and Wrench Flats / One End Male Thread with Undercut and Cross-drilled Hole-

For Shafts w/o wrench flats or cross-drilled holes, please see P.129

RoHS



For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D≤30, L≤500)

Type						M Material	H Hardness	S Surface Treatment
With Wrench Flats			With Cross-drilled Holes					
Precision Type	Standard							
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8			
VAFS	SAFS	SFSU	-	SFHS	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC ~ 1.4125/ equivalent 56HRC ~	-
VSAFS	SSAFS	SSFSU	-	SSHFS	-	1.4125/ equivalent		
VPAFS	PSAFS	PSFSU	-	PSHFS	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSAFS	PSSAFS	PSSFSU	-	PSSHFS	-	1.4125/ equivalent		
VRFS	RSAFS	-	-	RSHFS	-	1.3505/100Cr6		LTBC
-	-	-	PSAGS	-	PSHGS	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSAGS	-	-	1.4301/		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

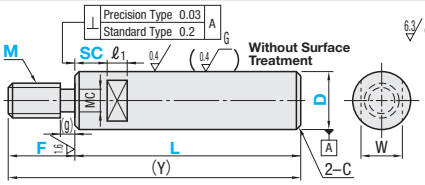
Annealing required for machining wrench flats, cross-drilled hole and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.

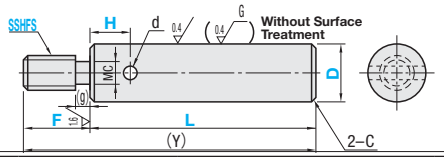
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103

Features of LTBC P.118

With wrench flats

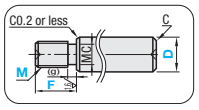


With cross-drilled holes. (D≤30, L≤500)



Features of Precision Type

Squareness is ⊥ 0.03



Centering holes will be spotted on shaft ends of precision type.

Part Number		1mm Increments		Selection	Wrench Flats Dimensions		(Y) Max.	C
Type	D	L	F	M (Coarse Threads)	W	ℓ1		
Precision type (Shafts with Wrench Flats) (D Tolerance g6) VAFS VSAFS VPAFS VPSAFS VRFS	8	25~295	5≤F≤Mx3	6	7	8	300	0.5 Less than
	10	25~345		6 8	8		350	
	12	25~345		6 8 10	10	10	350	
	13	25~345		6 8 10	11		350	
	15	25~345		6 8 10 12	13		350	
	16	25~345		6 8 10 12	14		350	
	18	25~345		6 8 10 12 16	16		350	
	20	25~445		6 8 10 12 16	17		450	1.0 Less than
	25	25~443	F-(g)≥Pitchx3	8 10 12 16 20	22		450	
	30	25~443		8 10 12 16 20 24	27	15	450	

SC=1mm Increment

SC+ℓ1≤L
SC=0
or
SC≥1

Details of Wrench Flats P.104

Coarse Thread Details			
M	Pitch	MC	Undercut (g)
6	1.0	4.4 (4.2)	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

MC dimensions in ( ) are for Precision Type M6.

Part Number			1mm Increments		Selection	Wrench Flats Dimensions		Cross-drilled Hole Dimensions		(Y) Max.	C
Type			D	L	M (Coarse Threads)	W	ℓ1	H	d		
Standard Type (Shafts with Wrench Flats) (D Tolerance g6) SAFS SSAFS PSAFS PSSAFS RSAFS(D≤30, L≤500) (D Tolerance f8) PSAGS PSSAGS	(D Tolerance h5) SFSU SSFSU PSFSU PSSFSU	(Shafts with Cross-drilled Holes) D≤30, L≤500 (D Tolerance g6) SFHS SSHFS PSHFS PSSHFS RSHFS (D Tolerance f8) PSHGS	8	25~795	6	7	8	H=Specified in 1mm Increments L≥H+d/2+2 H≥d/2+2	3	800	0.5 or less
			10	25~795	6 8	8				800	
			12	25~995	6 8 10	10				1000	
			13	25~995	6 8 10 12	11			4	1000	
			15	25~995	6 8 10 12	13				1000	
			16	25~1195	6 8 10 12	14	10			1200	
			18	25~1195	6 8 10 12 16	16			6	1200	1.0 or less
			20	25~1195	6 8 10 12 16	17				1200	
			25	25~1195	8 10 12 16 20 24	22			7	1200	
			30	25~1495	8 10 12 16 20 24	27	15			1500	
			35	25~1495	10 12 16 20 24 30	30			-	1500	
			40	25~1495	12 16 20 24 30	36	20			1500	
			50	25~1495	16 20 24 30	41				1500	

SC=1mm Increment

SC+ℓ1≤L
SC=0
or
SC≥1

Details of Wrench Flats P.104

F-(g)≥ Pitchx3

H=Specified in 1mm Increments
L≥H+d/2+2
H≥d/2+2

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number		€ Unit Price											
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1495
SAFS SFSU SFHS	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSAFS SSFSU SSHFS	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number		€ Unit Price											
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1495
PSAFS PSFSU PSHFS	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSAFS PSSFSU PSSHFS	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D≤30, L≤500)

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSAFS (P)RSHFS	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VAFS	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFS	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFS	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VPAFS	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSAFS	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

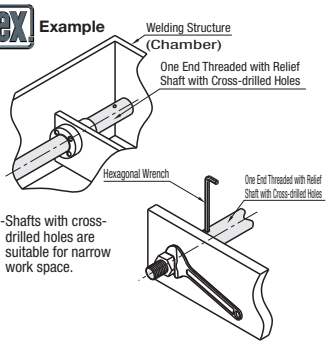
Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1495
PSAGS (P)PSHGS	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSAGS	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

(P)For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D≤30, L≤500)

■Price Reductions for cross-drilled hole option

D	Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

Example



-Shafts with cross-drilled holes are suitable for narrow work space.

Alterations

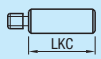
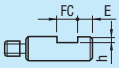
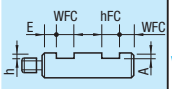
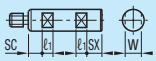
Part Number - L - F - M (MMC · MMS) - SC - H - (LKC...etc.)
SAFS30 - 250 - F20 - M10 - 20 - LKC

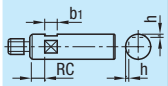
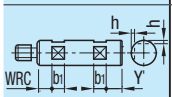
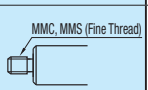
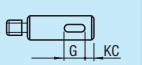
(P)Keyway machining (KC) only.

10 Days (RSFAS and RSFHFS are to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFSU, SSFSU, PSFSU and PSSFSU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type When using LKC, L dimensions can be specified in 0.1 increments. (P) L<200 ···▸L±0.03 200≤L<500···▸L±0.05 L≥500 ···▸L±0.1 ⊗Not applicable when D-M≤2	4,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. (P) FC≤3xD (P) When 1.5xD<FC, FC≤L/2 (P) E=0 or E≥2 ⊗Can not be used with WFC D: 8~18 h:1; 20~40 h:2; 50 h:3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments (P) WFC≤3xD (P) When 1.5xD<FC, 2WFC≤L/2 (P) A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D: 8~18 h:1; 20~40 h:2; 50 h:3	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Only applicable for Shafts with Wrench Flats Specify SX in 1mm increments (P) SC+SX+ℓ1x2<L (P) SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D: 8 W:7 ℓ1:8; 10 W:8 ℓ1:8; 12 W:10 ℓ1:10; 13 W:11 ℓ1:10; 15 W:13 ℓ1:10; 16 W:14 ℓ1:10; 18 W:16 ℓ1:10; 20 W:17 ℓ1:10; 25 W:22 ℓ1:10; 30 W:27 ℓ1:15; 35 W:30 ℓ1:15; 40 W:36 ℓ1:20; 50 W:41 ℓ1:20	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Shafts withcross-drilled holes, Precision Type, D Tolerance f8, Not applicable to LTBC plated shafts.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS	Change to fine threads. Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS)	3,00
	KC	Keyway is added at one location Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	5,00

For details, please see Alterations Overview P.105

(P)Please see Alteration Guides for details if provided. P.105
(P)For more than one alteration, 2mm or more separation required between machined sections. P.106
(P)Alterations may lower hardness. P.104

Order Example

Part Number	L	F	M	SC	H
VAFS13	200	F20	M10	SC10	
SAFS13	800	F23	M10		
SSHFS20	450	F28	M12		H15

Degreasing Service P.83

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P.88
(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.
- VAFS · VSAFS · VPAFS · VPSAFS · VRFS

10 Days — Express B 8,00 EUR/unit P.88
(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRFS.

- RSAFS · RSHFS
13 Days

Add. Spec. Shafts -Standard Type-

-Both Ends Male Thread with O.D. same as Shaft O.D.-

For Both Ends Male Thread Shafts with different diameters, please see P.135

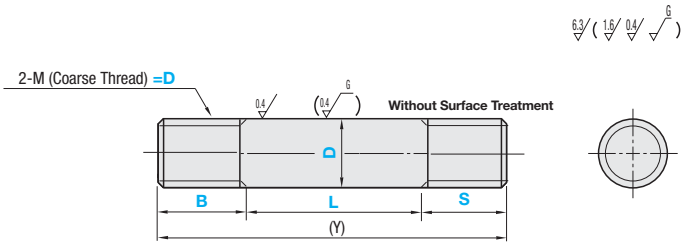
RoHS



- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104
- Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103
- Features of LTBC P.118

Type			M Material	H Hardness	S Surface Treatment
Standard					
D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFAL	SFUL	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC ~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
SSFAL	SSFUL	-	1.4125/X105CrMo17 equivalent		
PSFAL	PSFUL	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFAL	PSSFUL	-	1.4125/X105CrMo17 equivalent		
RSFAL	-	-	1.3505/100Cr6		LTBC
-	-	PSFGL	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	PSSFGL	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
3	-0.002 -0.008	0 -0.004	-
4			
5	-0.004 -0.012	0 -0.005	-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
16			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
30			



L does not include incomplete threads.

Part Number Type	D	1mm Increments L	B / S	M	(Y) Max.	Coarse Thread Dimensions M	Pitch
(D Tolerance g6) (D Tolerance h5) SFAL SFUL	3	25~194	3~15	3	200	3	0.5
SSFAL SSFUL	4	25~292	4~20	4	300	4	0.7
PSFAL PSFUL	5	25~392	4~25	5	400	5	0.8
PSSFAL PSSFUL	6	25~590	5~30	6	600	6	1.0
RSFAL (L≤500, Ymax≤800)	8	25~786	7~40	8	800	8	1.25
	10	25~784	8~50	10	800	10	1.5
(D Tolerance f8)	12	25~982	9~60	12	1000	12	1.75
PSFGL	16	25~1180	10~80	16	1200	16	2.0
PSSFGL	20	25~1174	13~100	20	1200	20	2.5
	30	25~1464	18~150	30	1500	30	3.5

For "Thread O.D. = Shaft O.D."shafts, L dimension has priority. B (S) dimension will be B (S) - (Pitch x 2).

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for 50 or more LTBC plated Shafts.

Part Number Type	D	€ Unit Price Min. L 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1464
SFAL SFUL	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												
SSFAL SSFUL	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												

Part Number Type	D	€ Unit Price Min. L 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1464
PSFAL PSFUL	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												
PSSFAL PSSFUL	3												
	4												
	5												
	6												
	8												
	10												
	12												
	16												
	20												
	30												

For D tolerance h5, 2,00 EUR is added to the prices above.

CAD Data

Part Number		€ Unit Price						
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAL	3							
	4							
	5							
	6							
	8							
	10							
	12							
	16							
	20							
	30							

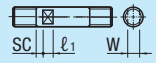
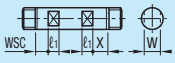
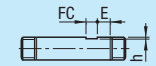
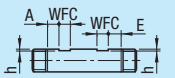
Part Number		€ Unit Price							
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1464
PSFGL	6								
	8								
	10								
	12								
	16								
	20								
	30								
PSSFGL	6								
	8								
	10								
	12								
	16								
	20								
	30								

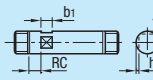
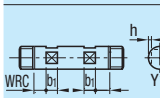
Alterations

Part Number - L - B - S - (SC...etc.)
SFAL30 - 300 - B30 - S40 - SC10

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUL, SSFUL, PSFUL and PSSFUL on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	SC	Adds a set of wrench flats. Ordering Code SC5 Application Notes Applicable to D = 6 and over SC=1mm Increment ℗SC+ℓ1≤L ℗SC=0 or SC≥1 ⊗Can not be used with WSC D: 6, 8, 10 / W: 5, 7, 8 / ℓ1: 8	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC15 WSC (X)=Specified in 1mm increments ℗WSC+X+ℓ1x2<L ℗WSC (X)=0 or WSC (X)≥1 ⊗Not available on the same plane. ⊗Can not be used with D: 12, 16, 20, 30 / W: 10, 14, 17, 27 / ℓ1: 10, 15	8,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Specify FC and E in 1mm increments. ℗FC≤3xD ℗When 1.5xD<FC, FC≤L/2 ℗E=0 or E≥2 ⊗Can not be used with WFC D: 3~5, 6~16, 20~30 / h: 0.5, 1, 2	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC10-A8-E20 Specify WFC, A and E in 1mm increments ℗WFC≤3xD ℗When 1.5xD<WFC, 2WFC≤L/2 ℗A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D: 3~5, 6~16, 20~30 / h: 0.5, 1, 2	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Can not be used with WRC For details, please see Alterations Overview P.105	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00

℗Please see Alteration Overview for details. P.105
℗For more than one alteration, 2mm or more separation required between machined sections. P.106
℗Alterations may lower hardness. P.104

Order Example

Part Number - L - B - S
SFAL20 - 300 - B20 - S15

Days to Ship

8 Days
5 Days
- RSFAL
13 Days

Express A 8,00 EUR/unit P.88
℗A Express Charge of 21,60 EUR for 3 or more identical pieces.

Shafts -Standard Type / Precision Type-
-Both Ends Male Thread-

NEW

For Male Thread Shafts with Undercuts, please see P.139 For Shafts with wrench flats and cross-drilled holes, please see P.137

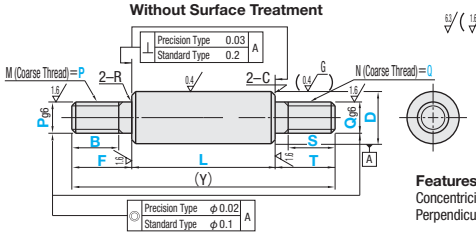
RoHS



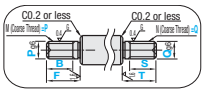
Type				M Material	H Hardness	S Surface Treatment
Precision type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFBM	SFAM	SFUM	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFBM	SSFAM	SSFUM	-	1.4125/X105CrMo17 eq.		
VPFBM	PSFAM	PSFUM	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFBM	PSSFAM	PSSFUM	-	1.4125/X105CrMo17 eq.		
VRBM	RSFAM	-	-	1.3505/100Cr6		LTBC
-	-	-	PSFGM	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGM	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
4	-0.004 -0.012	0 -0.005	- -0.010 -0.028
5			
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

Without Surface Treatment



Precision Type



Features of Precision Type
Concentricity is ◎ Ø0.02
Perpendicularity is ⊥ 0.03

Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103
Features of LTBC P.118

When B = 0 or S = 0, no thread machining will be performed. D>P (Q)

Precision Type has grinding undercuts at the bottom ends of threads and center holes at the ends.

Part Number Type	D	1mm Increments L	F · T	B · S	P · Q Selection	(Y) Max.	R	C
Precision Type (D Tolerance g6) VFBM VSFBM VPFBM VPSFBM VRBM	5	25~292	2≤F≤Px5 2≤T≤Qx5	(When P≤6) B≤F-2 (When P=8 · 10) B≤F-3 (When P≤12) B≤F-5 (When Q≤6) S≤T-2 (When Q=8 · 10) S≤T-3 (When Q≥12) S≤T-5 (When without threads) B=0 S=0 B · S≥Pitchx3	3	300	0.2 or less	0.2 or less
	6	25~292			3 4	300		
	8	25~292			3 4 5 6	300	0.3 or less	
	10	25~340			4 5 6 8	350		
	12	25~340			5 6 8 10	350		
	13	25~340			5 6 8 10	350		
	15	25~340			5 6 8 10 12	350		
	16	25~340			5 6 8 10 12	350		
	18	25~340			5 6 8 10 12 16	350		
	20	25~440			6 8 10 12 16	450		
	25	25~436			8 10 12 16 20	450		
	30	25~436			8 10 12 16 20 24	450		

Coarse Thread Dim.	
M / N	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

Part Number Type	D	1mm Increments L	F · T	B · S	P · Q Selection	(Y) Max.	R	C
Standard Type (D Tolerance g6) SFAM SSFAM PSFAM PSSFAM RSFAM (D≤30, L≤500, Ymax≤800) (D Tolerance h5) SFUM SSFUM PSFUM PSSFUM (D Tolerance f8) PSFGM (D≥6) PSSFGM (D≥6)	4	25~296	2≤F≤Px5 2≤T≤Qx5	(When P≤6) B≤F-2 (When P=8 · 10) B≤F-3 (When P≤12) B≤F-5 (When Q≤6) S≤T-2 (When Q=8 · 10) S≤T-3 (When Q≥12) S≤T-5 (When without threads) B=0 S=0 B · S≥Pitchx3	3	300	0.2 or less	0.2 or less
	5	25~396			3 4	400		
	6	25~596			3 4 5	600	0.3 or less	0.5 or less
	8	25~796			3 4 5 6	800		
	10	25~796			4 5 6 8	800		
	12	25~996			5 6 8 10	1000		
	13	25~996			5 6 8 10 12	1000		
	15	25~996			5 6 8 10 12	1000		
	16	25~1196			5 6 8 10 12	1200		
	18	25~1196			5 6 8 10 12 16	1200		
	20	25~1196			6 8 10 12 16	1200		1.0 or less
	25	25~1196			8 10 12 16 20 24	1200		
	30	25~1496			8 10 12 16 20 24	1500		
	35	25~1496			10 12 16 20 24 30	1500		
	40	25~1496			12 16 20 24 30	1500	0.5 or less	
	50	25~1496			16 20 24 30	1500		

Price

■Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1496
SFAM SFUM	4												
	5												
	6												
	8												
	10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												
SSFAM SSFUM	4												
	5												
	6												
	8												
	10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1496
PSFAM PSFUM	4												
	5												
	6												
	8												
	10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												
PSSFAM PSSFUM	4												
	5												
	6												
	8												
	10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

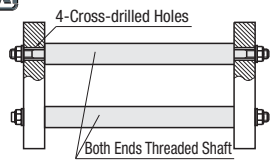
Part Number		€ Unit Price						
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSFAM	4							
	5							
	6							
	8							
	10							
	12 / 13							
	15 / 16							
	18 / 20							
	25							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1496
PSFGM	6								
	8								
	10								
	12·13								
	15·16								
	18·20								
	25								
	30								
	35								
	40								
	50								
PSSFGM	6								
	8								
	10								
	12·13								
	15·16								
	18·20								
	25								
	30								
	35								
	40								
	50								

Part Number		€ Unit Price					
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 440
VFBM	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFBM	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRBM	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number		€ Unit Price					
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 440
VPFBM	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFBM	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Example

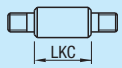
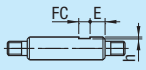
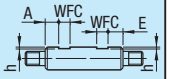


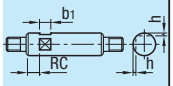
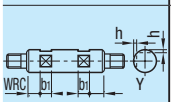
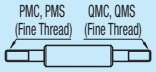
Alterations

Part Number - [L] - [F] - [B] - [P (PMC · PSC)] - [T] - [S] - [Q (QMC · QMS)] - [(LKC...etc.)]
SFAM30 - 300 - F40 - B30 - P20 - T50 - S40 - Q16 - LKC

DKC alterations was discontinued in June 2010. Please specify new part nbrs; SFUM, SSFUM, PSFUM and PSSFUM on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code: LKC Application Notes: Applicable when L=200 or less for precision type ⊗Not applicable when D-P (Q)≤2 When using LKC, L dimensions can be specified in 0.1 increments. Ⓨ L<200 ···L±0.03 200≤L<500···L±0.05 L≥500 ···L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code: WSC12-X8 Application Notes: Applicable to D = 6 and over Specify WSC/X in 1mm increments. Ⓨ WSC+X+ℓ1x2<L Ⓨ WSC (X)=0 Or WSC (X)≥1 ⊗Not available on the same plane.	8,00
	FC	Add Set Screw Flat at one location Ordering Code: FC10-E8 Application Notes: ⊗Not applicable to precision type Specify FC and E in 1mm increments. Ⓨ FC≤3xD Ⓨ When 1.5xD<FC, FC≤L/2 Ⓨ E=0 or E≥2 ⊗Can not be used with WFC	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code: WFC8-A8-E4 Application Notes: ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments Ⓨ WFC≤3xD Ⓨ When 1.5xD<WFC, 2WFC≤L/2 Ⓨ A (E) = 0 or A (E) ≥ 2 ⊗Cannot be machined on the same plane. Cannot be combined with FC.	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code: DKC Application Notes: ⊗Precision type, D tolerance and Not applicable to Low Temperature Black Chrome Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code: RC10 Application Notes: Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code: WRC10-Y10 Application Notes: Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	PMC QMC QMS	Change to fine threads. Ordering Code: PMC14 (P is changed to PMC) PMS14 (P is changed to PMS) QMC14 (Q is changed to QMC) QMS14 (Q is changed to QMS)	3,00

For details, please see Alterations Overview P.105

Ⓨ Please see Alteration Guides for details if provided. P.105
Ⓨ For more than one alteration, 2mm or more separation required between machined sections.
Ⓨ Alterations may lower hardness. P.104

Order Example

Part Number	L	F	B	P	T	S	Q
SFAM20	300	F30	B20	P8	T20	S15	Q10
VFBM15	200	F28	B16	P6	T17	S12	Q12

Degreasing Service P.83

Days to Ship

- VFBM · VSFBM · VPFBM · VPSFBM · VRBM

8 Days — Express A 8,00 EUR/unit — P. 88
5 Days
Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.

- RSFAM

10 Days — Express B 8,00 EUR/unit — P. 88
Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗ Express is not available for VRBM.

13 Days

Shafts -Standard Type / Precision Type-

-Both Ends Male Thread with Wrench Flats / Both Ends Male Thread with Cross-drilled Hole-

For Shafts w/o wrench flats or cross-drilled holes, please see P.135



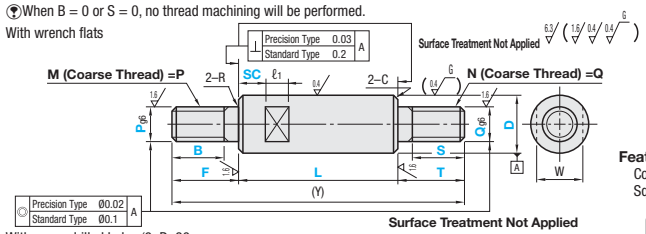
RoHS

Type							Material	Hardness	Surface Treatmen
With Wrench Flats				With Cross-drilled Holes.					
Precision type	Standard								
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8				
VFBU	SFAU	SFUU	-	SFHM	-		1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104	-
VSFBU	SSFAU	SSFUU	-	SSFHM	-		1.4125/ equivalent		
VPFBU	PSFAU	PSFUU	-	PSFHM	-		1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 – Plating Thickness 5μ or more
VPSFBU	PSSFAU	PSSFUU	-	PSSFHM	-		1.4125/ equivalent	1.3505/100Cr6 58HRC- 1.4125/X105CMo17 equivalent 58HRC -	
VRBU	RSFAU	-	-	RSFHM	-		1.3505/100Cr6		LTBC
-	-	-	-	PSFGU	-	PSGHM	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 – Plating Thickness: 10μm or more.
-	-	-	-	PSSFGU	-	-	1.4301/X5CrNi18-10		

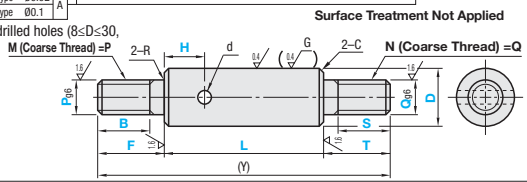
D Tolerance			
D	g6	h5	f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12			
13	-0.006 -0.017	0 -0.008	-0.016 -0.043
15			
16			
18			
20			
25	-0.007 -0.020	0 -0.009	-0.020 -0.053
30			
35			
40	-0.009 -0.025	0 -0.011	-0.025 -0.064
50			

When B = 0 or S = 0, no thread machining will be performed.

With wrench flats



With cross-drilled holes (8≤D≤30, L≤500)

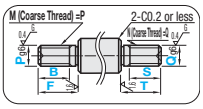


Surface Treatment Not Applied

Features of Precision Type

Concentricity is Ø0.02

Squareness is 0.03



Precision Type has grinding undercuts at the bottom ends of threads and center holes at the ends.

Annealing required for machining wrench flats, cross-drilled hole and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.

Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103

Features of LTBC P.118

Part Number Type	D	1mm Increments L	F / T	B / S	P / Q Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
Precision Type (D Tolerance g6) VFBU VSFBU VPFBU VPSFBU VRBU	6	25~292	2≤F≤Px5 2≤T≤Qx5	(When P≤6) B≤F-2 (When P=8 / 10) B≤F-3 (When P≤12) B≤F-5 (When Q≤6) S≤T-2 (When Q=8 / 10) S≤T-3 (When Q≥12) S≤T-5 (When without threads) B=0 S=0 B / S≥Pitchx3	3 4	SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 Details of Wrench Flats P.104	5	8	300	0.3 or less	0.2 or less
	8	25~292			3 4 5 6					
	10	25~340			4 5 6 8	7		300		
	12	25~340			5 6 8 10	8		350		
	13	25~340			5 6 8 10	10		350		
	15	25~340			5 6 8 10 12	11		350		
	16	25~340			5 6 8 10 12	13		350		
	18	25~340			5 6 8 10 12 16	14		350		
	20	25~440			6 8 10 12 16	16		350		
	25	25~436			8 10 12 16 20	17		450		
	30	25~436			8 10 12 16 20 24	22		450		
						27	15	450		

Coarse Thread Dimensions	
M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

Part Number Type	D	1mm Increments L	F / T	B / S	P / Q Selection	Wrench Flats Dimensions W	ℓ1	Cross-drilled Hole Dimensions H	d	(Y) Max.	R	C
Standard Type (Shafts with Wrench Flats) (D Tolerance g6) SFAU SSFAU PSFAU PSSFAU RSFAU (D≤30, L≤500, Ymax≤800) (D Tolerance f8) PSFGU PSSFGU (D Tolerance h5) SFUU SSFUU PSFUU PSSFUU (Shafts with Cross-drilled Holes) 8≤D≤30, L≤500 (D Tolerance g6) SFHM SSFHM PSFHM PSSFHM RSFHM (D Tolerance f8) PSGHM	6	25~596	2≤F≤Px5 2≤T≤Qx5	(When P≤6) B≤F-2 (When P=8 / 10) B≤F-3 (When P≤12) B≤F-5 (When Q≤6) S≤T-2 (When Q=8 / 10) S≤T-3 (When Q≥12) S≤T-5 (When without threads) B=0 S=0 B / S≥Pitchx3	3 4 5	SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 Details of Wrench Flats P.104	5	8	H=Specified in 1mm Increments L≥H+d/2+2 H≥d/2+2	-	600	0.3 or less	0.5 or less
	8	25~796			3 4 5 6	7				800		
	10	25~796			4 5 6 8	8			3	800		
	12	25~996			5 6 8 10	10				1000		
	13	25~996			5 6 8 10 12	11			4	1000	0.3 or less	
	15	25~996			5 6 8 10 12	13				1000		
	16	25~1196			5 6 8 10 12	14	10			1200		
	18	25~1196			5 6 8 10 12 16	16			6	1200		
	20	25~1196			6 8 10 12 16	17				1200		
	25	25~1196			8 10 12 16 20 24	22			7	1200		1.0 or less
	30	25~1496			8 10 12 16 20 24	27	15			1500		
	35	25~1496			10 12 16 20 24 30	30				1500	0.5 or less	
	40	25~1496			12 16 20 24 30	36	20		-	1500		
	50	25~1496			16 20 24 30	41				1500		

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1496
SFAU SFUU SFHM	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAU SSFUU SSFHM	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1496
PSFAU PSFUU PSFHM	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAU PSSFUU PSSFHM	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤500)

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAU / ?RSFHM	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 440
VFBU	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFBU	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRBU	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 440
VPFBU	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFBU	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

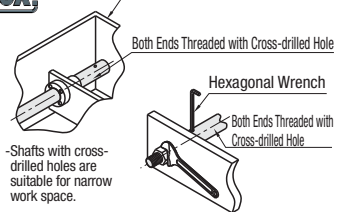
Part Number Type	D	€ Unit Price Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1496
PSFGU / ?PSGHM	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFGU	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

?For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤50)

Price Reductions for cross-drilled hole option

D	Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

ex Example — Welding Structure (Chamber)

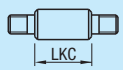
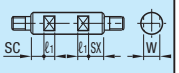
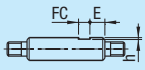
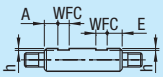


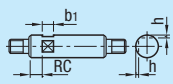
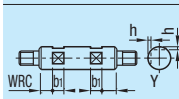
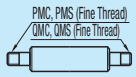
Alterations

Part Number - L - F - B - P (PMC · PSC) - T - S - Q (QMC · QMS) - SC - H - (LKC...etc.)
SFAU30 - 300 - F40 - B30 - P20 - T50 - S40 - Q16 - SC10 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUU, SSFUU, PSFUU and PSSFUU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P (Q)≤2 When using LKC, L dimensions can be specified in 0.1 increments. ? L<200 ····L±0.03 200≤L<500···L±0.05 L≥500 ····L±0.1	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Only applicable for Shafts with Wrench Flats Specify SX in 1mm increments ? SC+SX+ℓ1x2<L ? SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D: 6 / 8 / 10 / 12 / 13 / 15 / 16 / 18 / 20 / 25 / 30 / 35 / 40 / 50 W: 5 / 7 / 8 / 10 / 11 / 13 / 14 / 16 / 17 / 20 / 22 / 27 / 30 / 36 / 41 ℓ1: 8 / 10 / 15 / 20	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. ? FC≤3xD ? When 1.5xD<FC, FC≤L/2 ? E=0 or E≥2 ⊗Can not be used with WFC D: 6~18 / 20~40 / 50 h: 1 / 2 / 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments ? WFC≤3xD ? When 1.5xD<WFC, 2WFC≤L/2 ? A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D: 6~18 / 20~40 / 50 h: 1 / 2 / 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision Type / Shafts with Cross-drilled hole / D Tolerance f8 Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	PMC QMC QMS	Change to fine threads. Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMC) QMC14 (Q is changed to QMC) QMS14 (Q is changed to QMS)	3,00

For details, please see Alterations Overview P.105

?Please see Alteration Guides for details if provided. P.105
?For more than one alteration, 2mm or more separation required between machined sections. P.106
?Alterations may lower hardness. P.104

Order Example

Part Number	L	F	B	P	T	S	Q	SC	H
VFBU15	200	F28	B16	P6	T17	S12	Q12	SC8	
SFHM15	300	F28	B16	P6	T17	S12	Q12		H8

Degreasing Service P.83

Days to Ship

8 Days — Express A — 8,00 EUR/ unit — P.88
?A Express Charge of 21,60 EUR for 3 or more identical pieces.
5 Days
- VFBU · VSFBU · VPFBU · VPSFBU · VRBU

10 Days — Express B — 8,00 EUR/ unit — P.88
?A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRBU.
- RSFAU · RSFHM

13 Days

NEW

Shafts -Standard Type / Precision Type-
-Both Ends Male Thread with Undercuts-

For Shafts with wrench flats or with cross-drilled hole P.141

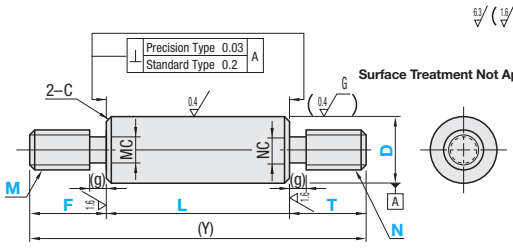
RoHS



Shaft End Machined Area (Effective Thread Length + approx. 10mm)
hardness may be reduced by annealing. P.104
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103
Features of LTBC P.118

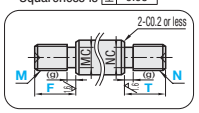
Type				M Material	H Hardness	S Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VAFM	SAFM	SFMU	-	1.3505	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
VSAFM	SSAFM	SSFMU	-	1.4125		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPAFM	PSAFM	PSFMU	-	1.3505		
VPSAFM	PSSAFM	PSSFMU	-	1.4125		LTBC
VRFM	RSAFM	-	-	1.3505		
-	-	-	PSAGM	1.1191	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSAGM	1.4301		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Surface Treatment Not Applied

Features of Precision Type
Squareness is ⊥ 0.03



Centering holes will be spotted on shaft ends of precision type.

Part Number		1mm Increments		Selection	(Y) Max.	C
Type	D	L	F · T	M · N (Coarse)		
Precision Type (D Tolerance g6) VAFM VSAFM VPAFM VPSAFM VRFM	8	25~290	5≤F≤Mx3 5≤T≤Nx3 F-(g)≥Pitchx3 T-(g)≥Pitchx3	6	300	0.2 or less
	10	25~340		6 8	350	
	12	25~340		6 8 10	350	
	13	25~340		6 8 10	350	
	15	25~340		6 8 10 12	350	
	16	25~340		6 8 10 12	350	
	18	25~340		6 8 10 12 16	350	
	20	25~440		6 8 10 12 16	450	
	25	25~436		8 10 12 16 20	450	
	30	25~436		8 10 12 16 20 24	450	

Undercut Dimensions (Coarse Threads)			
M N	Pitch	MC NC	(g)
6	1.0	4.4 (4.2)	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

MC dimensions in ( ) are for Precision Type M6.

Part Number		1mm Increments		Selection	(Y) Max.	C
Type	D	L	F · T	M · N (Coarse)		
Standard Type (D Tolerance g6) SAFM SSAFM PSAFM PSSAFM RSAFM (D≤30, L≤500, Ymax≤800) (D Tolerance h5) SFMU SSFMU PSFMU PSSFMU	8	25~790	5≤F≤Mx3 5≤T≤Nx3 F-(g)≥Pitchx3 T-(g)≥Pitchx3	6	800	0.5 or less
	10	25~790		6 8	800	
	12	25~990		6 8 10	1000	
	13	25~990		6 8 10 12	1000	
	15	25~990		6 8 10 12	1000	
	16	25~1190		6 8 10 12	1200	
	18	25~1190		6 8 10 12 16	1200	
	20	25~1190		6 8 10 12 16	1200	1.0 or less
	25	25~1190		8 10 12 16 20 24	1200	
	30	25~1490		8 10 12 16 20 24	1500	
	35	25~1490		10 12 16 20 24 30	1500	
	40	25~1490		12 16 20 24 30	1500	
	50	25~1490		16 20 24 30	1500	

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number		€ Unit Price											
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1490
SAFM SFMU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSAFM SSFMU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number		€ Unit Price											
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1490
PSAFM PSFMU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSAFM PSSFMU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

CAD Data

Part Number		€ Unit Price						
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSAFM	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price						
Type	D	Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1490
PSAGM	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSAGM	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Part Number		€ Unit Price					
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 440
VAFM	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFM	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFM	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

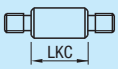
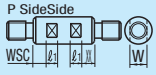
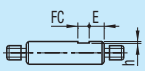
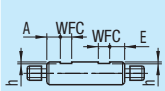
Part Number		€ Unit Price					
Type	D	Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 440
VPAFM	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSAFM	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

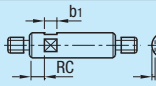
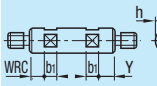
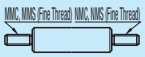
Alterations

Part Number - [L] - [F] - [M (MMC · MMS)] - [T] - [N] - (LKC...etc.)
SAFM30 - 300 - F40 - M20 - T48 - N16 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFMU, SSFMU, PSFMU and PSSFMU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-M (N)≤2 When using LKC, L dimensions can be specified in 0.1 increments. ⓟ L<200 ···→L±0.03 200≤L<500···→L±0.05 L≥500 ···→L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. ⓟ WSC+X+ℓ1x2<L ⓟ WSC (X)=0 Or WSC (X)≥1 ⊗Machining on the same plane is not applicable. D W ℓ1: 8 7 8; 10 8; 12 10; 13 11; 15 13 10; 16 14; 18 16 D W ℓ1: 20 17 10; 25 22; 30 27 15; 35 30; 40 36 20; 50 41	8,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and A in 1mm increments. ⓟ FC≤3xD ⓟ When 1.5xD<FC, FC≤L/2 ⓟ A=0 or A ≥ 2 ⊗Can not be used with WFC D h: 8~18 1; 20~40 2; 50 3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments ⓟ WFC≤3xD ⓟ When 1.5xD<FC, 2WFC≤L/2 ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D h: 8~18 1; 20~40 2; 50 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Not applicable to Precision Type, Shafts with D tolerance f8 and LTBC plating.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable for D=10~30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS NMC NMS	Change to fine threads. Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS) NMC14 (N is changed to NMC) NMS14 (N is changed toNMC)	3,00

For details, please see Alterations Overview P.105

ⓟ Please see Alteration Guides for details if provided. P.105
ⓟ For more than one alteration, 2mm or more separation required between machined sections. P.106
ⓟ Alterations may lower hardness. P.104

Order Example: Part Number - [L] - [F] - [M] - [T] - [N]
VAFM20 - 200 - F30 - M10 - T20 - N10

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P.88
ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VAFM · VSAFM · VPAFM · VPSAFM · VRFM
10 Days — Express B 8,00 EUR/unit P.88
ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRFM.

- RSAFM
13 Days

Shafts -Standard Type / Precision Type-

-Both Ends Male Thread w/Undercuts and Wrench Flats / Both Ends Male Thread w/Undercuts and Cross-drilled Hole-

For Shafts w/o wrench flats or cross-drilled holes, please see P.139

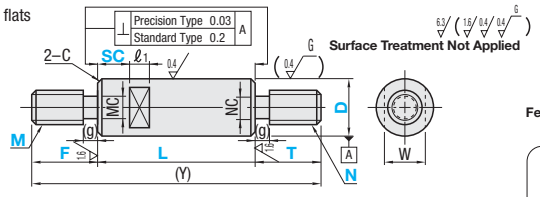
RoHS



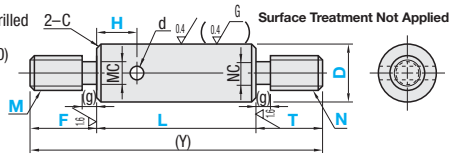
Type						M Material	H Hardness	S Surface Treatment
With Wrench Flats				With Cross-drilled Holes.				
Precision Type	Standard							
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8			
VAFU	SAFU	SFFU	-	SFHAM	-	1.3505	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
VSAFU	SSAFU	SSFFU	-	SSHAM	-	1.4125 equivalent		
VPAFU	PSAFU	PSFFU	-	PSHAM	-	1.3505		Hard Chrome Plating Plating Hardness: HV750 ~Plating Thickness 5μ or more
VPSAFU	PSSAFU	PSSFFU	-	PSSHAM	-	1.4125 equivalent		LTBC
VRFU	RSAFU	-	-	RSHAM	-	1.3505		
-	-	-	PSAGU	-	PSHGM	1.1191	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSAGU	-	-	1.4301		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

With wrench flats

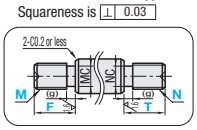


With cross-drilled holes. (D≤30, L≤500)



Features of Precision Type

Squareness is ⊥ 0.03



Centering holes will be spotted on shaft ends of precision type.

Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.

Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. P.103

Features of LTBC Plating P.118

Part Number Type	D	1mm Increments L	F / T	Selection M / N (Coarse)	Wrench Flats Dimensions W	ℓ1	(Y) Max.	C
Precision Type (Shafts with Wrench Flats) (D Tolerance g6) VAFU VSAFU VPAFU VPSAFU VRFU	8	25~290	5≤F≤Mx3 5≤T≤Nx3 F-(g)≥Pitchx3 T-(g)≥Pitchx3	6	7	8	300	0.2 or less
	10	25~340		6 8	8		350	
	12	25~340		6 8 10	10	10	350	
	13	25~340		6 8 10	11		350	
	15	25~340		6 8 10 12	13		350	
	16	25~340		6 8 10 12	14		350	
	18	25~340		6 8 10 12 16	16		350	
	20	25~440		6 8 10 12 16	17		450	
	25	25~436		8 10 12 16 20	22		450	
	30	25~436		8 10 12 16 20 24	27	15	450	

SC=1mm Increment
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Undercut Dimensions (Coarse Threads)			
M N	Pitch	MC NC	(g)
6	1.0	4.4 (4.2)	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

MC dimensions in ( ) are for Precision Type M6.

Part Number Type	D	1mm Increments L	F / T	Selection M / N (Coarse)	Wrench Flats Dimensions W	ℓ1	Cross-drilled Hole Dimensions H	d	(Y) Max.	C
Standard Type (Shafts with Wrench Flats) (D Tolerance g6) SAFU SSAFU PSAFU PSSAFU RSAFU (D≤30, L≤500, Ymax≤800) (D Tolerance f8) PSAGU PSSAGU	8	25~790	5≤F≤Mx3 5≤T≤Nx3 F-(g)≥Pitchx3 T-(g)≥Pitchx3	6	7	8	H=Specified in 1mm Increments L≥H+d/2+2 H≥d/2+2	3	800	0.5 or less
(Shafts with Cross-drilled Holes) D≤30, L≤500 (D Tolerance h5) SFFU SSFFU PSFFU PSSFFU (D Tolerance g6) SFHAM SSHAM PSHAM PSSHAM RSHAM (D Tolerance f8) PSHGM	10	25~790		6 8	8				800	
	12	25~990		6 8 10	10				1000	
	13	25~990		6 8 10 12	11			4	1000	
	15	25~990		6 8 10 12	13				1000	
	16	25~1190		6 8 10 12	14	10			1200	
	18	25~1190		6 8 10 12 16	16			6	1200	
	20	25~1190		6 8 10 12 16	17				1200	
	25	25~1190		8 10 12 16 20 24	22			7	1200	1.0 or less
	30	25~1490		8 10 12 16 20 24	27	15			1500	
	35	25~1490		10 12 16 20 24 30	30			-	1500	
	40	25~1490		12 16 20 24 30	36	20			1500	
	50	25~1490		16 20 24 30	41				1500	

SC=1mm Increment
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1490
SAFU SFFU SFHAM	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSAFU SSFFU SSHAM	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1490
PSAFU PSFFU PSHAM	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSAFU PSSFFU PSSHAM	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D≤30, L≤500)

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSAFU / RSHAM	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1490
PSAGU / PSHGM	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSAGU	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D≤30, L≤500)

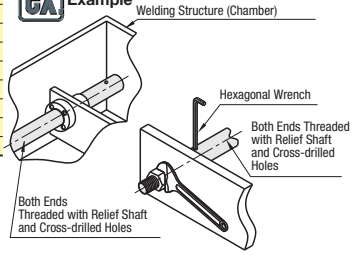
Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 440
VAFU	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFU	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFU	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

■Price Deductions for Cross-drilled Hole Option

D	Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
VPAFU	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							
VPSAFU	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Example



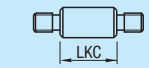
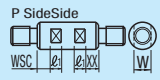
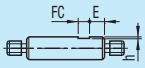
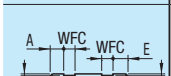
- Shafts with cross-drilled holes are suitable for limited work spaces.

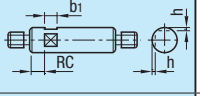
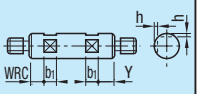
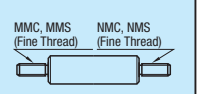
Alterations

Part Number	L	F	M (MMC · MMS)	T	N (NMC · NMS)	SC	H	(LKC...etc.)
SAFU30	- 300	- F40	- M20	- T48	- N16	- 20	-	LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFFU, SSFFU, PSFFU and PSSFFU on the left page to place orders.

Alteration Details ☞P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-M (N)≤2 When using LKC, L dimensions can be specified in 0.1 increments. (P) L<200 ···→L±0.03 200≤L<500···→L±0.05 L≥500 ···→L±0.1	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Applicable to "Shafts with Wrench Flats" only. Specify SX in 1mm increments (P) SC+SX+ℓ1x2<L (P) SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D / W / ℓ1: 8 7 8; 10 8 8; 12 10 8; 13 11 8; 15 13 10; 16 14 10; 18 16 10; 20 17 10; 25 22 10; 30 27 15; 35 30 15; 40 36 20; 50 41 20	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. (P) FC≤3xD (P) When 1.5xD<FC, FC≤L/2 (P) E=0 or E≥2 ⊗Can not be used with WFC D / h: 8~18 1; 20~40 2; 50 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments (P) WFC≤3xD (P) When 1.5xD<FC, 2WFC≤L/2 (P) A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 8~18 1; 20~40 2; 50 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Shafts with Cross-drilled hole, Precision Type, D Tolerance f8, Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS NMC NMS	Change to fine threads. Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMSC) NMC14 (N is changed to NMC) NMS14 (N is changed to NMS)	3,00

For details, please see Alterations Overview ☞P.105

(P)Please see Alteration Guides for details if provided. ☞P.105
(P)For more than one alteration, 2mm or more separation required between machined sections. ☞P.106
(P)Alterations may lower hardness. ☞P.104

Order Example

Part Number	L	F	M	T	N	SC	H
VAFU20	- 200	- F30	- M10	- T20	- N10	- SC8	
SAFU15	- 300	- F18	- M6	- T17	- N12	- SC8	
SFHAM15	- 300	- F18	- M6	- T17	- N12		- H8

Days to Ship

8 Days — Express A 8,00 EUR/unit ☞P.88
(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.

5 Days
- VAFU · VSAFU · VPAFU · VPSAFU · VRFU ☞P.88

10 Days — Express B 8,00 EUR/unit
(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRFU.
- RSAFU · RSHAM

13 Days

Shafts
-One End Male Thread / One End Female Thread-

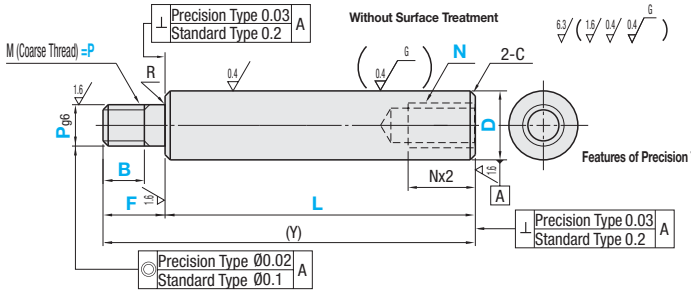
For Shafts with wrench flats or with cross-drilled hole, please see P.145



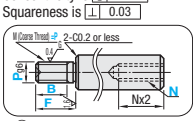
RoHS

Type				M Material	H Hardness	S Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFBD	SFAD	SFUD	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104	-
VSFBD	SSFAD	SSFUD	-	1.4125/ equivalent		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPFBD	PSFAD	PSFUD	-	1.3505/100Cr6	58HRC~	
VPSFBD	PSSFAD	PSSFUD	-	1.4125/ equivalent	56HRC ~	LTBC
VRBD	RSFAD	-	-	1.3505/100Cr6		
-	-	-	PSFGD	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGD	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
4			-
5	-0.004 -0.012	0 -0.005	-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Features of Precision Type : Concentricity is Ø0.02, Squareness is 0.03



Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Circularity, Straightness, Perpendicularity, P.103

Features of LTBC P.118

Overall length L requires Nx3≤L.

When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).

Precision shafts have grinding undercut section at the bottom of threads. Shaft ends

Part Number Type	D	1mm Increments L	F	B	P (Coarse) Selection	N (Coarse) Selection	(Y) Max.	R	C
Precision Type (D Tolerance g6) VFBD VSFBD VPFBD VPSFBD VRBD	5	25~296	2≤F≤Px5	(When P≤6) B≤F-2	3	2.6 3	300	0.2 or less	0.2 or less
	6	25~296			3 4	3	300	0.3 or less	
	8	25~296			3 4 5 6	3 4 5	300		
	10	25~345		(When P=8 / 10) B≤F-3	4 5 6 8	3 4 5 6	350		
	12	25~345			5 6 8 10	4 5 6 8	350		
	13	25~345			5 6 8 10	4 5 6 8	350		
	15	25~345		(When P≤12) B≤F-5	5 6 8 10 12	4 5 6 8 10	350		
	16	25~345			5 6 8 10 12	4 5 6 8 10	350		
	18	25~345		(When without threads) B=0	5 6 8 10 12 16	4 5 6 8 10 12	350		
	20	25~445			6 8 10 12 16	4 5 6 8 10 12	450		
	25	25~443			8 10 12 16 20	4 5 6 8 10 12 16	450		
	30	25~443		⊗B≥Pitchx3	8 10 12 16 20 24	6 8 10 12 16 20	450		

Coarse Thread Dimensions M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

Part Number Type	D	1mm Increments L	F	B	P (Coarse) Selection	N (Coarse) Selection	(Y) Max.	R	C
Standard Type (D Tolerance g6) SFAD SSFAD PSFAD PSSFAD RSFAD (D≤30, L≤500) (D Tolerance h5) SFUD SSFUD PSFUD PSSFUD (D Tolerance f8) PSFGD PSSFGD	4	25~298	2≤F≤Px5	(When P≤6) B≤F-2	3 4	2	300	0.2 Less than	0.2 Less than
	5	25~398			3 4 5	2.6 3	400	0.3 or less	0.5 or less
	6	25~598			3 4 5 6	3	600		
	8	25~798			3 4 5 6 8	3 4 5	800		
	10	25~798		(When P=8 / 10) B≤F-3	4 5 6 8 10	3 4 5 6	800		
	12	25~998			5 6 8 10 12	4 5 6 8	1000		
	13	25~998			5 6 8 10 12	4 5 6 8	1000		
	15	25~998		(When P≤12) B≤F-5	5 6 8 10 12	4 5 6 8 10	1000		
	16	25~1198			5 6 8 10 12 16	4 5 6 8 10	1200		
	18	25~1198			5 6 8 10 12 16	4 5 6 8 10 12	1200		
	20	25~1198		(When without threads) B=0	6 8 10 12 16 20	4 5 6 8 10 12	1200		1.0 or less
	25	25~1198			8 10 12 16 20 24	4 5 6 8 10 12 16	1200		
	30	25~1498			8 10 12 16 20 24 30	6 8 10 12 16 20	1500		
	35	25~1498			10 12 16 20 24 30	8 10 12 16 20 24	1500	0.5 or less	
	40	40~1498		⊗B≥Pitchx3	12 16 20 24 30	10 12 16 20 24 30	1500		
	50	50~1498			16 20 24 30	12 16 20 24 30	1500		

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1498
SFAD SFUD	4												
	5												
	6												
	8												
	10												
	12 • 13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												
SSFAD SSFUD	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1498
PSFAD PSFUD	4												
	5												
	6												
	8												
	10												
	12 • 13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												
PSSFAD PSSFUD	4												
	5												
	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

CAD Data

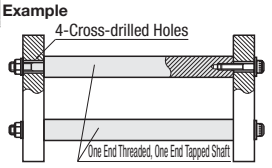
Part Number		€ Unit Price						
Type	D	Min. L ↓ 50	L51 ↓ 100	L101 ↓ 150	L151 ↓ 200	L201 ↓ 300	L301 ↓ 400	L401 ↓ 500
RSFAD	4							
	5							
	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price						
Type	D	Min. L ↓ 100	L101 ↓ 200	L201 ↓ 400	L401 ↓ 600	L601 ↓ 800	L801 ↓ 1000	L1001 ↓ 1200	L1201 ↓ 1498
PSFGD	6								
	8								
	10								
	12								
	13								
	15 • 16								
	18 • 20								
	25								
	30								
	35								
	40								
	50								
PSSFGD	6								
	8								
	10								
	12 • 13								
	15 • 16								
	18 • 20								
	25								
	30								
	35								
	40								
	50								

Part Number		€ Unit Price					
Type	D	Min. L ↓ 50	L51 ↓ 100	L101 ↓ 200	L201 ↓ 300	L301 ↓ 445
VFBD	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFBD	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRBD	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number		€ Unit Price					
Type	D	Min. L ↓ 50	L51 ↓ 100	L101 ↓ 200	L201 ↓ 300	L301 ↓ 445
VPFBD	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFBD	5					
	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Example

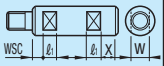
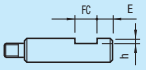
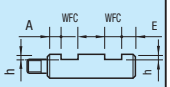


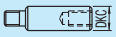
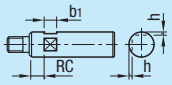
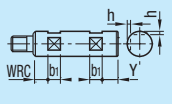
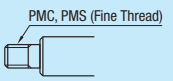
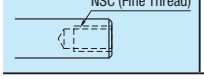
Alterations

Part Number - L - F - B - P (PMC / PSC) - N (NSC) - (LKC / WSC...etc.)
SFAD30 - 250 - F40 - B30 - P10 - N10 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUD, SSFUD, PSFUD and PSSFUD on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. Ⓟ L<200 ···› L±0.03 200≤L<500···› L±0.05 L≥500 ···› L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Application Notes Applicable to D = 6 and over Specify WSC/X in 1mm increments. Ⓟ WSC=X+ℓ1x2<L Ⓟ WSC (X)=0 or WSC (X)≥1 ⊗Not available on the same plane.	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. Ⓟ FC≤3xD Ⓟ When 1.5xD<FC, FC≤L/2 Ⓟ E=0 or E≥2 ⊗Can not be used with WFC D / h: 4~5 / 0.5; 6~18 / 1; 20~40 / 2; 50 / 3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments Ⓟ WFC≤3xD Ⓟ When 1.5xD<FC, 2WFC≤L/2 Ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 4~5 / 0.5; 6~18 / 1; 20~40 / 2; 50 / 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC ⊗Not available on the same plane.	10,00
	PMC	Change to fine threads. Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMS)	3,00
	NSC	Change to fine thread tap. Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable for D = 6 or more	3,00

For details, please see Alterations Overview P.105

Ⓟ Please see Alteration Guides for details if provided. P.105
Ⓟ For more than one alteration, 2mm or more separation required between machined sections. P.106
Ⓟ Alterations may lower hardness. P.104

Order Example

Part Number - L - F - B - P - N
VFBD12 - 277 - F20 - B12 - P8 - N5
SFAD20 - 277 - F25 - B12 - P10 - N12

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P. 88
Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VFBD · VSFBD · VPFBD · VPSFBD · VRBD
10 Days — Express B 8,00 EUR/unit P. 88
Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRBD.

- RSFAD
13 Days

NEW

Shafts -Standard Type / Precision Type-

-One End Male Thread and One End Female Thread w/Wrench Flats / One End Male Thread and One End Female Thread w/Cross-drilled Hole-

For Shafts w/o wrench flats or cross-drilled holes, please see P.143

RoHS

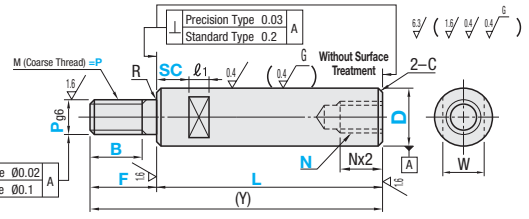


- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104
- Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.
- Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103
- Features of LTBC P.118

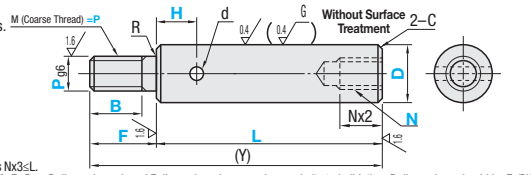
Type						M Material	H Hardness	S Surface Treatment
With Wrench Flats				With Cross-drilled Hole				
Precision Type	Standard							
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8			
VFAZ	SFAZ	SFZU	-	SFZH	-	1.3505	Induction Hardening Effective Hardening Depth ☞P.104	-
VSFAZ	SSFAZ	SSFZU	-	SSFZH	-	1.4125		
VPFAZ	PSFAZ	PSFZU	-	PSFZH	-	1.3505		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFAZ	PSSFAZ	PSSFZU	-	PSSFZH	-	1.4125	1.3505/100Cr6 58HRC~	
VRAZ	RSFAZ	-	-	RSFZH	-	1.3505	1.4125/X105CrMo17 equivalent 56HRC~	LTBC
-	-	-	PSGGZ	-	PSGZH	1.1191	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSGGZ	-		1.4301		

D Tolerance			
D	g6	h5	f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

With wrench flats



With cross-drilled holes. (8≤D≤30, L≤500)

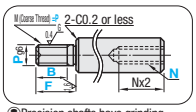


- Overall length L requires Nx3≤L.
- When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).

Features of Precision Type

Concentricity is ◎ Ø0.02

Squareness is ⊥ 0.03



- Precision shafts have grinding undercut section at the bottom of threads. Shaft ends

Part Number Type	D	1mm Increments L	F	B	P (Coarse) Selection	N (Coarse) Selection
Precision Type (With wrench flats) (D Tolerance g6) VFAZ VSFAZ VPFAZ VPSFAZ VRAZ	6	25~296	2≤F≤Px5	(When P≤6) B≤F-2	3 4	3
	8	25~296			3 4 5 6	3 4 5
	10	25~345			4 5 6 8	3 4 5 6
	12	25~345		(When P=8 / 10) B≤F-3	5 6 8 10	4 5 6 8
	13	25~345			5 6 8 10	4 5 6 8
	15	25~345		(When P≤12) B≤F-5	5 6 8 10 12	4 5 6 8 10
	16	25~345			5 6 8 10 12	4 5 6 8 10
	18	25~345		(When without threads) B=0	5 6 8 10 12 16	4 5 6 8 10 12
	20	25~445			6 8 10 12 16	4 5 6 8 10 12
	25	25~443			8 10 12 16 20	4 5 6 8 10 12 16
	30	25~443		B≥Pitchx3	8 10 12 16 20 24	6 8 10 12 16 20

Wrench Flats Dimensions	W	ℓ1	(Y) Max.	R	C
SC=1mm Increment	5		300	0.3 or less	0.2 or less
	7	8	300		
SC+ℓ1≤L	8		350		
SC=0 or SC≥1	10		350		
	11		350		
	13		350		
	14	10	350		
Details of Wrench Flats ☞P.104	16		350		
	17		450		
	22		450		
	27	15	450		

Coarse Thread Dimensions	
M	pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

Part Number Type	D	1mm Increments L	F	B	P (Coarse) Selection	N (Coarse) Selection
Standard Type (With wrench flats) (With cross-drilled hole) 8≤D≤30, L≤500 (D Tolerance g6) SFAZ SSFAZ PSFAZ PSSFAZ RSFAZ (D≤30, L≤500) (D Tolerance f8) PSGGZ PSSGGZ (D Tolerance h5) SFZU SSFZU PSFZU PSSFZU (D Tolerance g6) SFZH SSFZH PSFZH PSSFZH RSFZH (D Tolerance f8) PSGZH	6	25~598	2≤F≤Px5	(When P≤6) B≤F-2	3 4 5 6	3
	8	25~798			3 4 5 6 8	3 4 5
	10	25~798			4 5 6 8 10	3 4 5 6
	12	25~998		(When P=8 / 10) B≤F-3	5 6 8 10 12	4 5 6 8
	13	25~998			5 6 8 10 12	4 5 6 8
	15	25~998		(When P≤12) B≤F-5	5 6 8 10 12	4 5 6 8 10
	16	25~1198			5 6 8 10 12 16	4 5 6 8 10
	18	25~1198		(When without threads) B=0	5 6 8 10 12 16	4 5 6 8 10 12
	20	25~1198			6 8 10 12 16 20	4 5 6 8 10 12
	25	25~1198			8 10 12 16 20 24	4 5 6 8 10 12 16
	30	25~1498		B≥Pitchx3	8 10 12 16 20 24 30	6 8 10 12 16 20
	35	25~1498			10 12 16 20 24 30	8 10 12 16 20 24
	40	40~1498			12 16 20 24 30	10 12 16 20 24 30
	50	50~1498			16 20 24 30	12 16 20 24 30

Wrench Flats Dimensions SC	W	ℓ1	Cross-drilled Hole Dimensions H	d	(Y) Max.	R	C
SC=1mm Increment	5	8	H=Specified in 1mm increments L≥H+d/2+6+Nx2.5 H≥d/2+2	-	600	0.3 or less	0.5 or less
	7			3	800		
SC+ℓ1≤L	8				800		
SC=0 or SC≥1	10				1000		
	11			4	1000		
	13				1200		
	14	10		6	1200		
Details of Wrench Flats ☞P.104	16				1200		
	17			7	1200		1.0 or less
	22				1500		
	27	15		-	1500	0.5 or less	
	30				1500		
	36	20					
	41						

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L x 50	L51 x 100	L101 x 150	L151 x 200	L201 x 300	L301 x 400	L401 x 500	L501 x 600	L601 x 800	L801 x 1000	L1001 x 1200	L1201 x 1498
SFAZ SFZU SFZH	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAZ SSFZU SSFZH	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L x 50	L51 x 100	L101 x 150	L151 x 200	L201 x 300	L301 x 400	L401 x 500	L501 x 600	L601 x 800	L801 x 1000	L1001 x 1200	L1201 x 1498
PSFAZ PSFZU PSFZH	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAZ PSSFZU PSSFZH	6												
	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

- For D tolerance h5,2.00 EUR is added to the prices above.
- For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤500)

Price Reduction
3%

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSFAZ	6							
	8							
	10							
	12							
	13							
	15							
RSFZH	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VFAZ	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFAZ	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRAZ	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VPFAZ	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFAZ	6					
	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

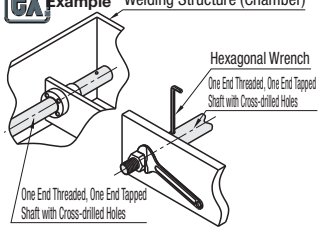
Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1498
PSGGZ	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
PSGZH	25								
	30								
	35								
	40								
	50								
PSSGGZ	6								
	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

For shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D≤30,L≤50)

■ Price Deductions for Shafts with Cross-drilled Holes

D	€ Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

Example Welding Structure (Chamber)



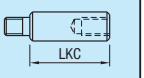
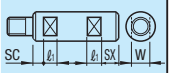
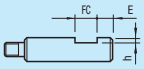
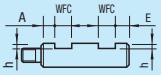
- Shafts with cross-drilled holes are suitable for limited work spaces.

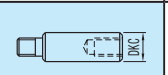
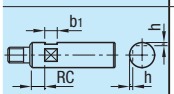
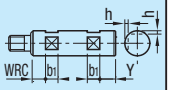
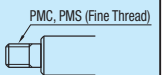
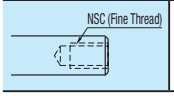
Alterations

Part Number - L - F - B - P (PMC · PSC) - N (NSC) - SC - H - (LKC...etc.)
SFAZ30 - 250 - F40 - B30 - P10 - N10 - SC10 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFZU, SSFZU, PSFZU and PSSFZU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. (P) L<200 ···›L±0.03 200≤L<500···›L±0.05 L≥500 ···›L±0.1	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Applicable to "Shafts with Wrench Flats" only. Specify SX in 1mm increments (P) SC+SX+ℓ₁x2<L (P) SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D / h: 6~18 / 1; 20~40 / 2; 50 / 3	4,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. (P) FC≤3xD (P) When 1.5xD<FC, FC≤L/2 (P) E=0 or E≥2 ⊗Can not be used with WFC D / h: 6~18 / 1; 20~40 / 2; 50 / 3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments (P) WFC≤3xD (P) When 1.5xD<FC, 2WFC≤L/2 (P) A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 6~18 / 1; 20~40 / 2; 50 / 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Shafts with Cross-drilled hole, Precision Type, D Tolerance f8, Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	PMC	Change to fine threads. Ordering Code PMC14 (P is changed to PMC) PMS14 (P is changed to PMS)	3,00
	NSC	Change to fine thread tap. Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable for D = 6 or more	3,00

For details, please see Alterations Overview P.105

(P)Please see Alteration Guides for details if provided. P.105
(P)For more than one alteration, 2mm or more separation required between machined sections.
(P)Alterations may lower hardness. P.104

Order Example

Part Number	L	F	B	P	N	SC	H
VFAZ16	200	F20	B12	P10	N8	SC10	
SFAZ20	277	F25	B12	P10	N12	SC10	
SSFZH20	277	F25	B12	P10	N12		H10

Days to Ship

- RSFAZ · RSFZH: 8 Days — Express A 8,00 EUR/unit — 5 Days (P.88)
(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.
- VFAZ · VSFAZ · VPFAZ · VPSFAZ · VRAZ: 10 Days — Express B 8,00 EUR/unit (P.88) — 13 Days
(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRAZ.

NEW

Shafts -Standard Type / Precision Type-

-One End Male Thread / One End Female Thread with Undercut-

For Shafts with wrench flats or with cross-drilled hole, please see P.149

RoHS



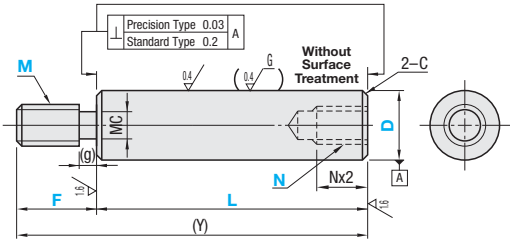
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing. P.104

Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103

Features of LTBC P.118

Type				Material	Hardness	Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VAFD	SAFD	SFDU	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
VSAFD	SSAFD	SSFDU	-	1.4125/X105CrMo17 equivalent		
VPAFD	PSAFD	PSFDU	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSAFD	PSSAFD	PSSFDU	-	1.4125/X105CrMo17 equivalent		
VRFD	RSAFD	-	-	1.3505/100Cr6		LTBC
-	-	-	PSAGD	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSAGD	1.4301/ X5CrNi18-10		

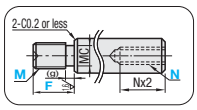
D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Overall length L requires Nx3≤L.

Features of Precision Type

Squareness is ⊥ 0.03



Centering holes will be spotted on shaft ends of precision type.

Part Number Type	D	1mm Increments L	F	M (Coarse Threads) Selection	N (Coarse) Selection	(Y) Max.	C
Precision type (D Tolerance g6) VAFD VSAFD VPAFD VPSAFD VRFD	8	25~295	5≤F≤Mx3 F-g≥Pitchx3	6	3 4 5	300	0.2 or less
	10	25~345		6 8	3 4 5 6	350	
	12	25~345		6 8 10	4 5 6 8	350	
	13	25~345		6 8 10	4 5 6 8	350	
	15	25~345		6 8 10 12	4 5 6 8 10	350	
	16	25~345		6 8 10 12	4 5 6 8 10	350	
	18	25~345		6 8 10 12 16	4 5 6 8 10 12	350	
	20	25~445		6 8 10 12 16	4 5 6 8 10 12	450	
	25	25~443		8 10 12 16 20	4 5 6 8 10 12 16	450	
	30	25~443		8 10 12 16 20 24	6 8 10 12 16 20	450	

Undercut Dimensions (Coarse Threads)			
M	Pitch	MC	(g)
6	1.0	4.4 (4.2)	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

MC dimensions in () are for Precision Type M6.

Part Number Type	D	1mm Increments L	F	M (Coarse Threads) Selection	N (Coarse) Selection	(Y) Max.	C
Standard Type (D Tolerance g6) SAFD SSAFD PSAFD PSSAFD RSAFD (D≤30, L≤500) (D Tolerance f8) PSAGD PSSAGD / (D Tolerance h5) SFDU SSFDU PSFDU PSSFDU	8	25~795	5≤F≤Mx3	6	3 4 5	800	0.5 or less
	10	25~795		6 8	3 4 5 6	800	
	12	25~995		6 8 10	4 5 6 8	1000	
	13	25~995		6 8 10 12	4 5 6 8	1000	
	15	25~995		6 8 10 12	4 5 6 8 10	1000	
	16	25~1195		6 8 10 12	4 5 6 8 10	1200	
	18	25~1195		6 8 10 12 16	4 5 6 8 10 12	1200	
	20	25~1195		6 8 10 12 16	4 5 6 8 10 12	1200	1.0 or less
	25	25~1193		8 10 12 16 20 24	4 5 6 8 10 12 16	1200	
	30	25~1493		8 10 12 16 20 24	6 8 10 12 16 20	1500	
	35	25~1492		10 12 16 20 24 30	8 10 12 16 20 24	1500	
	40	40~1490		12 16 20 24 30	10 12 16 20 24 30	1500	
	50	50~1490		16 20 24 30	12 16 20 24 30	1500	

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1493
SAFD SFDU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSAFD SSFDU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1493
PSAFD PSFDU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSAFD PSSFDU	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

CAD Data

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSAFD	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 445
VAFD	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFD	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFD	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 445
VPAFD	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSAFD	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

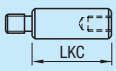
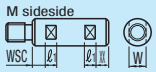
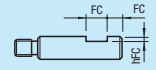
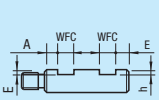
Part Number Type	D	€ Unit Price Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1493
PSAGD	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSAGD	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

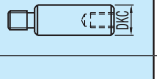
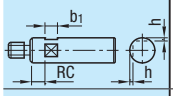
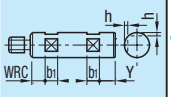
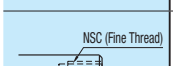
Alterations

Part Number - L - F - M (MMC · MMS) - N (NSC) - (LKC...etc.)
SAFD30 - 250 - F40 - M20 - N20 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFDU, SSFDU, PSFDU and PSSFDU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-M≤2 When using LKC, L dimensions can be specified in 0.1 increments. ? L<200 ···L±0.03 200≤L<500···L±0.05 L≥50 ···L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. ? WSC+X+ℓ1x2<L ? WSC (X)=0 or WSC (X)≥1 ⊗Not available on the same plane. D: 8, 10, 12, 13, 15, 16, 18 / W: 7, 8, 10, 11, 13, 14, 16 / ℓ1: 8 (D 8–10), 10 (D 12–18) D: 20, 25, 30, 35, 40, 50 / W: 17, 22, 27, 30, 36, 41 / ℓ1: 10, 15, 20	8,00
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. ? FC≤3xD ? When 1.5xD<FC, FC≤L/2 ? E=0 or E≥2 ⊗Can not be used with WFC D: 8~18 / h: 1; D: 20~40 / h: 2; D: 50 / h: 3	2,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments ? WFC≤3xD ? When 1.5xD<WFC, 2WFC≤L/2 ? A (E) = 0 or A (E) ≥ 2 ⊗Cannot be machined on the same plane. Cannot be combined with FC. D: 8~18 / h: 1; D: 20~40 / h: 2; D: 50 / h: 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Not applicable for Precision Type, Shafts with D tolerance f8 and LTBC plating.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS	Change to fine threads. Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS)	3,00
	NSC	Change to fine thread tap. Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable for D = 6 or more	3,00

For details, please see Alterations Overview P.105

? Please see Alteration Guides for details if provided. P.105
? For more than one alteration, 2mm or more separation required between machined sections.
? Alterations may lower hardness. P.104

Order Example

Part Number	L	F	M	N
SAFD20	277	F25	M10	N12
VPAFD20	300	F25	M16	N12

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days P.88
? A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VAFD · VSAFD · VPAFD · VPSAFD · VRFD
10 Days — Express B 8,00 EUR/unit P.88
? A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRFD.

- RSAFD
13 Days

Shafts -Standard Type / Precision Type-

-One End Male Thread and One End Female Thread w/Undercut and Wrench Flats / One End Male Thread and One End Female Thread w/Undercut and Cross-drilled Hole-

For Shafts w/o wrench flats or cross-drilled holes, please see P.147

RoHS

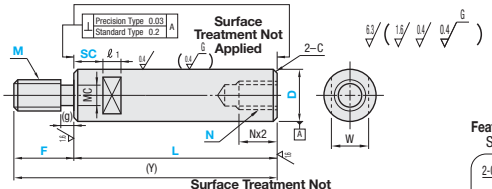


- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104
- Cross-drilled hole areas may be out of O.D. tolerances due to deformations caused by annealing.
- Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103
- Features of LTBC P.118

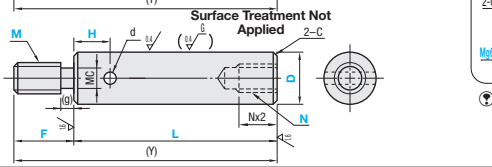
Type						M Material	H Hardness	S Surface Treatment
Precision Type	Standard			With Cross-drilled Holes.				
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance f8			
VAFZ	SAFZ	SFBU	-	SAHD	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~1.4125/ X105CrMo17 equivalent 56HRC ~	-
VSAFZ	SSAFZ	SSFBU	-	SSAHD	-	1.4125/ X105CrMo17 equivalent		
VPAFZ	PSAFZ	PSFBU	-	PSAHD	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSAFZ	PSSAFZ	PSSFBU	-	PSSAHD	-	1.4125/ X105CrMo17 equivalent		
VRFZ	RSAFZ	-	-	RSAHD	-	1.3505/100Cr6		LTBC
-	-	-	PSAGZ	-	PSHGD	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ PlatingThickness: 10μm or more.
-	-	-	PSSAGZ	-	-	1.4301/ X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

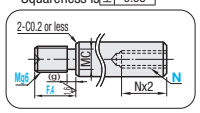
With wrench flats



With cross-drilled holes. (D≤30, L≤500)



Features of Precision Type
Squareness is ⊥ 0.03



- Centering holes will be spotted on shaft ends of precision type.
- Overall length L requires Nx3≤L.

Part Number Type	D	1mm Increments L	F	M (Coarse Threads) Selection	N (Coarse) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	C
Precision Type (Shafts with Wrench Flats) (Tolerance g6) VAFZ VSAFZ VPAFZ VPSAFZ VRFZ	8	25~295	5≤F≤Mx3 (F-g≥Pitchx3)	6	3 4 5	7	8	300	0.2 or less
	10	25~345		6 8	3 4 5 6	8		350	
	12	25~345		6 8 10	4 5 6 8	10	10	350	
	13	25~345		6 8 10	4 5 6 8	11		350	
	15	25~345		6 8 10 12	4 5 6 8 10	13		350	
	16	25~345		6 8 10 12	4 5 6 8 10	14		350	
	18	25~345		6 8 10 12 16	4 5 6 8 10 12	16		350	
	20	25~445		6 8 10 12 16	4 5 6 8 10 12	17		450	
	25	25~443		8 10 12 16 20	4 5 6 8 10 12 16	22		450	
	30	25~443		8 10 12 16 20 24	6 8 10 12 16 20	27	15	450	

SC=1mm Increment
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Undercut Dimensions (Coarse Threads)			
M	Pitch	MC	Undercuts (g)
6	1.0	4.4 (4.2)	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

MC dimensions in ( ) are for Precision Type M6.

Part Number Type	D	1mm Increments L	F	M (Coarse Threads) Selection	N (Coarse) Selection	Wrench Flats Dimensions W	ℓ1	Cross-drilled Hole Dimensions H	d	(Y) Max.	C
Standard Type (Shafts with Wrench Flats) (Tolerance g6) SAFZ SSAFZ PSAFZ PSSAFZ RSAFZ (D≤30, L≤500) (Tolerance f8) PSAGZ PSSAGZ	8	25~795	5≤F≤Mx3 (F-g≥ Pitchx3)	6	3 4 5	7	8	H=Specified in 1mm increments L≥H+d/2+6+Nx2.5 H≥d/2+2	3	800	0.5 or less
	10	25~795		6 8	3 4 5 6	8				800	
(Shafts with Wrench Flats) (Tolerance h5) SFBU SSFBU PSFBU PSSFBU (Shafts with Cross-drilled Holes) D≤30, L≤500 (Tolerance g6) SAHD SSAHD PSAHD PSSAHD RSAHD (Tolerance f8) PSHGD	12	25~995		6 8 10	4 5 6 8	10	10		4	1000	
	13	25~995		6 8 10 12	4 5 6 8	11				1000	
	15	25~995		6 8 10 12	4 5 6 8 10	13				1000	
	16	25~1195		6 8 10 12	4 5 6 8 10	14				1200	
	18	25~1195		6 8 10 12 16	4 5 6 8 10 12	16			6	1200	
	20	25~1195		6 8 10 12 16	4 5 6 8 10 12	17				1200	1.0 or less
	25	25~1193		8 10 12 16 20 24	4 5 6 8 10 12 16	22			7	1200	
	30	25~1493		8 10 12 16 20 24	6 8 10 12 16 20	27	15			1500	
	35	25~1492		10 12 16 20 24 30	8 10 12 16 20 24	30			-	1500	
	40	40~1490		12 16 20 24 30	10 12 16 20 24 30	36	20			1500	
	50	50~1490		16 20 24 30	12 16 20 24 30	41				1500	

SC=Specified
SC+ℓ1≤L
SC=0 or SC≥1
Details of Wrench Flats P.104

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.For 50 or more shafts with diameter greater than 30 and applied low temp chrome plating, please request for quote.

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1493
SAFZ SFBU SAHD	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSAFZ SSFBU SSAHD	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1493
PSAFZ PSFBU PSAHD	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSAFZ PSSFBU PSSAHD	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above. For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D≤30, L≤500)

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSAFZ (P)RSAHD	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1493
PSAGZ (P)PSHGD	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSAGZ	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

(P)For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D≥30, L≤500)

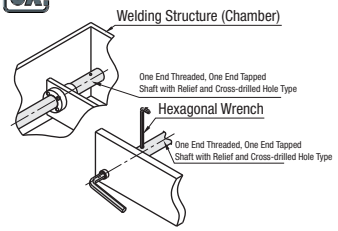
Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VAFZ	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSAFZ	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRFZ	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

■Price Deductions for Cross-drilled Hole Option

D	€ Price Deductions
8 · 10	
12 · 13 · 15 · 16 · 18 · 20	
25 · 30	

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 445
VPAFZ	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSAFZ	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Example



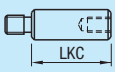
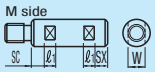
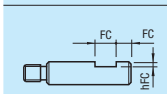
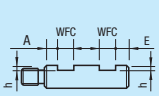
- Shafts with cross-drilled holes are suitable for limited work spaces.

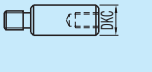
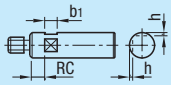
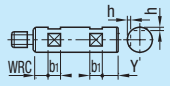
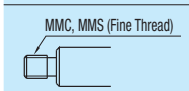
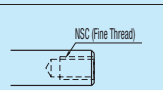
Alterations

Part Number - L - F - M (MMC · MMS) - N (NSC) - SC - H - (LKC...etc.)
SAFZ30 - 250 - F40 - M20 - N20 - SC10 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFBU, SSFBU, PSFBU and PSSFBU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-M≤2 When using LKC, L dimensions can be specified in 0.1 increments. (P) L<200 ···▸L±0.03 200≤L<500···▸L±0.05 L≥500 ···▸L±0.1	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Applicable to "Shafts with Wrench Flats" only. Specify SX in 1mm increments (P) SC+SX+ℓ1x2<L (P) SX = 0 or SX ≥ 1 ⊗Not available on the same plane.	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. (P) FC≤3xD (P) When 1.5xD<FC, FC≤L/2 (P) E=0 or E≥2 ⊗Can not be used with WFC	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments (P) WFC≤3xD (P) When 1.5xD<WFC, 2WFC≤L/2 (P) A (E) = 0 or A (E) ≥ 2 ⊗Cannot be machined on the same plane. Cannot be combined with FC.	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Shafts with Cross-drilled hole, Precision Type, D Tolerance f8,Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS	Change to fine threads. Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS)	3,00
	NSC	Change to fine thread tap. Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable for D = 6 or more	3,00

For details, please see Alterations Overview P.105

(P)Please see Alteration Guides for details if provided. P.105
(P)For more than one alteration, 2mm or more separation required between machined sections.
(P)Alterations may lower hardness. P.104

Order Example

Part Number - L - F - M - N - SC - H
SAFZ20 - 277 - F25 - M10 - N12 - SC10
SSAHD20 - 277 - F25 - M12 - N12 - H10

Days to Ship: 8 Days

Express A | 8,00 EUR/unit | P.88 | 5 Days

(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.

- VAFZ · VSAFZ · VPAFZ · VPSAFZ · VRFZ: 10 Days

Express B | 8,00 EUR/unit | P.88

(P)A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRFZ.

- RSAFZ / RSAHD: 13 Days

Shafts -Standard Type / Precision Type-
-One End Stepped and Female Thread / One End Stepped-

For Shafts with Wrench flats, please see P.153

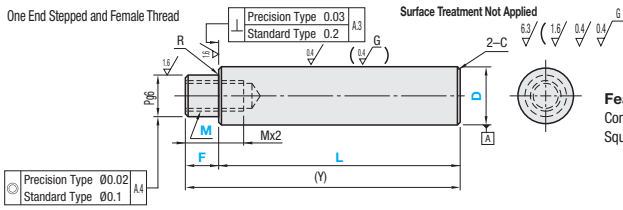
RoHS



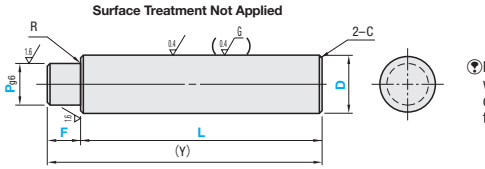
Type							M Material	H Hardness	S Surface Treatment
One End Stepped and Female Thread				One End Stepped					
Precision type	Standard			Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance g6	D Tolerance h5			
VFAG	SFAG	SFUG	-	SFAC	SFCU	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFAG	SSFAG	SSFUG	-	SSFAC	SSFCU	-	1.4125 equivalent		
VPFAG	PSFAG	PSFUG	-	PSFAC	PSFCU	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFAG	PSSFAG	PSSFUG	-	PSSFAC	PSSFCU	-	1.4125 equivalent		
VRAG	RSFAG	-	-	RSFAC	-	-	1.3505/100Cr6		LTBC
VSRAG	-	-	-	-	-	-	1.4125 equivalent		
-	-	-	PSFGG	-	-	PSCGC	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGG	-	-	PSSCGC	1.4301		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

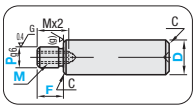
One End Stepped and Female Thread



One End Stepped



Features of Precision Type
Concentricity is ◎ Ø0.02,
Squareness is ⊥ 0.03



Precision Type will have an undercut (max. width: 1mm, max. depth: 0.1mm) at the base of stepped section, and centering holes on the ends.

Shaft End Machined Area (Effective Thread Length + approx. 10mm)hardness may be reduced by annealing. P.104

Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103

Features of LTBC P.118

Part Number Type	D	1mm Increments L	F	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Precision Type	8	25~298	2≤F≤Px4	6	3	300	0.3 or less	0.5 or less
One End Stepped and Female Thread (D Tolerance g6)	10	25~348		6~8	3 4 5	350		
	12	25~348		6~10	3 4 5 6	350		
	13	25~348		6~11	3 4 5 6 8	350		
VFAG	15	25~348		6~13	3 4 5 6 8 10	350		
VSFAG	16	25~348		6~14	3 4 5 6 8 10	350		
VPFAG	18	25~348		8~16	4 5 6 8 10 12	350		
VPSFAG	20	25~448		8~17	4 5 6 8 10 12	450		1.0 or less
VRAG	25	25~448		8~22	4 5 6 8 10 12 16	450		
VSRAG	30	25~448		9~27	5 6 8 10 12 16 20 24	450		

-One End Stepped and Female Thread ◎M + 3 ≤ P is required for P Dimension. ◎When Mx2.5+4≥Y, tap pilot hole may go through. ◎For Precision Type, (Y) dimensions needs to be Mx4≤(Y). Tap pilot hole may go through.

Part Number Type				D	1mm Increments L	F	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Standard Type				8	25~798	2≤F≤Px4	6	3	800	0.3 or less	0.5 or less
One End Stepped and Female Thread (D Tolerance g6)	(D Tolerance h5)	One End Stepped (D Tolerance g6)	(D Tolerance h5)	10	25~798		6~ 8	3 4 5	800		
SFAG	SFUG	SFAC	SFCU	12	25~998		6~10	3 4 5 6	1000		
SSFAG	SSFUG	SSFAC	SSFCU	13	25~998		6~11	3 4 5 6 8	1000		
PSFAG	PSFUG	PSFAC	PSFCU	15	25~998		6~13	3 4 5 6 8 10	1000		
PSSFAG	PSSFUG	PSSFAC	PSSFCU	16	25~1198		6~14	3 4 5 6 8 10	1200		
RSFAG (D≤30, L≤500)		RSFAG (D≤30, L≤500)		18	25~1198		8~16	4 5 6 8 10 12	1200		
				20	25~1198		8~17	4 5 6 8 10 12	1200		1.0 or less
(D Tolerance f8)		(D Tolerance f8)		25	25~1198		8~22	4 5 6 8 10 12 16	1200		
PSFGG		PSCGC		30	25~1498		9~27	5 6 8 10 12 16 20 24	1500		
PSSFGG		PSSCGC		35	25~1498		9~32	5 6 8 10 12 16 20 24	1500	0.5 or less	
				40	25~1498		11~37	6 8 10 12 16 20 24 30	1500		
				50	25~1498		11~47	6 8 10 12 16 20 24 30	1500		

-One End Stepped and Female Thread ◎M + 3 ≤ P is required for P Dimension. ◎When Mx2.5+4≥Y, tap pilot hole may go through.

Price

Volume Discount (◎Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

◎RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1498
SFAG	8 · 10												
◎SFUG	12 · 13												
◎SFAC	15 · 16												
◎SFCU	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAG	8 · 10												
◎SSFUG	12 · 13												
◎SSFAC	15 · 16												
◎SSFCU	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1498
PSFAG	8 · 10												
◎PSFUG	12 · 13												
◎PSFAC	15 · 16												
◎PSFCU	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAG	8 · 10												
◎PSSFUG	12 · 13												
◎PSSFAC	15 · 16												
◎PSSFCU	18 · 20												
	25												
	30												
	35												
	40												
	50												

-One End Stepped and Female Thread
◎For D tolerance h5, 2,00 EUR is added to the prices above.

-One End Stepped
◎For D tolerance h5, 3,90 EUR is added to the above prices. And then the prices on the right page are subtracted.
◎For D tolerance g6, the prices on the right page are subtracted from the above prices.

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≤ 100	L101 ≤ 150	L151 ≤ 200	L201 ≤ 300	L301 ≤ 400	L401 ≤ 500
RSFAG	8							
	10							
	12							
	13							
	15							
	16							
RSFAC	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≤ 100	L101 ≤ 200	L201 ≤ 300	L301 ≤ 448
VFAG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFAG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRAG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSRAG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≤ 100	L101 ≤ 200	L201 ≤ 300	L301 ≤ 448
VPFAG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFAG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≤ 200	L201 ≤ 400	L401 ≤ 600	L601 ≤ 800	L801 ≤ 1000	L1001 ≤ 1200	L1201 ≤ 1498
PSFGG	8 · 10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
PSCGC	30								
	35								
	40								
	50								
PSSFGG	8 · 10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
PSSCGC	30								
	35								
	40								
	50								

For One End Stepped, the right prices are subtracted from the above prices.

Price Deductions for Tap Machining on One End Stepped Shafts

D	Price Deductions
8 · 10 · 12 · 13	
15 · 16 · 18 · 20 · 25	
30 · 35 · 40 · 50	

EX.)
SFAC20-500-F25-P16
···›19,00-0,80=18,20 EUR

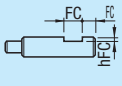
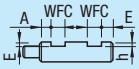
Alterations

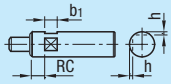
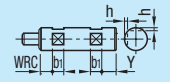
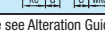
Part Number - L - F - P - M - (LKC · FC...etc.)
SFAG30 - 400 - F25 - P16 - M10 - LKC

- Keyway machining (Only KC and WKC) 10 Days (RSFAG and RSFAC are to be shipped on the 13th day after order)

DKC alteration was discontinued in June 2010. Please specify new part numbers; SFUG, SSFUG, PSFUG, PSSFUG, SFCU, SSFCU, PSFCU and PSSFCU on the left page.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. L<200 ···›L±0.03 200≤L<500···›L±0.05 L≥500 ···›L±0.1	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. FC≤3xD When 1.5xD<FC, FC≤L/2 E=0 or E≥2 ⊗Can not be used with WFC D: 8~18 h:1; 20~40 h:2; 50 h:3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments WFC≤3xD When 1.5xD<WFC, 2WFC≤L/2 A (E) = 0 or A (E) ≥ 2 ⊗Cannot be machined on the same plane. Cannot be combined with FC. D: 8~18 h:1; 20~40 h:2; 50 h:3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Not applicable for Precision Type, Shafts with D tolerance f8 and LTBC plating.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
- Keyway at one location :KC  - Keyways at two locations :WKC 	KC WKC	Keyway Ordering Code KC10-G10 WKC10-C8-KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	KC 5,00 WKC 10,00

For details, please see Alterations Overview P.105

Please see Alteration Guides for details if provided. P.105
For more than one alteration, 2mm or more separation required between machined sections.
Alterations may lower hardness. P.104

Order Example

Part Number	L	F	P	M
VFAG20	400	F25	P16	M10
SFAG20	400	F25	P16	M10
SFAC20	500	F25	P16	

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days — P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.
- VFAG· VSFAG · VPFAG · VPSFAG · VRAG · VSRAG

10 Days — Express B 8,00 EUR/unit — P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express is not available for VRAG and VSRAG.

- RSFAG · RSFAC
13 Days

NEW

Shafts -Standard Type / Precision Type-

-One End Stepped and Female Thread with Wrench Flats-

For Shafts w/o wrench flats, please see P.151

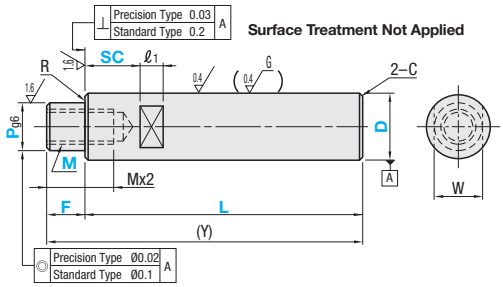


RoHS

Type				M Material	H Hardness	S Surface Treatment
Precision type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFPG	SFPG	SFPU	-	1.3505	Induction Hardening Effective Hardening Depth P104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFPG	SSFPG	SSFPU	-	1.4125		
VPFPG	PSFPG	PSFPU	-	1.3505		Hard Chrome Plating Plating Hardness: Hv750 ~ Plating Thickness 5μ or more
VPSFPG	PSSFPG	PSSFPU	-	1.4125		
VRPG	RSFPG	-	-	1.3505		LTBC
VSRPG	-	-	-	1.4125		
-	-	-	PFPGG	1.1191	-	Hard Chrome Plating Plating Hardness: Hv750 ~ Plating Thickness: 10μm or more.
-	-	-	PSFPGG	1.4301		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

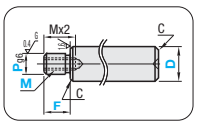
Surface Treatment Not Applied



Features of Precision Type

Concentricity is Ø0.02

Squareness is 0.03



Precision Type will have an undercut (max. width: 1mm, max. depth: 0.1mm) at the base of stepped section, and centering holes on the ends.

Annealing required for machining wrench flats and shaft end threading (thread effective length + approx. 10mm) may lower hardness. P.104

Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103

Features of LTBC P.118

M + 3 ≤ P is required for P Dimension. For Precision Type, (Y) dimensions needs to be Mx4≤(Y). Tap pilot hole may go through.

Part Number Type	D	1mm Increments L	F	P	M (Coarse Threads) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
	8	25~298		6	3	7	8	300		
Precision Type	10	25~348		6~8	3 4 5	8		350		
(D Tolerance g6)	12	25~348		6~10	3 4 5 6	10		350		0.5 or less
VFPG	13	25~348		6~11	3 4 5 6 8	11		350		
VSFPG	15	25~348	2≤F≤Px4	6~13	3 4 5 6 8 10	13		350	0.3 or less	
VPFPG	16	25~348		6~14	3 4 5 6 8 10	14	10	350		
VPSFPG	18	25~348		8~16	4 5 6 8 10 12	16		350		
VRPG	20	25~448		8~17	4 5 6 8 10 12	17		450		1.0 or less
VSRPG	25	25~448		8~22	4 5 6 8 10 12 16	22		450		
	30	25~448		9~27	5 6 8 10 12 16 20 24	27	15	450		

SC=1mm Increment

SC+ℓ1≤L

SC=0 or SC≥1

Details of Wrench Flats P.104

Part Number Type		D	1mm Increments L	F	P	M (Coarse Threads) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
		8	25~798		6	3	7	8	800		
Standard Type		10	25~798		6~8	3 4 5	8		800		
(D Tolerance g6)	(D Tolerance h5)	12	25~998		6~10	3 4 5 6	10		1000		0.5 or less
SFPG	SFPU	13	25~998		6~11	3 4 5 6 8	11		1000		
SSFPG	SSFPU	15	25~998		6~13	3 4 5 6 8 10	13		1000	0.3 or less	
PSFPG	PSFPU	16	25~1198		6~14	3 4 5 6 8 10	14	10	1200		
PSSFPG	PSSFPU	18	25~1198	2≤F≤Px4	8~16	4 5 6 8 10 12	16		1200		
RSFPG(D≤30, L≤500)		20	25~1198		8~17	4 5 6 8 10 12	17		1200		1.0 or less
(D Tolerance f8)		25	25~1198		8~22	4 5 6 8 10 12 16	22		1200		
PFPGG		30	25~1498		9~27	5 6 8 10 12 16 20 24	27	15	1500		
PSFPGG		35	25~1498		9~32	5 6 8 10 12 16 20 24	30		1500	0.5 or less	
		40	25~1498		11~37	6 8 10 12 16 20 24 30	36	20	1500		
		50	25~1498		11~47	6 8 10 12 16 20 24 30	41		1500		

SC=1mm Increment

SC+ℓ1≤L

SC=0 or SC≥1

Details of Wrench Flats P.104

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1498
SFPG SFPU	8 · 10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFPG SSFPU	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~800	L801 ~1000	L1001 ~1200	L1201 ~1498
PSFPG PSFPU	8 · 10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFPG PSSFPU	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number		€ Unit Price						
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFPG	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1498
PFPGG	8・10								
	12								
	13								
	15・16								
	18・20								
	25								
	30								
	35								
	40								
	50								
PSFPGG	8・10								
	12・13								
	15・16								
	18・20								
	25								
	30								
	35								
	40								
	50								

Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 448
VFPG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFPG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRPG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSRPG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 448
VPFPG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFPG	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

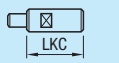
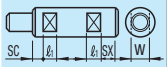
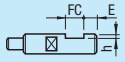
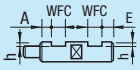
Alterations

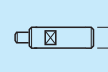
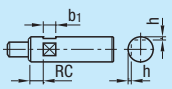
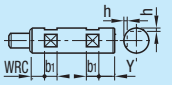
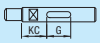
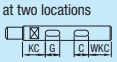
Part Number - L - F - P - M - SC - (LKC / FC...etc.)
SFPG30 - 400 - F25 - P16 - M10 - SC10 - LKC

- Keyway machining (Only KC and WKC) 10 Days (RSFPG is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFPU, SSFPU, PSFPU and PSSFPU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. ? L<200 ···L±0.03 200≤L<500···L±0.05 L≥500 ···L±0.1	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Specify SX in 1mm increments ? SC+SX+ℓ1x2<L ? SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D / W / ℓ1: 8/7/8; 10/8/8; 12/10/10; 13/11/10; 15/13/10; 16/14/10; 18/16/10; 20/17/10; 25/22/10; 30/27/15; 35/30/15; 40/36/20; 50/41/20	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. ? FC≤3xD ? When 1.5xD<FC, FC≤L/2 ? E=0 or E≥2⊗Can not be used with WFC D / h: 8~18/1; 20~40/2; 50/3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments ? WFC≤3xD ? When 1.5xD<FC, 2WFC≤L/2 ? A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 8~18/1; 20~40/2; 50/3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance f8 shafts and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
- Keyway at one location :KC  - Keyways at two locations :WKC 	KC WKC	Keyway Ordering Code KC10-G10 WKC10-C8-KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	KC 5,00 WKC 10,00

For details, please see Alterations Overview P.105

?Please see Alteration Guides for details if provided. P.105
?For more than one alteration, 2mm or more separation required between machined sections. P.106
?Alterations may lower hardness. P.104

Order Example
Part Number - L - F - P - M - SC
VFPG20 - 400 - F25 - P16 - M10 - SC10
SFPG20 - 500 - F25 - P16 - M10 - SC10

Days to Ship

8 Days — Express A 8,00 EUR/unit — 5 Days — P.88
?A Express Charge of 21,60 EUR for 3 or more identical pieces.
- VFPG/ VSFPG / VPFPG / VPSFPG / VRPG / VSRPG

10 Days — Express B 8,00 EUR/unit — P.88
? ⊗Express is not available for VRPG and VSRPG.

- RSFPG
13 Days

Shafts -Standard Type / Precision Type-

-Both Ends Stepped and Female Thread / Both Ends Stepped-

For Both Ends Female Thread with Wrench Flats, please see P.157

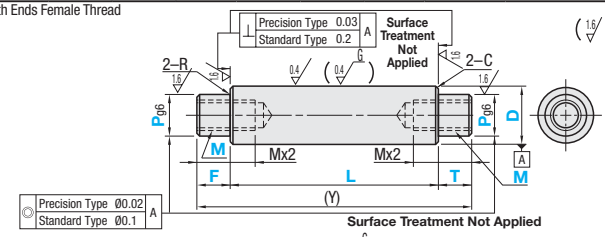
RoHS



Type							Material	Hardness	Surface Treatment
Both Ends Female Thread				Both Ends Stepped					
Precision type	Standard			Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFAH	SFAH	SFUH	-	SFAJ	SFUJ	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFAH	SSFAH	SSFUH	-	SSFAJ	SSFUJ	-	1.4125/ equivalent		
VPFAH	PSFAH	PSFUH	-	PSFAJ	PSFUJ	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFAH	PSSFAH	PSSFUH	-	PSSFAJ	PSSFUJ	-	1.4125/ equivalent		
VRAH	RSFAH	-	-	RSFAJ	-	-	1.3505/100Cr6		LTBC
VSRAH	-	-	-	-	-	-	1.4125/ equivalent		
-	-	-	PSFGH	-	-	PSFGJ	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSSFGH	-	-	PSSFGJ	1.4301/ X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

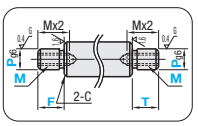
Both Ends Female Thread



Features of Precision Type

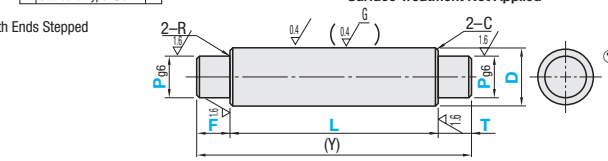
Concentricity is Ø0.02,

Squareness is 0.03



Precision shafts have grinding undercuts at stepped sections (max. width 1mm / max. depth 0.1mm).

Both Ends Stepped



Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103

Features of LTBC P.118

Part Number Type	D	1mm Increments L	F / T	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Precision Type	8	25~296		6	3	300	0.3 or less	0.5 or less
Both Ends Female Thread (D Tolerance g6)	10	25~346		6~8	3 4 5	350		
VFAH	12	25~346		6~10	3 4 5 6	350		
VSFAH	13	25~346		6~11	3 4 5 6 8	350		
VPFAH	15	25~346	2≤F≤Px4	6~13	3 4 5 6 8 10	350		
VPSFAH	16	25~346	2≤T≤Px4	6~14	3 4 5 6 8 10	350		
VRAH	18	25~346		8~16	4 5 6 8 10 12	350		
VSRAH	20	25~446		8~17	4 5 6 8 10 12	450		1.0 or less
	25	25~446		8~22	4 5 6 8 10 12 16	450		
	30	25~446		9~27	5 6 8 10 12 16 20 24	450		

- Both Ends Female Thread M + 3 ≤ P is required for P Dimension. For Precision Type, (Y) dimensions needs to be Mx4≤(Y). Tap pilot hole may go through.

Part Number Type	D	1mm Increments L	F / T	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Standard Type	8	25~796		6	3	800	0.3 or less	0.5 or less
Both Ends Female Thread (D Tolerance g6) SFAH SSFAH PSFAH PSSFAH RSFAH (D≤30, L≤500) (D Tolerance f8) PSFGH PSSFGH — (D Tolerance h5) SFUH SSFUH PSFUH PSSFUH	10	25~796		6~8	3 4 5	800		
Both Ends Stepped (D Tolerance g6) SFAJ SSFAJ PSFAJ PSSFAJ RSFAJ (D≤30, L≤500) (D Tolerance f8) PSFGJ PSSFGJ — (D Tolerance h5) SFUJ SSFUJ PSFUJ PSSFUJ	12	25~996		6~10	3 4 5 6	1000		
	13	25~996		6~11	3 4 5 6 8	1000		
	15	25~996		6~13	3 4 5 6 8 10	1000		
	16	25~1196	2≤F≤Px4	6~14	3 4 5 6 8 10	1200		
	18	25~1196		8~16	4 5 6 8 10 12	1200		
	20	25~1196	2≤T≤Px4	8~17	4 5 6 8 10 12	1200		1.0 or less
	25	25~1196		8~22	4 5 6 8 10 12 16	1200		
	30	25~1496		9~27	5 6 8 10 12 16 20 24	1500		
	35	25~1496		9~32	5 6 8 10 12 16 20 24	1500	0.5 or less	
	40	25~1496		11~37	6 8 10 12 16 20 24 30	1500		
	50	25~1496		11~47	6 8 10 12 16 20 24 30	1500		

- Both Ends Female Thread M + 3 ≤ P is required for P Dimension. When (MX2.5+4)X2≥(Y), tap pilot hole may go through.

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1496
SFAH SFUH SFAJ SFUJ	8 · 10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAH SSFUH SSFAJ SSFUJ	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1496
PSFAH PSFUH PSFAJ PSFUJ	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAH PSSFUH PSSFAJ PSSFUJ	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

-Both Ends Female Thread

For D tolerance h5, 2,00 EUR is added to the prices above.

-Both Ends Stepped

For D tolerance h5, 3,90 EUR is added to the above prices. And then the prices on the right page are subtracted.

For D tolerance g6, the prices on the right page are subtracted from the above prices.

Price Reduction
3%

CAD Data

Part Number		€ Unit Price						
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAH / RSFAJ	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1496
PSFGH / PSFGJ	8 · 10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFGH / PSSFGJ	8 · 10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

For Both Ends Stepped, the right prices are subtracted from the above prices.

Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 446	
VFAH	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VSFAH	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VRAH	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VSRAH	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						

Part Number		€ Unit Price					
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 200	L201 ~ 300	L301 ~ 446	
VPFAH	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						
VPSFAH	8						
	10						
	12						
	13						
	15						
	16						
	18						
	20						
	25						
	30						

Price Deductions for Tap Machining on Both Ends Stepped Shafts.

D	Price Deductions
8 · 10 · 12 · 13	
15 · 16 · 18 · 20 · 25	
30 · 35 · 40· 50	

EX.)
SFAJ20-400-F25-P16-T20
⋯› 25,00-1,20=23,80 EUR

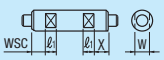
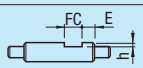
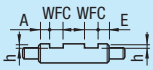
Alterations

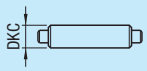
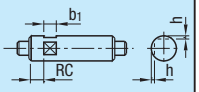
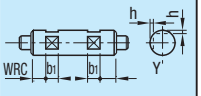
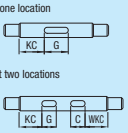
Part Number - L - F - P - M - T - (LKC · WSC...etc.)
SFAH20 - 400 - F25 - P16 - M10 - T20 - LKC

- Keyway machining (KC / WKC) only 10 Days (RSFAH and RSFAJ are to be shipped on the 13th day after order)

DKC alteration was discontinued in June 2010. Please specify new part numbers; SFUG, SSFUG, PSFUG, PSSFUG, SFCU, SSFCU, PSFCU and PSSFCU on the left page.
Please specify SFUH, SSFUH, PSFUH, PSSFUH, SFUJ, SSFUJ, PSFUJ and/or PSSFUJ to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. ? L<200 ⋯›L±0.03 200≤L<500⋯›L±0.05 L≥500 ⋯›L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. ? WSC+X+ℓ1x2<L ? WSC (X)=0 or WSC (X)≥1 ⊗Not available on the same plane. D W ℓ1: 8 7 8 / 10 8 8 / 12 10 10 / 13 11 10 / 15 13 10 / 16 14 10 / 18 16 10 / 20 17 10 / 25 22 15 / 30 27 15 / 35 30 15 / 40 36 20 / 50 41 20	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. ? FC≤3xD ? When 1.5xD<FC, FC≤L/2 ? E=0 or E≥2⊗Can not be used with WFC D h: 8~18 1 / 20~40 2 / 50 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments ? WFC≤3xD ? When 1.5xD<FC, 2WFC≤L/2 ? A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D h: 8~18 1 / 20~40 2 / 50 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance f8 shafts and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	KC WKC	Keyway Ordering Code KC10-G10 WKC10-C8-KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	KC 5,00 WKC 10,00

For details, please see Alterations Overview P.105

? Please see Alteration Guides for details if provided. P.105
? For more than one alteration, 2mm or more separation required between machined sections.
? Alterations may lower hardness. P.104

Order Example

Part Number	L	F	P	M	T
VFAH18	200	F20	P15	M8	T20
SFAH20	400	F25	P16	M10	T20
SFAJ20	400	F25	P16		T20

Days to Ship

8 Days — Express A 8,00 EUR/unit P.88 — 5 Days
? A Express Charge of 21,60 EUR for 3 or more identical pieces.
- VFAH · VSFAH · VPFAH · VPSFAH · VRAH · VSRAH - RSFAH · RSFAJ
10 Days — Express B 8,00 EUR/unit P.88 — 13 Days
? A Express Charge of 21,60 EUR for 3 or more identical pieces. ⊗Express is not available for VRAH and VSRAH.

NEW

Shafts -Standard Type / Precision Type-

-Both Ends Stepped and Female Thread with Wrench Flats-

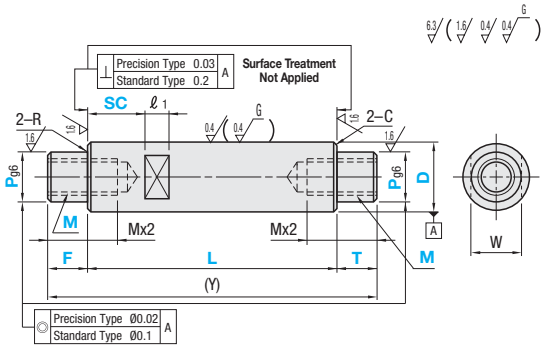
For Shafts w/o Wrench Flats, please see P.155

RoHS



Type				Material	Hardness	Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFPH	SFPH	SFHU	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104	-
VSFPH	SSFPH	SSFHU	-	1.4125 equivalent		
VPFPH	PSFPH	PSFHU	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPSFPH	PSSFPH	PSSFHU	-	1.4125 equivalent	1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	LTBC
VRPH	RSFPH	-	-	1.3505/100Cr6		
VSRPH	-	-	-	1.4125		
-	-	-	PFPGH	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10μm or more.
-	-	-	PSFPGH	1.4301		

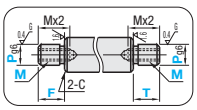
D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Features of Precision Type

Concentricity is ◎ Ø0.02

Squareness is ⊥ 0.03



Precision shafts have grinding undercuts at stepped sections (max. width 1mm / max. depth 0.1mm).

Annealing required for machining wrench flats and shaft end threading (thread effective length + approx. 10mm) may lower hardness. P.104

Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103

Features of LTBC P.118

M + 3 ≤ P is required for P Dimension. For Precision Type, (Y) dimensions needs to be Mx4≤(Y). Tap pilot hole may go through.

Part Number Type	D	1mm Increments L	F / T	P	M (Coarse Threads) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
Precision Type (D Tolerance g6) VFPH VSFPH VPFPH VPSFPH VRPH VSRPH	8	25~296	2≤F≤Px4 2≤T≤Px4	6	3	SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 Details of Wrench Flats P.104	7	8	300	0.3 or less	0.5 or less
	10	25~346		6~8	3 4 5		8		350		
	12	25~346		6~10	3 4 5 6		10		350		
	13	25~346		6~11	3 4 5 6 8		11		350		
	15	25~346		6~13	3 4 5 6 8 10		13		350		
	16	25~346		6~14	3 4 5 6 8 10		14		350		
	18	25~346		8~16	4 5 6 8 10 12		16		350		
	20	25~446		8~17	4 5 6 8 10 12		17		450		1.0 or less
	25	25~446		8~22	4 5 6 8 10 12 16		22		450		
	30	25~446		9~27	5 6 8 10 12 16 20 24		27	15	450		

Part Number Type	D	1mm Increments L	F · T	P	M (Coarse Threads) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
Standard Type (D Tolerance g6) SFPH SSFPH PSFPH PSSFPH RSFPH(D≤30, L≤500) (D Tolerance f8) PFPGH PSFPGH (D Tolerance h5) SFHU SSFHU PSFHU PSSFHU	8	25~796	2≤F≤Px4 2≤T≤Px4	6	3	SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 Details of Wrench Flats P.104	7	8	800	0.3 or less	0.5 or less
	10	25~796		6~8	3 4 5		8		800		
	12	25~996		6~10	3 4 5 6		10		1000		
	13	25~996		6~11	3 4 5 6 8		11		1000		
	15	25~996		6~13	3 4 5 6 8 10		13		1000		
	16	25~1196		6~14	3 4 5 6 8 10		14	10	1200		
	18	25~1196		8~16	4 5 6 8 10 12		16		1200		
	20	25~1196		8~17	4 5 6 8 10 12		17		1200		1.0 or less
	25	25~1196		8~22	4 5 6 8 10 12 16		22		1200		
	30	25~1496		9~27	5 6 8 10 12 16 20 24		27		1500		
	35	25~1496		9~32	5 6 8 10 12 16 20 24		30	15	1500	0.5 or less	
	40	25~1496		11~37	6 8 10 12 16 20 24 30		36		1500		
	50	25~1496		11~47	6 8 10 12 16 20 24 30		41	20	1500		

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1496
SFPH SFHU	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFPH SSFHU	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1496
PSFPH PSFHU	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFPH PSSFHU	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

Price Reduction 3%

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSFPH	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 446
VFPH	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFPH	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRPH	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSRPH	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 446
VPFPH	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFPH	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1496
PFPGH	8 · 10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSFPGH	8 · 10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Alterations

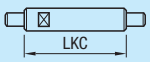
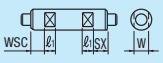
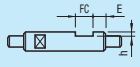
Part Number - L - F - P - M - T - SC - (LKC...etc.)
SFPH20 - 400 - F25 - P16 - M10 - T20 - SC10 - LKC

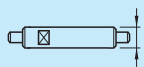
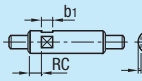
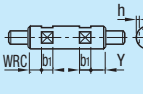
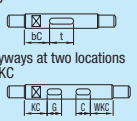
- Keyway machining (KC / WKC) only

10 Days (RSFPH is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFHU, SSFHU, PSFHU and PSSFHU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. Ⓟ L<200 ···L±0.03 200≤L<500 ···L±0.05 L≥500 ···L±0.1	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Specify SX in 1mm increments Ⓟ SC+SX+ℓ1x2<L Ⓟ SX = 0 or SX ≥ 1 ⊗Not available on the same plane. D / W / ℓ1: 8: 7 / 10: 8 / 12: 10 / 13: 11 / 15: 13 / 16: 14 / 18: 16 — ℓ1 = 8 D / W / ℓ1: 20: 17 / 25: 22 / 30: 27 / 35: 30 / 40: 36 / 50: 41 — ℓ1 = 10 / 15 / 20	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. Ⓟ FC≤3xD Ⓟ When 1.5xD<FC, FC≤L/2 Ⓟ E=0 or E≥2 ⊗Can not be used with WFC D / h: 8~18: 1 / 20~40: 2 / 50: 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision Specify WFC, A and E in 1mm increments Ⓟ WFC≤3xD Ⓟ When 1.5xD<FC, 2WFC≤L/2 Ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 8~18: 1 / 20~40: 2 / 50: 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance to shafts and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	KC WKC	-Keyway at one location :KC -Keyways at two locations :WKC Keyway Ordering Code KC10-G10 WKC10-C8-KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to precision type	KC 5,00 WKC 10,00

For details, please see Alterations Overview P.105

Ⓟ Please see Alteration Guides for details if provided. P.105
Ⓟ For more than one alteration, 2mm or more separation required between machined sections.
Ⓟ Alterations may lower hardness. P.104

Order Example

Part Number	L	F	P	M	T	SC
VFPH20	300	F25	P16	M10	T20	SC10
SFPH20	400	F25	P16	M10	T20	SC10

Days to Ship

8 Days — Express A 8,00 EUR/unit P.88
Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.

5 Days — - VFPH · VSFPH · VPFPH · VPSFPH · VRPH · VSRPH - RSFPH

10 Days — Express B 8,00 EUR/unit P.88 — 13 Days
Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗ Express is not available for VRPH and VSRPH.

Shafts -Standard Type / Precision Type-

-One End Stepped and Both Ends Female Thread / One End Stepped and One End Female Thread-

For One End Stepped and Both Ends Female Thread with Wrench Flats, please see P.161

RoHS



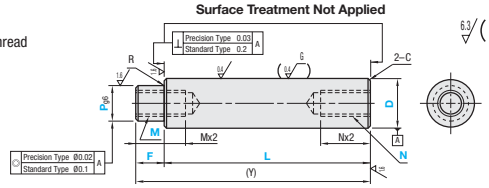
For Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing. P.104
For Circularity, Straightness, Perpendicularity, P.103
For Features of LTBC P.118

Type							M Material	H Hardness	S Surface Treatment
Both Ends Female Thread				One End Female Thread					
Prec. type	Standard								
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFAA	SFAA	SFUE	-	SFNA	SFEU	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFAA	SSFAA	SSFUE	-	SSFNA	SSFEU	-	1.4125 eq.		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPFAA	PSFAA	PSFUE	-	PSFNA	PSFEU	-	1.3505/100Cr6		
VPSFAA	PSSFAA	PSSFUE	-	PSSFNA	PSSFEU	-	1.4125 eq.		LTBC
VRAA	RSFAA	-	-	RSFNA	-	-	1.3505/100Cr6		
VSRAA	-	-	-	-	-	-	1.4125 eq.		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 10μ or more
-	-	-	PSFGA	-	-	PSNGA	1.1191/C45E	-	
-	-	-	PSSFGA	-	-	PSSNGA	1.4301		

D Tolerance			
D	g6	h5	f8
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12	-0.006	0	-0.016
13	-0.017	-0.008	-0.043
15			
16			
18			
20	-0.007	0	-0.020
25	-0.020	-0.009	-0.053
30			
35	-0.009	0	-0.025
40	-0.025	-0.011	-0.064
50			

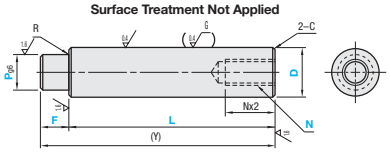
One End Stepped
- Both Ends Female Thread

Surface Treatment Not Applied

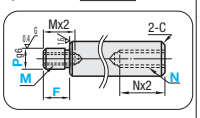


One End Stepped
- One End Female Thread

Surface Treatment Not Applied



Features of Precision Type
Concentricity is Ø0.02
Squareness is 0.03



Precision shafts have grinding undercuts at stepped sections (max. width 1mm / max. depth 0.1mm). Grinding undercut(max. width 1mm / max. depth 0.1mm) is added.

Part Number Type	D	1mm Increments L	F	P	M (Coarse Threads) Selection	N (Coarse) Selection	(Y) Max.	R	C
Precision type One End Stepped - Both Ends Female Thread (D Tolerance g6) VFAA VSFAA VPFAA VPSFAA VRAA VSRAA	8	25~298	2≤F≤Px4	6	3	3 4 5	300	0.3 or less	0.5 or less
	10	25~348		6~ 8	3 4 5	3 4 5 6	350		
	12	25~348		6~10	3 4 5 6	4 5 6 8	350		
	13	25~348		6~11	3 4 5 6 8	4 5 6 8	350		
	15	25~348		6~13	3 4 5 6 8 10	4 5 6 8 10	350		
	16	25~348		6~14	3 4 5 6 8 10	4 5 6 8 10	350		
	18	25~348		8~16	4 5 6 8 10 12	4 5 6 8 10 12	350		
	20	25~448		8~17	4 5 6 8 10 12	4 5 6 8 10 12	450		1.0 or less
	25	25~448		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	450		
	30	25~448		9~27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	450		

M + 3 ≤ P is required for P Dimension. For Precision Type, (Y) dimensions needs to be Mx2+Nx2≤(Y). Tap pilot hole may go through.

Part Number Type					D	1mm Increments L	F	P	M (Coarse Threads) Selection	N (Coarse) Selection	(Y) Max.	R	C
Standard Type One End Stepped - Both Ends Fem. Thread (D Tolerance g6) SFAA SSFAA PSFAA PSSFAA RSFAA (D≤30, L≤500) (D Tolerance f8) PSFGA PSSFGA	(D Tolerance h5) SFUE SSFUE PSFUE PSSFUE	One End Stepped - One End Fem. Thread (D Tolerance g6) SFNA SSFNA PSFNA PSSFNA RSFNA (D≤30, L≤500) (D Tolerance f8) PSNGA PSSNGA	(D Tolerance h5) SFEU SSFEU PSFEU PSSFEU		8	25~798	2≤F≤Px4	6	3	3 4 5	800	0.3 or less	0.5 or less
					10	25~798		6~ 8	3 4 5	3 4 5 6	800		
					12	25~998		6~10	3 4 5 6	4 5 6 8	1000		
					13	25~998		6~11	3 4 5 6 8	4 5 6 8	1000		
					15	25~998		6~13	3 4 5 6 8 10	4 5 6 8 10	1000		
					16	25~1198		6~14	3 4 5 6 8 10	4 5 6 8 10	1200		
					18	25~1198		8~16	4 5 6 8 10 12	4 5 6 8 10 12	1200		
					20	25~1198		8~17	4 5 6 8 10 12	4 5 6 8 10 12	1200		1.0 or less
					25	25~1198		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	1200		
					30	25~1498		9~27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	1500		
					35	25~1498		9~32	5 6 8 10 12 16 20 24	8 10 12 16 20 24	1500	0.5 or less	
					40	25~1498		11~37	6 8 10 12 16 20 24 30	10 12 16 20 24 30	1500		
					50	25~1498		11~47	6 8 10 12 16 20 24 30	12 16 20 24 30	1500		

M + 3 ≤ P is required for P Dimension. When D-P≤4, stepped section chamfer C is 0.2 or less. L dimension of "One End Stepped - One End Female Thread" shafts needs to be N x 3 ≤ L.
When Mx2.5+4+Nx2.5+4≥(Y), tap pilot may go through. When Mx2+Nx2≥(Y), effective thread length of larger diameter tap has priority. In such case, Y needs to be Y≥Mx2.5+4+N or Y≥Nx2.5+4+M.

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1498
SFAA SFUE SFNA SFEU	8·10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												
SSFAA SSFUE SSFNA SSFEU	8·10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1498
PSFAA PSFUE PSFNA PSFEU	8·10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												
PSSFAA PSSFUE PSSFNA PSSFEU	8·10												
	12·13												
	15·16												
	18·20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.
For One End Stepped and One End Female Thread Shafts, the prices on the right page are subtracted from the above prices.

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500
RSFAA ⓟRSFNA	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101 ≥ 200	L201 ≥ 400	L401 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1498
PSFGA ⓟPSNGA	8						⊗	⊗	⊗
	10						⊗	⊗	⊗
	12							⊗	⊗
	13							⊗	⊗
	15·16								⊗
	18·20								⊗
	25								⊗
	30								
	35								
	40								
	50								
PSSFGA ⓟPSSNGA	8						⊗	⊗	⊗
	10						⊗	⊗	⊗
	12							⊗	⊗
	13							⊗	⊗
	15·16								⊗
	18·20								⊗
	25								⊗
	30								
	35								
	40								
	50								

ⓟFor One End Stepped and One End Female Thread Shafts, the prices right are subtracted from the above prices.

Part No. Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 448
VFAA	8					⊗
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFAA	8					⊗
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRAA	8					⊗
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSRAA	8					⊗
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 200	L201 ≥ 300	L301 ≥ 448
VPFAA	8					⊗
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFAA	8					⊗
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

■ Price Deductions for Tap Machining on One End Stepped - One End Female Thread Shafts.

D	€ Price Deductions
8 · 10 · 12 · 13	
15 · 16 · 18 · 20 · 25	
30 · 35 · 40· 50	

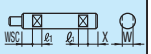
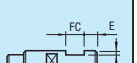
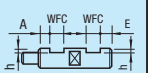
EX.)
SFNA20-400-F25-P16-M10-N10
···20,00-1,20=18,80 EUR

Alterations

Part Number	-	L	-	F	-	P	-	M	-	N (NSC)	-	(LKC · WSC...etc.)
SFAA30	-	400	-	F25	-	P16	-	M10	-	N10	-	LKC

DKC alteration was discontinued in June 2010. Please specify new part numbers; SFUG, SSFUG, PSFUG, PSSFUG, SFCU, SSFCU, PSFCU and PSSFCU on the left page.
Please specify SFUE, SSFUE, PSFUE, PSSFUE, SFEU, SSFEU, PSFEU and/or PSSFEU to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes App when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. ⓟ L<200 ···›L±0.03; 200≤L<500···›L±0.05 L≥500 ···›L±0.1	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. ⓟ WSC+X+ℓ1x2<L ⓟ WSC (X)=0 Or WSC (X)≥1 ⊗Not available on the same plane. D / W / ℓ1: 8 / 7 / 8; 10 / 8 / 8; 12 / 10 / 10; 13 / 11 / 10; 15 / 13 / 10; 16 / 14 / 10; 18 / 16 / 10; 20 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. ⓟ FC≤3xD ⓟ When 1.5xD<FC, FC≤L/2 ⓟ E=0 or E≥2 ⊗Can not be used with WFC D / h: 8~18 / 1; 20~40 / 2; 50 / 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments ⓟ WFC≤3xD ⓟ When 1.5xD<FC, 2WFC≤L/2 ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 8~18 / 1; 20~40 / 2; 50 / 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Precision type, D tolerance f8 shafts and Not applicable to LTBC Plated Shafts.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable to D=10~30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10~30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	NSC	Change to fine thread tap. Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable to D = 6 or more	3,00

For details, please see Alterations Overview P.105

ⓟPlease see Alteration Guides for details if provided. P.105
ⓟFor more than one alteration, 2mm or more separation required between machined sections.
ⓟAlterations may lower hardness. P.104

Order Example

Part Number	-	L	-	F	-	P	-	M	-	N
VFAA20	-	400	-	F25	-	P16	-	M10	-	N10
SFAA20	-	400	-	F25	-	P16	-	M10	-	N10
SFNA20	-	400	-	F25	-	P15			-	N10

Days to Ship

8 Days — Express A — 8,00 EUR/unit — **5 Days** P.88
ⓟA Express Charge of 21,60 EUR for 3 or more identical pieces.

- VFAA · VSFAA · VPFAA · VPSFAA · VRAA · VSRAA - RSFAA · RSFNA

10 Days — Express B — 8,00 EUR/unit P.88 — **13 Days**
ⓟA Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗Express Service is not available for VRAA and VSRAA.

NEW

Shafts -Standard Type / Precision Type-

-One End Stepped - Both Ends Female Thread with Wrench Flats-

For Shafts w/o wrench flats, please see **P.159**

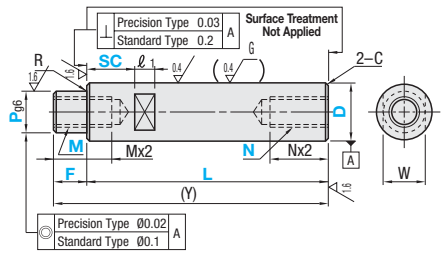
RoHS

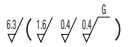


Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. **P.104**
Changes in circularity,straightness,perpendicularity, coaxiality and hardness **P.103**
Features of LTBC **P.118**

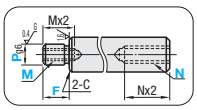
Type				Material	Hardness	Surface Treatment
Precision Type	Standard					
D Tolerance g6	D Tolerance g6	D Tolerance h5	D Tolerance f8			
VFPA	SFPPA	SFUP	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth **P.104** 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
VSFPA	SSFPA	SSFUP	-	1.4125/equivalent		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
VPFPA	PSFPA	PSFUP	-	1.3505/100Cr6		
VPSFPA	PSSFPA	PSSFUP	-	1.4125/equivalent		
VRPA	RSFPA	-	-	1.3505/100Cr6		LTBC
VSRPA	-	-	-	1.4125/equivalent		
-	-	-	PFPGA	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 10μ or more
-	-	-	PSFPGA	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			





Features of Precision Type
Concentricity is Ø0.02 Perpendicularity is 0.03



Precision shafts have grinding undercuts at stepped sections (max. width 1mm / max. depth 0.1mm).

Part Number Type	D	1mm Increments L	F	P	M (Coarse Threads) Selection	N (Coarse) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
Precision Type (D Tolerance g6) VFPA VSFPA VPFPA VPSFPA VRPA VSRPA	8	25~298	2≤F≤Px4	6	3	3 4 5	SC=1mm Increment 7	8	300	0.3 or less	0.5 or less
	10	25~348		6~ 8	3 4 5	3 4 5 6	8		350		
	12	25~348		6~10	3 4 5 6	4 5 6 8	SC+ℓ1≤L SC=0 or SC≥1 10		350		
	13	25~348		6~11	3 4 5 6 8	4 5 6 8	11		350		
	15	25~348		6~13	3 4 5 6 8 10	4 5 6 8 10	13		350		
	16	25~348		6~14	3 4 5 6 8 10	4 5 6 8 10	14	10	350		
	18	25~348		8~16	4 5 6 8 10 12	4 5 6 8 10 12	Details of Wrench Flats **P.104** 16		350		
	20	25~448		8~17	4 5 6 8 10 12	4 5 6 8 10 12	17		450		1.0 or less
	25	25~448		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	22		450		
	30	25~448		9~27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	27	15	450		

M + 3 ≤ P is required for P Dimension. For Precision Type, (Y) dimensions needs to be MX2+NX2≤(Y). Tap pilot hole may go through.

Part Number Type	D	1mm Increments L	F	P	M (Coarse Threads) Selection	N (Coarse) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	R	C
Standard Type (D Tolerance g6) SFPPA SSFPA PSFPA PSSFPA RSFPA (D≤30, L≤500) (D Tolerance h5) SFUP SSFUP PSFUP PSSFUP (D Tolerance f8) PFPGA PSFPGA	8	25~798	2≤F≤Px4	6	3	3 4 5	SC=1mm Increment 7	8	800	0.3 or less	0.5 or less
	10	25~798		6~ 8	3 4 5	3 4 5 6	8		800		
	12	25~998		6~10	3 4 5 6	4 5 6 8	SC+ℓ1≤L SC=0 or SC≥1 10		1000		
	13	25~998		6~11	3 4 5 6 8	4 5 6 8	11		1000		
	15	25~998		6~13	3 4 5 6 8 10	4 5 6 8 10	13		1000		
	16	25~1198		6~14	3 4 5 6 8 10	4 5 6 8 10	14	10	1200		
	18	25~1198		8~16	4 5 6 8 10 12	4 5 6 8 10 12	Details of Wrench Flats **P.104** 16		1200		
	20	25~1198		8~17	4 5 6 8 10 12	4 5 6 8 10 12	17		1200		1.0 or less
	25	25~1198		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	22		1200		
	30	25~1498		9~27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	27	15	1500		
	35	25~1498		9~32	5 6 8 10 12 16 20 24	8 10 12 16 20 24	30		1500	0.5 or less	
	40	25~1498		11~37	6 8 10 12 16 20 24 30	10 12 16 20 24 30	36	20	1500		
	50	25~1498		11~47	6 8 10 12 16 20 24 30	12 16 20 24 30	41		1500		

M + 3 ≤ P is required for P Dimension.
When Mx2.5+4+Nx2.5+4≥(Y), tap pilot may go through. When Mx2+Nx2≥(Y), effective thread length of larger diameter tap has priority. In such case, Y needs to be Y≥Mx2.5+4+N or Y≥Nx2.5+4+M.

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number Type	D	€ Unit Price Min. L , 50	L51 , 100	L101 , 150	L151 , 200	L201 , 300	L301 , 400	L401 , 500	L501 , 600	L601 , 800	L801 , 1000	L1001 , 1200	L1201 , 1498
SFPPA SFUP	8・10												
	12												
	13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												
SSFPA SSFUP	8・10												
	12・13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L , 50	L51 , 100	L101 , 150	L151 , 200	L201 , 300	L301 , 400	L401 , 500	L501 , 600	L601 , 800	L801 , 1000	L1001 , 1200	L1201 , 1498
PSFPA PSFUP	8・10												
	12・13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												
PSSFPA PSSFUP	8・10												
	12・13												
	15・16												
	18・20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number		€ Unit Price						
Type	D	Min. L ≧ 50	L51 ≧ 100	L101 ≧ 150	L151 ≧ 200	L201 ≧ 300	L301 ≧ 400	L401 ≧ 500
RSFPA	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ≧ 100	L101 ≧ 200	L201 ≧ 400	L401 ≧ 600	L601 ≧ 800	L801 ≧ 1000	L1001 ≧ 1200	L1201 ≧ 1498
PFPGA	8								
	10								
	12								
	13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSFPGA	8								
	10								
	12								
	13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Part Number		€ Unit Price					
Type	D	Min. L ≧ 50	L51 ≧ 100	L101 ≧ 200	L201 ≧ 300	L301 ≧ 448
VFPA	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSFPA	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VRPA	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VSRPA	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

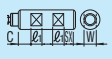
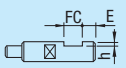
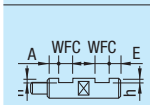
Part Number		€ Unit Price				
Type	D	Min. L ≧ 50	L51 ≧ 100	L101 ≧ 200	L201 ≧ 300	L301 ≧ 448
VPFPA	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					
VPSFPA	8					
	10					
	12					
	13					
	15					
	16					
	18					
	20					
	25					
	30					

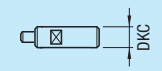
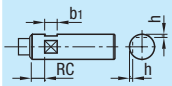
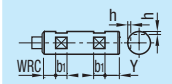
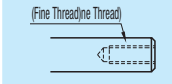
Alterations

Part Number - L - F - P - M - N (NSC) - SC - (LKC / NSC...etc.)
SFPPA30 - 400 - F25 - P16 - M10 - N10 - SC10 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUP, SSFUP, PSFUP and PSSFUP on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. Ⓥ L<200 ···>L±0.03 200≤L<500···>L±0.05 L≥500 ···>L±0.1	4,00
	SX	Add wrench flats at two locations Ordering Code SX15 Specify SX in 1mm increments Ⓥ SC+SX+ℓ1x2<L Ⓥ SX = 0 or SX ≥ 1 ⊗Not available on the same plane.	4,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes ⊗Not applicable to precision type Specify FC and E in 1mm increments. Ⓥ FC≤3xD Ⓥ When 1.5xD<FC, FC≤L/2 Ⓥ E=0 or E≥2⊗Can not be used with WFC	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC8-A8-E4 Application Notes ⊗Not applicable to precision type Specify WFC, A and E in 1mm increments Ⓥ WFC≤3xD Ⓥ When 1.5xD<FC, 2WFC≤L/2 Ⓥ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC.	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Not applicable for Precision Type, Shafts with D tolerance f8 and LTBC plating.	-
	RC	Add 90-deg. set screw flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Not applicable to precision type ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. set screw flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Not applicable to precision type ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	NSC	Change to fine thread tap. Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable to D = 6 or more	3,00

For details, please see Alterations Overview P.105

Ⓥ Please see Alteration Guides for details if provided. P.105
Ⓥ For more than one alteration, 2mm or more separation required between machined sections.
Ⓥ Alterations may lower hardness. P.104

Order Example

Part Number	-	L	-	F	-	P	-	M	-	N	-	SC
VFPA20	-	400	-	F25	-	P16	-	M10	-	N10	-	SC10
SSFPA20	-	400	-	F25	-	P16	-	M10	-	N10	-	SC10

Days to Ship

- RSFPA
8 Days / 5 Days
Express A 8,00 EUR/unit P88
Ⓥ A Express Charge of 21,60 EUR for 3 or more identical pieces.
13 Days

- VFPA · VSFPA · VPFPA · VPSFPA · VRPA · VSRPA
10 Days
Express B 8,00 EUR/unit P88
Ⓥ A Express Charge of 21,60 EUR for 3 or more identical pieces.
⊗ Express is not available for VRPA and VSRPA.

Add. Spec. Shafts

-One End Stepped and Male Thread / One End Female Thread-

Precision Type selections are available on P.169

RoHS

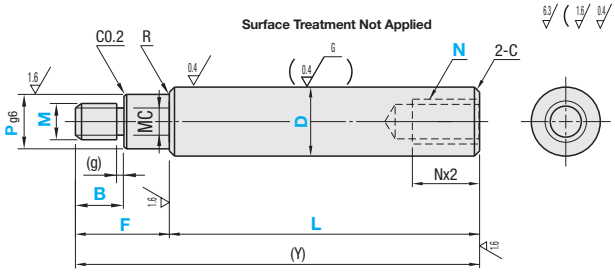


Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing. P.104
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. Coaxiality / Changes in Hardness / Male Thread Relief Dimensions P.103
Features of LTBC P.118

Type			Material	Hardness	Surface Treatment
D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFAY	SFUY	-	1.3505	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
SSFAY	SSFUY	-	1.4125 equivalent		
PSFAY	PSFUY	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFAY	PSSFUY	-	1.4125 equivalent		
RSFAY	-	-	1.3505/100Cr6		LTBC
-	-	PSFGY	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 10μ or more
-	-	PSSFGY	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

Surface Treatment Not Applied



Part Number Type	D	1mm Increments L	F	B	P	M (Coarse Threads) Selection	N (Coarse) Selection	(Y) Max.	R	C
(D Tolerance g6) SFAY SSFAY PSFAY PSSFAY RSFAY (D≤30, L≤500)	8	25~790	10≤F≤Px5	Pitchx3+(g)≤B≤Mx3	M<P<D	6	3 4 5	800	0.3 or less	0.5 or less
(D Tolerance h5) SFUY SSFUY PSFUY PSSFUY	10	25~790				6 8	3 4 5 6	800		
	12	25~990				6 8 10	4 5 6 8	1000		
	13	25~990				6 8 10	4 5 6 8	1000		
	15	25~990				6 8 10 12	4 5 6 8 10	1000		
	16	25~1190				6 8 10 12	4 5 6 8 10	1200		
	18	25~1190				6 8 10 12 16	4 5 6 8 10 12	1200		
	20	25~1190				6 8 10 12 16	4 5 6 8 10 12	1200		1.0 or less
	25	25~1190				8 10 12 16 20	4 5 6 8 10 12 16	1200		
	30	25~1490				8 10 12 16 20 24	6 8 10 12 16 20	1500		
	35	25~1480	20≤F≤Px5			10 12 16 20 24 30	8 10 12 16 20 24	1500	0.5 or less	
	40	40~1480				12 16 20 24 30	10 12 16 20 24 30	1500		
	50	50~1480				16 20 24 30	12 16 20 24 30	1500		

Overall length L requires Nx3≤L. F-B≥2 is required

Undercut Dimensions (Coarse Threads)			
M	Pitch	MC	(g)
6	1.0	4.4	2
8	1.25	6.0	3
10	1.5	7.7	
12	1.75	9.4	4
16	2.0	13.0	
20	2.5	16.4	5
24	3.0	19.6	
30	3.5	25.0	

Undercut Dimensions for Fine Threads.			
	Pitch	MC	(g)
6	0.75	4.8	2
8	1.0	6.4	
10		8.4	
12		10.4	
15		13.4	
17		15.4	
20		18.4	
25	1.5	22.7	3
30		27.7	

Undercut Dimension (2) on Fine Threads.			
MMS	Pitch	MC	(g)
10	1.25	8	3
12	1.5	9.7	
14		11.7	
18		15.7	

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1490
SFAY SFUY	8												
	10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAY SSFUY	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

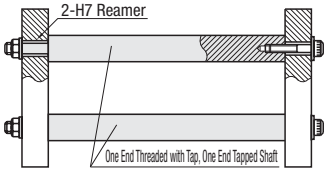
Part Number Type	D	€ Unit Price Min. L ≥ 50	L51 ≥ 100	L101 ≥ 150	L151 ≥ 200	L201 ≥ 300	L301 ≥ 400	L401 ≥ 500	L501 ≥ 600	L601 ≥ 800	L801 ≥ 1000	L1001 ≥ 1200	L1201 ≥ 1490
PSFAY PSFUY	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAY PSSFUY	8												
	10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number		€ Unit Price						
Type	D	Min. L ≀ 50	L51 ≀ 100	L101 ≀ 150	L151 ≀ 200	L201 ≀ 300	L301 ≀ 400	L401 ≀ 500
RSFAY	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number		€ Unit Price							
Type	D	Min. L ≀ 100	L101 ≀ 200	L201 ≀ 400	L401 ≀ 600	L601 ≀ 800	L801 ≀ 1000	L1001 ≀ 1200	L1201 ≀ 1490
PSFGY	8								
	10								
	12								
	13								
	15・16								
	18・20								
	25								
	30								
	35								
	40								
	50								
PSSFGY	8								
	10								
	12・13								
	15・16								
	18・20								
	25								
	30								
	35								
	40								
	50								

Example

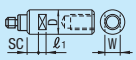
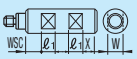
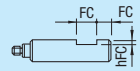
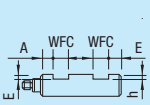


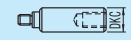
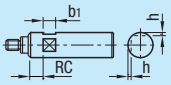
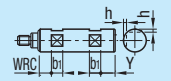
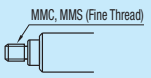
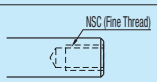
Alterations

Part Number - L - F - B - P - M (MMC・MMS) - N (NSC) - (LKC・SC...etc.)
SFAY30 - 250 - F40 - B20 - P10 - M8 - N10 - LKC

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUY, SSFUY, PSFUY and PSSFUY on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC ⊗Not applicable when D-P≤2 When using LKC, L dimensions can be specified in 0.1 increments. Ⓟ L<200 ···L±0.03 200≤L<500···L±0.05 L≥500 ···L±0.1	4,00
	SC	Adds a set of wrench flats. Ordering Code SC5 SC=1mm Increment Ⓟ SC+ℓ1≤L Ⓟ SC=0 or SC≥1 ⊗can not be used with WSC D / W / ℓ1: 8 / 7 / 8; 10 / 8; 12 / 10; 13 / 11; 15 / 13; 16 / 14 / 10	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. Ⓟ WSC+X+ℓ1x2<L Ⓟ WSC (X)=0 or WSC (X)≥1 ⊗Cannot be machined on the same plane. Can not be used with 18 16; 20 17; 25 22; 30 27; 35 30; 40 36 / 50 41: 15 / 20	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Specify FC and E in 1mm increments. Ⓟ FC≤3xD Ⓟ When 1.5xD<FC, FC≤L/2 Ⓟ E=0 or E≥2 ⊗Can not be used with WFC D / h: 8~18 / 1; 20~40 / 2; 50 / 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC10-A8-E20 Specify WFC, A and E in 1mm increments Ⓟ WFC≤3xD Ⓟ When 1.5xD<FC, 2WFC≤L/2 Ⓟ A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. D / h: 8~18 / 1; 20~40 / 2; 50 / 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗ Not applicable to RSFAY, PSFGY and PSSFGY	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS	Change to fine threads. Ordering Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS)	3,00
	NSC	Change to fine thread tap. Ordering Code NSC14 (N is changed to NSC) Application Notes Applicable for D = 6 or more	3,00

For details, please see Alterations Overview P.105

Ⓟ Please see Alteration Guides for details if provided. P.105
Ⓟ For more than one alteration, 2mm or more separation required between machined sections.
Ⓟ Alterations may lower hardness. P.104

Order Example

Part Number - L - F - B - P - M - N
SFAY20 - 277 - F25 - B12 - P10 - M8 - N12

Days to Ship

8 Days
5 Days

Express A 8,00 EUR/unit P.88
Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.

- RSFAY
13 Days

Shafts

-One End Stepped and Male Thread / Both Ends Stepped and Male Thread-

Precision Type selections are available on P.169

RoHS



Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing. P.104

Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. Coaxiality / Changes in Hardness / Male Thread Relief Dimensions P.103

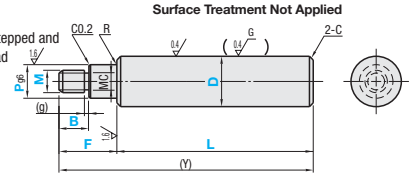
Features of LTBC P.118

Type						M Material	H Hardness	S Surface Treatment
One End Stepped and Male Thread			Both Ends Male Thread and Stepped					
D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFAF	SFUF	-	SFAX	SFUX	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/ equivalent 56HRC~	-
SSFAF	SSFUF	-	SSFAX	SSFUX	-	1.4125/ equivalent		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSFAF	PSFUF	-	PSFAX	PSFUX	-	1.3505/100Cr6		
PSSFAF	PSSFUF	-	PSSFAX	PSSFUX	-	1.4125/equivalent		LTBC
RSFAF	-	-	RSFAX	-	-	1.3505/100Cr6		
-	-	PSFGF	-	-	PSFGX	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 10μ or more
-	-	PSSFGF	-	-	PSSFGX	1.4301/XSCrNi18-10		

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

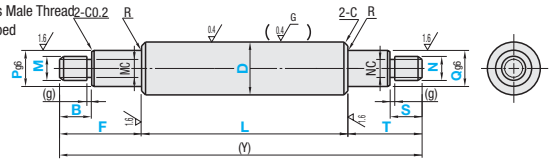
Surface Treatment Not Applied

One End Stepped and Male Thread



Surface Treatment Not Applied

Both Ends Male Thread and Stepped



Part Number Type				D	L	1mm Increments F / T	B / S	P / Q	M / N (Coarse) Selection	(Y) Max.	R	C
One End Stepped and Male Thread		Both Ends Male Thread and Stepped										
(D Tolerance g6)	(D Tolerance h5)	(D Tolerance g6)	(D Tolerance h5)									
SFAF	SFUF	SFAX	SFUX	8	25~790				6	800	0.3 or less	0.5 or less
SSFAF	SSFUF	SSFAX	SSFUX	10	25~790				6 8	800		
PSFAF	PSFUF	PSFAX	PSFUX	12	25~990				6 8 10	1000		
PSSFAF	PSSFUF	PSSFAX	PSSFUX	13	25~990				6 8 10	1000		
RSFAF (D≤30, L≤500)		RSFAX (D≤30, L≤500)		15	25~990	10≤F≤Px5 10≤T≤Qx5			6 8 10 12	1000		
(D Tolerance f8)		(D Tolerance f8)		16	25~1190		Pitchx3+(g)≤Bx3≤Mx3 Pitchx3+(g)≤S≤Nx3	M<P<D N<Q<D	6 8 10 12	1200		
PSFGF		PSFGX		18	25~1190				6 8 10 12 16	1200		
PSSFGF		PSSFGX		20	25~1190				6 8 10 12 16	1200		
* For RSFAF and RSFAX, L≤500, Ymax≤800				25	25~1190				8 10 12 16 20	1200		
				30	25~1490				8 10 12 16 20 24	1500		
				35	25~1480	20≤F≤Px5 20≤T≤Qx5			10 12 16 20 24 30	1500	0.5 or less	1.0 or less
				40	25~1480				12 16 20 24 30	1500		
				50	25~1480				16 20 24 30	1500		

F-B (T-S)≥2 is required.

Undercut Dimensions (Coarse Threads)				
M N	Pitch	MC NC	(g)	
6	1.0	4.4	2	
8	1.25	6.0	3	
10	1.5	7.7		
12	1.75	9.4	4	
16	2.0	13.0		
20	2.5	16.4	5	
24	3.0	19.6		
30	3.5	25.0		

Undercut Dimensions for Fine Threads.			
NMC	Pitch	MC NC	(g)
6	0.75	4.8	2
8	1.0	6.4	
10		8.4	
12		10.4	
15		13.4	
17		15.4	
20		18.4	
25	1.5	22.7	3
30		27.7	

Undercut Dimension (2) on Fine Threads.			
MMS NMS	Pitch	MC NC	(g)
10	1.25	8	3
12	1.5	9.7	
14		11.7	
18		15.7	

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price Min. L 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1490
SFAF SFUF	8												
	10												
	12												
	13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												
SSFAF SSFUF	8												
	10												
	12 / 13												
	15 / 16												
	18 / 20												
	25												
	30												
	35												
	40												
	50												

Part Number Type	D	€ Unit Price Min. L 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1490
PSFAF PSFUF	8												
	10												
	12 / 13												
	15 / 16												
	18 / 20												
	25												
	30												
	35												
	40												
	50												
PSSFAF PSSFUF	8												
	10												
	12 / 13												
	15 / 16												
	18 / 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number Type	D	€ Unit Price Min. L 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAF	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

Part Number Type	D	€ Unit Price Min. L 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAX	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

CAD Data

Part Number Type	D	€ Unit Price Min. L ≥ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1490
SFAX (SFUX)	8												
	10												
	12												
	13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												
SSFAX (SSFUX)	8												
	10												
	12 • 13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												

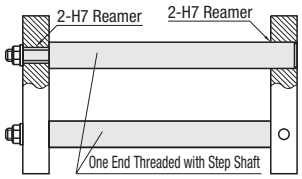
Part Number Type	D	€ Unit Price Min. L ≥ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1490
PSFAX (PSFUX)	8												
	10												
	12 • 13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												
PSSFAX (PSSFUX)	8												
	10												
	12 • 13												
	15 • 16												
	18 • 20												
	25												
	30												
	35												
	40												
	50												

For D tolerance h5, 3,90 EUR is added to the prices above.

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200	L1201~1490
PSFGF	8								
	10								
	12								
	13								
	15 • 16								
	18 • 20								
	25								
	30								
	35								
	40								
	50								
PSSFGF	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Part Number Type	D	€ Unit Price Min. L ≥ 100	L101~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200	L1201~1490
PSFGX	8								
	10								
	12								
	13								
	15 • 16								
	18 • 20								
	25								
	30								
	35								
	40								
	50								
PSSFGX	8								
	10								
	12 · 13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Example



Alterations

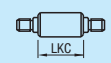
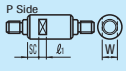
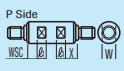
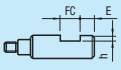
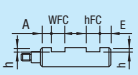
Part Number - L - F - B - P - M (MMC · MMS) - T - S - Q - N (NMC · NMS) - (LKC...etc.)
SFAX30 - 300 - F40 - B30 - P20 - M16 - T50 - S30 - Q16 - N10 - LKC

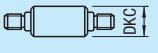
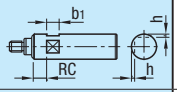
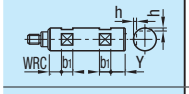
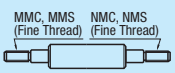
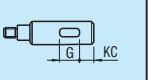
- Keyway machining (KC) only

10 Days (RSFAF and RSFAX are to be shipped on the 13th day after order)

DKC alteration was discontinued in June 2010. Please specify new part numbers; SFUG, SSFUG, PSFUG, PSSFUG, SFCU, SSFCU, PSFCU and PSSFCU on the left page. Please specify SFUF, SSFUF, PSFUF, PSSFUF, SFUX, SSFUX, PSFUX, and/or PSSFUX to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC ⊗Not applicable to D-P (Q)≤2 When using LKC, L dimensions can be specified in 0.1 increments. (?) L<200 ···›L±0.03 200≤L<500···›L±0.05 L≥500 ···›L±0.1	4,00
	SC	Adds a set of wrench flats. Ordering Code SC5 SC=1mm Increment (?) SC+ℓ1≤L SC=0 or SC≥1 ⊗Can not be used with WSC D: 8, 10, 12, 13, 15, 16 — W: 7, 8, 10, 11, 13, 14 — ℓ1: 8, 10	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. (?) WSC+X+ℓ1≤L (?) WSC (X)=0 or WSC (X)≥1 ⊗Cannot be machined on the same plane. Can not be used with ⊗Not applicable to One End Stepped and Male Thread Shafts D: 18, 20, 25, 30, 35, 40, 50 — W: 16, 17, 22, 27, 30, 36, 41 — ℓ1: 15, 20	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Specify FC and E in 1mm increments. (?) FC≤3xD (?) When 1.5xD<FC, FC≤L/2 (?) E=0 or E≥2 ⊗Can not be used with WFC ⊗Not applicable to "Both Ends Male Thread and Stepped" D: 8~18, 20~40, 50 — h: 1, 2, 3	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC10-A8-E20 Specify WFC, A and E in 1mm increments (?) WFC≤3xD (?) When 1.5xD<FC, 2WFC≤L/2 (?) A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC. ⊗Not applicable to "Both Ends Male Thread and Stepped" D: 8~18, 20~40, 50 — h: 1, 2, 3	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes ⊗Not applicable to shafts with diameter f8 tolerance and LTBC plating.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable to D=10 ~ 30 ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable to D=10 ~ 30 ⊗Cannot be used in combination with RC. ⊗Not available on the same plane.	10,00
	MMS NMC NMS	Change to fine threads. Order Code MMC14 (M is changed to MMC) MMS14 (M is changed to MMS) NMC14 (N is changed to NMC) NMS14 (N is changed toNMC)	3,00
	KC	Keyway is added at one location Ordering Code KC10-G10 Application Notes Applicable only to D = 12, 16, 20, 25 or 30. ⊗Not applicable to Both Ends Stepped and Male Thread	5,00

For details, please see Alterations Overview P.105

(?) Please see Alteration Guides for details if provided. P.105
(?) For more than one alteration, 2mm or more separation required between machined sections.
(?) Alterations may lower hardness. P.104

Order Example

Part Number - L - F - B - P - M - T - S - Q - N
SFAX20 - 400 - F30 - B20 - P10 - M8 - T20 - S15 - Q10 - N8

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR/unit P. 88
(?) A Express Charge of 21,60 EUR for 3 or more identical pieces.

- RSFAF · RSFAX: 13 Days

Add. Spec. Shafts

-One End Stepped and Female Thread - One End Male Thread / One End Stepped - One End Male Thread-

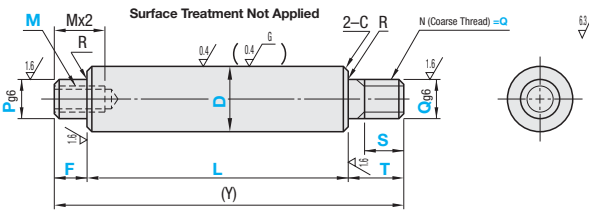
RoHS



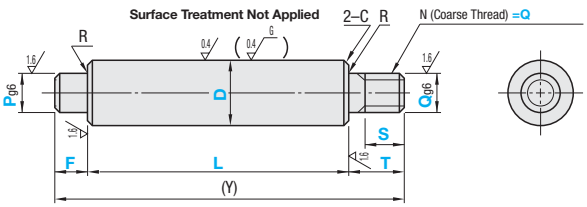
Type						M Material	H Hardness	S Surface Treatment
One End Stepped and Female Thread - One End Male Thread			One End Stepped / One End Male Thread					
D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFAB	SFUA	-	SFNB	SFUB	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth ☞P.104	-
SSFAB	SSFUA	-	SSFNB	SSFUB	-	1.4125/X105CrMo17 equivalent		
PSFAB	PSFUA	-	PSFNB	PSFUB	-	1.3505/100Cr6	1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFAB	PSSFUA	-	PSSFNB	PSSFUB	-	1.4125/X105CrMo17 equivalent		
RSFAB	-	-	RSFNB	-	-	1.3505/100Cr6		LTBC
-	-	PSFGB	-	-	PSNGB	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 10μ or more
-	-	PSSFGB	-	-	PSSNGB	1.4301/X5CrNi18-10		

Ⓨ Shaft End Machined Area (EffectiveThread Length + approx. 10mm) hardness may be reduced by annealing.
Ⓨ Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. ☞P.103
Ⓨ Features of LTBC ☞P.118

One End Stepped and Female Thread - One End Male Thread



One End Stepped / One End Male Thread



Coarse thread dimensions	
M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

D Tolerance			
D	g6	h5	f8
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			

Part Number Type	D	L (1mm Increments)	F (1mm Increments)	T (1mm Increments)	S (1mm Increments)	P (1mm Increments)	M (Coarse Threads) Selection	Q Selection	(Y) Max.	R	C
One End Stepped and Female Thread - One End Male Thread / One End Stepped / One End Male Thread	8	25~796	2≤F≤Px4	2≤T≤Qx5	(When Q≤6) S≤T-2	6	3	3 4 5 6 8	800	0.3 or less	0.5 or less
	10	25~796			(When Q=8 / 10) S≤T-3	6~8	3 4 5	4 5 6 8 10	800		
(D Tolerance g6) (D Tolerance h5) (D Tolerance g6) (D Tolerance h5)	12	25~996				6~10	3 4 5 6	5 6 8 10 12	1000		
SFAB SFUA SFNB SFUB	13	25~996				6~11	3 4 5 6 8	5 6 8 10 12	1000		
SSFAB SSFUA SSFNB SSFUB	15	25~996			(When Q≥12) S≤T-5	6~13	3 4 5 6 8 10	5 6 8 10 12	1000		
PSFAB PSFUA PSFNB PSFUB	16	25~1196				6~14	3 4 5 6 8 10	5 6 8 10 12 16	1200		
PSSFAB PSSFUA PSSFNB PSSFUB	18	25~1196			(When without threads) S=0	8~16	4 5 6 8 10 12	5 6 8 10 12 16	1200		
RSFAB RSFNB	20	25~1196			Ⓨ S=0 is only applicable for One End Male Thread. One End Stepped and Female Thread	8~17	4 5 6 8 10 12	6 8 10 12 16 20	1200		1.0 or less
(D≤30, L≤500, Ymax≤800) (D≤30, L≤500, Ymax≤800)	25	25~1196				8~22	4 5 6 8 10 12 16	8 10 12 16 20 24	1200		
(D Tolerance f8) (D Tolerance f8)	30	25~1496				9~27	5 6 8 10 12 16 20 24	8 10 12 16 20 24 30	1500		
PSFGB PSNGB	35	25~1496				9~32	5 6 8 10 12 16 20 24	10 12 16 20 24 30	1500		
PSSFGB PSSNGB	40	25~1496				11~37	6 8 10 12 16 20 24 30	12 16 20 24 30	1500	0.5 or less	
	50	25~1496			Ⓨ S≥Pitchx3	11~47	6 8 10 12 16 20 24 30	16 20 24 30	1500		

Ⓨ M + 3 ≤ P is required for P Dimension. Ⓨ L+F dimension needs to be M x 4 or more.
Ⓨ When D=P, please specify T=S as S dimensions. L and T dimensions, however, have priority to build, thus S dimensions should be T-(Pitch x 2).

Price

■Volume Discount (Ⓨ Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1496
SFAB Ⓨ SFUA Ⓨ SFNB Ⓨ SFUB	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAB Ⓨ SSFUA Ⓨ SSFNB Ⓨ SSFUB	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

- One End Stepped and Female Thread - One End Male Thread
Ⓨ For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number Type	D	€ Unit Price Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1496
PSFAB Ⓨ PSFUA Ⓨ PSFNB Ⓨ PSFUB	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAB Ⓨ PSSFUA Ⓨ PSSFNB Ⓨ PSSFUB	8 · 10												
	12 · 13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												

- One End Stepped - One End Male Thread
Ⓨ For D tolerance h5, 3,90 EUR is added to the above prices. And then the prices on the right page are subtracted.
Ⓨ For D tolerance g6, the prices on the right page are subtracted from the above prices.

Price Reduction
3%

CAD Data

Part Number Type	D	€ Unit Price Min. L 50 ~	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500
RSFAB / RSFNB	8							
	10							
	12							
	13							
	15							
	16							
	18							
	20							
	25							
	30							

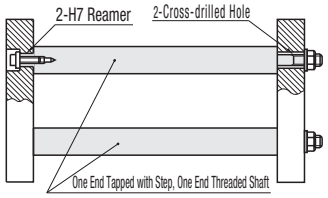
The prices below are subtracted from the above prices.

Price Deductions for Tap Machining on One End Stepped - One End Male Thread Shafts

D	Price Deductions
8 · 10 · 12 · 13	
15 · 16 · 18 · 20 · 25	
30 · 35 · 40· 50	

EX.)
SFNB20-400-F25-P16-T35-S25-Q16
···›27,50-1,20=26,30 EUR

Example



Part Number Type	D	€ Unit Price Min. L 100 ~	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1496
PSFGB / PSNGB	8								
	10								
	12								
	13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								
PSSFGB / PSSNGB	8								
	10								
	12								
	13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

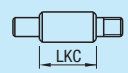
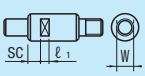
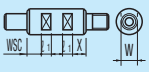
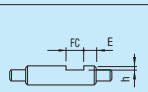
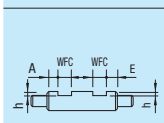
The left prices are subtracted from the above prices.

Alterations

Part Number	L	F	P	M	T	S	Q (QMC · QMS)	(LKC...etc.)
SFAB20	400	F25	P16	M10	T35	S25	Q16	LKC-QC

DKC alteration was discontinued in June 2010. Please specify new part numbers; SFUG, SSFUG, PSFUG, PSSFUG, SFCU, SSFCU, PSFCU and PSSFCU on the left page.
Please specify SFUA, SSFUA, PSFUA, PSSFUA, SFUB, SSFUB, PSFUB, and/or PSSFUB to place orders.

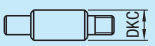
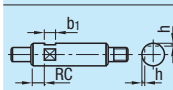
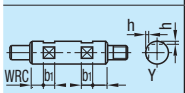
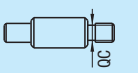
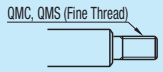
Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC ⊗Not applicable to D-P (Q)≤2 When using LKC, L dimensions can be specified in 0.1 increments. L<200 ···›L±0.03 200≤L<500···›L±0.05 L≥50 ···›L±0.1	4,00
	SC	Adds a set of wrench flats. Ordering Code SC5 SC=1mm Increment ⊗SC+ℓ1≤L SC=0 or SC≥1 ⊗can not be used with WSC	4,00
	WSC	Add wrench flats at two locations Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. WSC+X+ℓ1x2<L WSC (X)=0 or WSC (X)≥1 ⊗Cannot be machined on the same plane. Can not be used with	8,00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Specify FC and E in 1mm increments. FC≤3xD When 1.5xD<FC, FC≤L/2 E=0 or E≥2 ⊗Can not be used with WFC	2,00
	WFC	Add set screw flats at two locations Ordering Code WFC10-A8-E20 Specify WFC, A and E in 1mm increments WFC≤3xD When 1.5xD<WFC, 2WFC≤L/2 A (E) = 0 or A (E) ≥ 2 ⊗Machining on the same plane is not applicable. Can not be used with FC.	4,00

D	W	ℓ1
8	7	8
10	8	
12	10	10
13	11	
15	13	
16	14	
18	16	
20	17	15
25	22	
30	27	
35	30	20
40	36	
50	41	

D	h
8~18	1
20~40	2
50	3

D	h
8~18	1
20~40	2
50	3

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes D Tolerance f8 / Not applicable to Low Temperature Black Chrome Plated Shafts.	-
	RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes Applicable for D=10 ~ 30 ⊗Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes Applicable for D=10 ~ 30 ⊗Cannot be used in combination with RC.	10,00
	QC	Undercut Ordering Code QC Application Notes Applicable when M=6 or more ⊗Not Applicable when D=Q	Free of charge
	QMC QMS	Change to fine threads. Ordering Code QMC14 (Q is changed to QMC) QMS14 (Q is changed to QMC)	3,00

For details, please see Alterations Overview P.105

Please see Alteration Guides for details if provided. P.105
For more than one alteration, 2mm or more separation required between machined sections.
Alterations may lower hardness. P.104

Order Example

Part Number	L	F	P	M	T	S	Q
SFNB20	400	F25	P16		T35	S25	Q16
SFAB20	400	F25	P16	M10	T35	S25	Q16

Days to Ship

8 Days
5 Days
- RSFAB / RSFNB
13 Days

Express A 8,00 EUR/unit P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

High Precision Linear Shafts Stepped Ends · Stepped Ends with Wrench Flats

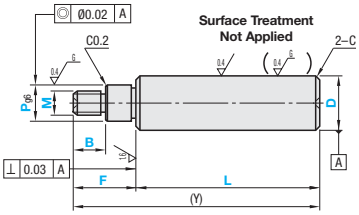
-One End Male Thread · Both Ends Male Thread · One End Male Thread - One End Female Thread-



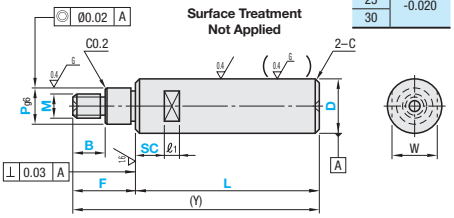
Type						D Tolerance	M Material	H Hardness	S Surface Treatment
One End Stepped and Male Thread		Both Ends Stepped and Male Thread		One End Stepped and Male Thread - One End Female Thread					
Standard	With Wrench Flats	Standard	With Wrench Flats	Standard	With Wrench Flats				
VFAN	VFPN	VFAM	VFPM	VFAD	VFPD	g6	1.3505	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
VSFAN	VSFPN	VSFAM	VSFPM	VSFAD	VSFPD		1.4125 equivalent		
VRAN	VRPN	VRAM	VRPM	VRAD	VRPD		1.3505		LTBC
VSRAN	VSRPN	VSRAM	VSRPM	VSRAD	VSRPD		1.4125 equivalent		

D Tolerance	
Dg6	
4	-0.004 -0.012
5	
6	
8	-0.005 -0.014
10	
12	-0.006 -0.017
13	
15	
16	
18	
20	-0.007 -0.020
25	
30	

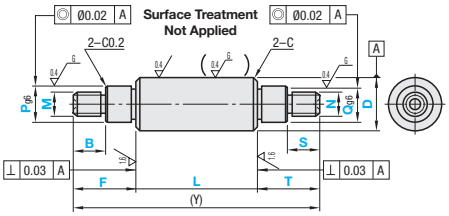
One End Stepped and Male Thread



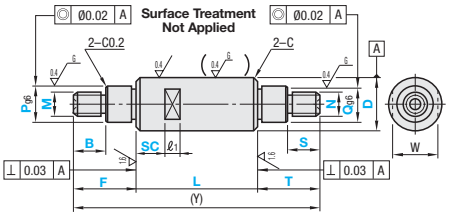
One End Stepped and Male Thread with Wrench Flats



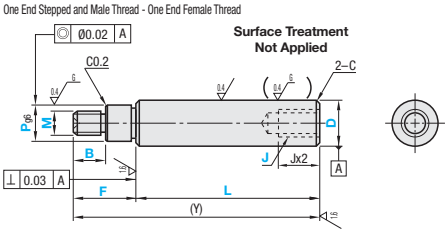
Both Ends Stepped and Male Thread



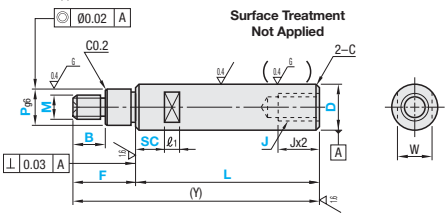
Both Ends Male Thread and Stepped with Wrench Flats



One End Stepped and Male Thread - One End Female Thread



One End Stepped and Male Thread - One End Female Thread with Wrench Flats



- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104
- Changes in hardness and thread undercut dimensions. P.103
- There will be centering holes on end faces of the shafts.
- Features of LTBC P.118

The inside of taps won't be coated.

The inside of taps won't be coated.

Part Number Type		D	1mm Increments L	F · T	B · S	P · Q	M · N (Coarse) Selection	J (Coarse) Selection	Wrench Flats Dimensions W	ℓ1	(Y) Max.	C
		(4)	25~195				3	2	-	-	-	200	0.2 or less
VFAN	VFPN	(5)	25~295				3 4	2,6 3	-	-	-	300	
VSFAN	VSFPN	6	25~295				3 4 5	3	5			300	
VRAN	VRPN	8	25~295				3 4 5 6	3 4 5	7	8		300	
VSRAN	VSRPN	10	25~345				4 5 6 8	3 4 5 6	8			350	
VFAM	VFPM	12	25~345	5≤F≤Px5	(When without threads) B=0 S=0	M<P<D	5 6 8 10	4 5 6 8	10			350	0.5 or less
VSFAM	VSFPM	13	25~345				5 6 8 10	4 5 6 8	11			350	
VRAM	VRPM	15	25~345	5≤T≤Nx5		N<Q<D	5 6 8 10 12	4 5 6 8 10	13			350	
VSRAM	VSRPM	16	25~345		Mx1≤B≤Mx3 Nx1≤S≤Nx3		5 6 8 10 12	4 5 6 8 10	14	10		350	
VFAD	VFPD	18	25~345				5 6 8 10 12	4 5 6 8 10 12	16			350	
VSFAD	VSFPD	20	25~445				6 8 10 12 16	4 5 6 8 10 12	17			450	
VRAD	VRPD	25	25~445				8 10 12 16 20	4 5 6 8 10 12 16	22			450	1.0 or less
VSRAD	VSRPD	30	25~445				8 10 12 16 20 24	6 8 10 12 16 20	27	15		450	

SC=1mm Increment

- SC+ℓ1≤L
- **SC=0 or SC≥1**
- Details of Wrench Flats **P.104**

For full length L of VFAD, VRAD, VSFAD, VSRAD, VFPD, VSFPD, VRPD and VSRPD, J x 3≤L is required. F-B (T-S)≥2 is required.
Specify M = 0 when B = 0; N = 0 when S = 0 Sizes in ( ) are not applicable to shafts with wrench flats.

Order Example

Part Number	L	F	B	P	M	SC
VFAN20	400	F30	B20	P10	M8	

Part Number	L	F	B	P	M	T	S	Q	N	SC
VFPM12	300	F30	B20	P10	M8	T20	S10	Q10	N6	SC10

Part Number	L	F	B	P	M	J	SC
VSFAD30	250	F50	B40	P20	M16	J20	

Days to Ship 10 Days | Express B 8,00 EUR/unit P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.
Express Serviceis not available for LTBC Plated Shafts.

Price

Volume Discount (Round down to one Cent) **P.87**

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VFAN	4					
	5					
VRAN (Price indicated right + Price in the table below)	6					
	8					
	10					
VFPN (Price indicated right + 4,00 EUR) (Applicable to D≥6)	12					
	13					
	15					
	16					
VRPN (Price indicated right + Price in the table below + 4,00 EUR) (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VSFAN	4					
VSRAN (Price indicated right + Price in the table below)	5					
	6					
	8					
	10					
VSFPN (Price indicated right + 4,00 EUR) (Applicable to D≥6)	12					
	13					
	15					
	16					
VSRPN (Price indicated right + Price in the table below + 4,00 EUR) (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~440
VFAM	4					
	5					
VRAM (Price indicated right + Price in the table below)	6					
	8					
	10					
VFPM (Price indicated right + 4,00 EUR) (Applicable to D≥6)	12					
	13					
	15					
	16					
VRPM (Price indicated right + Price in the table below + 4,00 EUR) (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~440
VSFAM	4					
VSRAM (Price indicated right + Price in the table below)	5					
	6					
	8					
	10					
VSFPM (Price indicated right + 4,00 EUR) (Applicable to D≥6)	12					
	13					
	15					
	16					
VSRPM (Price indicated right + Price in the table below + 4,00 EUR) (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VFAD	4					
	5					
VRAD (Price indicated right + Price in the table below)	6					
	8					
	10					
VFPD (Price indicated right + 4,00 EUR) (Applicable to D≥6)	12					
	13					
	15					
	16					
VRPD (Price indicated right + Price in the table below + 4,00 EUR) (Applicable to D≥6)	18					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
VSFAD	4					
	5					
VSRAD (Price indicated right + Price in the table below)	6					
	8					
	10					
VSFPD (Price indicated right + 4,00 EUR) (Applicable to D≥6)	12					
	13					
	15					
	16					
VSRPD (Price indicated right + Price in the table below + 4,00 EUR) (Applicable to D≥6)	18					
	20					
	25					
	30					

For "LTBC Plated" shafts, please add low temp chrome plating charges below to the above non-plated shafts unit prices. Ex.) VRAN20-400-F30-B20-P10-M8⋯7,430+1,900=93,30 EUR

Low Temp Black Chrome Plating Additional Price	D	Additional Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
	4~6					
	8 / 10					
	12 / 13					
	15 / 16					

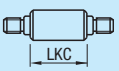
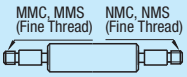
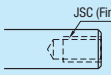
Low Temp Black Chrome Plating Additional Price	D	Additional Price Min. L ~ 50	L51~100	L101~200	L201~300	L301~445
	18 / 20					
	25					
	30					

Features of LTBC **P.118**

Alterations

Part Number - L - F - B - P - M (MMC · MMS) - T · J (JSC) - S - Q - N (NMC / NMS) - [ ] - (LKC)

VFAM13 - 300 - F30 - B20 - P10 - M8 - T20 - S10 - Q10 - NMC6

Alterations	Alteration to L Dimension Tolerance	Change to Fine Thread	Change to Fine Thread
			
Code	**LKC**	**MMC · MMS · NMC · NMS**	**JSC**
Spec.	Changes "L Tolerance". Order number LKC Applicable to L dimension 200 or less. L≤200⋯±0.03 When using LKC, L dimensions can be specified in 0.1mm increments. ⊗Not applicable when D-P (Q)≤2	Changes the threads to Fine Threads shown in the table below. (MMC and NMC are applicable to Bearing Nut fine thread pitch) (MMS and NMS are applicable to Cylinder fine thread pitch) Order Code MMC17	Female Thread thread changed to fine thread listed in the table below. Order Code JSC14
Price Adder	4,00	3,00	3,00

D	MMC / NMC								MMS / NMS	
4	3									
5	3	4								
6	3	4	5							
8	3	4	5	6						
10		4	5	6	8					
12			5	6	8	10			10	
13			5	6	8	10			10	
15			5	6	8	10	12		10	12
16			5	6	8	10	12		10	12
18			5	6	8	10	12	15	10	12 14
20				6	8	10	12	15 17	10	12 14
25					8	10	12	15 17 20	10	12 14 18
30					8	10	12	15 17 20 25	10	12 14 18
Pitch	0.35	0.5	0.75	1.0				1.5	1.25	1.5

Please replace M dimensions with MMC (MMS) to specify.
Please replace N dimensions with NMC (MMS) to specify.

D	JSC				
12	8				
13	8				
15	8	10			
16	8	10			
18	8	10	12		
20	8	10	12	14	
25	8	10	12	14	18
30	8	10	12	14	18
Pitch	1.0	1.25	1.5		

Specify as J changed to JSC.
J dimension is equal to JSC.
Only Applicable for V_AD / VS_AD / V_PD / VS_PD

When ordering alterations, more than 2mm of separation is required between wrench flats and alteration areas. **P.106**
Alterations may lower hardness. **P.104** Please see

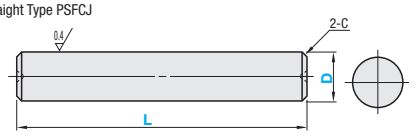
Shafts
-Surface Treatment Fully Plated Type-

Plating is also applied to shaft ends.

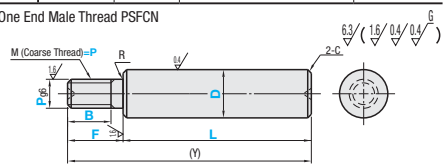


Type					D Tolerance	M Material	H Hardness	S Surface Treatment
Straight	One End Female Thread	One End Stepped and Female Thread	One End Male Thread	One End Male Thread - Thread O.D. same as Shaft O.D.				
PSFCJ	PSFCT	PSFCG	PSFCN	PSFCQ	g6	1.3505/ 100Cr6	Induction Hardening 58HRC~ Effective Hardening Depth☞P.104	Electroless Nickel Plating

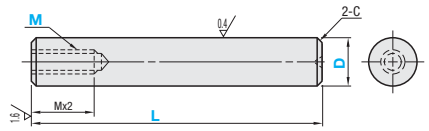
Straight Type PSFCJ



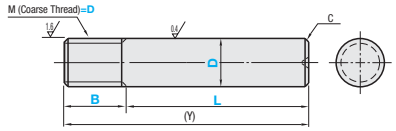
One End Male Thread PSFCN



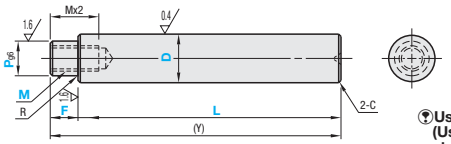
One End Female Thread PSFCT



One End Male Thread - Thread O.D. = Shaft O.D PSFCQ



One End Stepped and Female Thread PSFCG



Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness.☞P.103

Shaft End Machined Area (Effective Thread Length + approx. 10mm) Annealing could reduce hardness.

Shaft may have center holes at its end faces depending on shape.

L does not include incomplete threads.

Use "Oil-free Bushings" for sliding applications. P.325~352 (Using rolling ball elements such as linear ball bushings on electroless nickel plated shafts may result in flaking of the nickel plating layer.)

■Straight Type One End Female Thread - One End Stepped and Female Thread

Part Number Type	D	1mm Increments L (Straight / One End Female Thread)	L (One End Stepped and Female Thread)	F	P	Selection M (One End Female Thread)	M (One End Stepped and Female Thread)	(Y) Max.	R	C
Straight Type PSFCJ	8	20~ 800	25~798	2≤F≤Px4	6	3 4 5	3	800	0.3 or less	0.5 or less
	10	20~ 800	25~798		6~ 8	3 4 5 6	3 4 5	800		
One End Female Thread Type PSFCT	12	20~1000	25~998		6~10	4 5 6 8	3 4 5 6	1000		
	15	25~1000	25~998		6~13	4 5 6 8 10	3 4 5 6 8 10	1000		
	20	30~1000	25~998		6~17	4 5 6 8 10 12	4 5 6 8 10 12	1000		1.0 or less
	25	35~1000	25~998		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	1000		
One End Stepped Female Thread Type PSFCG	30	35~1000	25~998		9~27	6 8 10 12 16 20	5 6 8 10 12 16 20	1000		
	35	35~1000	25~998		9~32	8 10 12 16 20 24	5 6 8 10 12 16 20 24	1000	0.5 or less	
	40	50~1000	25~998		11~37	10 12 16 20 24 30	6 8 10 12 16 20 24 30	1000		
	50	65~1000	25~998		11~47	12 16 20 24 30	6 8 10 12 16 20 24 30	1000		

- One End Female Thread Ⓨ When Mx2.5+4≥L, tap pilot hole may go through. -One End Stepped and Female Thread Ⓨ P≥M+3 Ⓨ When Mx2.5+4≥Y, tap pilot hole may go through.

■One End Male Thread

Part Number Type	D	1mm Increments L	F	B	P Selection	(Y) Max.	R	C
One End Male Thread PSFCN	8	25~798	2≤F≤Px5	(When P≤6) B≤F-2 (When P=8 / 10) B≤F-3 (P≥12) B≤F-5 Ⓨ B≥Pitchx3	3 4 5 6	800	0.3 or less	0.5 or less
	10	25~798			4 5 6 8	800		
	12	25~998			5 6 8 10	1000		1.0 or less
	15	25~998			5 6 8 10 12	1000		
	20	25~998			6 8 10 12 16	1000		
	25	25~998			8 10 12 16 20 24	1000		
	30	25~998			8 10 12 16 20 24	1000		
	35	25~998			10 12 16 20 24 30	1000	0.5 or less	
	40	25~998			12 16 20 24 30	1000		
	50	25~998			16 20 24 30	1000		

Coarse Thread Dimensions M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

■One End Male Thread - Thread O.D. = Shaft O.D.

Part Number Type	D	1mm Increments L	B	M	(Y) Max.	R	C
One End Male Thread Thread O.D.=Shaft O.D. Type PSFCQ	8	25~793	7~40	8	800	0.3 Less than	0.5 Less than
	10	25~795	8~50	10	800		
	12	25~991	9~60	12	1000		
	20	25~987	13~100	20	1000		1.0 Less than
	30	25~982	18~150	30	1000		

Ⓨ For "Thread O.D. = Shaft O.D."shafts, L dimension has priority. Effective thread length will be B-(Pitch x 2).

Order Example

Part Number	L	F	B	P	M
PSFCJ20	75				
PSFCT20	525				M8
PSFCG20	400	F25		P16	M10
PSFCN20	950	F50	B30	P10	
PSFCQ12	500		B20		

Days to Ship: 10 Days

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~9	10~12	13 / 14	15~19
Discount rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Straight Type

Part Number Type	D	€ Unit Price Min. L ≀ 50	L51 ≀ 100	L101 ≀ 150	L151 ≀ 200	L201 ≀ 300	L301 ≀ 400	L401 ≀ 500	L501 ≀ 600	L601 ≀ 800	L801 ≀ 1000
PSFCJ	8										✕
	10										✕
	12										
	15										
	20										
	25										
	30										
	35										
	40										
	50	✕									

One End Male Thread

Part Number Type	D	€ Unit Price Min. L ≀ 50	L51 ≀ 100	L101 ≀ 150	L151 ≀ 200	L201 ≀ 300	L301 ≀ 400	L401 ≀ 500	L501 ≀ 600	L601 ≀ 800	L801 ≀ 998
PSFCN	8										
	10										✕
	12										
	15										
	20										
	25										
	30										
	35										
	40										
	50	✕									

One End Female Thread Type

Part Number Type	D	€ Unit Price Min. L ≀ 50	L51 ≀ 100	L101 ≀ 150	L151 ≀ 200	L201 ≀ 300	L301 ≀ 400	L401 ≀ 500	L501 ≀ 600	L601 ≀ 800	L801 ≀ 1000
PSFCT	8										✕
	10										✕
	12										
	15										
	20										
	25										
	30										
	35										
	40										
	50	✕									

One End Male Thread - Thread O.D. = Shaft O.D.

Part Number Type	D	€ Unit Price Min. L ≀ 50	L51 ≀ 100	L101 ≀ 150	L151 ≀ 200	L201 ≀ 300	L301 ≀ 400	L401 ≀ 500	L501 ≀ 600	L601 ≀ 800	L801 ≀ 991
PSFCQ	8										✕
	10										✕
	12										
	20										
	30										

One End Stepped and Female Thread

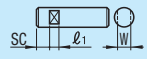
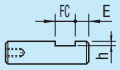
Part Number Type	D	€ Unit Price Min. L ≀ 50	L51 ≀ 100	L101 ≀ 150	L151 ≀ 200	L201 ≀ 300	L301 ≀ 400	L401 ≀ 500	L501 ≀ 600	L601 ≀ 800	L801 ≀ 1000
PSFCG	8										✕
	10										✕
	12										
	15										
	20										
	25										
	30										
	35										
	40										
	50	✕									

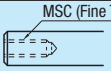
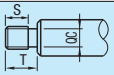
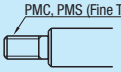
Alterations

Part Number - L - F - B - P (PMC · PSC) - M (MSC) - (LKC...etc.)
PSFCN30 - 250 - F40 - B30 - P10 - LKC

For more than one alteration, 2mm or more separation required between machined sections. P.106

Surface treatment will be also applied to altered areas.
Alterations may lower hardness. P.104

Alterations	Alteration to L Dimension Tolerance	Wrench Flats	Set Screw Flat
			
Code	LKC	SC	FC
Spec.	Changes "L Tolerance". Ordering Code LKC L<200···L±0.03 200≤L<500···L±0.05 L≥500···L±0.1 L dimension can be specified in 0.1mm increments for LKC. ⊗Not applicable to One End Male Thread when D-P≤2. ⊗Not applicable to One End Male Thread Shafts - Thread O.D. = Shaft O.D Type	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤LSC=0 or SC≥1 D / W / ℓ1: 8 / 7 / 8; 10 / 8; 12 / 10; 15 / 13 / 10; 20 / 17 D / W / ℓ1: 25 / 22 / 10; 30 / 27 / 15; 35 / 30; 40 / 36 / 20; 50 / 41	Add screw flats. Ordering Code FC10-E8 Specify FC and E in 1mm increments. FC≤Dx3 When 1.5xD<FC, FC≤L/2 E=0 or E≥2 D / h: 8~15 / 1; 20~40 / 2; 50 / 3
Price Adder	5,00	4,00	2,00

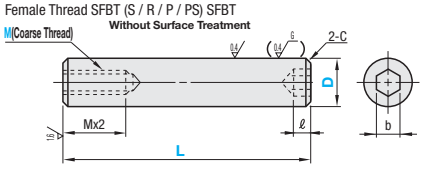
Alterations	Change to Fine Thread	Undercut	Change to Fine Thread
	MSC (Fine Thread)ne Thread) 		PMC, PMS (Fine Thread)ine Thread) 
Code	MSC	PC	PMC /
Spec.	Female Thread thread changed to fine thread listed in the table below. Ordering Code MSC14 Applicable to "One End Female Thread and One End Stepped and Female Thread" type. Specify in reference to D for "One End Male Thread" shafts, and P for "One End Stepped and Female Thread" shafts. D / P: 12 (8); 15 (8 10); 20 (8 10 12 14); 25~35 (8 10 12 14 18); 40 (10 12 14 18); 50 (12 14 18); Pitch (1.0 1.25 1.5) Specify using MSC in place of M. M dimension is equal to MSC.	Undercut added to P section. Ordering Code PC For detailed undercut dimensions, please see P.103 Applicable to "One End Male Thread" type only. ⊗Not applicable for M3 ~ M5.	Changes the threads to Fine Threads shown in the table below. (PMC → Applicable to Bearing nut fine threads) (PMS → Applicable to Cylinder fine thread pitches) Ordering Code PMC17 Applicable to "One End Male Thread" type only. D / PMC / PMS: 8 (3 4 5 6 / 8) / (); 10 (4 5 6 8) / (); 12 (5 6 8 10) / (10); 15 (5 6 8 10 12) / (10 12); 20 (6 8 10 12 15 17) / (10 12 14 18); 25 (8 10 12 15 17 20) / (10 12 14 18); 30 (8 10 12 15 17 20 25) / (10 12 14 18); 35 (10 12 15 17 20 25 30) / (10 12 14 18); 40 (12 15 17 20 25 30) / (12 14 18); 50 (15 17 20 25 30) / (14 18); Pitch (0.35 0.5 0.75 1.0 1.5 / 1.25 1.5) Please replace P dimensions with PMC (PMS) to specify. P dimension is equal to PMC (PMS).
Price Adder	3,00	Free of charge	3,00

Shafts
-Hexagon Socket Type-

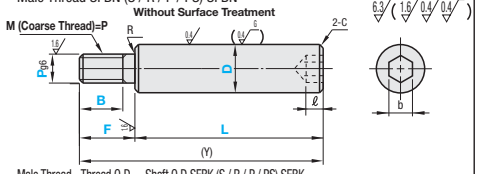


Type				D Tolerance	M Material	H Hardness	S Surface Treatment
Female Thread Type	Stepped and Female Thread	Male Thread type.	Male Thread - Thread O.D. = Shaft O.D.				
SFBT	SFBH	SFBN	SFBK	g6	1.3505/100Cr6	Induction Hardening Effective Hardening Depth☞P.104	-
SSFBT	SSFBH	SSFBN	SSFBK		1.4125 equivalent		
PSFBT	PSFBH	PSFBN	PSFBK		1.3505/100Cr6	58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFBT	PSSFBH	PSSFBN	PSSFBK		1.4125 equivalent	1.4125/X105CrMo17 equivalent 56HRC~	
RSFBT	RSFBH	RSFBN	RSFBK		1.3505/100Cr6		LTBC

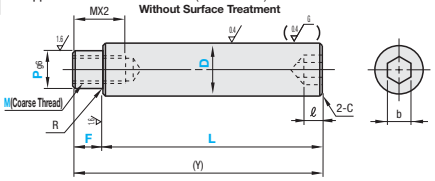
Female Thread SFBT (S / R / P / PS) SFBT — Without Surface Treatment



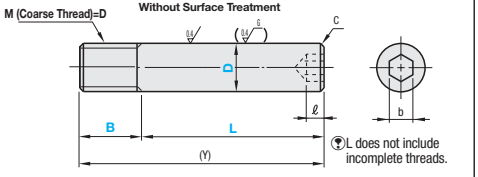
Male Thread SFBN (S / R / P / PS) SFBN — Without Surface Treatment



Stepped and Female Thread SFBH (S / R / P / PS) SFBH — Without Surface Treatment



Male Thread - Thread O.D. = Shaft O.D SFBK (S / R / P / PS) SFBK — Without Surface Treatment



☞L does not include incomplete threads.

■Hexagon Socket Dimensions

D	b	Hexagon Socket Depth ℓ
6	2.5	3.5
8	3	4.5
10	4	6
12 · 13 · 15	5	7.5
16 · 18	6	9
20	8	12

☞Features of LTBC ☞P.118 ☞Changes in circularity, straightness, perpendicularity, coaxiality and hardness ☞P.103
☞Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness.

■Female Thread / Stepped and Female Thread

Part Number Type		D	1mm Increments L (Female Thread)	L (Stepped and Female Thread)	F	P	Selection M (Female Thread)	M (Stepped and Female Thread)	(Y) Max.	R	C
Female Thread Type	Stepped and Female Thread	*6	20~ 300	-		-	3	-	-		
SFBT	SFBH	8	20~ 400	25~ 400		6	3 4 5	3	424		
SSFBT	SSFBH	10	20~ 500	25~ 500		6~ 8	3 4 5 6	3 4 5	532		
PSFBT	PSFBH	12	20~ 600	25~ 600		6~10	4 5 6 8	3 4 5 6	640	0.3 or less	0.5 or less
PSSFBT	PSSFBH	13	25~ 650	25~ 650	2≤F≤Px4	6~11	4 5 6 8	3 4 5 6 8	694		
RSFBT	RSFBH	15	25~ 750	25~ 750		6~13	4 5 6 8 10	3 4 5 6 8 10	802		
(L≤500)	(L≤500)	16	30~ 800	25~ 800		6~14	4 5 6 8 10	3 4 5 6 8 10	856		
		18	30~ 900	25~ 900		8~16	4 5 6 8 10 12	4 5 6 8 10 12	964		
☞Only female thread endis available for D = 6		20	30~1000	25~1000		8~17	4 5 6 8 10 12	4 5 6 8 10 12	1068		1.0 or less

- Female Thread Type☞Mx2.5+4+ℓ≤L☞Pilot holes for tapping may break through when M x 2.5 + 4 + ℓ x 1.5 ≥ L.
- Stepped and Female Thread☞P≥M+3☞Mx2.5+4+ℓ≤Y☞When Mx2.5+4+ℓX1.5≥Y, tap pilot hole may go through.

■Male Thread - Thread O.D. = Shaft O.D.

Part Number Type		D	1mm Increments L	F	B (Male Thread).	B (Male Thread - Thread O.D. = Shaft O.D.)	P Selection	(Y) Max.	R	C
Male Thread Type.	Male Thread - Thread O.D. = Shaft O.D.	*6	25~ 300				3 4 5	330		
SFBN	SFBK	*8	25~ 400		(When P≤6) B≤F-2		3 4 5 6	440		
SSFBN	SSFBK	*10	25~ 500		(When P=8 / 10) B≤F-3	2≤B≤Mx5	4 5 6 8	550		
PSFBN	PSFBK	*12	25~ 600		(When P=12 and 16) B≤F-5		5 6 8 10	660	0.3 or less	0.5 or less
PSSFBN	PSSFBK	13	25~ 650	2≤F≤Px5		☞For "Thread O.D.=Shaft O.D." Type shafts, L dimensions have priority. Effective thread length will be B-(Pitch x 2).	5 6 8 10 12	715		
RSFBN	RSFBK	15	25~ 750				5 6 8 10 12	825		
(L≤500)	(L≤500)	*16	25~ 800				5 6 8 10 12	880		
		18	25~ 900		☞B≥Pitchx3		5 6 8 10 12 16	990		
☞"Thread O.D.=Shaft O.D." Type are available for * sizes only.		*20	25~1000				6 8 10 12 16	1100		1.0 or less

☞For B dimensions "Thread O.D.=Shaft O.D" Type, effective thread length is Pitchx3≤B≤Mx5.☞D > P except "Thread O.D. same as Shaft O.D." type.

Order Example

Part Number	L	F	B	P	M
SFBT20	525				M8
SFBH20	400	F25		P16	M10
SFBN20	500	F25	B20	P16	
SFBK20	1000		B30		

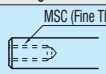
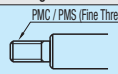
Days to Ship: Except LTBC Plated Shafts 8 Days; LTBC Plated Shafts 13 Days

Alterations

Part Number	L	F	B	P (PMC · PSC)	M (MSC)	(LKC..etc.)
SFBN20	250	F40	B30	P10		LKC

☞Alterations may lower hardness.☞P.104

Coarse Thread Dimensions	
M	pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5
12	1.75
16	2.0

Alterations	Alteration to L Dimension Tolerance	Change to Fine Thread	Change to Fine Thread
			
Code	LKC	MSC	PMC · PMS
Spec.	Changes "L Tolerance". Ordering Code LKC ☞L<200⋯› L±0.03 200≤L<500⋯› L±0.05 L≥500⋯› L±0.1 ☞When using LKC, L dimensions can be specified in 0.1mm increments. ⊗D-P≤2 ⊗Not applicable to "Thread with Same O.D. as Shaft O.D.	Female Thread thread changed to fine thread listed in the table below. Ordering Code MSC14 ☞Applicable to Female Thread Type D: MSC 12 / 13: 8 15 / 16: 8 10 18: 8 10 12 20: 8 10 12 14 Pitch: 1.0 1.25 1.5 ☞Specify using MSC in place of M. ☞M dimension is equal to MSC. ⊗Not applicable to "Stepped and Female Thread" type.	Changes the threads to Fine Threads shown in the table below. (PMC → Applicable to Bearing nut fine threads) (PMS → Applicable to Cylinder fine thread pitches) Ordering Code PMC17 ☞Applicable to Male Thread type only D: PMC: 6 3 4 5; 8 3 4 5 6; 10 4 5 6 8; 12 5 6 8 10; 13 5 6 8 10 12; 15 5 6 8 10 12; 16 5 6 8 10 12 15; 18 5 6 8 10 12 15 17; 20 6 8 10 12 15 17 Pitch: 0.35 0.5 0.75 1.0 1.5 1.25 1.5 PMS: 10; 10; 10 12; 10 12 14; 10 12 14; 10 12 14 18 ☞Please replace P dimensions with PMC (PMS) to specify. ☞P dimension is equal to PMC (PMS).
Price Adder	4,00	3,00	3,00

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Female Thread Type

Part Number		€ Unit Price									
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000
SFBT	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
SSFBT	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
PSFBT	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
PSSFBT	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
RSFBT	6										
	8										
	10										
	12										
	13										
	15										
	16										
	18 · 20										

Male Thread type.

Part Number		€ Unit Price									
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000
SFBN	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
SSFBN	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
PSFBN	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
PSSFBN	6										
	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
RSFBN	6										
	8										
	10										
	12										
	13										
	15										
	16										
	18 · 20										

Stepped and Female Thread

Part Number		€ Unit Price									
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000
SFBH	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
SSFBH	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
PSFBH	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
PSSFBH	8										
	10										
	12										
	13										
	15 · 16										
	18 · 20										
RSFBH	8										
	10										
	12										
	13										
	15										
	16										
	18 · 20										

Male Thread - Thread O.D. = Shaft O.D.

Part Number		€ Unit Price									
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000
SFBK	6										
	8										
	10										
	12										
	16										
	20										
SSFBK	6										
	8										
	10										
	12										
	16										
	20										
PSFBK	6										
	8										
	10										
	12										
	16										
	20										
PSSFBK	6										
	8										
	10										
	12										
	16										
	20										
RSFBK	6										
	8										
	10										
	12										
	16										
	20										

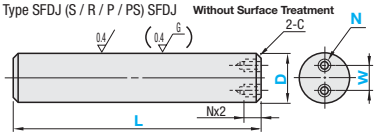
Shafts
-One End Two Female Thread Holes Type-

RoHS

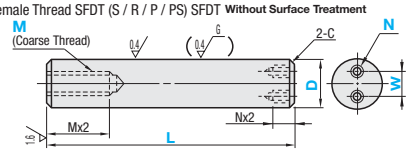


Type					D Tolerance	M Material	H Hardness	S Surface Treatment
Straight Type	Female Thread Type	Stepped and Female Thread Type	Male Thread Type	Male Thread - Thread O.D. = Shaft O.D.				
SFDJ	SFDT	SFDG	SFDN	SFDK	g6	1.3505/100Cr6	Induction Hardening Effective Hardening Depth☞P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
SSFDJ	SSFDT	SSFDG	SSFDN	SSFDK		1.4125 equivalent		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSFDJ	PSFDT	PSFDG	PSFDN	PSFDK		1.3505/100Cr6		
PSSFDJ	PSSFDT	PSSFDG	PSSFDN	PSSFDK		1.4125 equivalent		LTBC
RSFDJ	RSFDT	RSFDG	RSFDN	RSFDK		1.3505/100Cr6		

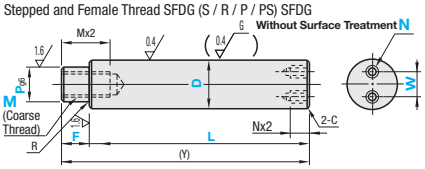
Straight Type SFDJ (S / R / P / PS) SFDJ **Without Surface Treatment**



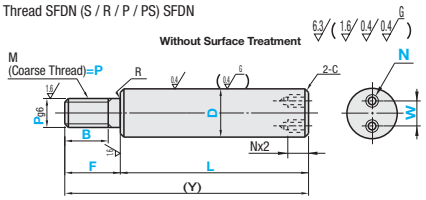
Female Thread SFDT (S / R / P / PS) SFDT **Without Surface Treatment**



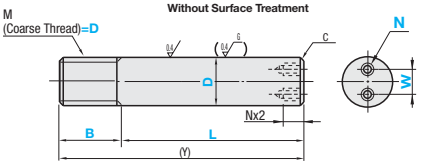
Stepped and Female Thread SFDG (S / R / P / PS) SFDG **Without Surface Treatment**



Male Thread SFDN (S / R / P / PS) SFDN **Without Surface Treatment**



Male Thread - Thread O.D. = Shaft O.D SFDK (S / R / P / PS) SFDK **Without Surface Treatment**



Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. ☞P.104

Circularity, Straightness, Perpendicularity, ☞P.103

Features of LTBC ☞P.118

L does not include incomplete threads.

■Straight Type One End Female Thread - One End Stepped and Female Thread

Part Number Type			D	1mm increments L (Straight - Female Thread)	1mm increments L (Stepped and Female Thread)	F	P	Selection M (Female Thread)	Selection M (Stepped and Female Thread)	W 1mm increments	N Selection	(Y) Max.	R	C
Straight Type	Female Thread Type	Stepped and Female Thread Type	15	25~750	25~750	2≤F≤Px4	6~13	4 5 6 8 10	3 4 5 6 8 10	D-W-N≥4 W-N≥3	4 5 6 8 10 12	802	0.3 or less	0.5 or less
SFDJ	SFDT	SFDG	16	30~800	25~800		6~14	4 5 6 8 10	3 4 5 6 8 10			856		
SSFDJ	SSFDT	SSFDG	18	30~900	25~900		8~16	4 5 6 8 10 12	4 5 6 8 10 12			964		1.0 or less
PSFDJ	PSFDT	PSFDG	20	30~1000	25~1000		8~17	4 5 6 8 10 12	4 5 6 8 10 12			1068		
PSSFDJ	PSSFDT	PSSFDG	25	35~1200	25~1198		8~22	4 5 6 8 10 12 16	4 5 6 8 10 12 16			1200		
RSFDJ	RSFDT	RSFDG	30	35~1500	25~1498		9~27	6 8 10 12 16 20	5 6 8 10 12 16 20 24			1500		
(D≤30, L≤500)	(D≤30, L≤500)	(D≤30, L≤500)	35	35~1500	25~1498		9~32	8 10 12 16 20 24	5 6 8 10 12 16 20 24			1500	0.5 or less	
			40	50~1500	25~1498		11~37	10 12 16 20 24 30	6 8 10 12 16 20 24 30			1500		
			50	50~1500	25~1498		11~47	12 16 20 24 30	6 8 10 12 16 20 24 30			1500		

- Female Thread Type☞Not applicable when Mx2.5+4+Nx2.5+4≤L - Stepped and Female Thread☞P≥M+3☞Not applicable when Mx2.5+4+Nx2.5+4≤L

■Male Thread - Thread O.D. = Shaft O.D.

Part Number Type		D	1mm increments L	F	B (Male Thread)	B (Male Thread - Thread O.D. = Shaft O.D.)	P Selection	W 1mm increments	N Selection	(Y) Max.	R	C
Male Thread type.	Male Thread - Thread O.D. = Shaft O.D.Type	15	25~750		(When P=5 and 6) B≤F-2	2≤B≤Mx5	5 6 8 10 12	D-W-N≥4 W-N≥3	4 5 6 8 10 12	825	0.3 or less	0.5 or less
SFDN	SFDK	*16	25~800				5 6 8 10 12			880		
SSFDN	SSFDK	18	25~900			☞*sizes are only available for Thread O.D. = Shaft O.D.	5 6 8 10 12 16			990		1.0 or less
PSFDN	PSFDK	*20	25~1000	2≤F≤Px5	(When P=8 / 10) B≤F-3	L dimensions have priority, thus the effective thread length will be B-(Pitchx2).	6 8 10 12 16			1100		
PSSFDN	PSSFDK	25	25~1198				8 10 12 16 20 24			1200		
RSFDN	RSFDK	*30	25~1498		(When P≤12) B≤F-5	B-(Pitch x 2)	8 10 12 16 20 24			1500		
(D≤30, L≤500)	(D≤30, L≤500)	35	25~1498				10 12 16 20 24 30			1500	0.5 or less	
☞*Thread O.D.=Shaft O.D.* Type are available for * sizes only.		40	25~1498		☞B≥Pitchx3		12 16 20 24 30			1500		
		50	25~1498				16 20 24 30			1500		

☞For B dimensions "Thread O.D.=Shaft O.D" Type, effective thread length is Pitchx3≤B≤Mx5.(☞D > P except "Thread O.D. same as Shaft O.D." type.

Part Number	L	F	B	P	M	W	N
SFDJ20	75					W10	N4
SFDT20	525				M8	W7	N4
SFDG20	400	F25		P16	M10	W12	N4
SFDN20	500	F30	B20	P16		W8	N4
SFDK20	1000		B30			W10	N4

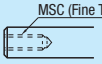
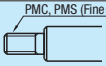
Days to Ship
- Except LTBC Plated Shafts: 8 Days
- LTBC Plated Shafts: 13 Days

Part Number	L	F	B	P (PMC・PSC)	M (MSC)	W	N	(LKC・MSC・PMC・PMS)
SFDN30	250	F40	B30	PMC10		W10	N4	LKC

☞Alterations may lower hardness. ☞P.104

Coarse Thread Dimensions M	Pitch
3	0.5
4	0.7
5	0.8
6	1.0
8	1.25
10	1.5

Coarse Thread Dimensions M	Pitch
12	1.75
16	2.0
20	2.5
24	3.0
30	3.5

Alterations	Alteration to L Dimension Tolerance	Change to Fine Thread	Change to Fine Thread
		MSC (Fine Thread) 	PMC, PMS (Fine Thread) 
Code	LKC	MSC	PMC / PMS
Spec.	Changes "L Tolerance". Ordering Code LKC ☞L<200⋯→L±0.03 200≤L<500⋯→L±0.05 L≥500⋯→L±0.1 ☞When using LKC, L dimensions can be specified in 0.1mm increments. ⊗Not applicable when D-P≤2 ⊗for Male Thread - Thread O.D. = Shaft O.D.	Female Thread thread changed to fine thread listed in the table below. Ordering Code MSC14 ☞Applicable to Female Thread Type ☞Please replace M dimension with MSC to specify. ☞M dimension is equal to MSC. ⊗Not applicable to Stepped and Female Thread.	Changes the threads to Fine Threads shown in the table below. (PMC → Applicable to Bearing nut fine threads) (PMS → Applicable to Cylinder fine thread pitches) Ordering Code PMC17 ☞Applicable to Male Thread type only ☞Please replace P dimension with PMC (PMS) to specify. ☞P dimension and PMC (PMS) are equal in measurement.
Price Adder	4,00	3,00	3,00

MSC

D	MSC				
15 / 16	8	10			
18	8	10	12		
20	8	10	12	14	
25~35	8	10	12	14	18
40		10	12	14	18
50			12	14	18
Pitch	1.0	1.25	1.5		

PMC / PMS

D	PMC							PMS		
15	5	6	8	10	12			10	12	
16	5	6	8	10	12	15		10	12	14
18	5	6	8	10	12	15	17	10	12	14
20		6	8	10	12	15	17	10	12	14 18
25			8	10	12	15	17 20	10	12	14 18
30			8	10	12	15	17 20 25	10	12	14 18
35				10	12	15	17 20 25 30	10	12	14 18
40					12	15	17 20 25 30		12	14 18
50						15	17 20 25 30			14 18
Pitch	0.5	0.75		1.0			1.5	1.25		1.5

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Straight Type

Part Number		€ Unit Price											
Type	D	Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1500
SFDJ	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFDJ	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSFDJ	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFDJ	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
RSFDJ	15 · 16												
	18 · 20												
	25												
	30												

Stepped and Female Thread

Part Number		€ Unit Price											
Type	D	Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1500
SFDG	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFDG	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSFDG	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFDG	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
RSFDG	15 · 16												
	18 · 20												
	25												
	30												

Female Thread Type

Part Number		€ Unit Price											
Type	D	Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1500
SFDT	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFDT	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSFDT	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFDT	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
RSFDT	15 · 16												
	18 · 20												
	25												
	30												

Male Thread type.

Part Number		€ Unit Price											
Type	D	Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1498
SFDN	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFDN	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSFDN	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFDN	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
RSFDN	15 · 16												
	18 · 20												
	25												
	30												

Male Thread - Thread O.D. = Shaft O.D.

Part Number		€ Unit Price											
Type	D	Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L501 600	L601 800	L801 1000	L1001 1200	L1201 1498
SFDK	16												
	20												
	30												
SSFDK	16												
	20												
	30												
PSFDK	16												
	20												
	30												
PSSFDK	16												
	20												
	30												
RSFDK	16												
	20												
	30												

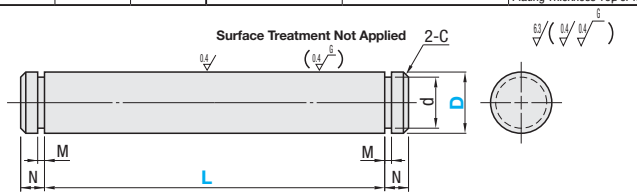
Shafts
-Retaining Ring Grooved-



RoHS

Type			M Material	H Hardness	S Surface Treatment
D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFAR	SFUR	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth☞P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
SSFAR	SSFUR	-	1.4125/X105CrMo17 equivalent		
PSFAR	PSFUR	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFAR	PSSFUR	-	1.4125/X105CrMo17 equivalent		
RSFAR	-	-	1.3505/100Cr6		LTBC
-	-	PSFGR	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 10μ or more
-	-	PSSFGR	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
3	-0.002 -0.008	0 -0.004	-
4	-0.004 -0.012	0 -0.005	
5			-0.010 -0.028
6			
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12	-0.006 -0.017	0 -0.008	-0.016 -0.043
13			
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			



☞Changes in circularity, straightness and hardness☞ P.103
☞Features of LTBC☞ P.118
☞For O.D. tolerance f8 type, D needs to be 6 or more

Part Number Type	D	L 1mm Increments	N	M	M Tolerance	d	d Tolerance	Applicable Retaining Ring	C
(D Tolerance g6) (D Tolerance h5) SFAR SFUR SSFAR SSFUR PSFAR PSFUR PSSFAR PSSFUR RSFAR(L≤500) (D Tolerance f8) PSFGR(D≥6) PSSFGR(D≥6)	3	10~400	2	0.5	+0.05 0	2	+0.06 0	NETW_2	0.5 or less
	4	10~400		0.7	+0.1 0	3		NETW_3	
	5	10~400				4	+0.075 0	NETW_4	
	6	20~600				5		NETW_5	
	8	20~800	3	0.9		7	+0.09 0	NETW_7	
	10	20~800		1.15	+0.14 0	9.6	0 -0.09	STW_10	
	12	20~1000	4			11.5	0 -0.11	STW_12	
	13	25~1000				12.4		STW_13	
	15	25~1200				14.3		STW_15	
	16	30~1200				15.2		STW_16	
	18	30~1200		1.35		17		STW_18	
	20	30~1200				19	0 -0.21	STW_20	1.0 or less
	25	35~1200	5			23.9		STW_25	
	30	35~1200		1.65		28.6		STW_30	

☞For E and C Type Retaining Rings, Refer to P.1964 and P.1965

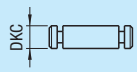
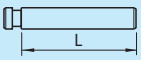
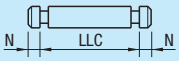
Order Example: Part Number SFAR20 - L 300

Days to Ship: 8 Days / 5 Days — Express A 8,00 EUR/unit ☞P.88
☞A Express Charge of 21,60 EUR for 3 or more identical pieces.

- RSFAR: 13 Days

Alterations: Part Number SFAR20 - L (LLC) LLC300 - (NWC / LLC)

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUR, SSFUR, PSFUR and PSSFUR on the left page to place orders.

Alterations	Revise O.D. Tolerance (Precision Grade)	One End w/o Retaining Ring Groove	Length Leader Position Change
			
Code	DKC	NWC	LLC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC ⊗ Not applicable to RSFAR, PSFGR and PSSFGR	One end will be left w/o retaining ring groove. Ordering Code NWC	Dimensioning leader position of L dimension will be altered to the outside of retaining ring grooves. Ordering Code LLC300 ☞Replace L dimensions with LLC ☞LLC=Specified in 1mm increments
Price Adder	-	Free of charge	Free of charge

D	h5 Tolerance
3	0 -0.004
4~6	0 -0.005
8 / 10	0 -0.006
12~18	0 -0.008
20~30	0 -0.009

☞ Alterations may lower hardness.☞ P.104

Price Reduction 3%

CAD Data

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

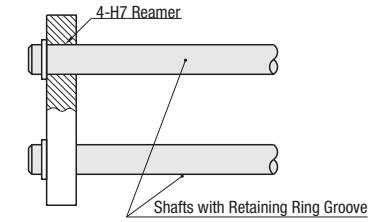
Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number		€ Unit Price										
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
SFAR SFUR	3 · 4 · 5											
	6											
	8											
	10											
	12											
	13											
	15 · 16											
	18											
	20											
	25											
	30											
SSFAR SSFUR	3 · 4 · 5											
	6											
	8											
	10											
	12											
	13											
	15 · 16											
	18 · 20											
	25											
	30											
PSFAR PSFUR	3 · 4 · 5											
	6											
	8											
	10											
	12 · 13											
	15 · 16											
	18 · 20											
	25											
	30											
PSSFAR PSSFUR	3 · 4 · 5											
	6											
	8 · 10											
	12											
	13											
	15 · 16											
	18 · 20											
	25											
	30											
RSFAR	3 · 4 · 5											
	6											
	8											
	10											
	12											
	13											
	15											
	16											
	18											
	20											
	25											
	30											

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number		€ Unit Price						
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
PSFGR	6							
	8							
	10							
	12							
	13							
	15 · 16							
	18 · 20							
	25							
	30							
PSSFGR	6							
	8							
	10							
	12							
	13							
	15 · 16							
	18 · 20							
	25							
	30							

Example



Shafts
-Keyway Type-

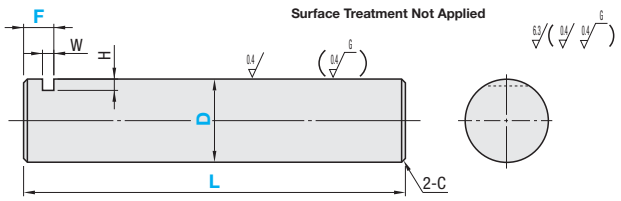


RoHS

Changes in circularity, straightness, perpendicularity and hardness ☞P.103
Features of LTBC ☞P.118

Type			M Material	H Hardness	S Surface Treatment
D Tolerance g6	D Tolerance h5	D Tolerance f8			
SFAK	SFUK	-	1.3505/100Cr6	Induction Hardening Effective Hardening Depth ☞P.104 1.3505/100Cr6 58HRC ~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
SSFAK	SSFUK	-	1.4125/ equivalent		
PSFAK	PSFUK	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFAK	PSSFUK	-	1.4125/ equivalent		LTBC
RSFAK	-	-	1.3505/100Cr6		
-	-	PSFGK	1.1191/C45E	-	Hard Chrome Plating Plating Hardness: HV750 ~ Plating thickness 10μ or more
-	-	PSSFGK	1.4301/X5CrNi18-10		

D Tolerance			
D	g6	h5	f8
6	-0.004 -0.012	0 -0.005	-0.010 -0.028
8	-0.005 -0.014	0 -0.006	-0.013 -0.035
10			
12			
13	-0.006 -0.017	0 -0.008	-0.016 -0.043
15			
16			
18			
20	-0.007 -0.020	0 -0.009	-0.020 -0.053
25			
30			
35	-0.009 -0.025	0 -0.011	-0.025 -0.064
40			
50			



Part Number		1mm Increments		W	H	C
Type	D	L	F			
(D Tolerance g6) (D Tolerance h5) SFAK SFUK / SSFAK SSFUK / PSFAK PSFUK / PSSFAK PSSFUK / RSFAK (D≤30, L≤500)	6	20~600	5≤F≤L/2	3.1	2	0.5 or less
	8	20~800				
	10	20~800			3	
	12	20~1000				
	13	25~1000				
	15	25~1200				
	16	30~1200				
	18	30~1200				
	20	30~1200			4	1.0 or less
(D Tolerance f8) PSFGK PSSFGK	25	35~1200			5	
	30	35~1500	7≤F≤L/2	5.1	6	
	35	35~1500			7	
	40	50~1500			8	
	50	65~1500			10	

Order Example: Part Number - L - F → SFAK16 - 265 - F25

Degreasing Service ☞P.83

Days to Ship: 8 Days / 5 Days - RSFAK 13 Days

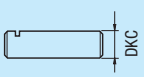
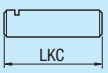
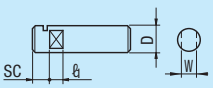
Express A 8,00 EUR/unit ☞P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations: Part Number - L - F - (LKC · SC) → SFAK16 - 625 - F25 - LKC

Alterations may lower hardness. ☞P.104
For more than one alteration, 2mm or more separation required between machined sections. ☞P.106

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SFUK, SSFUK, PSFUK and PSSFUK to place orders.

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats
			
Code	DKC	LKC	SC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC D / h5 Tolerance: 6: 0 -0.005; 8 / 10: 0 -0.006; 12~18: 0 -0.008; 20~30: 0 -0.009; 35~50: 0 -0.011 ⊗ Not applicable to RSFAK, PSFGK and PSSFGK.	Changes "L Tolerance". Ordering Code LKC L<200···L±0.03 200≤L<500 ···L±0.05 L≥500···L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments.	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 D / W / ℓ1: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12 / 10 / 10; 13 / 11 / 10; 15 / 13 / 10; 16 / 14 / 10; 18 / 16 / 10; 20 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20
Price Adder	-	4,00	4,00

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

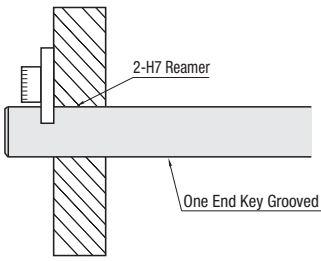
For orders larger than indicated quantity, please request a quotation.

Part Number		€ Unit Price											
Type	D	Min. L ~ 50	L51 ~ 100	L101 ~ 150	L151 ~ 200	L201 ~ 300	L301 ~ 400	L401 ~ 500	L501 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
SFAK SFUK	6												
	8												
	10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
SSFAK SSFUK	6												
	8												
	10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSFAK PSFUK	6												
	8												
	10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
	50												
PSSFAK PSSFUK	6												
	8												
	10												
	12												
	13												
	15 · 16												
	18 · 20												
	25												
	30												
	35												
	40												
RSFAK	50												
	8												
	10												
	12												
	13												
	15												
	16												
	18												
	20												
	25												
	30												

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number		€ Unit Price							
Type	D	Min. L ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	L1201 ~ 1500
PSFGK	6								
	8								
	10								
	12								
	13								
	15 · 16								
	18								
	20								
	25								
	30								
	35								
	40								
	50								
PSSFGK	6								
	8								
	10								
	12								
	13								
	15 · 16								
	18 · 20								
	25								
	30								
	35								
	40								
	50								

Example



Shafts

-One End Tapered - One End Female Thread / One End Stepped and Female Thread / One End Male Thread-

Hardness of J+10 area will be lower due to annealing required for machining. Case hardening and plating layers do not remain on the tapered area.

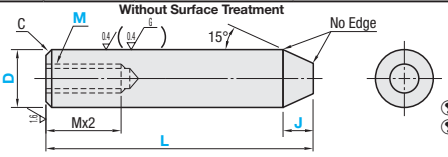
■One End Tapered - One End Female Thread



RoHS

Type		M Material	H Hardness	S Surface Treatment
D Tolerance g6	D Tolerance h5			
SFTF	SFLU	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
SSFTF	SSFLU	1.4125 equivalent		
PSFTF	PSFLU	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFTF	PSSFLU	1.4125 equivalent		

Without Surface Treatment



D Tolerance		
D	g6	h5
6	-0.004 -0.012	0 -0.005
8	-0.005 -0.014	0 -0.006
10		
12		
13	-0.006 -0.017	0 -0.008
15		
16		
18		
20	-0.007 -0.020	0 -0.009

Changes in circularity, straightness, perpendicularity and hardness P.103
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

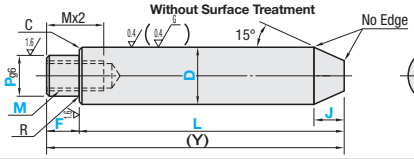
■One End Tapered - One End Stepped and Female Thread



RoHS

Type		M Material	H Hardness	S Surface Treatment
D Tolerance g6	D Tolerance h5			
SFTG	SFJU	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1,4125/X105CrMo17 equivalent 56HRC~	-
SSFTG	SSFJU	1.4125 equivalent		
PSFTG	PSFJU	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFTG	PSSFJU	1.4125 equivalent		

Without Surface Treatment



Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

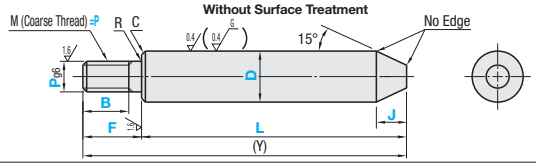
■One End Tapered - One End Male Thread



RoHS

Type		M Material	H Hardness	S Surface Treatment
D Tolerance g6	D Tolerance h5			
SFTN	SFKU	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
SSFTN	SSFKU	1.4125 equivalent		
PSFTN	PSFKU	1.3505/100Cr6		Hard chrome plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFTN	PSSFKU	1.4125 equivalent		

Without Surface Treatment



Changes in circularity, straightness, perpendicularity, coaxiality and hardness P.103
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

■One End Tapered - One End Female Thread

Part Number Type		D	1mm Increments L	J	M (Coarse Threads) Selection	C
		6	25~200	5~7	3	
		8	25~200	5~10	3 4 5	
(D Tolerance g6)	(D Tolerance h5)	10	30~200	5~14	3 4 5 6	
SFTF	SFLU	12	40~300	5~18	4 5 6 8	0.5 or less
SSFTF	SSFLU	13	40~300	5~20	4 5 6 8	
PSFTF	PSFLU	15	50~300	10~24	4 5 6 8	
PSSFTF	PSSFLU	16	50~500	10~25	4 5 6 8 10	
		18	60~500	10~28	4 5 6 8 10 12	
		20	60~500	10~32	4 5 6 8 10 12	1.0 or less

L needs to be L-J≥20

■One End Tapered - One End Female Thread Types

Part Number Type		D	1mm Increments L	F	P	J	M (Coarse Threads) Selection	(Y) Max.	R	C
		8	25~198		6	5~10	3	200		
		10	30~198		6~8	5~14	3 4 5	200		
(D Tolerance g6)	(D Tolerance h5)	12	40~298		6~10	5~18	3 4 5 6	300		
SFTG	SFJU	13	40~298		6~11	5~20	3 4 5 6 8	300	0.3	0.5
SSFTG	SSFJU	15	50~298	2≤F≤Px4	6~13	10~24	3 4 5 6 8 10	300	or less	or less
PSFTG	PSFJU	16	50~498		6~14	10~25	3 4 5 6 8 10	500		
PSSFTG	PSSFJU	18	60~498		8~16	10~28	4 5 6 8 10 12	500		
		20	60~498		8~17	10~32	4 5 6 8 10 12	500		1.0 or less

M + 3 ≤ P is required for P Dimension. L needs to be L-J≥20

■One End Tapered - One End Male Thread

Part Number Type		D	1mm Increments L	F	B	P Selection	1mm Increments J	(Y) Max.	R	C
		6	25~198		B≤F-2	3 4 5 6	5~7	200		
		8	25~198		(When P≤6)	3 4 5 6 8	5~10	200		
(D Tolerance g6)	(D Tolerance h5)	10	30~198		B≤F-3	4 5 6 8 10	5~14	200		
SFTN	SFKU	12	40~298		(When P=8 / 10)	5 6 8 10 12	5~18	300	0.3	0.5
SSFTN	SSFKU	13	40~298	2≤F≤Px5	B≤F-5	5 6 8 10 12	5~20	300	or less	or less
PSFTN	PSFKU	15	50~298		(When P≤12)	5 6 8 10 12	10~24	300		
PSSFTN	PSSFKU	16	50~498		B=0	5 6 8 10 12 16	10~25	500		
		18	60~498		(When without	5 6 8 10 12 16	10~28	500		
		20	60~498		threads)	5 6 8 10 12 16 20	10~32	500		1.0 or less

When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).
Thread machining will not be applied when B = 0 is specified. L needs to be L-J≥20 B ≥ Pitch x 3 is required.

Order Example

- One End Tapered - One End Female Thread

Part Number	-	L	-	J	-	M
SFTF20	-	350	-	J15	-	M6

- One End Tapered - One End Stepped and Female Thread

Part Number	-	L	-	F	-	P	-	J	-	M
SFTG20	-	350	-	F25	-	P16	-	J10	-	M8

- One End Tapered - One End Male Thread

Part Number	-	L	-	F	-	B	-	P	-	J
SFTN20	-	350	-	F40	-	B30	-	P10	-	J10

Price

Volume Discount (Round down to one Cent) P.87

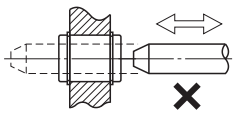
Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Days to Ship: **8 Days** / **5 Days**

Express A 8,00 EUR/unit P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Example



Not suitable for usage requiring frequent insertions with Linear Bushings.
(due to potential breakage of Linear Bushings)

One End Tapered - One End Female Thread

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
SFTF / SFLU	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18 · 20							
SSFTF / SSFLU	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18 · 20							

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
PSFTF / PSFLU	6							
	8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							
PSSFTF / PSSFLU	6 · 8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							

For D tolerance h5, 2,00 EUR is added to the prices above.

One End Tapered - One End Female Thread Types

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~498
SFTG / SFJU	8 · 10							
	12							
	13							
	15							
	16							
	18 · 20							
SSFTG / SSFJU	8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~498
PSFTG / PSFJU	8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							
PSSFTG / PSSFJU	8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							

For D tolerance h5, 2,00 EUR is added to the prices above.

One End Tapered - One End Male Thread

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~498
SFTN / SFKU	6 · 8 · 10							
	12							
	13							
	15							
	16							
	18 · 20							
SSFTN / SSFKU	6 · 8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~498
PSFTN / PSFKU	6 · 8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							
PSSFTN / PSSFKU	6 · 8 · 10							
	12 · 13							
	15							
	16							
	18 · 20							

For D tolerance h5, 2,00 EUR is added to the prices above.

DKC alterations was discontinued in June 2010.
Please specify new part numbers; SF_U, SSF_U, PSF_U and PSSF_U on the left page to place orders.

Alterations

- One End Tapered - One End Female Thread

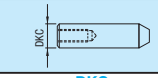
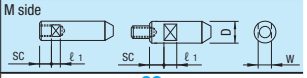
Part Number	-	L	-	J	-	M	-	(LKC · SC)
SFTF20	-	350	-	J15	-	M6	-	LKC

- One End Tapered - One End Stepped and Female Thread

Part Number	-	L	-	F	-	P	-	J	-	M	-	(SC)
SFTG20	-	350	-	F25	-	P16	-	J10	-	M8	-	SC5

- One End Tapered - One End Male Thread

Part Number	-	L	-	F	-	B	-	P	-	J	-	(SC)
SFTN20	-	350	-	F40	-	B30	-	P10	-	J10	-	SC5

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats
			M side 
Code	DKC	LKC	SC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code: DKC D / h5 Tolerance: 6 → 0 -0.005; 8 / 10 → 0 -0.006; 12~18 → 0 -0.008; 20 → 0 -0.009	Changes "L Tolerance". Ordering Code: LKC L<200···L±0.03 200≤L<500 ···L±0.05 L=500···L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments. ⊗Not applicable when D=P ⊗One End Stepped and Female Thread - One End Male Thread Not Applicable	Adds a wrench flat. Ordering Code: SC5 SC=1mm Increment SC+ℓ1≤L-J SC=0 or SC≥1 D / W / ℓ1: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12 / 10 / 10; 13 / 11 / 10; 15 / 13 / 10; 16 / 14 / 10; 18 / 16 / 10; 20 / 17 / 10
Price Adder	-	4,00	4,00

Alterations may lower hardness. P.104

Shafts

-Hollow · One End Female Thread Hollow Shafts · One End Female Thread Hollow Shafts with Wrench Flats-

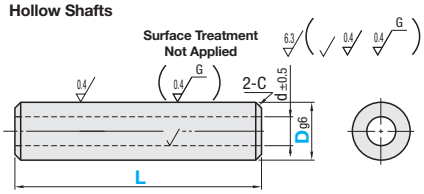


Type			Material	Hardness	Surface Treatment
SPJ	SPJT	SPTR	1.3505/100Cr6	Induction Hardening Effective Hardening Depth☞P.104 1.3505/100Cr6 58HRC ~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
SSPJ	SSPJT	SSPTR	1.4125/ equivalent		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSPJ	PSPJT	PSPTR	1.3505/100Cr6		LTBC
RSPJ	RSPJT	RSPTR	1.3505/100Cr6		

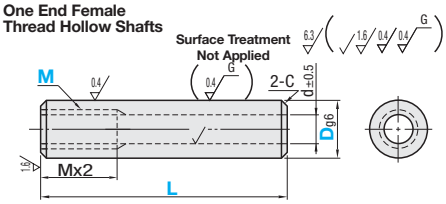
RoHS

- Features of LTBC ☞P.118
- LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
- Changes in circularity, straightness, perpendicularity and hardness ☞P.103
- Circularity and outer diameter tolerance may not meet precision specification in areas approximately 10mm from each wrench flat end.
- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness.

Hollow Shafts

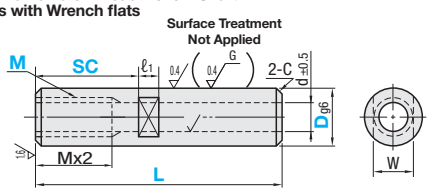


One End Female Thread Hollow Shafts



D Tolerance	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~16	-0.006 -0.017
20~30	-0.007 -0.020
35~50	-0.009 -0.025

One End Female Thread Hollow Shaft Shafts with Wrench flats



- About hollow shaft wall thickness deviations. **please see on the right page**

Part Number Type		D	L 1mm Increments	M (Coarse Threads) Selection			Wrench Flats Dimensions W	ℓ1	d	C
Hollow Shafts	SPJ	6	20~600	3			5	8	2	0.5 or less
	SSPJ(*marked sizes only)	*8	20~800 (300)	4	*5		7		3 (3)	
	PSPJ	*10	20~800 (400)	5	*6		8		4 (4)	
	RSPJ(D≤30, L≤500)	*12	20~1000 (500)		*8	*T1(RC1·8)	10	10	6 (5)	
One End Female Thread Hollow Shafts	SPJT	*13	25~1000 (500)		*10	*T1(RC1·8)	11		7 (5)	
	SSPJT(*marked sizes only)	*16	30~1200 (600)		*12	*T2(RC1·4)	14		10 (6)	
	PSPJT	*20	30~1200 (800)		*16	*T3(RC3·8)	17		14 (8)	1.0 or less
	RSPJT(D≤30, L≤500)	*25	35~1200 (1000)		*20		22		16 (10)	
	SPTR	*30	35~1500 (1000)		*20		27	15	17 (12)	
One End Female Thread Hollow Shaft Shafts with Wrench flats	SSPTR(*marked sizes only)	35	35~1500		24		30		19	
	PSPTR	40	50~1500		24	30	36	20	20	
	RSPTR(D≤30, L≤500)	50	60~1500		30		41		26	

SC=1mm Increment
- When D≤25 **SC+ℓ1≤LSC≥Mx2**
- When D≥30 **SC+ℓ1≤L**, **SC=0** or **SC≥1**

Details of Wrench Flats P.104

- When T1, T2 or T3 is selected as M, tapered thread machining is applied. (Ordering Code: MT1) When Mx2.5+4≥L, tap pilot hole may go through.
- Only *marked D and M dimensions are applicable to Stainless Steel Shafts. L and d dimensions in ( ) are applicable.

Order Example

Part Number	-	L	-	M	-	SC
SPJ20	-	350				
SPJT20	-	525	-	MT3		
SPTR30	-	730	-	M20	-	SC8

Days to Ship

8 Days | 5 Days | Express A 8,00 EUR/unit ☞P.88

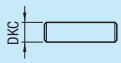
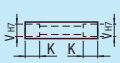
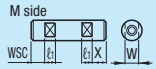
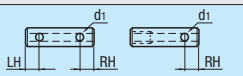
- A Express Charge of 21,60 EUR for 3 or more identical pieces.

- RSPJ · RSPJT · RSPTR: 13 Days

Alterations

Part Number	-	L	-	M	-	SC	-	(KKC...etc.)
SPJ30	-	250					-	DKC
SPJT30	-	250	-	M20			-	WSC12-X8

- Alterations may lower hardness. ☞P.104
- For more than one alteration, 2mm or more separation required between machined sections. ☞P.106

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	End Boring	Add Wrench Flats at Two Locations	Lateral Hole Addition to One Side
					
Code	DKC	LKC	VC · WVC	WSC	RH · LH
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC D / h5 Tolerance: 6: 0 -0.005; 8-10: 0 -0.006; 12~16: 0 -0.008; 20~30: 0 -0.009; 35~50: 0 -0.011 ⊗Not applicable to Stainless Steel and Low Temp Chrome Plated Shafts.	Changes "L Tolerance". Ordering Code LKC L<200···L±0.03 200≤L<500 ···L±0.05 L≥500···L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments.	One end or both ends are bored. (Used as pilot holes) Hole diameter V_{H7} is shown in the table below. K=Specified in 1mm increments 3<K≤Vx2 Ordering Code One End VC-K5 Both ends WVC-K10 D / V_{H7}: 10: 6; 12: 8; 13: 10; 16: 12; 20: 16; 25 · 30: 20; 35 · 40: 24; 50: 30 WVC is only applicable to Hollow Shafts.	Two wrench flats. Ordering Code WSC12-X8 Specify WSC-X in 1mm increments. When D≤25 WSC+X+ℓ1x2<L WSC≥Mx2, X≥Mx2 When D≥30 WSC+X+ℓ1x2<L WSC=0 or WSC≥1 X = 0 or X ≥ 1 Two wrench flats will not be positioned in a coplanar relationship. D / W / ℓ1: 6 5; 8 7; 10 8 — 8; 12 10; 13 11; 16 14; 20 17; 25 22 — 10; 30 27; 35 30 — 15; 40 36; 50 41 — 20 ⊗One End Female Thread Hollow Shafts	Lateral hole added to one side. Lateral hole diameters are shown in the table below. RH and LH=Specified in 1 mm Increments d1+1<RH,LH≤Dx3 Ordering Code One End RH5 Both Ends RH5-LH Two cross-drilled holes will not be oriented in a coplanar relationship. LH RH D / d1: 10 2 (2); 12 3 (2); 13 3 (2); 16 5 (3); 20 6 (4); 25 · 30 6 (5); 35 · 40 8; 50 10 Values in ( ) are for Stainless Steel Shafts. The hollow I.D. "d" may vary due to the wall thickness deviations. Not applicable to female thread endof "One End Female Thread" type. Burrs might remain inside after alteration. Hole positions are arbitrarily arranged with respect to other alterations. ⊗Not applicable if interfering with other alterations.
Price Adder	2,00	4,00	VC:2,00 WVC:4,00	8,00	One End: 4,00 Both Ends: 8,00

Price Reduction
Up to 12%

CAD Data

Price

Volume Discount (Round down to one Cent) **P87**

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Hollow Shafts

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1500
SPJ RSPJ Price indicated right + Price in the table below	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												
SSPJ	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
PSPJ	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												

One End Female Thread Hollow Shafts

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1500
SPJT SPTR For Shafts with wrench flats, Price indicated right + 4,00 EUR RSPJT Price indicated right + Price in the table below RSPTR For Shafts with wrench flats, Price indicated right + Price in the table below 4,00 EUR + Price in the table below	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												
SSPJT SSPTR For Shafts with wrench flats, Price indicated right + 4,00 EUR	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
PSPJT PSPTR For Shafts with wrench flats, Price indicated right + JPY400	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												

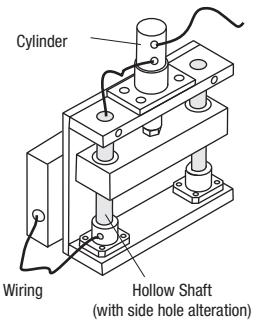
Low Temp Black Chrome Plating Additional Price (RSPJ RSPJT RSPTR Applied.)	D	Additional Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

For Low Temp Chrome Plated Shafts, please add low temp chrome plating charges to the above non-plated shaft unit prices.

EX.)RSPJ20-350⋯› 13,60+37,80=51,40 EUR

Features of LTBC ☞ P118

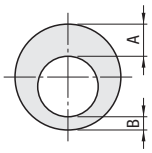
Example



About Hollow Shaft Wall Thickness Deviations

Unit: mm

Outer Diameter (D)	1.3505/100Cr6 Wall Thickness Deviation Value	1.4125/X105CrMo17 Wall Thickness Deviation Value
6	0.3 or less	-
8	0.4 or less	1.5 or less
10		4.0 or less
12		
13		
16		
20		
25	0.6 or less	
30	1.0 or less	
35		-
40	1.5 or less	
50		



Deviation Value=A-B

Shafts

-Both Ends Female Thread Hollow Shafts · Both Ends Female Thread Hollow Shafts with Wrench Flats · One End Male Thread Hollow Shafts · One End Male Thread Hollow Shafts with Wrench Flats-



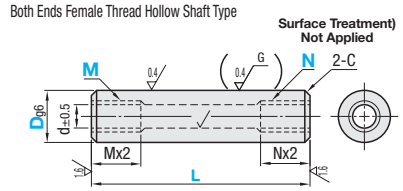
RoHS

- Features of LTBC P.118
- Circularity and outer diameter tolerance may not meet precision specification in areas approximately 15mm from wrench flats machined ends.
- Changes in circularity, straightness, perpendicularity and hardness P.103
- LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P.104

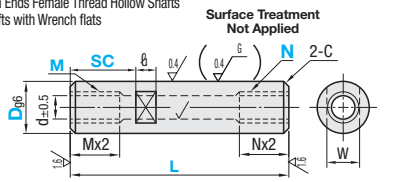
Type				M Material	H Hardness	S Surface Treatment
Both Ends Female Thread	Both Ends Female Thread with Wrench Flats	One End Male Thread	One End Male Thread with Wrench Flats			
SPJW	SPWR	SPJN	SPNR	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 1.3505/100Cr6 58HRC ~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
SSPJW	SSPWR	-	-	1.4125/ equivalent		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSPJW	PSPWR	PSPJN	PSPNR	1.3505/ 100Cr6		LTBC
RSPJW	RSPWR	RSPJN	RSPNR	1.3505/100Cr6		

D Tolerance	
6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~16	-0.006 -0.017
20~30	-0.007 -0.020
35~50	-0.009 -0.025

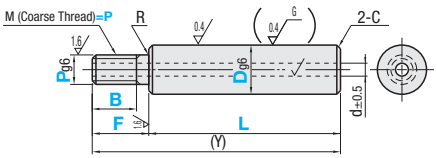
Both Ends Female Thread Hollow Shaft Type



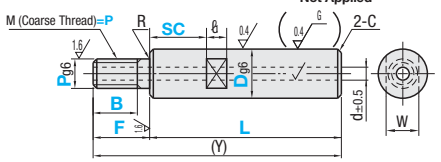
Both Ends Female Thread Hollow Shafts Shafts with Wrench flats



One End Male Thread Hollow Shaft Type



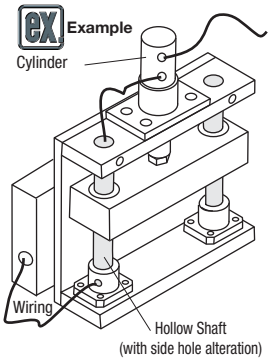
One End Male Thread with Wrench Flats Hollow Type



- About hollow shaft wall thickness deviations. P.184

Both Ends Female Thread Hollow Shafts

Part Number Type	D	L 1mm Increments	M (Coarse Threads) · N (Coarse Threads) Selection	Wrench Flats Dimensions W	ℓ1	d	C
Both Ends Female Thread Hollow Shafts SPJW SSPJW(*marked sizes only) PSPJW RSPJW(D≤30, L≤500)	6	20 ~ 600	3	SC=1mm Increment ·When D≤25 SC+ℓ1≤L-Nx2 SC≥Mx2 ·When D≥30 SC+ℓ1≤L SC=0 or SC≥1	5	8	2	0.5 or less
	*8	20 ~ 800 (300)	4 *5		7		3 (3)	
	*10	20 ~ 800 (400)	5 *6		8		4 (4)	
	*12	32 ~ 1000 (500)	*8 *T1(RC1·8)		10		6 (5)	
	*13	40 ~ 1000 (500)	*10 *T1(RC1·8)		11		7 (5)	
	*16	48 ~ 1200 (600)	*12 *T2(RC1·4)		14	10	10 (6)	
Both Ends Female Thread Hollow Shafts Shafts with Wrench flats SPWR SSPWR(*marked sizes only) PSPWR RSPWR(D≤30, L≤500)	*20	64 ~ 1200 (800)	*16 *T3(RC3·8)		17		14 (8)	1.0 or less
	*25	80 ~ 1200 (1000)	*20		22		16 (10)	
	*30	80 ~ 1500 (1000)	*20		27	15	17 (12)	
	35	96 ~ 1500	24		30		19	
	40	96 ~ 1500	24 30	·Details of Wrench Flats P.104	36	20	20	
	50	120 ~ 1500	30		41		26	



- When T1, T2 or T3 is selected as M or N, tapered thread machining is applied. (Ordering Code: MT1 · NT1) · L needs to be Mx2+Nx2≤L
- When Mx25+4+Nx2.5+4≥L, tap pilot hole may go through. · When L≤Mx2+Nx2, effective depth of larger diameter tap has priority.
- Only *marked D, M and N dimensions are applicable to Stainless Steel Shafts. L and d dimensions are indicated in ( ).

One End Male Thread Hollow Shafts

Part Number Type	D	1mm Increments L	F	B	P Selection	Wrench Flats Dimensions W	ℓ1	d	(Y) Max.	R	C
One End Male Thread, Hollow SPJN PSPJN RSPJN(D≤30, L≤500)	6	25~ 598	2≤F≤Px5	B≤F-2 (When P=6)	6	SC=1mm Increment	5	8	2	600	0.3 or less	0.5 or less
	8	25~ 798			8		7		3	800		
	10	25~ 798		B≤F-3 (When P=8 / 10)	8 10		8		4			
	12	25~ 998			10 12	·SC+ℓ1≤L ·SC=0 or SC≥1	10		6	1000		
	13	25~ 998			12		11		7			
One End Male Thread Hollow Shafts Shafts with Wrench flats SPNR PSPNR RSPNR(D≤30, L≤500)	16	25~1198		B≤F-5 (When P≤12)	16		14	10	10	1200		
	20	25~1198			20		17		14			
	25	25~1198		B=0 (When without threads)	24		22		16			
	30	25~1498			24 30	·Details of Wrench Flats P.104	27	15	17	1500	0.5 or less	1.0 or less
	35	25~1498		·B≥Pitchx3	30		30		19			
	40	25~1498			30		36	20	20			

- When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).
- Thread machining will not be applied when B = 0 is specified.

Order Example

- Both Ends Female Thread Hollow Shafts

Part Number	-	L	-	M	-	N	-	SC
SPJW20	-	500	-	M16	-	N16		
SPWR30	-	680	-	M20	-	N20	-	SC10

- One End Male Thread Hollow Shafts

Part Number	-	L	-	F	-	B	-	P	-	SC
SPJN 20	-	1051	-	F30	-	B30	-	P20		
SPNR 30	-	1270	-	F60	-	B28	-	P24	-	SC5

Days to Ship

8 Days | 5 Days

Express A 8,00 EUR/unit P. 88

- A Express Charge of 21,60 EUR for 3 or more identical pieces.

- RSPJW · RSPWR · RSPJN · RSPNR

13 Days

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

- For orders larger than indicated quantity, please request a quotation.

Part Number / Type	D	€ Unit Price											
		Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1500
SPJW **SPWR** For Shafts with wrench flats, Price indicated right + 4,00 EUR **RSPJW** Price indicated right + Price in the table below + Price in Table 1 below **RSPWR** Price indicated right + Price in the table below + 4,00 EUR + Price in Table 1 below	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												
SSPJW **SSPWR** For Shafts with wrench flats, Price indicated right + 4,00 EUR	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
PSPJW **PSPWR** For Shafts with wrench flats, Price indicated right + 4,00 EUR	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												
SPJN **SPNR** For Shafts with wrench flats, Price indicated right + 4,00 EUR **RSPJN** Price indicated right + Price in the table below + Price in Table 2 below **RSPNR** Price indicated right + Price in the table below + 4,00 EUR + Price in Table 2 below	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
PSPJN **PSPNR** For Shafts with wrench flats, Price indicated right + 4,00 EUR	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												

(Table 1)	D	Additional Price						
		Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
Low Temp Black Chrome Plating Additional Price RSPJW RSPWR Applied.	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

(Table 2)	D	Additional Price						
		Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
Low Temp Black Chrome Plating Additional Price RSPJN RSPNR Applied.	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

For "LTBC Plated" shafts add low temp chromeplating charges in (Table 1) and (Table 2) to the non-plated unit prices. EX.)RSPJW20-500-M16-N16···20,30+38,60=58,90 EUR

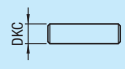
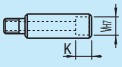
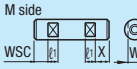
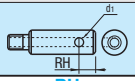
Alterations

- Both Ends Female Thread Hollow Shafts

Part Number - L - M - N - SC - (DKC...etc.)
SPJW30 - 500 - M20 - N20 - WSC12-X8

- One End Male Thread Hollow Shafts

Part Number - L - F - B - P - SC - (DKC...etc.)
SPJN30 - 250 - F40 - B30 - P24 - DKC

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	One End Bored	Add Wrench Flats At Two Locations	Lateral Hole Addition to One Side.
					
Code	**DKC**	**LKC**	**VC**	**WSC**	**RH**
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC D / h5 Tolerance: 6 / 0 -0.005; 8-10 / 0 -0.006; 12~16 / 0 -0.008; 20~30 / 0 -0.009; 35~50 / 0 -0.011 ⊗Not applicable to Stainless Steel and Low Temp Chrome Plated Shafts.	Changes "L Tolerance". Ordering Code LKC L<200···L±0.03 200≤L<500 ···L±0.05 L≥500···L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments. ⊗One End Male Thread Hollow Shafts is not applicable when D-P≤2	Boring added to right end (Please use as pilot) Hole Diameter Vh7 shown in the table below. K=Specified in 1mm increments 3<K≤Vx2 Ordering Code VC-K5 D / Vh7: 10 / 6; 12 / 8; 13 / 10; 16 / 12; 20 / 16; 25 / 20; 30 / 20; 35 / 24; 40 / 24 ⊗Both End Female Thread Hollow Shafts	Two wrench flats. Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. When D≤25 WSC+X+ℓ1×2<L WSC≥Mx2, X≥Mx2 When D≥30 WSC+X+ℓ1×2<L WSC=0 or WSC≥1 X = 0 or X ≥ 1 Two wrench flats will not be positioned in a coplanar relationship. D / W / ℓ1: 6 / 5; 8 / 7 / 8; 10 / 8; 12 / 10; 13 / 11; 16 / 14 / 10; 20 / 17; 25 / 22; 30 / 27 / 15; 35 / 30; 40 / 36 / 20; 50 / 41 Applicable to "Both Ends Female Thread Hollow Shafts" only.	Lateral hole added to one side. Lateral hole diameters are shown in the table below. RH=Specified in 1 mm Increments d1+1<RH≤Dx3 Ordering Code RH5 D / d1 / D / d1: 10 / 2 (2) / 20 / 6 (4); 12 / 3 (2) / 25 / 30 / 6 (5); 13 / 3 (2) / 35 / 40 / 8; 16 / 5 (3) / 50 / 10 Values in () are for Stainless Steel Shafts. The hollow I.D. "d" may vary due to the wall thickness deviations. Not applicable to threaded side of One End Male Thread shafts. Burrs might remain inside after alteration. Hole positions are arbitrarily arranged with respect to other alterations. ⊗Not applicable to Both Ends Female Thread Shafts ⊗Not applicable if interfering with other alterations.
Price Adder	2,00	4,00	2,00	8,00	4,00

For more than one alteration, 2mm or more separation required between machined sections. P.106 Alterations may lower hardness. P.104

Shafts

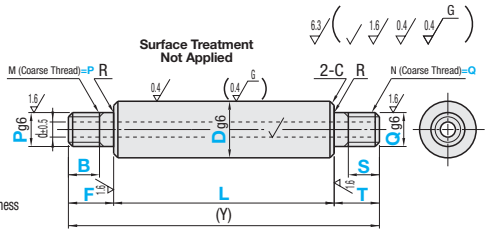
-Both Ends Male Thread Hollow Shafts-

CAD Data



RoHS

Type	Material	Hardness	Surface Treatment
SPJM	1.3505/100Cr6	Induction Hardening Effective Hardening Depth P.104 58HRC~	-
PSPJM			Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
RSPJM			LTBC



- Features of LTBC P.118
- Changes in circularity, straightness, perpendicularity, wall thickness deviations and hardness P.103- P.184
- LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
- Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.
- About hollow shaft wall thickness deviations. P.184

Part Number Type	Dg6		1mm Increments L	F · T	B · S	P · Q Selection	d	(Y) Max.	R	C
SPJM PSPJM	6	-0.004 -0.012	25~ 596	2≤F≤Px5 2≤T≤Qx5	B≤F-2 (When P≤6)	6	2	600	0.3 or less	0.5 or less
	8	-0.005 -0.014	25~ 796		B≤F-3 (When P=8 · 10)1	8	3	800		
	10		25~ 796			8 10	4			
	12	-0.006 -0.017	25~ 996		B≤F-5 (When P≤12)	10 12	6	1000		
	13		25~ 996			12	7			
	16		25~1196		B=0 (When without threads)	16	10			
RSPJM (D≤30, L≤500)	20	-0.007 -0.020	25~1196		S≤T-2 (When Q≤6)	20	14	1200		1.0 or less
	25		25~1196		S≤T-3 (Q=8 ·1	24	16			
	30		25~1496		S≤T-5 (When Q≥12)	24 30	17			
	35	-0.009 -0.025	25~1496			30	19	1500	0.5 or less	
	40		25~1496		S=0 (When without threads)	30	20			

- When D=P or D=Q, please specify F=B (T=S) as B (S) dimensions. However, the manufacturing processes will prioritize L, F and T dimensions, and B (S) dimension will be F (T)-(Pitch x 2).
- When B=0 or S=0, no thread machining will be performed. B and S ≥ Pitch x 3 is required.

Part Number - L - F - B - P - T - S - Q
SPJM20 - 400 - F20 - B20 - P20 - T20 - S20 - Q20

Part Number - L - F - B - P - T - S - Q - (DKC · LKC...etc.)
SPJM30 - 300 - F40 - B30 - P24 - T50 - S40 - Q24 - DKC

8 Days | 5 Days | - RSPJM 13 Days

Express A | 8,00 EUR/ unit P.88

- A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

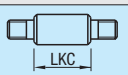
Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	25%

- For orders larger than indicated quantity, please request a quotation.

Low Temp Black Chrome Plating Additional Price	D	Additional Price Min. L - 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

- For Low Temp Chrome Plated Shafts, the non-plated shaft unit prices below
  EX.) RSPJM20-400-F20~···› 23,60+36,60=60,20 EUR
- Features of LTBC P.118

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats	Add Wrench Flats at Two Locations
				
Code	DKC	LKC	SC	WSC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC D / h5 Tolerance: 6: 0 -0.005; 8 / 10: 0 -0.006; 12~16: 0 -0.008; 20~30: 0 -0.009; 35 / 40: 0 -0.011 ⊗LTBC is not applicable.	Changes "L Tolerance". Ordering Code LKC L<200···› L±0.03 200≤L<500 ···› L±0.05 L≥500···› L±0.1 ⊗When D-P (Q)≤2 When using LKC, L dimensions can be specified in 0.1mm increments.	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 D / W / ℓ1: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12 / 10 / 10; 13 / 11 / 10; 16 / 14 / 10; 20 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20	Two wrench flats. Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. WSC+X+ℓ3x2<L WSC=0 or WSC≥1 X = 0 or X ≥ 1 Two wrench flats will not be positioned in a coplanar relationship. D / W / ℓ3: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12 / 10 / 10; 13 / 11 / 10; 16 / 14 / 10; 20 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20
Price Adder	2,00	4,00	4,00	8,00

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1496
SPJM RSPJM Price in this table + Price in the table above	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
PSPJM	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												

Shafts

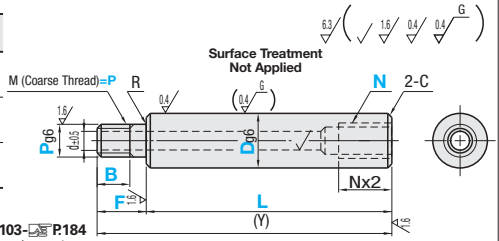
-One End Male Thread Hollow Shafts-

CAD Data



RoHS

Type	M Material	H Hardness	S Surface Treatment
SPJD	1.3505/ 100Cr6	Induction Hardening Effective Hardening Depth P.104 58HRC~	-
PSPJD			Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
RSPJD			LTBC



Features of LTBC P.118
Changes in circularity, straightness, perpendicularity, wall thickness deviations and hardness P.103-P.184
LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

About hollow shaft wall thickness deviations. P.184

Part Number Type	Dg6		1mm increments L	F	B	P Selection	N (Coarse) Selection	d	(Y) Max.	R	C
SPJD PSPJD RSPJD (D≤30, L≤500)	6	-0.004 -0.012	25~ 598	2≤F≤Px5	B≤F-2 (When P≤6)	6	3	2	600	-	0.5 or less
	8	-0.005	25~ 798			8	4 5	3	800	0.3 or less	
	10	-0.014	25~ 798		B≤F-3 (When P=8 / 10)1	8 10	5 6	4			
	12	-0.006 -0.017	25~ 998			10 12	8 T1(RC1/8)	6	1000		
	13		25~ 998			12	10 T1(RC1/8)	7			
	16		25~1198		B≤F-5 (When P≤12)	16	12 T2(RC1/4)	10	1200		1.0 or less
	20	-0.007 -0.020	25~1198			20	16 T3(RC3/8)	14			
	25		25~1198			24	20	16			
	30		25~1498		B=0 (When without threads)	24 30	20	17			
	35	-0.009	25~1498			30	24	19	1500	0.5 or less	
	40	-0.025	25~1498		B≥Pitchx3	30	24 30	20			

When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).
Thread machining will not be applied when B = 0 is specified. Overall length L requires Nx3≤L.

Order Example

Part Number	-	L	-	F	-	B	-	P	-	N
SPJD20	-	277	-	F12	-	B12	-	P20	-	N16

Part Number	-	L	-	F	-	B	-	P	-	N	-	(DKC · LKC · SC...etc.)
SPJD30	-	250	-	F40	-	B30	-	P24	-	N20	-	DKC

8 Days 5 Days - RSPJD 13 Days

Express A 8,00 EUR/ unit P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price euros

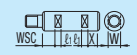
Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	25%

For orders larger than indicated quantity, please request a quotation.

	D	Additional Price Min. L - 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
Low Temp Black Chrome Plating Additional Price	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

For Low Temp Chrome Plated Shafts, the non-plated shaft unit prices below
EX.) RSPJD20-277-F12~···› 16,20+33,70=49,90 EUR
Features of LTBC P.118

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats	Add Wrench Flats at Two Locations
				
Code	DKC	LKC	SC	WSC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC D: 6 / 8 / 10~16 / 20~30 / 35 / 40 h5 Tolerance: 0 -0.005 / 0 -0.006 / 0 -0.008 / 0 -0.009 / 0 -0.011 ⊗LTBC is not applicable.	Changes "L Tolerance". Ordering Code LKC L<200···› L±0.03 200≤L<500 ···› L±0.05 L≥500···› L±0.1 ⊗When D-P (Q)≤2 When using LKC, L dimensions can be specified in 0.1mm increments. L dimensions can be specified in 0.1mm Increments	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 When D≤25 SC+ℓ1≤L-Nx2 D / W / ℓ1: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12 / 10 / 10; 13 / 11 / 10; 16 / 14 / 10; 20 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20	Two wrench flats. Ordering Code WSC12-X8 Specify WSC/X in 1mm increments. WSC+X+ℓ1x2<L WSC=0 or WSC≥1 When D≤25, X≥NX2 When D≤30, X=0 or X≥1 Two wrench flats will not be positioned in a coplanar relationship. D / W / ℓ1: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12 / 10 / 10; 13 / 11 / 10; 16 / 14 / 10; 20 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20
Price Adder	2,00	4,00	4,00	8,00

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1498
SPJD RSPJD Price in this table + Price in the table above	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
PSPJD	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												

Shafts

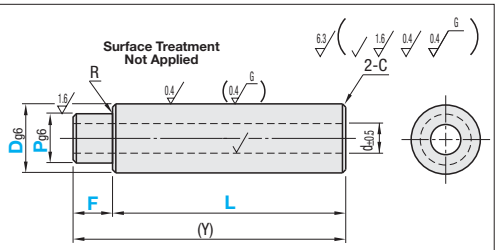
-One End Stepped Hollow Shafts-

CAD Data



RoHS

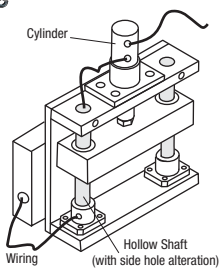
Type	M Material	H Hardness	S Surface Treatment
SPJG	1.3505/ 100Cr6	Induction Hardening Effective Hardening Depth P.104 58HRC~	-
PSPJG			Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
RSPJG			LTBC



- Features of LTBC P.118
- Changes in circularity, straightness, perpendicularity and hardness P.103
- LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
- Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.
- About hollow shaft wall thickness deviations. P.184

Part Number Type	Dg6		1mm Increments L	F	P	(Y) Max.	d	R	C
SPJG PSPJG RSPJG (D≤30, L≤500)	6	-0.004 -0.012	25~ 598	2≤F≤Px3	5≤P<D	600	2	0.3 or less	0.5 or less
	8	-0.005 -0.014	25~ 798		6≤P<D	800	3		
	10		25~ 798		7≤P<D		4		
	12	-0.006 -0.017	25~ 998		10≤P<D	1000	6		
	13		25~ 998				7		
	16		25~1198		13≤P<D	1200	10		
	20	-0.007 -0.020	25~1198		16≤P<D		14		1.0 or less
	25		25~1198		20≤P<D		16		
	30		25~1498		22≤P<D	1500	17		
	35	-0.009 -0.025	25~1498		24≤P<D		19	0.5 or less	
	40		25~1498		25≤P<D		20		
	50		25~1498		32≤P<D		26		

Example



Order Example

Part Number - L - F - P
SPJG20 - 400 - F25 - P16

Alterations

Part Number - L - F - P - (KKC...etc.)
SPJG30 - 400 - F25 - P22 - VC

- For more than one alteration, 2mm or more separation required between machined sections.
- Alterations may lower hardness. P.104

Days to Ship

8 Days | 5 Days

Express A 8,00 EUR/ unit P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- RSPJG: 13 Days

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats	One End Bored	Lateral Hole Addition to One Side
Code	DKC	LKC	SC	VC	RH
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC	Changes "L Tolerance". Ordering Code LKC	Adds a wrench flat. Ordering Code SC5	One end is bored. (Used as a pilot) Hole diameter VH7shown in the table below. K=Specified in 1mm increments	Lateral hole added to one side. Lateral hole diameters are shown in the table below. RH=Specified in 1 mm Increments
	D / h5 Tolerance: 6 → 0 -0.005; 8 / 10 → 0 -0.006; 12~16 → 0 -0.008; 20~30 → 0 -0.009; 35~50 → 0 -0.011	L<200⋯› L±0.03; 200≤L<500 ⋯› L±0.05; L≥500⋯› L±0.1	SC=1mm Increment	3<K≤Vx2 Ordering Code VC-K5	d1+1<RH≤Dx3 Ordering Code RH5
	LTBC is not applicable.	When using LKC, L dimensions can be specified in 0.1mm increments. When D-P (Q)≤2	D / W / ß: 6/5/8; 8/7/8; 10/8/8; 12/10/8; 13/11/8; 16/14/10; 20/17/10; 25/22/10; 30/27/15; 35/30/15; 40/36/20; 50/41/20	D / VH7: 6/-; 8/-; 10/6; 12/8; 13/10; 16/12; 20/16; 25/20; 30/20; 35/24; 40/24; 50/30	D / d1: 10/2, 12/3, 13/3, 16/5, 20/6, 25/30/6, 35/40/8, 50/10
					The hollow I.D. "d" may vary due to the wall thickness deviations. Not applicable to stepped side. Burrs might remain in the bore after the alteration. Hole positions are arbitrarily arranged with respect to other alterations. Not applicable if interfers with other alterations.
Price Adder	2,00	4,00	4,00	2,00	4,00

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1498
SPJG RSPJG Price indicated right + Price in the table below	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												
PSPJG	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												

	D	Additional Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
Low Temp Black Chrome Plating Additional Price	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

- For Low Temp Chrome Plated Shafts, please add low temp chrome plating charges left to the above non-plated shaft unit prices.
  EX.) RSPJG20-400-F25-P13⋯› 16,00+37,00=53,00 EUR
- Features of LTBC P.118

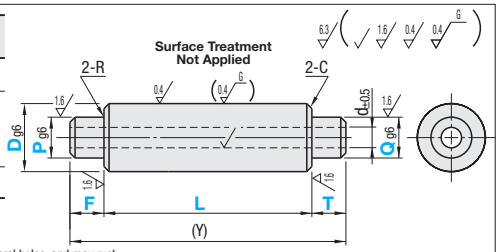
Shafts
-Both Ends Stepped Hollow Shafts-

CAD Data



RoHS

Type	M Material	H Hardness	S Surface Treatment
SPJQ	S35C/1100Cr6	Induction Hardening Effective Hardening Depth☞P.104 58HRC~	-
PSPJQ			Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
RSPJQ			LTBC



Features of LTBC ☞P.118
Changes in circularity, straightness, perpendicularity and hardness ☞P.103
LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

About hollow shaft wall thickness deviations.☞P.184

Part Number Type	Dg6		1mm Increments L	F・T	P・Q	(Y) Max.	d	R	C
SPJQ PSPJQ RSPJQ (D≤30, L≤500)	6	-0.004 -0.012	25~ 596	2≤F≤Px3 2≤T≤Qx3	5≤P (Q)<D	600	2	0.3 or less	0.5 or less
	8	-0.005 -0.014	25~ 796		6≤P(Q)<D	800	3		
	10		25~ 796		7≤P(Q)<D	800	4		
	12	-0.006 -0.017	25~ 996		10≤P(Q)<D	1000	6		
	13		25~ 996			1000	7		
	16		25~1196		13≤P(Q)<D	1200	10		
	20	-0.007 -0.020	25~1196		16≤P(Q)<D	1200	14		1.0 or less
	25		25~1196		20≤P(Q)<D	1200	16		
	30		25~1496		22≤P(Q)<D	1500	17		
	35	-0.009 -0.025	25~1496		24≤P(Q)<D	1500	19	0.5 or less	
	40		25~1496		25≤P(Q)<D	1500	20		
	50		25~1496		32≤P(Q)<D	1500	26		

Alterations may lower hardness.☞P.104

Order Example

Part Number - L - F - P - T - Q
SPJQ20 - 400 - F25 - P16 - T25 - Q18

- RSPJQ

Days to Ship

8 Days | 5 Days | 13 Days

Express A 8,00 EUR/unit ☞P.87

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

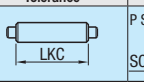
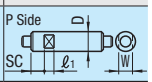
Part Number - L - F - P - T - Q - (DKC / LKC / SC)
SPJQ20 - 400 - F25 - P16 - T25 - Q18 - LKC

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats
			
Code	DKC	LKC	SC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC D / h5 Tolerance: 6: 0 -0.005; 8 / 10: 0 -0.006; 12~16: 0 -0.008; 20~30: 0 -0.009; 35~50: 0 -0.011 ⊗LTBC is not applicable.	Changes "L Tolerance". Ordering Code LKC L<200⋯› L±0.03 200≤L<500 ⋯› L±0.05 L≥500⋯› L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments. ⊗When D-P (Q)≤2	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 D / W / ß: 6: 5; 8: 7: 8; 10: 8; 12: 10; 13: 11; 16: 14: 10; 20: 17; 25: 22; 30: 27: 15; 35: 30; 40: 36: 20; 50: 41
Price Adder	2,00	4,00	4,00

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1496
SPJQ RSPJQ Price in this table + Price in the table below	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												
PSPJQ	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												

Low Temp Black Chrome Plating Additional Price	D	Additional Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

For Low Temp Chrome Plated Shafts, please add low temp chrome plating charges left to the above non-plated shaft unit prices.
EX.)RSPJQ20-400-F25~⋯› 18,50+37,00=55,50 EUR

Features of LTBC ☞P.118

Shafts

-One End Stepped / One End Female Thread Hollow Shafts-

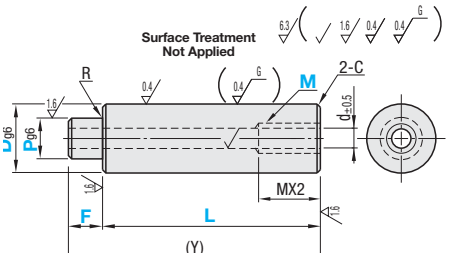
CAD Data



RoHS

Type	M Material	H Hardness	S Surface Treatment
SPJA	1.3505/ 100Cr6	Induction Hardening Effective Hardening Depth☞P.104 58HRC~	-
PSPJA			Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
RSPJA			LTBC

Surface Treatment Not Applied



Features of LTBC ☞P.118
Changes in circularity, straightness, perpendicularity and hardness ☞P.103
LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

About hollow shaft wall thickness deviations.☞P.184

Part Number Type	Dg6	L	F	P	M (Coarse Threads) Selection	(Y) Max.	d	R	C
	6 -0.004 -0.012	25~ 598	2≤F≤Px3	5≤P<D	3	600	2	0.3 or less	0.5 or less
	8 -0.005 -0.014	25~ 798		6≤P<D	4 5	800	3		
	10	25~ 798		7≤P<D	5 6	800	4		
	12 -0.006 -0.017	25~ 998		10≤P<D	8 T1(RC1/8)	1000	6		
SPJA	13	25~ 998			10 T1(RC1/8)	1000	7		
PSPJA	16	25~1198		13≤P<D	12 T2(RC1/4)	1200	10		
RSPJA (D≤30, L≤500)	20 -0.007 -0.020	25~1198		16≤P<D	16 T3(RC3/8)	1200	14		1.0 or less
	25	25~1198		20≤P<D	20	1200	16		
	30	25~1498		22≤P<D	20	1500	17		
	35 -0.009 -0.025	25~1498		24≤P<D	24	1500	19	0.5 or less	
	40	25~1498		25≤P<D	24 30	1500	20		
	50	25~1498		32≤P<D	30	1500	26		

When T1, T2 or T3 is selected as M, tapered thread machining is applied. (Ordering Code: MT1)
Overall length L requires Mx3≤L

Order Example

Part Number	-	L	-	F	-	P	-	M
SPJA20	-	277	-	F25	-	P16	-	M16

Days to Ship

8 Days | 5 Days | -RSPJA 13 Days

Express A | 8,00 EUR/unit ☞P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

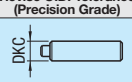
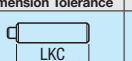
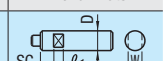
Part Number	-	L	-	F	-	P	-	M	-	(DKC·LKC·SC)
SPJA20	-	277	-	F25	-	P16	-	M16	-	LKC

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats
			
Code	DKC	LKC	SC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC D / h5 Tolerance 6 / 0 -0.005 8 / 10 / 0 -0.006 12~16 / 0 -0.008 20~30 / 0 -0.009 35~50 / 0 -0.011 ⊗LTBC Not applicable	Changes "L Tolerance". Ordering Code LKC L<200···L±0.03 200≤L<500 ···L±0.05 L≥500···L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments. ⊗When D-P (Q)≤2	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC+ℓ1≤L-Mx2 SC=0 or SC≥1 D / W / ℓ1 6 / 5 / 8 8 / 7 / 8 10 / 8 / 8 12 / 10 / 10 13 / 11 / 10 16 / 14 / 10 20 / 17 / 10 25 / 22 / 10 30 / 27 / 15 35 / 30 / 15 40 / 36 / 20 50 / 41 / 20
Price Adder	2,00	4,00	4,00

Alterations may lower hardness.☞P.104

Part Number Type	D	€ Unit Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1498
SPJA RSPJA Price in this table + Price in the table below	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												
PSPJA	6												
	8												
	10												
	12												
	13												
	16												
	20												
	25												
	30												
	35												
	40												
	50												

Low Temp Black Chrome Plating Additional Price	D	Additional Price Min. L ~ 50	L51~100	L101~150	L151~200	L201~300	L301~400	L401~500
	6							
	8							
	10							
	12							
	13							
	16							
	20							
	25							
	30							

For Low Temp Chrome Plated Shafts, please add low temp chrome plating charges to the above non-plated shaft unit prices.

EX.)RSPJA20-277-F25-···› 14,30+33,00=47,30 EUR

Features of LTBC ☞P.118

Shafts

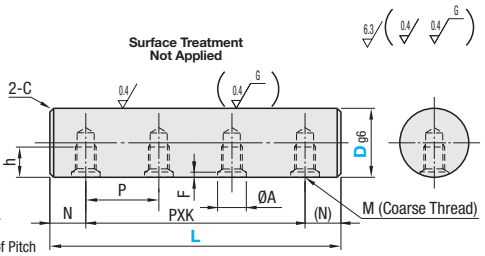
-Continuous Support - Predrilled and Female Thread-

CAD Data



RoHS

Type	M Material	H Hardness	S Surface Treatment
SFAE	1.3505/100Cr6	Induction Hardening Effective Hardening Depth ☞P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC~	-
SSFAE	1.4125/ X105CrMo17 equivalent		
PSFAE	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more
PSSFAE	1.4125/ X105CrMo17 equivalent		



$N = \frac{L - PxK}{2}$

K: Number of Pitch

Changes in circularity, straightness, perpendicularity and hardness ☞P.103

Part Number Type	Dg6		L 1mm Increments	M (Coarse Thread)	P	h	C	A	F
SFAE PSFAE	10	-0.005 -0.014	200~ 800	M4	100	4.5	0.5 or less	4.3	2.0
	12	-0.006 -0.017	200~1000			5			
	13		200~1000			5.5			
SFAE SSFAE PSFAE PSSFAE	16		200~1200	M5	150	Mx2		5.5	
	20	-0.007 -0.020	200~1200	M6			1.0 or less	6.8	2.5
	25		300~1200		200				
	30		300~1500	M8				9	3.0
	35	-0.009 -0.025	300~1500						
	40		400~1500		300				3.5
	50		400~1500	M10				11	

Order Example

Part Number	-	L
SFAE10	-	300

Days to Ship: 8 Days

Express A 8,00 EUR/unit ☞P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Correlation between L Dimension and Number of Taps

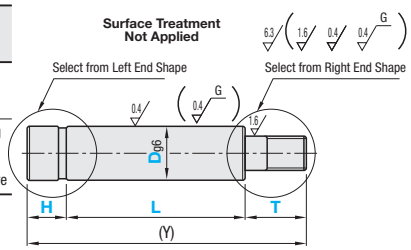
Pitch	P=100	P=150	P=200	P=300	Number of Taps	K (Number of pitches)	N
L	200~219	200~319	300~419	400~619	2	1	$N=\frac{L-PxK}{2}$
	220~319	320~469	420~619	620~919	3	2	
	320~419	470~619	620~819	920~1219	4	3	
	420~519	620~769	820~1019	1220~	5	4	
	520~619	770~919	1020~1219	-	6	5	
	620~719	920~1069	1220~1419	-	7	6	
	720~819	1070~	1420~	-	8	7	
	820~919	-	-	-	9	8	
	920~	-	-	-	10	9	

Part Number Type	D	€ Unit Price L200~300	L301~400	L401~500	L501~600	L601~800	L801~1000	L1001~1200	L1201~1500
SFAE	10								
	12								
	13								
	16								
	20								
	25								
	30								
	35								
	40								
	50								
SSFAE	16								
	20								
	25								
	30								
	35								
	40								
	50								
PSFAE	10								
	12								
	13								
	16								
	20								
	25								
	30								
	35								
	40								
	50								
PSSFAE	16								
	20								
	25								
	30								
	35								
	40								
	50								

Shafts
-Shaft Ends Configurable Type-



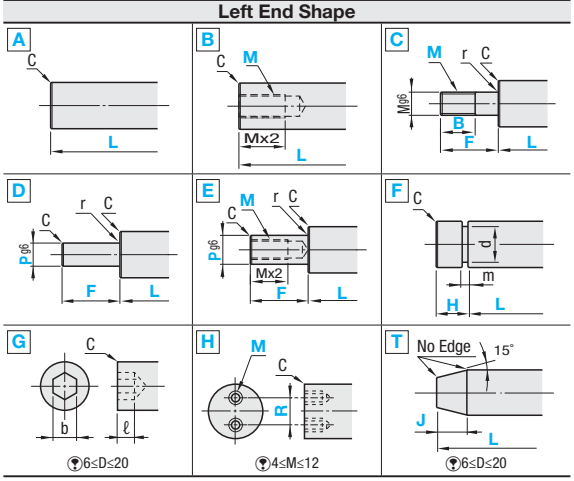
Type		M Material	H Hardness	S Surface Treatment
D Tolerance g6	D Tolerance h5			
FSFJ	FSFU	1.3505/100Cr6	Induction Hardening Effective Hardening Depth ☞P.104 1.3505/100Cr6 58HRC~ 1.4125/X105CrMo17 equivalent 56HRC ~	-
FSSFJ	FSSFU	1.4125/X105Cr-Mo17 equivalent		
FPSFJ	-	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~; Plating Thickness 5μ or more
FPSSFJ	-	1.4125/X105CrMo17 equivalent		



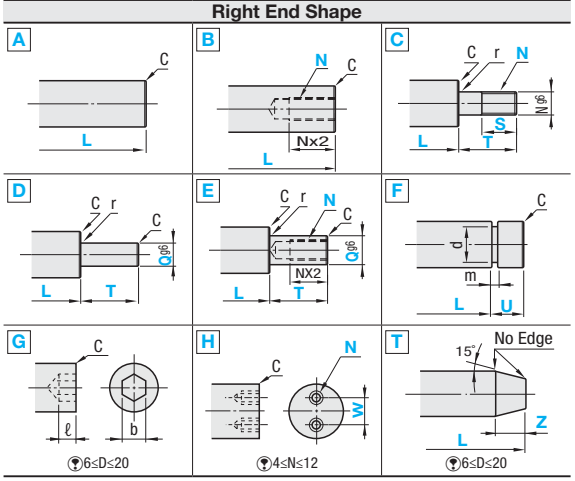
(Y) dimensions need to be (Y)≤Dx50. (Y)≤1500

Changes in circularity, straightness, perpendicularity, coaxiality and hardness ☞P.103

Left End Shape



Right End Shape



Machining Conditions (No alteration condition for Shape A)

B

- When M3 ~ 8 — M (N)≤D-3
- When M10 or 12 — M (N)≤D-4
- When M16, 20 or 24 — M (N)≤D-5
- When M30 — M (N)≤D-6

L≥M (N)x4

C

D	r
6~30	0.3 or less
31~50	0.5 or less

Please specify M(N) Dimensions.
B and S ≥ Pitch x 3 is required.

D

D	r
6~30	0.3 or less
31~50	0.5 or less

E

D	r
6~30	0.3 or less
31~50	0.5 or less

P (Q)M (N)+3

- When M3 ~ 8 — M (N)≤P (Q)-3
- When M10 or 12 — M (N)≤P (Q)-4
- When M16, 20 or 24 — M (N)≤P (Q)-5
- When M30 — M (N)≤P (Q)-6

F

For Set Screw Detailed Dimensions, P.734

D dimensions 31 and 38 can not be specified.

G

D	b	Hexagon Socket Depthℓ
6 / 7	2.5	3.5
8 / 9	3	4.5
10	4	6
12~15	5	7.5
16~19	6	9
20	8	12

H

D≥16
D≥M+4+R
D≥N+4+W
R≥M+3
W≥N+3

Tap Depth
Mx2
Nx2

T

D-J (Z) tan15°x2≥2
(Tip diameter Ø2 or more)

- L needs to be L-J (Z) ≥20
- When both ends are in T shape, needs to be L-(J+Z) ≥20

When only one end requires alteration, select Shape A for the opposite end that does not require alteration. G and H will not be symmetrical when applied to both ends of the shaft.
When D = P or D = N is selected for shaft shape C, B (S) needs to be specified as F = B (T = S). However, L, F, and T dimensions have manufacturing priority and B (S) dimension will be F (T)-(Pitch x 2).

Part Number			Selection	Specif. in 0.5mm Increments		1mm Increments					Selection	C
Type	Left End Shape	Right End Shape	D	L	F / T	B / S	H / U	P / Q	R / W	J / Z	M / N (Coarse)	
(D Tolerance g6) FSFJ FSSFJ FPSFJ FPSSFJ (D Tolerance h5) FSFU FSSFU	A B C D E F G H T	A B C D E F G H T	6 17 31 7 18 32 8 19 35 9 20 38 10 22 40 12 24 45 13 25 50 14 26 15 28 16 30	20.0~1500.0 (L≤DX5)	2≤F≤Px5 2≤F≤MX5 2≤T≤QX5 2≤T≤NX5	2≤B≤Mx3 2≤S≤NX3 B≤F-2 S≤T-2 (When M and N≤6) B≤F-3 S≤T-3 (When M and N≤8 / 10) B≤F-5 S≤T-5 (When M and N≤12)	2≤H / U (When D=6) 3≤H / U (When 6<D≤10) 4≤H / U (When 10<D≤20) 5≤H / U (When 20<D) H-U<½	D/3≤P / Q<D	D≥M+4+R D≥N+4+W R≥M+3 W≥N+3	D: J / Z 6 / 7: 5~7; 8 / 9: 5~10; 10: 5~14; 12: 5~18; 13 / 14: 5~20; 15: 10~24; 16 / 17: 10~25; 18 / 19: 10~28; 20: 10~32	3 4 5 6 8 10 12 16 20 24 30	0.2 or less when D-Q (P / M / N) ≤4 When D<20, 0.5 or less When D≥20, 1.0 or less

Order Example

Part Number																										
Type	Left end	Right End	-	D	-	L	-	F	-	M	-	B	-	T	-	N	-	S	-	H	-	U	-	P	-	Q	-	R	-	W	-	J	-	Z
FSFJ	A	C	-	D12	-	L100							-	T30	-	N6	-	S12																

Days to Ship

10 Days — Express B — 5,00 EUR/ piece ☞P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
D=6.8.10.12.13.15.16.18.20.25.30.35.
Express is only available for 40, 50

Alterations

☞For details, please see Alterations Overview P.105
Available only for LKC, SC, WSC, PMC, PMS, QMC and QMS.

DKC alterations was discontinued in June 2010.
Please specify new part numbers; FSFU and FSSFU to place orders.
Not available for Hard Chrome Plated Shafts

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Price = Standard material unit price + Standard shaft ends alteration unit price.
EX) FSFJBC-D6-L70~ ⋯› 2,90+2,70+5,90=11,50 EUR

For orders larger than indicated quantity, please request a quotation.

Type	D	Material € Unit Price Left Shaft: A Shape Right Shaft: A Shape												Shaft End Alteration € Unit Price						
		Min. L ~ 50	50.5~100	100.5~150	150.5~200	200.5~300	300.5~400	400.5~500	500.5~600	600.5~800	800.5~1000	1000.5~1200	1200.5~1500	B	C	D	E	F	G	H	T
FSFJ	6																				
	7																				
	8																				
	9																				
	10																				
	12																				
	13																				
	14·15																				
FSFU (2,00 EUR is added to the prices indicated right.)	16																				
	17·18·19																				
	20																				
	22·24																				
	25																				
	26·28																				
	30																				
	31·32																				
	35																				
	38																				
	40																				
	45																				
	50																				
FSSFJ	6																				
	7																				
	8																				
	9																				
	10																				
	12																				
	13																				
	14·15																				
FSSFU (2,00 EUR is added to the prices indicated right.)	16																				
	17·18·19																				
	20																				
	22·24																				
	25																				
	26·28																				
	30																				
	31·32																				
	35																				
	38																				
	40																				
	45																				
	50																				
FPSFJ	6																				
	7																				
	8																				
	9																				
	10																				
	12																				
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FPSSFJ	6																				
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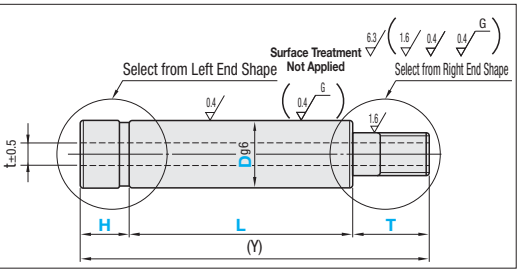
	31·32																				
	35																				
	38																				
	40																				
	45																				
	50																				

Washers for Hollow / Linear Shafts

-Shaft Ends Configurable Type-



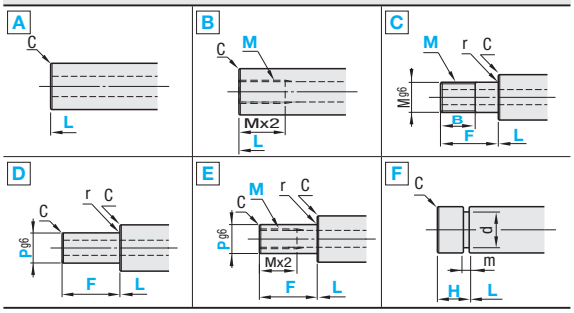
Type	M Material	H Hardness	S Surface Treatment
FSPJ	1.3505/ 100Cr6	Induction hardening Effective Hardening Depth P.104 58HRC~	-
FPSPJ			Hard chrome plating Plating Hardness: HV750 ~ Plating Thickness 5μ or more



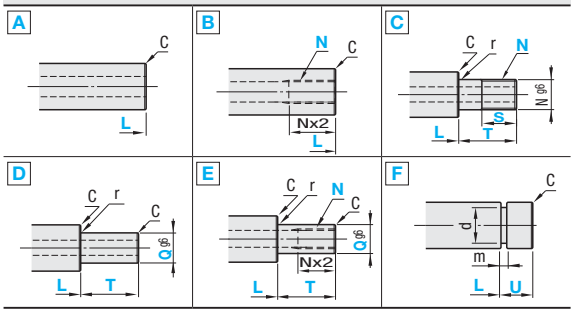
RoHS

- About hollow shaft wall thickness deviations. P.184
- (Y) dimensions need to be (Y)≤DX50. (Y)≤1500
- Changes in circularity, straightness, perpendicularity, wall thickness deviations and hardness P.103- P.184

Left End Shape



Right End Shape



Machining Conditions (No alteration condition for Shape A)

B
- When D=6, then M3
- When 8≤D≤12 t+1≤M (N)≤D-3
- When 13≤D≤25, t+2≤M (N)≤D-3
- When 30≤D≤40, t+2≤M (N)≤D-7
- Not applicable when D=50
- One End Female Thread Hollow Shafts P.183
- L≥M (N)x4

C

D	r
6~30	0.3 or less
35~50	0.5 or less

- When 6≤D≤20, t+4≤M (N)≤D
- When 25≤D≤40, t+6≤M (N)≤D
- Not applicable when D=50
- Both Ends Male Thread Hollow Shafts P.187

B and S≤Pitchx3 is required.

D

D	r
6~30	0.3 or less
35~50	0.5 or less

One End Stepped Hollow Shafts P.189

E

D	r
6~30	0.3 or less
35~50	0.5 or less

P (Q)≤M (N)+4

F

For Set Screw Detailed Dimensions, P.734

When only one end requires alteration, for the opposite end please select shape A

Part Number			Selection	t	Specified in 0.5mm Increments.		1mm Increments			Selection	C
Type	Left End Shape	Right End Shape	D		L	F · T	B · S	H · U	P · Q	M · N (Coarse Thread)	
FSPJ FPSPJ	A	A	6	2	20.0~1500.0 (L≤DX5)	2≤F≤P (M)x5 2≤T≤Q(N)X5	2≤B≤Mx3 2≤S≤NX3 B≤F-2 S≤T-2 (When M and N≤6) B≤F-3 S≤T-3 (When M and N≤8 · 10) B≤F-5 S≤T-5 (When M and N≤12)	2≤H · U (When D=6) 3≤H · U (When 6<D≤10) 4≤H · U (When 10<D≤20) 5≤H · U (When 20<D) H-U<L/2	D·4≤P · Q<D	3 4 5 6 8 10 12 16 20 24 30	When D<20, 0.5 or less When D≥20, 1.0 or less
	B	B	8	3							
	C	C	10	4							
	D	D	12	6							
	E	E	13	7							
	F	F	16	10							
			20	14							
			25	16							
			30	17							
			35	19							
			40	20							
			50	26							

Order Example

Part Number			-	D	-	L	-	F	-	M	-	B	-	T	-	N	-	S	-	H	-	U	-	P	-	Q
Type	Left end	Right End																								
FSPJ	A	C	-	D12	-	L100							-	T20	-	N10	-	S12								

Days to Ship

10 Days | Express B | 5,00 EUR/pc P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P. 87

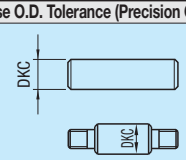
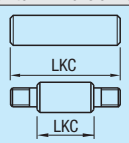
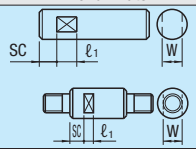
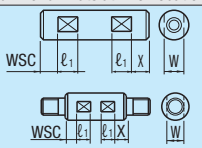
Quantity	1~4	5~12	13~19	20~49
Discount Rates	€ Unit Price	5%	10%	15%

Price = Standard material unit price + Standard shaft ends alteration unit price.
EX)FSPJBC-D6-L70~···› 3,90+2,70+5,90=12,50 EUR
For orders larger than indicated quantity, please request a quotation.

Type	D	Material € Unit Price Left Shaft: A Shape Right Shaft: A Shape												Standard € Unit Price for Shaft End Alterations				
		Min. L ~ 50	50.5~100	100.5~150	150.5~200	200.5~300	300.5~400	400.5~500	500.5~600	600.5~800	800.5~1000	1000.5~1200	1200.5~1500	B	C	D	E	F
FSPJ	6~10																	
	12 · 13																	
	16 · 20																	
	25																	
	30																	
	35																	
	40																	
	50																	
FPSPJ	6~10																	
	12 · 13																	
	16 · 20																	
	25																	
	30																	
	35																	
	40																	
	50																	

Alterations

Part Number	-	D	-	L	-	F	-	M	-	B	-	T	-	N	-	S	-	H	-	U	-	P	-	Q	-	(KKC...etc.)
Type Left end Right End																										
FSPJ A C	-	D12	-	L100							-	T20	-	N6	-	S12									-	DKC

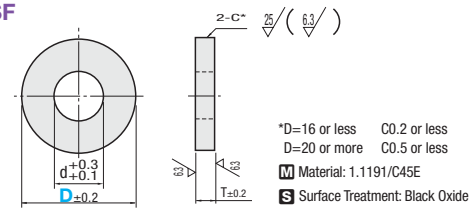
Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats	Add Wrench Flats at Two Locations
				
Code	DKC	LKC	SC	WSC
Spec.	Outer diameter tolerance is altered to h5. Order number DKC D / h5 Tolerance 6 / 0 -0.005 8 / 10 / 0 -0.006 12~16 / 0 -0.008 20~30 / 0 -0.009 35~50 / 0 -0.011 ⊗Not applicable to FPSPJ.	Changes "L Tolerance". Order number LKC L<200···› L±0.03 200≤L<500 ···› L±0.05 L≥500···› L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments. ⊗C Shape When D-M (N)≤2 ⊗E Shape Not applicable when D-P (Q)≤2	Adds a wrench flat. Order number SC5 SC=1mm Increment SC+ℓ1≤L SC=0 or SC≥1 When selecting Shape B When D≤25, SC≥Mx2 SC+ℓ1≤L-Nx2 D / W / ℓ1 6 / 5 / 8 8 / 7 10 / 8 12 / 10 13 / 11 / 10 16 / 14 20 / 17 / 10 25 / 22 30 / 27 / 15 35 / 30 40 / 36 / 20 50 / 41	Wrench flats are added at two locations. Order number WSC12-X8 WSC, (X)=Specified in 1mm increments WSC+X+ℓ1x2≤L WSC=0 or WSC≥1 X = 0 or X ≥ 1 When selecting Shape B WSC+X+ℓ1x2≤L WSC≥Mx2 X≥Nx2 Two wrench flat alterations will not be oriented in a coplanar relationship. D / W / ℓ1 6 / 5 / 8 8 / 7 10 / 8 12 / 10 13 / 11 / 10 16 / 14 20 / 17 / 10 25 / 22 30 / 27 / 15 35 / 30 40 / 36 / 20 50 / 41
Price Adder	2,00	4,00	4,00	8,00

Alterations may lower hardness. P.104

For Linear Shafts Washers RoHS

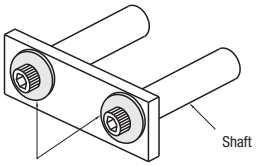


WSF



*D=16 or less C0.2 or less
D=20 or more C0.5 or less
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide

EX



Washers for Liner Shafts

Part Number Type	D	d	T	€ Unit Price
WSF	10	3	3	
	12	4		
	13	5		
	16	6		
	20	8	5	
	25	10		
	30	12		
	35			
	40	16		
	50			

For the above washers,refer to P.2-101

Order Example

Part Number
WSF10

Days to Ship

6 Days P. 87 2 Days

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~9	10~19	20~49	50~99
Discount Rates	€ Unit Price	30%	35%	40%

For orders larger than indicated quantity, please request a quotation.

Shaft Supports

Shaft Supports






Product Name	-Flanged Mount - Standard	Long Sleeve	Pilot	With Dowel Hole
Page	201	201	202	202






-Flanged Mount Thick Sleeve - Standard	Long Sleeve	Pilot	With Dowel Hole
203	203	204	204






-Flanged Mount Slit - Standard	Long Sleeve	Pilot	With Dowel Hole
205	205	206	206






-Flanged Mount Type - Compact Standard Type	Compact Long Sleeve	With Keyway	Back Mounted Type
207	207	207	208






-Flanged Mount Split	-Flanged Slit (Precision Cast) - Standard	Long Sleeve	-T-shaped Slit (Precision Cast) - Standard
208	209	209	210







-T-shaped Slit (Precision Cast) - Wide	-T-shaped (Precision Cast) - Standard	Side Slit	Wide Side Slit	-T-shaped Split (Precision Cast) - Standard
210	211	211	211	212

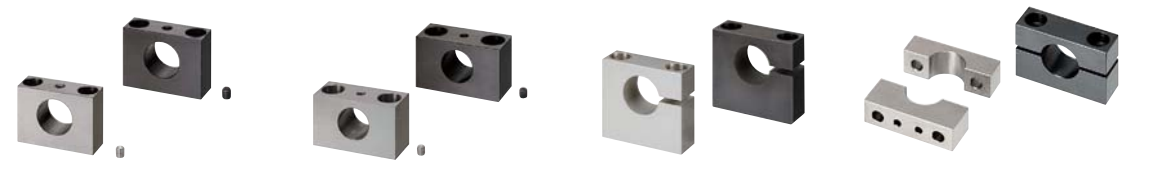





-T-shaped Split (Precision Cast) - Wide	-T-shaped Set Screw (Machined) - Standard / With Dowel Hole	Wide	-T-shaped Slit (Machined) - Standard / With Dowel Hole
212	213	213	214



-T-shaped Slit (Machined) - Wide	-T-shaped Side Slit (Machined) - Standard	Wide	-T-shaped Side Split (Machined) - Standard	Wide
214	215	215	216	216



-Compact (Machined) - Set Screw	Wide Set Screw	Side Slit	Split
217	217	217	218



-Compact Type (Machined) - Wide Split	-T-shaped (Machined) - With Clamp Lever	Hinged Type	-Hinged Type (Machined) - L-Shaped
218	219	219	220



-Hinged (Machined) - Bottom Mount	Side Mount	-L-shaped (Precision Cast) - Standard / Slit / Side Slit / Split
220	220	221-222



-L-shaped (Machined) - Standard / Slit / Side Slit / Split	-Bottom Mount Set Screw (Machined) - Standard	Wide	-Bottom Mount Type - Slit (Machined) - Standard
223-224	225	225	226



-Bottom Mount Type - Slit (Machined) - Wide	-Bottom Mount Type - Split (Machined) - Standard	Wide	-Bottom Mount Type (Machined) - Side Slit
226	227	227	228



-Side Mount (Machined) - Standard	Slit	Side Slit	Split
229	229	230	230

Shaft Supports Guide

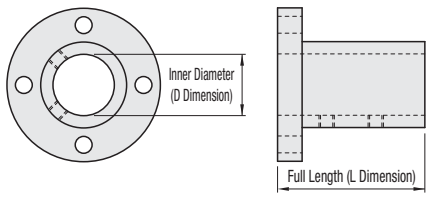
■About Inner Bore Accuracies

Features: - Combination use of MISUMI Shafts (standard g6, f8 and h5) and MISUMI Shaft Supports are recommended.
- Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

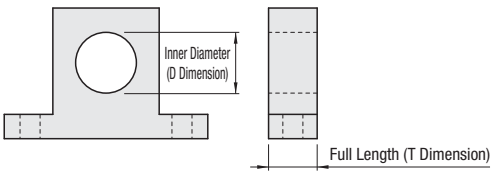
■Relationship between inner diameter (D dimension) and full length of guide (L, T dimensions)

Features: - Standard Type spec. is L,·T=Dx1.3 or less approx. Long Sleeve Type / Wide Type spec. is L,·T=Dx1.3 to 2.0 approx.
- Rigidity of Long Sleeve Type and Wide Type is enhanced as they have longer shaft holding area.
- L=Dx2.0 or more are available under the index of Posts. Please refer to **P.1813~P.1832**

(Ex.)**Flanged Mount**



(Ex.)**T-shaped**



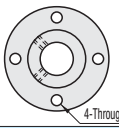
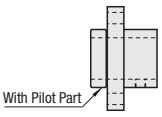
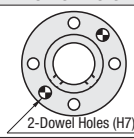
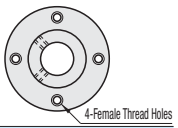
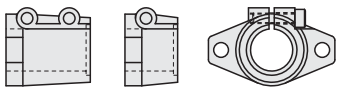
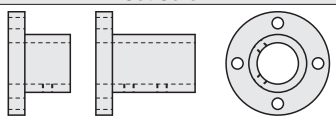
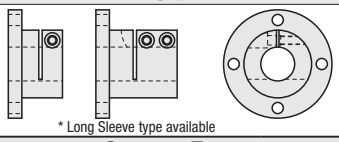
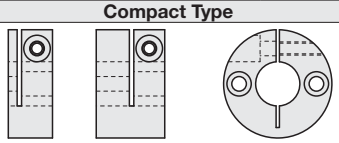
■Manufacturing Method

Features: MISUMI shaft supports are available in machined types and precision cast types.
Precision cast products are offered at lower prices than machined products. Precision cast supports have slight de-molding draft and gritty surfaces but the dimensions are precisely finished as shown in the catalog.

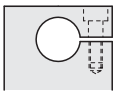
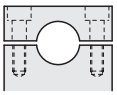
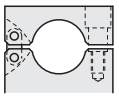
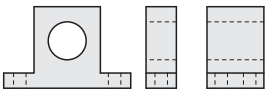
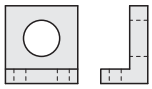
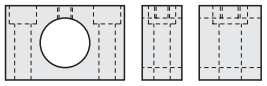
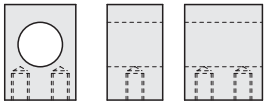
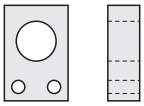
■About Materials

Features: 1.1191/C45E · 1.4301/X5CrNi18-10 and Aluminum materials (EN AC-51300/G-AlMg5 for Precision Cast) are available.

•: Existing Products

	Basic Shape	How to Mount	through hole	With Pilot	Dowel Hole	Female Thread Hole
						
		Characteristics	Mounted by using tapped holes on mounting plate	Easy positioning during assembly. Easy repeatability during maintenance.		Suitable when mounting plates are thin or may have insufficient strength like aluminum.
Precision Cast	**Flanged Type**		**Features**: Most economical. Longer sleeve than standard type improves shaft gripping power.			
	 * Long Sleeve type available		• **P.209**	-	-	-
Machined Products	**Set Screw**		**Features**: Set screws may scratch the shaft during clamping; however, this is the most economical machined product.			
	 * Long Sleeve type available		• **P.201** • **P.203** (Thick Sleeve)	• **P.202** • **P.204** (Thick Sleeve)	• **P.202** • **P.204** (Thick Sleeve)	• **P.201**
	Slit		**Features**: Tightening doesn't damage shafts during clamping.			
	 * Long Sleeve type available		• **P.205**	• **P.206**	• **P.206**	-
	Compact Type		**Features**: Small outer diameter contributes in space saving designs. Tightening doesn't damage shafts.			
	 * Long Sleeve type available		• **P.207**	-	-	-
	Split		**Features**: Easy shaft removal for maintenance.			
			• **P.208**	-	-	-
	Back Mount		**Features**: Shaft can be tightened securely using a tapped hole on shaft end.			
			• **P.208**	-	-	-

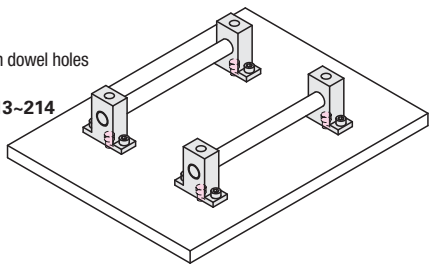
•: Existing Products

Basic Shape	Shaft Securing Methods	Set Screw	Slit	Side Slit	Split	Hinged
						
	Characteristics	Most Economical	Shafts can be secured without damages.		Easy maintenance	Enhanced working efficiency with only one tightening screw.
Precision Cast / Machined Products	**T-shaped**	**Features**: Suitable when lengthwise space is limited.				
	 * With Dowel Hole available / * Wide Type available	Precision Cast	• P.211	• P.210	• P.211	• P.212	-
		Machined Products	• P.213	• P.214	• P.215	• P.216	• P.219
	L-shaped	**Features**: Suitable when crosswise space is limited.				
		Precision Cast	• P.221	• P.221	• P.222	• P.222	-
		Machined Products	• P.223	• P.223	• P.224	• P.224	• P.220
Machined Products	**Compact Type**	**Features**: Space saving design, most compact in all dimensions.				
	 * Wide Type Available		• P.217	-	• P.217	• P.218	-
	Bottom Mount	**Features**: Screw mount from underside is effective when the mounting host is too thin to tap, and in space limited applications.				
	 * Wide Type Available		• P.225	• P.226	• P.228	• P.227	• P.220
	Side Mount Type	**Features**: Side mounting on plate is possible.				
			• P.229	• P.229	• P.230	• P.230	• P.220

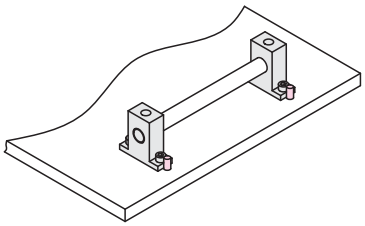
■Positioning and Repeatability

• Support units are located with dowel holes on the units and dowel pins pressed into the mounting plate.

Use support units with dowel holes shown in pages
☞P.201~206, P.213~214

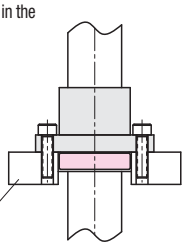


• Support units are located with dowel pins pressed into the mounting plate against unit housing's vertical faces.

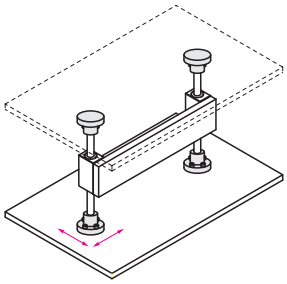


• Support units are located with the housing pilot and a precision bored (H7) mounting hole made in the mounting plate.

Use Pilot Type shown in pages
☞P.201~206



• Use clearances of mounting hole (through hole) and make adjustments and positioning on site.



Shaft Supports -Flanged Mount-

-Standard Type with Through or Female Thread Mounting Holes / Long Sleeve Type / With Pilot / With Dowel Hole-

Features: Female Thread Mounting Hole Type is suitable when tapping is difficult due to insufficient mounting plate strength (aluminum) or thickness.

Standard Type Through Mounting Holes, Female Thread Mounting Holes RoHS





Long Sleeve

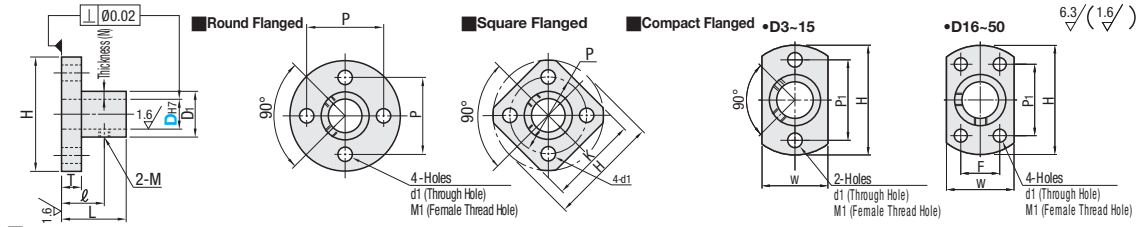




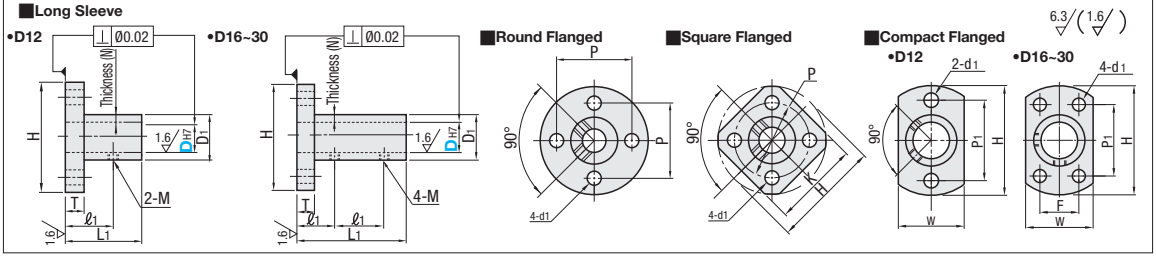
Type	Through Mounting Holes			Female Thread Mounting Holes		M Material	S Surface Treatment
	Round Flanged	Square Flanged	Compact Flanged	Round Flanged	Compact Flanged		
Standard	STHRB	STHSB	STHCB	STHRBT	STHCBT	1.0038/ S235JR	Black Oxide
	STHR	STHS	STHC	STHRT	STHCT		Electroless Nickel Plating
	SSTHR	SSTHS	SSTHC	SSTHRT	SSTHCT	1.4301	-
	ATHR	ATHS	ATHC	-	-	EN AW-6061/EN AW-AlMg1SiCu	White Alumite
	BTHR	-	BTHC	-	-		Black Alumite
Long Sleeve	STHRBL	STHSBL	STHCBL	-	-	1.0038/ S235JR	Black Oxide
	STHRL	STHSL	STHCL	-	-		Electroless Nickel Plating
	SSTHRL	SSTHSL	SSTHCL	-	-	1.4301	-

Refer to Alterations for included Hexagon Socket Set Screw.

Standard Type with Through Mounting Holes / Female Thread Mounting Holes



Long Sleeve



Part Number Type	D H7		Sleeve Thickness (N)	L	L1	D1	H	T	ℓ	ℓ1	M (Coarse Thread)	P	K	W	P1	F	d1	M1 (Coarse Thread)
Standard Type with Through Mounting Holes	3	+0.010 0	2.5	10		8	22	3	7			15	16	8	15			
Round Flanged / Square Flanged / Compact Flanged	4	+0.012 0		10		9	24	3	7		M3	17	19	9	17		3.5	-
STHRB / STHSB / STHCB	5			12		10	25	3.5	7			18	20	10	18			
STHR / STHS / STHC	6		3	15	-	12	28	3.5	7	-		20	22	12	20			
SSTHR / SSTHS / SSTHC	8		2	16		12	28	5	10			20	22	16	20	-	4.5	M4
ATHR / ATHS / ATHC	8M **	+0.015 0									M4							
BTHR	10			20		14	30		12		M3	22	23	18	22		3.5	-
	10M **										M4						4.5	M4
Standard Type with Female Thread Mounting Holes (Only for D dimension denoted with * mark)	*12 **	+0.018 0	2.5	24	30	16	36	6	15	15	M4	26	28	20	26		4.5	M4
STHRBT / STHCBT	13				18	38				28	30	22	28					
STHRT / STHCT	15 **			30	-	20	40		18	-		30	32	24	30			
SSTHRT / SSTHCT	*16 **		3	32	48	22	42		19	16		32	33	26	28	16		
	18		5	32	-	28	50	8	20	-	M5	39	39	32	31	22	5.5	M5
	*20 **	+0.021 0	4	32	48	28	50	8	20	16		39	39	32	31	22		
Long Sleeve Type (Only for D dimension denoted with * mark)	*25 **			38	57	33	55	8	23	19		44	44	37	36	24		
STHRBL / STHSBL / STHCBL	*30 **					38	66	10	24	19		52	52	42	41	27	6.6	M6
STHRL / STHSL / STHCL	35	+0.025 0	5	50	-	45	80	10	30	-	M6	65	65	55	56	33	9	M8
SSTHRL / SSTHSL / SSTHCL	40		10			60	90	10				75	75	65	65	38		
	50					70	100	10				85	90	75	74	43		

Female Thread Mounting Holes type are available only for D dimension denoted with ** mark. Long Sleeve Type are available only for D dimension denoted with * mark.
Only 1.0038/S235JR and 1.4301/X5CrNi18-10 are applicable to D dimension 8M and 10M (EN AW-6061/EN AW-AlMg1SiCu is not applicable).

Standard Type

D	€ Unit Price														
	Round Flanged					Square Flanged				Compact Flanged					
	STHRB	STHR	SSTHR	ATHR	BTHR	STHSB	STHS	SSTHS	ATHS	STHCB	STHC	SSTHC	ATHC	BTHC	
	STHRBT	STHRT	SSTHRT							STHCBT	STHCT	SSTHCT			
3															
4															
5															
6															
8 / 8M*															
10 / 10M*															
12*															
13															
15*															
16*															
18															
20*															
25*															
30*															
35															
40															
50															

Long Sleeve

D	€ Unit Price								
	Round Flanged			Square Flanged			Compact Flanged		
	STHRBL	STHRL	SSTHRL	STHSBL	STHSL	SSTHSL	STHCBL	STHCL	SSTHCL
12									
16									
20									
25									
30									

•Caution in selection of Standard type

Price of Female Thread Mounting Holes type (Type:_ _ _ _T) = Price in the left table + Express Charge of 2,00 EUR
Ex. STHRBT10 (2,00 EUR) = STHRB10 (13,70 EUR) + Tapping Charge (11,70 EUR)

Female Thread Mounting Holes type are available only for D dimension denoted with * mark.

Aluminum is not available for D dimension 8M and 10M products.

Features: Easy positioning during assembly.

Pilot

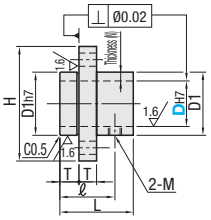
RoHS



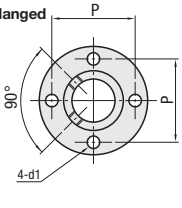
Round Flanged	Square Flanged	Compact Flanged	M Material	S Surface Treatment
STHIRB	STHISB	STHICB	1.0038/S235JR	Black Oxide
STHIR	STHIS	STHIC		Electroless Nickel Plating
SSTHIR	SSTHIS	SSTHIC	1.4301/X5CrNi18-10	-

Refer to Alterations for included Hexagon Socket Set Screw.

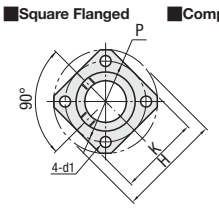
6.3 (1.6)



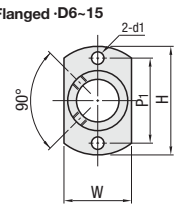
■Round Flanged



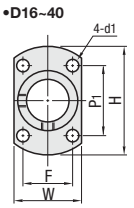
■Square Flanged



■Compact Flanged ·D6~15



•D16~40



Part Number Type	DH7		Sleeve Thickness (N)	L	D1	H	T	ℓ	M (Coarse Thread)	P	K	W	P1	F	d1	€ Unit Price Round Flanged STHIRB	STHIR	SSTHIR	Square Flanged STHISB	STHIS	SSTHIS	Compact Flanged STHICB	STHIC	SSTHIC
Round Flanged / Square Flanged / Compact Flanged	6	+0.012 0	3	15	12	28	3.5	11	M3	20	22	12	20	-	3.5									
STHIRB / STHISB / STHICB	8		2	18			5	14	M4			16			4.5									
STHIR / STHIS / STHIC	8M	+0.015 0							M3						3.5									
SSTHIR / SSTHIS / SSTHIC	10			20	14	30		15	M4	22	23	18	22		4.5									
	10M																							
	12	+0.018 0		24	16	36	6	18	M4	26	28	20	26		4.5									
	15		2.5	30	20	40		21		30	32	24	30											
	16		3	32	22	42		22		32	33	26	28	16										
	20	+0.021 0	4	32	28	50	8	24	M5	39	39	32	31	22	5.5									
	25			38	33	55		27		44	44	37	36	24										
	30				38	66	10	29	M6	52	52	42	41	27	6.6									
	40	+0.025 0	10	50	60	90	10	35		75	75	65	65	38	9									

With Dowel Hole

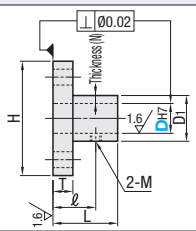
RoHS



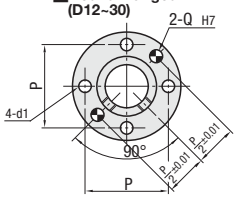
Round Flanged	Compact Flanged	M Material	S Surface Treatment
STHRBK	STHCBK	1.1191/C45E	Black Oxide
STHRK	STHCK		Electroless Nickel Plating
SSTHRK	SSTHCK	1.4301/X5CrNi18-10	-

Refer to Alterations for included Hexagon Socket Set Screw.

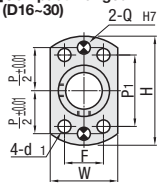
6.3 (1.6)



■Round Flanged (D12~30)



■Compact Flanged (D16~30)



Part Number Type	DH7		Sleeve Thickness (N)	L	D1	H	T	ℓ	M (Coarse Thread)	P	W	P1	F	d1	Q	€ Unit Price Round Flanged STHRBK	STHRK	SSTHRK	Compact Flanged STHCBK	STHCK	SSTHCK
Round Flanged / Compact Flanged	12	+0.018 0	2	24	16	36	6	15	M4	26	20	28	-	4.5	4						
STHRBK / STHCBK	13		2.5	24	18	38	6	15		28	22	28									
STHRK / STHCK	15			30	20	40	6	18		30	24	30									
SSTHRK / SSTHCK	*16		3	32	22	42	6	19		32	26	28	16		5						
(Only for D dimension denoted with * mark)	*18		5	32	28	50	8	20	M5	39	32	31	22	5.5							
	*20	+0.021 0	4	32	28	50	8	20		39	32	31	22		6						
	*25			38	33	55	8	23		44	37	36	24								
	*30				38	66	10	24	M6	52	42	41	27	6.6							

Compact Flange type are available only for D dimension denoted with * mark.

Order Example

Part Number
STHRL10
STHIS20
SSTHCK20

Price

■Volume Discount (Round down to one Cent.) P87

•STHC · STHR 8th day shipping

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Delivery Time	Standard			

For orders larger than indicated quantity, please request a quotation.

•ATHS · BTH_ · SSTH_L · STHSL · SSTHIR · STHICB

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Delivery Time	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Delivery Time	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Days to Ship

■Standard Type with Through Mounting Holes
Long Sleeve Type (Except STHSBL)
With Pilot (Round Flange · Only STHICB)

6 Days P.87

■Standard Type with Female Thread Mounting Holes
Long Sleeve Type (Only STHSBL)
With Pilot (Square · Compact Flanged · STHIC · SSTHIC) With Dowel Hole

8 Days | 2 Days

Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Alterations

Part Number - (MB)
STHR10 - MB
STHRL20 - MB

8 Days

Alterations	Hexagon Socket Set Screw included
Code	MB
Spec.	Hexagon socket set screws come with as a set. Screw head can protrude from outer cylinder (D1). Black Oxide · Black Alumited products only Included screws are 1.7220/34CrMo4 products (Black Oxide). Others are JIS SUS products. Long Sleeve Type comes with 4 Set Screws. Others come with 2 set screws.
Price Adder	Standard Type · With Pilot · With Dowel Hole :1,00 Long Sleeve :2,00

D	MxLength
3 · 4 · 5 · 6 · 8 · 10	M3x3
8M · 10M · 12 · 13 · 15 · 16	M4x3
18 · 20 · 25	M5x4
30 · 35 · 40 · 50	M6x5

Shaft Supports -Flanged Mount - Thick Sleeve-

-Standard Type · Long Sleeve Type · With Pilot · With Dowel Hole-

■Features: Thicker sleeve than standard type (P.201) enhances strength against falling.

■Standard Type RoHS



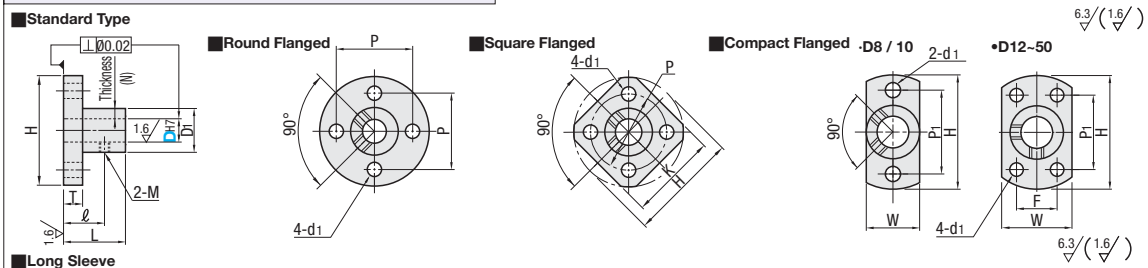
■Long Sleeve



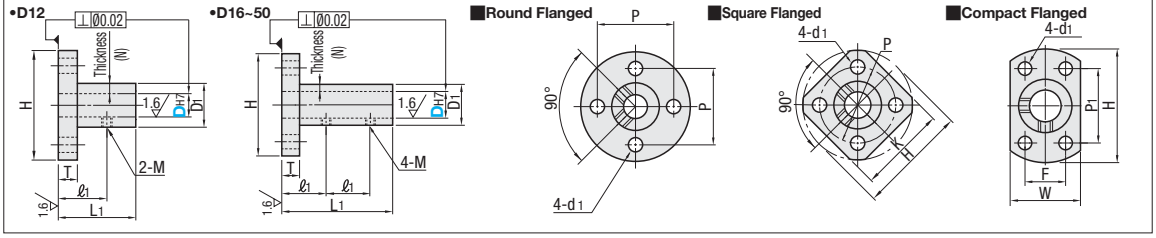
Type	Round Flanged	Square Flanged	Compact Flanged	Material	Surface Treatment
Standard	STHRBN	STHSBN	STHCBN	1.0038/S235JR	Black Oxide
	STHRN	STHSN	STHCN		Electroless Nickel Plating
	SSTHRN	SSTHSN	SSTHCN	1.4301/X5CrNi18-10	-
	STHRNA	-	STHCNA	EN AW-5056/AlMg5	White Alumite
	STHRND	-	STHCND		Black Alumite
Long Sleeve	STHRBNL	STHSBNL	STHCBNL	1.0038/S235JR	Black Oxide
	STHRNL	STHSNL	STHCNL		Electroless Nickel Plating
	SSTHRNL	SSTHSNL	SSTHCNL	1.4301/X5CrNi18-10	-

Refer to Alterations for included Hexagon Socket Set Screw.

■Standard Type



■Long Sleeve



Part Number Type	DH7		Sleeve Thickness (N)	L	L1	D1	H	T	ℓ	ℓ1	M (Coarse Thread)	P	K	W	P1	F	d1
Standard Type	8*	+0.015 0	3.5	16	-	15	32	5	10	-	M3	25	25	15	25	-	3.5
	8M										M4						
Round Flanged Square Flanged Compact Flanged	10*		5	20		20	38		12		M3	30	30	20	30		4.5
STHRBN STHSBN STHCBN	**12*	+0.018 0		24	30	22	40	6	15	15	M4	32	32	25	28	16	
STHRN STHSN STHCN	13		5.5	26	-	24	42		16	-		34	34	27		18	
SSTHRN SSTHSN SSTHCN	15			30		26	48		18			38	38	29	32		5.5
(Only for D dimension denoted with * mark)	**16*		6	32	48	28	50		19	16		40	39	32	33	22	
STHRNA STHCNA	**20*	+0.021 0	7.5			35	63	8	20		M5	50	48	40	42	25	6.6
STHRND STHCND	**25*			38	57	40	68		23	19		55	53	45	45	30	
Long Sleeve Type (only applicable to D dimension denoted with * mark)	**30*					45	73	10	24		M6	60	58	50	48	35	
STHRBNL STHSBNL STHCBNL	**35	+0.025 0	10	50	75	55	89		30	25		72	70	61	58	42	9
STHRNL STHSNL STHCNL	**40		15			70	104	12			M8	87	80	76	68	54	
SSTHRNL SSTHSNL SSTHCNL	**50					80	114					97	90	86	73	64	

Clear and black anodizing are available only for D dimension denoted with * mark. Long Sleeve Type is only applicable to D dimension denoted with ** mark.

■Standard Type

D	€ Unit Price												
	Round Flanged					Square Flanged			Compact Flanged				
	STHRBN	STHRN	SSTHRN	STHRNA	STHRND	STHSBN	STHSN	SSTHSN	STHCBN	STHCN	SSTHCN	STHCNA	STHCND
8 / 8M													
10													
12													
13													
15													
16													
20													
25													
30													
35													
40													
50													

■Long Sleeve

D	€ Unit Price								
	Round Flanged			Square Flanged			Compact Flanged		
	STHRBNL	STHRNL	SSTHRNL	STHSBNL	STHSNL	SSTHSNL	STHCBNL	STHCNL	SSTHCNL
12									
16									
20									
25									
30									
35									
40									
50									

Features: Easy positioning during assembly.

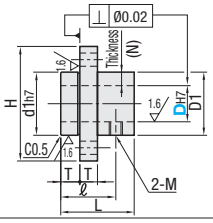
Pilot



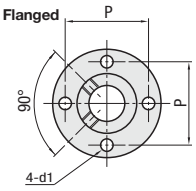
Round Flanged	Compact Flanged	Material	Surface Treatment
STHIRBN	STHICBN	1.0038/ S235JR	Black Oxide
STHIRN	STHICN		Electroless Nickel Plating

Refer to Alterations for included Hexagon Socket Set Screw.

6.3 (1.6)

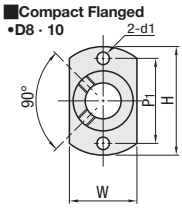


Round Flanged

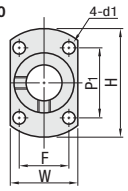


Compact Flanged

•D8 · 10



•D12~30



Part Number Type	DH7		Sleeve Thickness (N)	L	D1	H	T	ℓ	M (Coarse)	P	W	P1	F	d1	€ Unit Price Round Flanged		€ Unit Price Compact Flanged	
															STHIRBN	STHIRN	STHICBN	STHICN
Round Flanged STHIRBN STHIRN Compact Flanged STHICBN STHICN	8	+0.015 0	3.5	18	15	32	5	14	M3	25	15	25	-	3.5				
	8M								M4					4.5				
	10		5	20	20	38		15	M3	30	20	30						
	12	+0.018 0		24	22	40	6	18	M4	32	25	28	16					
	16		6	32	28	50		22		40	32	33	22	5.5				
	20	+0.021 0	7.5	32	35	63	8	24	M5	50	40	42	25	6.6				
	25			38	40	68		27		55	45	45	30					
	30				45	73	10	29	M6	60	50	48	35					

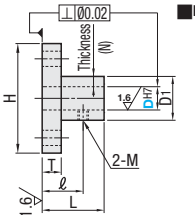
With Dowel Hole



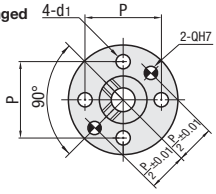
Round Flanged	Compact Flanged	Material	Surface Treatment Nylon 6 (Glass Fiber 30%)
STHRBNK	STHCBNK	1.0038/S235JR	Black Oxide
-	STHCNK		Electroless Nickel Plating

Refer to Alterations for included Hexagon Socket Set Screw.

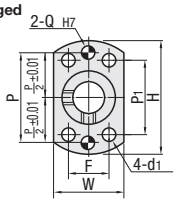
6.3 (1.6)



Round Flanged



Compact Flanged



Part Number Type	DH7		Sleeve Thickness (N)	L	D1	H	T	ℓ	M (Coarse)	P	W	P1	F	d1	Q	€ Unit Price Round Flanged	€ Unit Price Compact Flanged	
																STHRBNK	STHCBNK	STHCNK
Round Flanged STHRBNK Compact Flanged STHCBNK STHCNK	12	+0.018 0	5	24	22	40	6	15	M4	32	25	28	16	4.5	4			
	16		6	32	28	50		19		40	32	33	22	5.5	5			
	20	+0.021 0	7.5		35	63	8	20	M5	50	40	42	25	6.6				
	25			38	40	68		23		55	45	45	30		6			
	30				45	73	10	24	M6	60	50	48	35					

Order Example Part Number
STHRBN10
STHRNL20
STHICBN8M

Price

Volume Discount (Round down to one Cent.) P.87

•13th day shipping

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

•1.4301/X5CrNi18-10 · Square Flange · STHCBNL

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Alterations Part Number - (MB)
STHRBN10 - MB
STHRBNL12 - MB

8 Days

Alterations Code	Hexagon Socket Set Screw included: MB
Spec.	Hexagon socket set screws come with as a set. Screw head can protrude from outer cylinder (D1). Only Black Oxide · Black Alumite. Included screws are 1.7220/34CrMo4 products (Black Oxide). Others are JIS SUS products. Long Sleeve Type comes with 4 Set Screws. Others come with 2 set screws.
Price Adder	Standard Type · With Pilot · With Dowel Hole :1,00 Long Sleeve :2,00

D	MxLength
8 · 10	M3x3
8M · 12 · 13 · 15 · 16	M4x3
20 · 25	M5x4
30 · 35	M6x5
40 · 50	M8x6

Days to Ship

Except Those Shown Below

6 Days P.87

Standard Type (EN AW-5056/AlMg5 · SSTHSN only)
Long Sleeve Type (SSTHCNL only)
Pilot
Dowel Hole Type

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.
Express Serviceis not available for EN AW-5056/AlMg5 products

Shaft Supports -Flanged Mount Type with Slit-

-Standard Type · Long Sleeve Type-

CAD Data

■Standard Type
Through Mounting Holes

RoHS



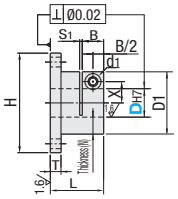
■Long Sleeve

RoHS

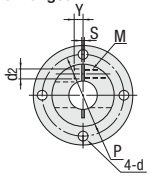


Type	Round Flanged	Square Flanged	Compact Flanged	M Material	S Surface Treatment	A Accessories
Standard	STHWRB	STHWSB	STHWCB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
	STHWR	STHWS	STHWC		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
	SSTHWR	SSTHWS	SSTHWC	1.4301	-	
Long Sleeve	STHWRBL	STHWSBL	STHWCBL	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
	STHWRL	STHWSL	STHWCL		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
	SSTHWRL	SSTHWSL	SSTHWCL	1.4301	-	

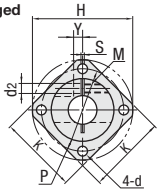
■Standard Type
Through Mounting Holes



■Round Flanged

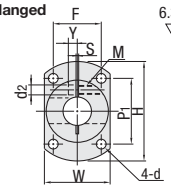


■Square Flanged



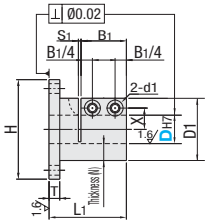
■Compact Flanged

6.3 (1.6)

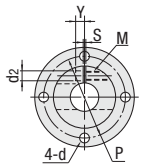


■Long Sleeve

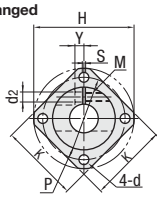
6.3 (1.6)



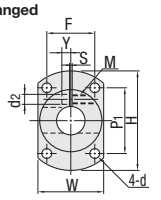
■Round Flanged



■Square Flanged



■Compact Flanged



Part Number Type	DH7	Sleeve Thickness (N)	L	L1	D1	H	T	B	B1	P	K	W	P1	F	d	S	S1	X	Y	d1	d2	M	Included Screw(s) MxLength
Standard Type	8	8.5	18	-	25	39	5	10	-	32	30	27	25	20	3.5	1.5	1.5	7.5	3.5	7.5	4.6	M4	M4x10
Round Flanged: STHWRB · STHWR · SSTHWR	8M														4.5								
Square Flanged: STHWSB · STHWS · SSTHWS	10	10	20		30	49				40	38	32	33	23				10	3	9	5.6	M5	M5x10
Compact Flanged: STHWCB · STHWC · SSTHWC	*12		22	33	32	52	6		20	42	40	34	35	25	4.5			11	4				M5x12
Long Sleeve Type (Only for D dimension denoted with * mark)	13	9.5	24	-				12	-														
STHWRBL · STHWSBL · STHWCBL	15	10	27		35	56			24	46	44	37	37	27	5.5			12	5				
STHWRL · STHWSL · STHWCL	*16	9.5	30	45																			
SSTHWRL · SSTHWSL · SSTHWCL	*20	10	32	48	40	64	8			52	50	42	43	30				14	6				M5x16
	*25		38	57	45	69		15	30	57	54	47	46	34	6.6		2	17					
	*30	12.5	40	60	55	79	10			67	60	57	50	45				20	10	12	6.6	M6	M6x20
	*35		48	72	60	94				77	71	66	58	50	9			23	12				
	*40	15	55	82.5	70	104	12	18	36	87	81	76	67	55				26	13	14	9	M8	M8x26
	*50	17.5	65	97.5	85	119		22	44	102	94	91	82	60				32	16	18	11	M10	M10x32

Standard Type
Round Flanged: STHWRB · STHWR · SSTHWR
Square Flanged: STHWSB · STHWS · SSTHWS
Compact Flanged: STHWCB · STHWC · SSTHWC

Long Sleeve Type (Only for D dimension denoted with * mark)
STHWRBL · STHWSBL · STHWCBL
STHWRL · STHWSL · STHWCL
SSTHWRL · SSTHWSL · SSTHWCL

Long Sleeve Type is only applicable to D dimension denoted with * mark.

Order Example — Part Number: STHWR10

Days to Ship
■Others: 6 Days P.87; 2 Days
■SSTHWC · SSTHWSL · SSTHWCL: 8 Days — Express A 2,00 EUR/piece P.88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87
•8rd Day Shipping

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

•STHWRL · SSTHWS · STHWSB · STHWSBL · STHWSL

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

•Other stocked items

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

■ Standard Type

D	€ Unit Price								
	Round Flanged			Square Flanged			Compact Flanged		
	STHWRB	STHWR	SSTHWR	STHWSB	STHWS	SSTHWS	STHWCB	STHWC	SSTHWC
8 · 8M									
10									
12									
13									
15									
16									
20									
25									
30									
35									
40									
50									

■ Long Sleeve Type

D	€ Unit Price								
	Round Flanged			Square Flanged			Compact Flanged		
	STHWRBL	STHWRL	SSTHWRL	STHWSBL	STHWSL	SSTHWSL	STHWCBL	STHWCL	SSTHWCL
12									
16									
20									
25									
30									
35									
40									
50									

Shaft Supports -Flanged Mount Type with Slit-

-With Pilot · With Dowel Hole-

CAD Data

Features: Easy positioning during assembly.

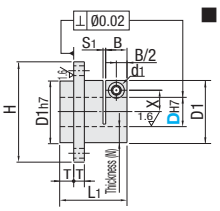
With Pilot

RoHS

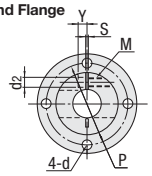


Round Flanged	Compact Flanged	M Material	S Surface Treatment	A Accessories
STHWIRB	STHWICB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
STHWIR	STHWIC		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSTHWIR	SSTHWIC	1.4301/X5CrNi18-10	-	

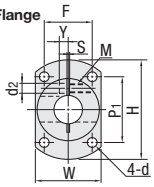
6.3 (1.6)



■ Round Flange



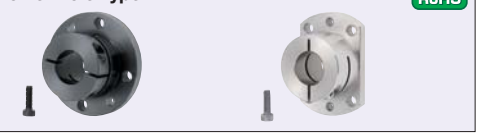
■ Compact Flange



Part Number Type	DH7	Sleeve Thickness (N)	L1	D1	H	T	B	P	W	P1	F	d	S	S1	X	Y	d1	d2	M	Included Screw M x length	€ Unit Price Round Flanged STHWIRB	STHWIR	SSTHWIR	Compact Flanged STHWICB	STHWIC	SSTHWIC
Round Flanged STHWIRB STHWIR SSTHWIR	8	+0.015 0	8.5	23	25	39	5	10	32	27	25	20	3.5	1.5	1.5	7.5	3.5	7.5	4.6	M4	M4x10						
	8M												4.5														
	10	+0.018 0	10	25	30	49			40	32	33	23	4.5			10	3	9	5.6	M5	M5x10						
	12			28	32	52	6	12	42	34	35	25				11	4				M5x12						
	15		10	33	35	56			46	37	37	27	5.5			12	5										
	16		9.5	36	35	56		12	46	37	37	27	5.5			12	5										
Compact Flanged STHWICB STHWIC SSTHWIC	20	+0.021 0	10	40	40	64	8		52	42	43	30	6.6		2	14	6				M5x16						
	25			46	45	69		15	57	47	46	34				17											
	30		12.5	50	55	79	10		67	57	50	45				20	10	12	6.6	M6	M6x20						
	40	+0.025 0	15	67	70	104	12	18	87	76	67	55	9	1.5		26	13	14	9	M8	M8x26						

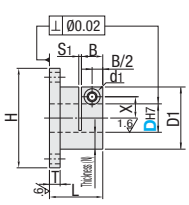
Dowel Hole Type

RoHS

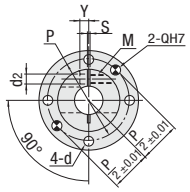


Round Flanged	Compact Flanged	M Material	S Surface Treatment	A Accessories
STHWRBK	STHWCBK	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
STHWRK	STHWCK		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSTHWRK	SSTHWCK	1.4301/X5CrNi18-10	-	

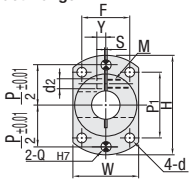
6.3 (1.6)



■ Round Flange



■ Compact Flange



Part Number Type	DH7	Sleeve Thickness (N)	L	D1	H	T	B	P	W	P1	F	d	S	S1	X	Y	d1	d2	Q	M	Included Screw M x length	€ Unit Price Round Flanged STHWRBK	STHWRK	SSTHWRK	Compact Flanged STHWCBK	STHWCK	SSTHWCK
Round Flanged STHWRBK STHWRK SSTHWRK	12	+0.018 0	10	22	32	52	6	10	42	34	35	25	4.5	1.5	1.5	11	4	9	5.6	4	M5	M5x12						
	16		9.5	30	35	56		12	46	37	37	27	5.5			12	5			5								
Compact Flanged STHWCBK STHWCK SSTHWCK	20	+0.021 0	10	32	40	64	8		52	42	43	30	6.6		2	14	6			6		M5x16						
	25			38	45	69		15	57	47	46	34				17												
	30		12.5	40	55	79	10		67	57	50	45				20	10	12	6.6		M6	M6x20						

Order Example

Part Number
STHWIR10
STHWRBK25

Days to Ship

■STHWIRB / STHWIR / STHWIC / STHWCK: 6 Days P.87

■Others: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Price

■Volume Discount (Round down to one Cent.) P.87

•STHWIRB · STHWIC · STHWCK

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

•STHWIR

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

Shaft Supports -Flanged Mount-

-Compact Standard Type · Compact Long Sleeve Type · With Keyway-

CAD Data

Features: Outer dia. (H Dimension) is smaller than the previous type. Space saving design.

Compact Standard Type RoHS



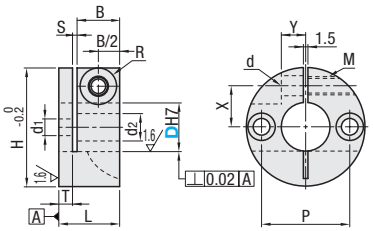
Compact Long Sleeve



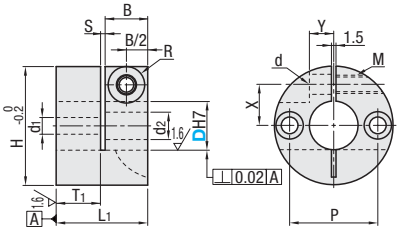
Type		Material	Surface Treatment	Accessories
Standard	Long Sleeve			
STHMRB	STHMRBL	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
STHMR	STHMRL		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSTHMR	SSTHMRL	1.4301/X5CrNi18-10	-	

6.3 (1.6)

Compact Standard Type



Compact Long Sleeve



Part Number Type		DH7	L	L1	H	B	T	T1	P	d1	d2	S	X	Y	M	d	R
Compact Standard Type	STHMRB	8	16	-	30	11	3.5	-	20	4.5	8	1.5	9.5	5	5	5.5	9
	STHMR	10	17	-	34		4.5	-	22	5.5	9.5		10	6			
	SSTHMR	*12		25	36			12.5	25				12				
		*15		28	38			15.5	26				13				
Compact Long Sleeve Type (Only for D dimension denoted with * mark)	STHMRBL	*16	22	30	39	14	6	14	28	6.6	11	2	13.5	7	6	6.6	12
	STHMRL	*20		34	49			18	35				16	8			
	SSTHMRL	*25		38	54			22	40				19				
		*30	24	40	59		8	24	45				22				

Order Example Part Number: STHMRB16, STHMR20, SSTHMRL20

Days to Ship 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

•STHMR · STHMRB

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price					
	Compact Standard			Compact Long Sleeve		
	STHMRB	STHMR	SSTHMR	STHMRBL	STHMRL	SSTHMRL
8						
10						
12						
15						
16						
20						
25						
30						

Outer Diameter Comparison Table

D (Inner Diameter)	Outer Diameter (H)		
	Compact Type Ex.) STHMR · STHMRL	Flanged Mount Type with Slit P.205 Ex.) STHWR · STHWRL	Difference
8	30	39	-9
10	34	49	-15
12	36	52	-16
15	38	56	-18
16	39	56	-17
20	49	64	-15
25	54	69	-15
30	59	79	-20

Features: Effective in preventing the shaft from rotating.

With Keyway RoHS

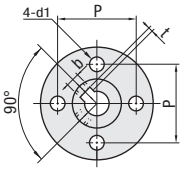


Round Flanged	Compact Flanged	Material	Surface Treatment
STHRBNG	STHCBNG	1.1191/C45E	Black Oxide
STHRNG	STHCNG		Electroless Nickel Plating

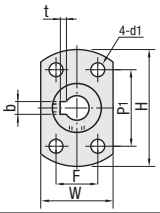
Refer to Alterations for included Hexagon Socket Set Screw.

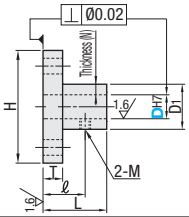
6.3 (1.6)

Round Flanged



Compact Flanged





Part Number Type		DH7	Sleeve Wide (N)	L	D1	H	T	ℓ	M (Coarse Thread)	P	W	P1	F	d1	b	Tolerance	t	Tolerance	€ Unit Price Round Flanged		€ Unit Price Compact Flanged	
Round Flanged	Compact Flanged																		STHRBNG	STHRNG	STHCBNG	STHCNG
		12	+0.018 0	5	24	22	40	6	15	M4	32	25	28	16	4.5	4	±0.015	1.8	+0.1 0				
		16		6	32	28	50		19		40	32	33	22	5.5	5		2.3					
STHRBNG	STHCBNG	20	+0.021 0	7.5	32	35	63	8	20	M5	50	40	42	25	6.6	6	±0.018	2.8	+0.2 0				
STHRNG	STHCNG	25			38	40	68		23		55	45	45	30		8		3.3					
		30				45	73	10	24	M6	60	50	48	35									

Order Example Part Number: STHRNG25

Days to Ship 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~22	23, 24	25~29
Discount Rates	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations Part Number: STHRNG25 - MB, STHCNG30 - MB (MB) 8 Days

Hexagon Socket Set Screw included MB

Refer to Alterations for details. P.202

Shaft Supports -Flanged Mount-

-Back Mounted Type · Split Type-

CAD Data

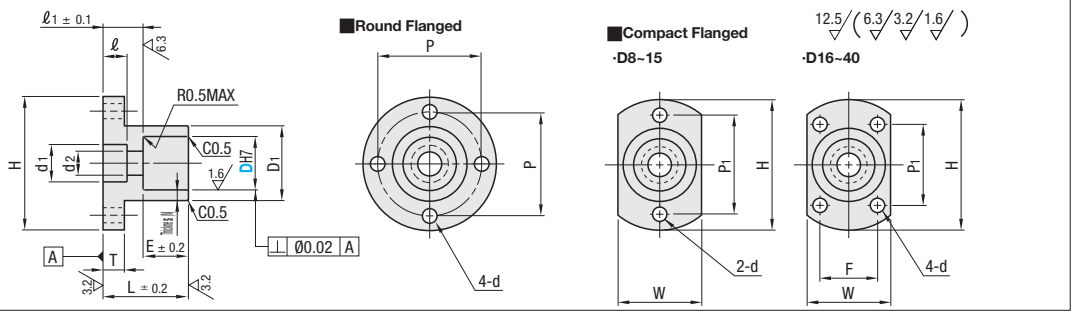
■Features: Shaft can be mounted using a tapped hole.

■Back Mounted Type

RoHS



Round Flanged	Compact Flanged	Material	Surface Treatment
STHXRB	STHXCB	1.1191/C45E	Black Oxide
STHXR	STHXC		Electroless Nickel Plating
SSTHXR	SSTHXC	1.4301/X5CrNi18-10	-



Part Number Type	DH7	Sleeve Thickness (N)	L	D1	H	T	ℓ	ℓ1	E	P	W	P1	F	d	d1	d2	Mounting Screws	€ Unit Price Round Flanged STHXRB	STHXR	SSTHXR	Compact Flanged STHXCB	STHXC	SSTHXC
Round Flanged Compact Flanged STHXRB STHXCB STHXR STHXC SSTHXR SSTHXC	8 +0.015 0	2	16	12	28	5	4.5	8	8	20	16	20	-	3.5	8	4.5	M4						
	10		20	14	30		5.5	10	10	22	18	22			9.5	5.5	M5						
	12 +0.018 0		24	16	36		6.5	11	13	26	20	26			11	6.6	M6						
	15	2.5	30	20	40	6	9	15	15	30	24	30		4.5	14	9	M8						
	16	3	32	22	42			16	16	32	26	28	16										
	20		38	28	50	8	11	18	20	39	32	31	22		18	11	M10						
	25 +0.021 0	4	46	33	55		13	21	25	44	37	36	24	5.5	20	13	M12						
	30		58	38	66			28	30	52	42	41	27	6.6									
	40 +0.025 0	7	70	54	88	10	17	30	40	72	62	62	38	9	26	17	M16						

Order Example Part Number STHXR10

Days to Ship **8 Days**

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Features: Removable split sleeve makes maintenance easy.

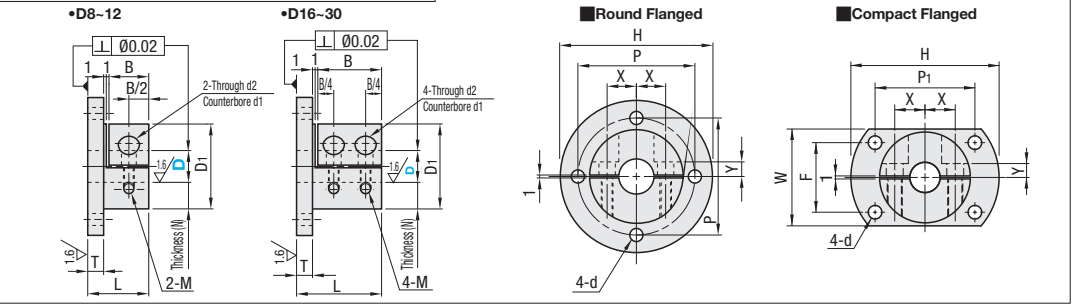
■Split Type

RoHS



Round Flanged	Compact Flanged	Material	Surface Treatment	Accessories
STHPRB	STHPCB	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
STHPR	STHPC		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
SSTHPR	SSTHPC	1.4301	-	

D dimension 16 ~ 30 come with 4 screws.



Part Number Type	D	Sleeve Thickness (N)	L	D1	H	T	B	P	W	P1	F	d	X	Y	d1	d2	M (Coarse Thread)	Included Screws MxLength	€ Unit Price Round Flanged STHPRB	STHPR	SSTHPR	Compact Flanged STHPCB	STHPC	SSTHPC
Round Flanged Compact Flanged STHPRB STHPCB STHPR STHPC SSTHPR SSTHPC	8 +0.015 0	8.5	19	25	39	5	12	32	27	25	20	3.5	7.5	3.5	7.5	4.6	M4	M4x10						
	10	10	21	30	49		14	40	32	33	23	4.5	10	3	9	5.6	M5	M5x10						
	12 +0.018 0		23	32	52	6	15	42	34	35	25		11	4				M5x12						
	16	9.5	32	35	56		24	46	37	37	27	5.5	12	5										
	20	10	34	40	64	8	24	52	42	43	30	6.6	14	6				M5x16						
	25 +0.021 0		40	45	69		30	57	47	46	34		17											
	30	12.5	42	55	79	10	30	67	57	50	45		20	10	12	6.6	M6	M6x20						

Order Example Part Number STHPR10

Days to Ship

■STHPRB · STHPC **6 Days** P.87

■Others **8 Days**

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Shaft Supports -Flanged Slit (Precision Cast)-

-Standard Type · Long Sleeve Type-

CAD Data

Features: Most economical and popular shaft support type. Machined products are recommended for precision requiring applications.

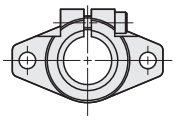
Standard Type

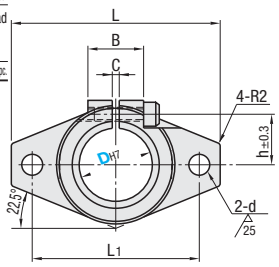


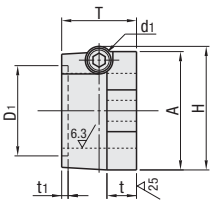
RoHS

Type	Material	Surface Treatment	Accessories
SHFT	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHFM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHFSS	1.4301	-	
SHF	EN AC-51300/ G-AlMg5	White Alumite	
SHFD		Black Alumite	Hexagon Socket Head Cap Screw 1 pc.

SHFT, SHFM and SHFSS may be replaced with 2 cutout type.







Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Part Number Type	D	L	T	t	H	A	L1	d	d1	D1	t1	B	C	h	Tightening Screw M	Mass g	€ Unit Price SHFT	SHFM	SHFSS	SHF	SHFD
SHFT SHFM (D8~16 20~50) SHFSS	3	43	10	5	24	20	32	5.5	9	10	1.5	18	2	9.5	M4	32 (11)					
	4															32 (11)					
	5															32 (11)					
	6															32 (11)					
	8															29 (10)					
	10									12						29 (10)					
	12	47	13	7	28	25	36			14				11		52 (18)					
	13									16						52 (18)					
SHF (D3~50)	15	50	16	8	31	28	40			20	2			12.5		64 (22)					
	16															64 (22)					
SHFD (D8~16 20~30)	18	60	20		37	34	48	7	10	24		22	2.5	15	M5	110 (38)					
	20															110 (38)					
	25	70	25	10	42	40	56			30				17		179 (62)					
	30	80	30	12	50	46	64	9	12	35				21	M6	278 (96)					
	35	92	35	14	58	50	72	12	15	40	3			25.5	M8	350 (121)					
	40	102	40	16	67	56	80	12	18	45				30	M10	500 (173)					
	50	122	50	19	83	70	96	14	20	55				38	M12	952 (329)					

Values in ( ) are the mass for aluminum products.

Features: MISUMI's original. Longer sleeve than standard type enhances strength against falling.

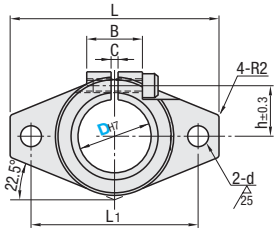
Long Sleeve



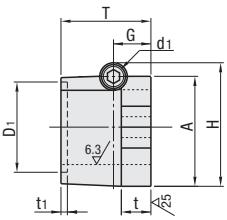
RoHS

Type	Material	Surface Treatment	Accessories
SHFTL	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHFML		Electroless Nickel Plating	Hex Socket Head Cap Screw 1 pc. (JIS SUS)
SHFSSL	1.4301/XSCrNi18-10	-	
SHFL	EN AC-51300/ G-AlMg5	White Alumite	
SHFDL		Black Alumite	Hexagon Socket Head Cap Screw 1 pc.

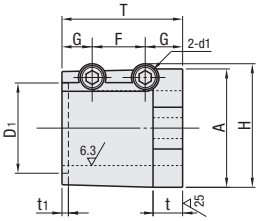
D dimensions 12 ~ 50 come with 2 screws.
Slit is machined after mounting hole D is bored to H7 tolerance. The tolerance may become H8 or so depending on the machining condition.



•D8 / 10



•D12~50



Part Number Type	D	L	T	t	H	A	L1	d	d1	D1	t1	B	C	h	G	F	Tightening Screw M	Mass g	€ Unit Price SHFTL	SHFML	SHFSSL	SHFL	SHFDL
SHFTL SHFML SHFSSL SHFL (D8~50)	*8	43	20	5	25.5	20	32	5.5	10	10	1.5	18	2	10.5	10	-	M5	51 (18)					
	*10									12								47 (17)					
	*12	47	28	7	28	25	36		9	14			2.5	11	7	14	M4	91 (32)					
	*13									16								87 (30)					
	15	50	32	8	31	28	40			20	2	22		12.5	8	16		114 (41)					
	*16																	112 (39)					
	*20	60	40		37	34	48	7	10	24				15	10	20	M5	191 (66)					
	*25	70	50	10	42	40	56			30				17	12.5	25		300 (104)					
SHFDL (D8~13 16~30)	*30	80	60	12	50	46	64	9	12	35				21	15	30	M6	450 (156)					
	35	92	70	14	58	50	72	12	15	40	3	22	2.5	25.5	17.5	35	M8	592 (205)					
	40	102	80	16	67	56	80		18	45				30	20	40	M10	831 (288)					
	50	122	90	19	83	70	96	14	20	55				38	22.5	45	M12	1446 (410)					

Values in ( ) are the mass for aluminum products. Only * marked D dimensions are applicable to SHFDL.

Order Example — Part Number: SHFTL16

Days to Ship — 6 Days P.87 — 2 Days

Price

Volume Discount (Round down to one Cent.) P.87

•SHF · SHFT

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

•SHFDL

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Shaft Supports -T-shaped Slit (Precision Cast)-

-Standard Type · Wide Type-

CAD Data

Features: Most economical and popular. Wide Type has longer shaft holding section than standard type and has enhanced gripping power.

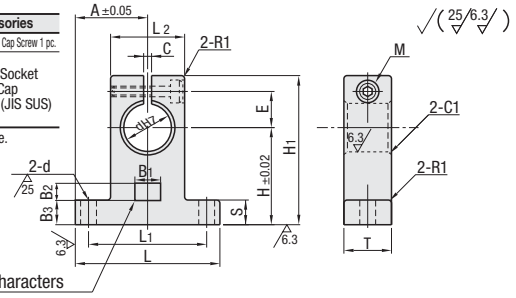
Standard Type



RoHS

Type	Material	Surface Treatment	Accessories
SHAT	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHAM		Electroless Nickel Plating	
SHASS	1.4301	-	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHA	EN AC-51300/ G-AlMg5	White Alumite	
SHAKD		Black Alumite	

Slit is machined after mounting hole D is bored to H7 tolerance. The tolerance may become H8 or so depending on the machining condition.



Part Number Type	No.	D	H	L	H1	T	L1	d	L2	A	S	E	C	B1	B2	B3	Tightening Screw M	Mass g	€ Unit Price SHAT	SHAM	SHASS	SHA	SHAKD
SHAT SHAM SHASS SHA SHAKD	3	3	20	42	32.8	14	32	5.5	18	21	6	7.8	2	14	8	2	M4	69 (24)					
	4	4																69 (24)					
	5	5																69 (24)					
	6	6																69 (24)					
	*815	8	15		28													58 (20)					
	*8		20		32.8													69 (24)					
	*10	10																69 (24)					
	*1220	12			35				20			9.5						69 (24)					
	*12		23		37.5													87 (30)					
	*1320	13	20		35													69 (24)					
	*13		23		37.5													87 (30)					
	15	15	27	48	44	16	38		25	24	8	12						116 (40)					
	*1625	16	25		42													121 (42)					
	*16		27		44													116 (40)					
	18	18	31	60	51	20	45	6.6	30	30	10	14	2.5		11	4	M5	202 (70)					
	*2025	20	25		45										8	2		191 (66)					
	*2030		30		50													214 (74)					
	*20		31		51										11	4		202 (70)					
	*2530	25	30	70	55	24	56		38	35	12	17			8	2	M6	381 (132)					
	*25		35		60										11	4		376 (130)					
	*3030	30	30	84	58	28	64	9	44	42		21			8	2		474 (164)					
	*30		42		70											4		520 (180)					
	35	35	50	98	82	32	74	11	50	49	15	24			11	8	M8	780 (270)					
	40	40	60	114	96	36	90		60	57		27						1213 (420)					
	50	50	70	126	120	40	100	14	74	63	18	38					M12	2167 (750)					

SHAT · SHAM and SHASS are only available in sizes denoted with * mark.

Values in ( ) are the mass for aluminum products. Only * marked sizes are applicable to SHAT · SHAM and SHASS.

Wide Type

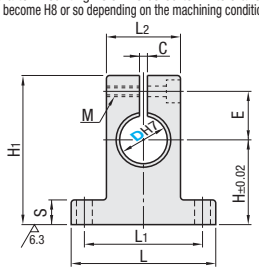


RoHS

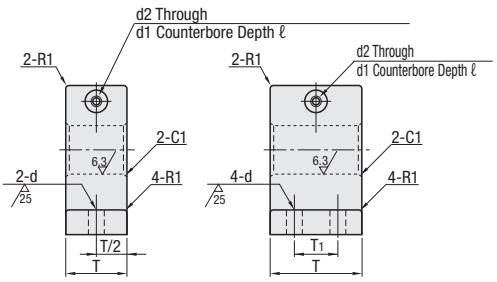
Type	Material	Surface Treatment	Accessories
SHATN	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHAMN		Electroless Nickel Plating	
SHASSN	1.4301	-	Hex Socket Head Cap Screw 1 pc. (JIS SUS)
SHAN	EN AC-51300	White Alumite	

Slit is machined after mounting hole D is bored to H7 tolerance. The tolerance may become H8 or so depending on the machining condition.

·D10 ~ 16



·D20 ~ 30



Part Number Type	D	H	L	H1	T	T1	L1	d	L2	S	E	C	Tightening Screw M	d1	d2	ℓ	Mass g	€ Unit Price SHATN	SHAMN	SHASSN	SHAN
SHATN SHAMN SHASSN SHAN	10	20	44	40	20	-	32	6.6	18	8	13	2	5	9	5.5	5.5	129 (44)				
	12																124 (43)				
	16	25	52	48	25		40		25		15		6	11	6.6	6.5	244 (84)				
	20	30	62	59	30	18	46		30	10	19		8	14	9	9	408 (140)				
	25		66	61	35	20	50		35		22						526 (181)				
	30		85	63	40		65		44	12	24	3					790 (272)				

Values in ( ) are the mass for aluminum products.

Order Example — Part Number: SHASSN30, SHAT1220, SHATN20, SHASSN16

Days to Ship: 6 Days (P.87) / 2 Days

Price

Volume Discount (Round down to one Cent.) P.87

•SHA

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

•SHASSN

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

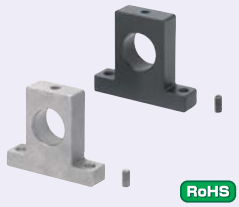
For orders larger than indicated quantity, please request a quotation.

Shaft Supports -T-shaped Precision Casting-

-Standard Type · Side Slit Type · Wide Side Slit Type-

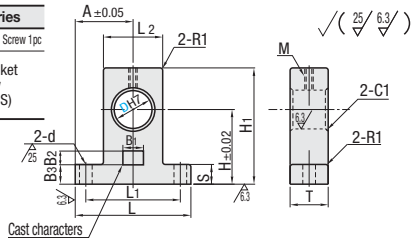
CAD Data

■Standard Type



RoHS

Type	M Material	S Surface Treatment	A Accessories
SHTBT	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHTBM		Electroless Nickel Plating	Hexagon Socket Set Screw 1pc. (JIS SUS)
SHTBS	1.4301	-	
SHTBA	EN AC-51300	White Alumite	



Part Number Type	No.	D	H	L	H1	T	L1	d	L2	A	S	B1	B2	B3	Set Screw M	Mass g	€ Unit Price SHTBT	SHTBM	SHTBS	SHTBA
SHTBT SHTBM SHTBS SHTBA	815	8	15	42	24	10	32	5.5	18	21	6	14	8	2	M4	29 (10)				
	1020	10	20		30											46 (16)				
	1220	12			32				20							49 (17)				
	1320	13														46 (16)				
	1625	16	25	48	40		38		25	24	8					72 (25)				
	2025	20		60	43	16	45	6.6	30	30	10				M6	153 (53)				
	2030		30		48											178 (62)				
	2530	25		70	50		56		35	35	12					201 (70)				
	3030	30		84	53	20	64	9	44	42						314 (109)				

(P)Values in ( ) are the mass for aluminum products.

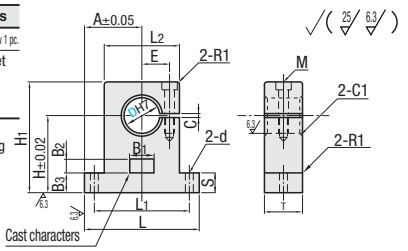
■Side Slit Type



RoHS

Type	M Material	S Surface Treatment	A Accessories
SHTCT	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHTCM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHTCS	1.4301	-	
SHTCA	EN AC-51300	White Alumite	

(P)Slit is machined after mounting hole D is bored to H7 tolerance. The tolerance may become H8 or so depending on the machining condition.



Part Number Type	No.	D	H	L	H1	T	L1	d	L2	A	S	E	C	B1	B2	B3	Tightening Screw M	Mass g	€ Unit Price SHTCT	SHTCM	SHTCS	SHTCA
SHTCT SHTCM SHTCS SHTCA	815	8	15	52	22	12	40	5.5	28	26	6	9	2	14	8	2	M4	61 (21)				
	1020	10	20	54	29		42		30	27		10						81 (28)				
	1220	12		56	31		44		32	28		11						90 (31)				
	1320	13																87 (30)				
	1625	16	25	58	37		46		34	29		12						107 (37)				
	2025	20		79	40	16	64	6.5	49	39.5	8	17					M6	220 (76)				
	2030		30		45													254 (88)				
	2530	25			48							18						248 (86)				
	3030	30		102	51	20	82	9	62	51	10	22	3				M8	477 (165)				

(P)Values in ( ) are the mass for aluminum products.

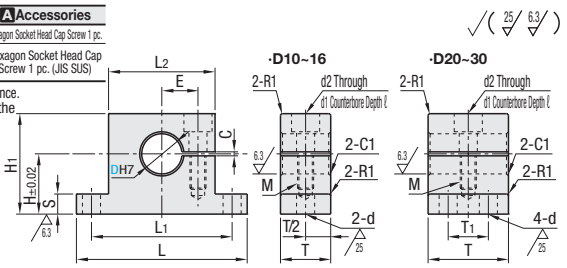
■Wide Side Slit Type



RoHS

Type	M Material	S Surface Treatment	A Accessories
SHTCTN	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHTCMN		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHTCAN	EN AC-51300	White Alumite	

(P)Slit is machined after mounting hole D is bored to H7 tolerance. The tolerance may become H8 or so depending on the machining condition.



Product Number TYPE	D	H	L	H1	T	T1	L1	d	L2	S	E	C	Tightening Screw M	d1	d2	ℓ	Weight g	€ Unit Price SHTCTN	SHTCMN	SHTCAN
SHTCTN SHTCMN SHTCAN	10	20	62	30	20	-	50	6.6	38	6	12	2	M6	11	6.6	6.5	181 (62)			
	12																176 (61)			
	16	25		38	25						12.5						264 (91)			
	20	30	85	48	30	15	70		58	8	20.5		M8	14	9	9	614 (211)			
	25																574 (197)			
	30		110	53	40	20	90		70	10	24	3					1038 (357)			

(P)Values in ( ) are the mass for aluminum products.

Order Example

Part Number
SHTBT3030
SHTCS2025
SHTCTN20

Price

■Volume Discount ((P)Round down to one Cent.) P.87

•SHTBT · SHTCT

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

(P)For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

(P)For orders larger than indicated quantity, please request a quotation.

Days to Ship

6 Days
2 Days

P.87

Shaft Supports -T-shaped Split (Precision Cast)-

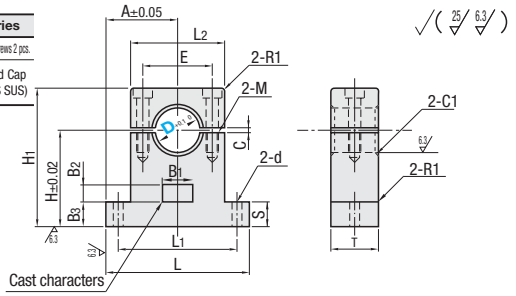
-Standard Type · Wide Type-

CAD Data

■Standard Type



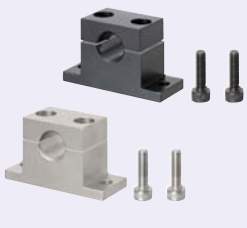
Type	Material	Surface Treatment	Accessories
SHTDT	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHTDM		Electroless Nickel Plating	Hex Socket Head Cap Screw 2pcs. (JIS SUS)
SHTDA	EN AC-51300	White Alumite	



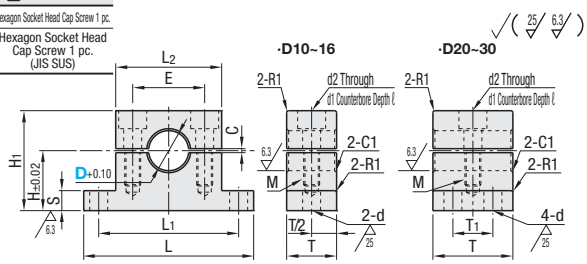
Part Number Type	No.	D	H	L	H1	T	L1	d	L2	A	S	E	C	B1	B2	B3	Tightening Screw M	Mass g	€ Unit Price SHTDT	SHTDM	SHTDA
SHTDT SHTDM SHTDA	815	8	15	52	22	12	40	5.5	28	26	6	18	2	14	8	2	M4	58 (20)			
	1020	10	20	54	29		42		30	27		20						78 (27)			
	1220	12		56	31		44		32	28		22						87 (30)			
	1320	13																84 (29)			
	1625	16	25	58	37		46		34	29		24						104 (36)			
	2025	20		79	40		64	6.5	49	39.5	8	34					M6	214 (74)			
	2030		30		45	16												249 (86)			
	2530	25			48							36						243 (84)			
	3030	30		102	51	20	82	9	62	51	10	44	3				M8	463 (160)			

Values in ( ) are the mass for aluminum products.

■Wide Split



Type	Material	Surface Treatment	Accessories
SHTDTN	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHTDMN		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHTDAN	EN AC-51300	White Alumite	



Product Number TYPE	D	H	L	H1	T	T1	L1	d	L2	S	E	C	Tightening Screw M	d1	d2	ℓ	Mass g	€ Unit Price SHTDTN	SHTDMN	SHTDAN
SHTDTN SHTDMN SHTDAN	10	20	62	30	20	-	50	6.6	38	6	24	2	M6	11	6.6	6.5	177 (61)			
	12																172 (59)			
	16	25		38	25						25						260 (89)			
	20	30	85	48	30	15	70		58	8	41		M8	14	9	9	605 (208)			
	25																566 (195)			
	30		110	53	40	20	90		70	10	48	3					1019 (351)			

Values in ( ) are the mass for aluminum products.

Order Example

Part Number
SHTDT1320
SHTDA2030
SHTDMN25

Days to Ship

6 Days P.87

2 Days

Price

■Volume Discount (Round down to one Cent.) P.87

•SHTDT

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~24	25~29	30~49
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Shaft Supports -T-shaped Set Screw Type (Machined)-

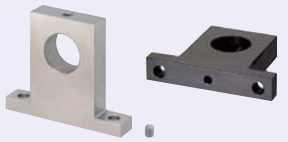
-Standard Type · Wide Type-

CAD Data

■Features: Added Dowel Hole Type to simplify locating in assembling.

■Standard Type

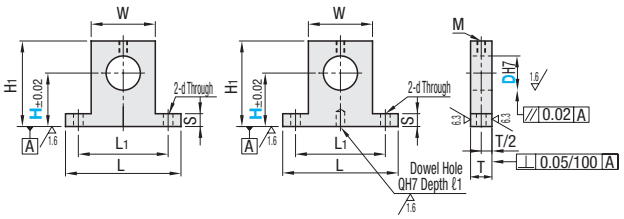
RoHS



Example of Assembly P.200

25/ (6.3/ 1.6/)

•Without Dowel Hole •With Dowel Hole



Without Dowel Hole		With Dowel Hole	M Material	S Surface Treatment	A Accessories
Height H Selectable Type	Height H Configurable Type	Height H Selectable Type			
SHTB	SHTBH	SHTBK	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHTM	SHTMH	SHTMK		Electroless Nickel Plating	Hexagon Socket Set Screw 1pc. (JIS SUS)
SHTS	SHTSH	SHTSK	1.4301	-	
SHTA	SHTAH	-	EN AW-6063	White Alumite	

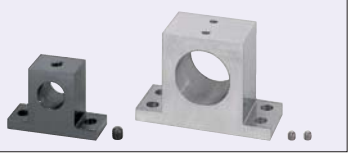
Part Number Type	D	H Height Selectable Type	H Height Configurable Type 0.1mm Increment	L	H1	T	S	W	Set Screw M	L1	d	Q	ℓ1	€ Unit Price Qty. 1 ~ 4 Without Dowel Hole Height Selectable Type SHTB	SHTM	Height Configurable Type SHTS	SHTA	SHTBH	SHTMH	SHTSH	SHTAH	With Dowel Hole Height Selectable Type SHTBK	SHTMK	SHTSK
Without Dowel Hole Height H Selectable Type SHTB SHTM SHTS SHTA	3	10 15 20	10.0~20.0	26	H+5	8	4	10	M3	18	3.5	-	-											
	4				H+6																			
	5	15 20 25	15.0~25.0		H+7																			
	6				H+8																			
Height H Configurable Type SHTBH SHTMH SHTSH SHTAH	8	(10)15 20 25 30 40	10.0~40.0	42	H+9	10	6	18	M4	30	4.5	4	5											
	10	(10)15 20 25 30 40	15.0~40.0		H+10																			
	12				H+11																			
	13	20 25 30 40			H+12																			
	15	(15) / 20 25 30 40	15.0~40.0	54	H+15			30		42														
	16																							
With Dowel Hole SHTBK SHTMK SHTSK (8≤D≤50)	18	25 30 40 50 60	25.0~60.0	67	H+18	16	8	35	M6	50	6.6	5	7											
	20	(15) / 20 25 30 40 50 60	20.0~60.0		H+20																			
	25	(20) / 25 30 40 50 60	25.0~60.0	85	H+23	20	10	45		65	9													
	30				H+25																			
	35	(25) / 30 / 50 / 60	30.0~60.0																					
	40	(25) / 30 / 40 / 60 / 80	30.0~80.0	100	H+30			60		80														
	50	30 40 60 80	40.0~80.0	125	H+38		15	75		100	14													

H dimensions in ( ) are not applicable to Dowel Hole Type. Dowel Hole Types are only applicable to D dimensions 8 ~ 50.

■Features: T dimension is thicker in comparison to conventional type (Inner Diameter Dx1-1.5). Newly added Aluminum material (excluding Wide Standard) in order for component weight reduction.

■Wide Type

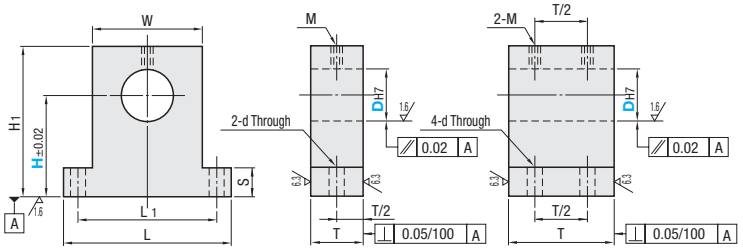
RoHS



Type	M Material	S Surface Treatment	A Accessories
SHTBN	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHTMN		Electroless Nickel Plating	Hexagon Socket Set Screw 1pc. (JIS SUS)
SHTSN	1.4301	-	

D dimensions 30 ~ 50 come with 2 screws.

25/ (6.3/ 1.6/)



Part Number Type	D	H Selectable	L	H1	T	S	W	Set Screw M	L1	d	€ Unit Price SHTBN	SHTMN	SHTSN
SHTBN SHTMN SHTSN	8	10 15 20 25 30 40	42	H+9	15	6	18	M6	30	6.6			
	10	10 15 20 25 30 40 50 60		H+10									
	12	10 15 20 25 30 40 50 60		H+11	18								
	13	15 20 25 30 40 50 60		H+12									
	15	15 20 25 30 40 50 60	54	H+15	20		30		42				
	16	15 20 25 30 40 50 60		H+15									
	20	20 25 30 40 50 60 80	67	H+18	25	8	35	M8	50	9			
	25	20 25 30 40 50 60 80		H+20	30								
	30	25 30 40 50 60 80	85	H+23	35	10	45		65	6.6			
	35	25 30 40 50 60 80		H+25									
	40	30 40 50 60 80	100	H+30	40		60		80	9			
	50	40 50 60 80	125	H+38	50	15	75		100	11			

Order Example

Part Number	-	H
SHTB8	-	25
SHTMH15	-	25.6
SHTBN35	-	50

Price

■Volume Discount (Round down to one Cent.) P.87

SHTB / SHTM / SHTS / SHTA

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

Please request a quotation for 20 or more pieces of With Dowel Hole, Precision, Side Set Screw Type.

Others

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

Please request a quotation for 20 or more pieces of With Dowel Hole, Precision, Side Set Screw Type.

Days to Ship

■Standard, Height Selectable Type
6 Days P.87

■Standard, Height Configurable Type
■StandardWith Dowel Hole · Wide Type
8 Days

Shaft Supports -T-shaped Slit Type (Machined)-

-Standard Type · Wide Type-

CAD Data

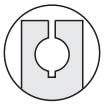
Features: Added Dowel Hole Type to simplify locating in assembling. High repositioning repeatability in reassembly for maintenance.

Standard Type

RoHS



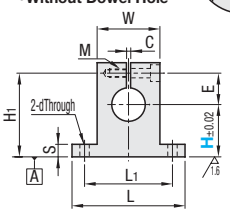
Example of Assembly P.200



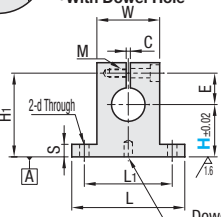
* D3 · D4 have 4mm deeper slits.

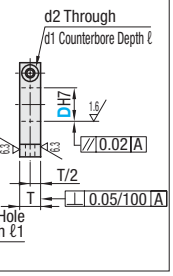
25 (6.3) 1.6

•Without Dowel Hole



•With Dowel Hole





Without Dowel Hole		With Dowel Hole	M Material	S Surface Treatment	A Accessories
Height H Selectable Type	Height H Configurable Type	Height H Selectable Type			
SHSTB	SHSTBH	SHSTBK	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHSTM	SHSTMH	SHSTMK		Electroless Nickel Plating	Hex Socket Head Cap Screw 1 pc. (JIS SUS)
SHSTS	SHSTSH	SHSTSK	1.4301	-	
SHSTA	SHSTAH	-	EN AW-6063/ AlMg0,7Si	White Alumite	
SHSTD	SHSTDH	-		Black Alumite	Hexagon Socket Head Cap Screw 1 pc.

Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Part Number		H		L	H1	T	S	W	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	Q	ℓ1	€ Unit Price Qty. 1 ~ 4									
																				Without Dowel Hole								With Dowel Hole	
																				Height Selectable Type					Height Configurable Type					Height Selectable Type	
Type	D	Height Selectable Type	Height Configurable Type 0.1mm Increment																	SHSTB	SHSTM	SHSTS	SHSTA	SHSTD	SHSTBH	SHSTMH	SHSTSH	SHSTAH	SHSTDH	SHSTBK	SHSTMK	SHSTSK
Without Dowel Hole Height H Selectable Type SHSTB SHSTM SHSTS SHSTA SHSTD	3	10 15 20	10.0~20.0	26	H+11	8	4	10	18	3.5	7	M3 Through	3.5	6.5	3.5	1.5	-	-												
	4																														
	5	10 15 20 25	10.0~25.0		H+12						8																				
	6																														
	8	(10) / 15 / 20 / 25 / 30 / 40	10.0~40.0	42	H+16	10	6	18	30	4.5	11	M4 (Through)	4.5	8	4.5	2	4	5												
	10	(10) / 15 / 20 / 25 / 30	10.0~30.0		H+18						13																				
Height H Configurable Type SHSTBH SHSTMH SHSTSH SHSTAH SHSTDH	12																														
	13	(15) / 20 / 25 / 30	15.0~30.0																												
	15			54	H+20			30	42		15	M4 Depth 8																				
	16	15 / 20 / 25 / 30 / 40	15.0~40.0																												
	18	20 25 30 40 50 60	20.0~60.0	67	H+26	16	8	35	50	6.6	18	M6 (Through)	6.6	11	6.5		5	7												
	20																														
With Dowel Hole SHSTBK SHSTMK SHSTSK (8≤D≤50)	25	20 / 25 / 30 / 40 / 50 / 60	20.0~60.0		H+28						21																				
	30	25 30 40 50 60	25.0~60.0	85	H+33	20	10	45	65	9	24	M8 Depth 16	9	14	9	3														
	35	(25) / 30 / 40 / 50 / 60	25.0~60.0		H+36						27																				
	40	30 40 50 60 80	30.0~80.0	100	H+38			60	80		29																				
	50	40 50 60 80	40.0~80.0	125	H+51	25	15	75	100	14	38	M12 Depth 24	14	20	13																

H dimensions in ( ) are not applicable to Dowel Hole Type. Dowel Hole Types are only applicable to D dimensions 8 ~ 50.

Wide Type

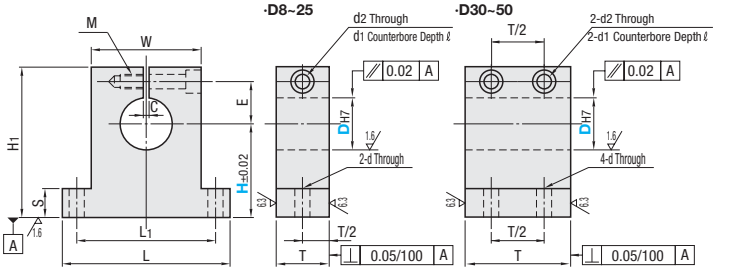
RoHS



Type	M Material	S Surface Treatment	A Accessories
SHSTBN	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHSTMN		Electroless Nickel Plating	Hex Socket Head Cap Screw 1 pc. (JIS SUS)
SHSTSN	1.4301	-	
SHSTAN	EN AW-5052	White Alumite	

D dimensions 30 ~ 50 come with 2 screws.

25 (6.3) 1.6



Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Part Number		H		L	H1	T	S	W	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price			
Type	D	Selectable																SHSTBN	SHSTMN	SHSTSN	SHSTAN
SHSTBN SHSTMN SHSTSN SHSTAN	8	10 15 20 25 30 40		48	H+18	15	6	24	36	6.6	11	M6 (Through)	6.6	11	6.5	2				
	10	10 15 20 25 30 40 50 60			H+19						12										
	12	10 15 20 25 30 40 50 60			H+21	18					14										
	13	15 20 25 30 40 50 60																			
	15	15 20 25 30 40 50 60		54	H+23	20		30	42		16										
	16	15 20 25 30 40 50 60																			
	20	20 25 30 40 50 60 80		67	H+29	25	8	35	50	9	19	M8 (Through)	9	14	9						
	25	20 25 30 40 50 60 80			H+31	30					22										
	30	25 30 40 50 60 80		85	H+33	35	10	45	65	6.6	24					3					
	35	25 30 40 50 60 80			H+36						27										
	40	30 40 50 60 80		100	H+38	40		60	80	9	29	M8 Depth 16									
	50	40 50 60 80		125	H+51	50	15	75	100	11	38	M12 Depth 24	14	20	13						

Order Example

Part Number	-	H
SHSTM8	-	25
SHSTMH8	-	25.6
SHSTMN20	-	30

Days to Ship

■Standard, Height Selectable Type

8 Days (Express A: 2,00 EUR/ piece) P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

■Standard, Height Configurable Type

■Standard with Dowel Hole · Wide Type

8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

Please request a quotation for 20 or more pieces of Precision Type.

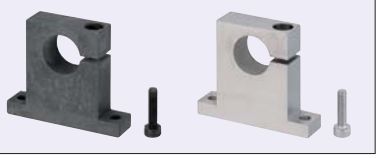
Shaft Supports -T-shaped Side Slit (Machined)-

-Standard Type · Wide Type-

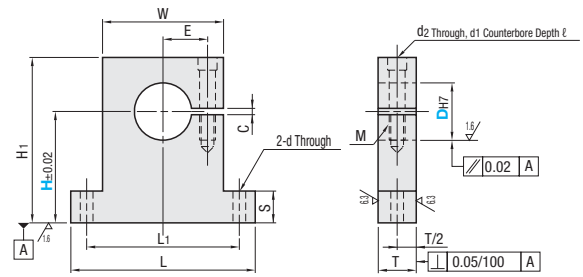
CAD Data

■Standard Type

RoHS



Height H Selectable Type	Height H Configurable Type	M Material	S Surface Treatment	A Accessories
SHWTB	SHWTBH	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHWTM	SHWTMH		Electroless Nickel Plating	Hex Socket Head Cap Screw 1 pc. (JIS SUS)
SHWTS	SHWTSH	1.4301	-	
SHWTA	SHWTAH	EN AW-6063	White Alumite	



Slit is machined after mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Part Number Type	D	H Height Selectable Type	H Height Configurable Type 0.1mm Increment	L	H1	T	S	W	L1	d	E	Tightening Screws M	d2	d1	ℓ	C	€ Unit Price Height Selectable Type SHWTB	SHWTM	SHWTS	SHWTA	Height Configurable Type SHWTBH	SHWTMH	SHWTSH	SHWTAH
Height H Selectable Type SHWTB SHWTM SHWTS SHWTA	8	*10 *15 20 25 30 40	10.0~40.0	44	H+7	12	6	28	36	4.5	9	M4 Depth 8	4.5	8	4.5	2								
	10	*10 *15 20 25 30	10.0~30.0	50	H+9			32	41		11													
	12				H+10																			
	13	*15 20 25 30	15.0~30.0		H+11																			
	16	*15 20 25 30 40	15.0~40.0		H+12																			
Height H Configurable Type SHWTBH SHWTMH SHWTSH SHWTAH	20	*20 25 30 40 50 60	20.0~60.0	75	H+15	16	8	49	62	6.5	17	M6 Depth 12	6.6	11	6.5									
	25	*20 25 30 40 50 60			H+18						18													
	30	*25 30 40 50 60	25.0~60.0	94	H+21	20	10	62	78	9	22	M8 Depth 16	9	14	9	3								
	35			98	H+24			66	82		24													
	40	30 40 50 60 80	30.0~80.0	103	H+27			71	87		27													

Regarding H dimensions denoted with * mark, pilot hole for tapped hole M will be through.

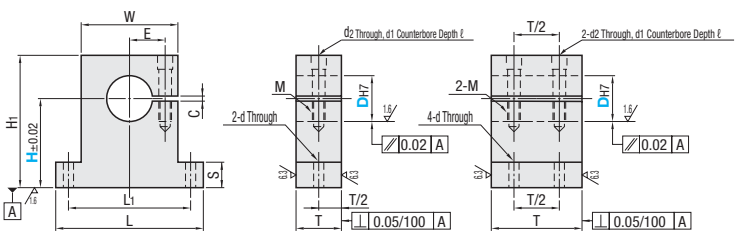
■Wide Type

RoHS



Type	M Material	S Surface Treatment	A Accessories
SHWTBN	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHWTMN		Electroless Nickel Plating	Hex Socket Head Cap Screw 1 pc. (JIS SUS)
SHWTSN	1.4301	-	
SHWTAN	EN AW-5052	White Alumite	

D dimensions 30 ~ 40 come with 2 screws.



Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Part Number Type	D	H Selectable	L	H1	T	S	W	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price SHWTBN	SHWTMN	SHWTSN	SHWTAN
SHWTBN SHWTMN SHWTSN SHWTAN	8	*10 *15 *20 25 30 40	62	H+10	15	6	38	50	6.6	11	M6 Depth 12	6.6	11	6.5	2				
	10	*10 *15 *20 25 30 40 50 60		H+11						12									
	12	*10 *15 *20 25 30 40 50 60		H+12	18														
	13	*15 *20 25 30 40 50 60																	
	15	*15 *20 25 30 40 50 60		H+14	20														
	16	*15 *20 25 30 40 50 60																	
	20	*20 *25 30 40 50 60 80	85	H+18	25	8	53	70	9	18	M8 Depth 16	9	14	9	3				
	25	*20 *25 30 40 50 60 80			30														
	30	*25 30 40 50 60 80	102	H+21	35	10	62	82	6.6	22									
	35	*25 30 40 50 60 80	106	H+24			66	86		24									
	40	40 50 60 80	111	H+27	40		71	91	9	27									

Regarding H dimensions denoted with * mark, pilot hole for tapped hole M will be through.

Order Example

Part Number	-	H
SHWTM8	-	25
SHWTMH8	-	25.6
SHWTSN30	-	40

Days to Ship

■Standard, Height Selectable Type

8 Days — Express A — 2,00 EUR/ piece — P.88

■Standard, Height Configurable Type
■WideType

8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

Shaft Supports -T-shaped Split (Machined)-

-Standard Type · Wide Type-

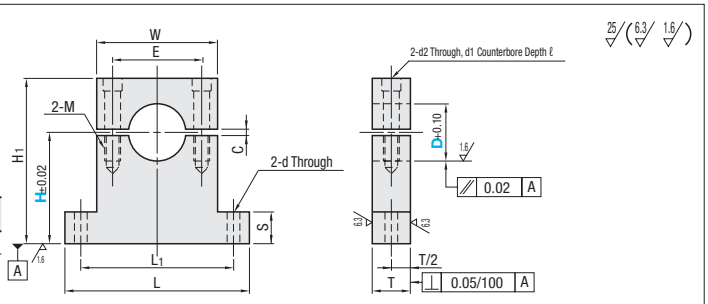
CAD Data

■Standard Type

RoHS



Height H Selectable Type	Height H Configurable Type	M Material	S Surface Treatment	A Accessories
SHPTB	SHPTBH	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHPTM	SHPTMH		Electroless Nickel Plating	Hexagon Socket Head Cap Screws 2 pcs. (JIS SUS)
SHPTS	SHPTSH	1.4301	-	
SHPTA	SHPTAH	EN AW-6063	White Alumite	



Part Number Type	D	H Height Selectable Type	H Height Configurable Type 0.1mm Increment	L	H1	T	S	W	L1	d	E	Tightening Screw M	d2	d1	ℓ	C
Height H Selectable Type SHPTB SHPTM SHPTS SHPTA	3	*10 15 20	10.0~20.0	38	H+6	8	4	22	30	3.5	13	M3 Depth 6	3.5	6.5	3.5	1.5
	4															
	5	*10 15 20 25	10.0~25.0		H+7											
	6															
	8	*10 *15 20 25 30 40	10.0~40.0	50	H+10	10	6	30	40	4.5	20	M4 Depth 8	4.5	8	4.5	2
	10	*10 *15 20 25 30	10.0~30.0	60				38	50		26					
	12															
Height H Configurable Type SHPTBH SHPTMH SHPTSH SHPTAH	13	*15 20 25 30	15.0~40.0													
	16	*15 20 25 30 40			H+12											
	20	*20 25 30 40 50 60	20.0~60.0	82	H+17 H+20	16	8	50	66	6.6	36	M6 Depth 12	6.6	11	6.5	
	25															
	30	*25 30 40 50 60	25.0~60.0	110	H+30	20	10	70	90	9	48	M8 Depth 16	9	14	9	3
	35															
	40	30 40 50 60 80	30.0~80.0	116				76	96		56					
	50	40 50 60 80	40.0~80.0	154	H+40	25	15	102	128	14	76	M12 Depth 24	14	20	13	

Part Number Type	D	€ Unit Price Height Selectable Type SHPTB	SHPTM	SHPTS	SHPTA	Height Configurable Type SHPTBH	SHPTMH	SHPTSH	SHPTAH
Height H Selectable Type SHPTB SHPTM SHPTS SHPTA	3								
	4								
	5								
	6								
	8								
	10								
	12								
Height H Configurable Type SHPTBH SHPTMH SHPTSH SHPTAH	13								
	16								
	20								
	25								
	30								
	35								
	40								
	50								

Regarding H dimensions denoted with * mark, pilot hole for tapped hole M will be through.

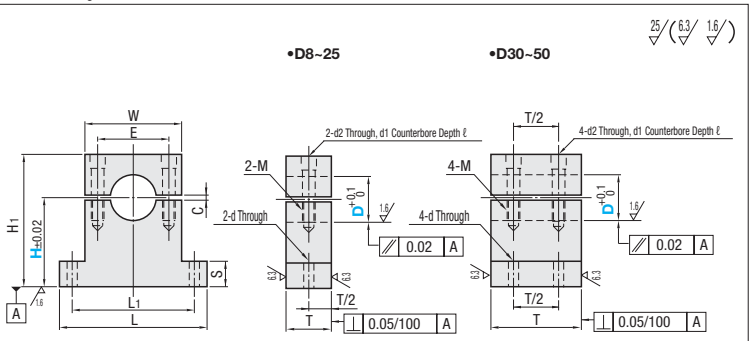
■Wide Type

RoHS



Type	M Material	S Surface Treatment	A Accessories
SHPTBN	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHPTMN		Electroless Nickel Plating	Hex Socket Head Cap Screw 2pcs. (JIS SUS)
SHPTSN	1.4301	-	
SHPTAN	EN AW-5052	White Alumite	

D dimensions 30 ~ 50 come with 4 screws.



Part Number Type	D	H Selectable	L	H1	T	S	W	L1	d	E	Tightening Screw M	d2	d1	ℓ	C
SHPTBN SHPTMN SHPTSN SHPTAN	8	*10 *15 *20 25 30 40	62	H+10	15	6	38	50	6.6	23	M6 Depth 12	6.6	11	6.5	2
	10	*10 *15 *20 25 30 40 50 60		H+11											
	12	*10 *15 *20 25 30 40 50 60		H+12	18					24					
	13	*15 *20 25 30 40 50 60													
	15	*15 *20 25 30 40 50 60		H+14	20										
	16	*15 *20 25 30 40 50 60													
	20	*20 25 30 40 50 60 80	85	H+18	25	8	53	70	9	36	M8 Depth 16	9	14	9	3
	25	*20 *25 30 40 50 60 80			30										
	30	*25 30 40 50 60 80	110	H+30	35	10	70	90	6.6	48					
	35	*25 30 40 50 60 80													
	40	30 40 50 60 80	116		40		76	96	9	56					
	50	40 50 60 80	154	H+40	50	15	102	128	11	76	M12 Depth 24	14	20	13	

Part Number Type	D	€ Unit Price SHPTBN	SHPTMN	SHPTSN	SHPTAN
SHPTBN SHPTMN SHPTSN SHPTAN	8				
	10				
	12				
	13				
	15				
	16				
	20				
	25				
	30				
	35				
	40				
	50				

Regarding H dimensions denoted with * mark, pilot hole for tapped hole M will be through.

Order Example

Part Number	-	H
SHPTM8	-	25
SHPTMH8	-	25.6
SHPTMN25	-	40

Days to Ship

■Standard, Height Selectable Type

8 Days — Express A — 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

■Standard, Height Configurable Type
■WideType

8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

Shaft Supports -Compact Type (Machined)-

-Set Screw Type · Wide Set Screw Type · Side Slit Type · Split Type · Wide Split Type-

Features: Space-saving compact type. L dimensions are more compact than the conventional T-shaped Type (Refer to the comparison table on next page).

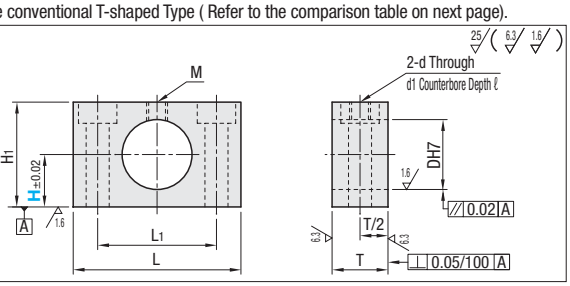
Set Screw Type



RoHS

Type	Material	Surface Treatment	Accessories
SHMTB	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc.
SHMTM		Electroless Nickel Plating	Hexagon Socket Set Screw 1pc. (JIS SUS)
SHMTS	1.4301	-	

Refer to the comparison table on next page.



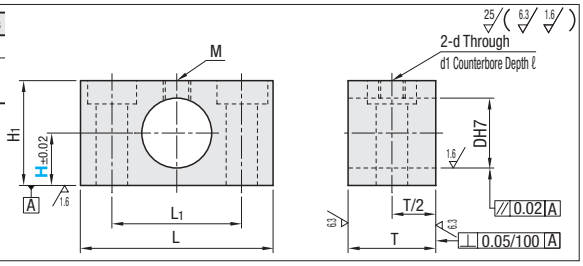
Part Number Type	D	H Selectable	L	H1	T	L1	d	d1	ℓ	Set Screw M	€ Unit Price SHMTB	SHMTM	SHMTS
SHMTB SHMTM SHMTS	6	5 10 15	24	H+8	10	14	4.5	8	4.5	M4			
	8	10 15 20	26	H+9	12	16							
	10	10 15 20	32	H+10		20							
	12	10 15 20		H+11									
	15	15 20 25	34	H+15		23							
	16	15 20 25											
	20	15 20 25	50	H+18	16	34	6.6	11	6.5	M6			
	25	20 25 30		H+20		36							
	30	20 25 30	70	H+23	22	48	9	14	9				
	35	25 30 35		H+25									
	40	25 30 35	76	H+30		58							

Wide Set Screw Type



RoHS

Type	Material	Surface Treatment	Accessories
SHMTBN	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc.
SHMTMN		Electroless Nickel Plating	Hexagon Socket Set Screw 1pc. (JIS SUS)
SHMTSN	1.4301	-	



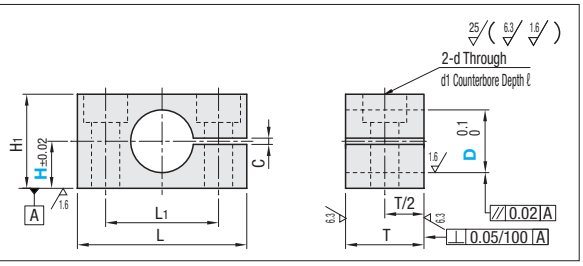
Part Number Type	D	H Selectable	L	H1	T	L1	d	d1	ℓ	Set Screw M	€ Unit Price SHMTBN	SHMTMN	SHMTSN
SHMTBN SHMTMN SHMTSN	8	10 15 20	34	H+9	15	20	6.6	11	6.5	M6			
	10	10 15 20 25	36	H+10		22							
	12	10 15 20 25	38	H+11	18	24							
	15	15 20 25	42	H+15	20	28							
	16	15 20 25											
	20	15 20 25 30	54	H+18	25	36	9	14	9	M8			
	25	20 25 30	60	H+20	30	42							
	30	20 25 30 35	74	H+23	35	52	11	17.5	11	M10			
	35	25 30 35	78	H+26		56							
	40	25 30 35	80	H+30	40	58							

Side Slit Type



RoHS

Type	Material	Surface Treatment
SHMWB	1.1191/C45E	Black Oxide
SHMWM		Electroless Nickel Plating
SHMWS	1.4301/X5CrNi18-10	-



Part Number Type	D	H Selectable	L	H1	T	L1	d	d1	ℓ	C	€ Unit Price SHMWB	SHMWM	SHMWS
SHMWB SHMWM SHMWS	6	5 10 15	24	H+7	10	15	4.5	8	4.5	2			
	8	10 15 20	26		12	17							
	10	10 15 20	32	H+9		22							
	12	10 15 20		H+10									
	15	15 20 25	34	H+11.5		24							
	16	15 20 25											
	20	15 20 25	50	H+17	16	34	6.6	11	6.5	3			
	25	20 25 30		H+19.5		36							
	30	20 25 30	70	H+23	22	48	9	14	9				
	35	25 30 35		H+25									
	40	25 30 35	76	H+30		58							

CAD Data

Features: Space-saving compact type. H1 and L dimensions are more compact than the conventional Split Type (Refer to the comparison table below).

Split Type



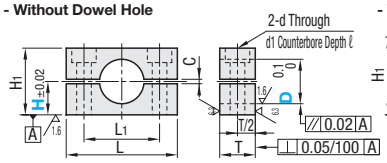
RoHS

Type		Material	Surface Treatment
Without Dowel Hole	With Dowel Hole		
SHMPB	SHMPBK	1.1191/C45E	Black Oxide
SHMPM	SHMPMK		Electroless Nickel Plating
SHMPS	SHMPSK	1.4301/X5CrNi18-10	-

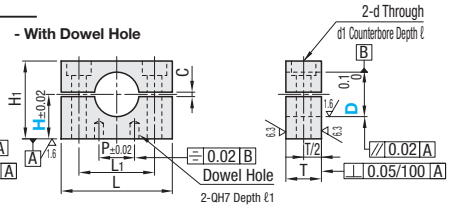
Features

- Dowel Hole Type is easy to locate and assemble.

- Without Dowel Hole



- With Dowel Hole



Refer to the comparison table below.

Part Number Type	D	H Selectable	L	H1	T	L1	d	d1	ℓ	Q	P	ℓ1	C	€ Unit Price SHMPB	SHMPM	SHMPS	SHMPBK	SHMPMK	SHMPSK
	6	10 15 20 25	24	H+7	10	14	4.5	8	4.5	-	5	-	2						
(Without Dowel Hole)	8	(10) 15 20 25	26	H+10	12	16				3		5							
SHMPB	10	(10) 15 20 25	32			20					8								
SHMPM	12	(10) 15 20 25																	
SHMPS	15	-15 20 25	34	H+12		23					9								
	16	-15 20 25																	
(With Dowel Hole)	20	-15 20 25 30	50	H+15	16	34	6.6	11	6.5	4	16	7							
SHMPBK	25	-20 25 30		H+20		36					20								
SHMPMK	30	-20 25 30 35	70		22	48	9	14	9	5	28	8	3						
SHMPSK	35	-25 30 35		H+25															
	40	-25 30 35	76			56					34								

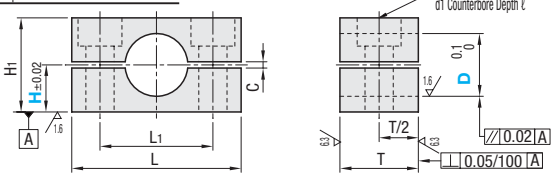
H Dimensions in ( ) are not applicable to Dowel Hole Type. ⊗D6 is not available with dowel holes.

Wide Split



RoHS

Type	Material	Surface Treatment
SHMPBN	1.1191/C45E	Black Oxide
SHMPMN		Electroless Nickel Plating
SHMPSN	1.4301/X5CrNi18-10	-



Part Number Type	D	H Selectable	L	H1	T	L1	d	d1	ℓ	C	€ Unit Price SHMPBN	SHMPMN	SHMPSN
	8	10 15 20 25	34	H+10	15	20	6.6	11	6.5	2			
	10	10 15 20 25	36			22							
	12	10 15 20 25	38		18	24							
SHMPBN	15	15 20 25	42	H+12	20	28							
SHMPMN	16	15 20 25											
SHMPSN	20	15 20 25 30	54	H+15	25	36	9	14	9				
	25	20 25 30	60	H+20	30	42							
	30	20 25 30 35	74		35	52	11	17.5	11	3			
	35	25 30 35	78	H+25		56							
	40	25 30 35	80		40	58							

Order Example

Part Number	-	H
SHMPB8	-	10
SHMPSN40	-	30

Days to Ship 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%

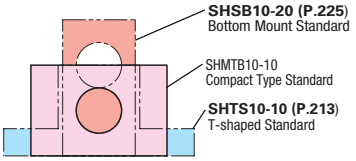
Please request a quotation for 30 or more pieces of Split With Dowel Hole Type.

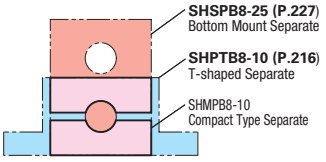
Example

Compactness Comparison Table

D	L Dimension: Compact Type Standard	T-shaped Standard P.213	Difference
6	24	26	-2
8	26	42	-16
10	32	42	-10
12	32	42	-10
15	34	54	-20
16	34	54	-20
20	50	67	-17
25	50	67	-17
30	70	85	-15
35	70	85	-15
40	76	100	-24

Compactness Comparison (Actual Dimension x 1/2)





Compared to conventional products, external shape is compact. (For Space Saving)

Shaft Supports -T-shaped (Machined)-

-With Clamp Lever Type · Hinged Type-

CAD Data

■With Clamp Lever



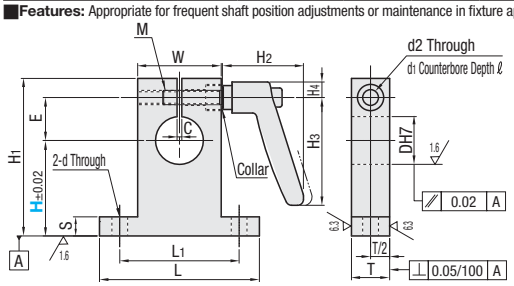
RoHS

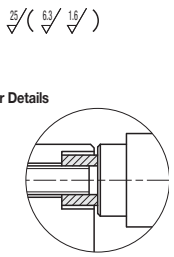
Type	Shaft Supports		Clamp Lever		Lever Thread		Collar Section	
	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
SHSTBCL	1.1191/C45E	Black Oxide	Zinc Diecast	Baked Coating	1.0718/ 9SMnPb28	Black Chromate	1.0715/ 9SMn28	Black Oxide
SHSTMCL	1.1191/C45E	Electroless Nickel Plating						Electroless Nickel Plating
SHSTSCL	1.4301	-			1.4305	-	-	-

Slit is machined after mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Clamp Lever Details P.2-999

■**Features:** Appropriate for frequent shaft position adjustments or maintenance in fixture applications.





Part Number Type	D	H Selectable	Lever Color	L	H1	T	S	W	L1	d	E	M (Coarse Thread)	d2	d1	ℓ	C	H2	H3	H4	Lever	€ Unit Price SHSTBCL	SHSTMCL	SHSTSCL
SHSTBCL SHSTMCL SHSTSCL	8	40	M (Orange) B (Black) S (Silver Gray)	42	H+16	10	6	18	30	4.5	11	M4	4.5	8	4.5	2	35	45	6.5	CLDM4-16-M/B/S (CLMS4-16-M/B/S)			
	10	40			H+18						13												
	12	40									15									CLDM4-25-M/B/S (CLMS4-25-M/B/S)			
	16	40		54	H+20			30	42														
	20	30 40 50 60		67	H+26	16	8	35	50	6.6	18	M6	6.6	11	6.5					CLDM6-25-M/B/S (CLMS6-25-M/B/S)			
	25	30 40 50 60			H+28						21												
	30	40 50 60		85	H+33	20	10	45	65	9	24	M8	9	14	9	3	45.5	63	8.75	CLDM8-32-M/B/S (CLMS8-32-M/B/S)			

Levers in ( ) are used for SHSTSCL.

Order Example: Part Number SHSTBCL20 - H 30 - Lever Color M

Days to Ship: 8 Days

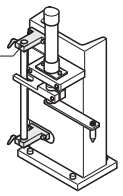
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

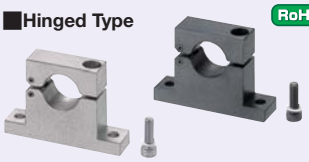
Example SHSTSCL



■**Features:** Shaft can be easily mounted or dismounted. Hinged Type comes with one tightening screw.

■Hinged Type

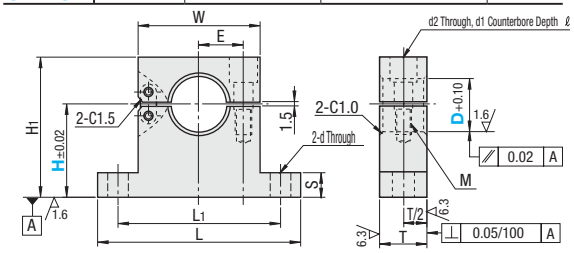
RoHS



Hinge: Spring Pin

M **Material** Spring Stainless Steel JIS SSPSR(P.2-251)

Type T-shaped	M Material	S Surface Treatment	A Accessories	
SHHTB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.	Nylon Washer 1 pc.
SHHTM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)	
SHHTS	1.4301/X5CrNi18-10	-		



Part Number Type	D	H Selectable	L	H1	T	S	W	L1	d	E	Tightening Screw M	d2	d1	ℓ	€ Unit Price SHHTB	SHHTM	SHHTS
SHHTB SHHTM SHHTS	10	20	50	H+9	10	6	30	40	4.5	10	M4	5	8	4			
	12	20 30		H+10										5			
	16	25 30	60	H+12	12		40	50		14	M5	7	9.5	6			
	20	25 30	65	H+15	16	8		52	5.5	14.5				8			
	25	30 50	75	H+18			50	62	6.6	18	M6	8	13				
	30	30 60	100	H+21	19	10	65	80	9	24				11			

Order Example: Part Number SHHTB30 - H 30

Days to Ship

■SHHTM 6 Days P.87

■Others 8 Days — Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Price

■Volume Discount (Round down to one Cent.) P.87

·SHHTM

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

·Others

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

Shaft Supports -Hinged Type (Machined)-

-L-shaped · Bottom Mount Type · Side Mount Type-

CAD Data

Features: Shaft can be easily mounted or dismounted. Hinged Type comes with one tightening screw.

L-shaped



Bottom Mount Type



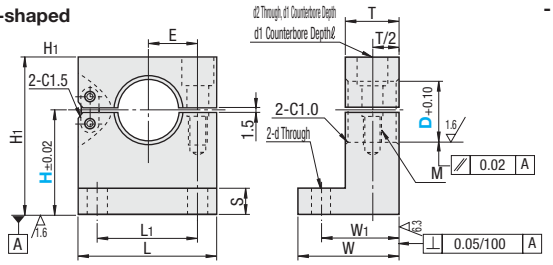
Side Mount RoHS



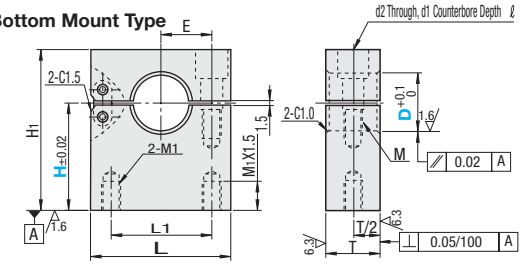
Type			M Material	S Surface Treatment	A Accessories	
L-shaped	Bottom Mount	Side Mount				
SHKHB	SHSHB	SHYHB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.	Nylon Washer 1 pc.
SHKHM	SHSHM	SHYHM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)	
SHKHS	SHSHS	SHYHS	1.4301/X5CrNi18-10	-		

Hinge Spring Pin
M Material: Spring Stainless Steel 25 (6.3 1.6)
JIS SSPSR(P.2-251)

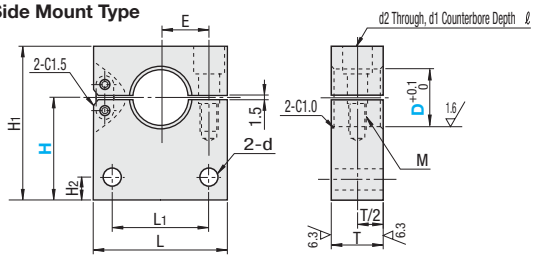
- L-shaped



- Bottom Mount Type



- Side Mount Type



L-shaped

Part Number Type	D	H Selectable	L	H1	T	S	W	W1	L1	d	E	Tightening Screw M	d2	d1	ℓ
SHKHB SHKHM SHKHS	10	20	30	H+9	10	6	20	15	20	4.5	10	M4	5	8	4
	12	20		H+10											5
	16	25	40	H+12	12		24	18	28		14	M5	7	9.5	6
	20	25 30		H+15	16	8	29	22.5	30	5.5	14.5				8
	25	40	50	H+18				23	36	6.6	18	M6	8	13	
	30	40	65	H+21	19	10	37	28	48	9	24				11

Bottom Mount · Side Mount Types

Part Number Type	D	H Selectable	L	H1	T	L1	E	Tightening Screw M	M1	d2	d1	ℓ	H2	d
Bottom Mount Type SHSHB SHSHM SHSHS	10	20	30	H+9	10	20	10	M4	M4	5	8	4	5	4.5
	12	20		H+10								5		
	16	25	40	H+12	12	24	14	M5		7	9.5	6		
Side Mount SHYHB SHYHM SHYHS	20	25 30		H+15	16		14.5		M6			8	7	5.5
	25	40	50	H+18		35	18	M6		8	13			6.6
	30	40	65	H+21	19	45	24		M8			11	10	9

Order Example

Part Number	-	H
SHYHM30	-	40

Days to Ship

SHSHB · SHYHM
6 Days P.87

Others
8 Days

Express A 2,00 EUR/piece P.88
A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Price

Volume Discount (Round down to one Cent.) P.87

·SHSHB · SHYHM

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

·Others

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price								
	SHKHB	SHKHM	SHKHS	SHSHB	SHSHM	SHSHS	SHYHB	SHYHM	SHYHS
10									
12									
16									
20									
25									
30									

Shaft Supports -L-shaped Precision Casting-

-Standard Type · Slit Type-

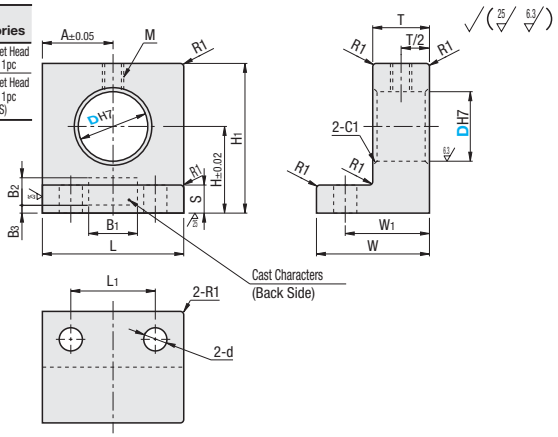
CAD Data

Cast manufacturing methods result in prices easier on budgets compared to machined products.

■ Standard Type RoHS



Type	M Material	S Surface Treatment	A Accessories
SHKLBT	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHKLMT		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1pc (JIS SUS)
SHKLST	1.4301/X5CrNi18-10	-	



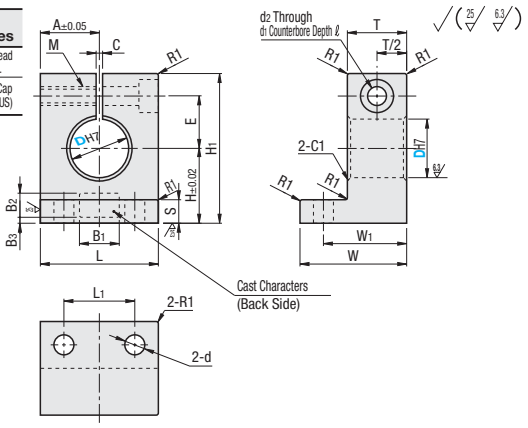
Part Number Type	D	H	L	H1	T	S	W	W1	A	Tightning Screws M	L1	d	B1	B2	B3	Mass g	€ Unit Price SHKLBT	SHKLMT	SHKLST
SHKLBT SHKLMT SHKLST	8	15	25	24	10	6	20	15	12.5	M4	13	5.5	14	7	2	60			
	10	20		30										8		72			
	12			31												71			
	16			38												79			
	20	25	40	43		8	26	18	20	M6	24	6.5				209			
	25	30		50												222			
	30		50	53	12	10	30	20	25		30	9				369			

■ Slit Type RoHS



Type	M Material	S Surface Treatment	A Accessories
SHKSBT	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHKSMT		Electroless Nickel Plating	Hex Socket Head Cap Screw 1 pc. (JIS SUS)
SHKSST	1.4301	-	

Slit is machined after mounting hole D is bored to H7 tolerance.
The tolerance may become H8 or so depending on the machining condition.



Part Number Type	D	H	L	H1	T	S	W	W1	A	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	B1	B2	B3	Mass g	€ Unit Price SHKSBT	SHKSMT	SHKSST
SHKSBT SHKSMT SHKSST	8	15	25	31	12	6	22	17	12.5	15	5.5	11	M4	4.5	8	4.5	2	14	7	2	72			
	10	20		36															8		82			
	12			38								13									83			
	16	25	30	45					15			15									114			
	20		40	51	16	8	32	24	20	24	6.5	18	M6	6.5	11	6.5					236			
	25	30		58								21									249			
	30		50	63	20	10	40	30	25	30	9	24	M8	9	14	9	3				417			

Order Example

Part Number
SHKSBT8

Days to Ship

6 Days P.87

2 Days

Price

■ Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~29	30~49
Discount Rates	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Shaft Supports -L-shaped Precision Casting-

-Side Slit Type · Split Type-

CAD Data

Cast manufacturing methods result in prices easier on budgets compared to machined products.

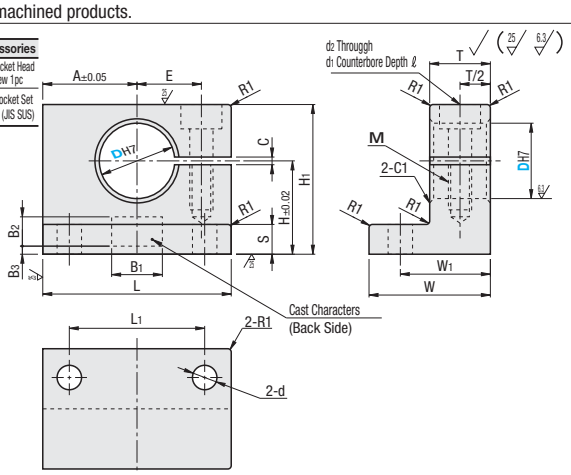
Side Slit Type

RoHS



Type	Material	Surface Treatment	Accessories
SHKWBT	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHKWMT		Electroless Nickel Plating	Hexagon Socket Set Screw 1pc. (JIS SUS)
SHKWST	1.4301	-	

Slit is machined after mounting hole D is bored to H7 tolerance.
The tolerance may become H8 or so depending on the machining condition.



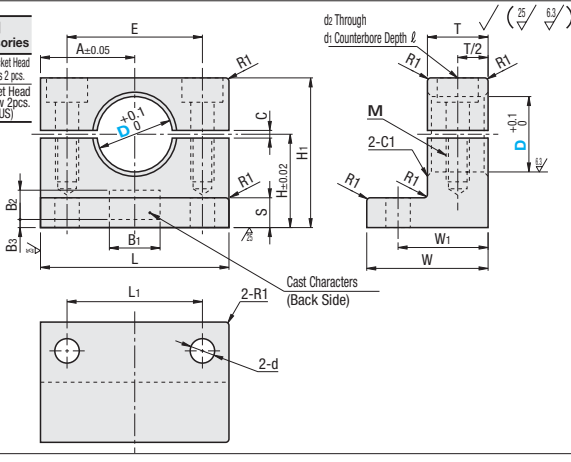
Part Number Type	D	H	L	H1	T	S	W	W1	A	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	B1	B2	B3	Mass g	€ Unit Price SHKWBT	SHKWMT	SHKWST
SHKWBT SHKWMT SHKWST	8	15	30	23	12	6	22	17	15	20	5.5	10	M4	4.5	8	4.5	2	14	7	2	70			
	10	20	32	29					16										8		90			
	12			30																	90			
	16	25	38	37					19	26		13									127			
	20		50	40	16	8	32	24	25	36	6.5	18	M6	6.5	11	6.5					243			
	25	30		48																	271			
	30		70	51	20	10	40	30	35	48	9	24	M8	9	14	9	3				503			

Split Type

RoHS



Type	Material	Surface Treatment	Accessories
SHKPBT	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHKPMT		Electroless Nickel Plating	Hex Socket Head Cap Screw 2pcs. (JIS SUS)
SHKPST	1.4301	-	



Part Number Type	D	H	L	H1	T	S	W	W1	A	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	B1	B2	B3	Mass g	€ Unit Price SHKPBT	SHKPMT	SHKPST
SHKPBT SHKPMT SHKPST	8	15	30	23	12	6	22	17	15	20	5.5	20	M4	4.5	8	4.5	2	14	7	2	65			
	10	20	32	29					16										8		85			
	12			30																	85			
	16	25	38	37					19	26		26									121			
	20		50	40	16	8	32	24	25	36	6.5	36	M6	6.5	11	6.5					230			
	25	30		48																	257			
	30		70	51	20	10	40	30	35	48	9	48	M8	9	14	9	3				483			

Order Example

Part Number
SHKWBT12

Days to Ship

6 Days
2 Days

P.87

Price

Volume Discount

Round down to one Cent. P.87

Quantity	1~9	10~19	20~29	30~49
Discount Rates	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Shaft Supports -L-shaped Type (Machined)-

-Standard Type · Slit Type-

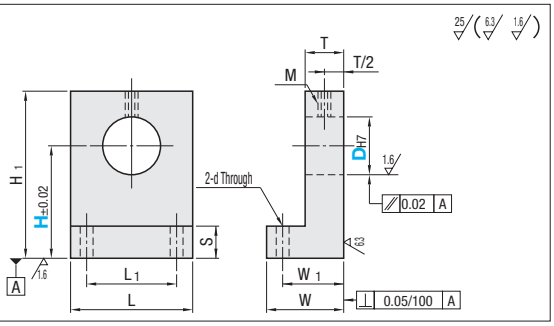
CAD Data

■Standard Type

RoHS



Height H Selectable Type	Height H Configurable Type	M Material	S Surface Treatment	A Accessories
SHKLB	SHKLBH	1.1191/C45E	Black Oxide	Hexagon Socket Set Screw 1 pc.
SHKLM	SHKLMH		Electroless Nickel Plating	
SHKLS	SHKLSH	1.4301/ X5CrNi18-10	-	Hexagon Socket Set Screw 1 pc. (JIS SUS)
SHKLA	SHKLAH	EN AW-6063/ AlMg0,7Si	White Alumite	



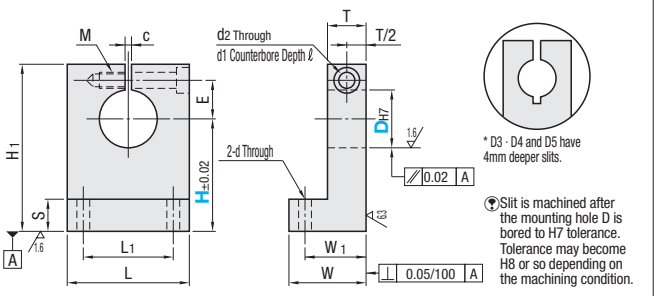
Part Number Type	D	H Height Selectable Type	H Height Configurable Type 0.1mm Increment	L	H1	T	S	W	W1	Set Screw M	L1	d	€ Unit Price Height Selectable Type SHKLB	SHKLM	SHKLS	SHKLA	Height Configurable Type SHKLBH	SHKLMH	SHKLSH	SHKLAH
Height H Selectable Type SHKLB SHKLM SHKLS SHKLA Height H Configurable Type SHKLBH SHKLMH SHKLSH SHKLAH	3	10 15 20	10.0~20.0	20	H+5	6	4	14	10	M3	10	3.6								
	4	10 15 20			H+6															
	5	15 20 25	15.0~25.0		H+7															
	6	15 20 25			H+8															
	8	15 20 25 30 40	15.0~40.0	25	H+9	8	6	18	13	M4	13	4.5								
	10	20 25 30 40	20.0~40.0		H+10															
	12	20 25 30 40			H+11															
	13	20 25 30 40			H+12															
	16	20 25 30 40	20.0~40.0		H+13															
	20	25 30 40 50 60	25.0~60.0	40	H+18	10	8	26	18	M6	24	6.6								
	25	30 40 50 60	30.0~60.0		H+20															
	30	35 40 50 60	35.0~60.0	50	H+23	12	10	32	22		30	9								
	35	40 50 60	40.0~60.0		H+25															
	40	40 50 60 80	40.0~80.0		H+30	16		36	26	M8										
	50	50 60 80	50.0~80.0	65	H+38		15	40	28		40	14								

■Slit Type

RoHS



Height H Selectable Type	Height H Configurable Type	M Material	S Surface Treatment	A Accessories
SHKSB	SHKSBH	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHKSM	SHKSMH		Electroless Nickel Plating	
SHKSS	SHKSSH	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHKSA	SHKSAH	EN AW-6063/ AlMg0,7Si	White Alumite	
SHKSD	-		Black Alumite	Hexagon Socket Head Cap Screw 1 pc.



Part Number Type	D	H Height Selectable Type	H Height Configurable Type 0.1mm Increment	L	H1	T	S	W	W1	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price Height Selectable Type SHKSB	SHKSM	SHKSS	SHKSA	SHKSD	Height Configurable Type SHKSBH	SHKSMH	SHKSSH	SHKSAH
Height H Selectable Type SHKSB SHKSM SHKSS SHKSA SHKSD Height H Configurable Type SHKSBH SHKSMH SHKSSH SHKSAH	3	10 15 20	10.0~20.0	20	H+11	8	4	16	12	12	3.5	7	M3 Depth 6	3.5	6.5	3.5	1.5									
	4	10 15 20										8														
	5	15 20 25	15.0~25.0		H+12																					
	6	15 20 25																								
	8	15 20 25 30 40	15.0~40.0	25	H+16	10	6	20	15	15	4.5	11	M4 Depth 8	4.5	8	4.5	2									
	10	20 25 30 40	20.0~40.0																							
	12	20 25 30 40			H+18							13														
	13	20 25 30 40																								
	16	20 25 30 40	20.0~40.0	30	H+20							15														
	20	25 30 40 50 60	25.0~60.0	40	H+26	16	8	32	24	24	6.6	18	M6 Depth 12	6.6	11	6.5										
	25	30 40 50 60	30.0~60.0		H+28							21														
	30	35 40 50 60	35.0~60.0	50	H+33	20	10	40	30	30	9	24	M8 Depth 16	9	14	9	3									
	35	40 50 60	40.0~60.0		H+36							27														
	40	40 50 60 80	40.0~80.0		H+38							29														
	50	50 60 80	50.0~80.0	65	H+51	25	15	50	38	40	14	38	M12 Depth 24	14	20	13										

Order Example

Part Number	-	H
SHKLM8	-	25
SHKLMH8	-	25.6

Days to Ship

■Height Selectable Type

8 Days — Express A — 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

■Height Configurable Type

10 Days — Express B — 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

Please request a quotation for 20 or more pieces of Height Configurable Type.

Shaft Supports -L-shaped Type (Machined)-

-Side Slit Type · Split Type-

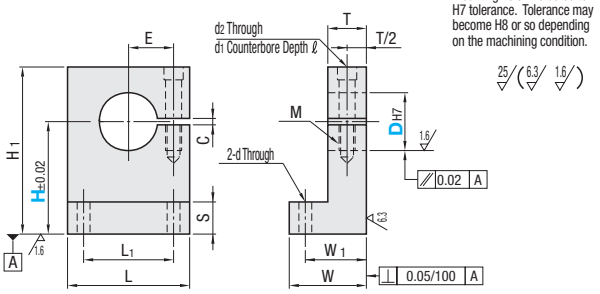
CAD Data

■Side Slit Type



RoHS

Height H Selectable Type	Height H Configurable Type	M Material	S Surface Treatment	A Accessories
SHKWB	-	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHKWM	SHKWMH		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHKWS	-	1.4301/X5CrNi18-10	-	
SHKWA	SHKWAH	EN AW-6063/ AlMg0,7Si	White Alumite	
SHKWD	-		Black Alumite	Hexagon Socket Head Cap Screw 1 pc.



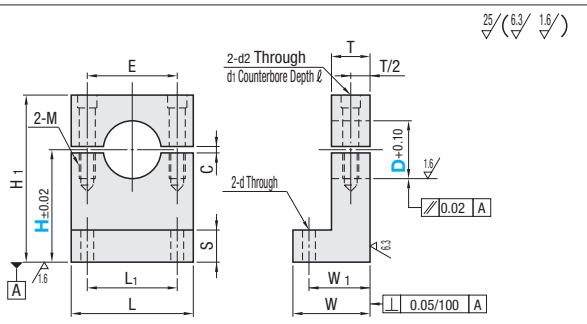
Part Number Type	D	H Height Selectable Type	H Height Configurable Type 0.1mm Increment	L	H1	T	S	W	W1	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price Height Selectable Type SHKWB	SHKWM	SHKWS	SHKWA	SHKWD	Height Configurable Type SHKWMH	SHKWAH
Height H Selectable Type SHKWB SHKWM SHKWS SHKWA SHKWD	8	15 20 25 30 40	15.0~40.0	32	H+8	10	6	22	16	22	4.5	11	M4 Depth 8	4.5	8	4.5	2							
	10	20 25 30	20.0~30.0		H+9																			
	12	20 25 30	20.0~30.0		H+10							13												
	13	20 25 30	20.0~30.0	38	H+11					28														
	16	20 25 30 40	20.0~40.0		H+13							14												
	20	25 30 40 50 60	25.0~60.0	50	H+15	16	8	32	24	36	6.5	17	M6 Depth 12	6.6	11	6.5								
Height H Configurable Type SHKWMH SHKWAH	25	30 40 50 60	30.0~60.0		H+18							18												
	30	30 40 50 60	30.0~60.0	73	H+21	20	10	38	29	55	9	26	M8 Depth 16	9	14	9	3							
	35	40 50 60	40.0~60.0		H+24																			
	40	40 50 60 80	40.0~80.0		H+27							27												

■Split Type



RoHS

Height H Selectable Type	Height H Configurable Type	M Material	S Surface Treatment	A Accessories
SHKPB	-	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHKPM	SHKPMH		Electroless Nickel Plating	Hexagon Socket Head Cap Screws 2 pcs. (JIS SUS)
SHKPS	SHKPSH	1.4301/X5CrNi18-10	-	
SHKPA	SHKPAH	EN AW-6063/ AlMg0,7Si	White Alumite	
SHKPD	-		Black Alumite	Hexagon Socket Head Cap Screws 2 pcs.



Part Number Type	D	H Height Selectable Type	H Height Configurable Type 0.1mm Increment	L	H1	T	S	W	W1	L1	d	E	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price Height Selectable Type SHKPB	SHKPM	SHKPS	SHKPA	SHKPD	Height Configurable Type SHKPMH	SHKPSH	SHKPAH
Height H Selectable Type SHKPB SHKPM SHKPS SHKPA SHKPD	3	10 15 20	10.0~20.0	22	H+6	8	4	16	12	13	3.5	13	M3 Depth 6	3.5	6.5	3.5	1.5								
	4	10 15 20	10.0~20.0		H+7																				
	5	15 20 25	15.0~25.0																						
	6	15 20 25	15.0~25.0																						
	8	15 20 25 30 40	15.0~40.0	30	H+10	10	6	20	15	20	4.5	20	M4 Depth 8	4.5	8	4.5	2								
	10	20 25 30	20.0~30.0	38						26		26													
	12	20 25 30	20.0~30.0																						
	13	20 25 30	20.0~30.0																						
	16	20 25 30 40	20.0~40.0		H+12																				
	20	25 30 40 50 60	25.0~60.0	50	H+17	16	8	32	24	36	6.6	36	M6 Depth 12	6.6	11	6.5									
Height H Configurable Type SHKPMH SHKPSH SHKPAH	25	30 40 50 60	30.0~60.0		H+20																				
	30	30 40 50 60	30.0~60.0	70	H+30	20	10	40	30	48	9	48	M8 Depth 16	9	14	9	3								
	35	40 50 60	40.0~60.0																						
	40	40 50 60 80	40.0~80.0	76						56		56													
	50	50 60 80	50.0~80.0	100	H+40	25	15	50	38	76	14	76	M12 Depth 24	14	20	13									

Order Example

Part Number	-	H
SHKWS20	-	30
SHKPSH20	-	30.6

Days to Ship

■Height Selectable Type

8 Days — Express A — 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

■Height Configurable Type

10 Days — Express B — 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

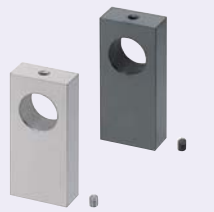
Please request a quotation for 20 or more pieces of Height Configurable Type.

Shaft Supports -Bottom Mount Set Screw (Machined)-

-Standard Type · Wide Type-

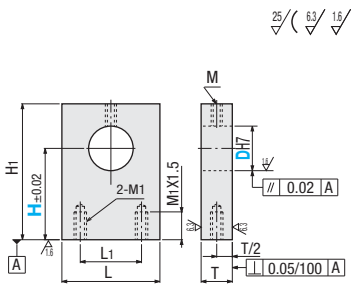
CAD Data

■Standard Type



RoHS

Type	MMaterial	SSurface Treatment	AAccessories
SHSC	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHBM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1pc (JIS SUS)
SHSB	1.4301/X5CrNi18-10	-	
SHSA	EN AW-6063/ AlMg0,7Si	White Alumite	



Part Number Type	D	H Selectable	L	H1	T	L1	Set Screw M	M1	€ Unit Price SHSC	SHBM	SHSB	SHSA
SHSC SHBM SHSB SHSA	8	15 20 25 30	16	H+9	12	10	M4	M4				
	10	20 25 30		H+10								
	12	20 25 30	22	H+11		14						
	13	20 25 30		H+12								
	15	25 30 40	25	H+15		16						
	16	25 30 40										
	18	25 30 40 50	32	H+18	16 (15)	18	M6	M6				
	20	25 30 40 50										
	25	30 40 50	38	H+20		24						
	30	30 40 50 60	50	H+23	22 (20)	32	M6	M8				
	35	40 50 60		H+25								
	40	40 50 60		H+30								

Values in ( ) are T dimension of SHSA (Aluminum).

■Wide Type



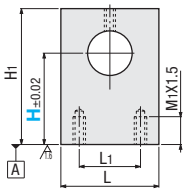
RoHS

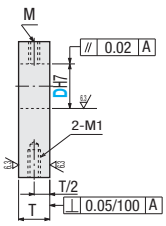
Type	MMaterial	SSurface Treatment	AAccessories
SHSCN	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHBMN		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1pc (JIS SUS)

D dimensions 30-40 come with 2 set screws.

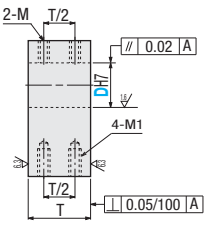
25 6.3 1.6

·D10~25





·D30~40



Part Number Type	D	H Selectable	L	H1	T	L1	Set Screw M	M1	€ Unit Price SHSCN	SHBMN
SHSCN SHBMN	10	20 25 30	22	H+10	18	12	M6	M6		
	12	20 25 30		H+11						
	16	25 30 40	25	H+15	20	14				
	20	25 30 40 50	32	H+18	25	18	M8	M8		
	25	30 40 50	38	H+20	30	24				
	30	30 40 50 60	50	H+23	35	32				
	35	40 50 60		H+25						
	40	40 50 60		H+30	40					

Order Example

Part Number	-	H
SHBM16	-	25
SHSCN20	-	30

Price

■Volume Discount (Round down to one Cent.) P.87

·SHSC

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

·Others

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

Days to Ship

■SHSC

6 Days P.87

■Others

8 Days Express A 2,00 EUR/ piece P.88

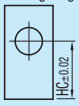
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Alterations

Part Number	-	HC
SHBM16	-	HC35.6
SHSB20	-	HC41.5

10 Days

⊗Alterations are not available for Wide Type.

Alteration	Code	Spec.	Price Adder
Mounting Height 	HC	Changes shaft mounting height. Change H to HC to specify height. Specify HC in 0.1mm increments. Specifiable Range Hmin.<HC<Hmax. Order Number HC35.6	8,00

Shaft Supports -Bottom Mount Slit (Machined)-

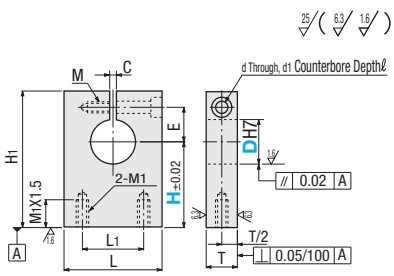
-Standard Type · Wide Type-

CAD Data

■Standard Type



Type	Material	Surface Treatment	Accessories
SHSBB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHSBM		Electroless Nickel Plating	
SHSBS	1.4301/ X5CrNi18-10	-	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHSBA	EN AW-6063/ AlMg0,7Si	White Alumite	
SHSBK		Black Alumite	Hexagon Socket Head Cap Screw 1 pc.



Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Part Number Type	D	H Selectable	L	H1	T	L1	E	Tightening Screw M	M1	d	d1	ℓ	C	€ Unit Price SHSBB	SHSBM	SHSBS	SHSBA	SHSBK
SHSBB SHSBM SHSBS SHSBA SHSBK	8	15 20 25 30	16	H+16	12	10	11	M4 Depth 8	4	4.5	8	4.5	2					
	10	20 25 30																
	12	20 25 30	22	H+18		14	13											
	13	20 25 30																
	15	25 30 40	25	H+20		16	15											
	16	25 30 40																
	18	25 30 40 50	32	H+26	16 (15)	18	18	M6 Depth 12	6	6.6	11	6.5						
	20	25 30 40 50																
	25	30 40 50	38	H+28		24	21											
	30	30 40 50 60	50	H+33	22 (20)	32	24	M8 Depth 16	8	9	14	9	3					
	35	40 50 60		H+36			27											
	40	40 50 60		H+38			29											

Values in ( ) are T dimension of SHSBA and SHSBK (Aluminum).

■Wide Type

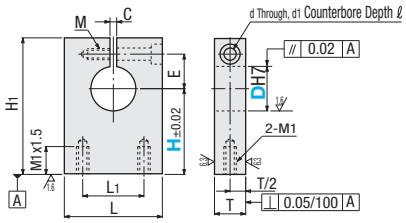


Type	Material	Surface Treatment	Accessories
SHSBBN	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHSBMN		Electroless Nickel Plating	
SHSBSN	1.4301/ X5CrNi18-10	-	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)

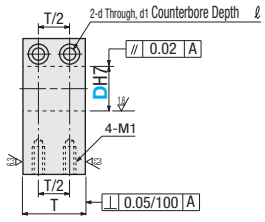
D dimensions 30 ~ 40 come with 2 screws.

Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

·D10~25



·D30~40



Part Number Type	D	H Selectable	L	H1	T	L1	E	Tightening Screw M	M1	d	d1	ℓ	C	€ Unit Price SHSBBN	SHSBMN	SHSBSN
SHSBBN SHSBMN SHSBSN	10	20 25 30	22	H+19 H+18	18	12	11	M6 (Through)	M6	6.6	11	6.5	2			
	12	20 25 30														
	16	25 30 40	25	H+20	20	14	13									
	20	25 30 40 50	32	H+26	25	18	17									
	25	30 40 50	38	H+28	30	24	19									
	30	30 40 50 60	50	H+33	35	32	24	M8 Depth 16	M8	9	14	9	3			
	35	40 50 60		H+36			27									
	40	40 50 60		H+38	40		29									

Order Example

Part Number	-	H
SHSBS20	-	30
SHSBMN30	-	30

Price

■Volume Discount (Round down to one Cent.) P.87

·SHSBB · SHSBM

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

·Others

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

Days to Ship

■SHSBB · SHSBM

6 Days P.87

■Others

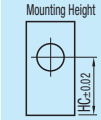
8 Days Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Alterations

Part Number - HC: SHSBS20 - HC41.5 | 10 Days

Alterations are not available for Wide Type.

Alteration	Code	Spec.	Price Adder
Mounting Height 	HC	Changes shaft mounting height. Change H to HC to specify height. Specify HC in 0.1mm increments. Specifiable Range Hmin.<HC<Hmax. Order Number HC35.6	8,00

Shaft Supports -Bottom Mount Type - Split (Machined)-

-Standard Type · Wide Type-

CAD Data

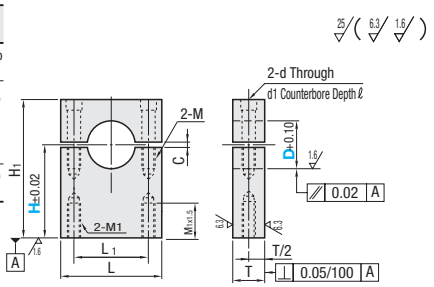
■Standard Type



Type	M Material	S Surface Treatment	A Accessories
SHSPB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHSPM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws 2 pcs. (JIS SUS)
SHSPS	1.4301/ X5CrNi18-10	-	
SHSPA	EN AW-6063/ AlMg0,7Si	White Alumite	
SHSPK		Black Alumite	Hexagon Socket Head Cap Screws 2 pcs.

Split Type – shaft can be mounted from top.

P.218



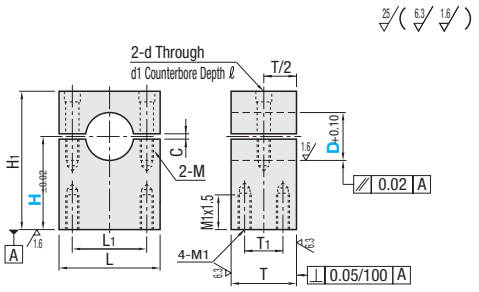
Part Number Type	D	H Selectable	L	H1	T	L1	Tightening Screw M	M1	d	d1	ℓ	C	€ Unit Price SHSPB	SHSPM	SHSPS	SHSPA	SHSPK
SHSPB SHSPM SHSPS SHSPA SHSPK	8	25 30	26	H+10	12	16	M4 Depth 8	4	4.5	8	4.5	2					
	10	25 30	32			20											
	12	25 30															
	13	25 30				21											
	15	25 30 40	34	H+12		23											
	16	25 30 40															
	18	30 40 50	44	H+17	16 (15)	28	M6 Depth 12	6	6.6	11	6.5						
	20	30 40 50	50			34											
	25	30 40 50		H+20		36											
	30	40 50 60	70	H+30	22 (20)	48	M8 Depth 16	8	9	14	9	3					
	35	40 50 60				56											
	40	40 50 60	76														

(?)Values in ( ) are T dimension of SHSPA and SHSPK (Aluminum).

■Wide Type



Type	M Material	S Surface Treatment	A Accessories
SHSPBN	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHSPMN		Electroless Nickel Plating	Hexagon Socket Head Cap Screws 2 pcs. (JIS SUS)
SHSPSN	1.4301/ X5CrNi18-10	-	



Part Number Type	D	H Selectable	L	H1	T	T1	L1	Tightening Screw M	M1	d	d1	ℓ	C	€ Unit Price SHSPBN	SHSPMN	SHSPSN
SHSPBN SHSPMN SHSPSN	10	25 30	37	H+11	24	16	22	M6 Depth 12	M4	6.6	11	6.5	2			
	12	25 30	39	H+12			24									
	15	25 30 40	46	H+14	26	18	28	M8 Depth 16		9	14	9				
	16	25 30 40	48				30									
	20	30 40 50	52	H+18	30	20	34		M6	9	14	9				
	25	30 40 50	56				38									
	30	40 50 60	62	H+30	35	25	44						3			
	35	40 50 60	66				48									
	40	40 50 60	72		40	24	54									

Order Example

Part Number	-	H
SHSPB10	-	25
SHSPBN16	-	30

Alterations

Part Number	-	HC		10 Days
SHSPB25	-	HC31.5		
SHSPS16	-	HC35.6		

⊗Alterations are not available for Wide Type.

Alteration	Code	Spec.	Price Adder
Mounting Height 	HC	Changes shaft mounting height. Change H to HC to specify height. (?)Specify HC in 0.1mm increments. (?)Specifiable Range Hmin.<HC<Hmax. Order Number HC35.6	8,00

Days to Ship

8 Days

Express A | 2,00 EUR/ piece P.88

(?)A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

⊗Express Serviceis not available for Wide Type.

Price

■Volume Discount (?)Round down to one Cent.) P.87

Quantity	1~9	10~12	13 / 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

Shaft Supports -Bottom Mount Type (Machined)-

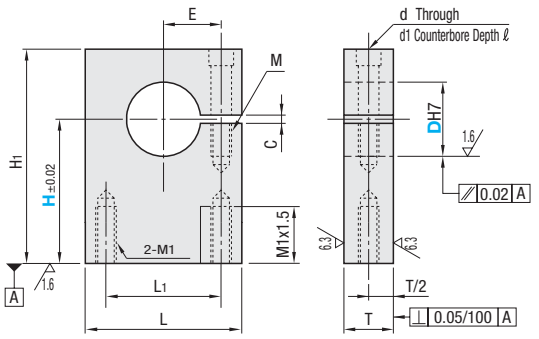
-Side Slit Type-

CAD Data

■Side Slit Type



Type	Material	Surface Treatment	Accessories
SHSWB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHSWM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHSWS	1.4301/X5CrNi18-10	-	
SHSWA	EN AW-6063/AlMg0,7Si	White Alumite	



RoHS

Slit is machined after the mounting hole D is bored to H7 tolerance. Tolerance may become H8 or so depending on the machining condition.

Part Number Type	D	H Selectable	L	H1	T	L1	E	Tightening Screw M	M1	d	d1	ℓ	C	€ Unit Price SHSWB	SHSWM	SHSWS	SHSWA
SHSWB SHSWM SHSWS SHSWA	8	25 30	26	H+7	12	16	8	M4 Depth 8	4	4.5	8	4.5	2				
	10	25 30	32	H+9		20	10										
	12	25 30		H+10													
	13	25 30		H+11		21	10.5										
	15	25 30 40	34	H+12		23	11.5										
	16	25 30 40															
	18	30 40 50	44	H+15	16 (15)	28	14	M6 Depth 12	6	6.6	11	6.5					
	20	30 40 50	50			34	17										
	25	30 40 50		H+18		36	18										
	30	40 50 60	70	H+21	22 (20)	48	24	M8 Depth 16	8	9	14	9	3				
	35	40 50 60		H+24													
	40	40 50 60	76	H+27		56	28										

Values in ( ) are T dimension of SHSWA (Aluminum).

Order Example

Part Number	-	H
SHSWB8	-	30

Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Alterations

Part Number	-	HC	10 Days
SHSWB20	-	HC41.5	

Alteration	Code	Spec.	Price Adder
Mounting Height 	HC	Changes shaft mounting height. Change H to HC to specify height. Specify HC in 0.1mm increments. Specifiable Range Hmin.<HC<Hmax. Order Number HC35.6	8,00

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rates	€ Unit Price	5%	10%	18%

Shaft Supports -Side Mount Type (Machined)-

-Standard Type · Slit Type-

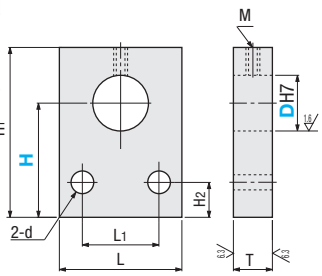
CAD Data

■Standard Type



RoHS

Type	M Material	S Surface Treatment	A Accessories
SHQB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc
SHQM		Electroless Nickel Plating	Hexagon Socket Set Screw 1pc. (JIS SUS)



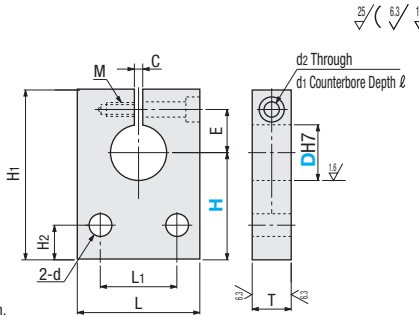
Part Number Type	D	H Selectable	L	H1	H2	T	L1	d	Set Screw M	€ Unit Price SHQB	€ Unit Price SHQM
SHQB SHQM	8	25 30	22	H+9	5	12	10	4.5	4		
	10	25 30		H+10							
	12	25 30	25	H+11			14				
	13	25 30		H+12							
	15	25 30 40	28	H+15			16				
	16	25 30 40									
	18	25 30 40 50	32	H+18	7	16	18	6.6	6		
	20	25 30 40 50									
	25	30 40 50	38	H+20			24				
	30	30 40 50 60	50	H+23	10	22	32	9	6		
	35	40 50 60		H+25							
	40	40 50 60		H+30							

■Slit Type



RoHS

Type	M Material	S Surface Treatment	A Accessories
SHYB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHYM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHYS	1.4301/ X5CrNi18-10	-	
SHYA	EN AW-6063/ AlMg0,7Si	White Alumite	



Slit is machined after the mounting hole D is bored to H7 tolerance.
Tolerance may become H8 or so depending on the machining condition.

Part Number Type	D	H Selectable	L	H1	H2	T	L1	E	d	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price SHYB	€ Unit Price SHYM	€ Unit Price SHYS	€ Unit Price SHYA
SHYB SHYM SHYS SHYA	8	20 25 30	22	H+16	5	12	10	11	4.5	M4 Depth 8	4.5	8	4.5	2				
	10	20 25 30																
	12	20 25 30	25	H+18			14	13										
	13	20 25 30																
	15	25 30 40	28	H+20			16	15										
	16	25 30 40																
	18	25 30 40 50	32	H+26	7	16 (15)	18	18	6.6	M6 Depth 12	6.6	11	6.5					
	20	25 30 40 50																
	25	30 40 50	38	H+28			24	21										
	30	30 40 50 60	50	H+33	10	22 (20)	32	24	9	M8 Depth 16	9	14	9	3				
	35	40 50 60		H+36				27										
	40	40 50 60		H+38				29										

Values in ( ) are T dimension of SHYA (Aluminum).

Order Example

Part Number	-	H
SHQM16	-	25
SHYS12	-	30

Days to Ship

8 Days | Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

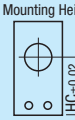
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13 · 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

Alterations

Part Number - HC → 10 Days

SHQM16 - HC35.6
SHYS40 - HC50.5

Alteration	Code	Spec.	Price Adder
Mounting Height 	HC	Changes shaft mounting height. Change H to HC to specify height. Specify HC in 0.1mm increments. Specifiable Range Hmin.<HC<Hmax. Order Number HC35.6	8,00

Shaft Supports -Side Mount Type (Machined)-

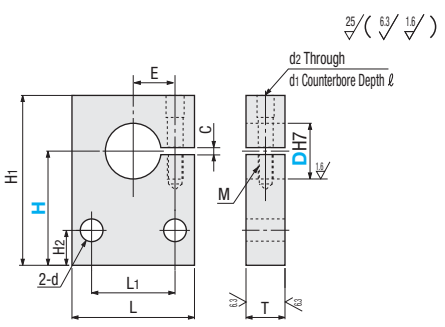
-Side Slit Type · Split Type-

CAD Data

■Side Slit Type



Type	Material	Surface Treatment	Accessories
SHUB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1 pc.
SHUM		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SHUS	1.4301/ X5CrNi18-10	-	
SHUA	EN AW-6063/ AlMg0,7Si	White Alumite	



Slit is machined after the mounting hole D is bored to H7 tolerance.
Tolerance may become H8 or so depending on the machining condition.

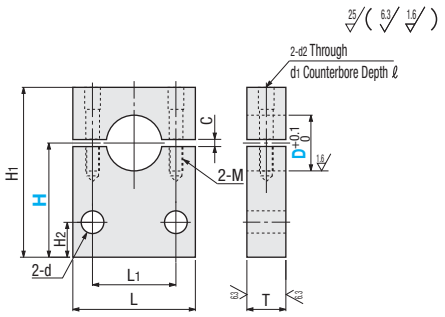
Part Number Type	D	H Selectable	L	H1	H2	T	L1	E	d	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price SHUB	SHUM	SHUS	SHUA
SHUB SHUM SHUS SHUA	8	25 30	26	H+7	5	12	16	8	4.5	M4 Depth 8	4.5	8	4.5	2				
	10	25 30	32	H+9			20	10										
	12	25 30		H+10														
	13	25 30		H+11			21	10.5										
	15	25 30 40	34	H+12			23	11.5										
	16	25 30 40																
	18	30 40 50	44	H+15	7	16 (15)	28	14	6.6	M6 Depth 12	6.6	11	6.5					
	20	30 40 50	50				34	17										
	25	30 40 50		H+18			36	18										
	30	40 50 60	70	H+21	10	22 (20)	48	24	9	M8 Depth 16	9	14	9	3				
	35	40 50 60		H+24														
	40	40 50 60	76	H+27			56	28										

Values in ( ) are T dimension of SHUA (Aluminum).

■Split Type



Type	Material	Surface Treatment	Accessories
SHZB	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws 2 pcs.
SHZM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws 2 pcs. (JIS SUS)
SHZS	1.4301/ X5CrNi18-10	-	
SHZA	EN AW-6063/ AlMg0,7Si	White Alumite	



Part Number Type	D	H Selectable	L	H1	H2	T	L1	d	Tightening Screw M	d2	d1	ℓ	C	€ Unit Price SHZB	SHZM	SHZS	SHZA
SHZB SHZM SHZS SHZA	8	25 30	26	H+10	5	12	16	4.5	M4 Depth 8	4.5	8	4.5	2				
	10	25 30	32				20										
	12	25 30															
	13	25 30					21										
	15	25 30 40	34	H+12			23										
	16	25 30 40															
	18	30 40 50	44	H+17	7	16 (15)	28	6.6	M6 Depth 12	6.6	11	6.5					
	20	30 40 50	50				34										
	25	30 40 50		H+20			36										
	30	40 50 60	70	H+30	10	22 (20)	48	9	M8 Depth 16	9	14	9	3				
	35	40 50 60															
	40	40 50 60	76				56										

Values in ( ) are T dimension of SHZA (Aluminum).

Order Example

Part Number	-	H
SHUA10	-	25
SHZM16	-	30

Alterations

Part Number	-	HC	Days
SHUS25	-	HC31.5	10
SHZM16	-	HC35.6	

Days to Ship

8 Days | Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more pieces of identical products.

Alteration	Code	Spec.	Price Adder
Mounting Height 	HC	Changes shaft mounting height. Change H to HC to specify height. Specify HC in 0.1mm increments. Specifiable Range Hmin.<HC<Hmax. Order Number HC35.6	8,00

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~12	13 · 14	15~19
Discount Rates	€ Unit Price	5%	10%	18%

Shaft Collars

Shaft Collars


Addition
Price Reduction Up to 46%

Product Name	Set Screw -Standard Type / Wide Type-	-Compact Type-	Clamp -Standard Type-
Page	237	238	239


Addition
Price Reduction Up to 45%


Addition
Price Reduction Up to 46 %




Price Reduction Up to 46%





-Compact Type-	Split -Standard Type-	-Compact Type-	-Balanced Type-
240	241	242	242









Set Screw -2-Hole / 2 Female Thread Type-	-4 Hole / 4 Female Thread Type-	Clamp -2 Hole Counterbored / 3 Hole Counterbored Type-	-2 Hole / 2 Female Thread Type-
243	243	244	245









-3 Hole / 3 Female Thread Type-	Wedge -2 Hole / 2 Female Thread Type-	-3 Hole / 3 Female Thread Type-	Split -2-Hole / 2 Female Thread Type-
246	247	247	248


Price Reduction 5%


Price Reduction 5%





Keyless Bushing Type -Standard-	-Keyless Bushing Quick Mount (Nut) Type-	Standard Type with Urethane Disc -Clamp Type-	-Split Type-
249	249	250	250









Compact Type with Urethane Disc -Clamp Type-	-Split Type-	With Bearing Shoulder -Set Screw Type-	-Set Screw Compact Type-
250	250	251	252









With Bearing Shoulder -Clamp Type-	-Compact Slit Type-	With Thread Inserts (Lightweight) -Resin Type-	-Aluminum Type-
253	254	255	255



Female Thread -Set Screw Flat Type-	-Clamp Type-	Hinged Type	One Touch Type -Standard / Mount Hole-
256	256	257	257











With Key Escapement Groove -Set Screw Flat Type-	-Clamp Type-	Standard Type with Clamp Lever -Clamp Type-	-D Cut Type-	-Side Mount Hole Type-
258	258	259	259	259









Compact Type with Clamp Lever -D Cut Type-	-Side Mount Hole Type-	Compact Wedge Type with Clamp Lever -D Cut Type-	Wedge -Side Mount Hole Type-
260	260	261	261









Two-Flats -Standard Clamp Type-	-Cut Surface Mount Hole Clamp Type-	Two-Flats -Clamp Type with Side Utility Holes-	-Split Type with Utility Holes on Flats-
262	262	262	262









Side Mount -Clamp Type-	-Split Type-	Side Mount Compact -Clamp Type-	-Split Type-
263	263	264	264







D Cut Standard -Set Screw Flat Type -	-Clamp Type-	-Split Type-
265	265	265





D Cut Compact -Clamp Type-	-Split Type-
266	266

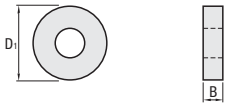
Shaft Collars Guide

■About Inner Diameter Tolerances

Features - MISUMI Shaft Collars have positively toleranced inner dia. (except some products) to prevent shafts from being scratched during insertion.
- Combination use of MISUMI Shafts (standard g6, f8 and h5) and MISUMI Shaft Collars are recommended.

■Product Variations

Features - 216 total product types consisting 119 industry standard products and 97 MISUMI original products are available. (Including material variations)
- The Compact Type has small width (B dim.) and O.D. (D1 dim.) helpful in space saving designs.



■Material Variations

Features- In addition to the industry standard material 1.1191/C45E · 1.4301/X5CrNi18-10 · EN AW-2017/AlCu4MgSi, Plastics and thread inserts integrated EN AW-2017/AlCu4MgSi and plastic products are offered.

- Thread Inserts integrated type is recommended for aluminum or plastic collars that are lighter in weight but the threads cut directly in materials may be damaged by repetitive screw tightening and loosening. P.255
- Specific Gravity 1.1191/C45E:7.9, 1.4301/X5CrNi18-10:8.0, EN AW-2017/AlCu4MgSi:2.8, Polyacetal:1.4, MC Nylon:1.1

■Set Screw Type

Features - Reasonably priced.

Page		P.237 · 238			P.243		P.256	P.258
Series		Standard			2 Hole 2 Female Thread	4 Hole 4 Female Thread	Male Thread Bore	with Key Escapement Groove
Thickness		Standard	Wide	Compact	Standard	Standard	Standard	Standard
Picture		Price Reduction Up to 45% 						
M Material	S Surface Treatment							
1.1191/C45E	Black Oxide Coating	•	•	•	•	•	•	•
	Electroless Nickel Plating	•	•	•	•	•	•	•
1.4301/X5CrNi18-10	-	•	•	•	•	•	•	-
EN AW-2017/ AlCu4MgSi	-	•	-	-	-	-	-	-
	Clear Anodize	•	-	-	-	-	-	-
	Black Anodize	•	-	-	-	-	-	-

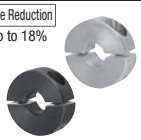
■Slit

Features - Shaft damage from tightening can be avoided. (Maximum thrust load data (Series: Standard) are shown on P.236.

Page		P.239 · 240 · P.255		P.245	P.246	P.244		P.250		P.258	P.256	P.262
Series		Standard		2 Hole 2 Female Thread	3 Hole 3 Female Thread	2 Hole Counterbored	3 Hole Counterbored	With Urethane		with Key Escapement Groove	Male Thread Bore	2-Flats
Thickness		Standard	Compact	Standard	Standard	Standard	Standard	Standard	Compact	Standard	Standard	Standard
Picture		Price Reduction Up to 10% 										
M Material	S Surface Treatment											
1.1191/C45E	Black Oxide Coating	•	•	•	•	•	•	•	•	•	•	•
	Electroless Nickel Plating	•	•	•	•	•	•	•	•	•	•	•
1.4301/X5CrNi18-10	-	•	•	•	•	•	•	•	•	-	•	•
EN AW-2017/ AlCu4MgSi	With Thread Inserts	•	-	-	-	-	-	-	-	-	-	-
	-	•	-	-	-	-	-	-	-	-	-	-
	Clear Anodize	•	-	-	-	-	-	-	-	-	-	-
	Black Anodize	•	-	-	-	-	-	-	-	-	-	-
Polyacetal	With Thread Inserts	•	-	-	-	-	-	-	-	-	-	-
	-	•	-	-	-	-	-	-	-	-	-	-
MC Nylon	With Thread Inserts	•	-	-	-	-	-	-	-	-	-	-

■Split

Features - Post assembly installation and removal are possible, making for easy maintenance.
- Shaft damage from tightening can be avoided.

Page		P.241 · 242 · P.255		P.248	P.242	P.250	
Series		Standard		2 Hole 2 Female Thread	Balanced	With Urethane	
Thickness		Standard	Compact	Standard	Standard	Standard	Compact
Picture		Price Reduction Up to 18% 					
M Material	S Surface Treatment						
1.1191/C45E	Black Oxide Coating	•	•	•	•	•	•
	Electroless Nickel Plating	•	•	•	•	•	•
1.4301/X5CrNi18-10	-	•	•	•	•	•	•
EN AW-2017/ AlCu4MgSi	With Thread Inserts	•	-	-	-	-	-
	-	•	-	-	-	-	-
	Clear Anodize	•	-	-	-	-	-
	Black Anodize	-	-	-	-	-	-
Polyacetal	With Thread Inserts	•	-	-	-	-	-
	-	•	-	-	-	-	-
MC Nylon	With Thread Inserts	•	-	-	-	-	-

■For Bearing Fixing

Features - For bearing inner race retention.
- Requires no dedicated tools, and economical compared to bearing nuts.

Page	P.251 · 252		P.253 · 254	
Series	Set Screw Short Shoulder · Long Shoulder		Slit Short Shoulder · Long Shoulder	
Thickness	Standard	Compact	Standard	Compact
Picture				
M Material / S Surface Treatment				
1.1191/C45E Black Oxide Coating	•	•	•	•
1.1191/C45E Electroless Nickel Plating	•	•	•	•
1.4301/X5CrNi18-10 -	•	•	•	•
EN AW-2017/AlCu4MgSi With Thread Inserts	-	-	-	-
EN AW-2017/AlCu4MgSi -	-	-	-	-
EN AW-2017/AlCu4MgSi Clear Anodize	•	-	•	-
EN AW-2017/AlCu4MgSi Black Anodize	-	-	•	-
Polyacetal With Thread Inserts	-	-	-	-
Polyacetal -	-	-	-	-
MC Nylon With Thread Inserts	-	-	-	-

For Sensor Bracket Mounting

Features- Tap sizes and hole pitches for direct mounting of sensor brackets are offered. EN AW-2017/AlCu4MgSi (aluminum) is recommended for weight reduction requirements. (Specific Gravity EN AW-2017/AlCu4MgSi:2.8, 1.1191/C45E:7.9, 1.4301/X5CrNi18-10:8.0)

Page		P.263·264				P.262			P.265 · 266				
Series		Side Mounting Holes				2-Flats			D Cut				
		Slit		Split		Slit Cut Surface Mounting Holes	Slit Side Mounting Holes	Split Cut Surface Mounting Holes	Set Screw	Slit		Split	
Thickness		Standard	Compact	Standard	Compact	Standard	Standard	Standard	Standard	Standard	Compact	Standard	Compact
Picture													
Material	Surface Treatment												
1.1191/C45E	Black Oxide Coating	•	•	•	•	•	•	•	•	•	•	•	•
	Electroless Nickel Plating	•	•	•	•	•	•	•	•	•	•	•	•
1.4301/X5CrNi18-10	-	•	•	•	•	•	•	•	•	•	•	•	•
EN AW-2017/AlCu4MgSi	-	-	-	-	-	-	-	-	-	•	•	•	•

For Stopper Applications

Features - MISUMI originally inspired products are offered with enhanced thrust load ratings. (?)Maximum thrust load data are shown on P.236.

Page		P.249	
Series		Keyless Bushing Type	
		Side Ring	Simple Nut Type
Picture		Price Reduction 5% 	Price Reduction 5% 
Material	Surface Treatment		
1.1191/C45E	Black Oxide Coating	•	•
	Electroless Nickel Plating	•	•
1.4301/X5CrNi18-10	-	•	•

Others

Features - MISUMI originally inspired products are offered in consideration for on-site operability.

Page		P.257		P.259 · 260					P.257
Series		One Touch		With Clamp Lever					Hinged
		Standard	Mounting Holes	Standard	Cut Surface Mounting Holes		Side Mounting Holes		
Thickness		Standard	Standard	Standard	Standard	Compact	Standard	Compact	Standard
Picture									
Material	Surface Treatment								
1.1191/C45E	Black Oxide Coating	-	-	•	•	•	•	•	•
	Electroless Nickel Plating	-	-	•	•	•	•	•	•
1.4301/X5CrNi18-10	-	-	-	•	•	•	•	•	•
EN AW-2017/AlCu4MgSi	Clear Anodize	•	•	-	-	-	-	-	-

Features - Less force is required for tightening. No constraints on tightening sequence.

Page		P.247		P.261	
Series		Wedge Type		Wedge Type with Clamp Lever	
		2 Hole 2 Female Thread	3 Hole 3 Female Thread	Cut Surface Mounting Holes	Side Mounting Holes
Picture					
Material	Surface Treatment				
1.1191/C45E	Black Oxide Coating	•	•	•	•
	Electroless Nickel Plating	•	•	•	•
1.4301/X5CrNi18-10	-	•	•	•	•

Shaft Collars Guide

-Keyless Bushing Mechanism · Wedge Mechanism · Clamping Force Data-

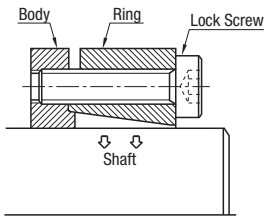
■Keyless Bushing Mechanism Features

- Clamping force increased up to 2.2 times *D35 is used for comparison.
Compared with the conventional Shaft Collars, these Collars can clamp the shafts firmly. **Refer to Clamping Force Data on P.236.**

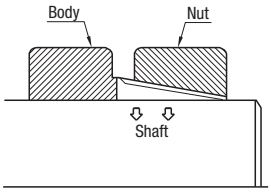
- Easy installation in space-savings
Collar tightening action is applied in axial direction from the front, effective where radial access is limited.

- 8 Parts are reduced by using the Sensor-less System.
As these Collars can clamp the shafts firmly, the Shaft Collar can be used as a home position.

■Keyless Bushing Type - Standard Type Mechanism



■Keyless Bushing Type - Nut Type Mechanism



■Installation

(1) Clean (wipe off) shaft surface.
(2) Clean (wipe off) contact surface of the body and ring (nut) as well.
(3) Temporarily assemble the body and ring (nut) and insert the shaft.
(Do not tighten the screws without a shaft inserted.)
(4) After positioning the collar, tighten the locking screws with a torque wrench in a diagonal order, beginning lightly (approx. 1/4 of the specified tightening torque).
(5) Tighten the screws further to an increased torque (approximately 1/2 specified torque).
(6) Tighten the screws to specified torque.
(7) Finally, tighten the lock screws in circumferential order.

■Cautions for Installation

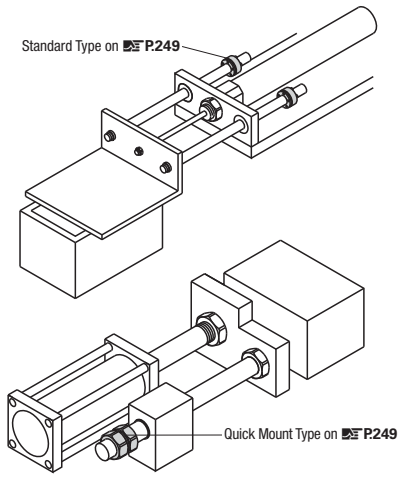
- For Keyless Bushing Type, tighten the screws after the shaft is inserted. (If the screws are tightened before the shaft is inserted, the locking mechanism would be deformed.)
- Use a torque wrench to tighten the screws.
- Do not use lock screws other than those included.

P.236 For the recommended tightening torque, please refer to Clamping Force Data.

■Removal

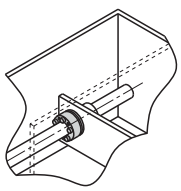
- Be sure the system is completely shut down and stopped before beginning the work.
- Loosen lock screws in circumferential order.
- Insert screws in removal holes and tighten evenly.
- Repeat "Installation" process for re-installation.

Example ■Cylinder Stopper



■Tightening from axial direction

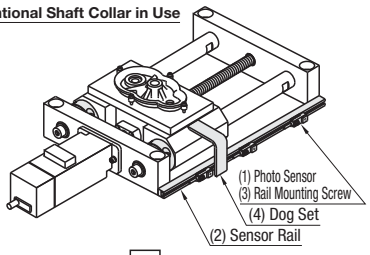
Use Standard Type on P.249



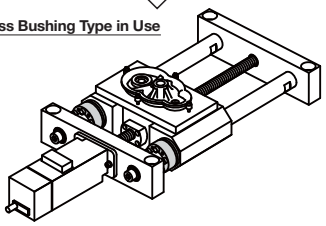
■Proposals for Parts Reduction

*The Shaft collar is used as a home position.
*Motor with an absolute encoder is used for this example.

Conventional Shaft Collar in Use



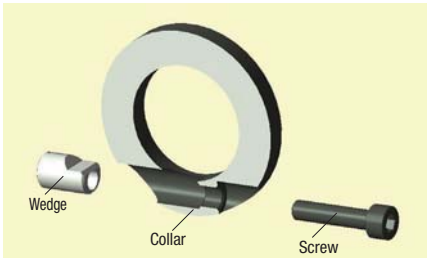
Keyless Bushing Type in Use

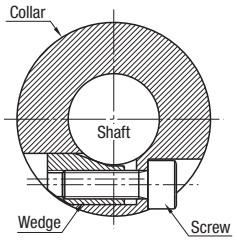


Advantages of sensor-less systems
- Reduced parts count (in the case above)
(1) 3 Photo Sensors + (2) 1 Sensor Rail
+(3) 3 Rail Mounting Screws + (4) 1 Sensor Target
= 8 parts can be reduced.
- No breakdown by sensor disconnection.
- Troubles from sensor errors can be reduced.
- Adjustments and maintenance can be reduced.

■Wedge Mechanism Features

- The screws pull a wedge and the shat is clamped; this structure requires less force for tightening.
- Good work efficiency; suitable for use in frequent positioning adjustments like width guide applications.
  The wedge for "With Clamp Lever Type" (P.261) is made of brass and does not damage shafts.



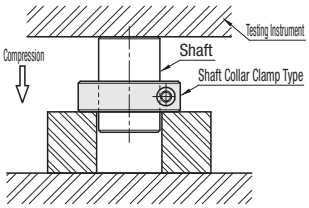


■Clamping force of Clamp Type · Wedge Type and Keyless Bushing Type shaft collars.

■Testing Conditions

1. Shaft: MISUMI Hardening Shaft (SFJ) Page **P.107**
2. Testing Instrument: Universal Tester
3. Tightening Torque: Select Tightening Torque from the tables on the right depending on the conditions of use.
4. Condition of antirust oil: Wiped with a cloth as arrived.

■Testing Method



■Definition of Max. Thrust Load

The shaft collar is tightened to torque value(s) shown in the chart below, then compressive load is applied with the tester.
The compressive load where the shaft begins to move is defined as the Max. Thrust Load.

■Clamp Type / Wedge Type

Nominal	Tightening Torque (Nm)	
	1.1191/C45E / 1.4301/X5CrNi18-10	EN AW-2017/AlCu4MgSi
M2.6	0.94	-
M3	1.61	1.61
M4	3.71	3.71
M5	7.54	7.54
M6	12.87	7.54
M8	31.2	12.87
M10	61.75	12.87
M16	267	-

■Keyless Bushing Type - Standard Type -

Nominal	Tightening Torque (Nm)	
	1.1191/C45E	1.4301/X5CrNi18-10
M6	15.7	9.6

■Keyless Bushing Type - Nut Type -

D (Inner Diameter)	Tightening Torque (Nm)
	1.1191/C45E
12	29.4
16	49
20	105
25	171
30	218
35	288

■About screw tightening

Aluminum or plastic threads may be damaged by repetitive tightening and loosening of a screw.

■Clamp Type

Formula for weight: Weight(g) = Volume(cm^3) x Specific Gravity P.1889
Specific Gravity EN Aw-2017/AlCu4MgSi:2.8, 1.1191/C45E:7.9, 1.4301/X5CrNi18-10:8.0

Dimension D (Inner Diameter)	Dimension B (Width)	Dimension M	Max. Thrust Load (kN) SCS / SCSJ 1.1191/C45E (Black oxide coating)	Max. Thrust Load (kN) SSCS (1.4301/ X5CrNi18-10)	Max. Thrust Load (kN) SCSA (EN AW-2017/ AlCu4MgSi)	Weight (g) SCS / SCSJ (1.1191/ C45E)
3	*8	3	0.5	0.5	0.4	11
4	8	3	0.5	0.5	0.3	14
5	*6	2.6	0.7	0.4	-	8
	8	3	1.1	0.7	0.6	17
	10	4	1.3	1.0	-	26
6	*6	2.6	0.7	0.4	-	10
	8	3	1.1	0.5	0.4	17
	10	4	1.8	1.0	-	21
8	*6	2.6	0.9	0.3	-	14
	8	3	0.6	0.6	0.1	26
	10	4	2.2	1.1	0.3	32
	12	5	3.3	1.5	-	58
	15	6	5.1	1.2	-	71
10	*6	2.6	0.7	0.3	-	17
	8	3	1.2	0.4	-	36
	10	4	2.0	1.0	0.3	45
	12	5	5.1	0.9	-	55
	15	6	3.9	2.1	-	95
12	*6	2.6	0.7	0.3	-	16
	8	3	1.1	0.8	-	34
	10	4	2.8	0.8	0.5	43
	12	5	4.0	1.2	-	52
	15	6	10.0	3.6	-	92
13	*8	3	1.1	0.8	-	28
	10	4	2.0	0.7	0.7	43
	12	5	5.9	1.3	-	67
	15	6	4.6	1.6	-	90
15	*8	3	1.5	0.6	-	31
	10	4	1.5	1.1	1.4	54
	12	5	5.1	1.8	-	69
	15	6	5.6	1.4	-	119
16	*8	3	2.1	1.1	-	29
	10	5	7.1	2.9	1.6	55
	12	5	5.4	2.3	2.4	67
	15	6	10.2	1.5	-	116
18	*10	5	6.5	1.8	-	75
	12	5	5.1	2.3	-	89
	15	6	9.4	1.6	-	148
20	*8	3	2.2	0.8	-	38
	10	5	5.8	2.7	1.4	69
	12	5	6.4	1.7	3.4	84
	15	6	10.4	3.0	3.0	140
25	*10	4	3.6	1.8	-	66
	12	5	8.8	2.6	2.1	98
	15	6	8.8	3.6	2.0	164
	20	6	10.0	1.2	-	284
30	*12	5	8.4	2.8	-	111
	15	6	8.9	2.2	2.4	185
	20	8	15.0	4.0	-	318
35	*12	5	6.4	2.4	-	124
	15	6	9.9	2.7	1.8	207
40	*12	5	7.0	3.1	-	139
	18	8	21.3	6.0	6.3	348
50	*18	8	18.0	4.5	-	415
	22	10	35.8	11.8	6.7	604
60	22	10	21.0	-	-	698
80	32	16	90.0	-	-	1954
100	36	16	120.0	-	-	2639

Note 1. * marked are Compact Types only. (SCSJ, SSCSJ)
2. These values are merely test results, and not guaranteed by the manufacturer.
3. Use optimum tightening torques depending on the condition of use by users.

■Wedge Type

Dimension D (Inner Diameter)	Dimension B (Width)	Dimension M	Max. Thrust Load (kN) SCWM 1.1191/C45E (Black oxide coating)	Max. Thrust Load (kN) SSCWM (1.4301/ X5CrNi18-10)	Weight (g) SCWM (1.1191/ C45E)
10	10	4	1.6	1.2	29
12	10	4	2.2	1.4	35
15	10	4	1.8	1.5	37
16	12	5	3.0	2.3	57
20	12	5	3.5	3.0	69
25	12	5	3.5	3.2	88
30	12	5	3.2	3.2	94
35	15	6	-	3.1	154
40	15	8	-	3.1	243
50	15	8	-	3.1	299

■Keyless Bushing Type - Standard Type -

Dimension D (Inner Diameter)	Dimension B (Width)	Dimension M	Dimension Screw Quantity	Max. Thrust Load (kN) SCML 1.1191/C45E (Black oxide coating)	Max. Thrust Load (kN) SSCML (1.4301/ X5CrNi18-10)	Weight (g) SCML (1.1191/ C45E)
12	27	6	3	13.3	4.0	291
16	27	6	3	13.3	4.0	259
20	27	6	4	17.8	5.3	372
25	27	6	4	17.8	5.3	371
30	28.5	6	5	22.2	6.7	523
35	28.5	6	5	22.2	6.7	534

■Keyless Bushing Type - Nut Type -

Dimension D (Inner Diameter)	Dimension B (Width)	Max. Thrust Load (kN) SCQL 1.1191/C45E Black oxide coating	Weight (g) SCQL (1.1191/ C45E)
12	20	3.7	29
16	25.5	5.4	54
20	31.5	8.8	105
25	36	15.7	171
30	41	17.7	218
35	45	20.6	288

Shaft Collars -Set Screw Type-

-Standard Type / Wide Type-

Add. Spec.

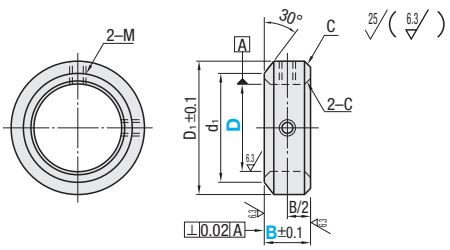
Price Reduction
Up to 46%

CAD Data

■Standard Type
■Wide Type
RoHS



Type		Material	Surface Treatment	Accessory
Standard Type	Wide Type			
SCCN	SCC	1.1191/C45E	Black Oxide Coating	2 Set Screws
PSCCN	PSCC		Electroless Nickel Plating	2 Set Screws (JIS SUS)
SSCCN	SSCC	1.4301/X5CrNi18-10	-	
SCCA	-	EN AW-2017/ AlCu4MgSi	Clear Anodize	
SCCAW	-			
SCCAB	-		Black Anodize	



Part Number Type	D		B Selectable	D1	d1	C	Set Screw M x Length	€ Unit Price SCCN	PSCCN	SSCCN	SCCA	SCCAW	SCCAB
(Standard Type) SCCN PSCCN SSCCN SCCA SCCAW SCCAB	3	+0.05 +0.01	*6 8	7	4.5	0.2	M3x3						
	4		*6 8	8	5.5								
	5		*6 8 10	11	10		M4x3						
	6		*6 *8 *10	12	11								
	8		*6 *8 *10	14	12								
	10		*6 *8 *10	16	13								
	12		6 *8 *10 12	20	15	0.5	M5x4 for B6 M4x3						
	13		*8 10 12	22	18								
	15		*8 *10 12	24	20								
	16		8 *10 12 15	26	22		M6x5 for B8 M5x4						
	18-20		*10 12 *15	32	27								
	25		*12 15 18	38	31								
	30		*15 18 20	46	38	1	M8x6						
	35		*15 18 20	50	40								
	40		*20 22	60	45		M10x8						
	50		20 *22 25	70	55								

- For SCCA · SCCAW and SCCAB, * marked sizes are only available.
- However, D18 is not available.
- D50 - B20 is applicable to SCCN and SSCCN only.

Part Number Type	DH7		B Selectable	D1	d1	C	Set Screw M x Length	€ Unit Price SCC	PSCC	SSCC
(Wide Type) SCC PSCC SSCC	5	+0.012 0	6 *8	14	*14	0.5	M4x4			
	6		6 8	15	*15					
			*10	16	*16					
	8	+0.015 0	8		13					
			10	18						
	10		8		16					
			10	20						
	12	+0.018 0	8	22	20					
			10 12	26			M5x5			
	13		*8	22			M4x4			
			10	26						
	15		8 10	25	24		M5x5			
			*12	28						
	20	+0.021 0	10 12 15	32	29		M6x6			
	25		12 15 *18	42	38					
	30		16	45	42	1	M8x8			
			*20	49						
	35	+0.025 0	*20	59	47					
	40		*20 *22	72	55		M10x10			
	50		*25	79	65					

- * 30°chamfering is not available for Wide Type D5 and D6. (D1=*d1)
- B dimensions with * are applicable to SCC only.

Order Example: Part Number - B
SCCN12 - 10
SF-SSCCN16 - 12

Days to Ship: 6 Days P.87
2 Days

Price

■Volume Discount (Round down to one Cent.) P87

- SCCN

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

- PSCCN · SSCCN

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

- SCCA

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	10%	15%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

- SCCAW

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	10%	15%	23%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

- SCCAB

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	10%	15%	23%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

- SCC · PSCC · SSCC

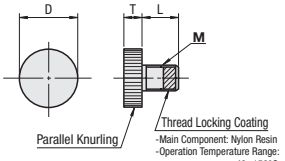
Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Alterations
Part Number - B - (KB / WKB)
SCCN12 - 10 - KB

Alterations	With Knurled Knob (Hand Tightening Type)
Code	KB(1 pc.) / WKB(2 pcs.)
Spec.	Attaches a knurled knob. *For detailed dimensions, see the right-hand side. A Set Screw is also included. Order Code KB (or WKB) D≤3 8≤B≤18
€	KB:B8 2,00 EUR/B10, 12 3,00 EUR/B15, 18 4,00 EUR WKB:B8 2,00 EUR/B10, 12 3,00 EUR/B15, 18 4,00 EUR

■Knurled Knob Details



M Material: 1.4301/X5CrNi18-10

B Selectable	M (Coarse Thread)	D	L	T
8	3	7.5	6	3
	4		8	
	5			
10	4	9.5	6	
	5		8	
	6			
12	5	11.5	10	4
	6			
15	6	14.5		
18	6	15.5	10	5

■Features
- Replacing the Hexagon Socket Set Screws with Knurled Knobs enables easy installation and removal of the Shaft Collar by hand.
- Set Screws come with loose-prevention coating (*For details, see P.251).
  * The knob that matches with dimension "B Selection" and dimension " M (Coarse) " is included.
  Ex. When a Knob is specified for SCCN10-8, Knurled Knobs of B8 and M4 are included.

Shaft Collars -Set Screw Type- -Compact Type-

Price Reduction Up to 45%

CAD Data

Features P.237: Smaller by up to 25% in width (B dimension) and 15% in outer diameter (D_1 dimension) than the Standard Type.

Compact Type

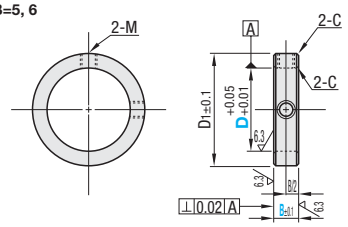
RoHS



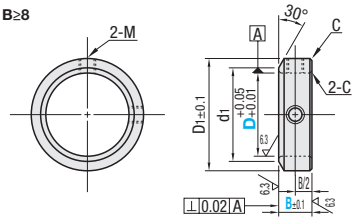
Type	M Material	S Surface Treatment	A Accessory
SCCJ	1.1191/C45E	Black Oxide Coating	2 Set Screws
PSCCJ		Electroless Nickel Plating	2 Set Screws
SSCCJ	1.4301/X5CrNi18-10	-	(JIS SUS)

25 / (6.3 /)

B=5, 6



B≥8



Part Number Type	D	B Selectable	D_1	d_1	C	Set Screw M x Length	€ Unit Price SCCJ	PSCCJ	SSCCJ
(Compact Type) SCCJ PSCCJ SSCCJ	3	5	7	-	0.2	M3x3			
	4		8						
	5		11						
	6		12						
	8		14						
	10		16						
	12		19		0.5				
	13		20						
	15		22						
	20	6	27			M4x3			
		8		22.5					
	25	8	32	27.5					
		10							
	30	10	39	32.5	1	M5x4			
		12	41			M6x5			
	35	10	44	37.5		M5x4			
		12	46			M6x5			
	40	15	51	42.5		M5x4			
		18	53			M6x5			

Order Example

Part Number	-	B
SCCJ15	-	5
SSCCJ25	-	10

Days to Ship: 6 Days (P.87) / 2 Days

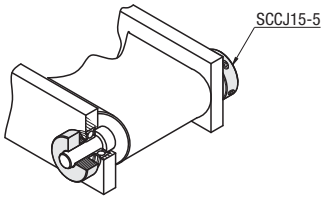
Price

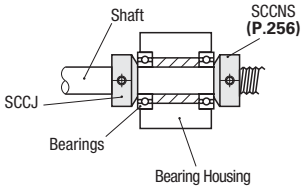
Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	10%	18%	23%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Example





Compactness Comparison Table

D	Size Differences B (Thickness)	Size Differences D1 (Outer Dia.)	Compact B (Thickness)	Compact D1 (Outer Dia.)	Standard (P.237) B (Thickness)	Standard (P.237) D1 (Outer Dia.)
3	-1	0	5	7	6	7
4	-1	0	5	8	6	8
5	-1	0	5	11	6	11
6	-1	0	5	12	6	12
8	-1	0	5	14	6	14
10	-1	0	5	16	6	16
12	-1	-1	5	19	6	20
13	-3	-2	5	20	8	22
15	-3	-2	5	22	8	24
20	-4	-5	6	27	10	32
25	-4	-6	8	32	12	38
30	-5	-7	10	39	15	46
35	-5	-6	10	44	15	50
40	-5	-9	15	51	20	60

Shaft Collars -Clamp-
-Standard Type-

Price Reduction
Up to 46%

CAD Data

Features: Less shaft damage from tightening than the Set Screw Type (**P.237**).

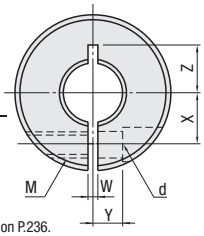
Standard Type

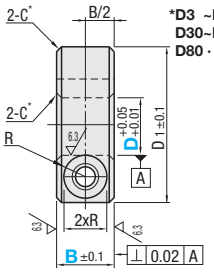
RoHS



Type	M Material	S Surface Treatment	A Accessory
SCS	1.1191/ C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCS		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCS	1.4301/ X5CrNi18-10	-	
SCSA	EN AW-2017/ AlCu4MgSi	Clear Anodize	
SCSAW			
SCSAB		Black Oxide Coating	

Thread Insert Type of EN AW-2017/AlCu4MgSi **P.255**





*D3 ~D25 :C0.5
D30~D60 :C1
D80 · D100 :C1.5

Maximum thrust loads obtained by tightening test are shown on P.236.

Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	Z	€ Unit Price SCS	PSCS	SSCS
(Standard Type) SCS PSCS SSCS	3	8	16	M3	3.4	3	1	4.5	2.2	3~5			
	4	8	18					5	3	3.5~6			
	5	8	20					5.5	4	5~6.5			
		10	22	M4	4.5	3.75		6.5		6~7			
	6	8	20	M3	3.4	3		6		6~6.5			
		10		M4	4.5	3.75							
	8	8	25	M3	3.4	3	1.5	8	5	7~9			
		10		M4	4.5	3.75							
		12	30	M5	5.5	4.5		9		7~10			
		15		M6	6.6	6							
	10	8		M3	3.4	3				8~10			
		10		M4	4.5	3.75							
		12		M5	5.5	4.5							
		15	35	M6	6.6	6		10	6	8~12			
	12	8	30	M3	3.4	3			5	9~10			
		10		M4	4.5	3.75							
		12		M5	5.5	4.5							
		15	35	M6	6.6	6		11	6	9~12			
	13	10	30	M4	4.5	3.75		10	5	10			
		12	34	M5	5.5	4.5		11		10~12			
		15	35	M6	6.6	6			6				
	15	10	34	M4	4.5	3.75		11.5		10~11			
		12	35	M5	5.5	4.5		12		11~13			
		15	40	M6	6.6	6		13	8				
	16	10	35	M5	5.5	4.5		12	6	11~12			
		12											
		15	40	M6	6.6	6		13	8	11~13			
	18 · 20	10		M5	5.5	4.5		14	7	13			
		12											
		15	45	M6	6.6	6		15	8	13~15			
		20*1						16					
	25	12		M5	5.5	4.5		17	7	16			
		15	50	M6	6.6	6		18	10	16~18			
		20	55					20		16~20			
	30	15								18~20			
		20	60	M8	9	7		23		18~21			
	35	15		M6	6.6	6	2		12	21			
	40	18	70	M8	9	7		26	13	23			
	50	22	85	M10	11	9	3	32	16	28			
	60*2	22	95					37	18	-			
	80*2	32	130	M16	18	13	5	50	22	-			
	100*2	36	150					60	26	-			

*1 B Dimension 20 is available for SCS only (When D18 is selected, this is not available.) *2 D Dimension 60 · 80 and 100 are available for SCS only. No slit machining on Z section.

Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	Z	€ Unit Price SCSA	SCSAW	SCSAB
(Standard Type) SCSA SCSAW SCSAB	3	8	16	M3	3.4	3	1	4.5	2.2	3			
	4	8	18					5	3	3.5			
	5	8	20					5.5	4	5			
	6	8						6		6			
	8	8	25				1.5	7	5	7			
		10											
	10	10	30	M4	4.5	3.75		9		8			
	12	10						10		9			
	13	10											
	15	10	34					11.5	6	10			
	16	10	35	M5	5.5	4.5		12		11			
		12											
	20	10	40					14	7	13			
		12											
		15											
	25	12	45					17		16			
		15											
	30	15	55	M6	6.6	6	2	20	10	18			
	35	15	60					23	12	21			
	40	18	70	M8	9	7		26	13	23			
	50	22	85	M10	11	9	3	32	16	28			

Order Example: Part Number - B → SCS10 - 10

Days to Ship: 6 Days (P.87) / 2 Days

Price

Volume Discount (Round down to one Cent.) **P.87**

- SCS · PSCS · SSCS

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

- SCSA · SCSAW

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

- SCSAB

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	10%	15%	23%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Shaft Collars -Clamp-
-Compact Type-

CAD Data

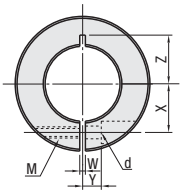
Features: Smaller by up to 33% in width (B dimension) and 16% in outer diameter (D_1 dimension) than the Standard Type (**P.239**).

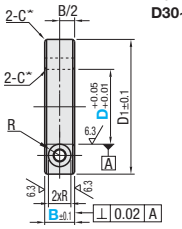
Compact Type

RoHS



Type	Material	Surface Treatment	Accessory
SCSJ	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCSJ		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCSJ	1.4301	-	





*D5 ~D25: C0.5
D30~D50: C1

Maximum thrust loads obtained by tightening test are shown on P.236.

Part Number Type	D	B	D_1	M (Coarse Thread)	d	R	W	X	Y	Z	€ Unit Price SCSJ	PSCSJ	SSCSJ
(Compact Type) SCSJ PSCSJ SSCSJ	5	6	16	M2.6	2.9	2.45	1	5.5	3	6			
	6		18					6		6.5			
	8		22				1.5	7		9			
	10		25					8					
	12							9					
	13	8	28	M3	3.4	3		11		11			
	15		30										
	16							11.5					
	20		35					13	5	13			
	25	10	42	M4	4.5	3.75		16.5		16.5			
	30	12	50	M5	5.5	4.5	2	20	6	20			
	35		55					22.5		21			
	40		60					25		23			
	50	18	80	M8	9	7	3	32	15	28			

Order Example: Part Number PSCSJ5 - B 6

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

- SCSJ

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard			

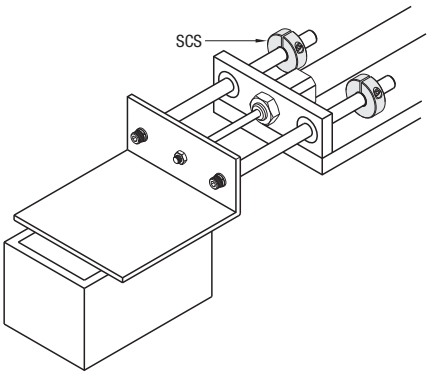
For orders larger than indicated quantity, please request a quotation.

- PSCSJ · SSCSJ

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Example



Compactness Comparison Table

D	Size Differences B (Thickness)	Size Differences D1 (Outer Dia.)	Compact B (Thickness)	Compact D1 (Outer Dia.)	Standard (P.237) B (Thickness)	Standard (P.237) D1 (Outer Dia.)
5	-2	-4	6	16	8	20
6	-2	-2	6	18	8	20
8	-2	-3	6	22	8	25
10	-2	-5	6	25	8	30
12	-2	-5	6	25	8	30
13	-2	-2	8	28	10	30
15	-2	-4	8	30	10	34
16	-2	-5	8	30	10	35
20	-2	-5	8	35	10	40
25	-2	-3	10	42	12	45
30	-3	-5	12	50	15	55
35	-3	-5	12	55	15	60
40	-6	-10	12	60	18	70
50	-4	-5	18	80	22	85

Shaft Collars -Split-

-Standard Type-

Price Reduction
Up to 46%

CAD Data

Feature: Post assembly collar installation makes maintenance easier compared to the Set Screw Type (**P.237**) and Clamp Type (**P.239**).

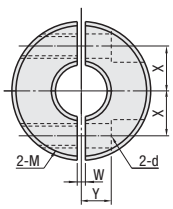
Standard Type

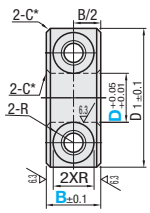
RoHS



Type	Material	Surface Treatment	Accessory
SCSP	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSCSP		Electroless Nickel Plating	
SSCSP	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screw 2 pcs.
SCNPA	EN AW-2017/ AlCu4MgSi	-	(JIS SUS)
SCNPAW		Clear Anodize	

Thread Insert Type of EN AW-2017/AlCu4MgSi P.255
The halves must remain in the same orientation as shipped when in use.





25/ (6.3/)

*D3 ~D25:C0.5
D30~D60:C1
D80 · D100:C1.5

Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	€ Unit Price SCSP	PSCSP	SSCSP	SCNPA	SCNPAW
(Standard Type) SCSP PSCSP SSCSP SCNPA (* only) SCNPAW (* only)	3	*8	16	M3	3.4	3	1	4.5	2.2					
	4	*8	18					5	3					
	5	*8	20					5.5	4					
		10	22	M4	4.5	3.75		6.5						
	6	*8	20	M3	3.4	3		6						
		10		M4	4.5	3.75								
	8	*8	25	M3	3.4	3		8 (7)※	5					
		10		M4	4.5	3.75								
		12	30	M5	5.5	4.5		9						
		15		M6	6.6	6								
	10	8		M3	3.4	3								
		*10		M4	4.5	3.75								
		12		M5	5.5	4.5								
		15	35	M6	6.6	6		10	6					
	12	8	30	M3	3.4	3			5					
		*10		M4	4.5	3.75								
		12		M5	5.5	4.5								
		15	35	M6	6.6	6		11	6					
	13	*10	30	M4	4.5	3.75		10	5					
		12	34	M5	5.5	4.5		11						
		15	35	M6	6.6	6			6					
	15	*10	34	M4	4.5	3.75	1.5	11.5						
		12	35	M5	5.5	4.5		12						
		15	40	M6	6.6	6		13	8					
	16	*10	35	M5	5.5	4.5		12	6					
		12												
		15	40	M6	6.6	6		13	8					
	18	10		M5	5.5	4.5		14	7					
		12												
		15		M6	6.6	6		15	8					
	20	*10	40	M5	5.5	4.5		14	7					
		12												
		15	45	M6	6.6	6		15	8					
	25	*12		M5	5.5	4.5		17	7					
		15	50	M6	6.6	6		18	10					
		20	55					20						
	30	*15												
		20	60	M8	9	7		23						
	35	*15		M6	6.6	6	2		12					
	40	*18	70	M8	9	7		26	13					
	50	*22	85	M10	11	9	3	32	16					
	60	22	95					37	18					
	80	32	130	M16	18	13	5	50	22					
	100	36	150					60	26					

※X will be equal to 7 when SCNPA or SCNPAW is selected only.

Order Example: Part Number - B
SCSP10 - 15
SCNPA15 - 10

Days to Ship: 6 Days P.87

Price

Volume Discount (※Round down to one Cent.) P.87

- SCSP · PSCSP · SSCSP

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%
Days to Ship	Standard		To be quoted	

※For orders larger than indicated quantity, please request a quotation.

- SCNPA · SCNPAW

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard		To be quoted	

※For orders larger than indicated quantity, please request a quotation.

Days to Ship: 2 Days

※Compactness Comparison Table

D	Size Differences B (Thickness)	Size Differences D1 (Outer Dia.)	Compact (P.242) B (Thickness)	Compact (P.242) D1 (Outer Dia.)	Standard B (Thickness)	Standard D1 (Outer Dia.)
5	-2	-4	6	16	8	20
6	-2	-2	6	18	8	20
8	-2	-3	6	22	8	25
10	-2	-5	6	25	8	30
12	-2	-5	6	25	8	30
13	-2	-2	8	28	10	30
15	-2	-4	8	30	10	34
16	-2	-5	8	30	10	35
20	-2	-5	8	35	10	40
25	-2	-3	10	42	12	45
30	-3	-5	12	50	15	55
35	-3	-5	12	55	15	60
40	-6	-10	12	60	18	70
50	-4	-5	18	80	22	85

Shaft Collars -Split-

-Compact Type / Balanced Type-

CAD Data

Feature: Smaller by up to 33% in width (B dimension) and 14% in outer diameter (D_1 dimension) than Standard Type (**P.241**).

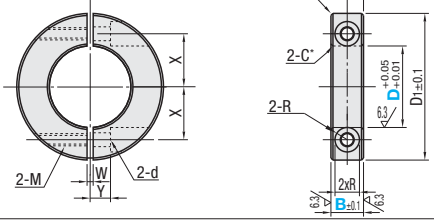
Compact Type

RoHS



Type	Material	Surface Treatment	Accessory
SCSPJ	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSCSPJ		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs.
SSCSPJ	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)

The halves must remain in the same orientation as shipped when in use.



25 / 6.3

*D5 ~D25:C0.5
D30~D50:C1

Part Number Type	D	B	D_1	M (Coarse Thread)	d	R	W	X	Y	€ Unit Price SCSPJ	PSCSPJ	SSCSPJ
(Compact Type) SCSPJ PSCSPJ SSCSPJ	5	6	16	M2.6	2.9	2.45	1	5.5	3			
	6		18					6				
	8	6	22				1.5	7				
	10		25					8				
	12							9				
	13	8	28	M3	3.4	3		11				
	15	8	30									
	16							11.5				
	20		35					13	5			
	25	10	42	M4	4.5	3.75		16.5				
	30	12	50	M5	5.5	4.5		20	6			
	35		55				2	22.5				
	40		60					25				
	50	18	80	M8	9	7	3	32	15			

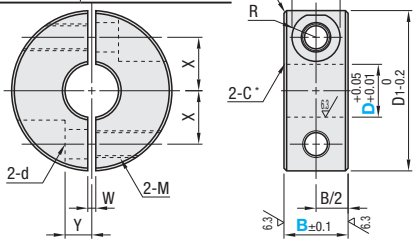
Feature: Suitable for rotating applications since the collars are weight balanced. Included hexagon socket head cap screws are coated with thread locking compound.

Balanced Type

RoHS



Type	Material	Surface Treatment	Accessory
SCSPB	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSCSPB		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
SSCSPB	1.4301/X5CrNi18-10	-	



25 / 6.3

*D16~D25:C0.5
D30~D50:C1

Part Number Type	D	B	D_1	M (Coarse Thread)	d	R	W	X	Y	€ Unit Price SCSPB	PSCSPB	SSCSPB
(Balanced Type) SCSPB PSCSPB SSCSPB	16	10	35	M5	5.5	4.5	1.5	12	6			
		12										
	17	10	40					14	7			
		12										
	20	10										
		12										
	25	15	45	M6	6.6	6		15	8			
		12		M5	5.5	4.5		17	7			
		15	50	M6	6.6	6		18	10			
	30	15	55					20				
		20	60	M8	9	7		23				
	35	15		M6	6.6	6	2		12			
	40	18	70	M8	9	7		26	13			
	50	22	85	M10	11	9	3	32	16			

Comparison Table of Weight Differences

Part Number Type	D	B	Body weight (g) Top Half	Bottom Half	Weight difference	Weight with screws (g) Top Half	Bottom Half	Weight difference
SCSP (Standard)	25	12	45	40	5	48	45	3
	40	18	141	163	22	162	173	11
SCSPB (Balanced Type)	25	12	43	43	0	47	47	0
	40	18	152	152	0	167	167	0

Order Example: Part Number - B
SCSPJ10 - 6
SCSPB17 - 12

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

- Compact Type · SCSPB

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

- PSCSPB · SSCSPB

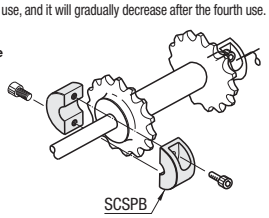
Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Thread loosening prevention measures for Balanced Type

- Threads are coated with special resin with superior elasticity as well as resistance to abrasion and oil.
- Effect is maximum at the first use, and it will gradually decrease after the fourth use.

Example



Shaft Collars -Set Screw Type-

-2-Hole Type / 2-Female Thread (Coarse) Type / 4-Hole Type / 4-Female Thread (Coarse) Type-

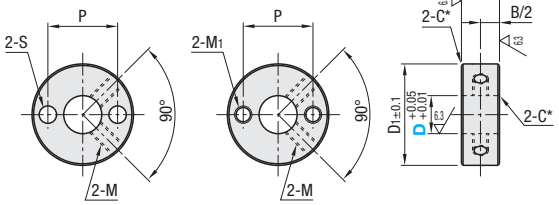
CAD Data

2-Hole Type / 2-Female Thread Type

RoHS



Type		Material	Surface Treatment	Accessory
2-Hole	2-Female Thread			
SCTN	SCTW	1.1191/C45E	Black Oxide Coating	2 Set Screws
PSCTN	PSCTW		Electroless Nickel Plating	2 Set Screws (JIS SUS)
SSCTN	SSCTW	1.4301/X5CrNi18-10	-	

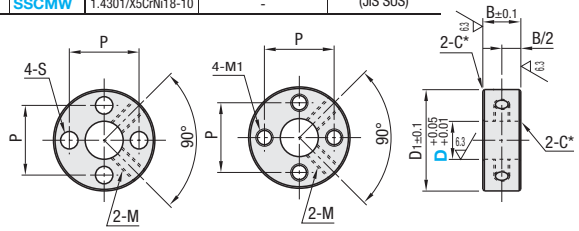


*D3 ~D25:C0.5
D30~D50:C1

4-Hole Type / 4-Female Thread Type



Type		Material	Surface Treatment	Accessory
4-Hole	4 Female Thread			
SCMN	SCMW	1.1191/C45E	Black Oxide Coating	2 Set Screws
PSCMN	PSCMW		Electroless Nickel Plating	2 Set Screws (JIS SUS)
SSCMN	SSCMW	1.4301/X5CrNi18-10	-	



*D3 ~D25:C0.5
D30~D50:C1

Part Number Type	D	B	D1	S	P	Set Screw M x Length	M1 (Coarse Thread)
(2-Hole Type)	3	6	18	3.4	11	M3x3	M3
SCTN	4						
PSCTN	5	10	22	4.5	15	M4x4	
SSCTN	6						
(2-Female Thread Type)	8		24		16		M4
SCTW	10		26		18		
PSCTW	12	12	32	5.5	22	M5x5	M5
SSCTW	13		33		23		
(4-Hole Type)	15		35		25		
SCMN	16		40	6.6	28	M6x6	M6
PSCMN	18 · 20		44		32		
SSCMN	25		49		37		
(4-Female Thread Type)	30	15	54		42	M8x8	
SCMW	35		59		47		
PSCMW	*40	20	72	9	56	M10x10	-
SSCMW	*50	25	86	11	68		-

* marked sizes are not available with Female Thread Holes.

D	€ Unit Price											
	SCTN	PSCTN	SSCTN	SCMN	PSCMN	SSCMN	SCTW	PSCTW	SSCTW	SCMW	PSCMW	SSCMW
3												
4												
5												
6												
8												
10												
12												
13												
15												
16												
18 · 20												
25												
30												
35												
*40												
*50												

(?)* marked sizes are not available with Female Thread Holes.

Order Example Part Number SCTN12

Days to Ship 6 Days P.87 2 Days

Price

Volume Discount (?)Round down to one Cent.) P.87

- SCTN

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	10%	15%	23%
Days to Ship	Standard		To be quoted	

(?)For orders larger than indicated quantity, please request a quotation.

- PSCTN · SSCTN · SCMN

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard		To be quoted	

(?)For orders larger than indicated quantity, please request a quotation.

- Others

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

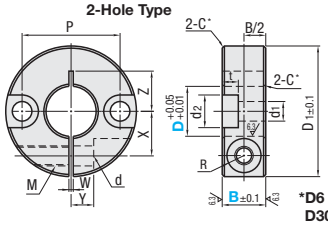
(?)For orders larger than indicated quantity, please request a quotation.

■2-Hole Counterbored Type RoHS
■3-Hole Counterbored Type

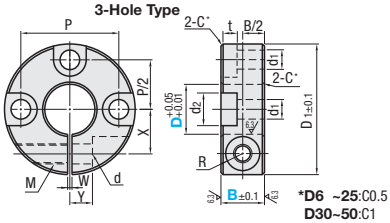


Type		M Material	S Surface Treatment	A Accessory
2-Hole	3-Hole			
SCSG	SCSGT	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCSG	PSCSGT		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc.
SSCSG	SSCSGT	1.4301/X5CrNi18-10	-	(JIS SUS)

2-Hole Type



3-Hole Type



Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	Z	P	d1	d2	t
(2-Hole Type) SCSG PSCSG SSCSG (3-Hole Type) SCSGT PSCSGT SSCSGT	6	*8	24	M3	3.4	3	1	8	4	6~8	15	3.5	6.5	3.3
		*10		M4	4.5	3.75								
	8	*8	25	M3	3.4	3	1.5		5	7~9	17			
		*10	28	M4	4.5	3.75		9		8~9	18	4.5	8	4.4
	10		33					10		10~11	22	5.5	9.5	5.4
		12		M5	5.5	4.5		11						
		15	36	M6	6.6	6		13	6	11~12	23	6.6	11	6.5
	12	*10	35	M4	4.5	3.75		11	5	10~12	24	5.5	9.5	5.4
		*12		M5	5.5	4.5								
		15	38	M6	6.6	6		13	6	11~13	25	6.6	11	6.5
	13	*10	33	M4	4.5	3.75		11	5	10~11	23	4.5	8	4.4
		12	36	M5	5.5	4.5				11~13	25	5.5	9.5	5.4
		15		M6	6.6	6		12	6					
	15	*12	38	M5	5.5	4.5		13			27			
		15	40	M6	6.6	6			8		28	6.6	11	6.5
	16	*10	36	M5	5.5	4.5		12	6	11~12	26	4.5	8	4.4
		*12	38					13		12~13	28	5.5	9.5	5.4
		15	42	M6	6.6	6			8	13~14	29	6.6	11	6.5
	20	*12		M5	5.5	4.5		15	7		32	5.5	9.5	5.4
		*15	45	M6	6.6	6			8	14~15	33	6.6	11	6.5
		20						16						
	25	*12	48	M5	5.5	4.5		17	7	14~16	37	5.5	9.5	5.4
		*15	50	M6	6.6	6		18	10	15~17	38	6.6	11	6.5
	30		55					20		20	43			
	35		60				2	23	12	21	48			
	40	*18	78	M8	9	7		28	13	26	60	9	14	8.6
	50	22	88	M10	11	9	3	32	16	29	71	11	17.5	10.8

(Only * marked sizes are available for 3-Hole Type.)

Due to no additional slitting on the opposite side of the screw, 3-Hole type has less gripping power. 2-Hole Type is recommended where more shaft gripping power is required

D	B Selectable	€ Unit Price SCSG	PSCSG	SSCSG	SCSGT	PSCSGT	SSCSGT
6	*8						
	*10						
8	*8						
	*10						
10	12						
	15						
12	*10						
	*12						
	15						
13	*10						
	12						
	15						
15	*12						
	15						
16	*10						
	*12						
	15						
20	*12						
	*15						
	20						
25	*12						
	*15						
30							
35							
40	*18						
50	22						

Only * marked sizes are available for 3-Hole Type.

Order Example: Part Number - B → SCSG10 - 10

Price

■Volume Discount (Round down to one Cent.) P.87

- SSCSGT

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

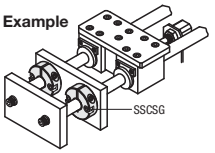
For orders larger than indicated quantity, please request a quotation.

- Other than SSCSGT

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Example



Days to Ship

- Except SCSGT: 6 Days P.87
- SCSGT: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Shaft Collars -Clamp-

-2-Hole Type / 2-Female Thread (Coarse) Type-

CAD Data

■ 2-Hole Type
■ 2-Female Thread (Coarse) Type

RoHS

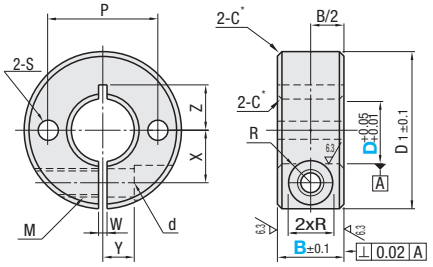


Type		M Material	S Surface Treatment	A Accessory
2-Hole	2-Female Thread			
SCSM	SCSW	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCSM	PSCSW		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc.
SSCSM	SSCSW	1.4301/X5CrNi18-10	-	(JIS SUS)

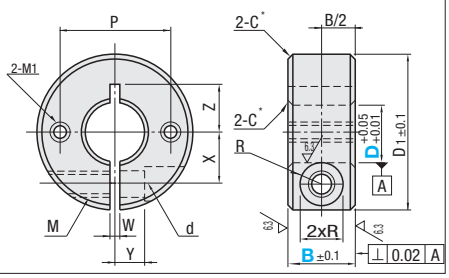
25 / (6.3 /)

*D6 ~D25:C0.5
D30~D50:C1

2-Hole Type



2-Female Thread (Coarse) Type



Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	Z	S	P	M1 (Coarse Thread)	€ Unit Price SCSM	PSCSM	SSCSM	SCSW	PSCSW	SSCSW
	6	* 8	20	M3	3.4	3	1	6	4	6~6.5	3.5	12								
		*10		M4	4.5	3.75						13	M3							
	8	* 8	25	M3	3.4	3		8	5	7~9	4.5	14								
		*10		M4	4.5	3.75						18	M4							
		*12		M5	5.5	4.5		9		7~10	5.5		M5							
		15		M6	6.6	6						20	-							
	10	* 8	30	M3	3.4	3				8~10			M5							
		*10		M4	4.5	3.75														
		*12		M5	5.5	4.5														
		15	35	M6	6.6	6		10	6	8~12	6.6	24	-							
	12	* 8	30	M3	3.4	3			5	9~10	5.5	22	M5							
(2-Hole Type)		*10		M4	4.5	3.75														
		*12		M5	5.5	4.5														
SCSM		*15	35	M6	6.6	6		11	6	9~12	6.6	24	M6							
	13	*10	30	M4	4.5	3.75		10	5	10	4.5	22	M4							
PSCSM		*12	34	M5	5.5	4.5		11		10~12	5.5	23	M5							
		15	35	M6	6.6	6			6			24	-							
SSCSM	15	*10	34	M4	4.5	3.75		11.5		10~11	4.5	23	M4							
		*12	35	M5	5.5	4.5		12		11~13	5.5	26	M5							
		*15	40	M6	6.6	6	1.5	13	8		6.6	28	M6							
	16	*10	35	M5	5.5	4.5		12	6	11~12	4.5	24	M4							
(2-Female Thread		*12									5.5	26	M5							
		*15	40	M6	6.6	6		13	8	11~13	6.6	28	M6							
Type)	18·20	*10	40	M5	5.5	4.5		14	7	13	4.5		M4							
		*12									5.5	30	M5							
SCSW		*15	45	M6	6.6	6		15	8	13~15	6.6	34	M6							
		20						16					-							
PSCSW		25																		
		30																		
SSCSW		*12		M5	5.5	4.5		17	7	16	5.5	36	M5							
	25	*15	50	M6	6.6	6		18	10	16~18	6.6	38	M6							
- Only * marked sizes are available for 2-Female Thread Type.		20	55					20		16~20		40	-							
- D18 is available for 2-Female Thread Type only.		25																		
		30																		
	30	*15								18~20		44	M6							
		20	60	M8	9	7		23		18~21	9	45	-							
		25																		
		30																		
	35	15		M6	6.6	6	2		12	21	6.6	48								
		20																		
		25																		
		30																		
	40	18	70	M8	9	7		26	13	23	9	56								
		30																		
	50	22	85	M10	11	9	3	32	16	28	11	68								
		30																		

Order Example: Part Number SCSM10 - B 10

Days to Ship: 6 Days (P.87) / 2 Days

Price

■Volume Discount (Round down to one Cent.) P.87

- Except Those Shown Below

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

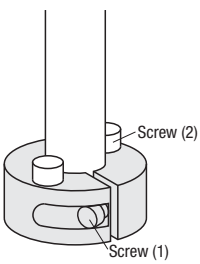
- SSCSM · SSCSW

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Example

Tips on Assembly
When using collars as shown in the diagram on the right, clamping the shaft with the screw (1) after the collar is fully tightened to the plate with the screws (2) is not possible.
The type shown on P.247 that can be fully mounted first with the screws (2) is recommended.
P.247



Shaft Collars -Clamp-

-3-Hole Type / 3-Female Thread (Coarse) Type-

CAD Data

■ 3-Hole Type
■ 3-Female Thread (Coarse) Type
RoHS

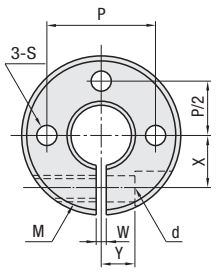


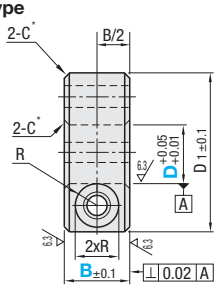
Type		M Material	S Surface Treatment	A Accessory
3-Hole	3-Female Thread			
SCST	SCSTR	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCST	PSCSTR		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc.
SSCST	SSCSTR	1.4301/X5CrNi18-10	-	(JIS SUS)

25 / (6.3 /)

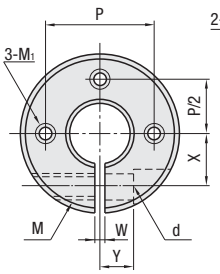
*D6 ~D25:C0.5
D30~D50:C1

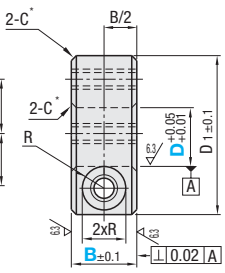
3-Hole Type





3-Female Thread (Coarse) Type





Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	S	P	M1 (Coarse Thread)	€ Unit Price SCST	PSCST	SSCST	SCSTR	PSCSTR	SSCSTR
(3-Hole Type) SCST PSCST SSCST (3-Female Thread Type) SCSTR PSCSTR SSCSTR	6	* 8	20	M3	3.4	3	1	6	4	3.5	12							
		*10		M4	4.5	3.75					13	M3						
	8	* 8	25	M3	3.4	3	1.5	8	5		14							
		*10		M4	4.5	3.75				4.5	18	M4						
		12	30	M5	5.5	4.5		9		5.5		-						
		15		M6	6.6	6					20							
	10	* 8		M3	3.4	3						M5						
		*10		M4	4.5	3.75												
		12		M5	5.5	4.5		10				-						
		15	35	M6	6.6	6			6	6.6	24							
	12	8	30	M3	3.4	3			5	5.5								
		*10		M4	4.5	3.75					22	M5						
		*12		M5	5.5	4.5												
		15	35	M6	6.6	6		11	6	6.6	24	-						
	13	*10	30	M4	4.5	3.75		10	5	4.5	22	M4						
		12	34	M5	5.5	4.5		11		5.5	23	-						
		15	35	M6	6.6	6			6		24							
	15	*10	34	M4	4.5	3.75		11.5		4.5	23	M4						
		*12	35	M5	5.5	4.5		12		5.5	26	M5						
		*15	40	M6	6.6	6		13	8	6.6	28	M6						
	16	10	35	M5	5.5	4.5		12	6	4.5	24	-						
		*12								5.5	26	M5						
		*15	40	M6	6.6	6		13	8	6.6	28	M6						
	20	*10		M5	5.5	4.5		14	7	4.5		M4						
		*12								5.5	30	M5						
		*15	45	M6	6.6	6		15	8	6.6	34	M6						
	25	*12	45	M5	5.5	4.5		17	7	5.5	36	M5						
		*15	50	M6	6.6	6		18	10	6.6	38	M6						
	30	*15	55					20	10		44							
	35	*15	60				2	23	12		48							
	40	*18	70	M8	9	7		26	13	9	56	M8						
	50	22	85	M10	11	9	3	32	16	11	68	-						

- Only * marked sizes are available for 3-Female Thread Type.

Due to no additional slitting on the opposite side of the screw, 3-Hole / 3-Female Thread type has less gripping power compared to 2-Hole / 2-Female Thread Type.
2-Hole / 2-Female Thread Type are recommended where more shaft gripping power is required.

Order Example

Part Number	-	B
SCST10	-	10

Days to Ship

6 Days P.87

2 Days

Price

■ Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Shaft Collars -Wedge-

-2-Hole Type / 2-Female Thread (Coarse) Type / 3-Hole Type / 3-Female Thread (Coarse) Type-

CAD Data

Feature: Less power is required for tightening comparing to the conventional Clamp Types. No constraints on tightening sequence.

■ 2-Hole Type
■ 2-Female Thread (Coarse) Type

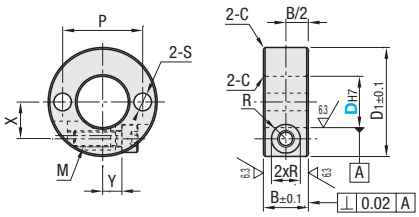


Type		Shaft Collar		Wedge	
2-Hole	2-Female Thread	M Material	S Surface Treatment	M Material	A Accessory
SCWM	SCWW	1.1191/C45E	Blackening Coating	1.4301/ X5CrNi18-10	Hexagon Socket Head Cap Screw 1 pc.
PSCWM	PSCWW		Electroless Nickel Plating		Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCWM	SSCWW	1.4301/X5CrNi18-10	-		

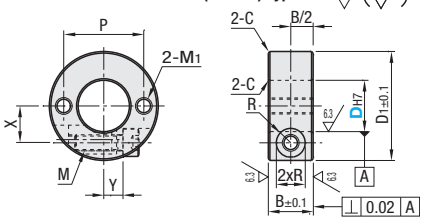
*D10~D25:C0.5
D30~D50:C1

Maximum thrust loads obtained by tightening test are shown on P.236

2-Hole Type



2-Female Thread (Coarse) Type



Part Number Type	D	D1	B	P	X	Y	S	M	M1	R	€ Unit Price SCWM	PSCWM	SSCWM	SCWW	PSCWW	SSCWW
(2-Hole Type)	10	25	10	18	8.5	3.5	4.5	4	4	4						
SCWM PSCWM SSCWM	12	28		20	9.5	5										
	15	30		23	11	4.5										
	16	34	12	25	11.5	6	5.5	5	5	4.5						
(2-Female Thread Type)	20	38		29	13.5	7										
	25	44		34	16	9										
	30	48		39	18.5	8										
SCWW PSCWW SSCWW	35	56	15	46	22	9.5	6.6	5	-	4.5						
	40	68		54	24.5	18	9	5	-							
	50	78		64	29.5	19										

C (O.D./I.D. Chamfers) will be 1.0 for D30 or more.

■ 3-Hole Type
■ 3-Female Thread (Coarse) Type

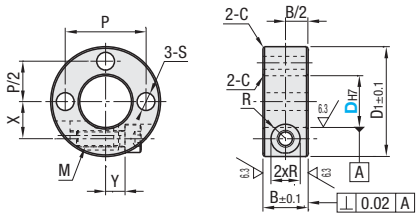


Type		Shaft Collar		Wedge	
3-Hole	3-Female Thread	M Material	S Surface Treatment	M Material	A Accessory
SCWT	SCWR	1.1191/C45E	Blackening Coating	1.4301/ X5CrNi18-10	Hexagon Socket Head Cap Screw 1 pc.
PSCWT	PSCWR		Electroless Nickel Plating		Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCWT	SSCWR	1.4301/X5CrNi18-10	-		

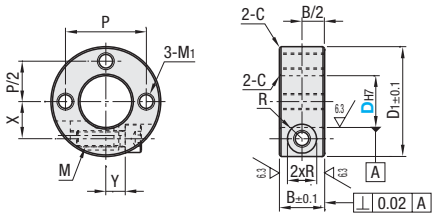
*D10~D25:C0.5
D30~D50:C1

Maximum thrust loads obtained by tightening test are shown on P.236

3-Hole Type



3-Female Thread (Coarse) Type



Part Number Type	D	D1	B	P	X	Y	S	M	M1	R	€ Unit Price SCWT	PSCWT	SSCWT	SCWR	PSCWR	SSCWR
(3-Hole Type)	10	25	10	18	8.5	3.5	4.5	4	4	4						
SCWT PSCWT SSCWT	12	28		20	9.5	5										
	15	30		23	11	4.5										
	16	34	12	25	11.5	6	5.5	5	5	4.5						
(3-Female Thread Type)	20	38		29	13.5	7										
	25	44		34	16	9										
	30	48		39	18.5	8										
SCWR PSCWR SSCWR	35	56	15	46	22	9.5	6.6	5	6	4.5						
	40	68		54	24.5	18	9	5	8							
	50	78		64	29.5	19			-							

C (O.D./I.D. Chamfers) will be 1.0 for D30 or more.

Order Example

Part Number
SCWM16
PSCWR35

Days to Ship

6 Days P.87

Price

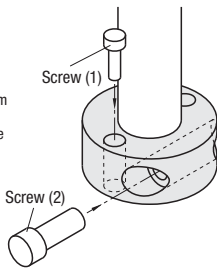
Volume Discount Rate (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49
Discount Rate	Unit Price	5%	10%
Days to Ship	Standard	To be quoted	

For orders larger than indicated quantity, please request a quotation.

Example

When using the Wedge Type as show in the diagram on the right, the collar can be fully tightened to the plate first with the screws (1), the shaft can then be clamped using the screw (2).



Shaft Collars -Split-

-2-Hole Type / 2-Female Thread (Coarse) Type-

CAD Data

Feature: Compared to the Set Screw Type and Clamp Type, post assembly install and remove is possible, making for easy maintenance. P.243 · P.244

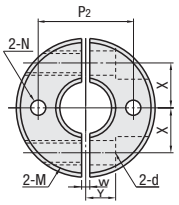
■ 2-Hole Type
■ 2-Female Thread (Coarse) Type



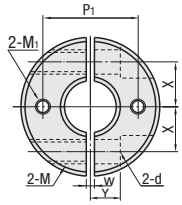
RoHS

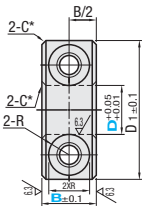
Type		Material	Surface Treatment	Accessory
2-Hole	2-Female Thread			
SCSPK	SCSPT	1.1191/C45E	Blackening Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSCSPK	PSCSPT		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
SSCSPK	SSCSPT	1.4301/X5CrNi18-10	-	

2-Hole Type



2-Female Thread (Coarse) Type





*D6 ~D25:C0.5
D30~D50:C1

Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	2-Hole Type N Through Hole	2-Hole Type P2	2-Female Thread Type M1 (Coarse Thread)	2-Female Thread Type P1	€ Unit Price SCSPT SCSPK	€ Unit Price PSCSPT PSCSPK	€ Unit Price SSCSPT SSCSPK
(2-Hole Type) SCSPK PSCSPK SSCSPK (2-Female Thread Type) SCSPT PSCSPT SSCSPT	6	8	20	M3	3.4	3	1	6	4	3.5	13					
		10		M4	4.5	3.75										
	8	8	25	M3	3.4	3	1.5	8	5	4.5	16.5	-	-			
		10		M4	4.5	3.75										
		12	30	M5	5.5	4.5		9			19					
		15		M6	6.6	6										
	10	8		M3	3.4	3				5.5	20	M4	20			
		10		M4	4.5	3.75										
		12		M5	5.5	4.5		10								
		15	35	M6	6.6	6			6		22.5					
	12	8	30	M3	3.4	3			5		21		22			
		10		M4	4.5	3.75										
		12		M5	5.5	4.5										
		15	35	M6	6.6	6		11	6		23.5					
	13	10	30	M4	4.5	3.75		10	5		21.5		24			
		12	34	M5	5.5	4.5		11			23.5					
		15	35	M6	6.6	6			6		24					
	15	10	34	M4	4.5	3.75		11.5			24.5		25			
		12	35	M5	5.5	4.5		12			25					
		15	40	M6	6.6	6		13	8		27.5					
	16	10	35	M5	5.5	4.5		12	6		25.5		28			
		12														
		15	40	M6	6.6	6		13	8		28					
	18	10		M5	5.5	4.5		14	7		29	M5	30			
		12														
		15	45	M6	6.6	6		15	8		31.5					
	20	10	40	M5	5.5	4.5		14	7		30					
		12														
		15	45	M6	6.6	6		15	8		32.5					
	25	12		M5	5.5	4.5		17	7	6.6	35		35			
		15	50	M6	6.6	6		18	10		37.5					
		20	55					20			40					
	30	15									42.5	M6	42			
		20	60	M8	9	7		23			45					
	35	15		M6	6.6	6	2		12		47.5		47			
	40	18	70	M8	9	7		26	13	9	55	M8	56			
	50	22	85	M10	11	9	3	32	16	11	67.5		66			

The halves must remain in the same orientation as shipped when in use. Prices in ( ) are for 2-Hole Type only.

Order Example: Part Number SCSPK10 - B 10

Days to Ship: 6 Days P.87

Example

Price

Volume Discount Rate (Round down to one Cent.) P.87

- SSCSPK

Quantity	1~29	30~39	40~49	50~99
Discount Rate	Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

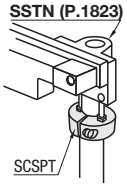
For orders larger than indicated quantity, please request a quotation.

- Other than SSCSPK

Quantity	1~29	30~39	40~49	50~99
Discount Rate	Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

SSTN (P.1823)



NEW

Shaft Collars -Keyless Bushing-

-Standard Type (with centering function) / Quick Mount (Nut) Type-

Price Reduction 5%

CAD Data

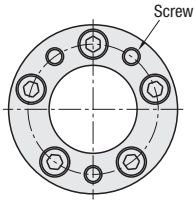
Features: Enhanced thrust load rating standards.

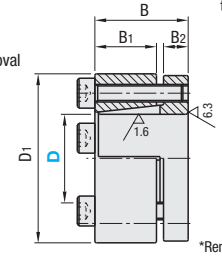
Standard Type (With Centering Function)

RoHS



Type	Material	Surface Treatment
SCML	1.1191/C45E	Black Oxide Coating
PSCML		Electroless Nickel Plating
SSCML	1.4301/X5CrNi18-10	-





Maximum thrust loads obtained by tightening test are shown on **P.236**

Locking screws for SCML and PSCML are colored red due to coating agent.

*Removal screw holes and Locking screw holes have the same thread size.

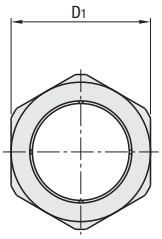
Part Number Type	D	D1	B1	B2	B	Locking Screws MxL	Locking Screws Quantity	Allowable Thrust Load (kN) SCML	PSCML	SSCML	Tightening Torque (Nm)		Mass (g)	€ Unit Price SCML	PSCML	SSCML
SCML PSCML SSCML	12	42	17	8	27	M6x25	3	13.3	13.3	4.0	15.7	9.6	262			
	16	43	16	9	27	M6x25	3	13.3	13.3	4.0	15.7	9.6	259			
	20	52	16	9	27	M6x25	4	17.8	17.8	5.3	15.7	9.6	372			
	25	54	16	9	27	M6x25	4	17.8	17.8	5.3	15.7	9.6	371			
	30	63	16	10.5	28.5	M6x25	5	22.2	22.2	6.7	15.7	9.6	523			
	35	66	16	10.5	28.5	M6x25	5	22.2	22.2	6.7	15.7	9.6	534			

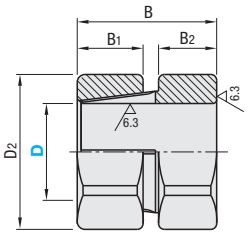
Quick Mount (Nut) Type

RoHS



Type	Material	Surface Treatment
SCQL	1.1191/C45E	Manganese Phosphate
PSCQL		Electroless Nickel Plating





Maximum thrust loads obtained by tightening test are shown on **P.236**

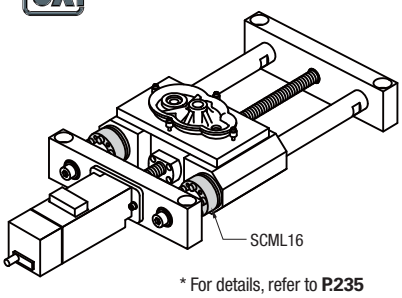
Teflon tape (sealing tape) is wrapped around the thread face. Must be re-taped for reuse.

Part Number Type	D	D1	D2	B1	B2	B	Allowable Thrust Load (kN) SCQL	PSCQL	Tightening Torque (Nm)	Mass (g)	€ Unit Price SCQL	PSCQL
SCQL PSCQL	12	19	21	9	8	20	3.7	2.1	29.4	29		
	16	24	26	12	10	25.5	5.4	3.1	49	54		
	20	30	32.5	14.5	13	31.5	8.8	4.9	68.6	105		
	25	36	40	17	15	36	15.7	8.8	88.2	171		
	30	41	45	17	17	41	17.7	9.9	127	218		
	35	46	51	19	19	45	20.6	11.5	167	288		

Order Example — Part Number: SCML16, SCQL30

Days to Ship: 6 Days P.87

Example



* For details, refer to **P.235**

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14
Discount Rate	€ Unit Price	5%
Days to Ship	Standard	To be quoted

For orders larger than indicated quantity, please request a quotation.

Recommended Shaft Tolerance

Shaft Outer Diameter	g6 (h7)

Finish the surface roughness to: Ra = 1.6a or better.

Cautions for Installation

Use a torque wrench to tighten the screws.

Shaft Collars -Standard Type with Urethane - Compact -
-Clamp Type / Split Type-

Features: Standard Type with Urethane: Reduces noise generated by metal-to-metal contact.
Compact Type with Urethane: Smaller by up to 44% in width (B dimension) and 25% in outer diameter (D_1 dimension) than Standard Type with Urethane.

CAD Data

Standard Type with Urethane Clamp Type RoHS



Standard Type with Urethane Split Type RoHS

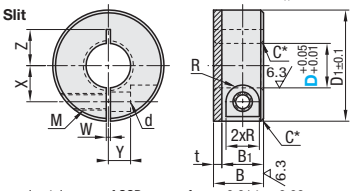


Type		M Material	S Surface Treatment	A Accessory
Slit	Split			
SCD	SCSPD	1.0038/S235JR (1.1191/C45E	Cathodic Electrodeposition Coating (Blackening	Clamp: Hexagon Socket Head Cap Screw 1 pc. Split: Hexagon Socket Head Cap Screw 2 pcs.
PSCD	PSCSPD		Electroless Nickel Plating	Clamp: Hexagon Socket Head Cap Screw 1 pc. (JIS SUS) Split: Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
SSCD	SSCSPD	1.4301/X5CrNi18-10	-	

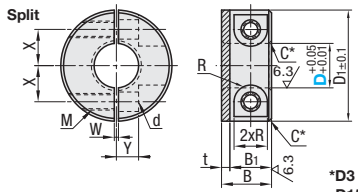
Damper
M Material: Urethane
H Hardness: Slit : Shore A70: No.3~6 (Ester Type)
: Shore A90: No.8~50 (Ether Type)
Split : Shore A70 (Ester Type)
(Allowable Temperature: 70°C)
(Urethane Rubber Features P.2-359

(Material and surface treatment will be revised to the indicated in ( ) without notice.

Slit



Split



25 (6.3)

*D3 ~D13:C0.5
D15~D50:C1

(D dimension tolerance of SCD ranges from +0.01 to +0.08.

Part Number Type	D	B	D_1	B_1	t	M (Coarse Thread)	d	R	W	X	Y	Z	€ Unit Price SCD	PSCD	SSCD	SCSPD	PSCSPD	SSCSPD
	*3	10	15	8	2	M3	3.4	3	1.0	4.5	3	3~5						
	*4											3.5~6						
	*5	12	20	10		M4	4.5	3.75		6	4	6~7						
(Clamp Type)	6											6~6.5						
SCD	8	18	30	15	3	M6	7	6	1.5	9	5	7~10						
PSCD	10		35							10	6	8~12.5						
SSCD	12									11		9~12.5						
* marked dimensions are for Slit Type only.	13											10~12.5						
	15		40							13	8	11~13						
(Split Type)	16											11~13						
SCSPD	20	20	45		5					15		13~15						
PSCSPD	25		50							18	10	16~18						
SSCSPD	30		55							20		15~20						
	*35		60						2.0	23	12	17.5~21						
	*40	23	70	18		M8	9	7		26	13	20~23						
	*50	27	85	22		M10	11	9		32	16	25~28						

Compact Type with Urethane Clamp Type RoHS



Compact Type with Urethane Split Type RoHS

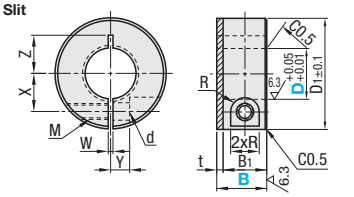


Type		M Material	S Surface Treatment	A Accessory
Slit	Split			
SCDJ	SCSPDJ	1.1191/C45E	Black Oxide Coating	Clamp: Hexagon Socket Head Cap Screw 1 pc. Split: Hexagon Socket Head Cap Screw 2 pcs.
PSCDJ	PSCSPDJ		Electroless Nickel Plating	Clamp: Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCDJ	SSCSPDJ	1.4301/X5CrNi18-10	-	Split: Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)

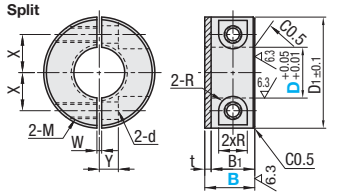
Damper
M Material: Ester Urethane
H Hardness: Shore A70
(Allowable Temperature: 70°C)
(Urethane Rubber Features P.2-359

(Refer to Compactness Comparison Table below.

Slit



Split



25 (6.3)

Part Number Type	D	B Selectable	D_1	B_1	t	M (Coarse Thread)	d	R	W	X	Y	Z	€ Unit Price Clamp Type SCDJ	PSCDJ	SSCDJ	Split Type SCSPDJ	PSCSPDJ	SSCSPDJ
(Clamp Type)	8	10	25	8	2	M3	3.4	3	1.5	8	5	7~9						
SCDJ	10		30							9		8~10						
PSCDJ	12									10		9~10						
SSCDJ	16	12	35	10		M5	5.5	4.5		12	6	11~12						
* marked dimensions are for the Clamp Type only.	20	13	40		3					14	7	13						
(Split Type)	25	15	45	12						17		16						
SCSPDJ	30		50							20	6	18~20						
PSCSPDJ	*40		60						2	25		23						
SSCSPDJ	*50	21	80	18		M8	9	7	3	32	15	28						

Order Example

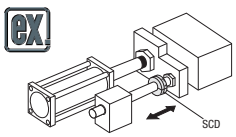
Part Number	-	B
SCSPD8		
SCDJ8	-	10
SCSPDJ10	-	10

Days to Ship
6 Days P.87 / 2 Days

Price
Volume Discount (Round down to one Cent.) P.87
- Other than SSCSPDJ

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard		To be quoted	

(For orders larger than indicated quantity, please request a quotation.



- SSCSPDJ

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard		To be quoted	

(For orders larger than indicated quantity, please request a quotation.

(Compactness Comparison Table

D	Size Differences B (Thickness)	Size Differences D_1 (Outer Dia.)	Compact B (Thickness)	Compact D_1 (Outer Dia.)	Standard B (Thickness)	Standard D_1 (Outer Dia.)
8	-8	-5	10	25	18	30
10	-8	-5	10	30	18	35
12	-8	-10	10	30	18	40
16	-6	-5	12	35	18	40
20	-7	-5	13	40	20	45
25	-5	-5	15	45	20	50
30	-5	-5	15	50	20	55
40	-8	-10	15	60	23	70
50	-6	-5	21	80	27	85

Shaft Collars -For Bearing Fixing-

-Set Screw Type-

CAD Data

Feature: For bearing inner race retention. Requires no special tools, and economical compared to specialty bearing nuts.

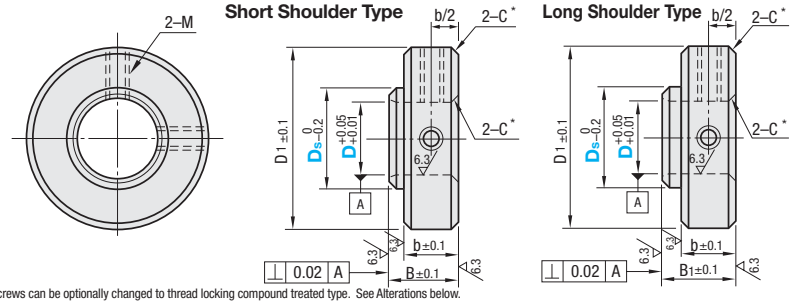
Set Screw Flat Type RoHS



Type		M Material	S Surface Treatment	A Accessory
Short Shoulder	Long Shoulder			
SCSBR	SCSBS	1.1191/C45E	Black Oxide Coating	2 Set Screws
PSCSBR	PSCSBS		Electroless Nickel Plating	2 Set Screws (JIS SUS)
SSCSBR	SSCSBS	1.4301/X5CrNi18-10	-	
SCSRAW	SCSSAW	EN AW-2017/AlCu4MgSi	Clear Anodizing	

25 / (6.3 /)

*D3 ~D25:C0.5
D30~D40:C1



* Included set screws can be optionally changed to thread locking compound treated type. See Alterations below.

Part Number Type	D	Ds Selectable	Applicable Bearing (O.D.)	B	B1	D1	Set Screw M x Length	b	€ Unit Price SCSBR SCSBS	PSCSBR PSCSBS	SSCSBR SSCSBS	SCSRAW SCSSAW
(Short Shoulder Type) SCSBR PSCSBR SSCSBR SCSRAW	3	5	673ZZ (6) · 683ZZ (7)	8	11	10	M3x3	7				
		6	693ZZ (8) · 603ZZ (9) · 623ZZ (10)									
	4	6	674ZZ (7) · 684ZZ (9)			12						
		*7	694ZZ (11) · 604ZZ (12) · 624ZZ (13)									
	5	7	675ZZ (8)			14	M4x3					
		*8	685ZZ (11) · 695ZZ (13) · 605ZZ (14) · 625ZZ (16)									
	6	8	676ZZ (10) · 686ZZ (13)			15						
		*9	696ZZ (15) · 606ZZ (17) · 626ZZ (19)									
	8	11	678ZZ (12) · 688ZZ (16)	10	12.5	16		8.5				
		*12	698ZZ (19) · 608ZZ (22) · 628ZZ (24)									
	10	*13	6800ZZ (19)			18						
		*14	6900ZZ (22) · 6000ZZ (26)									
		16	6200ZZ (30) · 6300ZZ (35)			20						
	12	15	6801ZZ (21)			22	M5x4					
		*16	6901ZZ (24) · 6001ZZ (28)									
		*18	6201ZZ (32) · 6301ZZ (37)									
	15	*18	6802ZZ (24) · 6902ZZ (28)			25						
		*19	6002ZZ (32)									
		*21	6202ZZ (35) · 6302ZZ (42)									
(Long Shoulder Type) SCSBS PSCSBS SSCSBS SCSSAW	(17)	*20	6803ZZ (26)	-		27						
		*21	6903ZZ (30) · 6003ZZ (35)									
		*23	6203ZZ (40) · 6303ZZ (47)									
	20	23	6704ZZ (27) · 6804ZZ (32)	12	15	32	M6x5	10				
		*24	6904ZZ (37)									
		*27	6004ZZ (42) · 6204ZZ (47)									
	25	28	6805ZZ (37)			42						
		*29	6905ZZ (42)									
		*31	6005ZZ (47)									
		*32	6205ZZ (52)									
	30	33	6806ZZ (42)	15.5	19	45	M8x6	13				
		35	6906ZZ (47)									
		*38	6006ZZ (55) · 6206ZZ (62) · 6306ZZ (72)									
	(35)	38	6807ZZ (47)	-		50						
		41	6907ZZ (55)									
		43	6007ZZ (62) · 6207ZZ (72)									
	(40)	43	6808ZZ (52)		21	60	M10x8	15				
		45	6908ZZ (62)									
		48	6008ZZ (68) · 6208ZZ (80)									

- Aluminum collars are available for * marked Ds dimensions only.
- D dimensions in ( ) are available for Long Shoulder Type only.

Prices in ( ) are for Long Shoulder Type only.

Order Example Part Number: SCSBS12 - Ds: 18

Days to Ship 6 Days P.87

Alterations Part Number: SCSBS20 - Ds: 23 - (YC): YC — 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

- Other than SCSSAW,

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

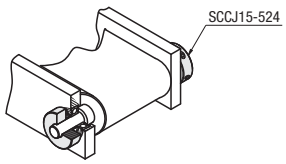
For orders larger than indicated quantity, please request a quotation.

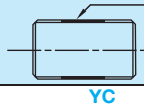
- SCSSAW

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Example



Alteration	Thread Lock Set Screw
	Thread Locking Coating 
Code	YC
Spec.	Change included set screws to thread locking compound treated type. ■Thread Locking Coating Threads are coated with special resin with superior elasticity as well as resistance to abrasion and oil. - Effect is maximum at the first use, and it will gradually decrease after the fourth use. ⊗Not applicable to SCSRAW and SCSSAW.
Price Adder	D3~10:1,50 EUR, D12~25:2,50 EUR, D30~40:3,50 EUR

Shaft Collars -For Bearing Fixing- (Space-saving design)

-Set Screw Compact Type-

CAD Data

Feature: Smaller by up to 40% in width (B dimension) and 19% in outer diameter (D_1 dimension) than Set Screw Type (P.251).

Set Screw Compact Type

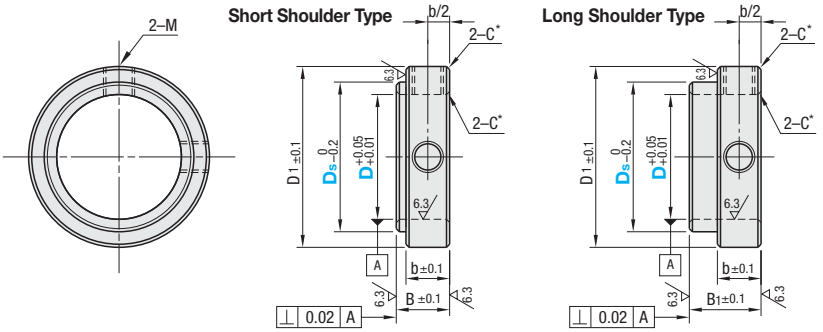
RoHS



Type		M Material	S Surface Treatment	A Accessory
Short Shoulder	Long Shoulder			
SCBRJ	SCBSJ	1.1191/C45E	Black oxide coating	2 Set Screws
PSCBRJ	PSCBSJ		Electroless Nickel Plating	2 Set Screws (JIS SUS)
SSCBRJ	SSCBSJ	1.4301/X5CrNi18-10	-	

25 (6.3)

*D4 ~D25:C0.5
D30~D40:C1



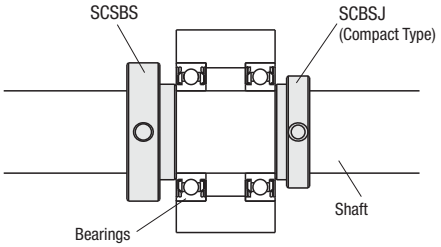
Part Number Type	D	Ds Selectable	Applicable Bearing (O.D.)	B	B_1	D_1	Set Screw M x Length	b	€ Unit Price SCBRJ SCBSJ	€ Unit Price PSCBRJ PSCBSJ	€ Unit Price SSCBRJ SSCBSJ
(Short Shoulder Type) SCBRJ PSCBRJ SSCBRJ	4	7	674ZZ (7) · 684ZZ (9) · 694ZZ (11) · 604ZZ (12) · 624ZZ (13)	6	9	10	M3x3	5			
	5	8	675ZZ (8) · 695ZZ (13) · 605ZZ (14) · 625ZZ (16)			12					
	6	9	676ZZ (10) · 686ZZ (13) · 696ZZ (15) · 606ZZ (17) · 626ZZ (19)			13					
	8	12	678ZZ (12) · 688ZZ (16) · 698ZZ (19) · 608ZZ (22) · 628ZZ (24)			15					
	10	13	6800ZZ (19)	7.5	10	17	M3x3	6			
		14	6900ZZ (22) · 6000ZZ (26)								
		16	6200ZZ (30) · 6300ZZ (35)								
	12	15	6701ZZ (18) · 6801ZZ (21)			19	M4x3				
		16	6901ZZ (24) · 6001ZZ (28)								
		18	6201ZZ (32) · 6301ZZ (37)								
	15	18	6802ZZ (24) · 6902ZZ (28)			22					
		19	6002ZZ (32)								
		21	6202ZZ (35) · 6302ZZ (42)								
(Long Shoulder Type) SCBSJ PSCBSJ SSCBSJ	(17)	20	6803ZZ (26)	-		24					
		21	6903ZZ (30) · 6003ZZ (35)								
		23	6203ZZ (40) · 6303ZZ (47)								
(D dimensions in ( ) are available for Long Shoulder Type only.)	20	23	6704ZZ (27) · 6804ZZ (32)	8.5	12	29	M5x4	7			
		24	6904ZZ (37)								
		27	6004ZZ (42) · 6204ZZ (47)								
	25	29	6905ZZ (42)			34					
		31	6005ZZ (47)								
		32	6205ZZ (52) · 6305ZZ (62)								
	30	35	6906ZZ (47)	10	14	41	M6x5	8			
		38	6006ZZ (55) · 6206ZZ (62) · 6306ZZ (72)								
	(35)	41	6907ZZ (55)	-		46					
		43	6007ZZ (62) · 6207ZZ (72)								
	(40)	48	6008ZZ (68) · 6208ZZ (80)		16	53	M8x6	10			

Prices in ( ) are for Long Shoulder Type only.

Order Example

Part Number	-	Ds
SCBRJ10	-	13

Example



Days to Ship

6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Shaft Collars -For Bearing Fixing-
-Clamp Type-

CAD Data

Features: Less shaft damage from tightening than the Set Screw Flat Type (P.251).

Clamp Type

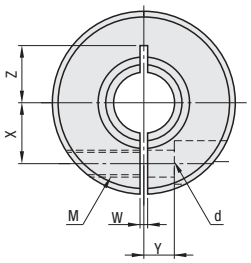
RoHS



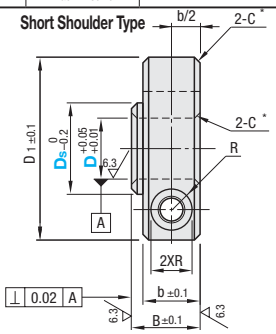
Type		Material	Surface Treatment	Accessory
Short Shoulder	Long Shoulder			
SCSBN	SCSLS	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCSBN	PSCSLS		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCSBN	SSCSLS	1.4301/	-	
SCSNAW	SCSLAW	EN AW-2017/ AlCu4MgSi	Clear Anodize	
SCSNAB	SCSLAB		Black Anodize	

25/ (6.3/)

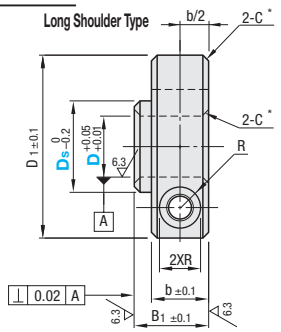
*D3 ~D25:C0.5
D30~D50:C1



Short Shoulder Type



Long Shoulder Type



Part Number Type	D	Ds Selectable	Applicable Bearing (O.D.)	B	B1	D1	M (Coarse Thread)	b	d	R	W	X	Y	Z	€ Unit Price SCSBN SCSLS	PSCSBN PSCSLS	SSCSBN SSCSLS	SCSNAW SCSLAW	SCSNAB SCSLAB
(Short Shoulder Type) SCSBN PSCSBN SSCSBN SCSNAW SCSNAB (Long Shoulder Type) SCSLS PSCSLS SSCSLS SCSLAW SCSLAB (Aluminum collars are available for * marked D dimensions only.)	3	5	673ZZ (6) · 683ZZ (8)	9	12	16	M3	8	3.4	3	1.0	4.5	2.2	3 ~5					
		6	693ZZ (8) · 603ZZ (9) · 623ZZ (10)																
		8	633ZZ (13)																
	4	6	674ZZ (7) · 684ZZ (9)			18						5	3	3.5~6					
		7	694ZZ (11) · 604ZZ (12) · 624ZZ (13)																
		9	634ZZ (16)																
	5	7	675ZZ (7)			20						5.5	4	5~6.5					
		8	685ZZ (11) · 695ZZ (13) · 605ZZ (14) · 625ZZ (16)																
		10	635ZZ (19)																
	6	8	676ZZ (10) · 686ZZ (13)									6		6~6.5					
		*9	696ZZ (15) · 606ZZ (17) · 626ZZ (19)																
		12	636ZZ (22)																
	8	11	678ZZ (15) · 688ZZ (16)	11.5	14	25	M4	10	4.5	3.75	1.5	7	5	7~9					
		*12	698ZZ (19) · 608ZZ (22) · 628ZZ (24)																
		14	638ZZ (28)																
	10	12	6700ZZ (15)			30						9		10					
		*13	6800ZZ (19)																
		*14	6900ZZ (22) · 6000ZZ (26)																
		16	6200ZZ (30) · 6300ZZ (35)																
	12	14	6701ZZ (18)									10		10					
		15	6801ZZ (21)																
		*16	6901ZZ (24) · 6001ZZ (28)																
		*18	6201ZZ (32) · 6301ZZ (37)																
	15	17	6702ZZ (21)			34						11.5	6	12					
		*18	6802ZZ (24) · 6902ZZ (28)																
		*19	6002ZZ (32)																
		*21	6202ZZ (35) · 6302ZZ (42)																
	17	20	6803ZZ (26)																
		*21	6903ZZ (30) · 6003ZZ (35)																
		*23	6203ZZ (40) · 6303ZZ (47)																
	20	23	6704ZZ (27) · 6804ZZ (32)	14	17	40	M5	12	5.5	4.5		14	7	14					
		*24	6904ZZ (37)																
		*27	6004ZZ (42) · 6204ZZ (47)																
		28	6304ZZ (52)																
	25	28	6805ZZ (37)			45						17	10	17					
		*29	6905ZZ (42)																
		*31	6005ZZ (47)																
		*32	6205ZZ (52)																
		33	6305ZZ (62)																
	30	33	6806ZZ (42)	17.5	21	55	M6	15	6.6	6	2.0	20		18					
		35	6906ZZ (47)																
		*38	6006ZZ (55) · 6206ZZ (62) · 6306ZZ (72)																
	35	38	6807ZZ (47)			60						23	12	21					
		41	6907ZZ (55)																
		*43	6007ZZ (62) · 6207ZZ (72)																
		45	6307ZZ (80)																
	40	43	6808ZZ (52)			70	M8		9	7		26	13	23					
		45	6908ZZ (62)																
		*48	6008ZZ (68) · 6208ZZ (80)																
		50	6308ZZ (90)																
	50	55	6910ZZ (72)	22.5	26	85	M10	20	11	9	3.0	32	16	28					
		57	6010ZZ (80)																

Prices in ( ) are for Long Shoulder Type only.

Order Example: Part Number SCSBN10 - Ds 14

Days to Ship: 6 Days / 2 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

- SCSNAB · SCSLAB

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

- SCSBN · PSCSBN

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

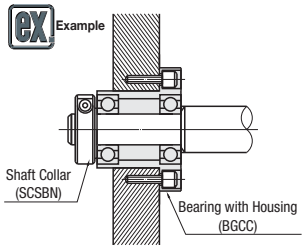
For orders larger than indicated quantity, please request a quotation.

- Others

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Example



Shaft Collars -For Bearing Fixing- (Space-saving design)
-Compact Slit Type-

CAD Data

■**Features**: Smaller by up to 32% in width (B dim.) and 14% in outer diameter (D_1 dim.) than the Clamp Type (P.253).

■Slit Compact Type

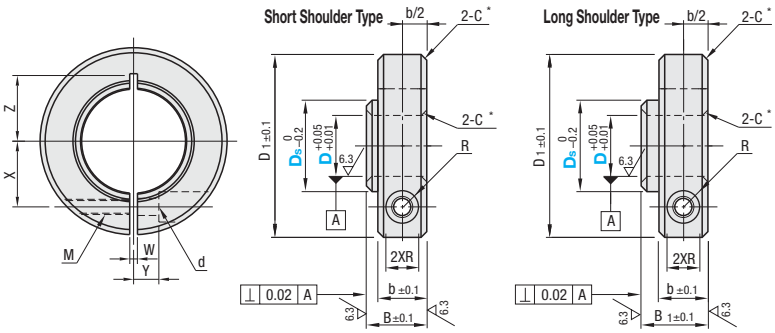
RoHS



Type		M Material	S Surface Treatment	A Accessory
Short Shoulder	Long Shoulder			
SCBNJ	SCLSJ	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCBNJ	PSCLSJ		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCBNJ	SSCLSJ	1.4301/X5CrNi18-10	-	

25/(6.3/)

*D8 ~D25:C0.5
D30~D40:C1



Part Number Type	D	Ds Selectable	Applicable Bearing (O.D.)	B	B1	D1	M (Coarse Thread)	b	d	R	W	X	Y	Z	€ Unit Price SCBNJ SCLSJ	€ Unit Price PSCBNJ PSCLSJ	€ Unit Price SSCBNJ SSCLSJ
(Short Shoulder Type) SCBNJ PSCBNJ SSCBNJ / (Long Shoulder Type) SCLSJ PSCLSJ SSCLSJ	8	11	678ZZ (12) · 688ZZ (16)	9	12	22	M3	8	3.5	3	1.5	7	4	7			
		12	698ZZ (19) · 608ZZ (22) · 628ZZ (24)														
	10	13	6800ZZ (19)	9.5		25						8		9			
		14	6900ZZ (22) · 6000ZZ (26)														
		16	6200ZZ (30) · 6300ZZ (35)														
	12	15	6801ZZ (21)									9					
		16	6901ZZ (24) · 6001ZZ (28)														
		18	6201ZZ (32) · 6301ZZ (37)										3				
	15	18	6802ZZ (24) · 6902ZZ (28)			30						11		11			
		19	6002ZZ (32)														
		21	6202ZZ (35) · 6302ZZ (42)														
	17	21	6903ZZ (30) · 6003ZZ (35)									11.5	4	12			
		23	6203ZZ (40) · 6303ZZ (47)														
	20	23	6704ZZ (27) · 6804ZZ (32)		13	36						13		13			
		24	6904ZZ (37)														
		27	6004ZZ (42) · 6204ZZ (47)														
	25	28	6805ZZ (37)	11.5	15	42	M4	10	4.5	3.75		16.5	5	16.5			
		29	6905ZZ (42)														
		31	6005ZZ (47)														
		32	6205ZZ (52)														
	30	35	6906ZZ (47)	14	18	50	M5	12	5.5	4.5		20	6	20			
		38	6006ZZ (55) · 6206ZZ (62) · 6306ZZ (72)														
	35	41	6907ZZ (55)			55					2	22.5		21			
		43	6007ZZ (62) · 6207ZZ (72)														
	40	45	6908ZZ (62)			60						25		23			
		48	6008ZZ (68) · 6208ZZ (80)														

Order Example: Part Number SCBNJ10 - Ds 14

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Shaft Collars -With Thread Insert- (Lightweight)

-Resin Type / Aluminum Type-

CAD Data

Features: Aluminum or plastic collars are lighter than those of steel or stainless steel.
Collars with thread inserts have improved screw thread strength.

Plastic Type

RoHS

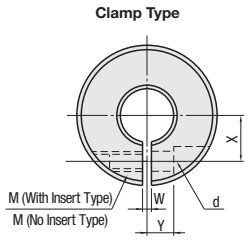


Type		Material	Color	Operating Ambient Temp.	Accessory	Thread Inserts Material
Clamp Type	Split Type					
SCSPH	SCSPP	Polyacetal	White	-45°C~95°C	Hexagon Socket Head Cap Screw (JIS SUS) Clamp Type: 1 pc. Split Type: 2 pcs.	1.4301/ X5CrNi18-10
SCSMH	SCSPM	MC Nylon	Ivory	-40°C~120°C		
SCSPO	-	Polyacetal	White	-45°C~95°C		Not provided

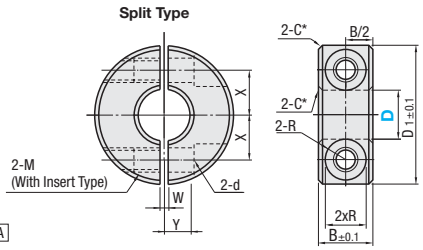
6.3

*D8~D25:C0.5
D30:C1

Clamp Type



Split Type



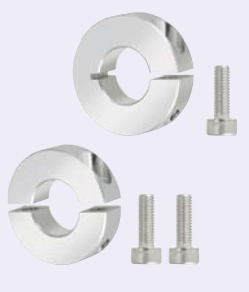
Part Number Type	D		B	D_1	M (Coarse Thread)	d	R	W	X	Y	€ Unit Price Clamp Type SCSPH	Clamp Type SCSMH	Split Type SCSPP	Split Type SCSPM
With Thread Inserts (Clamp Type) SCSPH SCSMH (Split Type) SCSPP SCSPM	8	±0.2	8	25	M3	3.4	3	1.5	7	5				
	10		10	30	M4	4.5	3.75		9					
	12								10					
	15		12	35	M5	5.5	4.5		12	6				
	16													
	20		15	45	M6	6.6	6		15	8				
	25			50					18	10				
	30			55					20					

The halves must remain in the same orientation as shipped when in use.

Part Number Type	D		B	D_1	d	M (Coarse Thread)	R	W	X	Y	€ Unit Price SCSPO
No Thread Inserts (Clamp Type) SCSPO	10	±0.1	12	28	4.5	M4	3.75	1.5	9	5	
	12			30					10	6	
	13										
	15		15	40	5.5	M5	4.5		13	8	
	16										
	20			49			5		16		
	25			54					20	6	
	30			60					21.5	8	

Aluminum Type

RoHS

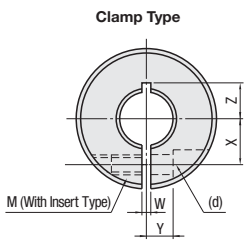


Type		Material	Surface Treatment	Accessory	Thread Inserts Material
Clamp Type	Split Type				
SCSAH	SCNPAH	EN AW-2017/ AlCu4MgSi	-	Hexagon Socket Head Cap Screw (JIS SUS) Clamp Type: 1 pc. Split Type: 2 pcs.	1.4301/X5CrNi18-10

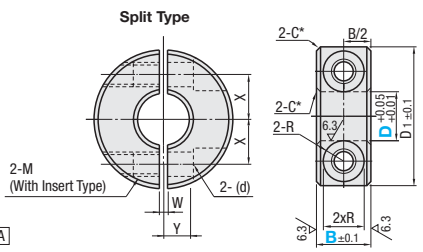
25 (6.3)

*D8~D25:C0.5
D30:C1

Clamp Type



Split Type



Part Number Type	D	B Selectable	D_1	M (Coarse Thread)	(d)	R	W	X	Y	Z	€ Unit Price SCSAH	SCNPAH
With Thread Inserts (Clamp Type) SCSAH (Split Type) SCNPAH	8	8	25	M3	3.2	3	1.5	7	5	7		
	10	10	30	M4	4.2	3.75		9		8		
	12							10		9		
	15		34					11.5	6	10		
	16		35	M5	5.3	4.5		12		11		
	20		40					14	7	13		
	25	12	45					17		16		
	30	15	55	M6	6.3	6		20	10	18		

(d) bore surface will have threads from installing the inserts.

Order Example

Part Number - B

SCSPH12
SCSPP12
SCSAH20 - 10

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Shaft Collars -Male Thread Bore-

-Set Screw Type / Clamp Type-

Price Reduction
Up to 46%

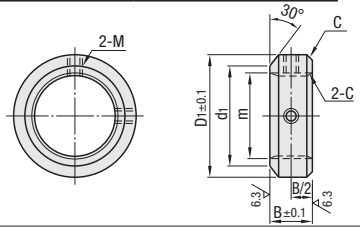
CAD Data

■Set Screw Flat Type RoHS



Type		M Material	S Surface Treatment	A Accessory
Fine Thread	Coarse Thread			
SCCNS	SCCNN	1.1191/C45E	Black Oxide Coating	2 Set Screws / 2 Set Pieces (Copper Alloy)
PSCCNS	PSCCNN		Electroless Nickel Plating	2 Set Screws / 2 Set Pieces (JIS SUS) (Copper Alloy)
SSCCNS	SSCCNN	1.4301/X5CrNi18-10	-	(JIS SUS) (Copper Alloy)

25/(6.3/)



Part Number Type	No.	B (Fine Thread)	B (Coarse Thread)	mxPitch (Fine Thread)	mxPitch (Coarse Thread)	D1	d1	C	Set Screw M x Length	€ Unit Price SCCNS SCCNN	€ Unit Price PSCCNS PSCCNN	€ Unit Price SSCCNS SSCCNN
(Fine Thread Type) SCCNS PSCCNS SSCCNS	*3	6	-	M3x0.35	-	7	4.5	0.2	M3x3			
	4		6	M4x0.5	M4x0.7	8	5.5					
	5			M5x0.5	M5x0.8	11	10		M4x3			
	6		10	M6x0.75	M6x1.0	12	11					
	8	8		M8x0.75	M8x1.25	14	12					
	10			M10x0.75	M10x1.5	16	13					
(Coarse Thread Type) SCCNN PSCCNN SSCCNN	*10A		-	M10x1.0	-							
	12	10	10	M12x1.0	M12x1.75	20	15	0.5	M5x4			
	*15		-	M15x1.0	-	24	20					
	16		12	M16x1.0	M16x2.0	26	22		M6x5			
	20			M20x1.0	M20x2.5	32	27					
	*25	12	-	M25x1.5	-	38	31					
	30	15	15	M30x1.5	M30x3.5	46	38	1	M8x6			

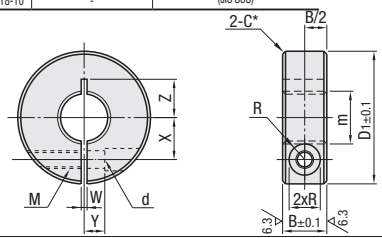
(* marked sizes are applicable to Fine Thread Type only.)

■Clamp Type RoHS



Type		M Material	S Surface Treatment	A Accessory
Fine Thread	Coarse Thread			
SCSN	SCSNN	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCSN	PSCSNN		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCSN	SSCSNN	1.4301/X5CrNi18-10	-	

25/(6.3/)



* m3 ~m8 :C0.5
m10~m30:C1

Part Number Type	No.	B	mxPitch (Fine Thread)	mxPitch (Coarse Thread)	D1	M (Coarse Thread)	d	R	W	X (Fine Thread)	X (Coarse Thread)	Y	Z	€ Unit Price SCSN SCSNN	€ Unit Price PSCSN PSCSNN	€ Unit Price SSCSN SSCSNN
	3	8	M3x0.35	M3x0.5	16	M3	3.4	3	1.0(T)	4.5	4.5	2.2	3~5			
	4		M4x0.5	M4x0.7	18					5	5	3	3.5~6			
	5		M5x0.5	M5x0.8	20					5.5	5.5	4	5~6.5			
	6	10	M6x0.75	M6x1.0		M4	4.5	3.75		6	6		6~6.5			
	8		M8x0.75	M8x1.25	25					8	8	5	8~9			
	*8A		M8x1.0	-							-					
(Fine Thread Type) SCSN PSCSN SSCSN	10		M10x0.75	M10x1.5	30					9	9		10			
	*10A		M10x1.0	-							-					
	*10B		M10x1.25													
	12		M12x1.0	M12x1.75						10	10		9~10			
	*12A		M12x1.25	-							-					
(Coarse Thread Type) SCSNN PSCSNN SSCSNN	*14	12	M14x1.5		34	M5	5.5	4.5	1.5	11.5		6	10~11			
	16		M16x1.0	M16x2.0	35					12	12.5		11~12			
	*16A		M16x1.5	-						12.5	-					
	*18		M18x1.5		40					14	14	7	12~13			
	20		M20x1.0	M20x2.5							-		13			
	*20A		M20x1.5	-												
	*22	15	M22x1.5		45	M6	6.6	6		17	17		14~15			
	24**		-	M24x3.0									16			
	*25		M25x1.5	-							-					
	*27		M27x1.5		55					20		8	17~20			
	30		M30x1.5	M30x3.5							20	10	18~20			

(T)* marked sizes are applicable to Fine Thread Type only. (T)** marked size in No. is applicable to Coarse Thread Type only. (T)W dimension of Coarse Thread Type No.5 is 1.5.

Order Example Part Number SCCNS20

Days to Ship 6 Days / 2 Days P.87

Price

■Volume Discount ((T)Round down to one Cent.) P.87
- Except Those Shown Below

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

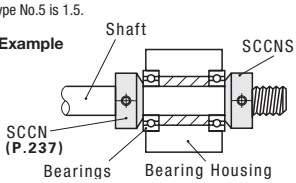
(T)For orders larger than indicated quantity, please request a quotation.

- SCSNN/SSCSNN

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%
Days to Ship	Standard	To be quoted		

(T)For orders larger than indicated quantity, please request a quotation.

Example



Shaft Collars -Hinged / One Touch-

-Hinged Type / One Touch Standard Type / One Touch Mount Hole Type-

CAD Data

Feature: Compared with conventional shaft collars, hinged structure enables easy fitting and removal in limited work space.
Washer fitted onto hexagon socket head cap screw reduces the chances of the screw falling out when the collar is removed from the shaft.

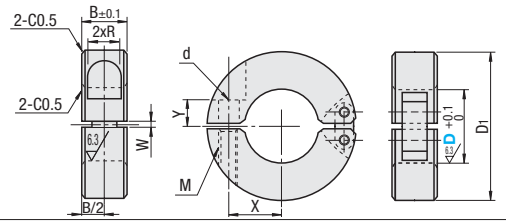
Hinged Type

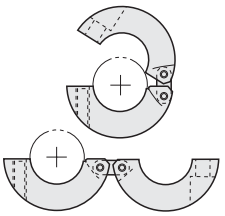
RoHS



Type	Main Body		Hinge	Spring Pins		Hexagon Socket Head Cap Screw	Washer
	M Material	S Surface Treatment	M Material	M Material	H Hardness	M Material	M Material
SCSH	1.1191/C45E	Blackening Coating	1.4301/ X5CrNi18-10	1.7220/ 34CrMo4	HRC42~48	1.4301/X5CrNi18-10	Nylon Washer (1 pc.)
PSCSH	1.1191/C45E	Electroless Nickel Plating				JIS SUS	
SSCSH	1.4301/X5CrNi18-10	-					

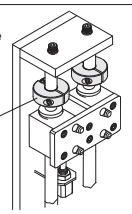
Hinge:
Spring Pins
Material:
Spring Stainless Steel
JIS SSPSR (P.Z-251)





Part Number Type	D	B	D1	M (Coarse Thread)	d	R	W	X	Y	Hexagon Socket Head Cap Screw M x Length	€ Unit Price SCSH	PSCSH	SSCSH
SCSH PSCSH SSCSH	10	10	30	M4	5	3.75	1.5	9	5	M4x8			
	12							10					
	15	12	35	M5	6	4.5		12	6	M5x10			
	16												
	20		40		7			14	7	M5x12			
	25	15	50	M6		6		18	10	M6x16			
	30		55					20					

Example



One Touch Type

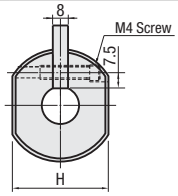
RoHS



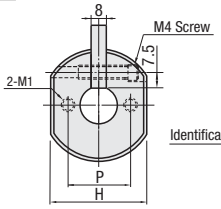
Type	M Material	S Surface Treatment	A Accessory
WSC	EN AW-2017/ AlCu4MgSi	Clear Anodize	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
WSCM			
WSCB		Black Anodize	

*Lever: Material 1.1191/C45E / Surface Treatment 45HRC - Tuftride(R)
Spring: Material JIS SWP-A
Female Thread holes are not anodized.

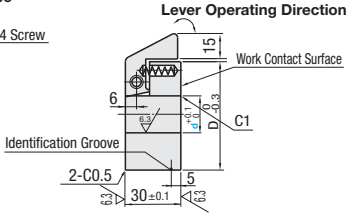
Standard Type



Mount Hole Type



Lever Operating Direction

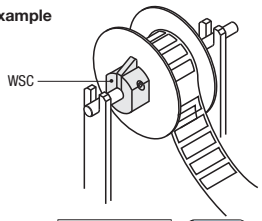


Part Number Type	d	D	H	P	M1 x Depth	€ Unit Price WSC	WSCB	WSCM
(Standard Type) WSC WSCB	10	50	40	25	M4x8			
	12	52	42	27				
	15	55	45	30				
	16	56	46	31				
(Mount Hole Type) WSCM	20	60	50	35	M5x10			
	22	62	52	37				
	25	65	55	40				
	25.4	65.4	55.4	40.4				
	30	70	60	45	M6x12			

Features

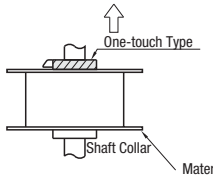
- The lever pressed by the spring gives consistent pressure on the shaft.
- Shaft collar can be easily removed by moving the lever down with a finger.
- Shafts do not require any flat alterations to secure the collar as in the case with Set Screws and can be clamped without damage.
- Working time can be reduced for frequent collar mounting / removal.
- Suitable for use in holding spools of material such as paper, film, metal foil, etc., and for uses in applications where there is no load on the collars.

Example

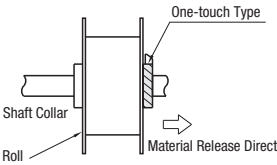


<WSC/WSCB/WSCM>

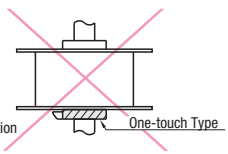
(1) Vertical Use Material Release Direction



(2) Horizontal Use



(3) Never use this collar in directions where loads apply.



Order Example

Part Number
SCSH10
WSCB16

Days to Ship

6 Days — P.87
2 Days

- WSCB
8 Days

Express A | 3,00 EUR/ piece — P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

- Hinged Type

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

- One Touch Type

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Shaft Collars -With Key Escapement Groove-

-Set Screw Type / Clamp Type-

CAD Data

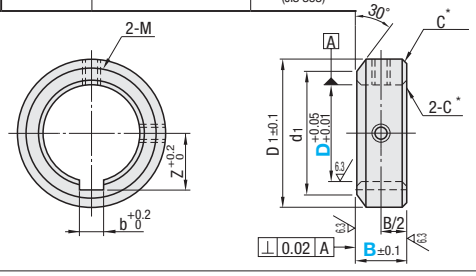
Feature: The shaft key can escape through the groove b. (The Key Escapement Groove is not for key-locking the collar itself.)

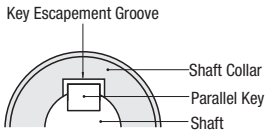
Set Screw Flat Type

RoHS



Type	Material	Surface Treatment	Accessory
SCKS	1.1191/C45E	Blackening Coating	2 Set Screws
PSCKS		Electroless Nickel Plating	2 Set Screws (JIS SUS)





*D10~D25:C0.5
D30:C1

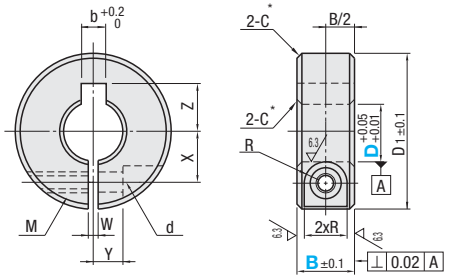
Part Number Type	D	B Selectable	D1	d1	Set Screw M x Length	b	Z	€ Unit Price SCKS	€ Unit Price PSCKS
SCKS PSCKS	10	6 8 10	20	13	M4x3	3.5	7		
	12	8 10	22	15	M5x4	4.5	8.5		
	15	8 10 12	26	20		5.5	10.5		
	20	10 12	32	27	M6x5	6.5	13.5		
	25	12 15	38	31		8.5	16.5		
	30	15 20	46	38	M8x6	8.5	19.0		

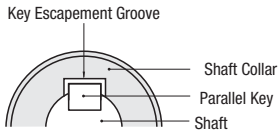
Clamp Type

RoHS



Type	Material	Surface Treatment	Accessory
SCSKS	1.1191/C45E	Black oxide coating	Hexagon Socket Head Cap Screw 1 pc.
PSCSKS		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)





*D10~D25:C0.5
D30:C1

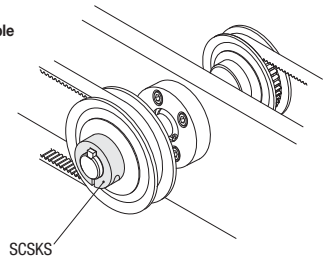
Part Number Type	D	B Selectable	D1	M (Coarse Thread)	d	R	W	X	Y	Z	b	€ Unit Price SCSKS	€ Unit Price PSCSKS
SCSKS PSCSKS	10	10	30	M4	4.5	3.75	1.5	9	5	7	3.5		
		12		M5	5.5	4.5		10					
		15	35	M6	6.6	6			6				
	12	10	30	M4	4.5	3.75			5	8.5	4.5		
		12		M5	5.5	4.5							
		15	35	M6	6.6	6		11	6				
	15	10	34	M4	4.5	3.75		11.5		10.5	5.5		
		12	35	M5	5.5	4.5		12					
		15	40	M6	6.6	6		13	8				
	20	10		M5	5.5	4.5		14	7	13.5	6.5		
		12				4.5							
		15	45	M6	6.6	6		15	8				
	25	12		M5	5.5	4.5		17	7	16.5	8.5		
		15	50	M6	6.6	6		18	10				
	30	15	55			6		20		19			

The groove b is for shaft key to pass through the collar, not for use as a keyway.

Order Example

Part Number	-	B
SCKS12	-	10
SCSKS10	-	10

Example



Days to Ship

6 Days P.87

Price

Volume Discount Rate (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Discount Rate	Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Shaft Collars -Standard Type with Clamp Lever / Compact Type with Clamp Lever-

-Clamp Type / D Cut Type / Side Mount Hole Type-

■**Feature:** Easy to change the clamp lever position as this collar does not require any clamping tools.
Lever is selectable from Standard or Miniature Type.

■Standard Clamp Type

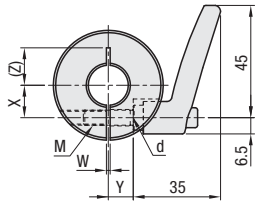
RoHS



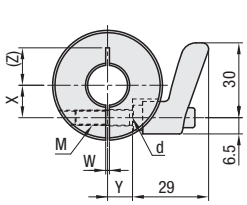
Type		Shaft Collar		Clamp Lever		Lever Thread	
Standard	Miniature	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
SCKL	SCKM	1.1191/C45E	Black Oxide Coating	Zinc Diecast	Baked Coating	1.0718/9SMnPb28	Black Chromate
PSCKL	PSCKM	1.1191/C45E	Electroless Nickel Plating				
SSCKL	SSCKM	1.4301	-			1.4305	-

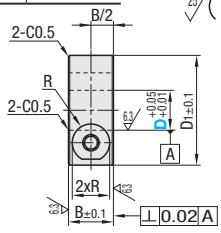
Clamp Lever Details ☞P.Z-999
Miniature Clamp Lever Details ☞P.Z-1001

Standard



Miniature





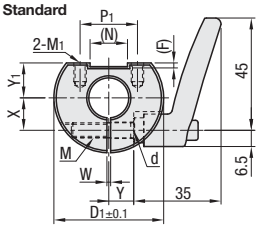
■Standard D Cut Type



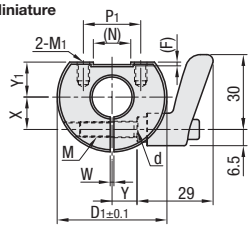
Type		Shaft Collar		Clamp Lever		Lever Thread	
Standard	Miniature	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
SCDKL	SCDKM	1.1191/C45E	Black Oxide Coating	Zinc Diecast	Baked Coating	1.0718/9SMnPb28	Black Chromate
PSCDKL	PSCDKM	1.1191/C45E	Electroless Nickel Plating				
SSCDKL	SSCDKM	1.4301/X5CrNi18-10	-			1.4305/X10CrNiS18-9	-

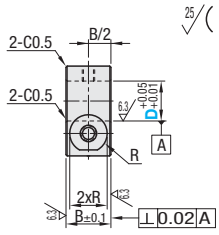
Clamp Lever Details ☞P.Z-999
Miniature Clamp Lever Details ☞P.Z-1001

Standard



Miniature





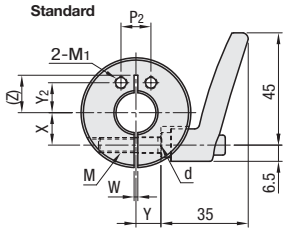
■Standard Side Mount Hole Type



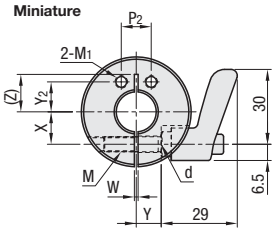
Type		Shaft Collar		Clamp Lever		Lever Thread	
Standard	Miniature	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
SCJKL	SCJKM	1.1191/C45E	Black Oxide Coating	Zinc Diecast	Baked Coating	1.0718/9SMnPb28	Black Chromate
PSCJKL	PSCJKM	1.1191/C45E	Electroless Nickel Plating				
SSCJKL	SSCJKM	1.4301/X5CrNi18-10	-			1.4305/X10CrNiS18-9	-

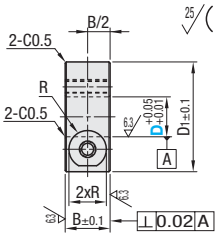
Clamp Lever Details ☞P.Z-999
Miniature Clamp Lever Details ☞P.Z-1001

Standard



Miniature





D	B	D1	M (Coarse Thread)	M1	d	P1	P2	(F)	(N)	Y1	Y2	R	W	X	Y	(Z)	Lever
6	18	35	M6	M3	6.6	15	8	1.5	10	7	8	7.5	1.5	10	7	13~15	CLDM_6-16-M/B/S (CLMS_6-16-M/B/S)
8							10			8	10						CLDM_6-16-M/B/S (CLMS_6-16-M/B/S)
10				M4					9	9.5						10~13	CLDM_6-16-M/B/S (CLMS_6-16-M/B/S)
12		40				20			14	11				11	8	13~15	CLDM_6-16-M/B/S (CLMS_6-16-M/B/S)
15		44		M5		23	12		15	13	12			13	10	16~17	CLDM_6-20-M/B/S (CLMS_6-20-M/B/S)
16										14						15~16	CLDM_6-20-M/B/S (CLMS_6-20-M/B/S)
20		48				26	14		18	16	14			15	12	17~18	CLDM_6-25-M/B/S (CLMS_6-25-M/B/S)
25		60				30	16		22	19.5	21			18	18	22~24	CLDM_6-32-M/B/S (CLMS_6-32-M/B/S)
30		70		M6		35	20		25	23	25			21	23	26~28	CLDM_6-32-M/B/S (CLMS_6-32-M/B/S)

Do not tighten the lever without inserting the shaft. The shaft collar may be deformed and become unusable.
Levers in ( ) are applicable to SSCK_, SSCDK_ and SSCJK_ (stainless steel products).
D_1 Tolerance for D25 and 30 is ±0.3. C (O.D./I.D. chamfers) will be 1.0 for D30.

Part Number Type				D	Lever Color Selectable	Standard Clamp Lever Type € Unit Price Slit SCKL	PSCKL	SSCKL	D Cut SCDKL	PSCDKL	SSCDKL	Side Mount Hole SCJKL	PSCJKL	SSCJKL	Miniature Clamp Lever Type € Unit Price Slit SCKM	PSCKM	SSCKM	D Cut SCDKM	PSCDKM	SSCDKM	Side Mount Hole SCJKM	PSCJKM	SSCJKM
	(Clamp)	(D Cut)	(Side Mount)	6	M (Orange) B (Black) S (Silver Gray)																		
Standard Lever	SCKL	SCDKL	SCJKL	8																			
	PSCKL	PSCDKL	PSCJKL	10																			
	SSCKL	SSCDKL	SSCJKL	12																			
				15																			
	SCKM	SCDKM	SCJKM	16																			
Miniature Lever	PSCKM	PSCDKM	PSCJKM	20																			
	SSCKM	SSCDKM	SSCJKM	25																			
				30																			

Feature: Smaller by up to 33% in width (B dim.) and 22% in outer diameter (D_1 dim.) than the Standard Type with Clamp Lever (P.259).

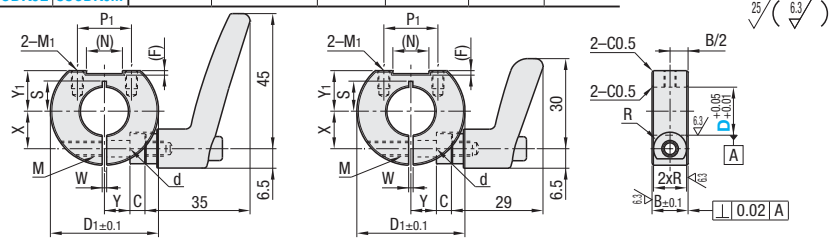
Compact D Cut Type

RoHS



Type		Shaft Collar		Clamp Lever		Lever Thread	
Standard	Miniature	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
SCDKJL	SCDKJM	1.1191/C45E	Black Oxide Coating	Zinc Diecast	Baked Coating	1.0718/ 9SMnPb28	Black Chromate
PSCDKJL	PSCDKJM	1.1191/C45E	Electroless Nickel Plating				
SSCDKJL	SSCDKJM	1.4301	-			1.4305	-

Clamp Lever Details P.Z-999
Miniature Clamp Lever Details P.Z-1001

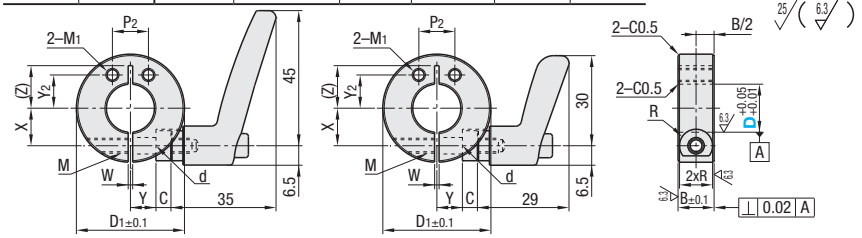


Compact Side Mount Hole Type



Type		Shaft Collar		Clamp Lever		Lever Thread	
Standard	Miniature	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
SCJKJL	SCJKJM	1.1191/C45E	Black oxide coating	Zinc Diecast	Baked Coating	1.0718/ 9SMnPb28	Black Chromate
PSCJKJL	PSCJKJM	1.1191/C45E	Electroless Nickel Plating				
SSCJKJL	SSCJKJM	1.4303	-			1.4305	-

Clamp Lever Details P.Z-999
Miniature Clamp Lever Details P.Z-1001



D	B	D_1	M	M_1	d	P_1	P_2	(F)	(N)	Y_1	Y_2	R	W	X	Y	(Z)	C	S
8	12	28	5	M4 Depth 6	5.5	18	10	0.5	12	7	10	5.5	1.5	9.5	5.5	11.5	5	5
10																		
12		32				20			14	8.5				10.5	7.5	13		
15		34					12			10.5	12			11.5	8.5	13.5		
16		36				22			16	11				12.5		14.5		-
20		42		M5 Depth 7.5		25	14		18	14	14			15.5		17	8	
25		48				29	21		22	16.5	16			18	11	19		
30		55				30	25		23	20	20			20.5	13.5	22		

Do not tighten the lever without inserting the shaft. The shaft collar may be deformed and become unusable.
Levers in ( ) are applicable to SSCDKJ_ and SSCJKJ_ (stainless steel products).
D_1 Tolerance for D25 and 30 is ±0.3. C (O.D./I.D. chamfers) will be 1.0 for D30.

Part Number Type			D	Lever Color Selectable	€ Unit Price D Cut Compact SCDKJL SCDKJM	SSCDKJL SSCDKJM	PSCDKJL PSCDKJM	Side Mount Hole SCJKJL SCJKJM	SSCJKJL SSCJKJM	PSCJKJL PSCJKJM	Lever
	(D Cut)	(Side Mount)	8	M (Orange) B (Black) S (Silver Gray)							CLDM_ (CLMS_) 5-20-M/B/S
Standard Lever	SCDKJL	SCJKJL	10								
	PSCDKJL	PSCJKJL	12								
	SSCDKJL	SSCJKJL	15								CLDM_ (CLMS_) 5-25-M/B/S
			16								
	SCDKJM	SCJKJM	20								
Miniature Lever	PSCDKJM	PSCJKJM	25								CLDM_ (CLMS_) 5-32-M/B/S
	SSCDKJM	SSCJKJM	30								

Order Example

Part Number	-	Lever Color
SCKL12	-	B
SCDKJM16	-	M
SCDKM10	-	S

Days to Ship: **6 Days** P.87

Price

Volume Discount (Round down to one Cent.) P.87

- SCJKL

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

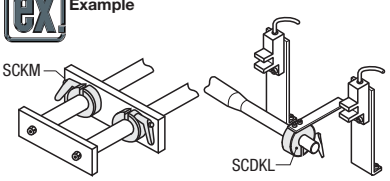
For orders larger than indicated quantity, please request a quotation.

- Others

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Example



Shaft Collars -Compact Type with Clamp Lever-

Wedge -D Cut Type / Side Mount Hole Type-

CAD Data

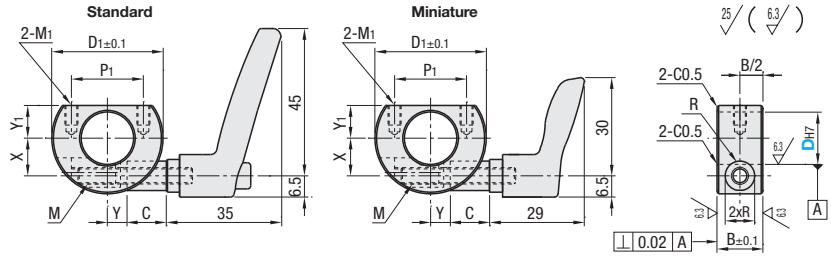
Features: Generates more clamping force with less screw tightening torque.
Smaller by up to 22% in width (B dim.) and 25% in outer diameter (D1 dim.) than the Standard Type with Clamp Lever (P.259).

D Cut Type



Type		Shaft Collar		Clamp Lever		Lever Thread		Wedge
Standard	Miniature	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material
SCWD	SCWDM	1.1191/C45E	Black Oxide Coating	Zinc Diecast	Baked Coating	1.0718/9SMnPb28	Black Chromate	CW614N/ CuZn39Pb3
PSCWD	PSCWDM	1.1191/C45E	Electroless Nickel Plating			1.4305/X10CrNiS18-9	-	
SSCWD	SSCWDM	1.4301	-					

Clamp Lever Details P.2-999 Miniature Clamp Lever Details P.2-1001

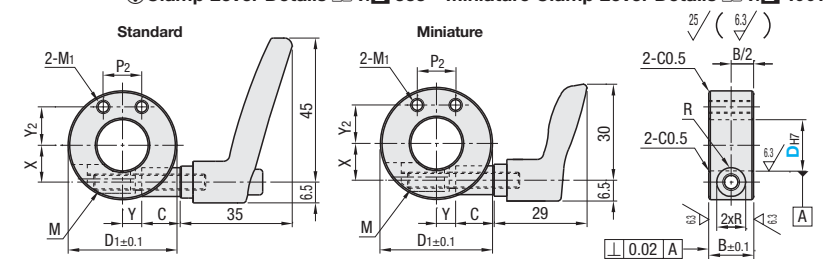


Side Mount Hole Type



Type		Shaft Collar		Clamp Lever		Lever Thread		Wedge
Standard	Miniature	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material
SCWJ	SCWJM	1.1191/C45E	Black Oxide Coating	Zinc Diecast	Baked Coating	1.0718/9SMnPb28	Black Chromate	CW614N/ CuZn39Pb3
PSCWJ	PSCWJM	1.1191/C45E	Electroless Nickel Plating			1.4305/X10CrNiS18-9	-	
SSCWJ	SSCWJM	1.4301	-					

Clamp Lever Details P.2-999 Miniature Clamp Lever Details P.2-1001



D	B	D1	M	M1	P1	P2	Y1	Y2	R	X	Y	C
10	14	28	4	M4	18	10	7	9	4	8.5	4.5	11
12		28			18		8	9.5		9.5	4	11
15		32			20	12	9.5	11		11	5.5	11
16		34	5		22		10	12	4.5	11.5	6	12
20		40		M5	25	14	13	14		13.5	8	12
25		45			29	18	14.5	16.5		16	9	12
30		52			30	22	19	19		18.5	11.5	12

Part Number			D	Lever Color Selectable	€ Unit Price						Lever
Type					D Cut			Side Mount Hole			
	(D Cut)	(Side Mount)			SCWD SCWDM	PSCWD PSCWDM	SSCWD SSCWDM	SCWJ SCWJM	PSCWJ PSCWJM	SSCWJ SSCWJM	
Standard Lever	SCWD	SCWJ	10	M (Orange) B (Black) S (Silver Gray)							CLDF_ (CLFS_) 4-7-M/B/S
	PSCWD	PSCWJ	12								
	SSCWD	SSCWJ	15								
			16								
Miniature Lever	SCWDM	SCWJM	20								CLDF_ (CLFS_) 5-7-M/B/S
	PSCWDM	PSCWJM	25								
	SSCWDM	SSCWJM	30								

Levers in ( ) are applicable to SSCWD_ and SSCWJ_ (stainless steel products). C (O.D./I.D. chamfers) will be 1.0 for D30.

Order Example

Part Number	-	Lever Color
SCWD12	-	B
PSCWJ16	-	M
SSCWDM16	-	S

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49
Discount Rate	€ Unit Price	5%	10%
Days to Ship	Standard		To be quoted

For orders larger than indicated quantity, please request a quotation.

Compactness Comparison Table

D	Size Differences		Wedge		Standard (P.260)	
	B (Thickness)	D1 (Outer Dia.)	B (Thickness)	D1 (Outer Dia.)	B (Thickness)	D1 (Outer Dia.)
10	-4	-7	14	28	18	35
12	-4	-12	14	28	18	40
15	-4	-12	14	32	18	44
16	-4	-12	14	34	18	44
20	-4	-8	14	40	18	48
25	-4	-15	14	45	18	60
30	-4	-18	14	52	18	70

Shaft Collars -2-Flats-

-Standard Clamp / Cut Surface Mount Hole Clamp / Clamp with Side Mounting Holes / Cut Surface Mount Hole Split Type-

CAD Data

Features: 2-Flats helps to save the spaces. Mount Hole Types enable easy installation of sensor brackets.

Standard Clamp Type



Cut Surface Mount Hole Clamp Type



Slit Type with Side Mount Holes



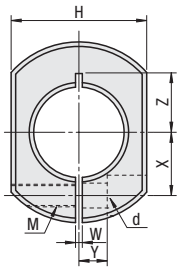
Clamp Type with Mount Holes on Flats



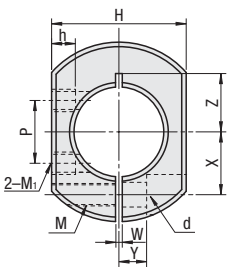
Type			M Material	S Surface Treatment	A Accessory
Standard	Cut Surface Mount Hole	Side Mount Hole			
SCSNK	SCKNK	SCJNK	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCSNK	PSCKNK	PSCJNK		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCSNK	SSCKNK	SSCJNK	1.4301/X5CrNi18-10	-	

25 / (6.3 /)

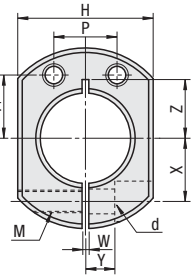
- Standard Type

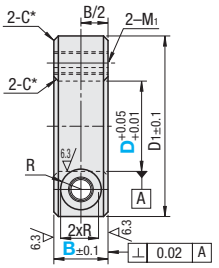


- Cut Surface Mount Hole Type



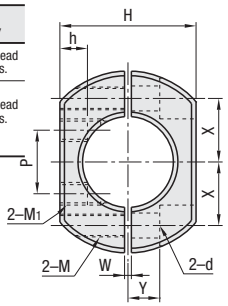
- Side Mount Hole Type

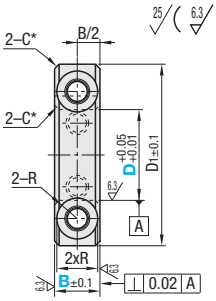




*D6 ~D25:C0.5
D30~D40:C1

Type	M Material	S Surface Treatment	A Accessory
SCPKNK	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSCPKNK		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
SSCPKNK	1.4301	-	





*D10~D25:C0.5
D30:C1

Part Number Type	D	B Selectable	D_1	H	M (Coarse Thread)	d	R	W	X	Y	Z	h	M_1 (Coarse Thread)	Y_1	P	€ Unit Price SCSNK	PSCSNK	SSCSNK	SCKNK SCJNK	PSCKNK PSCJNK	SSCKNK SSCJNK	SCPKNK	PSCPKNK	SSCPKNK
Standard Type SCSNK PSCSNK SSCSNK (D Dimension 6~40)	6	8	20	17	M3	3.4	3	1	6	4	6~6.5	-	-	-	-									
		10			M4	4.5	3.75																	
	8	8	25	19	M3	3.4	3	1.5	8	5	7~9													
		10			M4	4.5	3.75																	
Cut Surface Mount Hole Type SCKNK PSCKNK SSCKNK (D Dimension 10~40)	10	8	30	22	M3	3.4	3		9		8~10	6.4	M4	10	ⓟ10									
		*10			M4	4.5	3.75																	
	12	*10							10		9~10	5.8			10									
		12			M5	5.5	4.5					-	-	-	-									
Side Mount Hole Type SCJNK PSCJNK SSCJNK (D Dimension 10~40)	15	*10	34	24	M4	4.5	3.75		11.5		10~11	5.6	M4	12	12									
		12			M5	5.5	4.5		12	6	11~13	-	-	-	-									
	16	*10	35								11~12	4.8	M5	12	12									
		12										-	-	-	-									
Clamp Type with Mount Holes on Flats SCPKNK PSCPKNK SSCPKNK (D Dimension 10~30)	20	*10	40	30					14	7	13	6	M5	14	14									
		12										-	-	-	-									
		15	45		M6	6.6	6		15	8	13~15													
	25	12		36	M5	5.5	4.5		17	7	16													
		*15	50		M6	6.6	6		18	10	16~18	6.7	M5	16	16									
(Cut Surface Mount Hole Type, Side Mount Hole Type, Split Type with Mount Holes on Flats are available with *marked B dimension only.)	30	*15	55	41					20		18~20	7.2	M6	20	20									
	35	15	60	46	M8	9	7	2	23	12	21	-	-	-	-									
	40	*18	70	53					26	13	23	9	M8	26	26									

ⓟP dimension of Cut Surface Mount Hole Type with D10 is 8.
ⓟThe halves must remain in the same orientation as shipped when in use.
ⓟM_1 effective thread depth is 7mm (pilot hole through) for D10-16, 9mm (pilot hole through) for D20 of Cut Surface Mount Hole Type. For others, thread hole is through.

Order Example

Part Number	-	B
SCKNK15	-	10
SCPKNK15	-	10

Days to Ship

- SCSNK · SCJNK: 8 Days — Express A: 2,00 EUR/piece — P.88
ⓟA Express Charge of 5,40 EUR for 3 or more identical pieces.
- Others: 6 Days — P.87

Price

Volume Discount (ⓟRound down to one Cent.) P.87

- SCSNK · SCJNK

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

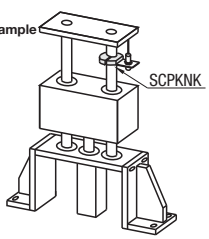
ⓟFor orders larger than indicated quantity, please request a quotation.

- Others

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

ⓟFor orders larger than indicated quantity, please request a quotation.

Example



Shaft Collars -Side Mounting Hole Standard-

-Clamp Type / Split Type-

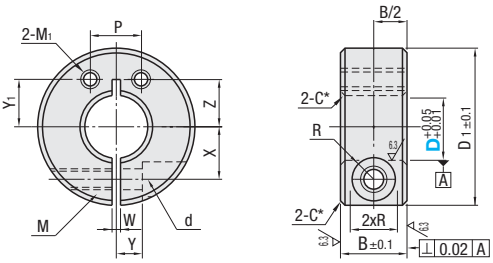
CAD Data

Feature: Mounting holes on side enable easy installation of sensor brackets.

Standard Clamp Type



Type	Material	Surface Treatment	Accessory
SCJS	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCJS		Electroless Nickel Plating	
SSCJS	1.4301/X5CrNi18-10	-	(JIS SUS)

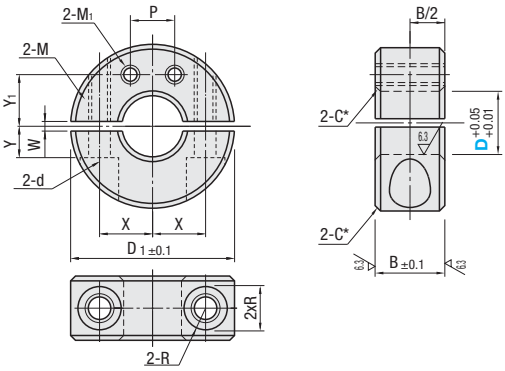


*D8~D25:C0.5
D30:C1

Standard Split Type



Type	Material	Surface Treatment	Accessory
SCJP	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSCJP		Electroless Nickel Plating	
SSCJP	1.4301/X5CrNi18-10	-	(JIS SUS)



*D8~D25:C0.5
D30:C1

RoHS

Part Number Type	D	B	D1	M (Coarse Thread)	d	R	W	X	Y	Z	M1 (Coarse Thread)	Y1	P	€ Unit Price Clamp Type SCJS	PSCJS	SSCJS	Split Type SCJP	PSCJP	SSCJP
Clamp Type SCJS PSCJS SSCJS / Split Type SCJP PSCJP SSCJP	8	10	25	M4	4.5	3.75	1.5	8	5	7~9	M3	8	8						
	10		30					9		8~10	M4	10	10						
	12							10		9~10									
	13																		
	15		34					11.5	6	10~12	M5	12	12 (14)						
	15A																		
	16		35	M5	5.5	4.5		12		11~12									
	16A										M4								
	20A		40					14	7	13		14							
	20										M5		14						
	25	12	45					17		16~18		17	16						
	25A										M4		12						
	30	15	55	M6	6.6	6		20	10	18~20	M6	20	20						

The halves must remain in the same orientation as shipped when in use.
( ) Only for Split Type, P dimension is 14 when D20A is selected.

Order Example

Part Number
SCJS10
SCJP12
SSCJP25A

Days to Ship

6 Days

2 Days

P.87

Price

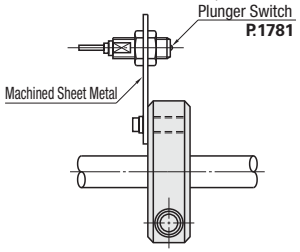
Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

Example

* Refer to Sheet Metal Products (Plate Type on P.2-1741) (Specific sensor mounting brackets are not available from MISUMI.)



Shaft Collars -Compact Type with Side Mount Holes- (For Space Saving)
-Clamp Type / Split Type-

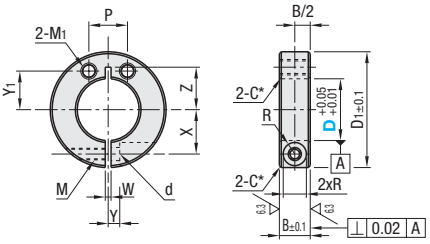
CAD Data

■ **Feature**: Smaller by up to 40% in width (B dim.) and 17% in outer diameter (D_1 dim.) than the Side Mounting Hole Standard Type (**P.263**).

■Compact Clamp Type



Type	Material	Surface Treatment	Accessory
SCJSJ	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSCJSJ		Electroless Nickel Plating	
SSCJSJ	1.4301/X5CrNi18-10	-	

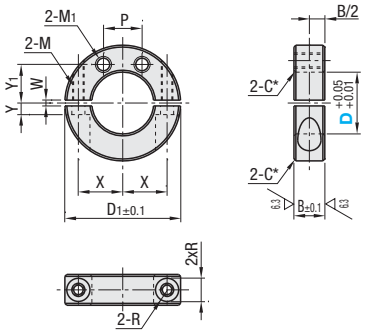


*D8~D25:C0.5
D30:C1

■Compact Split Type



Type	Material	Surface Treatment	Accessory
SCJPJ	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSCJPJ		Electroless Nickel Plating	
SSCJPJ	1.4301/X5CrNi18-10	-	(JIS SUS)



*D8~D25:C0.5
D30:C1

RoHS

Part Number Type	D	B	D_1	M (Coarse Thread)	d	R	W	X	Y	Z	M_1 (Coarse Thread)	Y_1	P	€ Unit Price Clamp Type SCJSJ	PSCJSJ	SSCJSJ	Split Type SCJPJ	PSCJPJ	SSCJPJ
Clamp Type SCJSJ PSCJSJ SSCJSJ	8	6	22	M2.6	2.9	2.45	1.5	7	3	9	M3	7	8						
	10		25					8				8							
	12		25					9				9							
	13	8	28	M3	3.4	3		11		11		10							
	15		30									11							
Split Type SCJPJ PSCJPJ SSCJPJ	16		30					11.5				11.5							
	20		35					13	5	13	M4	13.5	10						
	25	10	42	M4	4.5	3.75		16.5		16.5		16.5	12						
	30	12	50	M5	5.5	4.5		20	6	20		19	20						

The halves must remain in the same orientation as shipped when in use.

Order Example Part Number: SCJSJ8, SCJPJ15

Days to Ship 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49
Discount Rate	€ Unit Price	5%	10%
Days to Ship	Standard	To be quoted	

For orders larger than indicated quantity, please request a quotation.

Compactness Comparison Table

D	Size Differences B (Thickness)	Size Differences D_1 (Outer Dia.)	Compact B (Thickness)	Compact D_1 (Outer Dia.)	Standard (P.263) B (Thickness)	Standard (P.263) D_1 (Outer Dia.)
8	-4	-3	6	22	10	25
10	-4	-5	6	25	10	30
12	-4	-5	6	25	10	30
13	-2	-2	8	28	10	30
15	-2	-4	8	30	10	34
16	-2	-5	8	30	10	35
20	-2	-5	8	35	10	40
25	-2	-3	10	42	12	45
30	-3	-5	12	50	15	55

Shaft Collars -D Cut Standard / D Cut Compact (For Space Saving)-

-Set Screw Flat Type / Clamp Type / Split Type-

Features: Mounting holes on side enable easy installation of sensor brackets. EN AW-2017 (aluminum) is recommended for weight savings.

Standard Set Screw Flat Type

RoHS

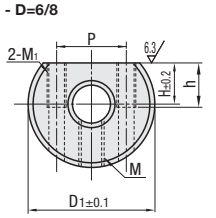


Type	Material	Surface Treatment	Accessory
SDSN	1.0038 (1.1191)	Black Oxide Coating	2 Set Screws
PSDSN		Electroless Nickel Plating	2 Set Screws (JIS SUS)
SSDSN	1.4301	-	

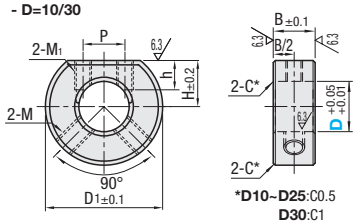
Material will be revised to the indicated in ( ) without notice.

25 / (6.3)

- D=6/8



- D=10/30



Standard Clamp Type



Type	Material	Surface Treatment	Accessory
SDS	1.0038 (1.1191)	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSDS		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCDS	1.4301	-	
SDSA	EN AW-2017	-	

Material will be revised to the indicated in ( ) without notice.

25 / (6.3)

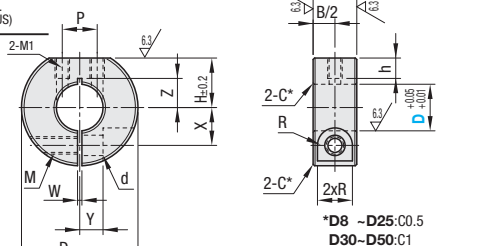
- 1.0038/S235JR / 1.4301/X5CrNi18-10

D	Z
8	8
10	10
12	10
13	10

The Slitting is applicable to D8~13 only.

- EN AW-2017/AlCu4MgSi

D	Z
8	8
10	10
12	10
15	12
16	12
20	13
25	16
30	18

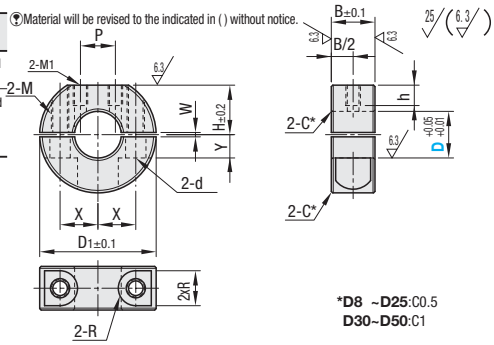


Standard Split Type



Type	Material	Surface Treatment	Accessory
SDN	1.0038 (1.1191)	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSDN		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
SSCDN	1.4301	-	
SDNA	EN AW-2017	-	

Material will be revised to the indicated in ( ) without notice.



Part Number Type	D	D1	B	H	M1	P	h	Set Screw M x Length	€ Unit Price SDSN	PSDSN	SSDSN
(Set Screw Type) SDSN PSDSN SSDSN	6	20	8	6.5	M3	11	7	M4x4			
	8	22		7		13					
	10	25		10		8					
	12	28	10	11	M4	10	5	M5x6			
	15	30		12.5							
	20	35		15							
	25	42	12	18	M5	12	6	M6x6			
	30	45		20			5				

M1 effective thread depth is 7mm (pilot hole through) for D6~12.

Part Number Type	D	D1	B	M (Coarse Thread)	d	R	H	M1	P	h	W	X	Y	€ Unit Price Clamp Type SDS	PSDS	SSCDS	SDSA	Split Type SDN	PSDN	SSCDN	SDNA
(Clamp Type) SDS PSDS SSCDS SDSA (Split Type) SDN PSDN SSCDN SDNA	*8	30	15	M5	5.5	4.5	13	M3	8	7	1.5	10	6								
	*10	35					15	M4	10			11.5									
	13																✕				✕
	*15	40		M6	7	6	17	M5	12	9		13	8								
	*16																				
	18	45					18.5		15			15					✕				✕
	*20																				
	*25	50					21		20	10		18	10								
	*30	55					23.5		21			20									
	35	60					26	M6	23		2.0	23	12				✕				✕
	40	70	18	M8	9	7	30		26	12		26	13				✕				✕
	50	85	22	M10	11	9	37	M8	28	13	3.0	32	16				✕				✕

(EN AW-2017/AlCu4MgSi is available for * marked sizes only.)

1.0038/S235JR effective thread depth is 7mm (pilot hole through) for D8~15. For others, holes are complete threads.

M1 effective thread depth is 7mm (pilot hole through) for 1.4301/X5CrNi18-10~12 and D15~18. For others, holes are complete threads.

The halves must remain in the same orientation as shipped when in use.

CAD Data

Features: Smaller by up to 46% in width (B dimension) and 22% in outer diameter (D_1 dimension) than D Cut Standard Type (**P.265**).

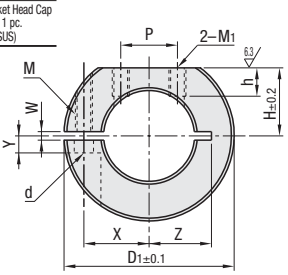
Compact Clamp Type

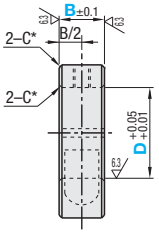
RoHS

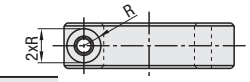


Type	M Material	S Surface Treatment	A Accessory
SDSJ	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 1 pc.
PSDSJ		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 1 pc. (JIS SUS)
SSCDSJ	1.4301	-	

Refer to Compactness Comparison Table below.







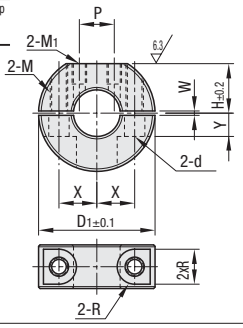
*D10~D25:C0.5
D30:C1

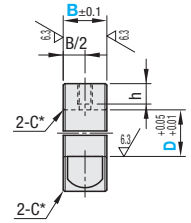
Compact Split Type



Type	M Material	S Surface Treatment	A Accessory
SDNJ	1.1191/C45E	Black Oxide Coating	Hexagon Socket Head Cap Screw 2 pcs.
PSDNJ		Electroless Nickel Plating	Hexagon Socket Head Cap Screw 2 pcs. (JIS SUS)
SSCDNJ	1.4301	-	

Refer to Compactness Comparison Table below.





*D10~D25:C0.5
D30:C1

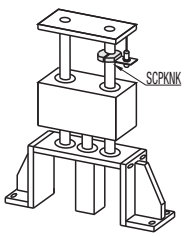
Part Number Type	D	B Selectable	D_1	M (Coarse Thread)	d	R	W	X	Y	Z	M_1	H	h	P	€ Unit Price Clamp Type SDSJ	PSDSJ	SSCDSJ	Split Type SDNJ	PSDNJ	SSCDNJ
(Clamp Type) SDSJ PSDSJ SSCDSJ	10	8	30	M3	3.4	3	1.5	9	5	8~10	M3	12	5	8						
	12							10		9~10										
	15							11	3	11				10						
	16							11.5					4.8							
(Split Type) SDNJ PSDNJ SSCDNJ	20		35					13	5	13		15	5							
	25	10	42	M4	4.5	3.75		16.5		16.5	M4	18.5	6	12						
	30	12	50	M5	5.5	4.5		20	6	20		22								

The halves must remain in the same orientation as shipped when in use.

Order Example

Part Number	-	B
SDNJ10	-	8
SDSJ16	-	8
SDS10		

Example



Compactness Comparison Table

D	Size Differences B (Thickness)	Size Differences D_1 (Outer Dia.)	Compact B (Thickness)	Compact D_1 (Outer Dia.)	Standard (P.265) B (Thickness)	Standard (P.265) D_1 (Outer Dia.)
10	-7	-5	8	30	15	35
12	-7	-5	8	30	15	35
15	-7	-10	8	30	15	40
16	-7	-10	8	30	15	40
20	-7	-10	8	35	15	45
25	-5	-8	10	42	15	50
30	-3	-5	12	50	15	55

Days to Ship

6 Days (**P.87**)

2 Days

Price

Volume Discount (Round down to one Cent.) **P.87**

- Others

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation.

- SSDSN · SDNA · SSCDSJ · SSCDNJ

Quantity	1~29	30~39	40~49	50~99
Discount Rate	€ Unit Price	5%	10%	15%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Linear Bushings · Ball Splines

Linear Bushings/ Ball Splines





Product Name	Linear Bushings -Various Grease Application Services-	Linear Bushings with Lubrication Unit MX -Straight-
Page	272	274





Flanged Linear Bushings with Lubrication Unit MX	Center Flanged Linear Bushings with Lubrication Unit MX
274	275





Linear Bushings with Lubrication Unit MX -Flanged with Pilot-	Linear Bushings with Lubrication Unit MX with Tall Blocks	Linear Bushings with Lubrication Unit MX with Wide Blocks
276	277	277

Addition



Price Reduction

Price Reduction



Linear Bushings Straight	Linear Bushings Straight Compact
278,279,281	280

Addition





Price Reduction

Flanged Linear Bushings Medium Type	Flanged Linear Bushings Single	Flanged Linear Bushings Compact Single
281,282	283	284

Addition



Price Reduction





Flanged Linear Bushings Double	Flanged Linear Bushings Compact Double	Flanged Linear Bushings with Grease Fitting	Mini-Flanged Linear Bushings	Height-Adjusting Spacers for Flanged Linear Bushings
285	286	287	287	288

Addition







Price Reduction





Spacers	Fixing Plates	Flanged Linear Bushings Single with Pilot	Flanged Linear Bushings Compact Single with Pilot	Flanged Linear Bushings Single with Female Thread Hole
288	288	289	290	290



Price Reduction

Addition







Price Reduction

Flanged Linear Bushings Double with Pilot	Flanged Linear Bushing Compact Double with Pilot	Flanged Linear Bushings Double with Pilot and Female Thread Holes	Center Flanged Linear Bushings
291	292	292	293

Addition







Addition



Price Reduction

Flanged Linear Bushings Compact	Flanged Linear Bushings with Female Thread Holes	Flanged Linear Bushings Long	Linear Bushings with Tall Blocks
294	294	295,296	297~299



NEW







Linear Bushings with Compact Tall Blocks	Shaft-sliding Linear Bushings with Housing Units	Linear Bushings with Tall Blocks with Dowel Holes	Linear Bushings with Wide Blocks with Dowel Holes
297,298	300	301	302

Addition



Price Reduction







Linear Bushings with Wide Blocks	Linear Bushings with Tall Blocks with Clamp Lever	Linear Bushings with Wide Blocks with Clamp Lever	Flanged Linear Bushings with Clamp Lever
303,304	305	306	307



Addition
Modified



Addition
Modified



NEW



NEW



Linear Ball Bushings	Ball Splines–Standard–	–Both Ends Female Thread–	-One End Female Thread-	-Both Ends Stepped Type-
308	312	313	313	314

Addition
Modified



NEW



NEW



NEW



Addition
Modified



–One End Stepped–	-Both Ends Stepped and Male Thread-	-Both Ends Stepped and Female Thread-	-One End Stepped and Male Thread-	–One End Male Thread and Stepped, One End Female Thread–
314	315	315	316	316











Miniature Ball Bearing Guide Sets	Shafts for Miniature Ball Bearing Guides	Miniature Ball Guide Bushings	Ball Sliders	Needle Roller Guide Set
317~319	319,320	321,322	322	324

Linear Bushings Overview

■Linear Bushings Selection Table by Shape and Material

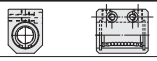
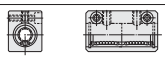
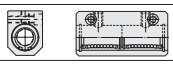
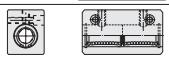
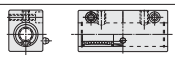
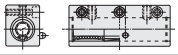
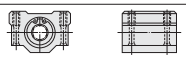
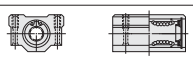
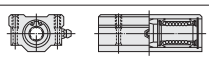
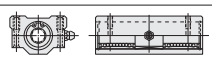
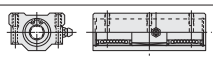
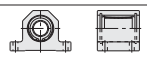
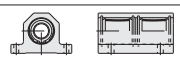
■Linear Bushings with Lubrication Unit MX Features: Built-in lubrication unit constantly supplies proper amounts of lubricant as needed, prolonging system life and long time maintenance-free operation.

Type				Diagram	Material of Bushing Outer Cylinder: 1.3505/100Cr6		Page Listed
					Surface Treatment of Bushing		
					-	Electroless Nickel Plating	
Shape		Length	Outer Dia.		Material of Retainer: Plastic		
Straight		Single Double	Standard		●	-	P.274
Standard Flange		Single Double	Standard		●	●	P.274 · 275
Pilot Flanged Type		Single Double	Standard		●	-	P.276
Center Flanged Type		Double	Standard		●	-	P.275
Linear Bishings with Housing Units Tall Blocks		Single Double	Standard		●	-	P.277
Linear Bishings with Housing Units Wide Blocks		Single Double	Standard		●	-	P.277

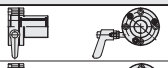
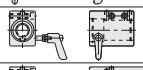
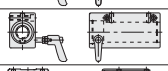
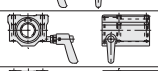
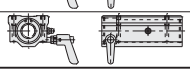
■Linear Bushings Features: Utilizes the rolling motion of steel balls to produce infinite linear motion travels.

Type				Diagram	Material of Bushing Outer Cylinder							Page Listed
					1.3505/100Cr6		1.4125/X105CrMo17		1.3505/100Cr6		1.3505/100Cr6	
					Surface Treatment of Bushing				Electroless Nickel Plating		Raydent	
					-							
Shape		Length	Outer Dia.		Material of Retainer							
					Plastic	JIS SUS	Plastic	JIS SUS	Plastic	JIS SUS	Plastic	
Straight		Short	Standard		●	-	●	-	-	-	-	P.278
		Single	Compact		●	-	-	-	-	-	-	P.280
			Standard		●	●	●	●	●	●	●	P.279
		Middle	Standard		●	-	-	-	●	-	-	P.281
		Double	Compact		●	-	-	-	-	-	-	P.280
			Standard		●	●	●	●	●	●	●	P.279
Mini-Flanged		Single	Standard		●	●	●	●	-	-	-	P.287
Standard Flange		Single	Compact		●	-	-	-	●	-	-	P.284
			Standard		●	●	●	●	●	●	●	P.283
		Middle	Standard		●	-	-	-	●	-	-	P.281
		Double	Compact		●	-	-	-	●	-	-	P.286
			Standard		●	●	●	●	●	●	●	P.285
		Long	Standard		●	●	●	●	●	●	-	P.295
Pilot Flanged Type		Single	Compact		●	-	-	-	-	-	-	P.290
			Standard	Counterbored Holes	●	●	●	●	●	●	-	P.289
				Female Thread Holes	●	-	-	-	-	-	-	P.290
		Middle	Standard		●	-	-	-	-	-	-	P.282
		Double	Compact		●	-	-	-	-	-	-	P.292
			Standard	Counterbored Holes	●	●	●	●	●	●	-	P.291
				Female Thread Holes	●	-	-	-	-	-	-	P.292
		Long	Standard		●	●	●	●	●	●	-	P.295
		Long with Pilot	Standard		●	●	●	●	●	●	-	P.296
Center Flanged Type		Middle	Standard		●	-	-	-	-	-	-	P.282
		Double	Compact		●	-	-	-	-	-	-	P.294
			Standard	Counterbored Holes	●	●	●	●	●	●	-	P.293
				Female Thread Holes	●	-	-	-	-	-	-	P.294

■Pillow Block Type Features: A linear bushing is housed in an aluminum body. Contributes to parts count and manufacturing step reductions.

Type					Diagram	Block Material , Surface Treatment: Aluminum Alloy , Clear Anodizing Material of Bushing Outer Cylinder 1.3505/100Cr6		1.4125/X105CrMo17		Page Listed
Shape		Length	Outer Dia.	Dowel Hole		Surface Treatment of Bushing -				
						Material of Retainer Plastic		Plastic		
Linear Bushings with Housing Units Tall Blocks		Single	Compact	-		●	-	-	-	P.297
			Standard	-		●	●	●	●	P.297
				With Dowel Hole		●	-	-	-	P.301
		Middle	Standard	-		●	-	-	-	P.299
		Double	Compact	-		●	-	-	-	P.298
			Standard	-		●	●	●	●	P.298
				With Dowel Hole		●	-	-	-	P.301
		Medium Long	Standard	-		●	-	-	-	P.299
		Long	Standard	-		●	-	-	-	P.299
				With Dowel Hole		●	-	-	-	P.301
Linear Bushings with Housing Units Wide Blocks		Single	Standard	-		●	●	●	●	P.303
				With Dowel Hole		●	-	-	-	P.302
		Middle	Standard	-		●	-	-	-	P.303
						●	-	-	-	
		Double	Standard	-		●	●	●	●	P.304
				With Dowel Hole		●	-	-	-	P.302
		Medium Long	Standard	-		●	-	-	-	P.304
		Long	Standard	-		●	-	-	-	P.304
				With Dowel Hole		●	-	-	-	P.302
Shaft-sliding Housing Unit Type		Single	Standard	-		●	-	-	-	P.300
		Double	Standard	-		●	-	-	-	P.300

■Linear Bushings with Clamp Lever Features: Ability to clamp at desired adjusted position enables reduction of machine parts count and part manufacturing work loads.

Type				Diagram	Material of Bushing Outer Cylinder 1.3505/100Cr6 Surface Treatment of Bushing -	Electroless Nickel Plating	Page Listed
Shape		Length	Outer Dia.		Material of Retainer Plastic		
Standard Flange		Single	Standard		●	●	P.307
		Double	Standard		●	●	P.307
Linear Bushings with Housing Units Linear Bushings with Tall Blocks		Single	Standard		●	-	P.305
		Double	Standard		●	-	P.305
Linear Bushings with Housing Units Linear Bushings with Wide Blocks		Single	Standard		●	-	P.306
		Double	Standard		●	-	P.306

■Linear Ball Bushings Features: Rolling ball bearings enable both linear and rotary motions.

Type				Diagram	Surface Treatment of Bushing - Material of Bushing Outer Cylinder 1.3505/100Cr6	1.4125/X105CrMo17	Page Listed
Shape		Length	Outer Dia.		Material of Retainer EN AW-5052/AlMg2,5		
Linear Ball Bushings Straight		Single Double	Standard		●	●	P.308
Linear Ball Bushings Standard Flange		Single Double	Standard		●	-	P.308

Linear Bushings

-Features / Antirust Performance Comparison Test / Various Grease Application Services-

■Features

Linear Bushings utilize the rolling motion of steel balls to produce infinite linear motion travels. They are capable of linear motion with high accuracy and low friction, and widely used for parts of semiconductor, electronic parts, and food package machinery, etc.

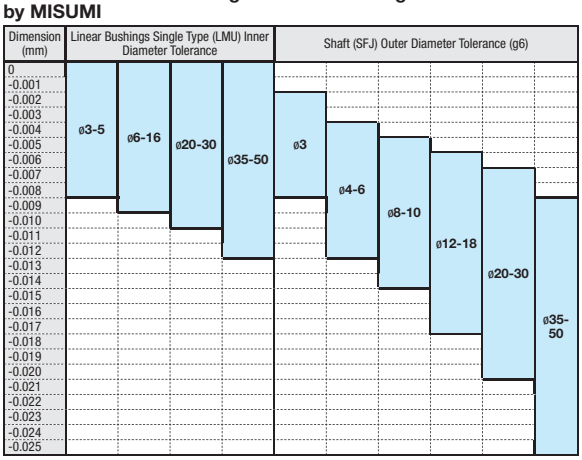
■Lubrication

Although MISUMI Linear Bushings, except for Lubrication Unit MX type, are coated with rust protection oil which hardly affect the effect of lubricant such as grease at the time of delivery, use with grease applied after cleaning and drying is recommended. Apply grease to the rows of balls on inner surface of linear bushing before use and repeat it appropriately.
In addition to Lubrication Unit MX type, MISUMI provides L, G and H greased type.

■Shaft Fits

For MISUMI linear bushings, use in combination with MISUMI shafts (hardened with g6 tolerance) is recommended (Normal clearance fit).
* Shaft P.107~

Reference: Tolerance range of linear bushing and shafts made by MISUMI



■Allowable Load

-Basic Dynamic Load Rating (C)
Basic Dynamic Load rating is defined as: A load applied and ran under equal condition on a group of linear system specimen where 90% of specimen will reach 50 x 10^3m without experiencing any flaking of rolling surfaces due to rolling fatigues.

-Basic Static Load Rating (Co)
Basic Static Load rating is defined as: A load applied on non-moving linear guides where a sum of rolling element plastic deformation amount and rolling surface plastic deformation amount becomes equal to 0.0001 times that of the diameter of the rolling element (balls).

■Operating Life

Rated Life can be obtained from the Basic Dynamic Load Rating and the actual load applied on the linear bushings, as shown below.

$$L=\left(\frac{fH \cdot fT \cdot fC}{fw} \cdot \frac{C}{P}\right)^3 \cdot 50$$

L : Rated Life (km)
C : Basic Dynamic Load Rating (N)
P : Applied Load (N)
fw: Load Factor (Refer to Table 4)
fH : Hardness Factor (Refer to Figure 1)
fT : Temperature Factor (Refer to Figure 2)
fC : Contact Factor (Refer to Table 3)

P.1902

Life hours can be obtained by calculating travel distance per hour. When stroke length and stroke cycles are fixed, see the equation below.
* Fig. 1 · Fig. 2 · Table 3 · Table 4 P.1902

$$Lh=\frac{L \cdot 10^3}{2 \cdot \ell s \cdot n_1 \cdot 60}$$

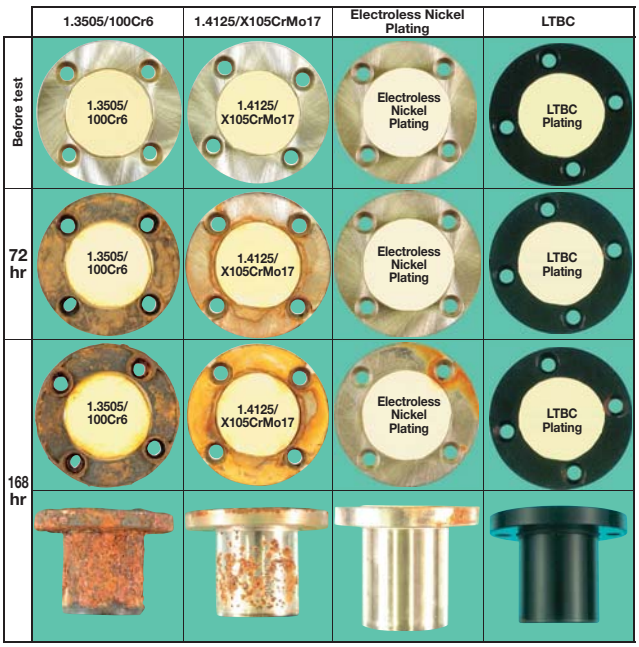
Lh: Life Hours (hr) ℓs: Stroke Length (m) L: Rated Life (km)
N1: Reciprocating cycles per Minute (cpm)

■Antirust Performance Comparison Test (Reference)

<Testing Method>
Salt water spray testing method conforms to JIS H8502.
(Spray 35°C, 5%NaCl Solution)

<Testing Sample>
Round Flanged Linear Bushings-Single Type-

Appearance of test piece 72 hr, 168 hr before test



■Various Grease Application Services

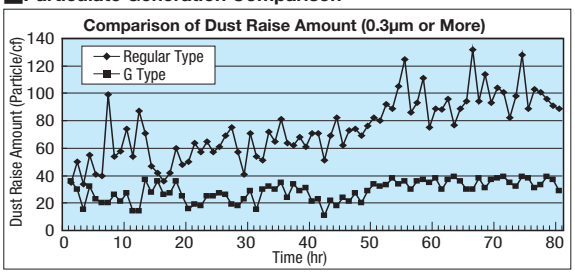
MISUMI linear bushings, except for Lubrication Unit MX type, are coated with rust protection oil, but not greased.
By selecting from the following greases, you can order pre-greased type.
Selecting **L** or **G** type enables great reduction of particle generation by grease dispersion in operation (See comparison of particle generation amount below).
Additionally, the **H** type (NSFH-1 Attestation) can be used in the situation which has the possibility of inadvertent contacts with foods.
Safety is assured even if grease contacts the foods.

Type	Product Name	Main Features
L Type	ET–100K (Made by Kyodo Yushi)	High heat resistance and oxidation stability. Also high adhesion and cohesion with limited splash or leakage.
G Type	LG2 (Made by NSK Ltd.)	Suitable for clean environment due to low particle generation grease. Highly resistant to corrosion.
H Type	FGL (Lubriplate®)	Formulated to meet increased demands of the food, beverage and pharmaceutical industries. (NSF H–1 Registration No.043534)

■Grease Performance

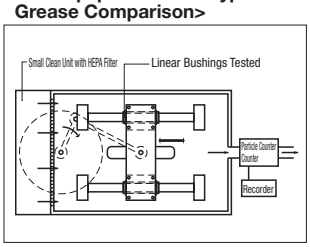
	Item	Conditions	Unit	Measurement Method	L Type	G Type	H Type
Grease Performance	Thickener	-	-	-	Aromatic Diurea	Lithium Type	Aluminum Complex Soap
	Base Oil	-	-	-	Ether Synthetic Oil	Mineral Oil+Synthetic Hydrocarbon Oil	USP White Oil
	Base Oil Kinetic Viscosity	40°C	mm^2/s	JIS K2220 5.19	103	30	105
		100°C			12.8	-	11.5
	Miscible Consistency	-	-	JIS K2220 5.3	280	207	310
	Dropping Point	-	°C	JIS K2220 5.4	<260	200	238
	Evaporation Amount	99°Cx22hr	wt%	-	0.15%	1.40%	0.27% (ASTMD-972)
	Oil Separation	100°Cx24hr	wt%	JIS K2220 514	1.2%	0.8%	2.1% (ASTMD-1742)
	Operating Temp.	In Air	°C	-	-40~200	-10~80	-12~170

■Particulate Generation Comparison



*Above data are for reference only. Not intended as manufacturer's guarantee.

<Test Equipment for G Type Grease Comparison>



<Test Condition>

Linear Bushings	LHFS16 (Regular Type) LHFS16G (G Type)
Liner Motion Speed	20m / min
Stroke	100mm
Environment	Inside clean booth (Class100)
Temperature	22.5°C±2°C
Humidity	50wt%
Particle Counter	Made by Rion Co.Ltd. KC03A1

■Products with Various Grease Options

Applicable Products	Shaft Dia. dr	€ Unit Price (Price for grease filling service)		
		Shaft Diameter dr≤10	12≤Shaft Diameter dr≤30	35≤Shaft Diameter dr
P.278~P.307 Linear bushings related (?)Products below are excluded. -Linear bushings without seals -Linear ball bushings **P.308**	3~50			

Order Example

Part Number

LMU12L (L Type Greased)
LMU12G (G Type Greased)
LMU12H (H Type Greased)

(?)To place an order, add L, G, or H after Part Number of regular type.

Days to Ship

10 Days

Express B | 5,00 EUR/ piece P.88

(?)A Express Charge of 13,50EUR for 3 or more identical pieces.

Price

Add the price in the above table to the unit price of applicable standard product.

<Price Calculation Example>LMU12L (Straight, Single Type)

(Standard Type € Unit Price) + (€ Unit Price in the Above Table) = (Total)
3,30 EUR + 18,00 EUR = 21,30 EUR (per piece)

■Quantity Discount Price (?)Round down to one Cent) P.87

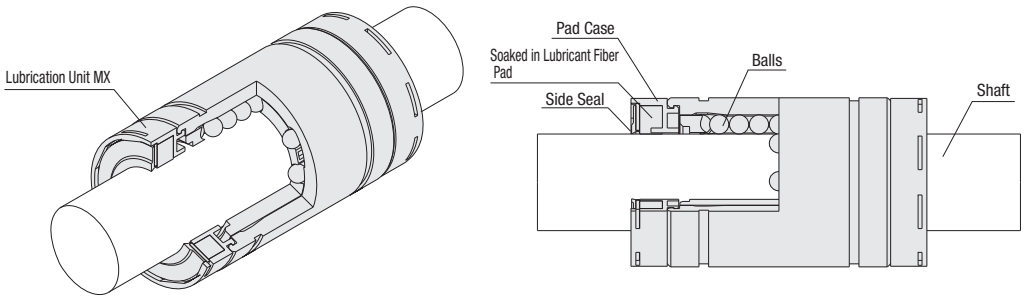
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

(?)For orders larger than indicated quantity, please request a quotation.

Lubrication MX Unit Series

Patent Pending

Structure of Lubrication Unit MX



Lubrication Unit MX has a fiber pad containing the lubricant. Capillary action allows appropriate supply of lubricant to contact surfaces. Therefore oil film is always formed between balls and shaft so that service intervals is extended significantly.

Features

-Extended maintenance period

Long durability of lubrication performance have resulted in significant reduction of maintenance load especially with machines and equipment environments where applying grease is not easy.

-Environmentally friendly system

Appropriate supply of lubricant to ball rolling surface at appropriate time makes the system environment-friendly.

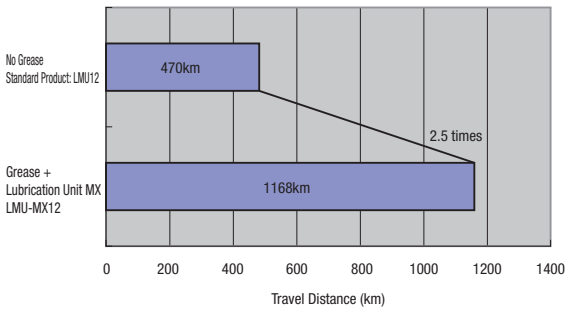
-Cost advantage

Contributes to reduction of maintenance costs and product troubles caused by failing to lubricate.

-Reduced procedural steps

No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Endurance Test Result



<Test Condition>

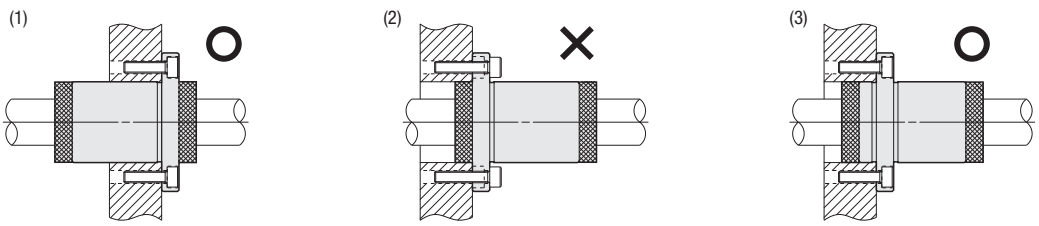
Sample	: Linear Bushings before removing rust protection oil LMU12 Linear Bushings with Lubrication Unit MX LMU-MX12
Applied Load	: 206N (50% against Basic Dynamic Load Rating 412N)
Average Speed	: 42m/min (0.7m/sec)
Stroke	: 100mm
Lubricant	: Grease, initial filling only (1.3505/100Cr6–MX12 only)
Shaft Material	: 1.3505/100Cr6 58HRC
24 hours, continuously operated	

With 50% of basic load rating applied for testing, the Lubrication Unit MX Type has shown a 2.5 times higher durability performance compared to the one without the MX lubrication unit.

*The data above are for reference only, and not a guarantee by the manufacturer.

The data was revised to the above since the 2007 catalog after the safety margin was confirmed by increased test data points.

Cautions



(Flanged Type)

(With Pilot, Flanged Type)

- When mounting flanged lubrication unit type, do not use the lubrication unit case as a pilot as shown in (2), as that may damage the case. Instead, use the Flanged Type with Pilot as shown in (3).
- Do not disassemble as that may cause failures.

Linear Bushings with Lubrication Unit MX

-Single / Double / Flanged Single-

Reduced Delivery Time

CAD Date

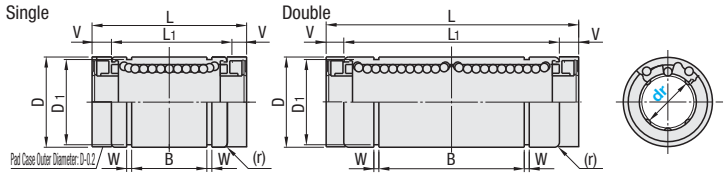
Details of Lubrication Unit MX P.273

Straight Single / Double



RoHS

Type		Outer Cylinder			Steel balls	Pad Case / Retainer	Operating Environment Temperature	Accessory
Single	Double	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LMU-MX	LMUW-MX	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber



No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Single

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 are recommended.

Part Number Type	dr	Tolerance	D	Tolerance	L	L1	Tolerance	V	B	Tolerance	W	D1	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Co (Static) N	Mass (g)
LMU-MX	10	0 -0.009	19	0 -0.013	39	29	0 -0.2	5	19.4	0 -0.4	1.3	18	0.4	0.012	4	372	549	35
	12		21		41	30		5.5	20.4			20				412	598	45
	16		28		49	37		6	23.3		1.6	27	0.8			775	1180	80
	20	0 -0.010	32	0 -0.016	56	42		7	27.3			30.5		0.015	5	882	1370	109
	25		40		77	59	0 -0.3	9	37.3	0 -0.5	1.85	38	1.5		6	980	1570	255
	30		45		84	64		10	40.8			43				1570	2740	286
	35	0 -0.012	52	0 -0.019	92	70		11	45.3		2.1	49		0.020		1670	3140	453
	40		60		104	80		12	56.3			57				2160	4020	687
	50		80		128	100		14	68.8		2.6	76.5				3820	7940	1763

Double

Part Number Type	dr	Tolerance	D	Tolerance	L	L1	Tolerance	V	B	Tolerance	W	D1	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (MoNm)	Mass (g)
LMUW-MX	10	0 -0.010	19	0 -0.016	65	55	0 -0.3	5	41.4	0 -0.5	1.3	18	0.4	0.015	4	588	1100	7.24	66
	12		21		68	57		5.5	43.4			20				657	1200	10.9	84
	16		28		82	70		6	49.8		1.6	27	0.8			1230	2350	19.7	152
	20	0 -0.012	32	0 -0.019	94	80		7	57.8			30.5			5	1400	2740	26.8	191
	25		40		130	112	0 -0.4	9	78.3	0 -0.6	1.85	38	1.5	0.020	6	1560	3140	43.4	459
	30		45		143	123		10	85.3			43				2490	5490	82.8	504
	35	0 -0.015	52	0 -0.022	157	135		11	94.8		2.1	49		0.025		2650	6270	110	823
	40		60		175	151		12	116.8			57				3430	8040	147	1203
	50		80		220	192		14	142.8		2.6	76.5				6080	15900	397	3163

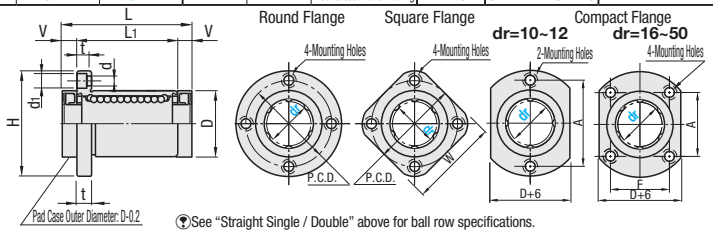
Details of Lubrication Unit MX P.273 Flange Type Height-adjusting Spacers can be selected from P.288

Flanged Single Type



RoHS

Type			Outer Cylinder			Steel balls	Pad Case / Retainer	Operating Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHFR-MX	LHFS-MX	LHFC-MX	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber
LHFRM-MX	LHFSM-MX	LHFCM-MX			Electroless Nickel Plating	1.4125			



See "Straight Single / Double" above for ball row specifications.

No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Part Number Type	dr	Tolerance	D Tolerance No Surface Treatment	D Tolerance Surface Treatment	L	L1	Tolerance	V	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Mass(g) Round Flange	Square Flange	Compact Flange
LHFR-MX LHFS-MX LHFC-MX LHFRM-MX LHFSM-MX LHFCM-MX	10	0 -0.009	19	0 -0.021	39	29	±0.3	5	40					29	30	-	29	0.012	0.012	372	549	76	56	68
	12		21		41	30		5.5	42	6	4.5	7.5	4.1	32	32	-	32			412	598	80	61	72
	16		28		49	37		6	48					38	37	22	31			775	1180	127	111	119
	20	0 -0.010	32	0 -0.025	56	42		7	54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	882	1370	191	156	178
	25		40		77	59		9	62					51	50	32	40			980	1570	359	319	344
	30		45		84	64		10	74	10	6.6	11	6.1	60	58	35	49			1570	2740	494	399	412
	35	0 -0.012	52	0 -0.030	92	70		11	82					67	64	38	55			1670	3140	678	588	603
	40		60		104	80		12	96	13	9	14	8.1	78	75	45	64	0.020	0.020	2160	4020	1093	913	946
	50		80		128	100		14	116					98	92	56	80			3820	7940	2263	2063	2100

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

Price

dr	Straight Single LMU-MX € Unit Price Qty. 1~9	Straight Single LMU-MX Volume Discount Qty.10~19	Straight Double LMUW-MX € Unit Price Qty. 1~9	Straight Double LMUW-MX Volume Discount Qty.10~19	Round Flange LHFR-MX € Unit Price Qty. 1~9	Round Flange LHFR-MX Volume Discount Qty.10~19	Round Flange LHFRM-MX € Unit Price Qty. 1~9	Round Flange LHFRM-MX Volume Discount Qty.10~19	Square Flange LHFS-MX € Unit Price Qty. 1~9	Square Flange LHFS-MX Volume Discount Qty.10~19	Square Flange LHFSM-MX € Unit Price Qty. 1~9	Square Flange LHFSM-MX Volume Discount Qty.10~19	Compact Flange LHFC-MX € Unit Price Qty. 1~9	Compact Flange LHFC-MX Volume Discount Qty.10~19	Compact Flange LHFCM-MX € Unit Price Qty. 1~9	Compact Flange LHFCM-MX Volume Discount Qty.10~19
10																
12																
16																
20																
25																
30																
35																
40																
50																

Order Example Part Number LMU-MX16 LHFR-MX12

⊗Various Grease Application Services are not applicable.

Days to Ship 6 Days P.87

For orders larger than indicated quantity, please request a quotation.

Linear Bushings with Lubrication Unit MX

-Flanged Double · Center Flanged Double-

Reduced Delivery Time

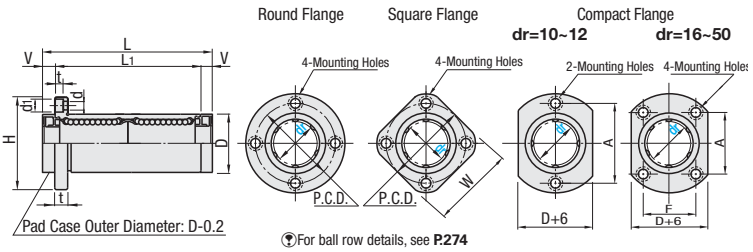
CAD Data

Details of Lubrication Unit MX P.273 Flange Type Height-adjusting Spacers can be selected from P.288

Flanged Double



Type			Outer Cylinder			Steel balls	Pad Case / Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHFRW-MX	LHFSW-MX	LHFCW-MX	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber
LHFRWM-MX	LHFSWM-MX	LHFCWM-MX			Electroless Nickel Plating	1.4125/ X105CrMo17			



For ball row details, see P.274

RoHS

■No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Part Number Type	dr	Tolerance	D Tolerance Surface Treatment No	Surface Treatment Yes	L	L1 Tolerance	V	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (MoNm)	Mass(g) Round Flange	Square Flange	Compact Flange
LHFRW-MX LHFSW-MX LHFCW-MX	10	0 -0.010	0 -0.016	0 -0.021	19	±0.3	5	40	6	4.5	7.5	4.1	29	30	-	29	0.015	0.015	588	1100	7.24	102	82	94
	12				21		5.5	42					32	32	-	32			657	1200	10.9	114	94	106
	16				28		6	48					38	37	22	31			1230	2350	19.7	197	172	189
LHFRWM-MX LHFSWM-MX LHFCWM-MX	20	0 -0.012	0 -0.019	0 -0.025	32		7	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	271	236	258
	25				40		9	62					51	50	32	40			1560	3140	43.4	559	519	544
	30				45		10	74					60	58	35	49			2490	5490	82.8	704	614	669
	35	0 -0.015	0 -0.022	0 -0.030	52		11	82	10	6.6	11	6.1	67	64	38	55	0.025	0.025	2650	6270	110	1048	958	973
	40				60		12	96	13	9	14	8.1	78	75	45	64			3430	8040	147	1603	1413	1456
	50				80		14	116					98	92	56	80			6080	15900	397	3663	3463	3500

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

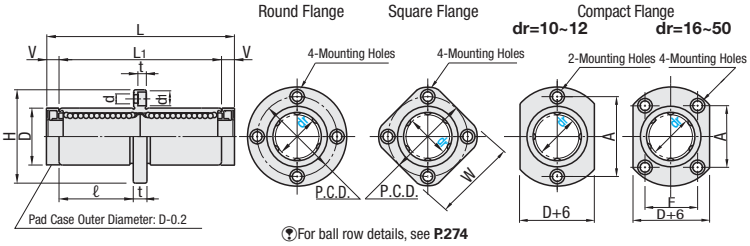
kgf=Nx0.101972

Details of Lubrication Unit MX P.273 Flange Type Height-adjusting Spacers can be selected from P.288

Center Flanged Double



Type			Outer Cylinder			Steel balls	Pad Case / Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHMRW-MX	LHMSW-MX	LHMCW-MX	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber



For ball row details, see P.274

RoHS

■No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Part Number Type	dr	Tolerance	D Tolerance	L	L1 Tolerance	V	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (MoNm)	Mass(g) Round Flange	Square Flange	Compact Flange
LHMRW-MX	10	0 -0.010	0 -0.016	65	±0.3	5	24.5	40	6	4.5	7.5	4.1	29	30	-	29	0.015	0.015	588	1100	7.24	102	82	94
	12			68		5.5	25.5	42					32	32	-	32			657	1200	10.9	114	94	106
	16			82		6	32	48					38	37	22	31			1230	2350	19.7	197	172	189
LHMSW-MX	20	0 -0.012	0 -0.019	94		7	36	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	271	236	258
	25			130		9	52	62					51	50	32	40			1560	3140	43.4	559	519	544
	30			143		10	56.5	74	10	6.6	11	6.1	60	58	35	49			2490	5490	82.8	704	614	669
LHMCW-MX	35	0 -0.014	0 -0.022	157		11	62.5	82	13	9	14	8.1	67	64	38	55	0.025	0.025	2650	6270	110	1048	958	973
	40			175		12	69	96					78	75	45	64			3430	8040	147	1603	1413	1456
	50			220		14	89.5	116					98	92	56	80			6080	15900	397	3663	3463	3500

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

euros Price

dr	Flanged Linear Bushings Double												Center Flanged Double					
	Round Flange				Square Flange				Compact Flange				Round Flange		Square Flange		Compact Flange	
	LHFRW-MX		LHFRWM-MX		LHFSW-MX		LHFSWM-MX		LHFCW-MX		LHFCWM-MX		LHMRW-MX		LHMSW-MX		LHMCW-MX	
	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19
10																		
12																		
16																		
20																		
25																		
30																		
35																		
40																		
50																		

Order Example

Part Number
LHFRW-MX16
LHMSW-MX20

⊗Various Grease Application Services are not appplicable.

Days to Ship 6 Days

P.87

For orders larger than indicated quantity, please request a quotation.

Linear Bushings with Lubrication Unit MX

-Flanged Single with Pilot · Double with Pilot-

Reduced Delivery Time

CAD Data

Details of Lubrication Unit MX P.273 Flange Type Height-adjusting Spacers can be selected from P.288

■Flanged Single with Pilot



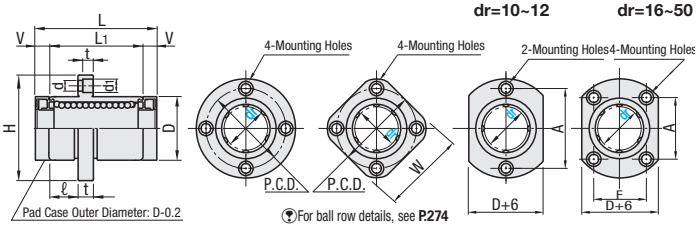


RoHS

Type			Outer Cylinder			Steel balls	Pad Case / Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHIFR-MX	LHIFS-MX	LHIFC-MX	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber

Round Flange Square Flange Compact Flange

dr=10~12 dr=16~50



For ball row details, see P.274

■No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Part Number Type	dr	Tolerance	D	Tolerance	L	L1	Tolerance	V	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Mass(g) Round Flange	Square Flange	Compact Flange
LHIFR-MX LHIFS-MX LHIFC-MX	10	0 -0.009	19	0 -0.016	39	29	±0.3	5	6	40	6	4.5	7.5	4.1	29	30	-	29	0.012	0.012	372	549	76	56	68
	12		21		41	30		5.5		42					32	32	-	32			412	598	80	61	72
	16		28		49	37		6		48					38	37	22	31			775	1180	127	111	119
	20	0 -0.010	32	0 -0.019	56	42		7	8	54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	882	1370	191	156	178
	25		40		77	59		9		62					51	50	32	40			980	1570	359	319	344
	30		45		84	64		10	10	74	10	6.6	11	6.1	60	58	35	49			1570	2740	494	399	412
	35	0 -0.012	52	0 -0.022	92	70		11	13	82	13	9	14	8.1	67	64	38	55	0.020	0.020	1670	3140	678	588	603
	40		60		104	80		12		96					78	75	45	64			2160	4020	1093	913	946
	50		80		128	100		14		116					98	92	56	80			3820	7940	2263	2063	2100

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 * Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

Details of Lubrication Unit MX P.273 Flange Type Height-adjusting Spacers can be selected from P.288

■Flanged Double with Pilot



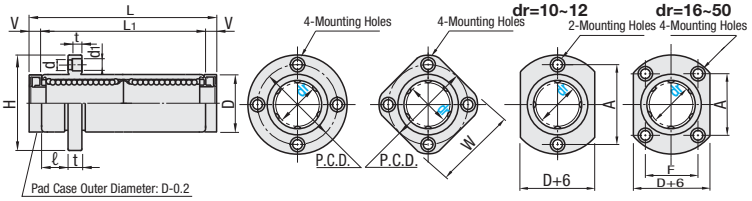


RoHS

Type			Outer Cylinder			Steel balls	Pad Case / Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHIRW-MX	LHISW-MX	LHICW-MX	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber

Round Flange Square Flange Compact Flange

dr=10~12 dr=16~50



For ball row details, see P.274

■No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Part Number Type	dr	Tolerance	D	Tolerance	L	L1	Tolerance	V	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (Mo Nm)	Mass(g) Round Flange	Square Flange	Compact Flange
LHIRW-MX LHISW-MX LHICW-MX	10	0 -0.010	19	0 -0.016	65	55	±0.3	5	6	40	6	4.5	7.5	4.1	29	30	-	29	0.015	0.015	588	1100	7.24	102	82	94
	12		21		68	57		5.5		42					32	32	-	32			657	1200	10.9	114	94	106
	16		28		82	70		6		48					38	37	22	31			1230	2350	19.7	197	172	189
	20	0 -0.012	32	0 -0.019	94	80		7	8	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	271	236	258
	25		40		130	112		9		62					51	50	32	40			1560	3140	43.4	559	519	544
	30		45		143	123		10	10	74	10	6.6	11	6.1	60	58	35	49			2490	5490	82.8	704	614	669
	35	0 -0.015	52	0 -0.022	157	135		11	13	82	13	9	14	8.1	67	64	38	55	0.025	0.025	2650	6270	110	1048	958	973
	40		60		175	151		12		96					78	75	45	64			3430	8040	147	1603	1413	1456
	50		80		220	192		14		116					98	92	56	80			6080	15900	397	3663	3463	3500

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 * Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

Price

dr	Flanged Linear Bushings Single with Pilot						Flanged Linear Bushings Double with Pilot					
	Round Flange		Square Flange		Compact Flange		Round Flange		Square Flange		Compact Flange	
	LHIFR-MX		LHIFS-MX		LHIFC-MX		LHIRW-MX		LHISW-MX		LHICW-MX	
	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19
10												
12												
16												
20												
25												
30												
35												
40												
50												

Order Example

Part Number
LHIFS-MX25
LHIRW-MX16

⊗Various Grease Application Services are not appplicable.

Days to Ship 6 Days

P.87

For orders larger than indicated quantity, please request a quotation.

Linear Bushings Housing Unit with Lubrication Unit MX
-Tall Block / Wide Block Type-

Reduced Delivery Time

CAD Data

Details of Lubrication Unit MX P.273

Linear Bushings with Tall Blocks

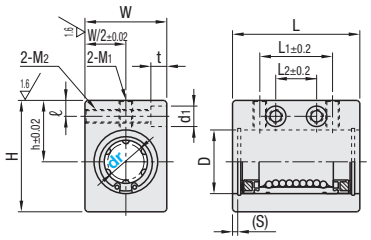
RoHS



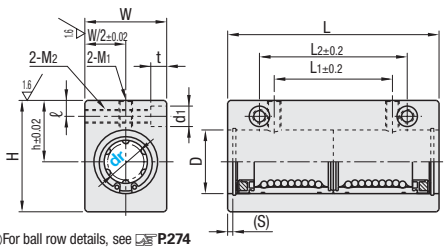
Type		Linear Bushings (P.274)	Housing		Ambient Operating Temp.
Single	Double		M Material	S Surface Treatment	
LHSS-MX	LHSSW-MX	LMU-MX	Aluminum Alloy	Clear Anodizing	-20~80°C

6.3 (1.6) (Blocks)

Single Type



Double Type



For ball row details, see P.274

No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

Linear Bushings with Tall Blocks

Part Number Type	dr	Tolerance Single	Tolerance Double	D	(S)	L Single	L Double	L1 Single	L1 Double	L2 Single	L2 Double	h	W	H	ℓ	M1	M2	d1xt	Basic Load Rating C (Dynamic) N Single	C (Dynamic) N Double	Co (Static) N Single	Co (Static) N Double	Mass (g) Single	Mass (g) Double	Single LHSS-MX € Unit Price	Single LHSS-MX Vol. Discount	Double LHSSW-MX € Unit Price	Double LHSSW-MX Vol. Discount
																									Qty. 1~9	Qty.10~19	Qty. 1~9	Qty.10~19
LHSS-MX LHSSW-MX	10	0 -0.009	0 -0.010	19	2.0	45	74	27	36	15	50	19	26	32	6	M6	M5	8x6 (For M4 Screws)	372	588	549	1100	92	166				
	12			21		47	77					20	28	34					412	657	598	1200	103	185				
	16			28	2.3	56	93	32	52	18	65	27	36	49	7		M6	9x7 (For M5 Bolt)	775	1230	1180	2350	237	423				
	20	0 -0.010	0 -0.012	32	2.8	64	106	36	58		70	31	42	54	8	M8	M8	11x8 (For M6 screws)	882	1400	1370	2740	324	584				
	25			40	2.2	85	144	42	80	22	100	37	52	65	9	M10	M10	14x10 (For M8 Screws)	980	1560	1570	3140	672	1239				
	30			45		92	156	44	90		110	40	58	71					1570	2490	2740	5490	843	1545				

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

For orders larger than indicated quantity, please request a quotation.

Details of Lubrication Unit MX P.273

Linear Bushings with Wide Blocks

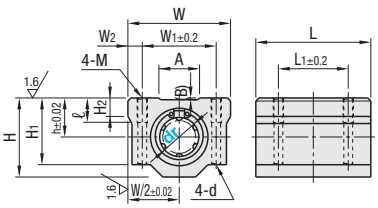
RoHS



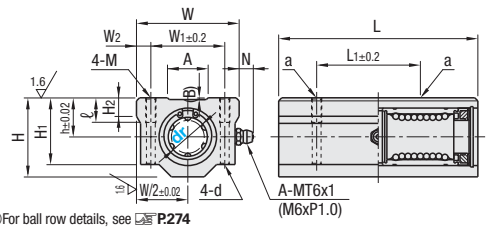
Type		Linear Bushings (P.274)	Housing		Ambient Operating Temp.
Single	Double		M Material	S Surface Treatment	
LHBB-MX	LHBBW-MX	LMU-MX	Aluminum Alloy	Clear Anodizing	-20~80°C

6.3 (1.6) (Blocks)

Single Type



Double Type



For ball row details, see P.274

No need to fill with grease prior to use because the product is already filled with Lithium soap-based grease in addition to the built-in lubrication unit.

There will be dowel holes on "a" locations for dr50.

Linear Bushings with Wide Blocks

Part Number Type	dr	Tolerance Single	Tolerance Double	L Single	L Double	L1 Single	L1 Double	h	H	H1	H2	W	W1	W2	M	d	ℓ	A	(B)	N	Basic Load Rating C (Dyn.) N Single	C (Dyn.) N Double	Co (Static) N Single	Co (Static) N Double	Mass (g) Single	Mass (g) Double	Single LHBB-MX € Unit Price	Single LHBB-MX Vol. Discount	Double LHBBW-MX € Unit Price	Double LHBBW-MX Vol. Disc.
																											Qty. 1~9	Qty. 10~19	Qty. 1~9	Qty. 10~19
LHBB-MX LHBBW-MX	10	0 -0.009	0 -0.010	45	78	21	46	13	26	21	8	40	28	6	M5	4.3	12	15.5	0.4	7.5	372	588	549	1100	114	206				
	12			47	81	26	50	15	28	24		42	30.5	5.75				17.5		7	412	657	598	1200	125	233				
	16			56	97	34	60	19	38.5	32.5	9	50	36	7				19.8	0.85	6.5	775	1230	1180	2350	268	450				
	20	0 -0.010	0 -0.012	64	110	40	70	21	41	35	11	54	40		M6	5.2		21	0.5	7.5	882	1400	1370	2740	310	647				
	25			85	148	50	100	26	51.5	42	12	76	54	11				36	1	4.5	980	1560	1570	3140	717	1339				
	30			92	160	58	110	30	59.5	49	15	78	58	10	M8	7	18	39.9	0.75	5.5	1570	2490	2740	5490	891	1665				
	35	0 -0.012	0 -0.015	102	177	60	120	34	68	54	18	90	70					53	1.5	6	1670	2650	3140	6270	1314	2448				
	40			114	199		140	40	78	62	20	102	80	11	M10	8.7	25	61		5.5	2160	3430	4020	8040	1873	3526				
	50			138	243	80	160	52	102	80	25	122	100					81			3820	6080	7940	15900	3821	7256				

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
LHSS-MX16
LHBBW-MX25

Various Grease Application Services are not appplicable.

Days to Ship

6 Days

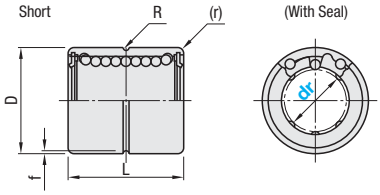
P. 87

Linear Bushings
-Short Type / Features of LTBC-

CAD Data



Type	Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	Accessory
Short	M Material	H Hardness	S Surface Treatment	M Material	M Material		A Accessory
LMUT	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals MMaterial: Nitrile Rubber (-20 ~120°C)
SLMUT	1.4125/X105CrMo17	56HRC~		1.4125/X105CrMo17			



■Short Type

Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	R	f	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass (g)	€ Unit Price LMUT	€ Unit Price SLMUT
LMUT SLMUT	6	0 -0.009	12	0 -0.011	16	0 -0.2	1	0.3	0.4	0.012	4	113	155	6.6		
	8		15		20							155	226	14.7		
	10		19	0 -0.013	25		1.2	0.4				254	359	26.1		
	12		21						0.8			317	407	28.6		
	13		23									320	413	36.3		
	16		28		30		1.5	0.5		0.015	5	582	724	60.0		
	20	0 -0.010	32	0 -0.016	35							777	1034	81.6		

For short type linear bushings, hardened shafts with h5 tolerance are recommended. P.107~195 are recommended.

Order Example

Part Number

LMUT10
LMUT10L (L Type Greased)
LMUT10G (G Type Greased)
LMUT10H (H Type Greased)

Alternative grease types available. For Days to Ship, Price and Performance, refer to P.272

Days to Ship

6 Days P. 87

2 Days

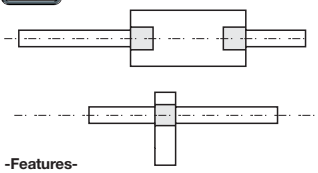
Price

■Quantity Discount Price (Round down to one Cent) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



-Features-

- The housing can be made more compact.
- The L dimensions are made to match MISUMI's standard plates.
- Short guiding section not suitable for applications where large moment loads apply.
- Setup to operate smoothly with hardened shafts with h5 tolerance.

■LTBC plating on linear bushings:

Type: LTBC plating with fluoropolymer layer on top
Thickness: 5µm thick. Internal running diameter remains unchanged due to tolerance control.
Corrosion protection: Excelent rust prevention for long term period
Material benefits: Chemically deposited at low temperature without any change in material structure.
Peeling: The coating is resistant to cracking from extreme and repeated bending. Even hairpin-shaped bending won't cause cracks. Plating won't be exfoliated by repeat bending (Any superficial coating particles that may come off the rolling contact surfaces are mixed in with the grease and remain its lubricity).
Optical benefits: Less reflections (suitable for places where light reflections are undesirable). Matching LTBC plated shafts.

■LTBC plating on linear shafts:

Type: LTBC plating without fluoropolymer layer.
Thickness: 1µm~2µm thick. Shaft outer diameter tolerance remains g6 after LTBC plating is applied.
Corrosion protection: Normal rust prevention effect (better than black oxide, and less than LTBC with fluoropolymer layer on top and suitable in normal environment.
Material benefits: Chemically deposited at low temperature without any change in material structure.
Peeling: The coating is resistant to cracking from extreme and repeated bending. Even hairpin-shaped bending won't cause cracks. Plating won't be exfoliated by repeat bending (Any superficial coating particles that may come off the rolling contact surfaces are mixed in with the grease and remain its lubricity).
Optical benefits: Less reflections (suitable for places where light reflections are undesirable when used in combination with LTBC plated linear bushings).
(LTBC plated shafts can be found on page, P.173~P.180, P.183~P.191)

Condition of shafts and linear bushings after sliding test



Order Example For details, refer to each page.

Days to Ship 6 Days P. 87

Sliding Test Conditions
Linear Bushings : LMUR12
Shafts : RSFJ12
50km sliding test was conducted with a 412N load on the linear bushing.
No performance degradation after the test.

■Linear bushings Applicable to LTBC

Linear Bushings Straight		Applicable Inner Diameter	Page Listed
Single	LMUR	Ø3-Ø30	P.279
Double	LMUWR	Ø5-Ø30	

Flanged Type		Applicable Inner Diameter	Page Listed
Single	LHF_R	Ø6-Ø30	P.283
Double	LHF_WR		P.285

(Note) No surface treatment is applied to inner diameter surface of LTBC plated linear bushings.

Linear Bushing Standard Type
-Single / Double-

Price Reduction

CAD Data

Spacers and Stoppers for linear bushings can be selected from P.288

Single RoHS

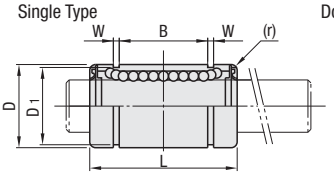


Double

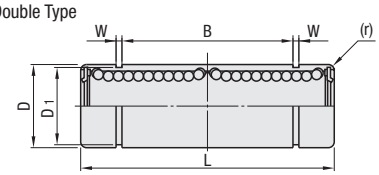


Type		Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	Accessory
Single	Double	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LMU-N	LMUW-N	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	* Seals M Material Nitrile Rubber (-20 ~120°C)
LMU	LMUW					1.4125/X105CrMo17	-20~110°C	
LMUF-N	LMUWF							
LMUF								
LMUR	LMUWR			Raydent	1.4125/ X105CrMo17	Plastic (Duracon M90 equivalent)	-20~80°C	
LMUM	LMUWM			Electroless Nickel Plating		1.4112/X105CrNiAl17-7	-20~110°C	
LMUMF	LMUWMF					Plastic (Duracon M90 equivalent)	-20~80°C	
SLMU	SLMUW	1.4125/ X105CrMo17	56HRC~	-		1.4112/X105CrNiAl17-7	-20~120°C	
SLMUS	SLMUWS							

Single Type



Double Type



* (With Seal)



No seal for dr=3 and 4, LMU-N, LMUF-N and LMUW-N.

Features of Raydent see P.278

Single For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

Part Number Type	dr	Tolerance	D Tolerance No Surface Treatment	D Tolerance Surface Treatment	L	L Tolerance	B	B Tolerance	W	D1	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass (g)	€ Unit Price LMU-N	LMU	LMUF-N	LMUF	LMUR	LMUM	LMUMF	SLMU	SLMUS
	3	0 -0.008	7	0 -0.009	10	0 -0.12	-	-	-	-	0.3	0.008		69	105	1.4									
	4		8	0 -0.015	12		-		-	-				88	127	2.0									
LMU-N (No Seal)	5		10		15		8	0 -0.4	1.1	9.6	0.4			167	206	4.0									
LMU	6	0 -0.009	12	0 -0.011	19	0 -0.2	11.3			11.5		0.012	4	206	265	8.5									
LMUF-N (No Seal)	8		15	0 -0.018	24		15.3			14.3				265	380	17									
LMUF	10		19	0 -0.013	29		19.4		1.3	18	0.8			372	549	31									
LMUR	12		21	0 -0.021	30		20.4			20				412	598	41									
LMUM	13		23		32					22				510	784	46									
LMUMF	16		28		37		23.3		1.6	27				775	1180	73									
SLMU	20	0 -0.010	32	0 -0.016	42		27.3			30.5		0.015	5	882	1370	98									
SLMUS	25		40	0 -0.025	59	0 -0.3	37.3	0 -0.5	1.85	38	1.5		6	980	1570	236									
	30		45		64		40.8			43				1570	2740	262									
LMU	35	0 -0.012	52	0 -0.019	70		45.3		2.1	49		0.020		1670	3140	425									
LMUM	40		60	0 -0.030	80		56.3			57				2160	4020	654									
	50		80		100		68.8		2.6	76.5				3820	7940	1700									

kgf=Nx0.101972

Double For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

Part Number Type	dr	Tolerance	D Tolerance No Surface Treatment	D Tolerance Surface Treatment	L	L Tolerance	B	B Tolerance	W	D1	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass (g)	€ Unit Price LMUW-N	LMUW	LMUWF	LMUWR	LMUWM	LMUWMF	SLMUW	SLMUWS
	3	0 -0.010	7	0 -0.011	19	0 -0.3	-	0 -0.5	-	-	0.3	0.010		138	210	0.51	3.2								
	4		8	0 -0.015	23		-		-	-				176	254	0.63	4.8								
	5		10		28		18.2		1.1	9.6	0.4			263	412	1.38	11								
LMUW-N (No Seal)	6		12	0 -0.013	35		24.8			11.5		0.015	4	324	529	2.18	16								
LMUW	8		15	0 -0.018	45		32.8			14.3				431	784	4.31	31								
LMUWF	10		19	0 -0.016	55		41.4		1.3	18	0.8			588	1100	7.24	62								
LMUWR	12		21	0 -0.021	57		43.4			20				657	1200	10.9	80								
LMUWM	13		23		61					22				813	1570	11.6	90								
LMUWMF	16		28		70		49.8		1.6	27				1230	2350	19.7	145								
SLMUW	20	0 -0.012	32	0 -0.019	80		57.8			30.5		0.020	5	1400	2740	26.8	180								
SLMUWS	25		40	0 -0.025	112	0 -0.4	78.3	0 -0.6	1.85	38	1.5		6	1560	3140	43.4	440								
	30		45		123		85.3			43				2490	5490	82.8	480								
	35	0 -0.015	52	0 -0.022	135		94.8		2.1	49		0.025		2650	6270	110	795								
LMUW	40		60	0 -0.030	151		116.8			57				3430	8040	147	1170								
LMUWM	50		80		192		142.8		2.6	76.5				6080	15900	397	3100								

kgf=Nx0.101972

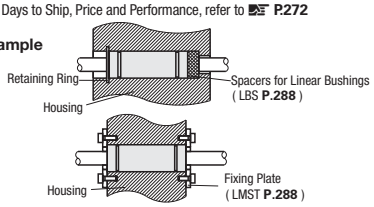
No-Seal Type moves smoothly due to no seal sliding resistance (0.4~1.2N).

Part Number

LMUR20
LMU-N20 (No Seal)
LMUR20L (L Type Greased)
LMUR20G (G Type Greased)
LMUR20H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Example



Days to Ship: 6 Days / 2 Days P.87

Price

Quantity Discount Price (Round down to one Cent) P.87

-LMU · LMUF · LMUW

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

-LMUR

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

Linear Bushing Compact Type
-Single / Double-

CAD Data

Features: 2mm smaller in outer diameter (D dimension) than Standard Type

Single RoHS

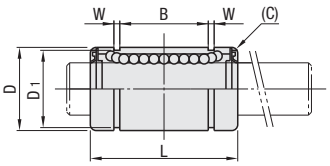


Double

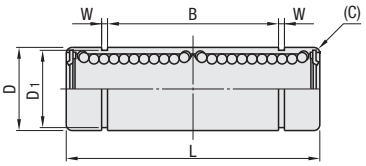


Type		Outer Cylinder		Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Single	Double	M Material	H Hardness	M Material	M Material		
LMK	LMKW	1.3505/100Cr6	58HRC~	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)

Single Type



Double Type





Single

Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	B	Tolerance	W	D1	(C)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass (g)	€ Unit Price
LMK	6	0 - 0.009	10	0 - 0.009	19	0 - 0.2	11.3	0 - 0.4	1.15	9.6	0.1	0.012	6	131	155	6	
	8		13		24		15.3			12.4	0.2			235	277	12	
	10		17	- 0.011	29		19.4			16.2				368	433	26	
	12		19	0	30		20.4		1.35	18				381	449	32	
	16		26	- 0.013	37		23.3			24.9	0.3			608	716	58	

Double

Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	B	Tolerance	W	D1	(C)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment(N•m)	Mass (g)	€ Unit Price
LMKW	6	0 - 0.010	10	0 - 0.009	35	0 - 0.3	24.8	0 - 0.5	1.15	9.6	0.1	0.015	6	206	309	2.46	12	
	8		13	0	45		32.8			12.4	0.2			383	555	5.76	24	
	10		17	- 0.011	55		41.4			16.2				585	867	10.99	52	
	12		19	0	57		43.4		1.35	18				608	899	11.85	64	
	16		26	- 0.013	70		49.8			24.9	0.3			965	1431	23.48	116	

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

kgf=Nx0.101972

Order Example

Part Number

LMK12
LMKW12
LMK12L (L Type Greased)
LMK12G (G Type Greased)
LMK12H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship 6 Days P.87

Price

Quantity Discount Price (Round down to one Cent) P.87

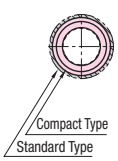
Quantity	1~19	20~34	35~79
Rate	€ Unit Price	5%	10%
Days to Ship	Standard		Quotation

For orders larger than indicated quantity, please request a quotation.

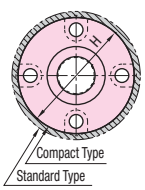
Standard and Compact Comparison

dr	Straight / Flanged Outer Dia. (D)			Flanged Type Flange Dia. (H)			Linear Bushings with Housing Units Width (W)			Linear Bushings with Housing Units Height (H)			Rows of Balls	
	Compact	Standard	Difference	Compact	Standard	Difference	Compact	Standard	Difference	Compact	Standard	Difference	Compact	Standard
6	10	12	-2	25	28	-3	14	16	-2	20	22	-2	6	4
8	13	15	-2	28	32	-4	17	20	-3	24	26	-2	6	4
10	17	19	-2	35	40	-5	23	26	-3	30	32	-2	6	4
12	19	21	-2	38	42	-4	25	28	-3	32	34	-2	6	4
16	26	28	-2	44	48	-4	33	36	-3	43	49	-6	6	4

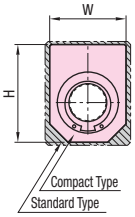
Linear Bushings Straight



Flanged Type (P.284~296)

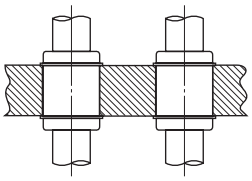


Housing Unit Type (P.297, 298)



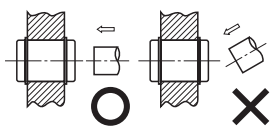
Example

For 2 linear bushings of Compact type, their mounting plate is 4mm smaller than that for Standard Type.

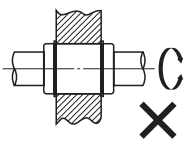


Cautions for Linear Bushing Usage

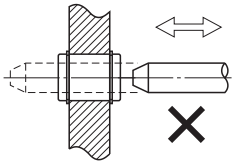
(1) When assembling with linear shafts, forcing the shaft into the bushing with angular misalignment may cause the ball retainers to deform and balls to fall out. Be sure to align the centers and insert the shaft gently.



(2) Linear bushing is structurally unsuitable for rotary motion. Forcing to rotate may cause failures.



(3) Linear Bushing is not suitable for uses that need repetitive insertion and extraction from shafts.



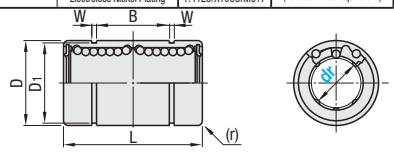
Linear Bushings / Flanged Linear Bushings
-Medium Type-

CAD Data

For features of medium type, see below.



Type	Outer Cylinder			Steel balls	Retainer	Operating Environment Temperature	Accessory
Linear Bushings Straight	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LMUD	1.3505/ 100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber
LMUDM			Electroless Nickel Plating	1.4125/X105CrMo17			



Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparisons)

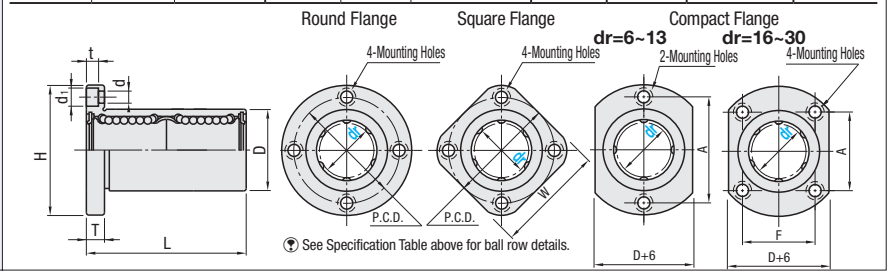
Part Number Type	dr	Tolerance	D	D Tolerance No Surface Treatment	D Tolerance Surface Treatment	L	L Tolerance	B	B Tolerance	W	D1	(r)	Eccentricity (Max.)	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass (g)
LMUD LMUDM	6	0 -0.010	12	0 -0.013	0 -0.018	29	0 -0.3	20	0 -0.5	1.1	11.5	0.4	0.015	4	226	310	1.42	12
	8		15			37		25			14.3				310	452	2.12	27
	10		19			47		30		1.3	18	0.8			508	718	4.37	49
	12		21	0 -0.016	0 -0.021						20				634	814	6.2	54
	13		23								22				640	826	6.2	69
	16		28			56		35		1.6	27				1164	1448	13.1	112
	20	0 -0.012	32	0 -0.019	0 -0.025	65		40	0 -0.6	1.85	30.5	2.0	0.02	5	1554	2068	18.3	152
	25		40			83		55			38			6	1725	3068	25.3	332
	30		45			90		71.3			42.5				2440	3974	42.7	422

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

Flange Type Height-adjusting Spacers can be selected from P.288



Type Round Flange	Square Flange	Compact Flange	Outer Cylinder M Material	H Hardness	S Surface Treatment	Steel balls M Material	Retainer M Material	Operating Environment Temperature	Accessory
LHFRD	LHFSD	LHFCD	1.3505/ 100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber
LHFRDM	LHFSDM	LHFCDM			Electroless Nickel Plating	1.4125/ X105CrMo17			



See Specification Table above for ball row details.

Part Number Type	dr	Tolerance	D	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	L Tolerance	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity (Max.)	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
LHFRD LHFSD LHFCD LHFRDM LHFSDM LHFCDM	6	0 -0.010	12	0 -0.013	0 -0.018	29	±0.3	28	5	3.5	6	3.1	20	22	-	20	0.015	0.015	226	310	1.42	27	21	24
	8		15			37		32					24	25	-	24			310	452	2.12	47	39	43
	10		19	0 -0.016	0 -0.021	47		40	6	4.5	7.5	4.1	29	30	-	29			508	718	4.37	85	65	77
	12		21					42					32	32	-	32			634	814	6.2	89	69	81
	13		23					43					33	34	-	33			640	826	6.2	109	87	102
	16		28			56		48					38	37	22	31			1164	1448	13.1	157	132	149
	20	0 -0.012	32	0 -0.019	0 -0.025	65		54	8	5.5	9	5.1	43	42	24	36	0.02	0.02	1554	2068	18.3	232	197	219
	25		40			83		62					51	50	32	40			1725	3068	25.3	479	440	450
	30		45			90		74	10	6.6	11	6.1	60	58	35	49			2440	3974	42.7	559	481	492

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

Price

Quantity Discount Price (Round down to one Cent) P. 87

-LMUDM

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-Other than LMUDM

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

dr	€ Unit Price Straight LMUD	Straight LMUDM	Round Flange LHFRD	Round Flange LHFRDM	Square Flange LHFSD	Square Flange LHFSDM	Compact Flange LHFCD	Compact Flange LHFCDM
6								
8								
10								
12								
13								
16								
20								
25			0					
30								

Order Example

Part Number

LMUD8
LHFRD10
LHFSDM12L (L Type Greased)
LHFSDM12G (G Type Greased)
LHFSDM12H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship

6 Days P. 87

Features of Medium Type Bushings

-Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. Suitable where there is no enough space for double type. (See Allowable Load Comparisons)
-B dimension (distance between retaining ring grooves) of the Straight Type is designed to match MISUMI's standard plate thickness to help reduce machining steps and costs.

Allowable Load Comparison

Type	Basic Dynamic Load Rating	Basic Static Load Rating	Allowable Static Moment
Short	0.7	0.6	Approx. 0.6
Single	1	1	1
Middle	1.4	1.3	Approx. 4.3
Double	1.6	2	Approx. 6
Medium Long	1.6	1.6	Approx. 10
Long	1.6	2	Approx. 21

*1 represent Single Type for comparison.

Flanged Linear Bushings
-Medium Type with Pilot / Center Flanged-

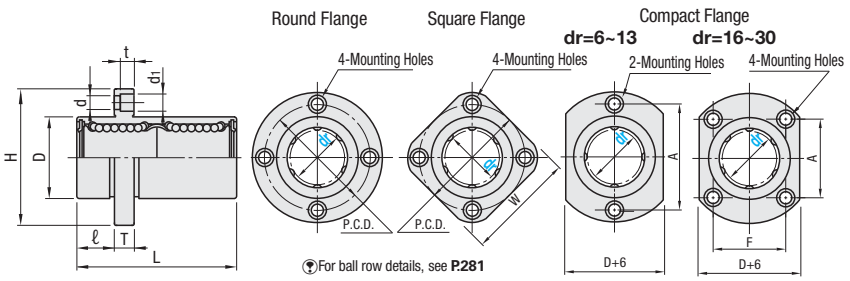
CAD Data

For features of medium type, see below. Flange Type Height-adjusting Spacers can be selected from P.288

Medium Length with Pilot



Type			Outer Cylinder			Steel balls	Retainer	Operating Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHIRD	LHISD	LHICD	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)



For ball row details, see P.281

RoHS

Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparisons)

Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	*Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Square Flange	Compact Flange
LHIRD LHISD LHICD	6	0 -0.010	12	0 -0.013	29	±0.3	5	28	5	3.5	6	3.1	20	22	-	20	0.015	0.015	226	310	1.42	27	21	24
	8		15		37			32					24	25	-	24			310	452	2.12	47	39	43
	10		19	0 -0.016	47		6	40	6	4.5	7.5	4.1	29	30	-	29			508	718	4.37	85	65	77
	12		21					42					32	32	-	32			634	814	6.2	89	69	81
	13		23					43					33	34	-	33			640	826	6.2	109	87	102
	16		28		56			48					38	37	22	31			1164	1448	13.1	157	132	149
	20	0 -0.012	32	0 -0.019	65		8	54	8	5.5	9	5.1	43	42	24	36	0.02	0.02	1554	2068	18.3	232	197	219
	25		40		83			62					51	50	32	40			1725	3068	25.3	481	442	452
	30		45		90		10	74	10	6.6	11	6.1	60	58	35	49			2440	3974	42.7	560	482	494

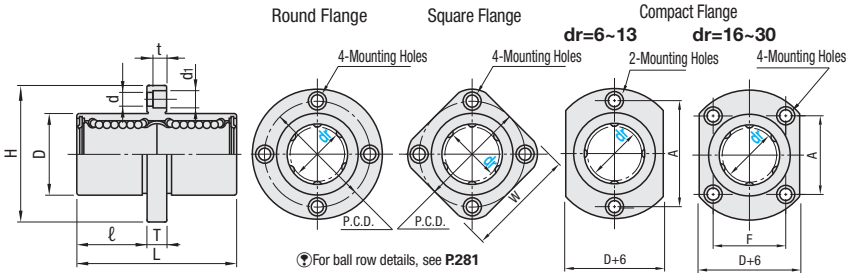
For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 *Perpendicularity of D to flange mounting surface kgf=Nx0.101972

Flange Type Height-adjusting Spacers can be selected from P.288

Medium Type Center Flanged



Type			Outer Cylinder			Steel balls	Retainer	Operating Environment Temperature	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHMRD	LHMSD	LHMCD	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seal M Material Nitrile Rubber (-20 ~120°C)



For ball row details, see P.281

RoHS

Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. (See Allowable Load Comparisons)

Part Number Type	dr	Tolerance	D	Tolerance	L	Tolerance	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	*Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Square Flange	Compact Flange
LHMRD LHMSD LHMCD	6	0 -0.010	12	0 -0.013	29	±0.3	12	28	5	3.5	6	3.1	20	22	-	20	0.015	0.015	226	310	1.42	27	21	24
	8		15		37		16	32					24	25	-	24			310	452	2.12	47	39	43
	10		19	0 -0.016	47		20.5	40	6	4.5	7.5	4.1	29	30	-	29			508	718	4.37	85	65	77
	12		21					42					32	32	-	32			634	814	6.2	89	69	81
	13		23					43					33	34	-	33			640	826	6.2	109	87	102
	16		28		56		25	48					38	37	22	31			1164	1448	13.1	157	132	149
	20	0 -0.012	32	0 -0.019	65		28.5	54	8	5.5	9	5.1	43	42	24	36	0.02	0.02	1554	2068	18.3	232	197	219
	25		40		83		37.5	62					51	50	32	40			1725	3068	25.3	481	442	452
	30		45		90		40	74	10	6.6	11	6.1	60	58	35	49			2440	3974	42.7	560	482	494

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 * Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

Order Example

Part Number
LHIRD12
LHMCD16
LHIRD12L (L Type Greased)
LHMCD16G (G Type Greased)
LHMSD20H (H Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship 6 Days P. 87

Price

Quantity Discount Price (Round down to one Cent) P. 87

-LHMRD / LHMSD

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

Features of Medium Type Bushings

-Body length is approximately 1.5 times of single type, and allowable moment is approximately 4.3 times. Suitable where there is no enough space for double type. (See Allowable Load Comparisons)
-B dimension (distance between retaining ring grooves) of the Straight Type is designed to match MISUMI's standard plate thickness to help reduce machining steps and costs.

Allowable Load Comparison

Type	Basic Dynamic Load Rating	Basic Static Load Rating	Allowable Static Moment
Short	0.7	0.6	Approx. 0.6
Single	1	1	1
Middle	1.4	1.3	Approx. 4.3
Double	1.6	2	Approx. 6
Medium Long	1.6	1.6	Approx. 10
Long	1.6	2	Approx. 21

*1 represent Single Type for comparison.

dr	€ Unit Price					
	Medium Length with Pilot			Medium Type Center Flanged		
	Round Flange	Square Flange	Compact Flange	Round Flange	Square Flange	Compact Flange
	LHIRD	LHISD	LHICD	LHMRD	LHMSD	LHMCD
6						
8						
10						
12						
13						
16						
20						
25						
30						

Flanged Linear Bushings Standard

-Single / Opposite Counterbored Hole-

Price Reduction

CAD Data

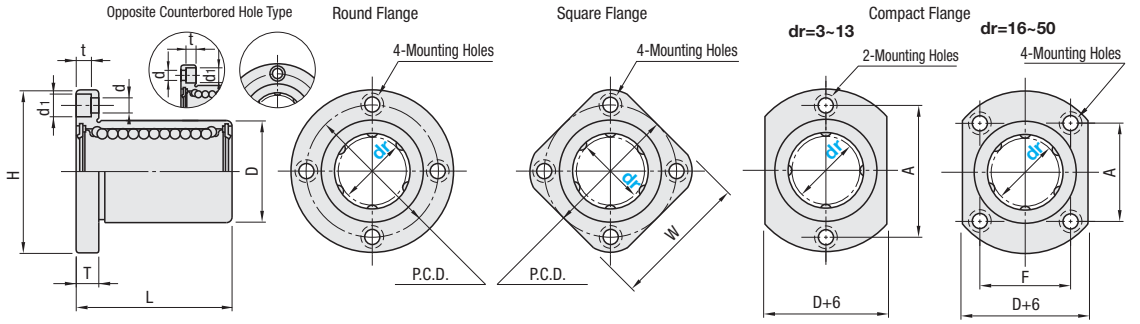
Flange Type Height-adjusting Spacers can be select from P.288

Standard Type

RoHS



Counterbored Holes	Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
	Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
Opposite Counterbored Hole	LHZR	LHZS	LHZC	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-120 ~120°C)
Standard	LHFR-N No Seal	LHFS-N No Seal	LHFC-N No Seal							
	LHFR	LHFS	LHFC							
	LHFRF	LHFSF	LHFCF					1.4125/X105CrMo17	-20~110°C	
	LHFRR	LHFSR	LHFCR			Raydent	1.4125/X105CrMo17 equivalent	Plastic (Duracon M90 equivalent)	-20~80°C	
	LHFRM	LHFSM	LHFCM			Electroless Nickel Plating				
	LHFRMF	LHFSMF	LHFCMF					1.4125/X105CrMo17	-20~110°C	
	SLHFR	SLHFS	SLHFC	1.4125/X105CrMo17 equivalent	56HRC~	-		Plastic (Duracon M90 equivalent)	-20~80°C	
	SLHFRS	SLHFSS	SLHFCS					1.4125/X105CrMo17	-20~120°C	



Features of Raydent see P.278 No seal for dr=3 and 4, LHFR-N, LHFS-N and LHFC-N. For ball row details, see P.279

dr	dr Tol.	D	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	L Tol.	H	T	d	d_1	t	P.C.D.	W	F	A	Eccentricity	Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
3	0 -0.008	7	0 -0.011	0 -0.015	10	±0.3	19	3.5	2.5	4.5	2.1	13	15	-	13	0.008	0.008	69	105	7	5.1	6
4		8			12		20					14	16	-	14			88	127	8	6.2	7
5		10			15		25					17	20	-	17			167	206	17	13	14
6	0 -0.009	12	0 -0.013	0 -0.018	19		28	5	3.5	6	3.1	20	22	-	20	0.012	0.012	206	265	24	18	21
8		15			24		32					24	25	-	24			265	380	37	29	33
10		19	0 -0.016	0 -0.021	29		40	6	4.5	7.5	4.1	29	30	-	29			372	549	72	52	64
12		21			30		42					32	32	-	32			412	598	76	57	68
13		23			32		43					33	34	-	33			510	784	88	72	81
16		28			37		48					38	37	22	31			775	1180	120	104	112
20	0 -0.010	32	0 -0.019	0 -0.025	42		54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	882	1370	180	145	167
25		40			59		62					51	50	32	40			980	1570	340	300	325
30		45			64		74					60	58	35	49			1570	2740	470	375	388
35	0 -0.012	52	0 -0.022	0 -0.030	70		82	10	6.6	11	6.1	67	64	38	55	0.020	0.020	1670	3140	650	560	575
40		60			80		96	13	9	14	8.1	78	75	45	64			2160	4020	1060	880	913
50		80			100		116					98	92	56	80			3820	7940	2200	2000	2037

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent) P. 87

-LHFR · LHFS · LHFC

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity,

-LHFCR · LHFS-N · LHFSR · LHZS

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity,

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity,

dr	€ Unit Price																						
	Round Flange									Square Flange								Compact Flange							
	LHZR	LHFR-N	LHFR	LHFRF	LHFRR	LHFRM	LHFRMF	SLHFR	SLHFRS	LHZS	LHFS-N	LHFS	LHFSF	LHFSR	LHFSM	LHFSMF	SLHFS	SLHFSS	LHZC	LHFC-N	LHFC	LHFCF	LHFCR	LHFCM	LHFCMF	SLHFC	SLHFCS
3																										
4																										
5																										
6																										
8																										
10																										
12																										
13																										
16																										
20																										
25																										
30																										
35																										
40																										
50																										

Order Example

Part Number

LHFCR8
LHFC-N10 (No Seal)
LHFCR10L (L Type Greased)
LHFCR10G (G Type Greased)
LHFCR10H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship

6 Days P. 87

2 Days

Flanged Linear Bushings Compact Type
-Single-

CAD Data

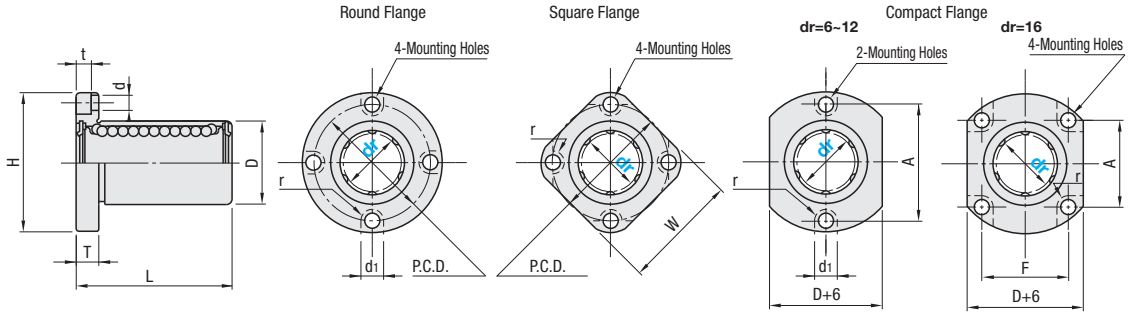
Features: 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in outer diameter (D dimension) than Standard Type. Standard and Compact Comparison ☞P.280

Compact Type

RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHRK	LHSK	LHCK	1.3505/ 100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
LHRKM	LHSKM	LHCKM			Electroless Nickel Plating	1.4125/X105CrMo17 equivalent			



For ball row details, see P.280

dr	Tol.	D Tolerance		L		H	T	d	d1	t	r	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating		Mass(g)		
		Surface Treatment No	Surface Treatment Yes		Tol.													C (Dynamic) N	Co (Static) N	Round Flange	Square Flange	Compact Flange
6	0 -0.009	10	0 -0.011	0 -0.015	19	±0.3	25	5	3.5	6	3.1	3	19	20	-	19	0.012	0.012	131	155	18	14	15
8		13	0	0	24		28						22	23	-	22			235	277	27	22	24
10		17	-0.013	-0.018	29		35	6	4.5	7.5	4.1	3.75	27	27	-	27			368	433	52	41	46
12		19	0	0	30		38						30	29	-	30			381	449	64	50	55
16		26	-0.016	-0.021	37		44						36	34	24	27			608	716	96	77	83

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent) P. 87

-LHCK · LHCKM

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard		Quotation

For orders larger than indicated quantity,

-Others

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity,

dr	€ Unit Price					
	Round Flange		Square Flange		Compact Flange	
	LHRK	LHRKM	LHSK	LHSKM	LHCK	LHCKM
6						
8						
10						
12						
16						

Order Example

Part Number

LHRK12
- LHRK12L (L Type Greased)
- LHRK12G (G Type Greased)
- LHRK12H (H Type Greased)

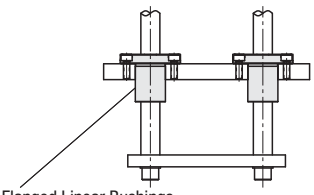
Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship

6 Days P. 87

Example

For 2 linear bushings of Compact type, their mounting plate is 6 to 10mm smaller than that for Standard Type.



Flanged Linear Bushings Compact Type

Flanged Linear Bushings Standard

-Double Type / Opposite Counterbored Hole-

Price Reduction

CAD Data

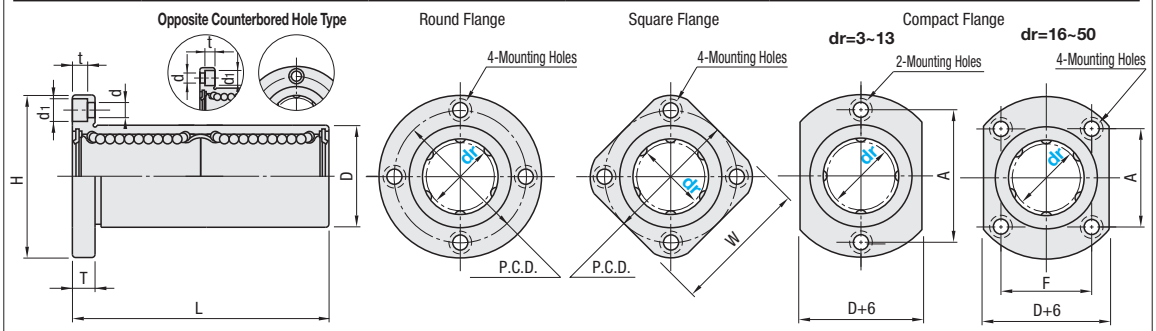
Flange Type Height-adjusting Spacers can be select from P.288

Standard Type

RoHS



Counterbored Holes	Type: Round Flange	Type: Square Flange	Type: Compact Flange	Outer Cylinder: M Material	Outer Cylinder: H Hardness	Outer Cylinder: S Surface Treatment	Steel balls: M Material	Retainer: M Material	Ambient Operating Temp.	A Accessory
Opposite Counterbored Hole	LHZRW	LHZSW	LHZCW	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
Standard Type	LHFRW-N No Seal	LHFSW-N No Seal	LHFCW-N No Seal							
	LHFRW	LHFSW	LHFCW					1.4125/X105CrMo17	-20~110°C	
	LHFRWF	LHFSWF	LHFCWF			Raydent	1.4125/X105CrMo17 equivalent	Plastic (Duracon M90 equivalent)	-20~80°C	
	LHFRWR	LHFSWR	LHFCWR			Electroless Nickel Plating		1.4125/X105CrMo17	-20~110°C	
	LHFRWM	LHFSWM	LHFCWM					Plastic (Duracon M90 equivalent)	-20~80°C	
	LHFRWMF	LHFSWMF	LHFCWMF					1.4125/X105CrMo17	-20~110°C	
	SLHFRW	SLHFSW	SLHFCW	1.4125/X105CrMo17 equivalent	56HRC~	-				
	SLHFRWS	SLHFSWS	SLHFCWS							



Features of Raydent see P.278 No seal for dr=3 and 4, LHFRW-N, LHFSW-N and LHFCW-N. For ball row details, see P.279

dr	dr Tolerance	D Tolerance: Surface Treatment No	D Tolerance: Surface Treatment Yes	L	L Tolerance	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	Perpendicularity	Basic Load Rating: C (Dynamic) N	Basic Load Rating: Co (Static) N	Allowable Static Moment Mo Nm	Mass(g): Round Flange	Mass(g): Square Flange	Mass(g): Compact Flange
3	0 -0.010	7	0 -0.011	0 -0.015	19	±0.3	19	3.5	2.5	4.5	2.1	13	15	-	13	0.010	0.010	138	210	0.51	8.7	7	7.7
4		8			23		20					14	16	-	14			176	254	0.63	11	9	10
5		10			28		25					17	20	-	17			263	412	1.38	24	20	21
6		12	0 -0.013	0 -0.018	35		28	5	3.5	6	3.1	20	22	-	20	0.015	0.015	324	529	2.18	31	25	28
8		15			45		32					24	25	-	24			431	784	4.31	51	43	47
10		19	0 -0.016	0 -0.021	55		40	6	4.5	7.5	4.1	29	30	-	29			588	1100	7.24	98	78	90
12		21			57		42					32	32	-	32			657	1200	10.9	110	90	102
13		23			61		43					33	34	-	33			813	1570	11.6	130	108	123
16		28			70		48					38	37	22	31			1230	2350	19.7	190	165	182
20	0 -0.012	32	0 -0.019	0 -0.025	80		54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	260	225	247
25		40			112		62					51	50	32	40			1560	3140	43.4	540	500	525
30		45			123		74					60	58	35	49			2490	5490	82.8	680	590	645
35	0 -0.015	52	0 -0.022	0 -0.030	135		82	10	6.6	11	6.1	67	64	38	55	0.025	0.025	2650	6270	110	1020	930	945
40		60			151		96	13	9	14	8.1	78	75	45	64			3430	8040	147	1570	1380	1423
50		80			192		116					98	92	56	80			6080	15900	397	3600	3400	3437

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent.) P.87

-LHFRW / LHFCW

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity,

-LHFCWR / LHFRW-N / LHFRWR / LHFSWMF / LHFSW-N / LHFSWR / LHZCE / LHZSW

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity,

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity,

dr	€ Unit Price: Round Flange LHZRW	LHFRW-N	LHFRW	LHFRWF	LHFRWR	LHFRWM	LHFRWMF	SLHFRW	SLHFRWS	Square Flange LHZSW	LHFSW-N	LHFSW	LHFSWF	LHFSWR	LHFSWM	LHFSWMF	SLHFSW	SLHFSWS	Compact Flange LHZCW	LHFCW-N	LHFCW	LHFCWF	LHFCWR	LHFCWM	LHFCWMF	SLHFCW	SLHFCWS
3																											
4																											
5																											
6																											
8																											
10																											
12																											
13																											
16																											
20																											
25																											
30																											
35																											
40																											
50																											

Order Example

Part Number

LHFCW-N12 (No Seal)
LHFCWR10
LHFCWR10L (L Type Greased)
LHFCWR10G (G Type Greased)
LHFCWR10H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship

6 Days P.87

2 Days

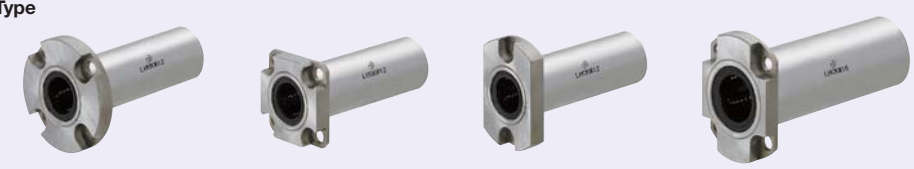
Flanged Linear Bushings Compact Type
-Double-

CAD Data

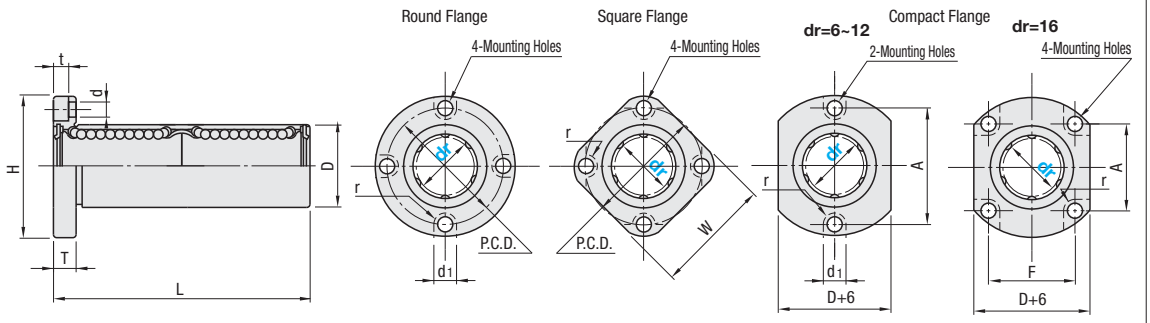
Features: 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in outer diameter (D dimension) than Standard Type. Standard and Compact Comparison P.280

Compact Type

RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHRKW	LHSKW	LHCKW	1.3505/ 100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
LHRKWM	LHSKWM	LHCKWM			Electroless Nickel Plating	1.4125/X105CRMO17 equivalent			



For ball row details, see P.280

dr	Toler-ance	D Tolerance: Surface Treatment No	Surface Treatment Yes	L	Toler-ance	H	T	d	d1	t	r	P.C.D.	W	F	A	Eccen-tricity	* Perpen-dicularity	Basic Load Rating: C (Dynamic) N	Co (Static) N	Allowable Static Moment (Nm)	Mass(g): Round Flange	Square Flange	Compact Flange
6	0 -0.01	10 - 0 -0.011	- 0 -0.015	35	±0.3	25	5	3.5	6	3.1	3	19	20	-	19	0.015	0.015	206	309	2.46	24	20	21
8		13 - 0 -0.013	- 0 -0.018	45		28						22	23	-	22			383	555	5.76	38	34	35
10		17		55		35	6	4.5	7.5	4.1	3.75	27	27	-	27			585	867	10.99	79	68	73
12		19 - 0 -0.016	- 0 -0.021	57		38						30	29	-	30			608	899	11.85	95	82	87
16		26		70		44						36	34	24	27			965	1431	23.48	154	135	141

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity,

dr	€ Unit Price					
	Round Flange		Square Flange		Compact Flange	
	LHRKW	LHRKWM	LHSKW	LHSKWM	LHCKW	LHCKWM
6						
8						
10						
12						
16						

Order Example

Part Number

LHRKW12

- LHRKW12L (L Type Greased)
- LHRKW12G (G Type Greased)
- LHRKW12H (H Type Greased)

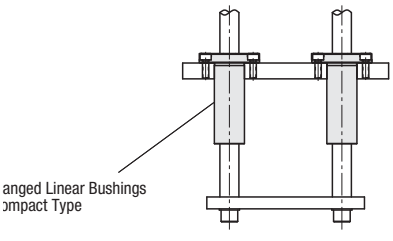
Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship

6 Days P.87

Example

For 2 linear bushings of Compact type, their mounting plate is 6 to 10mm smaller than that for Standard Type.



anged Linear Bushings
ompact Type

Linear Bushings with Grease Fitting / Mini-flanged Linear Bushings

-Double- -Female Thread Hole Type (For Space Saving)-

CAD Data

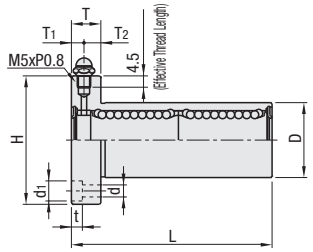
Features: Easy maintenance with Grease Fitting for lubrication.

Linear Bushings with Grease Fitting RoHS

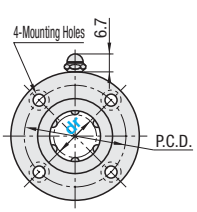


Type		Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHQRW	LHQCW	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)

For ball row details, see P.279

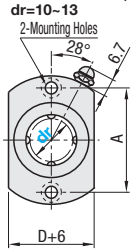


Round Flange

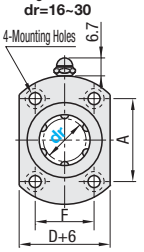


Compact Flange

dr=10~13



dr=16~30



Compared to the Flanged Linear Bushings Double Standard Type, T and L dimensions are larger but mounting dimensions are the same.

Part Number Type	dr	Tol.	D	Tol.	L	Tol.	H	T	T1	T2	d	d1	t	P.C.D.	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Compact Flange
LHQRW LHQCW	10	0 -0.010	19	0 -0.016	60	±0.3	40	11	4.6	6.4	4.5	7.5	4.1	29	-	29	0.015	0.015	588	1100	7.24	139	120
	12		21		62		42							32	-	32			657	1200	10.9	154	134
	13		23		66		43							33	-	33			813	1570	11.6	175	157
	16		28		75		48		4.7	6.3				38	22	31			1230	2350	19.7	245	225
	20	0 -0.012	32	0 -0.019	85		54	13	5.7	7.3	5.5	9	5.1	43	24	36	0.020	0.020	1400	2740	26.8	318	290
	25		40		117		62		5.5	7.5				51	32	40			1560	3140	43.4	626	594
	30		45		128		74		6.0	7.0	6.6	11	6.1	60	35	49			2490	5490	82.8	758	705

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 After greasing, refuel grease by stroking bushings. *Perpendicularity of D to flange mounting surface kgf=Nx0.101972

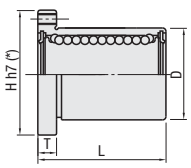
Features: Outer diameter of these bushing is designed to be 5 to 8mm smaller than those of conventional flanged linear bushings to save space.

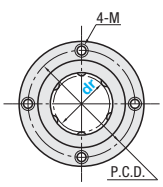
Mini-Flanged Linear Bushings RoHS



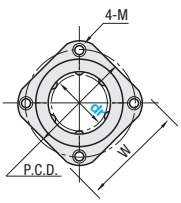
Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHTR	LHTS	LHTC	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material: Nitrile Rubber (-20 ~120°C)
LHTRF	LHTSF	LHTCF					1.4125/X105CrMo17	-20~110°C	
SLHTR	SLHTS	SLHTC	1.4125/X105CrMo17 equivalent	56HRC~		1.4125/X105CrMo17 equivalent	Plastic (Duracon M90 equivalent)	-20~80°C	
SLHTRS	SLHTSS	SLHTCS					1.4125/X105CrMo17	-20~120°C	

Round Flange



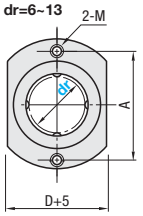


Square Flange

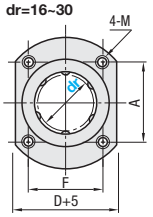


Compact Flange

dr=6~13



dr=16~30



* Available for Round Flange only

Part Number Type			dr	Tol.	D	Tol.	L	Tol.	H	T	M	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Steel balls Rows of Balls	Basic Load Rating C (Dynamic) N	Co (Static) N	Mass(g) Round Flange	Square Flange	Compact Flange
	(1.3505/ 100Cr6)	(1.4125/ X105CrMo17)	6	0 -0.009	12	0 -0.013	19	±0.3	23	5	M3	17	18	-	17	0.012	0.012	4	206	265	19	15	17
			8		15		24		27			21	21	-	21				265	380	30	25	27
(Round Flange)	LHTR	SLHTR	10		19	0 -0.016	29		34	6	M4	26	26	-	26				372	549	61	50	53
	LHTRF	SLHTRS	12		21		30		37			29	28	-	29				412	598	66	52	57
(Square Flange)	LHTS	SLHTS	13		23		32		38			30	30	-	30				510	784	78	66	70
	LHTSF	SLHTSS	16		28		37		43			35	33	20	29				775	1180	108	90	99
(Compact Flange)	LHTC	SLHTC	20	0 -0.010	32	0 -0.019	42		48	8	M5	39	37	22	32	0.015	0.015	5	882	1370	159	130	145
	LHTCF	SLHTCS	25		40		59		56			47	45	27	39			6	980	1570	314	283	298
			30		45		64		66	10	M6	55	51	32	45				1570	2740	417	350	380

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 *Perpendicularity of D to flange mounting surface kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent.) P. 87

-LHTR · LHTC · LHTS

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

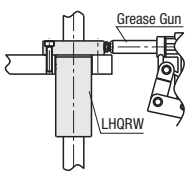
For orders larger than indicated quantity,

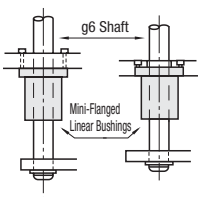
-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity,

Example





dr	€ Unit Price													
	Flanged Linear Bushings with Grease Fitting		Mini-Flanged											
	Round Flange	Compact Flange	Round Flange				Square Flange				Compact Flange			
	LHQRW	LHQCW	LHTR	LHTRF	SLHTR	SLHTRS	LHTS	LHTSF	SLHTS	SLHTSS	LHTC	LHTCF	SLHTC	SLHTCS
6														
8														
10														
12														
13														
16														
20														
25														
30														

Order Example

Part Number

LHQRW16
LHTR16
LHQRW10L (L Type Greased)
LHQRW10G (G Type Greased)
LHQCW10H (H Type Greased)

Alternative grease types available. For Days to Ship, Price and Performance, refer to P.272

Days to Ship 6 Days 2 Days P. 87

[Strength of Mini-Flanged Linear Bushings]

Housing strength test has proven that these bushings are as capable of maintaining strength under moment load as conventional flanged linear bushings, or better.

Height-adjusting Spacers for Flanged Bushings / Spacers for Linear Bushings / Stoppers for Linear Bushings

CAD Data

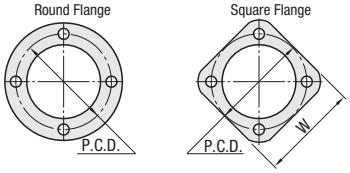
Features: Bushing position can be adjusted in axial direction (ex. when space is insufficient in thrust direction)

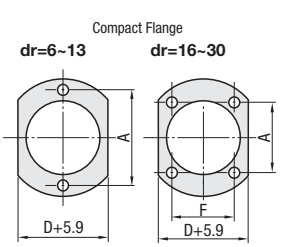
Flanged Type Height Adjusting Spacers

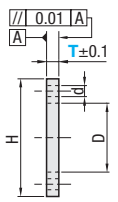


RoHS

Type			Material
Round Flange	Square Flange	Compact Flange	
LCSR	LCSS	LCSC	1.4301/X5CrNi18-10

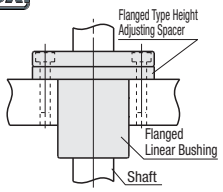






Part Number		T	D		d	H	P.C.D.	W	F	A	€ Unit Price								
Type	Nominal	Selectable		Tol.							Round Flange			Square Flange			Compact Flange		
											LCSR			LCSS			LCSC		
											T1	T3	T5	T1	T3	T5	T1	T3	T5
LCSR LCSS LCSC	6	1 3 5	12.1	+0.2 0	3.5	28	20	22	-	20									
	8		15.1			32	24	25	-	24									
	10		19.1		4.5	40	29	30	-	29									
	12		21.1			42	32	32	-	32									
	13		23.1			43	33	34	-	33									
	16		28.1			48	38	37	22	31									
	20		32.1	+0.3 0	5.5	54	43	42	24	36									
	25		40.1			62	51	50	32	40									
	30		45.1		6.6	74	60	58	35	49									

Example



⊗Linear Bushing Compact Type **P.284, 286, 290, 292, 294** are not applicable.

Order Example: Part Number - T
LCSR12 - 5
LCSC25 - 3

Days to Ship: 6 Days P. 87

Price

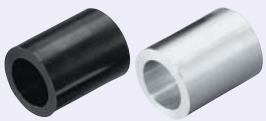
Quantity Discount Price (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

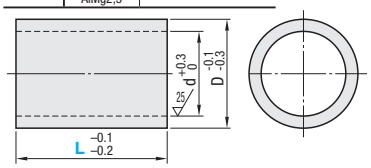
For orders larger than indicated quantity, please request a quotation.

Spacers for Linear Bushings

RoHS



Type	Material	Surface Treatment
LBS	1.1191/C45E	Black Oxide Coating
LBSA	EN AW-5052/AlMg2,5	-

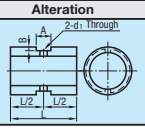


Part Number		L	D	d	LBS						LBSA					
Type	No.	1mm Increm.			Min. L~40		L41~100		L101~150		Min. L~40		L41~100		L101~150	
					€ Unit Price	Volume Discount	€ Unit Price	Vol. Disc.	€ Unit Price	Vol. Disc.	€ Unit Price	Vol. Disc.	€ Unit Price	Vol. Disc.	€ Unit Price	Vol. Disc.
					Qty. 1~9	10~29	1~9	10~29	1~9	10~29	1~9	10~29	1~9	10~29	1~9	10~29
LBS LBSA (Aluminum Type)	3	5~50	7	4												
	4		8	5												
	5		10	6												
	6		12	7												
	8		15	9												
	10	10~100	19	11												
	12		21	13												
	13		23	14												
	16		28	17												
	20		32	22												
	25		40	27												
	30	10~150	45	32												
	35		52	37												
	40		60	42												
	50		80	52												

⊗Linear Bushing Compact Type **P.280** are not applicable.

For orders larger than indicated quantity, please request a quotation.

Alterations: Part Number - L - (MC)
LBSA12 - 55 - MC

Alteration	Code	Spec.	Price Adder
Oil Groove Machining 	MC	Oil groove is added.	4,00

No.	A	B	d1
3.4	1.5	0.3	1
5~8	2.5	0.5	2
10~50	5	1	3

Order Example: Part Number - L
LBSA12 - 55

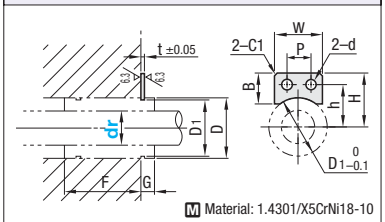
Days to Ship: 8 Days | Express A: 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Fixing Plates for Linear Bushings

RoHS





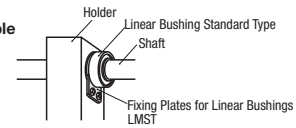
Material: 1.4301/X5CrNi18-10

Part Number		External Dimensions					Mounting Hole Dimensions			Reference Dimensions			Mass	€ Unit Price	Volume Discount
Type	dr	D1	W	H	B	t	d	P	h	D	F	G	(g)	Qty.1~19	20~49
LMST	5	9.6	14	13	12	1.0	3.4	6	9	10	11.5	3.5	1.0		
	6	11.5		14	13				10	12	15.15	3.85			
	8	14.3	16	16	15			8	12	15	19.65	4.35	1.1		
	10	18		18	13	1.2			14	19	24.2	4.8			
	12	20		19	12.5				15	21	25.2				
	13	22		20	12				16	23	26.2	5.8			
	16	27	20	25	15.5	1.5	4.5	10	20	28	30.15	6.85	2.5		
	20	30.5		27	15				22	32	34.65	7.35			
	25	38		31	14.5				26	40	48.15	10.85			
	30	43		34					29	45	52.4	11.6			

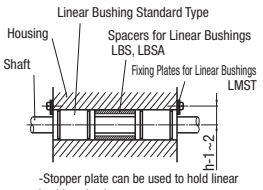
⊗Linear Bushing Compact Type **P.280** are not applicable.

For orders larger than indicated quantity, please request a quotation.

Example



•Stopper plates enable designs free of regards to housing lengths.
-Stopper plates allow Linear Bushings and Shafts to be installed close to its end face.



-Stopper plate can be used to hold linear bushings in place.

Order Example: Part Number
LMST16

Days to Ship: 6 Days | 2 Days P. 87

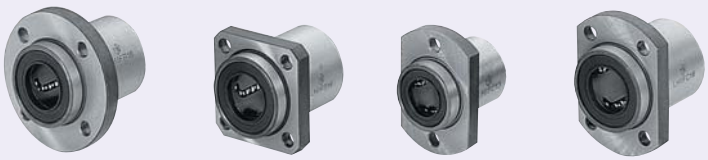
Flanged Linear Bushing Standard Type
-Single with Pilot-

Price Reduction

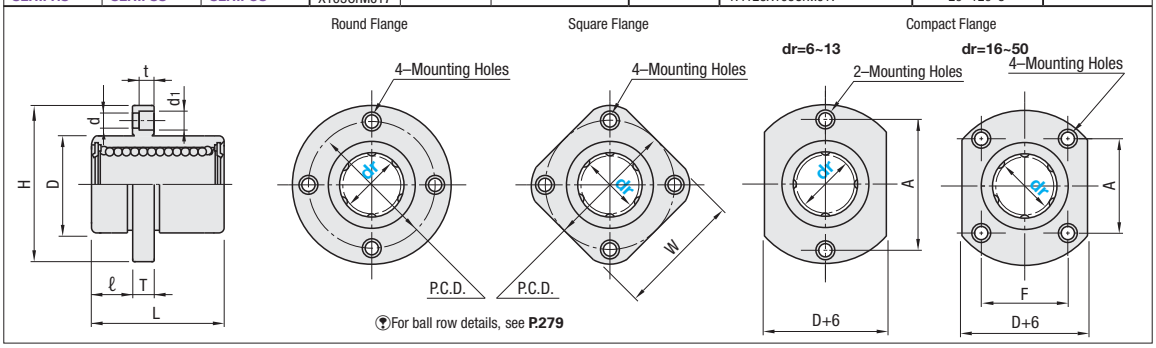
CAD Data

Flange Type Height-adjusting Spacers can be select from P.288

RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHIFR	LHIFS	LHIFC	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
LHIFRF	LHIFSF	LHIFCF					1.4125X105CrMo17	-20~110°C	
LHIFRM	LHIFSM	LHIFCM			Electroless Nickel Plating	1.4125/ X105CrMo17	Plastic (Duracon M90 equivalent)	-20~80°C	
LHIFRMF	LHIFSMF	LHIFCMF					1.4125X105CrMo17	-20~110°C	
SLHIFR	SLHIFS	SLHIFC	1.4125/ X105CrMo17	56HRC~	-		Plastic (Duracon M90 equivalent)	-20~80°C	
SLHIFRS	SLHIFSS	SLHIFCS					1.4125X105CrMo17	-20~120°C	



For ball row details, see P.279

dr	Tolerance	D	Surface Treatment No	Surface Treatment Yes	L	Tolerance	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
6	0 -0.009	12	0 -0.013	0 -0.018	19	±0.3	5	28	5	3.5	6	3.1	20	22	-	20	0.012	0.012	206	265	24	18	21
8		15			24			32					24	25	-	24			265	380	37	29	33
10		19	0 -0.016	0 -0.021	29		6	40	6	4.5	7.5	4.1	29	30	-	29			372	549	72	52	64
12		21			30			42					32	32	-	32			412	598	76	57	68
13		23			32			43					33	34	-	33			510	784	88	72	81
16		28			37			48					38	37	22	31			775	1180	120	104	112
20	0 -0.010	32	0 -0.019	0 -0.025	42		8	54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	882	1370	180	145	167
25		40			59			62					51	50	32	40			980	1570	340	300	325
30		45			64		10	74	10	6.6	11	6.1	60	58	35	49			1570	2740	470	375	388
35	0 -0.012	52	0 -0.022	0 -0.030	70		13	82	13	9	14	8.1	67	64	38	55	0.020	0.020	1670	3140	650	560	575
40		60			80			96					78	75	45	64			2160	4020	1060	880	913
50		80			100			116					98	92	56	80			3820	7940	2200	2000	2037

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent.) P. 87

-LHIFCMF · LHIFRMF · LHIFSMF · Material of Outer Cylinder 1.4125-X105CrMo17

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotataion		

For orders larger than indicated quantity, please request a quotation.

dr	€ Unit Price																	
	Round Flange						Square Flange						Compact Flange					
	LHIFR	LHIFRF	LHIFRM	LHIFRMF	SLHIFR	SLHIFRS	LHIFS	LHIFSF	LHIFSM	LHIFSMF	SLHIFS	SLHIFSS	LHIFC	LHIFCF	LHIFCM	LHIFCMF	SLHIFC	SLHIFCS
6																		
8																		
10																		
12																		
13																		
16																		
20																		
25																		
30																		
35																		
40																		
50																		

Order Example

Part Number

LHIFR20

LHIFR20L (L Type Greased)

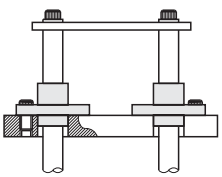
LHIFR20G (G Type Greased)

LHIFR20H (H Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to P.272

Example



Days to Ship

6 Days P. 87 2 Days

Flanged Linear Bushing Compact / With Female Thread Holes

-Single with Pilot-

CAD Data

Features: 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in outer diameter (D dimension) than Standard Type. Standard and Compact Comparison P.280

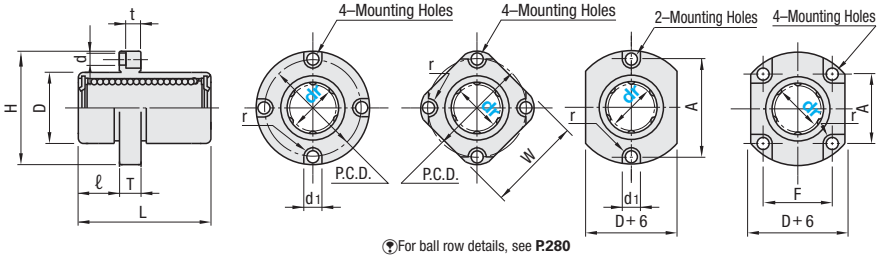
Compact Type RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHIRK	LHISK	LHICK	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seal M Material Nitrile Rubber (-20 ~120°C)

Round Flange Square Flange Compact Flange

dr=6~12 dr=16



For ball row details, see P.280

dr	D		L		ℓ	H	T	d	d1	t	r	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
Tolerance	Tolerance		Tolerance																			
6	0 -0.009	10	0 -0.011	19	5	25	5	3.5	6	3.1	3	19	20	-	19	0.012	0.012	131	155	18	14	15
8		13	0 -0.013	24		28						22	23	-	22			235	277	27	22	24
10		17		29	±0.3	35						27	27	-	27			368	433	52	41	46
12		19	0 -0.016	30		38	6	4.5	7.5	4.1	3.75	30	29	-	30			381	449	64	50	55
16		26		37	6	44						36	34	24	27			608	716	96	77	83

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Features: (1) Cost for tapping can be reduced. (2) Effective for connecting soft materials (3) Can be screw tightened from above.

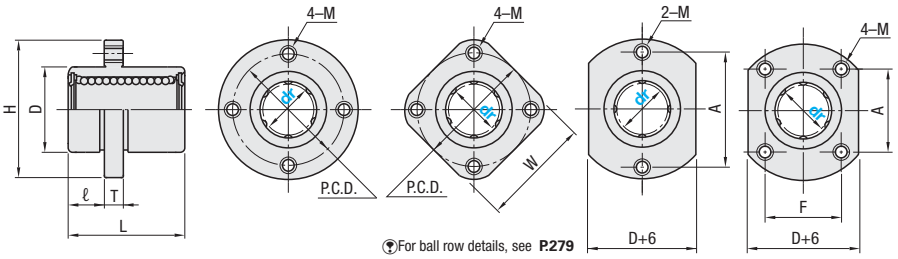
Female Thread Type RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHITR	LHITS	LHITC	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seal M Material Nitrile Rubber (-20 ~120°C)

Round Flange Square Flange Compact Flange

dr=6~12 dr=16~30



For ball row details, see P.279

dr	D		L		ℓ	H	T	M	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
Tolerance	Tolerance		Tolerance																
6	0 -0.009	12	0 -0.013	19	5	28	5	M3	20	22	-	20	0.012	0.012	206	265	24	18	21
8		15		24		32			24	25	-	24			265	380	37	29	33
10		19	0 -0.016	29	6	40	6	M4	29	30	-	29			372	549	72	52	64
12		21		30		42			32	32	-	32			412	598	76	57	68
16		28		37	±0.3	48			38	37	22	31			775	1180	120	104	112
20	0 -0.010	32	0 -0.019	42	8	54	8	M5	43	42	24	36	0.015	0.015	882	1370	180	145	167
25		40		59		62			51	50	32	40			980	1570	340	300	325
30		45		64	10	74	10	M6	60	58	35	49			1570	2740	470	375	388

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

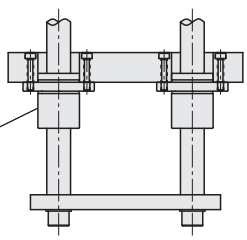
Quantity Discount Price (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity,

dr	€ Unit Price					
	Compact Type			Female Thread Type		
	Round Flange	Square Flange	Compact Flange	Round Flange	Square Flange	Compact Flange
	LHIRK	LHISK	LHICK	LHITR	LHITS	LHITC
6						
8						
10						
12						
16						
20						
25						
30						

Example



Flanged Linear Bushings Tapped Type

Order Example

Part Number

LHIRK12

LHIRK12L (L Type Greased)

LHIRK12G (G Type Greased)

LHIRK12H (H Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to P.272

Days to Ship 6 Days P. 87

Flanged Linear Bushing Standard Type
-Double with Pilot-

Price Reduction

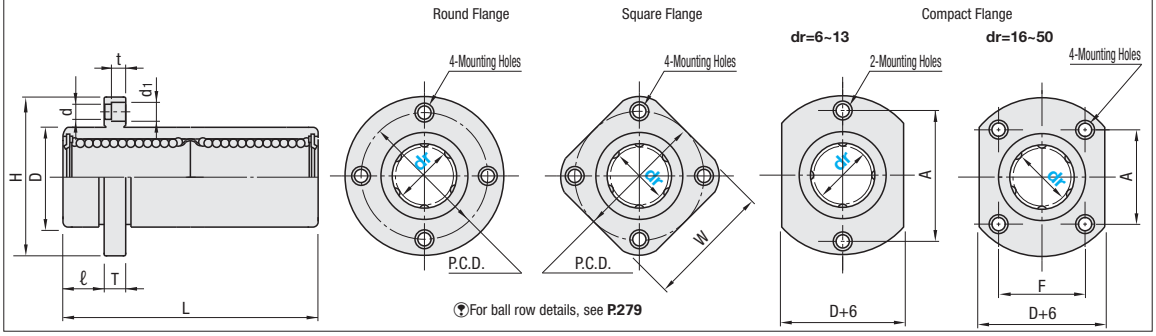
CAD Data

Flange Type Height-adjusting Spacers can be select from P.288

RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHIRW	LHISW	LHICW	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
LHIRWF	LHISWF	LHICWF					1,4125/X105CRM017	-20~110°C	
LHIRWM	LHISWM	LHICWM			Electroless Nickel Plating	1.4125/ X105CrMo17	Plastic (Duracon M90 equivalent)	-20~80°C	
LHIRWMF	LHISWMF	LHICWMF					1,4125/X105CRM017	-20~110°C	
SLHIRW	SLHISW	SLHICW	1.4125/ X105CrMo17	56HRC~	-		Plastic (Duracon M90 equivalent)	-20~80°C	
SLHIRWS	SLHISWS	SLHICWS					1,4125/X105CRM017	-20~120°C	



For ball row details, see P.279

dr	Tolerance	D	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	Tolerance	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
6	0 -0.010	12	0 -0.013	0 -0.018	35	±0.3	5	28	5	3.5	6	3.1	20	22	-	20	0.015	0.015	324	529	2.18	31	25	28
8		15			45			32					24	25	-	24			431	784	4.31	51	43	47
10		19	0 -0.016	0 -0.021	55		6	40	6	4.5	7.5	4.1	29	30	-	29			588	1100	7.24	98	78	90
12		21			57			42					32	32	-	32			657	1200	10.9	110	90	102
13		23			61			43					33	34	-	33			813	1570	11.6	130	108	123
16		28			70			48					38	37	22	31			1230	2350	19.7	190	165	182
20	0 -0.012	32	0 -0.019	0 -0.025	80		8	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	260	225	247
25		40			112			62					51	50	32	40			1560	3140	43.4	540	500	525
30		45			123		10	74	10	6.6	11	6.1	60	58	35	49			2490	5490	82.8	680	590	645
35	0 -0.015	52	0 -0.022	0 -0.030	135		13	82	13	9	14	8.1	67	64	38	55	0.025	0.025	2650	6270	110	1020	930	945
40		60			151			96					78	75	45	64			3430	8040	147	1570	1380	1423
50		80			192			116					98	92	56	80			6080	15900	397	3600	3400	3437

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent.) P.87

- LHIRWMF · LHIFSMF · LHISWMF · Material of Outer Cylinder 1.4125/X150CRMO17

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

dr	€ Unit Price																	
	Round Flange						Square Flange						Compact Flange					
	LHIRW	LHIRWF	LHIRWM	LHIRWMF	SLHIRW	SLHIRWS	LHISW	LHISWF	LHISWM	LHISWMF	SLHISW	SLHISWS	LHICW	LHICWF	LHICWM	LHICWMF	SLHICW	SLHICWS
6																		
8																		
10																		
12																		
13																		
16																		
20																		
25																		
30																		
35																		
40																		
50																		

Order Example

Part Number

LHIRW8

- LHIRW8L (L Type Greased)
- LHIRW8G (G Type Greased)
- LHIRW8H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

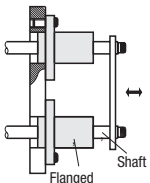
Days to Ship

6 Days P.87

2 Days

Example

Use the Pilot Type when some loads are to apply on linear bushings.



Flanged Linear Bushing Compact / With Female Thread Holes
-Double with Pilot-

CAD DatA

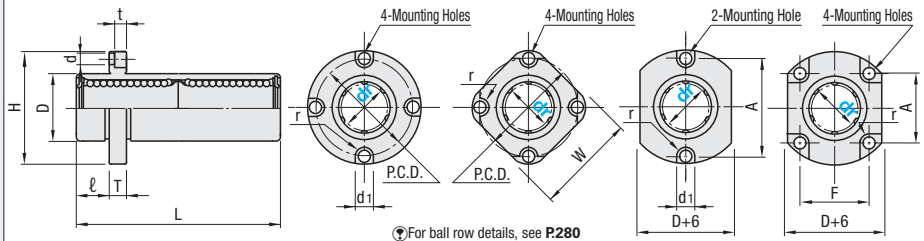
Features: 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in outer diameter (D dimension) than Standard Type. Standard and Compact Comparison P.280

Compact Type RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHIRKW	LHISKW	LHICKW	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)

Round Flange / Square Flange / Compact Flange (dr=6~12 / dr=16)



For ball row details, see P.280

dr	Tolerance	D	Tolerance	L	Tolerance	ℓ	H	T	d	d1	t	r	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
6	0 -0.010	10	0 -0.011	35	±0.3	5	25	5	3.5	6	3.1	3	19	20	-	19	0.015	0.015	206	309	2.46	24	20	21
8		13	0 -0.013	45			28						22	23	-	22			383	555	5.76	38	34	35
10		17		55		6	35	6	4.5	7.5	4.1	3.75	27	27	-	27			585	867	10.99	79	68	73
12		19	0 -0.016	57			38						30	29	-	30			608	899	11.85	95	82	87
16		26		70			44						36	34	24	27			965	1431	23.48	154	135	141

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

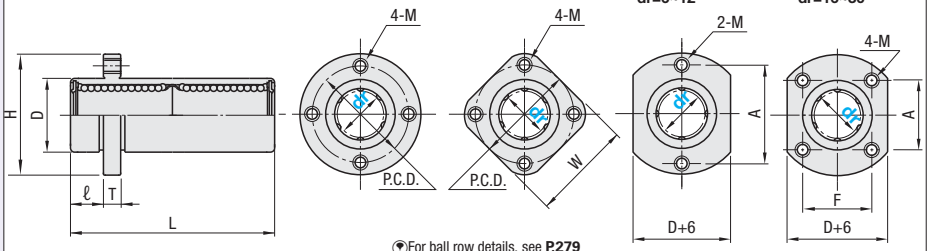
Features: (1) Cost for tapping can be reduced. (2) Effective for connecting soft materials (3) Can be screw tightened from above.

Female Thread Type RoHS



Type			Outer Cylinder			Steel balls	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material		
LHITRW	LHITSW	LHITCW	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)

Round Flange / Square Flange / Compact Flange (dr=6~12 / dr=16~30)



For ball row details, see P.279

dr	Tolerance	D	Tolerance	L	Tolerance	ℓ	H	T	M	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
6	0 -0.010	12	0 -0.013	35	±0.3	5	28	5	M3	20	22	-	20	0.015	0.015	324	529	2.18	31	25	28
8		15		45			32			24	25	-	24			431	784	4.31	51	43	47
10		19	0 -0.016	55		6	40	6	M4	29	30	-	29			588	1100	7.24	98	78	90
12		21		57			42			32	32	-	32			657	1200	10.9	110	90	102
16		28		70			48			38	37	22	31			1230	2350	19.7	190	165	182
20	0 -0.012	32	0 -0.019	80		8	54	8	M5	43	42	24	36	0.020	0.020	1400	2740	26.8	260	225	247
25		40		112			62			51	50	32	40			1560	3140	43.4	540	500	525
30		45		123		10	74	10	M6	60	58	35	49			2490	5490	82.8	680	590	645

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

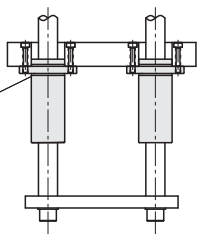
Quantity Discount Price (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity, please request a quotation.

dr	€ Unit Price					
	Compact Type			Female Thread Type		
	Round Flange	Square Flange	Compact Flange	Round Flange	Square Flange	Compact Flange
	LHIRKW	LHISKW	LHICKW	LHITRW	LHITSW	LHITCW
6						
8						
10						
12						
16						
20						
25						
30						

Example



Order Example

Part Number: LHIRKW12

- LHIRKW12L (L Type Greased)
- LHIRKW12G (G Type Greased)
- LHIRKW12H (H Type Greased)

Days to Ship: 6 Days P.87

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Flanged Linear Bushing Standard Type

-Center Flanged Double-

Price Reduction

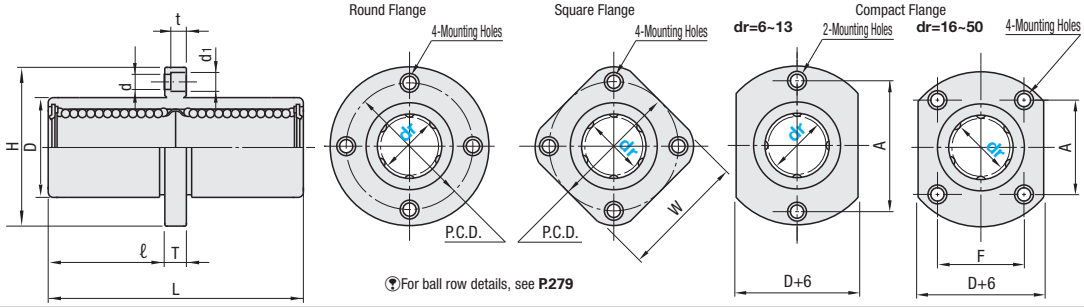
CAD Data

Flange Type Height-adjusting Spacers can be select from P.288

RoHS



Type			Outer Cylinder			Steel balls	Retainer		Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material	M Material			
LHMRW	LHMSW	LHMCW	1.3505/100Cr6	58HRC~	-	1.3505/100Cr6	Plastic (Duracon M90 equivalent)		-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
LHMRWF	LHMSWF	LHMCWF					1.4125/X105CrMo17		-20~110°C	
LHMRWM	LHMSWM	LHMCWM			Electroless Nickel Plating	1.4125/ X105CrMo17	Plastic (Duracon M90 equivalent)		-20~80°C	
LHMRWMF	LHMSWMF	LHMCWMF					1.4125/X105CrMo17		-20~110°C	
SLHMRW	SLHMSW	SLHMCW	1.4125/ X105CrMo17	56HRC~	-		Plastic (Duracon M90 equivalent)		-20~80°C	
SLHMRWS	SLHMSWS	SLHMCWS					1.4125/X105CrMo17		-20~120°C	



For ball row details, see P.279

dr	Tolerance	D	D Tolerance: Surface Treatment No	D Tolerance: Surface Treatment Yes	L	Tolerance	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating: C (Dynamic) N	Basic Load Rating: Co (Static) N	Allowable Static Moment (Nm)	Mass(g): Round Flange	Mass(g): Square Flange	Mass(g): Compact Flange
6	0 -0.010	12	0 -0.013	0 -0.018	35	±0.3	15	28	5	3.5	6	3.1	20	22	-	20	0.015	0.015	324	529	2.18	31	25	28
8		15			45		20	32					24	25	-	24			431	784	4.31	51	43	47
10		19	0 -0.016	0 -0.021	55		24.5	40	6	4.5	7.5	4.1	29	30	-	29			588	1100	7.24	98	78	90
12		21			57		25.5	42					32	32	-	32			657	1200	10.9	110	90	102
13		23			61		27.5	43					33	34	-	33			813	1570	11.6	130	108	123
16		28			70		32	48					38	37	22	31			1230	2350	19.7	190	165	182
20	0 -0.012	32	0 -0.019	0 -0.025	80		36	54	8	5.5	9	5.1	43	42	24	36	0.020	0.020	1400	2740	26.8	260	225	247
25		40			112		52	62					51	50	32	40			1560	3140	43.4	540	500	525
30		45			123		56.5	74	10	6.6	11	6.1	60	58	35	49			2490	5490	82.8	680	590	645
35	0 -0.014	52	0 -0.022	0 -0.030	135		62.5	82	13	9	14	8.1	67	64	38	55	0.025	0.025	2650	6270	110	1020	930	945
40		60			151		69	96					78	75	45	64			3430	8040	147	1570	1380	1423
50		80			192		89.5	116					98	92	56	80			6080	15900	397	3600	3400	3437

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

■Quantity Discount Price (Round down to one Cent.) P.87

- LHMRWMF · LHMSWMF · Material of Outer Cylinder 1.4125-X105CrMo17

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

dr	€ Unit Price: Round Flange						Square Flange						Compact Flange					
	LHMRW	LHMRWF	LHMRWM	LHMRWMF	SLHMRW	SLHMRWS	LHMSW	LHMSWF	LHMSWM	LHMSWMF	SLHMSW	SLHMSWS	LHMCW	LHMCWF	LHMCWM	LHMCWMF	SLHMCW	SLHMCWS
6																		
8																		
10																		
12																		
13																		
16																		
20																		
25																		
30																		
35																		
40																		
50																		

Order Example

Part Number

LHMCW25

- LHMCW25L (L Type Greased)
- LHMCW25G (G Type Greased)
- LHMCW25H (H Type Greased)

Alternative grease types available. For Days to Ship, Price and Performance, refer to P.272

Days to Ship

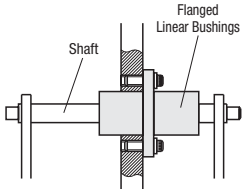
6 Days

2 Days

P.87

Example

When a long stroke distance is required, use of longer bushings is recommended.



Flanged Linear Bushing Compact / With Female Thread Holes
-Center Flanged Double-

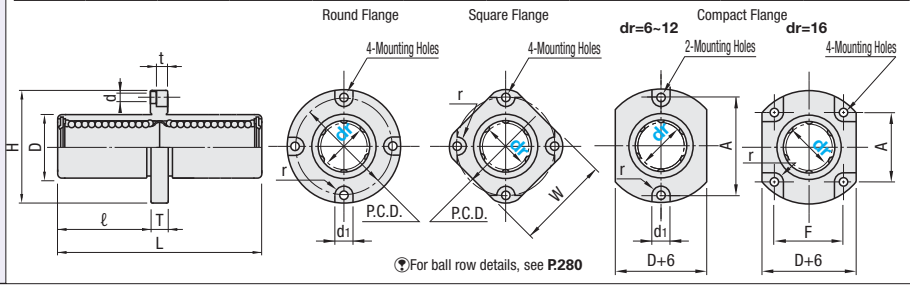
CAD Data

Features: 4 to 5mm smaller in flange diameter (H Dimension) and 2mm smaller in outer diameter (D dimension) than Standard Type. Standard and Compact Comparison P.280

Compact Type RoHS



Type: Round Flange	Type: Square Flange	Type: Compact Flange	Outer Cylinder: M Material	Outer Cylinder: H Hardness	Outer Cylinder: S Surface Treatment	Steel balls: M Material	Retainer: M Material	Ambient Operating Temp.	A Accessory
LHMRKW	LHMSKW	LHMCKW	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)



For ball row details, see P.280

dr	Tolerance	D	Tolerance	L	Tolerance	ℓ	H	T	d	d1	t	r	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating: C (Dynamic) N	Basic Load Rating: Co (Static) N	Allowable Static Moment (Nm)	Mass(g): Round Flange	Mass(g): Square Flange	Mass(g): Compact Flange
6	0 -0.010	10	0-0.011	35	±0.3	15	25	5	3.5	6	3.1	3	19	20	-	19	0.015	0.015	206	309	2.46	24	20	21
8		13	0-0.013	45		20	28						22	23	-	22			383	555	5.76	38	34	35
10		17		55		24.5	35	6	4.5	7.5	4.1	3.75	27	27	-	27			585	867	10.99	79	68	73
12		19	0-0.016	57		25.5	38						30	29	-	30			608	899	11.85	95	82	87
16		26		70		32	44						36	34	24	27			965	1431	23.48	154	135	141

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

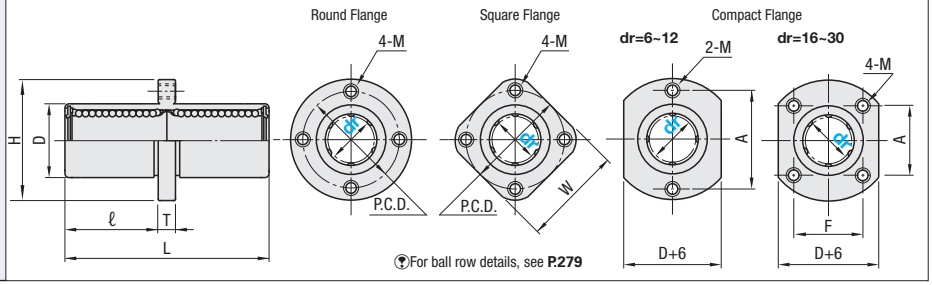
kgf=Nx0.101972

Features: (1) Cost for tapping can be reduced. (2) Effective for connecting soft materials (3) Can be screw tightened from above.

Female Thread Type RoHS



Type: Round Flange	Type: Square Flange	Type: Compact Flange	Outer Cylinder: M Material	Outer Cylinder: H Hardness	Outer Cylinder: S Surface Treatment	Steel balls: M Material	Retainer: M Material	Ambient Operating Temp.	A Accessory
LHMTRW	LHMTSW	LHMTCW	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)



For ball row details, see P.279

dr	Tolerance	D	Tolerance	L	Tolerance	ℓ	H	T	M	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating: C (Dynamic) N	Basic Load Rating: Co (Static) N	Allowable Static Moment (Nm)	Mass(g): Round Flange	Mass(g): Square Flange	Mass(g): Compact Flange
6	0 -0.010	12	0 -0.013	35	±0.3	15	28	5	M3	20	22	-	20	0.015	0.015	324	529	2.18	31	25	28
8		15		45		20	32			24	25	-	24			431	784	4.31	51	43	47
10		19	0 -0.016	55		24.5	40	6	M4	29	30	-	29			588	1100	7.24	98	78	90
12		21		57		25.5	42			32	32	-	32			657	1200	10.9	110	90	102
16		28		70		32	48			38	37	22	31			1230	2350	19.7	190	165	182
20	0 -0.012	32	0 -0.019	80		36	54	8	M5	43	42	24	36	0.020	0.020	1400	2740	26.8	260	225	247
25		40		112		52	62			51	50	32	40			1560	3140	43.4	540	500	525
30		45		123		56.5	74	10	M6	60	58	35	49			2490	5490	82.8	680	590	645

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

*Perpendicularity of D to flange mounting surface

kgf=Nx0.101972

Price

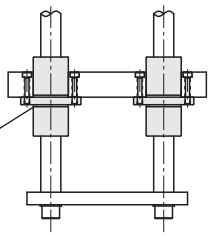
Quantity Discount Price (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity, please request a quotation.

dr	€ Unit Price: Compact Type: Round Flange LHMRKW	Compact Type: Square Flange LHMSKW	Compact Type: Compact Flange LHMCKW	Female Thread Type: Round Flange LHMTRW	Female Thread Type: Square Flange LHMTSW	Female Thread Type: Compact Flange LHMTCW
6						
8						
10						
12						
16						
20						
25						
30						

Example



Order Example

Part Number

LHMRKW12

- LHMRKW12L (L Type Greased)
- LHMRKW12G (G Type Greased)
- LHMRKW12H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Days to Ship 6 Days P.87

Flanged Linear Bushings

-Long / Long with Pilot-

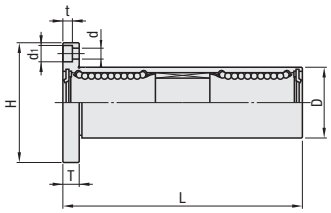
CAD Data



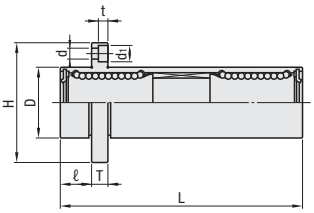
RoHS

	Type			Outer Cylinder / Balls		Outer Cylinder	Retainer	Ambient Operating Temp.	A Accessory
	Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material		
Long	LHKRNL	LHKSNL	LHKCNL	1.3505/100Cr6	58HRC~	-	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
	LHKRNLF	LHKSNLF	-				1.4125/X105CrMo17	-20~110°C	
	LHKRL	LHKSL	LHKCL			Electroless Nickel Plating	Plastic (Duracon M90 equivalent)	-20~80°C	
	LHKRLF	LHKSLF	-				1.4125/X105CrMo17	-20~110°C	
	SLHKRLFS	SLHKSLFS	-	1.4125/X105CrMo17	56HRC~	-	1.4125/X105CrMo17	-20~120°C	
Long Pilot	LHKIRNL	LHKISNL	LHKICNL	1.3505/100Cr6	58HRC~	-	Plastic (Duracon M90 equivalent)	-20~80°C	
	LHKIRNLF	LHKISNLF	-				1.4125/X105CrMo17	-20~110°C	
	LHKIRL	LHKISL	LHKICL			Electroless Nickel Plating	Plastic (Duracon M90 equivalent)	-20~80°C	
	LHKIRLF	LHKISLF	-				1.4125/X105CrMo17	-20~110°C	
	SLHKIRLFS	SLHKISLFS	-	1.4125/X105CrMo17	56HRC~	-	1.4125/X105CrMo17	-20~120°C	

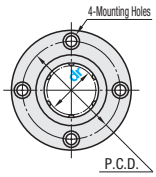
Long Type



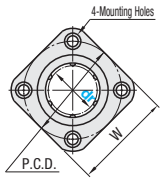
Long with Pilot Type



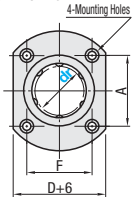
Round Flange



Square Flange



Compact Flange dr=16~40



Mounting hole of long type is of opposite direction. For ball row details, see P.279

dr	Tolerance	D	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L	L Tolerance	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N	Basic Load Rating Co (Static) N	Allowable Static Moment (Nm)	Mass(g) Round Flange	Mass(g) Square Flange	Mass(g) Compact Flange
6	0 -0.012	15	0 -0.013	0 -0.018	49	±0.3	5	32	5	3.5	6	3.1	24	25	-	-	0.020	0.020	324	529	8.2	66	58	-
8		19	0 -0.016	0 -0.021	68		6	40	6	4.5	7.5	4.1	29	30	-	-			431	784	16.0	135	117	-
10		23			82			43					33	34	-	-			588	1100	27.0	205	189	-
12	0 -0.015	26			86			46					36	35	-	-			657	1200	40.1	248	228	-
13		28			92			48					38	37	-	-			813	1570	42.9	308	286	-
16	0 -0.018	32	0 -0.019	0 -0.025	105		8	54	8	5.5	9	5.1	43	42	24	36	0.025	0.025	1230	2350	73.5	412	376	386
20		40			120			62					51	50	32	40			1400	2740	98.0	752	714	724
25		45			167		10	74	10	6.6	11	6.1	60	58	35	49			1560	3140	157	1244	1163	1178
30		52	0 -0.022	0 -0.030	184			82					67	64	38	55			2490	5490	297	1636	1543	1567
35	0 -0.021	60	-		200		13	96	13	9	14	8.1	78	75	45	64	0.030	0.030	2650	6270	373	2580	2400	2433
40		65			230			101					83	80	48	68			3430	8040	553	2950	2510	2798

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

■Quantity Discount Price (Round down to one Cent) P.87

-LHKRL · LHKIRL · LHKIRNL · LHKISL · LHKRNL · LHKSL

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

Part Number Type		dr	€ Unit Price Long Round Flange LHKRNL	LHKRL	LHKRNLF	LHKRLF	SLHKRLFS	Square Flange LHKSNL	LHKSL	LHKSNLF	LHKSLF	SLHKSLFS	Compact Flange LHKCNL	LHKCL
(1.3505/100Cr6)	(1.4125/X105CrMo17)	6												
(Round Flange) LHKRNL	SLHKRLFS	8												
LHKRNLF		10												
LHKRL		12												
LHKRLF		13												
(Square Flange) LHKSNL	SLHKSLFS	16												
LHKSNLF		20												
LHKSL		25												
LHKSLF		30												
(Compact Flange) LHKCNL		35												
LHKCL		40												

Part Number Type		dr	€ Unit Price Long with Pilot Round Flange LHKIRNL	LHKIRL	LHKIRNLF	LHKIRLF	SLHKIRLFS	Square Flange LHKISNL	LHKISL	LHKISNLF	LHKISLF	SLHKISLFS	Compact Flange LHKICNL	LHKICL
(1.3505/100Cr6)	(1.4125/X105CrMo17)	6												
(Round Flange) LHKIRNL	SLHKIRLFS	8												
LHKIRNLF		10												
LHKIRL		12												
LHKIRLF		13												
(Square Flange) LHKISNL	SLHKISLFS	16												
LHKISNLF		20												
LHKISL		25												
LHKISLF		30												
(Compact Flange) LHKICNL		35												
LHKICL		40												

Order Example

Part Number

LHKRL8

LHKRL8L (L Type Greased)

LHKRL8G (G Type Greased)

LHKRL8H (H Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to P.272

Days to Ship 6 Days P.87

Flanged Linear Bushings

-Long / with Long Pilot-

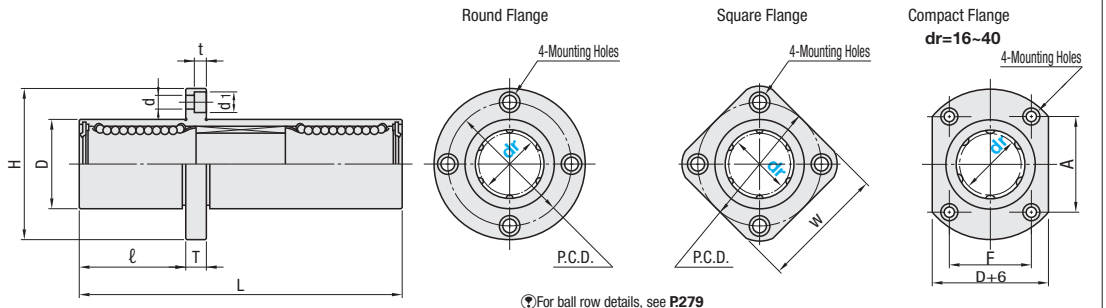
CAD Data

RoHS





Type			Outer Cylinder / Balls		Outer Cylinder	Retainer	Ambient Operating Temp.	A Accessory
Round Flange	Square Flange	Compact Flange	M Material	H Hardness	S Surface Treatment	M Material		
LHKMRNL	LHKMSNL	LHKMCNL	1.3505/ 100Cr6	58HRC~	-	Plastic (Duracon M90 equivalent)	-20~80°C	Seals M Material Nitrile Rubber (-20 ~120°C)
LHKMRNLF	LHKMSNLF	-				1.4125/X105CrMo17	-20~110°C	
LHKMRL	LHKMSL	LHKMCL			Electroless Nickel Plating	Plastic (Duracon M90 equivalent)	-20~80°C	
LHKMRLF	LHKMSLF	-				1.4125/X105CrMo17	-20~110°C	
SLHKMRLFS	SLHKMSLFS	-	1.4125/X105CrMo17	56HRC~	-	1.4125/X105CrMo17	-20~120°C	



For ball row details, see P.279

dr	Tolerance	D	D Tolerance: No Surface Treatment	D Tolerance: Surface Treatment	L	L Tolerance	ℓ	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating: C (Dynamic) N	Basic Load Rating: Co (Static) N	Allowable Static Moment (Nm)	Mass(g): Round Flange	Mass(g): Square Flange	Mass(g): Compact Flange
6	0 -0.012	15	0 -0.013	0 -0.018	49	±0.3	17	32	5	3.5	6	3.1	24	25	-	-	0.020	0.020	324	529	8.2	66	58	-
8		19	0 -0.016	0 -0.021	68		22	40	6	4.5	7.5	4.1	29	30	-	-			431	784	16.0	135	117	-
10		23			82		27	43					33	34	-	-			588	1100	27.0	205	189	-
12	0 -0.015	26			86		28	46					36	35	-	-			657	1200	40.1	248	228	-
13		28			92		30	48					38	37	-	-			813	1570	42.9	308	286	-
16		32	0 -0.019	0 -0.025	105		35	54	8	5.5	9	5.1	43	42	24	36	0.025	0.025	1230	2350	73.5	412	376	386
20	0 -0.018	40			120		40	62					51	50	32	40			1400	2740	98.0	752	714	724
25		45			167		55	74	10	6.6	11	6.1	60	58	35	49			1560	3140	157	1244	1163	1178
30		52	0 -0.022	0 -0.030	184		61	82					67	64	38	55			2490	5490	297	1636	1543	1567
35	0 -0.021	60	-		200		67	96	13	9	14	8.1	78	75	45	64	0.030	0.030	2650	6270	373	2580	2400	2433
40		65			230		77	101					83	80	48	68			3430	8040	553	2950	2510	2728

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface

kgf=Nx0.101972

Price

Quantity Discount Price (Round down to one Cent) P.87

-LHKMRL · LHKMRNL · LHKMSL

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

-Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

Part Number Type	dr	€ Unit Price: Round Flange LHKMRNL	LHKMRL	LHKMRNLF	LHKMRLF	SLHKMRLFS	Square Flange LHKMSNL	LHKMSL	LHKMSNLF	LHKMSLF	SLHKMSLFS	Compact Flange LHKMCNL	LHKMCL
(1.3505/100Cr6) (1.4125/X105CrMo17) (Round Flange) LHKMRNL SLHKMRLFS LHKMRNLF LHKMRL LHKMRLF	6												
	8												
	10												
	12												
	13												
(Square Flange) LHKMSNL SLHKMSLFS LHKMSNLF LHKMSL LHKMSLF	16												
	20												
	25												
	30												
(Compact Flange) LHKMCNL LHKMCL	35												
	40												

Order Example

Part Number

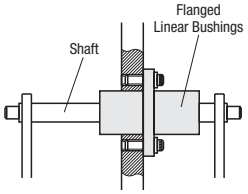
LHKMSLF6

- LHKMSLF6L (L Type Greased)
- LHKMSLF6G (G Type Greased)
- LHKMSLF6H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

Example

When a long stroke distance is required, use of longer bushings is recommended.



Days to Ship

6 Days P.87

Linear Bushings Housing Unit Standard · Compact
-Tall Block Single-

NEW

Price Reduction

CAD Data

Features: of Compact Type Max. 6mm taller in height (H dimension) and Max. 3mm smaller in width (W dimension) than Standard Type.

Standard and Compact Comparison ☞P.280

Standard Type

RoHS

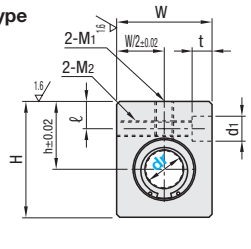


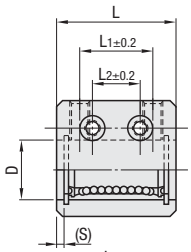
Compact Type



Type		Linear Bushings (☞P.279)	(☞P.280)	Housing		Ambient Operating Temp.
Standard	Compact	Standard	Compact	Material	Surface Treatment	
LHSS	LHSSK	LMU	LMK	Aluminum Alloy	Clear Anodizing	-20~80°C
LHSSF	-	LMUF	-			-20~110°C
SLHSS	-	SLMU	-			-20~80°C
SLHSSF	-	SLMUS	-			-20~110°C

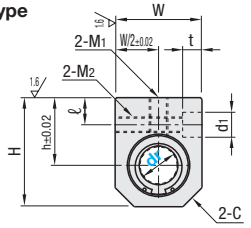
Standard Type

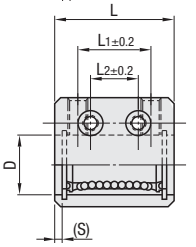




6.3 (1.6) (Blocks)

Compact Type





For ball row details, see **P.279, 280**

Standard Type dr4 has one M1 mounting hole only.

The datum surface is located on the other side of product ID label.

dr	Tolerance	D Standard	D Compact	(S)	L	L1	L2	h Standard	h Compact	W Standard	W Compact	H Standard	H Compact	ℓ Standard	ℓ Compact	M1 (Effective length) Standard	M1 (Effective length) Compact	M2 (Effective length) Standard	M2 (Effective length) Compact	C	d1xt
4	0 -0.008	8	-	1.1	15	-	10	10	-	12	-	16	-	3	-	M3 (6)	-	M3 (10.5)	-	-	4.2x1.5 (For M2 screws)
5	0 -0.008	10	-	4.0	25	16	7	13	-	15	-	20	-	5	-	M4 (8)	-	M4 (10)	-	-	6x5 (For M3 screws)
(6)	0 -0.009	12	10	3.0	27	18	9	14	13	16	14	22	20	5	4	M4 (8)	M4 (8)	M4 (11)	M4 (9)	4	6x5 (For M3 screws)
(8)	0 -0.009	15	13	3.0	32	20	10	16	15	20	17	26	24	5	5	M5 (8.5)	M5 (8.5)	M4 (15)	M4 (12)	5	6x5 (For M3 screws)
(10)	0 -0.009	19	17	4.0	39	27	15	19	18	26	23	32	30	6	6	M6 (9.5)	M6 (9.5)	M5 (20)	M5 (17)	6	8x6 (For M4 Screws)
(12)	0 -0.009	21	19	4.0	40	27	15	20	19	28	25	34	32	6	6	M6 (9.5)	M6 (9.5)	M5 (22)	M5 (19)	6	8x6 (For M4 Screws)
13	0 -0.009	23	-	4.0	42	28	16	25	-	30	-	43	-	7	-	M6 (13)	-	M6 (23)	-	-	9x7 (For M5 Bolt)
(16)	0 -0.009	28	26	3.8	47	32	18	27	26	36	33	49	43	7	7	M6 (13)	M6 (13)	M6 (29)	M6 (26)	8	9x7 (For M5 Bolt)
20	0 -0.010	32	-	3.8	52	36	18	31	-	42	-	54	-	8	-	M8 (15)	-	M8 (34)	-	-	11x8 (For M6 screws)
25	0 -0.010	40	-	3.2	69	42	22	37	-	52	-	65	-	9	-	M10 (17)	-	M10 (42)	-	-	14x10 (For M8 Screws)
30	0 -0.010	45	-	3.2	74	44	22	40	-	58	-	71	-	9	-	M10 (17.5)	-	M10 (48)	-	-	14x10 (For M8 Screws)

For linear bushings, hardened shafts with g6 tolerance are recommended. ☞P.107~195 Only dr dimensions in ( ) are available for Compact Type. Make certain that the screws do not interfere with the bushing as M1 are through holes.

Price

Quantity Discount Price (Round down to one Cent) P.87

-LHSS

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

-LHSSF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

-SLHSS / SLHSSF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

-LHSSK

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard		Quotation

For orders larger than indicated quantity, please request a quotation.

Part Number Type	dr	€ Unit Price Standard LHSS	Standard LHSSF	Standard SLHSS	Standard SLHSSF	Compact LHSSK
(Standard) LHSS LHSSF SLHSS SLHSSF	4					
	5					
	6					
	8					
	10					
	12					
	13					
	16					
	20					
	25					
	30					

dr	Basic Load Rating C (Dynamic) N Standard	C (Dynamic) N Compact	Co (Static) N Standard	Co (Static) N Compact	Mass(g) Standard	Mass(g) Compact
4	88	-	127	-	8	-
5	167	-	206	-	18	-
6	206	131	265	155	22	17
8	265	235	380	277	40	32
10	372	368	549	433	80	67
12	412	381	598	449	90	80
13	510	-	608	-	132	-
16	775	608	1180	716	204	155
20	882	-	1370	-	272	-
25	980	-	1570	-	574	-
30	1570	-	2740	-	710	-

kgf=Nx0.101972

Order Example

Part Number: LHSS12

- LHSS12L (L Type Greased)
- LHSS12G (G Type Greased)
- LHSS12H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to ☞P.272

Days to Ship

6 Days ☞P.87

2 Days

NEW

Linear Bushings Housing Unit Standard · Compact
-Tall Block Double-

Price Reduction

CAD Data

■**Features:** of Compact Type: Max. 6mm taller in height (H dimension) and Max. 3mm smaller in width (W dimension) than Standard Type.

■Standard and Compact Comparison ☞P.280

■**Standard Type** RoHS

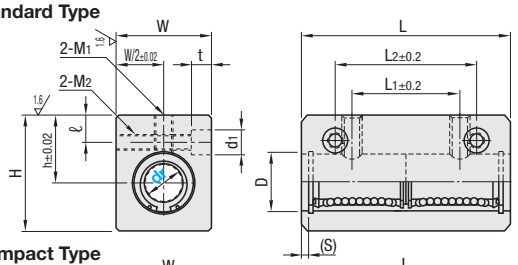


■**Compact Type**



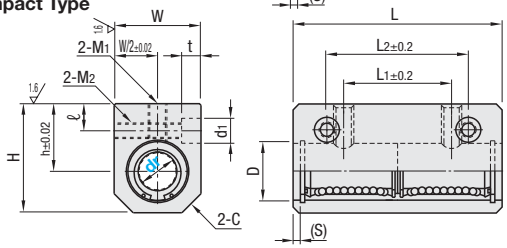
Type		Linear Bushings (☞P.279)	(☞P.280)	Housing		Ambient Operating Temp.
Standard	Compact	Standard	Compact	Material	Surface Treatment	
LHSSW	LHSSKW	LMU	LMK	Aluminum Alloy	Clear Anodizing	-20~80°C
LHSSWF	-	LMUF	-			-20~110°C
SLHSSW	-	SLMU	-			-20~80°C
SLHSSWF	-	SLMUS	-			-20~110°C

Standard Type



6.3 (1.6) (Blocks)

Compact Type



☞For ball row details, see **P.279, 280**

☞The datum surface is located on the other side of product ID label.

☞Allowable Static Moments: See ☞ **P.279, P.280**

dr	Tolerance	D Standard	D Compact	(S)	L	L1	L2	h Standard	h Compact	W Standard	W Compact	H Standard	H Compact	ℓ Standard	ℓ Compact	M1 (Effective length) Standard	M1 (Effective length) Compact	M2 (Effective length) Standard	M2 (Effective length) Compact	C	d1xt
4	0 -0.008	8	-	1.1	27	14	22	10	-	12	-	16	-	3	-	M3 (6)	-	M3 (10.5)	-	-	4.2x1.5 (For M2 screws)
5		10	-	4.0	40	18	28	13	-	15	-	20	-	5	-	M4 (8)		M4 (10)	-	-	6x5 (For M3 screws)
(6)	0 -0.010	12	10	3.0	46	20	30	14	13	16	14	22	20		4		M4 (8)	M4 (11)	M4 (9)	4	
(8)		15	13		56	30	42	16	15	20	17	26	24		5	M5 (8.5)	M5 (8.5)	M4 (15)	M4 (12)	5	
(10)		19	17	4.0	68	36	50	19	18	26	23	32	30	6	6	M6 (9.5)	M6 (9.5)	M5 (20)	M5 (17)	6	8x6 (For M4 Screws)
(12)		21	19		70			20	19	28	25	34	32					M5 (22)	M5 (19)		
13		23	-		74	42	55	25	-	30	-	43	-	7	-	M6 (13)	-	M6 (23)	-	-	9x7 (For M5 Bolt)
(16)		28	26	3.8	84	52	65	27	26	36	33	49	43		7		M6 (13)	M6 (29)	M6 (26)	8	
20	0 -0.012	32	-		94	58	70	31	-	42	-	54	-	8	-	M8 (15)		M8 (34)		-	11x8 (For M6 screws)
25		40	-	3.2	128	80	100	37	-	52	-	65	-	9	-	M10 (17)	-	M10 (42)	-	-	14x10 (For M8 Screws)
30		45	-		138	90	110	40	-	58	-	71	-		-	M10 (17.5)		M10 (48)		-	

☞For linear bushings, hardened shafts with g6 tolerance are recommended. ☞ **P.107~195** ☞Only dr dimensions in ( ) are available for Compact Type. ☞Make certain that the screws do not interfere with the bushing as M1 are through holes.

Price

-LHSSW

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard		Quotation

☞For orders larger than indicated quantity, please request a quotation.

-LHSSWF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

☞For orders larger than indicated quantity, please request a quotation.

-SLHSSW / SLHSSWF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

☞For orders larger than indicated quantity, please request a quotation.

-LHSSKW

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

☞For orders larger than indicated quantity, please request a quotation.

Part Number Type	dr	€ Unit Price Standard LHSSW	LHSSWF	SLHSSW	SLHSSWF	Compact LHSSKW
(Standard) LHSSW LHSSWF SLHSSW SLHSSWF	4					
	5					
	6					
	8					
	10					
	12					
	13					
(Compact) LHSSKW	16					
	20					
	25					
	30					

dr	Basic Load Rating C (Dynamic) N Standard	C (Dynamic) N Compact	Co (Static) N Standard	Co (Static) N Compact	Mass(g) Standard	Mass(g) Compact
4	176	-	254	-	14	-
5	263	-	412	-	35	-
6	324	206	529	309	40	34
8	431	383	784	555	75	60
10	588	585	1100	867	150	126
12	657	608	1200	899	168	150
13	813	-	1570	-	248	-
16	1230	965	2350	1431	383	296
20	1400	-	2740	-	520	
25	1560	-	3140	-	1120	-
30	2490	-	5490	-	1384	-

kgf=Nx0.101972

Order Example Part Number

LHSSW12
- LHSSW12L (L Type Greased)
- LHSSW12G (G Type Greased)
- LHSSW12H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to ☞ **P.272**

Days to Ship

6 Days ☞ P.87

2 Days

Linear Bushing with Housing Units

-Tall Block Medium / Medium Long / Long-

CAD Data

■Medium Type

RoHS



■Medium Long Type

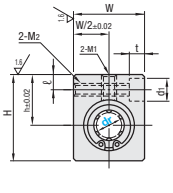


■Long Type

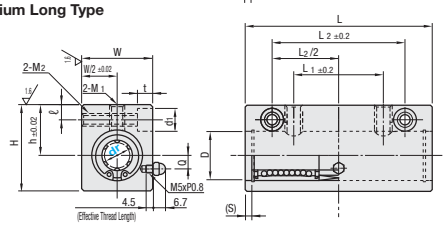


Type			Linear Bushings			Housing		Ambient Operating Temp.
Medium	Medium Long	Long	(☞P.281)	(☞P.279)		M Material	S Surface Treatment	
			Medium	Medium Long	Long			
LHSSD	LHSSS	LHSSL	LMUD	LMU	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

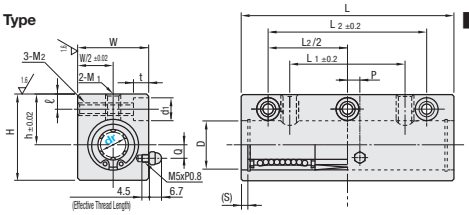
Medium Type



Medium Long Type



Long Type



6.3 (1.6) (Blocks)

■Features of Medium Type Bushings

Body length is approximately 1.4 times of single type and allowable moment is approximately 4.3 times; suitable where no space for double type is available.

■Features of Medium Long Type

Body length is approximately 2.2 times of single type and allowable moment is approximately 10 times; suitable where no space for long type is available.

■Features of Long Type

Body length is approximately 2.5 times of single type. Allowable moment is approximately 21 times.

- For ball row details, see **P.279, 281**
- The datum surface is located on the other side of product ID label.
- Allowable Static Moments: See ☞ **P.281, P.295**

Part Number Type	dr	Tolerance Medium	Tolerance Medium Long	Tolerance Long	D	(S)	L Medium	L Medium Long	L Long	L1 Medium	L1 Medium Long	L1 Long	L2 Medium	L2 Medium Long	L2 Long	h	W	H	ℓ	Q	P	M1 (Effective length)	M2 (Effective length)	d1xt
(Medium Type) LHSSD	(6)	0 -0.01	-	-	12	3	37	-	-	14	-	-	24	-	-	14	16	22	5	-	-	M4 (8)	M4 (11)	6x5 (For M3 screws)
	8			0 -0.012	15		45		80	20		48	32		60	16	20	26				M5 (8.5)	M4 (15)	
	10				19	4	57		97	25		58	40		72	19	26	32	6	7	7	M6 (9.5)	M5 (20)	8x6 (For M4 Screws)
(Medium Long Type) LHSSS	*12		0 -0.015		21			85	100		48	62		62	76	20	28	34					M5 (22)	
	13			0 -0.015	23			-	106		-	64		-	80	25	30	43	7	7.5		M6 (13)	M6 (23)	9x7 (For M5 Bolt)
(Long Type) LHSSL	*16				28	3.8	66	100	121	30	62	74	46	78	90	27	36	49		7			M6 (29)	
	*20	0 -0.012	0 -0.018	0 -0.018	32		75	115	136	34	68	82	52	88	102	31	42	54	8	0	8	M8 (15)	M8 (34)	11x8 (For M6 screws)
	*25				40	3.2	93	160	187	42	96	116	66	120	140	37	52	65	9		9	M10 (17)	M10 (42)	14x10 (For M8 Screws)
	*30				45		100	170	202	42	106	128	66	130	152	40	58	71				M10 (17.5)	M10 (48)	

☞ For linear bushings, hardened shafts with g6 tolerance are recommended. ☞ **P.107~195** ☞ Grease fitting not available on Long Type dr8. ☞ dr ( ) is only available in Medium Type, only sizes with * are available for Medium Long Type. ☞ Make certain that the screws do not interfere with the bushing as M1 are through holes.

Price

■Quantity Discount Price (☞Round down to one Cent) **P. 87**

-LHSSD / LHSSL

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

☞ For orders larger than indicated quantity, please request a quotation.

-LHSSS

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

☞ For orders larger than indicated quantity, please request a quotation.

Part Number Type	dr	€ Unit Price Medium Type	Medium Long Type	Long Type
		LHSSD	LHSSS	LHSSL
(Medium Type) LHSSD	6			
	8			
	10			
(Medium Long Type) LHSSS	12			
	13			
	16			
(Long Type) LHSSL	20			
	25			
	30			

dr	Basic Load Rating C (Dynamic) N Medium	C (Dynamic) N Medium Long	C (Dynamic) N Long	Co (Static) N Medium	Co (Static) N Medium Long	Co (Static) N Long	Mass(g) Medium	Mass(g) Medium Long	Mass(g) Long
6	226	-	-	310	-	-	31	-	-
8	310	-	431	452	-	784	60	-	126
10	508	-	588	718	-	1100	121	-	233
12	634	657	657	814	1200	1200	124	232	278
13	640	-	813	826	-	1570	186	-	376
16	1164	1230	1230	1448	2350	2350	296	472	569
20	1554	1400	1400	2068	2740	2740	403	671	788
25	1725	1560	1560	3068	3140	3140	843	1443	1653
30	2440	2490	2490	3974	5490	5490	979	1748	2041

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Order Example

Part Number: LHSSD16

- LHSSL12L (L Type Greased)
- LHSSD16G(G Type Greased)
- LHSSD20H(H Type Greased)

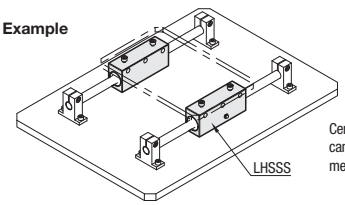
Alternative grease types available.

For Days to Ship, Price and Performance, refer to ☞ **P.272**

Days to Ship

6 Days ☞ **P. 87**

Example



Centering process and assembly labor cost can be reduced by using 1 long type or 1 medium long type, instead of 2 single types.

Shaft-sliding Linear Bushings with Housing Units
-Single / Double-

CAD Data

■For features of Shaft-sliding Linear Bushings with Housing Units, see below.

■**Single Type** RoHS

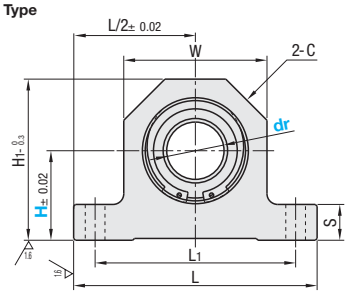


■**Double Type**

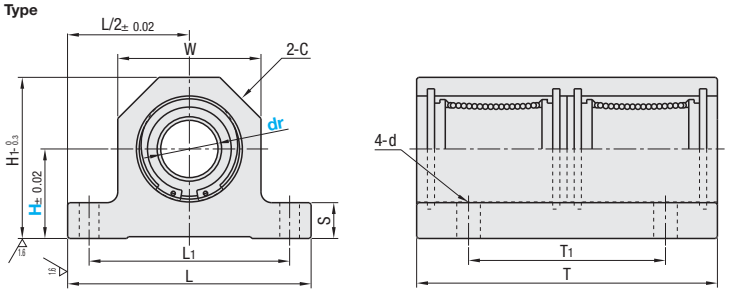


Type		Linear Bushings	Housing		Ambient Operating Temp.
Single	Double	(☞P.279)	M Material	S Surface Treatment	
LHGS	LHGW	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

Single Type



Double Type



For ball row details, see **P.279** The datum surface is located on the other side of product ID label. Allowable Static Moments: See ☞ **P.279, P.295**

Part Number Type	dr	H Selectable	L	H1	T Single	T Double	T1 Single	T1 Double	S	W	C	L1	d
(Single) LHGS	12	15 20 25	58	H+15	40	70	25	50	8	30	8.5	46	5.5
	16	20 25 30	68	H+20	47	84	30	55	10	40	11.5	56	5.5
(Double) LHGW	20	20 25 30	72	H+22	52	94	35	60	12	44	12.5	60	5.5
	25	25 30 40	90	H+27.5	69	128	50	90	15	55	16	75	6.6
	30	30 40 50	105	H+32.5	74	138	55	100	20	65	18	85	9

For linear bushings, hardened shafts with g6 tolerance are recommended. ☞ **P.107~195**

■Features of Shaft-sliding Linear Bushings with Housing Units

-As the height is selectable, there is no need to use Height Adjusting Spacers.
-As Spacers are not required, parts count and cost can be reduced.
-Can be easily screw mounted from above, suitable for shaft-sliding mechanisms.
-Compact specifications for space saving.

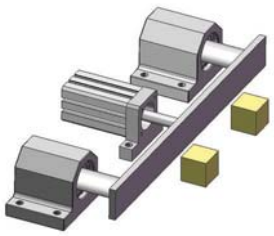
Price

■**Quantity Discount Price** (Round down to one Cent) **P. 87**

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity, please request a quotation.

Example ■Guide of cylinders for moving work piece



Part Number Type	dr	€ Unit Price H15	H20	H25	H30	H40	H50
(Single) LHGS	12						
	16						
	20						
	25						
	30						

Part Number Type	dr	€ Unit Price H15	H20	H25	H30	H40	H50
(Double) LHGW	12						
	16						
	20						
	25						
	30						

Order Example

Part Number	-	H
LHGS16	-	30
LHGW20	-	25
LHGS12L	-	15 (L Type Greased)
LHGW30G	-	30 (G Type Greased)
LHGW20H	-	25 (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to ☞ **P.272**

Days to Ship 6 Days ☞ **P. 87**

Linear Bushing and Housing Unit with Dowel Holes

-Tall Block Type Single / Double / Long Bushing Length-

CAD Data

For features of dowel hole type, see below.

■Single Type

RoHS



■Double Type



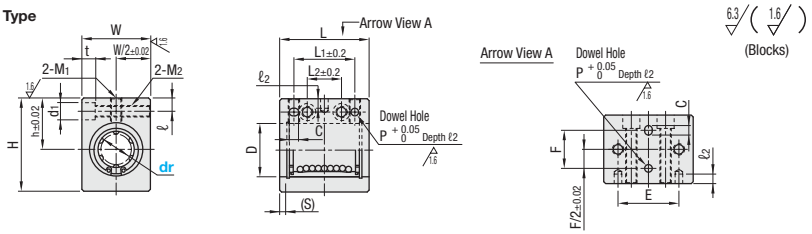
■Long Type



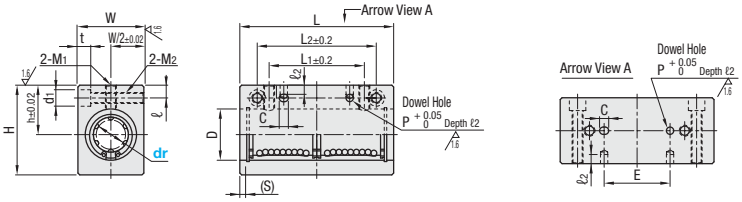
Type			Linear Bushings (☞P.279)	Housing		Ambient Operating Temp.
Single	Double	Long		M Material	S Surface Treatment	
LHSSN	LHSSWN	LHSSLN	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

- Inner surfaces of dowel holes are not anodized.
- For ball row details, see P.279
- The datum surface is located on the other side of product ID label.
- Allowable Static Moments: see P.279, P.295
- Dowel Pins MS / MSC shown P.2-243 are recommended.

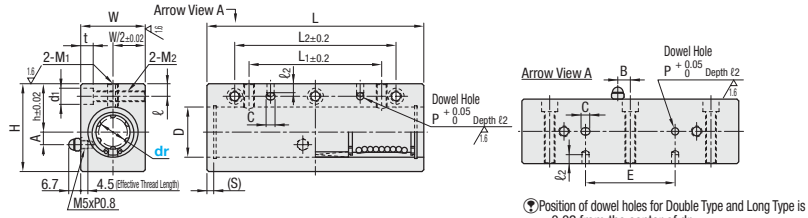
Single Type



Double Type Full length is approximately 2 times of single type and allowable moment is approximately 6 times.



Long Type Full length is approximately 2.5 times of single type and allowable moment is approximately 21 times.



Position of dowel holes for Double Type and Long Type is ± 0.02 from the center of dr.

Type	dr	Part Number Tolerance Single	Tolerance Double	Tolerance Long	D	(S)	L Single	L Double	L Long	L1 Single	L1 Double	L1 Long	L2 Single	L2 Double	L2 Long	h	W	H	ℓ	A	B	M1 (Effective length)	M2 (Effective length)	d1xt
LHSSN LHSSWN LHSSLN	8	0 -0.009	0 -0.010	-	15	3.0	32	56	-	20	30	-	10	42	-	16	20	26	5	-	-	M5 (8.5)	M4 (15)	6x5 (For M3 screws)
	10				19	4.0	39	68	-	27	36	-	15	50	-	19	26	32	6			M6 (9.5)	M5 (20)	8x6 (For M4 Screws)
	12				21		40	70	-			-			-	20	28	34					M5 (22)	
	13				23		42	74	-	28	42	-	16	55	-	25	30	43	7	7	7	M6 (13)	M6 (23)	9x7 (For M5 Bolt)
	(16)			0 -0.015	28	3.8	47	84	121	32	52	74	18	65	90	27	36	49					M6 (29)	
	(20)	0 -0.010	0 -0.012	0 -0.018	32	3.2	52	94	136	36	58	82	22	70	102	31	42	54	8	0	8	M8 (15)	M8 (34)	11x8 (For M6 screws)
	(25)				40		69	128	187	42	80	116		100	140	37	52	65	9		9	M10 (17)	M10 (42)	14x10 (For M8 Screws)
	(30)				45		74	138	202	44	90	128		110	152	40	58	71				M10 (17.5)	M10 (48)	

For linear bushings, hardened shafts with g6 tolerance are recommended. ☞P.107~195 Long Type is available in dr dimensions in ( ) only. Make certain that the screws do not interfere with the bushing as M1 are through holes.

Price

■Quantity Discount Price (Round down to one Cent) P. 87

-LHSSN

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-LHSSWN · LHSSLN

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

dr	€ Unit Price Single LHSSN	Double LHSSWN	Long LHSSLN
8			
10			
12			
13			
16			
20			
25			
30			

dr	Dowel Hole Dimensions P	C	ℓ2	E Single	E Double	E Long	F	Basic Load Rating C (Dynamic) N Single	C Double	C Long	Co (Static) N Single	Co Double	Co Long	Mass(g) Single	Mass(g) Double	Mass(g) Long
8	2.5	3.5	3	22	16	-	12	265	431	-	380	784	-	40	75	-
10	4	5	5	29	20	-	16	372	588	-	549	1100	-	80	150	-
12						-	18	412	657	-	598	1200	-	90	168	-
13				30	26	-	20	510	813	-	784	1570	-	132	248	-
16				32	36	50		775	1230	1230	1180	2350	2350	204	383	569
20				36	38	60		882	1400	1400	1370	2740	2740	272	520	788
25	5	6	6	42	58	90	26	980	1560	1560	1570	3140	3140	574	1120	1653
30				44	68	100	30	1570	2490	2490	2740	5490	5490	710	1384	2041

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Order Example

Part Number

LHSSN16

- LHSSWN20L (L Type Greased)
- LHSSN16G (G Type Greased)
- LHSSWN20H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to ☞P.272

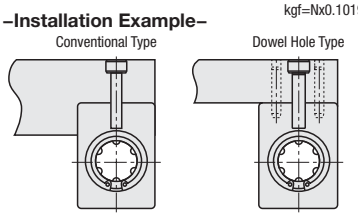
Days to Ship

6 Days ☞P87

■Features of Dowel Hole Type

- By the dowel holes provided on the mounting interface surface, locating work using the side datum surface can be eliminated. (See example on right)
- Machining work can be reduced for the top plate to be mounted on the block.

–Installation Example–



Linear Bushing and Housing Unit with Dowel Holes

-Wide Block Type Single / Double / Long Bushing Length-

CAD Data

For features of dowel hole type, see below.

Single Type

RoHS



Double Type



Long Type



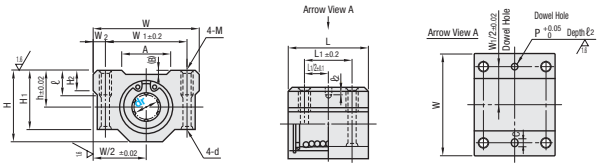
Type			Linear Bushings (☞P.279)	Housing		Ambient Operating Temp.
Single	Double	Long		M Material	S Surface Treatment	
LHBBN	LHBBWN	LHBBLN	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C

Features of Double Type
Body length is approximately 2 times of single type and allowable moment is approximately 6 times.

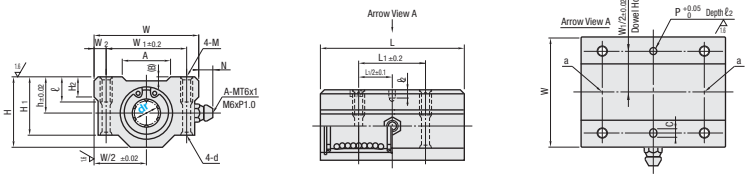
Features of Long Type
Body length is approximately 2.5 times of single type. Allowable moment is approximately 21 times.

6.3 (1.6) (Blocks)

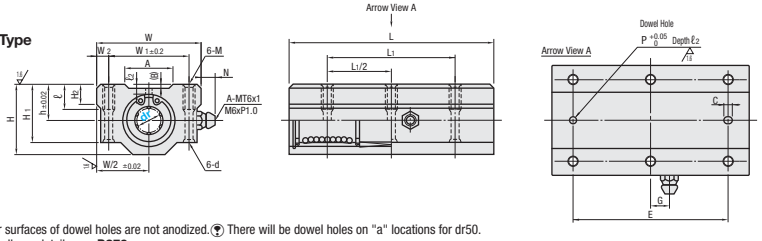
Single Type



Double Type



Long Type



For inner surfaces of dowel holes are not anodized. There will be dowel holes on "a" locations for dr50.
For ball row details, see **P.279**
The datum surface is located on the other side of product ID label.
Allowable Static Moments: see **P.279, P.296**
Dowel Pins MS / MSC shown **P.2 -243** are recommended.

Position of dowel hole for long type is ±0.02 to center of dr.

dr	Tolerance			L			L1			h	H	H1	H2	W	W1	W2	M	d	ℓ	A	(B)	N	G
	Single	Double	Long	Single	Double	Long	Single	Double	Long														
10	0 -0.009	0 -0.010	-	35	68	-	21	46	-	13	26	21	8	40	28	6	M5	4.3	12	15.5	0.4	7.5	-
12				36	70		26	50		15	28	24		42	30.5	5.75				17.5		7	
13				39	75						30	24.5		44	33	5.5				19			
(16)			0 -0.015	44	85	118	34	60	88	19	38.5	32.5	9	50	36	7				19.8	0.85	6.5	7
(20)	0 -0.010	0 -0.012	0 -0.018	50	96	134	40	70	100	21	41	35	11	54	40		M6	5.2		21	0.5	7.5	8
(25)				67	130	185	50	100	138	26	51.5	42	12	76	54	11	M8	7	18	36	1	4.5	9
(30)				72	140	200	58	110	150	30	59.5	49	15	78	58	10				39.9	0.75	5.5	
(35)	0 -0.012	0 -0.015	0 -0.021	80	155	220	60	120	170	34	68	54	18	90	70					53	1.5	6	10
(40)				90	175	250	60	140	190	40	78	62	20	102	80	11	M10	8.7	25	61		5.5	12
(50)				110	215	310	80	160	230	52	102	80	25	122	100					81			

For linear bushings, hardened shafts with g6 tolerance are recommended. ☞ **P.107~195** Long Type is available in dr dimensions in ( ) only.

Price

Quantity Discount Price (Round down to one Cent) **P. 87**

-LHBBN · LHBBWN

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

-LHBBLN

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

Part Number Type	dr	€ Unit Price Single LHBBN	Double LHBBWN	Long LHBBLN
LHBBN LHBBWN LHBBLN	10			
	12			
	13			
	16			
	20			
	25			
	30			
	35			
	40			
	50			

dr	Dowel Hole Dimensions P	ℓ2	C	E	Basic Load Rating C (Dynamic) N Single	Double	Long	Co (Static) N Single	Double	Long	Mass(g) Single	Double	Long
10	4	5	5	-	372	588	-	549	1100	-	92	180	-
12				-	412	657	-	598	1200	-	102	205	-
13				-	510	813	-	784	1570	-	120	240	-
16				88	775	1230	1230	1180	2350	2350	220	400	527
20	5	(5) 6	6	100	882	1400	1400	1370	2740	2740	255	570	682
25				138	980	1560	1560	1570	3140	3140	600	1200	1586
30				150	1570	2490	2490	2740	5490	5490	735	1480	1960
35				170	1670	2650	2650	3140	6270	6270	1100	2200	2974
40	6	7	7	190	2160	3430	3430	4020	8040	8040	1590	3200	4285
50				230	3820	6080	6080	7940	15900	15900	3340	6700	8620

ℓ2 of LHBBLN20 is 5.

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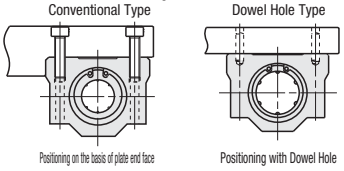
Order Example

Part Number
LHBBN10
LHBBWN20
LHBBWN20L (L Type Greased)
LHBBWN20G (G Type Greased)
LHBBWN20H (H Type Greased)
Alternative grease types available.
For Days to Ship, Price and Performance, refer to ☞ **P. 272**

Days to Ship

6 Days ☞ **P. 87**

-Installation Example-



Features of Dowel Hole Type

- By the dowel holes provided on the mounting interface surface, locating work using the side datum surface can be eliminated. (See example on left)
- Machining work can be reduced for the top plate to be mounted on the block.

Linear Bushing with Housing Units

-Wide Block Single / Medium Type-

Price Reduction

CAD Data

■Single Type RoHS



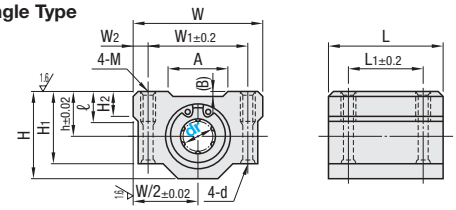
■Medium Type



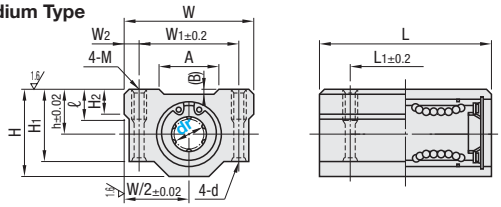
Type		Linear Bushings		Housing		Ambient Operating Temp.
Single Type	Medium Type	(P.279) Single	(P.281) Middle	M Material	S Surface Treatment	
LHBB	LHBBD	LMU	LMUD	Aluminum Alloy	Clear Anodizing	-20~80°C
LHBBF	-	LMUF	-			-20~110°C
SLHBB	-	SLMU	-			-20~80°C
SLHBBF	-	SLMUS	-			-20~110°C

6.3 (1.6) (Blocks)

Single Type



Medium Type



■Features of Medium Type

Body length is approximately 1.4 times of single type. Allowable moment is approximately 4.3 times. Suitable where there is no enough space for double type.

For ball row details, see P.279, 281

The datum surface is located on the other side of product ID label.

Allowable Static Moments: see P.279, 281

dr	Tolerance		L		L1		h	H	H1	H2	W	W1	W2	M	d	ℓ	A	(B)
	Single	Middle	Single	Middle	Single	Middle												
(5)	0 -0.008	-	18	-	12	-	7	14	11	-	22	16	3	M3	-	-	-	-
6	0 -0.009	0 -0.010	25	35	15	24	9	18	15	6	30	20	5	M4	3.4	8	12	0.4
8			30	43	18	28	11	22	18		34	24					16	
10			35	53	21	34	13	26	21	8	40	28	6	M5	4.3	12	15.5	
12			36		26	38	15	28	24		42	30.5	5.75				17.5	
13			39	54				30	24.5		44	33	5.5				19	0.85
16			44	63	34	48	19	38.5	32.5	9	50	36	7				19.8	
20	0 -0.010	0 -0.012	50	73	40	56	21	41	35	11	54	40		M6	5.2		21	0.5
25			67	93	50	66	26	51.5	42	12	76	54	11	M8	7	18	36	1
30			72	100	58	70	30	59.5	49	15	78	58	10				39.9	0.75
(35)	0 -0.012	-	80	-	60	-	34	68	54	18	90	70					53	1.5
(40)			90		60		40	78	62	20	102	80	11	M10	8.7	25	61	
(50)			110		80		52	102	80	25	122	100					81	

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 dr5 appearance will be different from the drawings above. dr( ) are available in Single Type only.

Price

■Quantity Discount Price (Round down to one Cent) P. 87

-LHBB

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated quantity, please request a quotation.

-LHBBD · LHBBF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

-SLHBB · SLHBBF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	Quotation		

For orders larger than indicated quantity, please request a quotation.

Part Number		€ Unit Price					dr	Basic Load Rating				Mass(g)	
		Single Type				Medium Type		C (Dynamic) N		Co (Static) N			
Type	dr	LHBB	LHBBF	SLHBB	SLHBBF	LHBBD		Single	Middle	Single	Middle	Single	Middle
	5						5	167	-	206	-	14	-
	6						6	206	226	265	310	34	48
(Single Type)	8						8	265	310	380	452	52	78
LHBB	10						10	372	508	549	718	92	142
LHBBF	12						12	412	634	598	814	102	144
SLHBB	13						13	510	640	784	826	120	172
SLHBBF	16						16	775	1164	1180	1448	220	323
	20						20	882	1554	1370	2068	255	382
	25						25	980	1725	1570	3068	600	866
(Medium Type)	30						30	1570	2440	2740	3974	735	1061
LHBBD	35						35	1670	-	3140	-	1100	-
	40						40	2160	-	4020	-	1590	-
	50						50	3820	-	7940	-	3340	-

kgf=Nx0.101972

Order Example

Part Number

LHBB12

LHBBD16

LHBB12L (L Type Greased)

LHBBD16G (G Type Greased)

LHBBD20H (H Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to P.272

Days to Ship

6 Days P. 87

2 Days

Linear Bushing with Housing Units
-Wide Block Double / Medium Long / Long-

Add. Spec.

Price Reduction

CAD Data

Double Type

RoHS



Medium Long Type

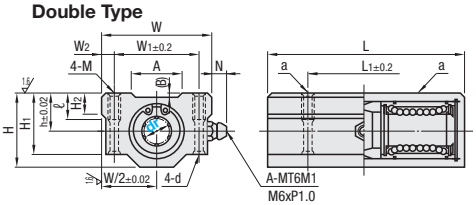


Long Type



Type			Linear Bushings (P.279)	Housing		Ambient Operating Temp.
Double	Medium Long	Long		M Material	S Surface Treatment	
LHBBW	LHBBS	LHBBL	LMU	Aluminum Alloy	Clear Anodizing	-20~80°C
LHBBWF	-	-	LMUF			-20~110°C
SLHBBW	-	-	SLMU			-20~80°C
SLHBBWF	-	-	SLMUS			-20~110°C

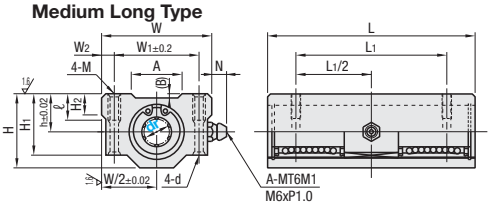
Double Type



(Blocks)

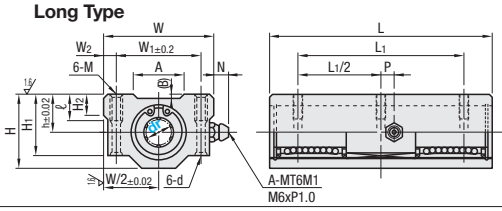
Features of Double Type
Body length is approximately 1.9 times of the type.
Allowable moment is approximately 6 times.

Medium Long Type



Features of Medium Long Type
Body length is approximately 2.2 times of the single type.
Allowable moment is approximately 10 times.
Suitable where there is not enough space for a long type.

Long Type



Features of Long Type
Body length is approximately 2.7 times of the single type.
Allowable moment is approximately 21 times.

For ball row details, see **P.279**
The datum surface is located on the other side of product ID label.
Allowable Static Moments: see **P.279, P.296**
There will be dowel holes on "a" locations for dr50.

dr	Tolerance			L			L1			h	H	H1	H2	W	W1	W2	M	d	ℓ	A	(B)	N	P
	Double	Medium Long	Long	Double	Medium Long	Long	Double	Medium Long	Long														
(5)	0 -0.008			33			25			7	14	11	-	22	16	3	M3	-	-	-	-	-	
(6)			-	48		-	36		-	9	18	15	6	30	20	5	M4	3.4	8	12	0.4	7.5	-
(8)		-		58	-		42	-		11	22	18		34	24					16			
10	0 -0.010		0 -0.012	68		93	46		70	13	26	21	8	40	28	6	M5	4.3	12	15.5		7	7
12				70		96	50		72	15	28	24		42	30.5	5.75				17.5			
13			0 -0.015	75		103			78		30	24.5		44	33	5.5				19	0.85	6.5	
*16		0 -0.015		85	100	118	60	74	88	19	38.5	32.5	9	50	36	7				19.8			
*20	0 -0.012	0 -0.018	0 -0.018	96	115	134	70	84	100	21	41	35	11	54	40		M6	5.2		21	0.5	7.5	8
*25				130	160	185	100	118	138	26	51.5	42	12	76	54	11	M8	7	18	36	1	4.5	9
*30				140	170	200	110	130	150	30	59.5	49	15	78	58	10				39.9	0.75	5.5	
(35)	0 -0.015	-	-	155	-	-	120	-	-	34	68	54	18	90	70					53	1.5	6	-
(40)				175			140			40	78	62	20	102	80	11	M10	8.7	25	61		5.5	
(50)				215			160			52	102	80	25	122	100					81			

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195 dr () is only available in Double Type, only sizes with * are available for Medium Long Type.
dr5 appearance will be different from the drawings above. Grease fitting not available on Double Type dr5.

Price

Quantity Discount Price (Round down to one Cent) P. 87

-LHBBW · LHBBL · LHBBWF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

-SLHBBW · SLHBBWF

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

-LHBBS

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity, please request a quotation.

Part Number		€ Unit Price					
		Double Type				Medium Long Type	Long Type
Type	dr	LHBBW	LHBBWF	SLHBBW	SLHBBWF	LHBBS	LHBBL
(Double) LHBBW LHBBWF SLHBBW SLHBBWF	5						
	6						
	8						
	10						
	12						
	13						
	16						
(Medium Long Type) LHBBS	20						
	25						
	30						
(Long Type) LHBBL	35						
	40						
	50						

dr	Basic Load Rating						Mass(g)		
	C (Dynamic) N			Co (Static) N					
	Double	Medium Long	Long	Double	Medium Long	Long	Double	Medium Long	Long
5	263	-	-	412	-	-	27	-	-
6	324	-	-	529	-	-	63	-	-
8	431	-	-	784	-	-	102	-	-
10	588	-	588	1100	-	1100	180	-	241
12	657	-	657	1200	-	1200	205	-	289
13	813	-	813	1570	-	1570	240	-	324
16	1230	1230	1230	2350	2350	2350	400	447	527
20	1400	1400	1400	2740	2740	2740	570	588	682
25	1560	1560	1560	3140	3140	3140	1200	1397	1586
30	2490	2490	2490	5490	5490	5490	1480	1693	1960
35	2650	-	-	6270	-	-	2200	-	-
40	3430	-	-	8040	-	-	3200	-	-
50	6080	-	-	15900	-	-	6700	-	-

Order Example

Part Number
LHBBW12
LHBBL16
LHBBW12L (L Type Greased)
LHBBW16G (G Type Greased)
LHBBL20H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.272

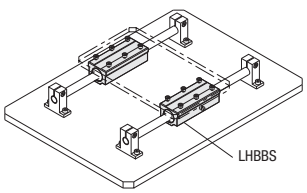
Days to Ship

6 Days
2 Days

P. 87

Example

Centering process and assembly labor cost can be reduced by using 1 long type or 1 medium long type, instead of 2 single types.



Linear Bushing and Housing Unit with Clamp Lever

-Tall Block Single / Double with Right / Left Clamp Lever-

CAD Data

■For features of the clamp lever type, see below.

RoHS

■Single
Right Lever Type



Left Lever Type



■Double
Right Lever Type

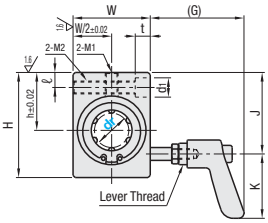


Left Lever Type

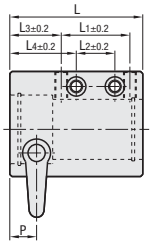


Type				Linear Bushing (☞P.279)	Housing		Collar · Thread	Clamp used Lever (☞P.1001)	Lever		Lever Thread	Operating Environment Temperature
Right Lever Type		Left Lever Type			M Material	S Surface Treatment	M Material		M Material	S Surface Treatment	M Material	
Single	Double	Single	Double									
LHSSC	LHSSWC	LHSLC	LHSLWC	LMU	Aluminum Alloy	Clear Anodized	1.4301/ X5CrNi18-10	CLFSC	Zinc Diecast	Baked Paint Finish	1.4305/ X10CrNiS18-9	-20~80°C

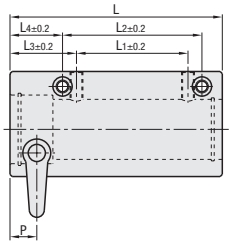
Right Lever Type



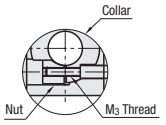
Single



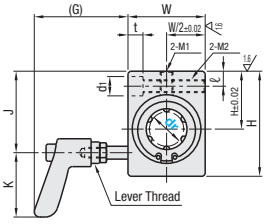
Double



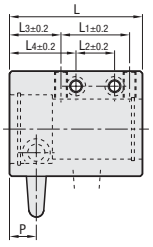
6.3 (1.6) (Blocks)



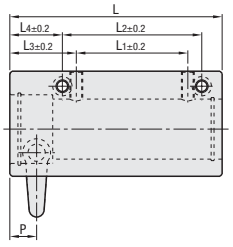
Left Lever Type

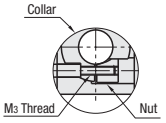


Single



Double





☞For ball row details, see **P.279**
☞The datum surface is located on the other side of product ID label.

The Linear Shaft is clamped by the internal nut as the lever is rotated.

Part Number				L		L1		L2		L3		L4		h	W	H	(G)	J	K	P	ℓ	M1 (Effective length)	M2 (Effective length)	M3	d1xt	Basic Load Rating				Mass(g)		€ Unit Price	
Type	dr	Tolerance																								C (Dynamic) N		Co (Static) N					
		Single	Double	Single	Double	Single	Double	Single	Double	Single	Double	Single	Double													Single	Double	Single	Double	Single	Double	Single	Double
LHSSC LHSLC LHSSWC LHSLWC	16	0 -0.009	0 -0.010	62	99	32	52	18		65	24	31	31	24.5	27	36	49	43.7	38	30	12.5	7	M6 (13)	M6 (29)	M4	9x7 (For M5 Bolt)	775	1230	1180	2350	347	526		
	20			67	109	36	58			70	23	33	32	27	31	42	54	40.7	44	30		8	M8 (15)	M8 (34)		11x8 (For M6 screws)	882	1400	1370	2740	438	686		
	25	0 -0.010	0 -0.012	86	145	42	80	22		100	30.5	41	40.5	31	37	52	65	45.7	53.5	30	13.5	9	M10 (17)	M10 (42)	M5	14x10 (For M8 Screws)	980	1560	1570	3140	841	1387		
	30			91	155	44	90			110	32		43		40	58	71	42.7	59	30			M10 (17.5)	M10 (48)			1570	2490	2740	5490	1015	1689		

☞For linear bushings, hardened shafts with g6 tolerance are recommended. ☞ **P.107~195**
☞Make certain that the screws do not interfere with the bushing as M1 are through holes.

kgf=Nx0.101972

■Features of Clamp Lever Type

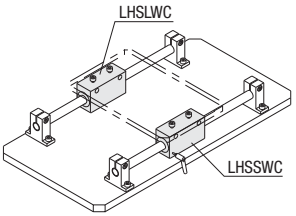
-Can be clamped easily at any desired position.
-Costs less than users making up a similar device with multiple components.
-Can reduce parts count and assembly steps.

■Maximum thrust load ☞P.307

■Precautions for Use

-For installation, loosen a lever until the nut does not interfere with the shaft, then insert the shaft.
-Do not tighten the lever without inserting the shaft. The linear bushing may be deformed and become unusable.
-Do not use as safety stoppers.

ex Example



Order Example

Part Number

LHSSC16
LHSLC16L (L Type Greased)
LHSSC16G (G Type Greased)
LHSLC20H (H Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to ☞ **P.272**

Days to Ship **6 Days** ☞ **P.87**

Price

■Quantity Discount Price (☞Round down to one Cent) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

☞For orders larger than indicated quantity, please request a quotation.

Linear Bushing and Housing Unit with Clamp Lever

-Wide Block Single / Double with Right / Left Clamp Lever-

CAD Data

■For features of the clamp lever type, see below.

RoHS

■Single
Right Lever Type



Left Lever Type



■Double
Right Lever Type



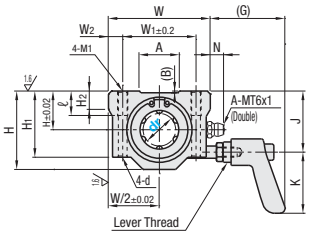
Left Lever Type



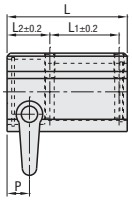
Type				Linear Bushing (☞P.279)	Housing		Collar / Thread	Clamp used Lever (☞P.2-1001)	Lever		Lever Thread	Operating Environment Temperature
Right Lever Type		Left Lever Type			M Material	S Surface Treatment	M Material		M Material	S Surface Treatment	M Material	
Single	Double	Single	Double									
LHBBC	LHBBWC	LHBLC	LHBLWC	LMU	Aluminum Alloy	Clear Anodized	1.4301/ X5CrNi18-10	CLFSC	Zinc Diecast	Baked Paint Finish	1.4305/ X10CrNiS18-9	-20~80°C

6.3 (1.6) (Blocks)

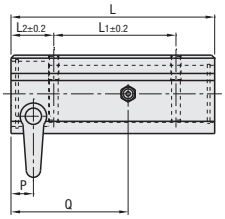
Right Lever Type

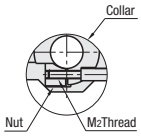


Single

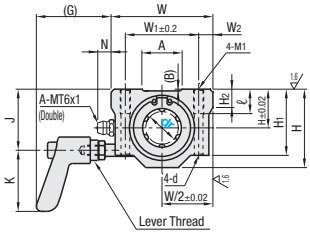


Double

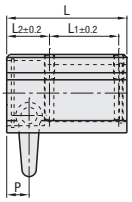




Left Lever Type



Single



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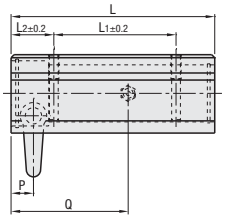
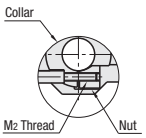




☞For ball row details, see **P.279**
☞The datum surface is located on the other side of product ID label.

The Linear Shaft is clamped by the internal nut as the lever is rotated.

Part Number				L		L1		L2		h	H	H1	H2	W	W1	W2	M1	M2	d	ℓ	A	(B)	(G)	J	K	P	N *	Q *	Basic Load Rating C (Dynamic) N		Co (Static) N		Mass(g)		€ Unit Price	
Type	dr	Tolerance																																			
		Single	Double	Single	Double	Single	Double	Single	Double																				Single	Double	Single	Double	Single	Double	Single	Double
LHBBC LHBLC LHBBWC LHBLWC	16	0 -0.009	0 -0.010	59	100	34	60	21	21	19	38.5	32.5	9	50	36	7	M5	M4	4.3	12	19.8	0.05	36.7	30	30	11	6.5	57.5	775	1230	1180	2350	358	538		
	20			69	111	40	70	24	23	21	41	35	11	54	40		M6		5.2		21	0.5	34.7	34		11.5	7.5	63	882	1400	1370	2740	420	725		
	25	0 -0.010	0 -0.012	85	148	50	100	26.5	27	26	51.5	42	12	76	54	11	M8	M5	7	18	36	1	33.7	42.5		13.5	4.5	83	980	1560	1570	3140	865	1465		
	30			90	158	58	110	25	27	30	59.5	49	15	78	58	10					39.9	0.75	32.7	49		5.5	88	1570	2490	2740	5490	1039	1784		

☞For linear bushings, hardened shafts with g6 tolerance are recommended. ☞**P.107~195**
☞Make certain that the screws do not interfere with the bushing as M1 are through holes.

* Only available in Double Type.

kgf=Nx0.101972

■Features of Clamp Lever Type

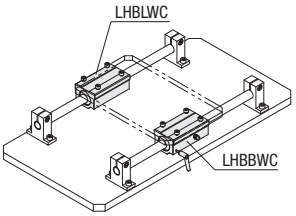
-Can be clamped easily at any desired position.
-Costs less than users making up a similar device with multiple components.
-Can reduce parts count and assembly steps.

■Maximum thrust load ☞P.307

■Precautions for Use

-For installation, loosen a lever until the nut does not interfere with the shaft, then insert the shaft.
-Do not tighten the lever without inserting the shaft. The linear bushing may be deformed and become unusable.
-Do not use as safety stoppers.

Example



Order Example

Part Number

LHBBC16
●**LHBLC20L** (L Type Greased)
●**LHBBC16G** (G Type Greased)
●**LHBLC20H** (H Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to ☞**P.272**

Days to Ship **6 Days** ☞P.87

Price

■Quantity Discount Price (☞Round down to one Cent) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

☞For orders larger than indicated quantity, please request a quotation.

Flanged Linear Bushing with Clamp Lever

-Flanged Single / Double with Right / Left Clamp Lever-

CAD Data

For features of clamp lever type, see below.

Single
Right Lever Type



Left Lever Type



Double
Right Lever Type



Left Lever Type

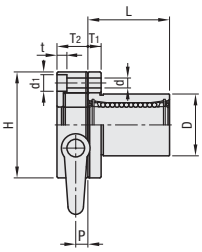


RoHS

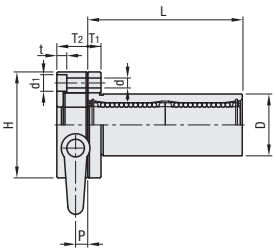
Type				Outer Cylinder			Steel balls	Retainer	Collar Holder		Collar · Lever Screw		Lever		Thread	Operating Environment Temperature
Right Lever Type		Left Lever Type		M Material	H Hardness	S Surface Treatment	M Material	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	
Single	Double	Single	Double													
LHRC	LHRCW	LHRLC	LHRLCW	1.3505/ 100Cr6	58HRC~	-	1.3505/ 100Cr6	Plastic (Duracon M90 equivalent)	Aluminum Alloy	Clear Anodized	1.1191/ C45E	Electroless Nickel Plating	Zinc Diecast	Baked Paint Finish	1.4301/ X5CrNi18-10	-20~80°C
LHRCM	LHRCWM	LHRLCM	LHRLCWM			Electroless Nickel Plating	1.4125/ equivalent									

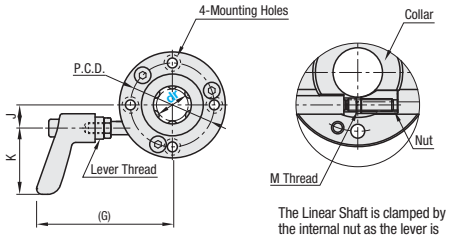
Right Lever Type

Single



Double

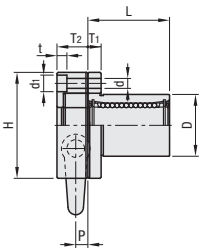




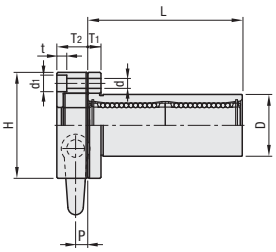
The Linear Shaft is clamped by the internal nut as the lever is rotated.

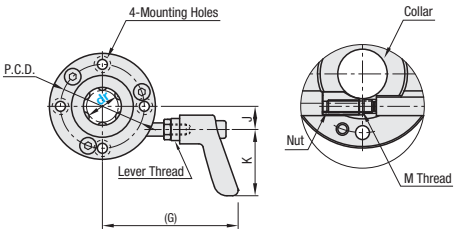
Left Lever Type

Single



Double





For ball row details, see **P.279**

Part Number Type	dr	Tolerance Single	Tolerance Double	D Tolerance Surface Treatment No	D Tolerance Surface Treatment Yes	L Single	L Single Tolerance	L Double	L Double Tolerance	H	T1	T2	d	d1	t	P.C.D.	(G)	J	K	P	M	Eccentricity Single	Eccentricity Double	* Perpendicularity Single	* Perpendicularity Double
Single Double (Right Lever Type) LHRC LHRCW LHRCM LHRCWM (Left Lever Type) LHRLC LHRLCW LHRLCM LHRLCWM	16	0 -0.009	0 -0.010	28	0 -0.016	0 -0.021	37	±0.3	70	±0.3	48	6	14	4.5	7.5	4.5	38	(62)	10.5	30	5.5	4	0.012	0.015	0.012	0.015
	20	0 -0.010	0 -0.012	32	0 -0.019	0 -0.025	42		80		54	8		5.5	9	5.5	43	(63.2)	12.5			5	0.015	0.020	0.015	0.020
	25			40			59		112		62						51	(70.7)	16							
	30			45			64		123		74	10		6.6	11	6.1	60	(73.5)	18.5							

For linear bushings, hardened shafts with g6 tolerance are recommended. P.107~195

* Perpendicularity of D part to flange mounting surface kgf=Nx0.101972

dr	Max. Thrust Load N Greased	Max. Thrust Load N Tightening Torque (Nm)	Basic Load Rating Single C (Dynamic) N	Basic Load Rating Single Co (Static) N	Basic Load Rating Double C (Dynamic) N	Basic Load Rating Double Co (Static) N	Mass(g) Single	Mass(g) Double	€ Unit Price LHRC LHRLC	€ Unit Price LHRCM LHRLCM	€ Unit Price LHRCW LHRLCW	€ Unit Price LHRCWM LHRLCWM
16	250	1.5	775	1180	1230	2350	217	289				
20	250	1.5	882	1370	1400	2740	324	406				
25	250	3	980	1570	1560	3140	553	757				
30	500	3	1570	2740	2490	5490	683	901				

Maximum thrust load is a reference.

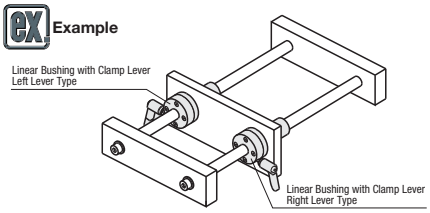
Features of Clamp Lever Type

- -Can be clamped easily at any desired position.
- -Costs less than users making up a similar device with multiple components.
- -Can reduce parts count and assembly steps.

Precautions for Use

- -For installation, loosen a lever until the nut does not interfere with the shaft, then insert the shaft.
- -Do not tighten the lever without inserting the shaft. The linear bushing may be deformed and become unusable.
- -Do not use as safety stoppers.

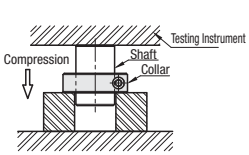
Example



Max. Thrust Load Test Method

The collar is tightened to torque value(s) shown in the chart, then compressive load is applied with the tester. The compressive load where the shaft begins to move is defined as the Max. Thrust Load.

*Max. thrust load of greased linear bushings was tested.



Order Example

Part Number

LHRC16

- LHRC16L (L Type Greased)
- LHRC16G (G Type Greased)
- LHRC16H (H Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to P.272

Days to Ship 6 Days P. 87

Price

Quantity Discount Price (Round down to one Cent) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%
Days to Ship	Standard	Quotation	

For orders larger than indicated quantity, please request a quotation.

Linear Ball Bushings / Flanged Linear Ball Bushings

-Single / Double- -Single / Double-

CAD Data

■Linear Ball Bushings



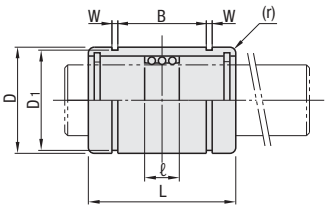


RoHS

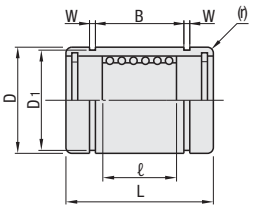
Type	Type	Outer Cylinder		Steel balls	Retainer	Ambient
		M Material	H Hardness	M Material	M Material	Operating Temp
Single	LBUS	1.3505/ 100Cr6	58HRC~	1.3505/ 100Cr6	EN AW-5052/ AlMg2,5	-20~110°C
Double	LBUW					
Single	SLBUS	1.4125/ equivalent	56HRC~	1.4125/ equivalent		-20~120°C
Double	SLBUW					

*Retaining Rings
LBUS · LBUW
M Material: 1.1525/C80W1
S Surface Treatment: Black Oxide
SLBUS · SLBUW
M Material: 1.4319/X3CrNiN17-8

Single



Double





Part Number Type	dr	Tolerance	Maximum Stroke Single	Maximum Stroke Double	of Ball Rows Single	of Ball Rows Double	ℓ Single	ℓ Double	D	D Tolerance	L	L Tolerance	B	B Tolerance	W	D1	(r)	Basic Load Rating C (Dynamic) N Single	Basic Load Rating C (Dynamic) N Double	Basic Load Rating Co (Static) N Single	Basic Load Rating Co (Static) N Double	Mass(g) Single	Mass(g) Double	€ Unit Price LBUS	€ Unit Price SLBUS	€ Unit Price LBUW	€ Unit Price SLBUW
Single LBUS SLBUS	5	0 -0.008	13	6	3	6	5.9	9.4	10	0 -0.009	15	0 -0.12	8	0 -0.4	1.1	9.6	0.4	131	209	106	212	4	5				
	6	0 -0.009	15	7			8.3	12.3	12	0 -0.011	19	0 -0.2	11.3			11.5		210	333	164	328	8	8				
	8		24	8			8.8	16.8	15		24		15.3			14.3		323	512	278	556	15	17				
Double LBUW SLBUW	10		30	8			10.8	21.8	19	0 -0.013	29		19.4		1.3	18	0.8	499	793	408	815	30	33				
	12		32	8			10.4	22.4	21		30		20.4			20		722	1146	579	1157	32	36				
	13		34	10			11.4	23.4	23		32		20.4			22		773	1226	634	1268	45	49				
	16		40	16			12.8	24.8	28		37		23.3		1.6	27		1330	2112	1029	2058	72	79				
	20	0 -0.010	46	28			14.8	23.8	32	0 -0.016	42		27.3			30.5		1609	2554	1517	3035	94	102				

Flange Type Height-adjusting Spacers can be select from P.288

kgf=Nx0.101972

■Flanged Linear Ball Bushings



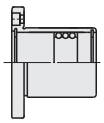


RoHS

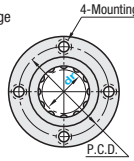
Type	Type			Outer Cylinder		Steel balls	Retainer	Ambient
	Round Flange	Square Flange	Compact Flange	M Material	H Hardness	M Material	M Material	Operating Temp
Single	LBHR	LBHS	LBHC	1.3505/100Cr6	58HRC~	1.3505/100Cr6	EN AW-5052/ AlMg2,5	-20~110°C
Double	LBHRW	LBHSW	LBHCW					

*Retaining Rings
M Material: 1.1525/C80W1
S Surface Treatment: Black Oxide

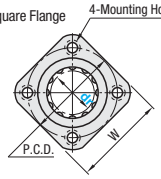
Single Type



Round Flange

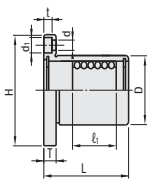


Square Flange

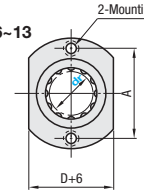


Double Type

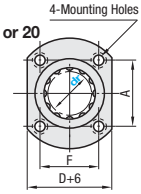
Compact Flange



dr=6~13



dr=16 or 20



dr Tolerance	Maximum Stroke Single	Maximum Stroke Double	of Ball Rows Single	of Ball Rows Double	ℓ1 Single	ℓ1 Double	D	D Tolerance	L	L Tolerance	H	T	d	d1	t	P.C.D.	W	F	A	Eccentricity	* Perpendicularity	Basic Load Rating C (Dynamic) N Single	Basic Load Rating C (Dynamic) N Double	Basic Load Rating Co (Static) N Single	Basic Load Rating Co (Static) N Double
6	15	7	3	6	8.3	12.3	12	0 -0.011	19	±0.3	28	5	3.5	6	3.1	20	22	-	20	0.012	0.012	210	333	164	328
8	24	8			8.8	16.8	15		24		32					24	25		24			323	512	278	556
10	30	8			10.8	21.8	19	0 -0.016	29		40	6	4.5	7.5	4.1	29	30		29			499	793	408	815
12	32	8			10.4	22.4	21		30		42					32	32		32			722	1146	579	1157
13	34	10			11.4	23.4	23		32		43					33	34		33			773	1226	634	1268
16	40	16			12.8	24.8	28		37		48					38	37	22	31			1330	2112	1029	2058
20	46	28			14.8	23.8	32	0 -0.019	42		54	8	5.5	9	5.1	43	42	24	36	0.015	0.015	1609	2554	1517	3035

■Single

Part Number Type	dr	€ Unit Price LBHR	€ Unit Price LBHS	€ Unit Price LBHC	Mass(g) Round	Mass(g) Square	Mass(g) Compact
LBHR LBHS LBHC	6				23	17	20
	8				41	33	37
	10				71	51	63
	12				67	48	59
	13				87	71	80
	16				119	103	111
	20				176	141	163

■Double

*Perpendicularity of D to flange mounting surface

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Part Number Type	dr	€ Unit Price LBHRW	€ Unit Price LBHSW	€ Unit Price LBHCW	Mass(g) Round	Mass(g) Square	Mass(g) Compact
LBHRW LBHSW LBHCW	6				24	18	21
	8				43	35	39
	10				74	54	66
	12				71	52	63
	13				91	75	84
	16				126	110	118
	20				184	149	171

Order Example

Part Number: LBHR10

Days to Ship: 6 Days P. 87 2 Days

Price

■Quantity Discount Price (Round down to one Cent.) P. 87

•LBUS · LBUW

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

•Others

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		Quotation	

For orders larger than indicated quantity, please request a quotation.

■Features

-Motion mechanism utilizing rolling balls, capable of linear and rotary motion.
-The bearing balls and the rolling surface are in point contact relationship enabling low friction rolling motion.
-Compatible with linear bushings, and load is evenly distributed.
-O.D. tolerance g6 shafts can be used with the linear ball bushings. P.107~195
When using preloaded, O.D. tolerance h5 shafts are recommended.

■Precautions for Use

-Since the balls do not recirculate, its stroke capability is finite.

Ball Splines Overview

Guideline for Products

Max. 40% Price Reduction (compared with products of part number)

Specified in 1 mm increments, short lead time.

A wide variety of shaft end configurations

68,10 EUR~

10th day shipping

9 Shapes (Alteration is available)

Structure

Ball spline is a linear motion mechanism with infinite linear motion travels of a nut on a spline shaft.
It can bear radial loads and rotational torque simultaneously due to the structure where balls within a nut roll smoothly.

Features

1 Capable of highly accurate linear motion

Applying preload makes ball splines capable of highly accurate linear motion.

2 Capable of transmission of torque

Rotary motion of balls on grooves of spline shaft makes ball spline capable of linear motion while transmitting torque.

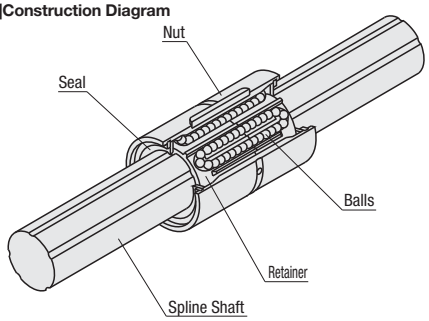
3 Capable of changing into compact design

Ability to transmit torque makes ball spline capable of guiding by single shaft.

4 High load capability and long life

High load capacity and long running life due to presence of grooves of splines on the surface where loads are applied.

■Construction Diagram



Balls do not fall out even if the spline shaft is pulled out.

Comparison of Characteristics with Other Linear Motion Mechanism

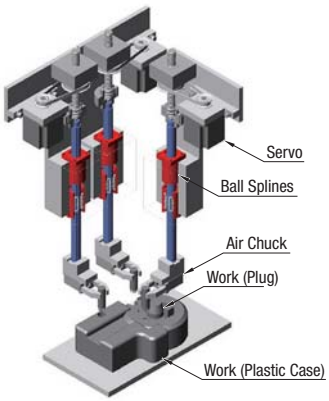
Ball splines are used in many machine applications requiring linear motion and rotary motion for space saving, cost, and weight advantages.

Linear Motion Mechanism	Ball Splines	Linear Bushings	Linear Guides
Radial Load	○	△	◎
Rotational torque	○	X	X
Cost	○	◎	△
Mass	◎	◎	△

Application Examples

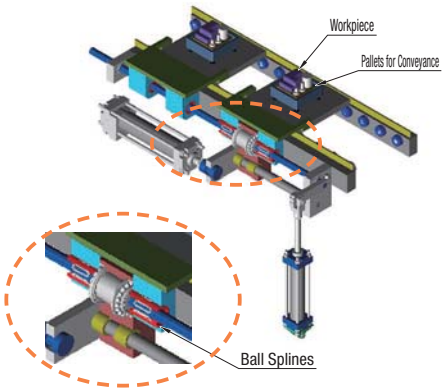
1 Pick and Place Application

For linear and rotational motions of each axis are needed in space-savings, ball splines capable of linear motion and torque transmission are effective.

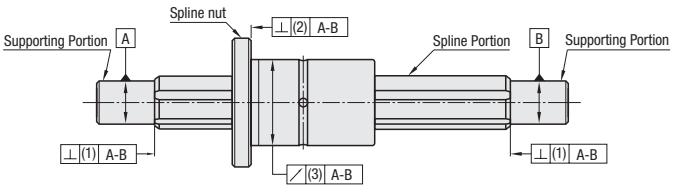


2 Work Transfer Mechanism

Space saving designs are made possible by a Ball Spline capable of torque transmitting and guiding in a single shaft package.



Accuracy



Reference: Supporting portion is the part to mount the bearing and support the spline shaft.

■Spline Shaft: Raceway Twist Tolerance (Max.)

Unit: μm

Material	Tolerance
1.3505/100Cr6	13
1.4125/X105CrMo17	33

Spline groove twist is measured at an arbitrary 100mm section of the effective shaft length.
If the length to be evaluated is longer or shorter than 100mm, proportionally add or subtract from the standard values in the table.

■Rotational Clearance Unit: μm

No.	Standard Preload 1.3505/100Cr6	Standard Preload 1.4125/X105CrMo17
6	-2~+1	-1~+4
8		
10	-3~+1	-2~+5
13		
16		
20	-4~+2	-
25		
30		

■Tolerance (max) of accuracies against spline shaft supporting portions. Unit: μm

No.	(1) Spline Portion Perpendicularity of End Face of the Shafts	(2) Flange face Perpendicularity
6	9	11
8		
10		
13	11	13
16		
20		
25	13	16
30		

Spline Shaft	(3) Max. radial runout of spline nut outer surface against spline shaft supporting axis.			
Full Length	No.6 • 8	No.10	No.13 • 16	No.20 • 25 • 30
~ 200	46 (72)	36 (59)	34 (56)	32
201~ 315	89	54 (83)	45 (71)	39
316~ 400	126	68 (103)	53 (83)	44
401~ 500	163	82	62	50
501~ 630	-	102	75	57
631~ 800	-	-	-	68
801~1000	-	-	-	83
1001~1150	-	-	-	102

Values in ( ) are for 1.4125/X105CrMo17.

Calculation of Life Span

Running Life

- Radial Load

$$L=\left(\frac{ft\cdot fh\cdot fp}{fw}\cdot\frac{Cr}{F}\right)^3\cdot L_0$$

- Torque Load

$$L=\left(\frac{ft\cdot fh}{fw}\cdot\frac{Ct}{T}\right)^3\cdot L_0$$

L: Running Life	(km)
Cr: Basic Dynamic Radial Load Rating	(N)
CT: Basic Dynamic Torque	(Nm)
F: Applied Radial Load	(N)
T: Applied Torque	(Nm)
LO: Rated Life	(50km)

Life Hours

$$Lh=\frac{10^6\cdot L}{120\cdot St\cdot n}$$

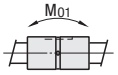
Lh: Running Time	(hr)
L: Running Life	(km)
ST: Stroke Length	(mm)
n: Reciprocating cycles per Minute	(cpm)

For values and factors, see below.

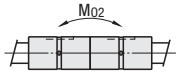
■Load Rating

No.	Basic Rated Torque Dynamic Ct Nm	Basic Rated Torque Static Cot Nm	Basic Load Rating Dynamic C kN	Basic Load Rating Static Co kN	Allowable Static Moment Mo1 Nm	Allowable Static Moment Mo2 Nm
6	3.8	7	1.2	2.1	5	36
8	4.8	8.7	1.2	2.1	5	36
10	19	34	3.8	6.9	26	181
13	28	52	4.6	8.3	36	251
16	51	93	6.2	11.1	56	386
20	85	154	8.5	15.3	83	611
25	193	348	15.4	27.7	173	1248
30	272	490	18.5	33.3	212	1581

Allowable static moment M01, M02

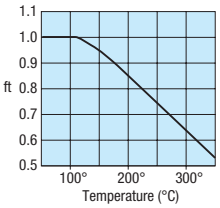


Cases of use when 1 nut is closely stuck to each other

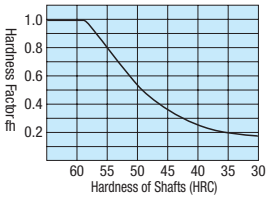


Cases of use when 2 nuts are closely stuck to each other

■Temperature Factor (ft)



■Hardness Factor (fh)



■Load Factor (fw)

Conditions of Use	Load Factor (fw)
Minimal vibrations / shocks, Low speed 15m/min. or less	1.0~1.2
Some vibrations / shocks, Medium speed 60m/min. or less	1.2~2.0
Significant vibrations / shocks, High speed over 60m/min.	2.0~3.5

Operating Environment

Lubrication

Ball splines are shipped greased.
Administer lubrication maintenance as needed.

Operating Temp.

Plastic components are used in ball spline assemblies.
Avoid usage in high temperature environments, keep below 80°C.

Installation Precautions

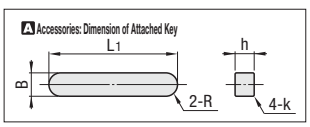
■Shaft Fits

An H7 tolerance is recommended for mating bores for the spline nuts.

■Dimension of Key (Included)

No.	B	Tolerance μm	h	Tolerance μm	L1	R
6	2.5	+16 +6	2.5	0 -25	10.5	1.25
8					10.5	
10	3		3		17 (14)	1.5
13					17 (14)	
16	3.5	+24 +12	3.5	0 -30	18 (18)	1.75
20	4		4		29	2
25					33	2.0
30				0 -36	42	3.5

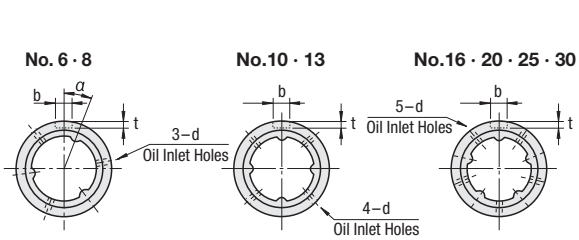
Values in ( ) are for 1.4125/X105CrMo17.

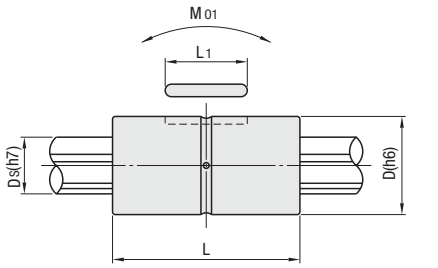


Ball Spline Nuts / Alteration Guide

CAD Data

Straight Nuts





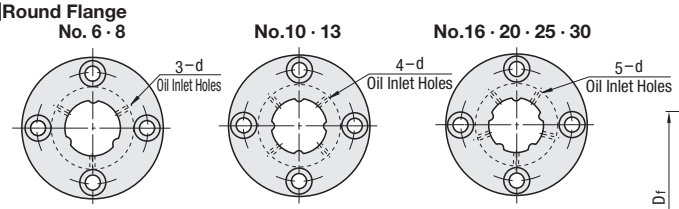
Nut M Material: 1.7242/16CrMo4 equivalent H Hardness: 60HRC~
(1.4125/X105CrMo17 equivalent for Stainless Steel, Hardness 55HRC~)

No.	D (h6)	L	b	Tolerance μm	t+0.05 0	L1	d	Ds (h7)	α	Cross Sectional Moment of Inertia mm⁴	Mass (Reference) Nut kg	Mass (Reference) Shaft kg/m
6	14	25	2.5	+14 0	1.2	10.5	1.5	6	15°	6.2 x10	0.23	0.23
8	16							8	25°	$1.97x10^2$	0.39	0.39
10	21	40 (33)	3		1.5	17(14)		10.4	-	$5.57x10^2$	0.06	0.65
13	24	44 (36)						13.4		$1.55x10^3$	0.07	1.11
16	31	50	3.5	+18 0	2	18		16.6		$3.61x10^3$	0.15	1.65
20	35	63	4		2.5	29	2	20.6		$8.74x10^3$	0.20	2.57
25	42	71				33		25.8		$2.13x10^4$	0.29	4.04
30	47	80				42	2.5	30.8		$4.373x10^4$	0.37	5.85

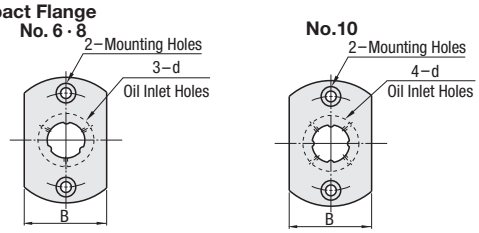
Purple letters denote dimensions changed from the previous products.

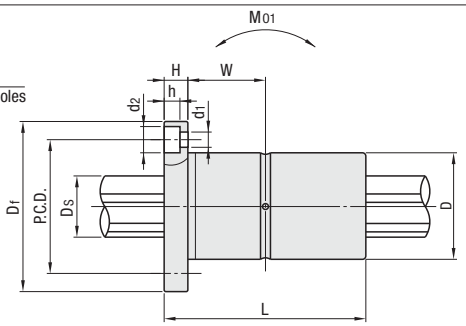
Flanged Nuts

Round Flange



Compact Flange





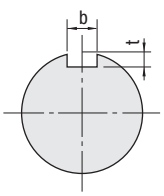
Nut M Material: 1.7242/16CrMo4 equivalent H Hardness: 60HRC~
(1.4125/X105CrMo17 for Stainless Steel, Hardness 55HRC~)

No.	D (h6)	L	Df	H	P.C.D.	d1	d2	h	W	d	B	Ds (h7)	Cross Sectional Moment of Inertia mm⁴	Mass (Reference) Nut kg	Mass (Reference) Shaft kg/m
6	14	25	30	6	22	3.5	6	3.1	6.5	1.5	18	6	6.2 x10	0.03	0.23
8	16		32		24						21	8	$1.97x10^2$	0.04	0.39
10	21	40 (33)	42 (41)	6 (8)	32 (30)	4.5	8	4.4 (5.3)	14(8.5)		25	10.4	$5.57x10^2$	0.09	0.65
13	24	44 (36)	44 (45)	7 (8)	33 (34)				15(10)		-	13.4	$1.55x10^3$	0.11	1.11
16	31	50	51	7	40			4.4	18			16.6	$3.61x10^3$	0.20	1.65
20	35	63	58	9	45	5.5	9.5	5.4	22.5	2		20.6	$8.74x10^3$	0.30	2.57
25	42	71	65		52				26.5			25.8	$2.13x10^4$	0.40	4.04
30	47	80	75	10	60	6.6	11	6.5	30	2.5		30.8	$4.373x10^4$	0.57	5.85

Purple letters denote dimensions changed from the previous products.

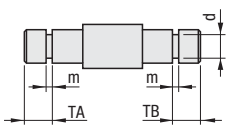
Alteration Guide

Dimensions of key grooves on shaft ends (P · Q)



P and Q	b	Tolerance (N9)	t	Tolerance
8 or 10	3	-0.004 -0.029	1.8	+0.1 0
12	4	0 -0.030	2.5	
13~16	5		3.0	
20	6		3.5	
25	8	0 -0.036	4.0	+0.2 0

Dimensions of the retaining ring groove on shaft ends (P and Q)



P · Q Tolerance	m	Tolerance	d	Tolerance	Applicable Retaining Ring
6	0 -0.012	0.7	+0.1 0	5.05	+0.075 0	JIS E Type 5
8	0 -0.015	0.9		6.05		JIS E Type 6
10		1.15	+0.14 0	9.6	0 -0.09	JIS C Type 10
12				11.5	0 -0.11	JIS C Type 12
13	0 -0.018			12.4		JIS C Type 13
15				14.3		JIS C Type 15
16				15.2		JIS C Type 16
20	0 -0.021	1.35		19	0 -0.21	JIS C Type 20
25				23.9		JIS C Type 25

Ball Splines
-Standard Type-

Part Number & Spec.Change Printed in Purple

CAD Data

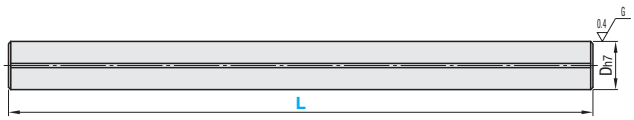
■Some product specifications and model numbers have been revised, and re-introduced in order to realize price reductions.

■Standard Type RoHS





Standard Type	Spline Shaft M Material 1.3505/100Cr6 or equivalent Nuts M 1.7242/16CrMo4 or equivalent H Hardness: 58HRC~				M 1.4125/X105CrMo17 equivalent H Hardness: 55HRC~	
	Nut 1 pc.		Nut 2 pcs.		Nut 1 pc.	
	L Dimension Selectable	L Dimension Configurable	L Dimension Selectable	L Dimension Configurable	L Dimension Selectable	L Dimension Configurable
With Straight Nut	BSSS	BHSS	BSS2S	BHS2S	BESKSS	BASKSS
With Round Flange Nut	BSSM	BHSM	BSS2M	BHS2M	BESKFS	BASKFS
With Compact Flange Nut	BSSN	BHSN	BSS2N	BHS2N	-	-





Accuracy P.310 Dimension details of included nut P.311

■Standard L Dimension Selectable Type

Part Number Type	No.	L Selectable	D
BSSS BSSM BSSN	*6	150* 200* 300 400	6
	*8	150* 200* 300 400	8
	*10	150 200* 300* 400 500 600	10.4
BSS2S BSS2M BSS2N BESKSS BESKFS	13	150 200* 300* 400 500 600	13.4
	16	150 200* 300* 400 500 600	16.6
	20	150 200 300 400 500 600 700	20.6
	25	150 200 300 400 500 600 700 800 900	25.8
	30	150 200 300 400 500 600 700 800 900 1000 1150	30.8

Only * marked sizes are available for BHSN and BHSS2N.
Only * marked sizes are available for BESKSS and BESKFS.

■Standard L Dimension Configurable

Part Number Type	No.	L 1mm Increment 1-Nut Type	L 1mm Increment 2-Nut Type	D
BHSS BHSM BHSN	*6	60~400 (200)	60~400	6
	*8	60~400 (200)	60~400	8
	*10	60~600 (350)	90~600	10.4
BHS2S BHS2M BHS2N BASKSS BASKFS	13	60~600 (350)	100~600	13.4
	16	70~600 (350)	110~600	16.6
	20	80~ 700	130~700	20.6
	25	90~ 900	150~900	25.8
	30	100~1150	170~1150	30.8

Only * marked sizes are available for BHSN and BHS2N.
Max. L dimension of BASKSS and BASKFS is in ( ).

Price

Part Number Type	No.	€ Unit Price L150	L200	L300	L400	L500	L600	L700	L800	L900	L1000	L1150
BSSS BSS2S Price of BSS2S is BSSS+price list below	6											
	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSSM BSS2M Price of BSS2M is BSSM+price list below	6											
	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSSN BSS2N Price of BSS2N is BSSN+price list below	6											
	8											
	10											

Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BHSS BHS2S Price of BHS2S is BHSS+price list below	6											
	8											
	10											
	13											
	16											
	20											
	25											
	30											
BHSM BHS2M Price of BHS2M is BHSM+price list below	6											
	8											
	10											
	13											
	16											
	20											
	25											
	30											
BHSN BHS2N Price of BHS2N is BHSN+price list below	6											
	8											
	10											

Part Number Type	No.	€ Unit Price L150	L200	L300
BESKSS	6			
	8			
	10			
	13			
	16			
BESKFS	6			
	8			
	10			
	13			
	16			

Part Number Type	No.	€ Unit Price Min.L~100	L101~150	L151~200	L201~250	L251~300	L301~350
BASKSS	6						
	8						
	10						
	13						
	16						
BASKFS	6						
	8						
	10						
	13						
	16						

No.	Additional Price for 2-Nut Type Straight Nuts	Round Flange Nuts	Compact Flange Nuts
6			
8			
10			
13			
16			
20			
25			
30			

Order Example

Part Number	-	L
BSSS8	-	300
BHS2M10	-	555

Days to Ship: 10 Days

Please request a quotation for 5 or more identical pieces.

Notices about lead times
These products are not available for delivery on Saturday, Sunday and public holiday.

NEW

Ball Splines

-Both Ends Female Thread Type · One End Female Thread Type-

Part Number & Spec.Change Printed in Purple

CAD Data

■Some product specifications and model numbers have been revised, and re-introduced in order to realize price reductions.

■Both Ends Female Thread RoHS

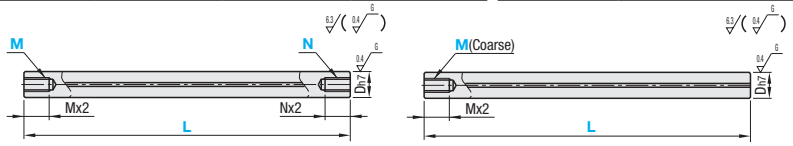


■One End Female Thread



Both Ends Female Thread Type	Spline Shaft M1.3505 Nuts M1.7242 or equivalent H Hardness: 58HRC~		M1.4125 or equivalent H Hardness: 55HRC~
	Nut 1 pc.	Nut 2 pcs.	Nut 1 pc.
With Straight Nut	BSHS	BSH2S	-
With Round Flange Nut	BSHM	BSH2M	BASBFS
With Compact Flange Nut	BSHN	BSH2N	-

One End Female Thread Type	Spline Shaft M1.3505/100Cr6 Nuts M1.7242 or equivalent H Hardness: 58HRC~
	Nut 1 pc.
With Straight Nut	BSFS
With Round Flange Nut	BSFM
With Compact Flange Nut	BSFN



Accuracy P.310 Dimension details of included nut P.311 Annealed range P.315

■Both Ends Female Thread

Part Number Type	No.	L 1mm Increment 1-Nut Type	L 1mm Increment 2-Nut Type	M (Coarse)·N (Coarse) Selectable	D
BSHS BSHM BSHN BSH2S BSH2M BSH2N BASBFS	*8	60~400	60~400	3 4	8
	*10	60~600	90~600	3 4 5	10.4
	13	60~600 (350)	100~600	5 6	13.4
	16	70~600 (350)	110~600	6 8	16.6
	20	80~700	130~700	6 8 10	20.6
	25	90~900	150~900	6 8 10 12	25.8
	30	100~1150	170~1150	8 10 12	30.8

BASBFS is applicable to only No.13 and 16, and max. of L dimension is ( ). Only * marked sizes are available for BSHN and BSH2N.

■One End Female Thread

Part Number Type	No.	L 1mm Increment 1-Nut Type	M (Coarse Thread) Selectable	D
BSFS BSFM BSFN	*8	60~400	3 4	8
	*10	60~600	3 4 5	10.4
	13	60~600	5 6	13.4
	16	70~600	6 8	16.6
	20	80~700	6 8 10	20.6
	25	90~900	6 8 10 12	25.8
	30	100~1150	8 10 12	30.8

Only * marked sizes are available for BSFN.

Order Example

Part Number	-	L	-	M	-	N
BSHS8	-	270	-	M4	-	N4
BSFS10	-	350	-	M5		

Days to Ship: 13 Days

Please request a quotation for 5 or more identical pieces.

Notices about lead times
These products are not available for delivery on Saturday, Sunday and public holiday.

Price

Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSHS BSH2S Price of BSH2S is BSHS+price list below	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSHM BSH2M Price of BSH2M is BSHM+price list below	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSHN BSH2N Price of BSH2N is BSHN+price list below	8											
	10											

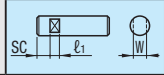
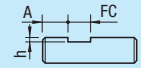
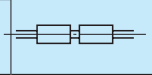
Part Number Type	No.	Standard € Unit Price Min.L~150	L151~200	L201~250	L251~300	L301~350
BASBFS	13					
	16					

No.	Additional € Price for 2-Nut Type Straight Nuts	Round Flange Nuts	Compact Flange Nuts
8			
10			
13			
16			
20			
25			
30			

Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSFS	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSFM	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSFN	8											
	10											

Alterations

Part Number	-	L	-	M	-	N	-	(SC · FC · NTW)
BSHN10	-	270	-	M5	-	N5	-	SC15

Alterations	Wrench Flats	Set Screw Flat	Additional Spline Nuts
			
Code	SC	FC	NTW
Spec.	Adds a wrench flat. = 1mm Increment. SC+ℓ1≤L. SC=0 or SC≥1	Adds a set screw flat. Ordering Code FC10-48. Specify FC and A in 1mm increm. FC≤3xD. 1.5xD<FC FC≤L/2. A = 0 or A≥2	Additional nuts (from one to two). BSFS·BSFM Available for BSFN only.
Price Adder	7,00	6,00	refer to the left.

No.	W	ℓ1
8	7	8
10	8	
13	11	10
16	14	
20	17	
25	22	15
30	27	

No.	h
8	1
10	
13	
16	
20	2
25	
30	

When selecting multiple alteration additions, more than 2mm is needed between each feature to be added.

Ball Splines
-Both End Stepped Type · One End Stepped Type-

Part Number & Spec.Change Printed in Purple

CAD Data

■Some product specifications and model numbers have been revised, and re-introduced in order to realize price reductions.

■Both Ends Stepped Type RoHS

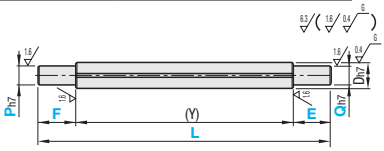


■One End Stepped Type



Both Ends Stepped Type	Spline Shaft M1.3505 Nuts M1.7242 or equivalent H Hardness: 58HRC~
	Nut 1 pc.
With Straight Nut	BSJS
With Round Flange Nut	BSJM
With Compact Flange Nut	BSJN

One End Stepped Type	Spline Shaft M1.3505 Nuts M1.7242 or equivalent H Hardness: 58HRC~	
	Nut 1 pc.	Nut 2 pcs.
With Straight Nut	BSDS	BSD2S
With Round Flange Nut	BSDM	BSD2M
With Compact Flange Nut	BSDN	BSD2N



Accuracy P.310 Dimension details of included nut P.311 Annealed range P.315

■Both Ends Stepped Type

Part Number Type	No.	1mm Increment L 1-Nut Type	F / E	P / Q Selectable	D	(Y) 1-Nut Type min~max
BSJS BSJM BSJN	*8	60~400	2≤F≤Px4 2≤E≤Qx4	5 6	8	56~396
	*10	60~600		5 6 8	10.4	56~596
	13	60~600		5 6 8 10	13.4	56~596
	16	70~600		5 6 8 10 12 13	16.6	66~596
	20	80~700		8 10 12 13 15 16	20.6	76~696
	25	90~900		8 10 12 13 15 16 20	25.8	86~896
	30	100~1150		10 12 13 15 16 20 25	30.8	96~1146

Only * marked sizes are available for BSJN.

■One End Stepped Type

Part Number Type	No.	1mm Increment L 1-Nut Type	L 2-Nut Type	F	P Selectable	D	(Y) 1-Nut Type min~max	(Y) 2-Nut Type min~max
BSDS BSDM BSDN BSD2S BSD2M BSD2N	*8	60~400	60~400	2≤F≤Px4	5 6	8	58~398	58~398
	*10	60~600	90~600		5 6 8	10.4	58~598	88~598
	13	60~600	100~600		5 6 8 10	13.4	58~598	98~598
	16	70~600	110~600		5 6 8 10 12 13	16.6	68~598	108~598
	20	80~ 700	130~700		8 10 12 13 15 16	20.6	78~698	128~698
	25	90~ 900	150~900		8 10 12 13 15 16 20	25.8	88~898	148~898
	30	100~1150	170~1150		10 12 13 15 16 20 25	30.8	98~1148	168~1148

Only * marked sizes are available for BHDN and BSD2N.

Order Example

Part Number	-	L	-	F	-	E	-	P	-	Q
BSJS8	-	300	-	F30	-	E20	-	P6	-	Q5
BSDN10	-	300	-	F20			-	P6		

Days to Ship 13 Days

Please request a quotation for 5 or more identical pieces.

Notices about lead times
These products are not available for delivery on Saturday, Sunday and public holiday.

Price

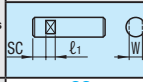
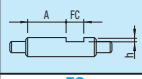
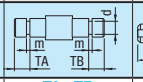
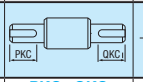
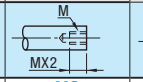
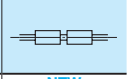
Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSJS	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSJM	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSJN	8											
	10											

Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSDS BSD2S Price of BSD2S is BSDS+price list below	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSDM BSD2M Price of BSD2M is BSDM+price list below	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSDN BSD2N Price of BSD2N is BSDN+price list below	8											
	10											

No.	Additional € Price for 2-Nut Type Straight Nuts	Round Flange Nuts	Compact Flange Nuts
8			
10			
13			
16			
20			
25			
30			

Alterations

Part Number	-	L	-	F	-	E	-	P	-	Q	- (FC, SC…etc.)
BSJS8	-	250	-	F20	-	E20	-	P5	-	Q5	- SC15

Alterations	Wrench Flats	Set Screw Flat	Retaining Ring Groove	Keyway on Shaft End	Tapping	Additional spline nuts
						
Code	SC	FC	TA · TB	PKC · QKC	MC	NTW
Spec.	Adds a wrench flat. = 1mm Increment SC=0 or SC≥1 SC+ℓ1≤Y	Adds a set screw flat. Ordering Code FC10-48 Specify FC and A in 1mm incr. FC≤3xD When 1.5xD<FC, FC≤Y/2 A = 0 or A≥2	Adds retaining ring grooves. Ordering Code TA10-TB10 TA, TB= 1mm Increment P, Q≥6 4≤TA, TB<F / E /2	Adds a keyway on the shaft end P (Q). Ordering Code PKC10 (QKC10) P, Q≥8 PKC / QKC =1mm Increment PKC, QKC≤Px3 (QKC)≤F (T)-1 For keyway details, refer to P.311	Machines tapped hole on the right end face. One End Stepped Type Applicable to one end stepped type only.	Additional nuts (from one to two) BSJS · BSJM Available for BSJN only.
Price Adder	7,00	6,00	14,00	14,00	6,00	Refer to the left

No.	W	ℓ1
8	7	8
10	8	
13	11	10
16	14	
20	17	
25	22	15
30	27	

No.	h
8	1
10	
13	
16	
20	
25	2
30	

No.	M
8	3,4
10	3, 4, 5
13	5, 6
16	6, 8
20	6, 8, 10
25	6, 8, 10, 12
30	8, 10, 12

When selecting multiple alteration additions, more than 2mm is needed between each feature to be added.

Ball Splines

-Both Ends Stepped and Male Thread · Both Ends Stepped and Female Thread-

CAD Data

■ Some product specifications and model numbers have been revised, and re-introduced as new in order to realize the price reductions.

■Both Ends Stepped and Male Thread

RoHS

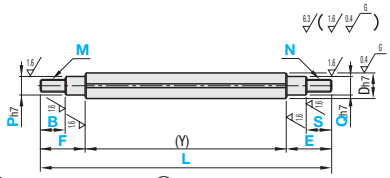


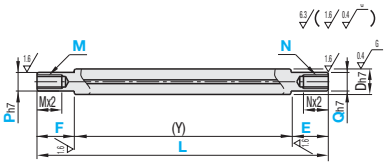
■Both Ends Stepped and Female Thread



Both Ends Stepped Male Thread	Spline Shaft Ⓜ1.3505 Nuts Ⓜ1.7242 or equivalent Ⓗ Hardness: 58HRC~
	Nut 1 pc.
With Straight Nut	BSYS
With Round Flange Nut	BSYM
With Compact Flange Nut	BSYN

Both Ends Stepped Female Thread	Spline Shaft Ⓜ1.3505 Nuts Ⓜ1.7242 or equivalent Ⓗ Hardness: 58HRC~
	Nut 1 pc.
With Straight Nut	BSLS
With Round Flange Nut	BSLM
With Compact Flange Nut	-





Ⓨ Accuracy P.310 Ⓨ Dimension details of included nut P.311 Ⓨ For annealed range, see below.

■Both Ends Stepped and Male Thread

Part Number Type	No.	1mm Increment L 1-Nut Type	F · E	B · S	P · Q Selectable	M (Coarse) · N (Coarse) Selectable (M≤P, N≤Q)	D	(Y) 1-Nut Type min~max
BSYS BSYM BSYN	*8	60~400	2≤F≤Px4 2≤E≤Qx4	When P, Q≤6, B, S≤F, E-2	5 6	5 6	8	56~396
	*10	60~600			5 6 8	5 6 8	10.4	56~596
	13	60~600		When P, Q=8, 10, B, S≤F, E-3	5 6 8 10	5 6 8 10	13.4	56~596
	16	70~600			5 6 8 10 12 13	6 8 10 12	16.6	66~596
	20	80~700		When P, Q≥12, B, S≤F, E-5	8 10 12 13 15 16	6 8 10 12 16	20.6	76~696
	25	90~900		Ⓨ B and S≥Pitchx3	8 10 12 13 15 16 20	6 8 10 12 16 20	25.8	86~896
	30	100~1150		Ⓨ B, S≤M, Nx3	10 12 13 15 16 20 25	8 10 12 16 20 24	30.8	96~1146

Ⓨ Only * marked sizes are available for BSYN.

■Both Ends Stepped and Female Thread

Part Number Type	No.	1mm Increment L 1-Nut Type	F · E	P · Q Selectable	M (Coarse) · N (Coarse) Selectable (M+3≤P, N+3≤Q)	D	(Y) 1-Nut Type min~max
BSLS BSLM	13	60~600	2≤F≤Px4 2≤E≤Qx4	6 8 10	3 4 5 6	13.4	56~596
	16	70~600		6 8 10 12 13	3 4 5 6 8 10	16.6	66~596
	20	80~700		8 10 12 13 15 16	4 5 6 8 10 12	20.6	76~696
	25	90~900		8 10 12 13 15 16 20	4 5 6 8 10 12 16	25.8	86~896
	30	100~1150		10 12 13 15 16 20 25	4 5 6 8 10 12 16 20	30.8	96~1146

Order Example

Part Number	-	L	-	F	-	E	-	B	-	S	-	P	-	Q	-	M	-	N
BSYS8	-	250	-	F20	-	E20	-	B8	-	S8	-	P6	-	Q6	-	M6	-	N6
BSLM13	-	250	-	F25	-	E10					-	P10	-	Q8	-	M5	-	N5

Days to Ship **13 Days**

Ⓨ Please request a quotation for 5 or more identical pieces.

Ⓨ Notices about lead times
These products are not available for delivery on Saturday, Sunday and public holiday.

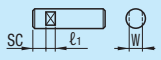
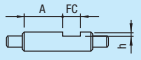
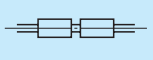
Price

Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSYS	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSYM	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSYN	8											
	10											

Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSLS	13											
	16											
	20											
	25											
	30											
BSLM	13											
	16											
	20											
	25											
	30											

Alterations

Part Number	-	L	-	F	-	E	-	B	-	S	-	P	-	Q	-	M	-	N	-	(SC / FC / NTW)	(Ex.)
BSYS8	-	250	-	F26	-	E20	-	B8	-	S8	-	P6	-	Q6	-	M6	-	N6	-	SC15	

Alterations	Wrench Flats	Set Screw Flat	Additional spline nuts
			
Code	SC	FC	NTW
Spec.	Adds a wrench flat. = 1mm Increment Ⓨ SC+ℓ1≤Y SC=0 or SC≥1	Adds a set screw flat. Ordering Code FC10-48 Specify FC and A in 1mm increments. Ⓨ FC≤3xD Ⓨ When 1.5xD<FC, FC≤Y/2 Ⓨ A = 0 or A≥2	Additional nuts (from one to two)
Price Adder	7,00	6,00	see P.316

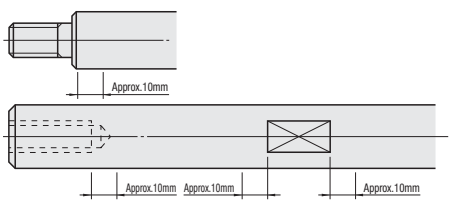
No.	W	ℓ1
8	7	8
10	8	
13	11	10
16	14	
20	17	
25	22	15
30	27	

No.	h
8	1
10	
13	
16	
20	2
25	
30	

Ⓨ When selecting multiple alteration additions, more than 2mm is needed between each feature to be added.

■Reduced hardness around machined areas

Alterations will be applied after the base materials are hardened.
In the example below, annealing may result in reduced hardness of the machined area +10mm fore and aft.



Annealing may lower hardness of following parts:
-All threaded types
-All stepped types
-All tapped types
-Wrench flats, set screw flats, retaining ring grooves, tap alteration

Ball Splines

-One End Male Thread / One End Stepped and Male Thread · One End Female Thread-

NEW

Part Number & Spec.Change Printed in Purple

CAD Data

■Some product specifications and model numbers have been revised, and re-introduced in order to realize price reductions.

■One End Stepped and Male Thread

RoHS

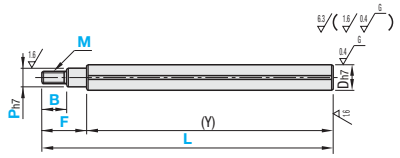


■One End Male Thread and Stepped/One End Female Thread



One End Stepped Male Thread	Spline Shaft M1.3505 Nuts M1.7242 or equivalent H Hardness: 58HRC~
	Nut 1 pc.
With Straight Nut	BSKS
With Round Flange Nut	BSKM
With Compact Flange Nut	BSKN

One End Stepped and Male Thread / One End Female Thread	Spline Shaft M1.3505 Nuts M1.7242 or equivalent H Hardness: 58HRC~	
	Nut 1 pc.	Nut 2 pcs.
With Straight Nut	BSBS	BSB2S
With Round Flange Nut	BSBM	BSB2M
With Compact Flange Nut	BSBN	BSB2N



Accuracy P.310 Dimension details of included nut P.311 Annealed range P.315

■One End Stepped and Male Thread

Part Number Type	No.	1mm Increment L 1-Nut Type	F	B	P Selectable	M (Coarse Thread) Selectable	D	(Y) 1-Nut Type min~max
BSKS BSKM BSKN	*8	60~400	2≤F≤Px4	When P≤6 B≤F-2 When P=8 or 10, B≤F-3 When P≥12 B≤F-5 B≥Pitchx3 B≤Mx3	5 6	5 6	8	58~398
	*10	60~600			5 6 8	5 6 8	10.4	58~598
	13	60~600			5 6 8 10	5 6 8 10	13.4	58~598
	16	70~600			6 8 10 12 13	6 8 10 12	16.6	68~598
	20	80~700			8 10 12 13 15 16 20	6 8 10 12 16	18.2	78~698
	25	90~900			8 10 12 13 15 16 20	6 8 10 12 16 20	23	88~898
	30	100~1150			10 12 13 15 16 20 25	8 10 12 16 20 24	28	98~1148

Only * marked sizes are available for BSCN.

■One End Male Thread and Stepped / One End Female Thread

Part Number Type	No.	1mm Increment L 1-Nut Type	L 2-Nut Type	F	B	P Selectable	M (Coarse Thread) Selectable	N (Coarse Thread) Selectable	D	(Y) 1-Nut Type min~max	(Y) 2-Nut Type min~max
BSBS BSBM BSBN BSB2S BSB2M BSB2N	*8	60~400	60~400	2≤F≤Px4	When P≤6, B≤F-2 When P=8 or 10, B≤F-3 When P≥12, B≤F-5 B≥Pitchx3 B≤Mx3	5 6	5 6	3 4	8	58~398	58~398
	*10	60~600	76~600			5 6 8	5 6 8	3 4 5	10.4	58~598	58~598
	13	60~ 600	82~600			5 6 8 10	5 6 8 10	4 5 6	13.4	58~598	58~598
	16	70~ 600	110~600			6 8 10 12 13	6 8 10 12	4 5 6 8	16.6	68~598	68~598
	20	80~ 700	130~700			8 10 12 13 15 16 20	6 8 10 12 16	4 5 6 8 10	18.2	78~698	78~698
	25	90~ 900	150~900			8 10 12 13 15 16 20	6 8 10 12 16 20	4 5 6 8 10 12	23	88~898	88~898
	30	100~1150	170~1150			10 12 13 15 16 20 25	8 10 12 16 20 24	4 5 6 8 10 12 16	28	98~1148	98~1148

Only * marked sizes are available for BSBN and BSB2N.

Order Example

Part Number	L	F	B	P	M	N
BSKS8	250	F20	B15	P6	M6	
BSB2N10	300	F20	B10	P5	M5	N3

Days to Ship: 13 Days

Please request a quotation for 5 or more identical pieces.

Notices about lead times
These products are not available for delivery on Saturday, Sunday and public holiday.

Price

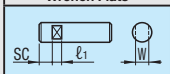
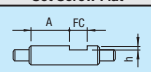
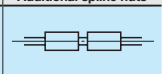
Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSCS	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSCM	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSAN	8											
	10											

Part Number Type	No.	€ Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSBS BSB2S Price of BSB2S is BSBS+price list below	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSBM BSB2M Price of BSB2M is BSBM+price list below	8											
	10											
	13											
	16											
	20											
	25											
	30											
BSBN BSB2N Price of BSB2N is BSBN+price list below	8											
	10											

No.	Additional € Price for 2-Nut Type Straight Nuts	Round Flange Nuts	Compact Flange Nuts
8			
10			
13			
16			
20			
25			
30			

Alterations

Part Number - L - F - B - P - M - N - (SC / FC / NTW)
BSKS8 - 250 - F20 - B15 - P6 - M6 - SC15

Alterations	Wrench Flats	Set Screw Flat	Additional spline nuts
			
Code		FC	NTW
Spec.	Adds a wrench flat. = 1mm Increment SC+ℓ1≤Y SC=0 or SC≥1	Adds a set screw flat. Ordering Code FC10-48 Specify FC and A in 1mm increments. FC≤3xD When 1.5xD<FC FC≤Y/2 A = 0 or A≥2	Additional nuts (from one to two) BSKS . BSKM Available for BSKN only.
Price Adder	7,00	6,00	Refer to the left

No.	W	ℓ1
8	7	8
10	8	
13	11	10
16	14	
20	17	
25	22	15
30	27	

No.	h
8	1
10	
13	
16	2
20	
25	
30	

When selecting multiple alteration additions, more than 2mm is needed between each feature to be added.

Miniature Ball Bearing Guide Sets

-Compact Type-

CAD Data



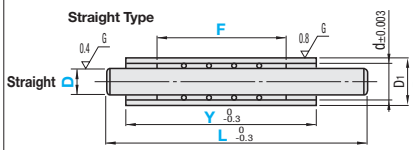
Bushing	Shafts: Straight	Shafts: One End Female Thread Hollow	Shafts: Both Ends Female Thread	Material: Shafts Bushing	Material: Steel balls Retainer	Material: Steel balls	Hardness: Shafts Bushing	Hardness: Steel balls
Straight Type	BYZ	BYA	BYY	1.3505/100Cr6	CW614N/ CuZn39Pb3 (Applicable to RoHS)	1.3505/100Cr6	58HRC~	58HRC~
	SSBYZ	SSBYA	SSBYY	1.4125/X105CrMo17		1.4125/X105CrMo17	56HRC~	56HRC~
With Shoulder Type	BYHZ	BYHA	BYHY	1.3505/100Cr6		1.3505/100Cr6	58HRC~	58HRC~
	SSBYHZ	SSBYHA	SSBYHY	1.4125/X105CrMo17		1.4125/X105CrMo17	56HRC~	56HRC~

Features of Compact Type

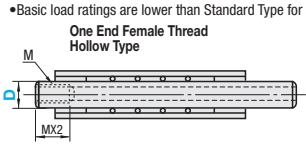
-The O.D. is 1~2mm smaller compared to the Standard Type using the same diameter shaft, contributing to space savings.

•Basic load ratings are lower than Standard Type for shaft diameter D8 or smaller. Refer to Basic Load Rating List below.

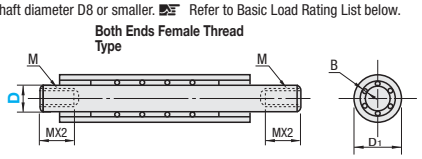
Straight Type

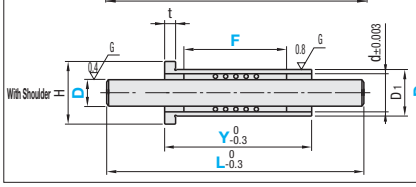


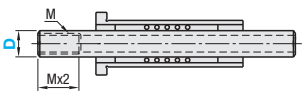
One End Female Thread Hollow Type

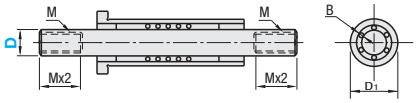


Both Ends Female Thread Type









Part Number Type	D	Shaft Dia. Tol.	L: Straight / One End Female Thread Hollow (1mm Increment)	L: Both Ends Female Thread (Selectable)	Y Selectable	F Selectable	D1	D1 Outer Diameter Tolerance	T	H	d	M (Coarse Thread)	B
Straight / One End Female Thread Hollow / Both Ends Female Thread; L Dimension Configurable / L Dimension Selectable	(2)	0 -0.005	30~50	-	10 15 20	10 15 20	5	0 -0.006	2.5	7	3.2	-	0.6
	(3)		40~70		10 20 30	10 15 20	6			8	4.2	-	
	(4)						7		3	9	5.2	-	
BYZ BYA BYY	5		40~90	40 50 60 70 80 90			8			10	6.2	M3	
BYHZ BYHA BYHY	6				20 30 40	15 20 30	9	0 -0.011	4	11	7.2	M3	
SSBYZ SSBYA SSBYY	8						11			13	9.2	M4	
SSBYHZ SSBYHA SSBYHY	10		40~150	40 50 60 70 80 90 100	30 40 50	20 30 40	14			16	12	M5	1.0
	12						16			18	14	M6	

(?)Sizes in ( ) are applicable to BYZ, BYHZ, SSBYZ and SSBYHZ only. (?)Ball retainer travels 1/2 the distance of the bushing (or the shaft) stroke. ½

Price

Quantity Discount Price (?)Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L	-	Y	-	F
BYZ5	-	72	-	20	-	15

Days to Ship

8 Days — Express A — 5,00 EUR/ piece P88

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.

D	Y	€ Unit Price: BYZ L30~50	BYZ L51~100	BYZ L101~150	BYHZ L40~50	BYHZ L51~100	BYHZ L101~150	SSBYZ L40~50	SSBYZ L51~100	SSBYZ L101~150	SSBYHZ L40~50	SSBYHZ L51~100	SSBYHZ L101~150
2	10												
	15												
	20												
3	10												
	20												
	30												
4	10												
	20												
	30												
5	10												
	20												
	30												
6	20												
	30												
	40												
8	20												
	30												
	40												
10	30												
	40												
	50												
12	30												
	40												
	50												

Basic Load Rating List

D	F	Basic Load Rating Co (Static) N
2	10	15.0
	15	24.4
	20	33.7
3	10	16.3
	15	26.5
	20	36.7
4	10	21.1
	15	34.3
	20	47.5
5	10	26.1
	15	42.4
	20	58.7
6	15	43.2
	20	59.8
	30	83.1
8	15	59.0
	20	81.6
	30	113.4
10	20	147.7
	30	221.5
	40	307.7
12	20	187.4
	30	281.1
	40	390.5

D	Y	€ Unit Price: BYA L40~50	BYA L51~100	BYA L101~150	BYHA L40~50	BYHA L51~100	BYHA L101~150	SSBYA L40~50	SSBYA L51~100	SSBYA L101~150	SSBYHA L40~50	SSBYHA L51~100	SSBYHA L101~150	BYY L40 • 50	BYY L60~	BYHY L40 • 50	BYHY L60~	SSBYY L40 • 50	SSBYY L60~	SSBYHY L40 • 50	SSBYHY L60~
5	10																				
	20																				
	30																				
6	20																				
	30																				
	40																				
8	20																				
	30																				
	40																				
10	30																				
	40																				
	50																				
12	30																				
	40																				
	50																				

Miniature Ball Bearing Guide Sets

-Standard Type-

CAD Data

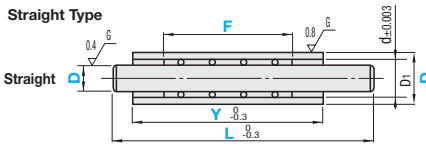


Bushing	Type: Shafts: Straight	Shafts: One End Female Thread Hollow	Shafts: Both Ends Female Thread	Material: Shafts Bushing	Material: Steel balls Retainer	Material: Steel balls	Hardness: Shafts Bushing	Hardness: Steel balls
Straight Type	BGZ	BGA	BGY	1.3505/100Cr6	CW614N/CuZn39Pb3 (Applicable to RoHS)	1.3505/100Cr6	58HRC~	58HRC~
	SSBGZ	SSBGA	SSBGY	1.4125/X105CrMo17		1.4125/X105CrMo17	56HRC~	56HRC~
With Shoulder Type	BGHZ	BGHA	BGHY	1.3505/100Cr6		1.3505/100Cr6	58HRC~	58HRC~
	SSBGHZ	SSBGHA	SSBGHY	1.4125/X105CrMo17		1.4125/X105CrMo17	56HRC~	56HRC~

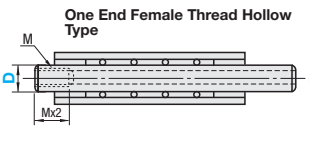
■Features of Miniature Ball Bearing Guide

Motion mechanism utilizing rolling balls, capable of linear and rotary motion.
The bearing balls and the rolling surface are in point contact relationship enabling low friction rolling motion.

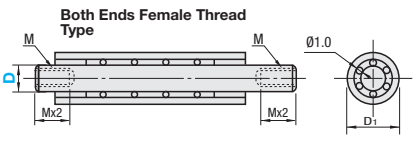
Straight Type

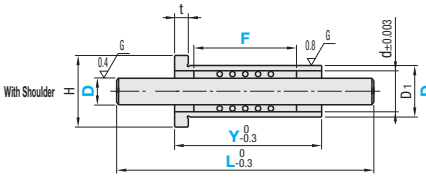


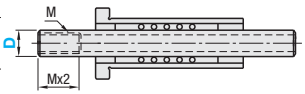
One End Female Thread Hollow Type

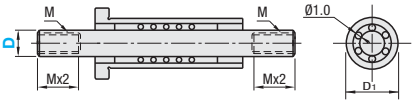


Both Ends Female Thread Type









Part Number: Type	D	Shaft Dia. Tol.	L: Straight One End Female Thread Hollow (1mm Increment)	L: Both Ends Female Thread (Selectable)	Y: Selectable	F: Selectable	D1: Outer Diameter Tolerance	T	H	d	M (Coarse Thread)
Straight / One End Female Thread Hollow / Both Ends Female Thread	(3)	0 -0.005	40~70	-	10 20 30	10 15 20	0 -0.006	2.5	9	5	-
L Dimension Configurable / L Dimension Selectable	(4)							3	10	6	-
BGZ BGA BGY	5								12	7	M3
BGHZ BGHA BGHY	6		40~90	40 50 60 70 80 90	20 30 40	15 20 30		4	13	8	M3
SSBGZ SSBGA SSBGY	8						0 -0.011		14	10	M4
SSBGHZ SSBGHA SSBGHY	10		40~150	40 50 60 70 80 90 100	30 40 50	20 30 40			18	12	M5
	12								20	14	M6

(P)Sizes in ( ) are applicable to BGZ, BGHZ, SSBGZ and SSBGHZ only. (P)Ball retainer travels 1/2 the distance of the bushing (or the shaft) stroke. ½

Price

■Quantity Discount Price (P)Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Order Example: Part Number - L - Y - F → BGZ5 - 72 - 20 - 15

Days to Ship: 8 Days — Express A 5,00 EUR/piece — P88

(P)A Express Charge of 13,50 EUR for 3 or more identical pieces.

(P)Please request a quotation for orders of 50 or more identical pieces (except BGZ, BGA, AVBGHZ and BGHA).

D	Y	€ Unit Price: BGZ L40~50	BGZ L51~100	BGZ L101~150	BGHZ L40~50	BGHZ L51~100	BGHZ L101~150	SSBGZ L40~50	SSBGZ L51~100	SSBGZ L101~150	SSBGHZ L40~50	SSBGHZ L51~100	SSBGHZ L101~150
3	10												
	20												
	30												
4	10												
	20												
	30												
5	10												
	20												
	30												
6	20												
	30												
	40												
8	20												
	30												
	40												
10	30												
	40												
	50												
12	30												
	40												
	50												

■Basic Load Rating List

D	F	Basic Load Rating Co (Static) N
3	10	30.4
	15	50.7
	20	71
4	10	40.4
	15	67.3
	20	87.5
5	10	50.7
	15	84.5
	20	109.9
6	15	101.5
	20	113.2
	30	182.9
8	15	105.1
	20	126.1
	30	189.2
10	20	147.7
	30	221.5
	40	307.7
12	20	187.4
	30	281.1
	40	390.5

D	Y	€ Unit Price: BGA L40~50	BGA L51~100	BGA L101~150	BGHA L40~50	BGHA L51~100	BGHA L101~150	SSBGA L40~50	SSBGA L51~100	SSBGA L101~150	SSBGHA L40~50	SSBGHA L51~100	SSBGHA L101~150	BGY L40 • 50	BGY L60~	BGHY L40 • 50	BGHY L60~	SSBGY L40 • 50	SSBGY L60~	SSBGHY L40 • 50	SSBGHY L60~
5	10																				
	20																				
	30																				
6	20																				
	30																				
	40																				
8	20																				
	30																				
	40																				
10	30																				
	40																				
	50																				
12	30																				
	40																				
	50																				

Miniature Ball Bearing Guides Sets / Shafts for Miniature Ball Bearing Guides -With Retaining Ring- -Straight-

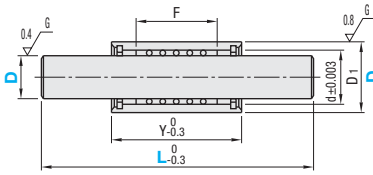
CAD Data

■Miniature Ball Bearing Guide Sets -With Retaining Ring-

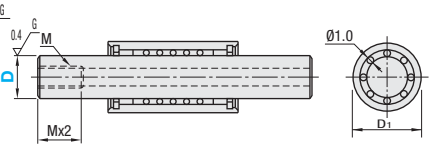
RoHS



BGSTZ



BGSTA



Parts	M Material	H Hardness
Shafts Bushing	1.3505/ 100Cr6	58HRC~

Parts	M Material	H Hardness
Ball Retainer	CW614N/CuZn39Pb3	-
Steel balls	1.3505/100Cr6	58HRC~
Retaining Ring	Spring Steel	44HRC~

Retaining rings are assembled into BGSTZ, BGSTA to prevent ball retainer from falling out.

Part Number Type	D	Shaft Dia. Tol.	L 1mm Increment	Y	F	D1	D1 Outer Dia. Tol.	M (Coarse Thread)	d	Max. Stroke mm	Standard € Unit Price BGSTZ L40~50	BGSTZ L51~100	BGSTZ L101~150	BGSTA L40~50	BGSTA L51~100	BGSTA L101~150
BGSTZ BGSTA	5	0 -0.005	40~90	17	6	10	0 -0.006	M3	7	13						
	6			19	7	11	0 -0.011	M3	8	15						
	8		40~150	25	8	13		M4	10	24						
	10			30	10	16		M5	12	30						
	12			32	11	18		M6	14	32						

■Shafts for Miniature Ball Bearing Guides -Straight-

RoHS

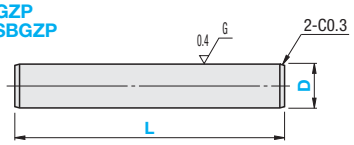


Type		M Material	H Hardness
Linear Bushings Straight	BGZP	1.3505/100Cr6	58HRC~
	SSBGZP	1.4125/X105CrMo17	56HRC~
Hollow Shaft	BGBP	1.3505/100Cr6	58HRC~



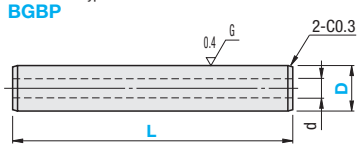
Linear Bushings Straight Type

BGZP
SSBGZP



Hollow Shaft Type

BGBP



Part Number Type	D	Shaft Dia. Tol.	L 1mm Increment	d	€ Unit Price BGZP L30~50	BGZP L51~100	BGZP L101~150	SSBGZP L30~50	SSBGZP L51~100	SSBGZP L101~150	BGBP L40~50	BGBP L51~100	BGBP L101~150
BGZP SSBGZP BGBP	2	0 -0.005	30~50	-									
	3		40~70										
	4												
	5		40~90	2.5									
	6												
	8		40~150	3.3									
	10			4.2									
	12			5									

Order Example

Part Number	-	L
BGZP5	-	72

Days to Ship

8 Days | Express A | 5,00 EUR/ piece P. 88

A Express Charge of JPN 13,50 for 3 or more identical pieces.

Price

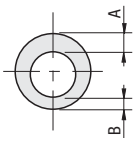
■Quantity Discount Price (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Please request a quotation for orders of 50 or more identical pieces (except **BGZP**).

-Accuracy Standard-

(1) L Dimension Tolerance	L≤120 =±0.3	L≥121=±0.5
(2) Circularity of Part D	0.004 or less	
(3) Concentricity of D and P	Ø0.1 or less	
(4) Thickness Variations of Hollow	D≤6=0.3 or less	D≥8 =0.4 or less Deviation Value=A–B



Shafts for Miniature Ball Bearing Guides

-One End Machined · Both Ends Machined

CAD Data

One End Machined

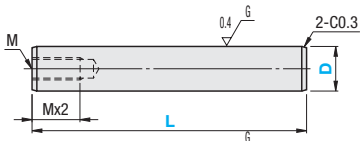
RoHS



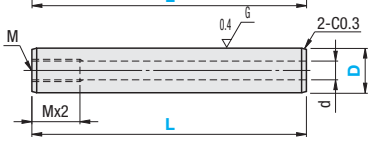
Type		Material	Hardness
One End Female Thread	BGDP	1.3505/100Cr6	58HRC~
	SSBGDP	1.4125/X105CrMo17	56HRC~
One End Female Thread Hollow	BGAP	1.3505/100Cr6	58HRC~
	SSBGAP	1.4125/X105CrMo17	56HRC~
One End Male Thread	BGEP	1.3505/100Cr6	58HRC~



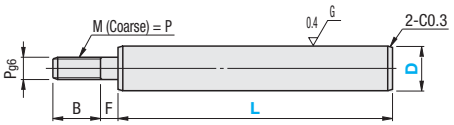
One End Female Thread Type
BGDP
SSBGDP



One End Female Thread Hollow Type
BGAP
SSBGAP



One End Male Thread Type
BGEP



Part Number Type	D	Shaft Dia. Tol.	L 1mm Increm.	F	B	M (Coarse Thread)	d	€ Unit Price BGDP L40~50	BGDP L51~100	BGDP L101~150	BGEP L40~50	BGEP L51~100	BGEP L101~150	SSBGDP L40~50	SSBGDP L51~100	SSBGDP L101~150	BGAP L40~50	BGAP L51~100	BGAP L101~150	SSBGAP L40~50	SSBGAP L51~100	SSBGAP L101~150
BGDP SSBGDP BGEP SSBGAP BGAP	5	0 -0.005	40~90	4	6	M3	2.5															
	6																					
	8		40~150	5	8	M4	3.3															
	10				10	M5	4.2															
	12				12	M6	5															

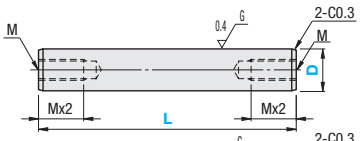
Both Ends Machined

RoHS

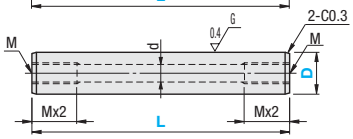


Type		Material	Hardness
Both Ends Female Thread	BGFP	1.3505/100Cr6	58HRC~
	SSBGFP	1.4125/X105CrMo17	56HRC~
Both Ends Female Thread Hollow	BGCP	1.3505/100Cr6	58HRC~
One End Male Thread, One End Female Thread	BGHP	1.3505/100Cr6	58HRC~

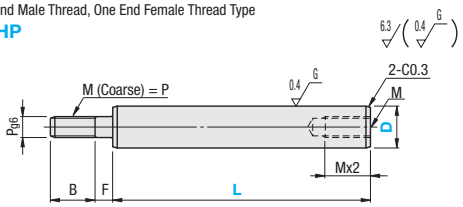
Both Ends Female Thread Type
BGFP
SSBGFP



Both Ends Female Thread Hollow Type
BGCP



One End Male Thread, One End Female Thread Type
BGHP



Part Number Type	D	Shaft Dia. Tol.	L Selectable	F	B	M (Coarse Thread)	d	€ Unit Price BGFP BGHP L40•50	BGFP BGHP L60~	BGCP L40•50	BGCP L60~	SSBGFP L40•50	SSBGFP L60~L100
BGFP SSBGFP BGCP BGHP	5	0 -0.005	40 50 60 70 80 90	4	6	M3	2.5						
	6												
	8		40 50 60 70 80 90 100	5	8	M4	3.3						
	10				10	M5	4.2						
	12				12	M6	5						

Order Example

Part Number	-	L
BGDP5	-	70

Price

Quantity Discount Price (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Please request a quotation for orders of 50 or more identical pieces (except **BGAP**).

Days to Ship

8 Days | Express A | 5,00 EUR/ piece P. 88

A Express Charge of JPN 13,50 for 3 or more identical pieces.

Miniature Ball Guide Bushings

-Compact / Standard-

CAD Data

RoHS

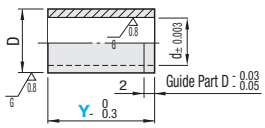


Type				Material	Hardness
Compact Type		Standard Type			
Straight Type	Shoulder Type	Straight Type	Shoulder Type		
BYB	BYH	BGB	BGH	1.3505/100Cr6	58HRC~
SSBYB	SSBYH	SSBGB	SSBGH	1.4125/X105CrMo17	56HRC~

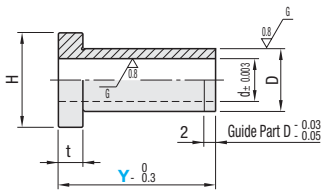
Use Ball Slider Compact Type (BYS, SSBYS) with Compact Type; Ball Sliders Standard Type (BGS, SSBGS, SSBPS) with Standard Type.
Loctite is recommended to fix bushings.

■Compact Type

(Straight Type)
BYB
SSBYB

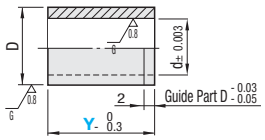


(Shoulder Type)
BYH
SSBYH

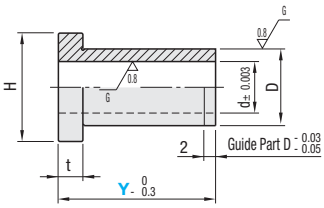


■Standard Type

BGB
SSBGB



BGH
SSBGH



■Compact Type

Part Number Type	No.	Y Selectable	D Outer Diameter Tolerance	T	H	d	€ Unit Price BYB	SSBYB	BYH	SSBYH
BYB SSBYB BYH SSBYH	2	10 15 20	5	2.5	7	3.2				
	3	10 20 30	6		8	4.2				
	4	10 20 30	7	3	9	5.2				
	5	10 20 30	8		10	6.2				
	6	20 30 40	9	4	11	7.2				
	8	20 30 40	11		13	9.2				
	10	30 40 50	14		16	12				
	12	30 40 50	16		18	14				

D Outer Diameter Tolerance: 0 -0.006 (5, 6, 7, 8); 0 -0.011 (9, 11, 14, 16)

Order Example

Part Number	-	Y
BYB5	-	20
SSBYH10	-	40
BGB5	-	20
BGH10	-	40

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Quantity Discount Price (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Please request a quotation for orders of 50 or more identical pieces (except BGB · BGH)

■Standard Type

Part Number Type	No.	Y Selectable	D Outer Diameter Tolerance	T	H	d	W	B	D_1	€ Unit Price BGB	SSBGB	BGH	SSBGH
BGB SSBGB BGH SSBGH	3	10	7	2.5	9	5	-	-	-				
		20											
		30											
	4	10	8	3	10	6							
		20											
		30											
	5	10	10		12	7	1.1	10	9.6				
		20						20					
		30											
	6	20	11	4	13	8		10	10.5				
		30						20					
		40						30					
	8	20	12		14	10		10	11.5				
		30						20					
		40						30					
	10	30	16		18	12		20	15.2				
		40						30					
		50						40					
	12	30	18		20	14	1.3	20	17				
		40						30					
		50						40					

D Outer Diameter Tolerance: 0 -0.006 (7, 8); 0 -0.011 (10, 11, 12, 16, 18)

Bushings for Miniature Ball Bearing Guides / Ball Sliders

-Compact / Standard-

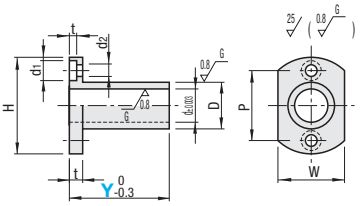
CAD Data

■Flanged Type



RoHS

BGHT (Mounting Hole)



M Material: 1.3505/100Cr6 H Hardness: 58HRC~

Part Number Type	No.	Y Selectable	D	Outer Diameter Tolerance	H	W	P	T	d	d1	d2	t	€ Unit Price
BGHT	5	20 30	10	0 -0.006	25	16	17	4	7	6	3.5	2.2	
	6	20 30 40	12	0 -0.011	28	18	20		8				
	8	20 30 40	14		29	20	21		10				
	10	30 40 50	16		34	22	25	5	12	7.5	4.5	3	
	12	30 40 50	19		40	25	29		14				

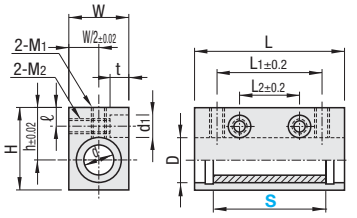
※ Use in combination with Ball Sliders Standard Type (BGS, SSBGS, SSBPS).

■Linear Bushings with Housing Units



RoHS

BGVH (BGB Built-in Bushings)



M Material: Aluminum Alloy S Surface Treatment: Clear Anodize

Part Number Type	No.	S	h	W	H	L	D	L1	L2	ℓ	M1	M2	d	d1xt	€ Unit Price
BGVH	5	20	13	15	20	30	10	20	10	5	M4	M4	7	6x5 (For M3 screws)	
		30				40		28	16						
	6	30	14	16	22	40	11	28	16				8		
		40				50		36	24						
	8	30	14	16	22	40	12	28	16				10		
		40				50		36	24						
	10	40	16	20	26	50	16	36	24		M5		12		
		50				60		44	30						
	12	40	19	26	32	50	18	36	24	6	M6	M5	14	8x6 (For M4 Screws)	
		50				60		44	30						

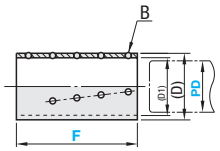
※ Use in combination with Ball Sliders Standard Type (BGS, SSBGS, SSBPS).

■Ball Sliders Compact Type



RoHS

Type	Material		Hardness
	Ball Retainer	Steel balls	Steel balls
BYS	CW614N/CuZn39Pb3 (Compliant with RoHS)	1.3505/100Cr6	58HRC~
SSBYS		1.4125/X105CrMo17	56HRC~



Part Number Type		F Selectable	(D)	(D1)	B	€ Unit Price BYS	€ Unit Price SSBYS
BYS SSBYS	2	10 15 20	3.1	2.1	0.6		
	3		4.1	3.1			
	4		5.1	4.1			
	5		6.1	5.1			
	6	15 20 30	7.1	6.1			
	8		9.1	8.1			
	10	20 30 40	11.8	10.2	1.0		
	12		13.8	12.2			

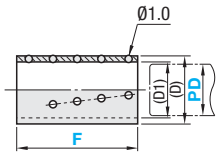
※ Use in combination with Bushings for Miniature Ball Bearing Guides Compact Type (BYB, SSBYB, BYH, SSBYH).

■Ball Sliders Standard Type



RoHS

Type	Material		Hardness
	Ball Retainer	Steel balls	Steel balls
BGS	CW614N/CuZn39Pb3 (Applicable to RoHS)	1.3505/100Cr6	58HRC~
SSBGS		1.4125/X105CrMo17	56HRC~
SSBPS	Polyacetal	1.4125/X105CrMo17	56HRC~



Part Number Type		F Selectable	(D)	(D1)	€ Unit Price BGS	€ Unit Price SSBGS	€ Unit Price SSBPS
BGS SSBGS SSBPS	3	10 15 20	4.8	3.2			
	4		5.8	4.2			
	(5)		6.8	5.2			
	(6)	15 20 30	7.8	6.2			
	(8)		9.8	8.2			
	(10)	20 30 40	11.8	10.2			
	(12)		13.8	12.2			

※ Only PD in ( ) are available for SSBPS.
※ Use in combination with Bushings for Miniature Ball Bearing Guides Standard Type (BGB, SSBGB, BGH, SSBGH, BGHT and BGVH).

■Polyacetal Type is superior in anti-corrosion performance compared to brass (CW614N/CuZn39Pb3) and best for use in environments where corrosion is not desirable.

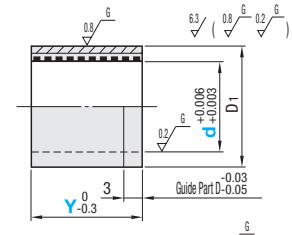
■Oil Free Bushings



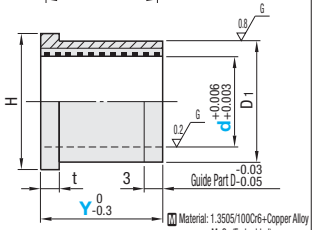


RoHS

BGMS (Straight)



BGMH (Shoulder)



※Loctite is recommended to fix oil free bushings.

M Material: 1.3505/100Cr6+Copper Alloy MoS2 (Embedded)
H Hardness: 45HRC~

Part Number Type	d	Y Selectable	D1	Outer Diameter Tolerance	T	H	€ Unit Price BGMS	€ Unit Price BGMH
BGMS BGMH	8	12 15	13	0 -0.011	3	15		
	10	15 20	16			18		
	12	20 25	18			20		

Order Example

Part Number	-	Y, F, S
BGHT5	-	20
BGVH10	-	40
BGS5	-	15
BGMS8	-	12

Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

※A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

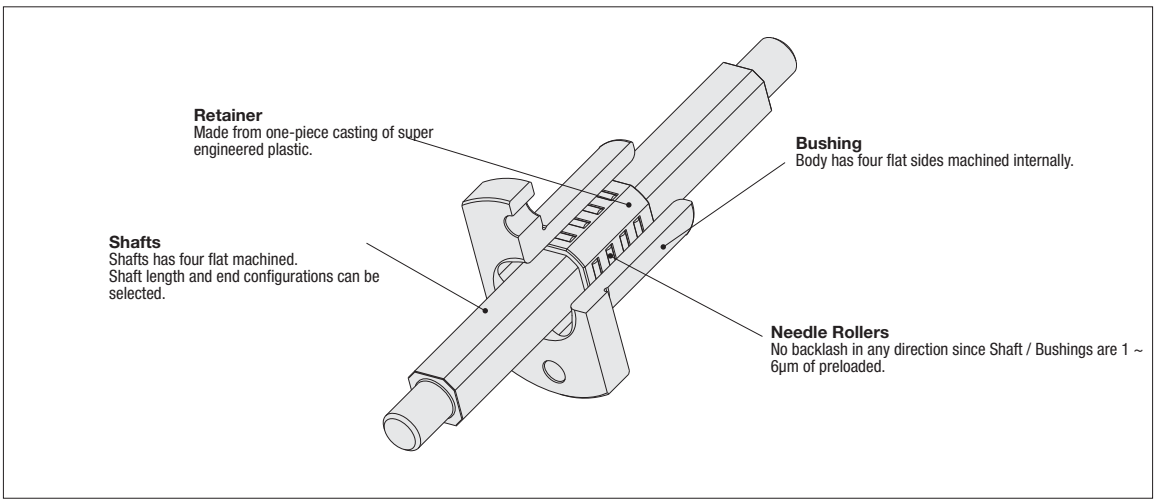
■Quantity Discount Price (※Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

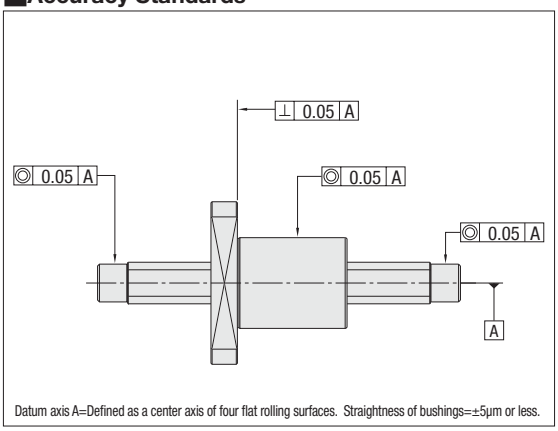
※Please request a quotation for orders of 50 or more identical pieces (except **BGS**)

High Rigidity Needle Guide Sets
-Overview-

■Features
High accuracy needle rollers are arranged in four directions against the square shafts.
Shafts / Bushings are designed to be 1 ~ 6μm preloaded.
Widely used in parts of semiconductor, liquid crystal manufacturing equipment and inspection device, lift / slide stages, robotic systems, press machines and transfer mechanism as the guide with high rigidity, straightness and high speed.
Capable of torque loading without rotation due to square cross section with low yawing and pitching, maintaining smooth rotation and stable accuracy.



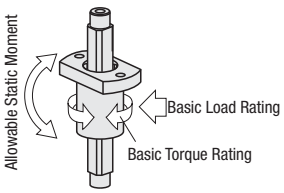
■Accuracy Standards



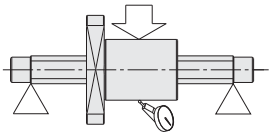
Datum axis A=Defined as a center axis of four flat rolling surfaces. Straightness of bushings=±5μm or less.

■Load Rating Chart

D	Basic Rated Torque		Basic Load Rating		Allowable Static Moment
	CT Dynamic (N·m)	CoT Static (N·m)	C Dynamic (kN)	Co Static (kN)	Mo (N·m)
6	12.3	21.0	3.4	5.0	10.6
10	48.7	84.4	6.8	10.0	23.0
12	91.3	162.9	11.9	17.4	76.4
16	115.7	212.0	11.9	17.4	83.6



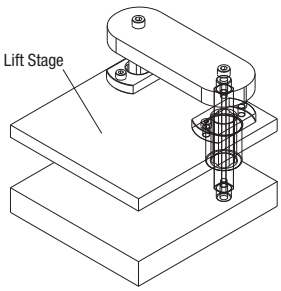
Load Point 1Kg



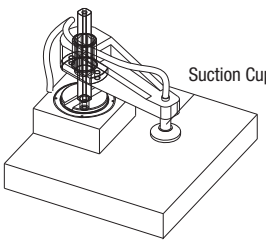
Displacement Measuring Point

D	Deflection (L is max.)
6	6μm
10	2μm
12	2μm
16	1μm

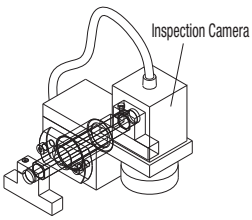
■Example of Use



Lift Stage



Swiveling Arm



Slide Stage

■Cautions
-Administer lubrication maintenance as needed.
-When designing, position the bushing where the retainer does not fall out from the bushing at stroke ends.
-As the preload is still applied when inserting retainers, assemble and fit carefully in order not to apply any off-center insertion force as that may cause the damage to the retainers as well as damages on the rolling surfaces.
-Protect it with covers if any foreign objects or dust may adhere to the rolling surfaces.
-Avoid using in high temperature environments, keep below 80°C.
-Do not cold shrink fit the bushings and shafts.
Residual austenite will transform into martensite and will expand inner / outer dimension of bushings and shafts, rendering them unusable.

High Rigidity Needle Guide Sets

CAD Data

RoHS

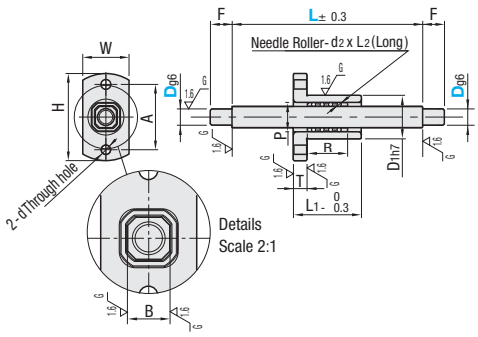
Reference: Cut-away View Photo



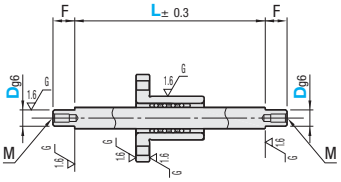


Type	Shaft / Bushing		Retainer	Needle Rollers		Ambient Operating Temp.
	M Material	H Hardness	M Material	M Material	H Hardness	
RGPFN RGPFT RGPFS	1.3505/100Cr6	58HRC~	Polyacetal	1.3505/100Cr6	54HRC~	-20~80°C

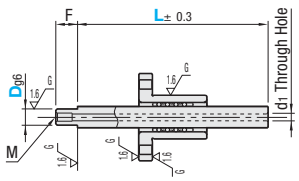
RGPFN



RGPFT



RGPFS



Part Number			L 10mm Increment	Effective Stroke (Reciprocating)	Shafts				Bushing								Retainer			
Type	Dg6				F	B	d1	M	D1	L1	T	H	W	P	d	A	R	d2	L2 (Length)	Needle Quantity
RGPFN RGPFT RGPFS	6	−0.004 −0.012	50~70	20	8	7.8	2.5	M3x 6	16	25	5	32	17	10.8	3.4	24	15	1.5	4.8	16
	10	−0.005 −0.014	60~80	30	8	11.0	4.2	M5x10	24	36	7	43	25	15.0	4.5	33	19	2	4.8	20
	12	−0.006 −0.017	90~120	40	10	14.6	5	M6x12	31	50	7	50	32	18.6	5.5	40	30	2	6.8	24
	16		100~130	50	10	18.9	6.8	M8x16	32	60	7	55	33	22.9	6.6	43	33	2	6.8	24

Order Example

Part Number	-	L
RGPFN10	-	60

Days to Ship

10 Days

Price

Part Number		L 10mm Increment	€ Unit Price	Volume Discount
Type	D		Qty. 1~10	11~19
RGPFN	6	50~70		
	10	60~80		
	12	90~120		
	16	100~130		
RGPFT	6	50~70		
	10	60~80		
	12	90~120		
	16	100~130		
RGPFS	6	50~70		
	10	60~80		
	12	90~120		
	16	100~130		

For orders larger than indicated quantity, please request a quotation.

Oil Free Bushings

Oil Free Bushings


Price Reduced 5%


Price Reduced 5%



Product Name	-Copper Alloy Straight Type-	-Copper Alloy Bushings with Oil Groove / Shoulder Type-	-Copper Alloy Thrust Type-
Page	331-332	333	334








Price Reduced 5%

Flange Integrated	-Copper Alloy Standard Flanged-	-Pilot Flanged-	-Center Flanged-	Oil Free Copper Alloy Washers
335	336	336	336	336









-Bronze Straight Type-	-Bronze Shoulder Type-	-Bronze Standard Flanged Type-	Oil Free Bushings with Male Thread Housing
337	337	338	338


Price Reduced 20%


NEW




Price Reduced 20%

Standard Flanged Oil Free Bushings -Compact-	-Standard-	-With Dust Seals-	Flanged Oil Free Bushings Pilot Type -Compact-
339	340	340	341







<Reference: Cut-out Photo>



Flanged Oil Free Bushings Pilot Type -Standard-	Center Flanged Oil Free Bushings	Small Flanged	Housing Unit -Flanged Type-
342	343	343	344











Housing Unit -Tall Block Type-	-Tall Block Compact · Wide Block Compact-	-Tall Block · Wide Block-
344	345	346













-Casting Straight / Shoulder Type-	Housing Unit -Casting Type-	Flange Integrated Oil Free Bushings -Casting Type-	-Multi-Layer MD Type-	Thrust Washers
347	347	347	348	348



-High Precision Type-
349





Flanged Oil Free Bushings -Built-in Multi-Layer MD Bushing Type-
349







Housing Unit -Built-in Multi-Layer MD Bushing Type-
350



-Polyacetal Resin Type-
351



-PTFE Resin Type-
351



Oil Free Resin Washers
352



Flanged Oil Free Bushings -Built-in Resin Bushing Type-
352



Housing Unit -Built-in Resin Bushing Type-
352

Features of Oil Free Bushings and Washers

■Material Properties and Environmental Tolerances (Reference Value)

Page	P.337 · 338	P.331~336		P.347		P.348~350	P.349	P.351	
Type	Bronze Type	Copper Alloy Type		Casting Type		Multi-Layer MD Type	High Precision Type	Resin Type (Polyacetal)	Resin Type (PTFE)
Shape									
Material Properties	Porous bronze casting soaked in lubrication.	Composite products with embedded solid lubricant in high-tensile brass.		Molybdenum Disulfide is embedded spirally in EN-JL 1040/EN-GJL-250.		Composite product consisting of three layers: steel-backed metal layer, sintered bronze layer and filler added PTFE Layer.	Fluororesin is bonded on base material (A2017).	Polyacetal resin with added lubricant and special fillers evenly.	PTFE to which friction resisting filler and solid lubricant are added.
Lubrication	Regular / Oil	Unlubricated	Regular	Unlubricated	Regular	Unlubricated	Unlubricated	Unlubricated	Unlubricated
Rotation	○	○		○		○	○	○	○
Oscillating Motion	○	○		○		○	○	○	○
Reciprocating Motion	○	○		○		○	○	○	○
Operating Temp. Range °C	-40~150	-40~200	-40~150	-40~150		-195~280	-50~140	-40~80	-200~200
Electrical Conductivity	Provided	Provided		Provided		Provided	Not provided	Not provided	Volume Resistivity: 3x102Ωcm2
Environmental Conditions: In the air	○	○		○		○	○	○	○
Environmental Conditions: In Oil	○	○		○		○	X	○	○
Environmental Conditions: In Water In	X	X	-	X		Δ	X	Δ	○
Environmental Conditions: In Seawater	X	X	-	X		X	X	Δ	○
Environmental Conditions: In In Chemical	X	X	-	X		Δ	X	Δ	○
Environmental Conditions: In Corrosive Atmosphere	X	Δ	Δ	X		Δ	○	Δ	○

Environmental Conditions Δ --- Applicable only under certain conditions. Some values for Casting Type are for reference only. Values for High Precision Type are values for the sliding material.

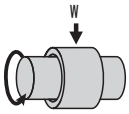
■Mechanical Properties (Reference Value)

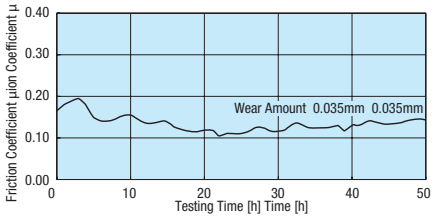
Characteristics	Unit	Bronze Type		Copper Alloy Type		Casting Type		Multi-Layer MD Type		High Precision Type		Resin Type (Polyacetal)		Resin Type (PTFE)	
		Value	Testing Method	Value	Testing Method	Value	Testing Method	Value	Testing Method	Value	Testing Method	Value	Testing Method	Value	Testing Method
Density	g/cm³	8.5	-	7.8	-	-	-	-	-	-	-	-	-	-	-
Tensile Strength	N/mm2{kgf/mm2}	150{15.0}	JIS Z 2241	755{77.0}	JIS Z 2241	245 (25.0)	-	380{38.7}	JIS Z 2241	12{1.2}	ASTM D 638	51.0{5.2}	ASTM D 638	13.1{1.3}	ASTM D 638
Tensile Elongation After Fracture	%	-	-	12	JIS Z 2241	-	-	-	-	-	-	60	ASTM D 638	150	ASTM D 638
Elongation	%	-	-	-	-	-	-	27	JIS Z 2241	171	ASTM D 638	-	-	-	-
Flexural Strength	N/mm2{kgf/mm2}	-	-	-	-	-	-	-	-	-	-	76.5{7.8}	ASTM D 790	-	-
Flexural Modulus	N/mm2{kgf/mm2}	-	-	-	-	-	-	-	-	-	-	2,650{270.2}	ASTM D 790	-	-
Compression Strength	N/mm2{kgf/mm2}	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Compression Yield Strength	N/mm2{kgf/mm2}	-	-	345{35.0}	-	-	-	-	-	-	-	-	-	-	-
Compression Stress 1% Deformation	N/mm2{kgf/mm2}	-	-	-	-	-	-	-	-	-	-	21.1{2.2}	ASTM D 695	10.5{1.1}	ASTM D 695
Compression Stress 10% Deformation	N/mm2{kgf/mm2}	-	-	-	-	-	-	-	-	-	-	81.9{8.4}	ASTM D 695	23.0{2.3}	ASTM D 695
Impact Strength	J/cm{kgfm/cm}	-	-	19{1.9}	JIS Z 2242	-	-	-	-	-	-	58.8{6.0}	ASTM D 256	-	-
Hardness	-	HB 60	JIS Z 2243	HB210	JIS Z 2243,2245	HB240	-	-	-	HDD62	ASTM D 2240	HRM72	ASTM D 785	HRR25	ASTM D 785
Young's Modulus	N/mm2{kgf/mm2}	-	-	105,000{10,700}	JIS Z 2241	-	-	-	-	-	-	-	-	-	-
Linear Thermal Expansion Coefficient	X10-5°C-1	-	-	2.2	-	0.92~1.18	-	-	-	9~9.75	ASTM D 696	8~13	ASTM D 696	9~11	ASTM D 696
Thermal Conductivity	W/m°C{cal/sec°C cm}	-	-	0.009{0.21}	-	-	-	-	-	-	-	-	-	-	-
Melting Point	°C	-	-	-	-	-	-	-	-	-	-	165	DSC	327	DSC
Specific Gravity	-	-	-	-	-	7.1	-	-	-	1.98	ASTM D 792	1.39	ASTM D 792	2.25	ASTM D 792
UL Flammability	-	-	-	-	-	-	-	-	-	-	-	HB	UL94	-	-

■Test Data of Bronze Type

Journal Rotation Test

<Test Conditions>
Bushing : **SHBZ30-30**
Mating Material : 1.1191/C45E HRC50
Surface Pressure : 1.47N/mm2{15kgf/cm2}
Velocity : 0.83m/S (50m/min)
Testing Time : 50h
Lubrication : Apply oil every 1 hour.

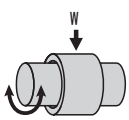


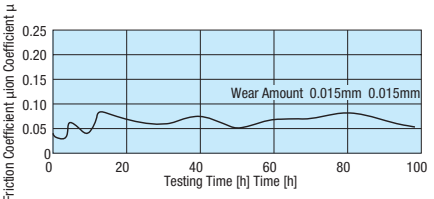


■Test Data of Copper Alloy Type

Journal Oscillation Motion Test

<Test Conditions>
Bushing : **MPBZ20-20**
Mating Material : 1.1191/C45E HRC46~48
Oscillation Angle : ±45°
Surface Pressure : 24.5N/mm2{250kgf/cm2}
Velocity : 0.5m/min{16cpm}
Lubrication : Unlubricated



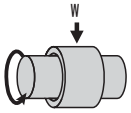


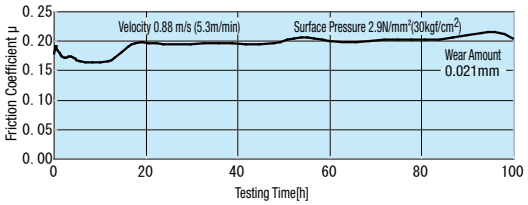
* Data below are for reference, not guaranteed.

■Test Data of Multi-Layer MD Type

Journal Rotation Test

<Test Conditions>
Bushing : **MDZB40-30**
Mating Material : 1.1191/C45E
Surface Pressure : 2.9N/mm² {30kgf/cm2}
Velocity : 0.088m/s {5.3m/min}
Lubrication : Unlubricated

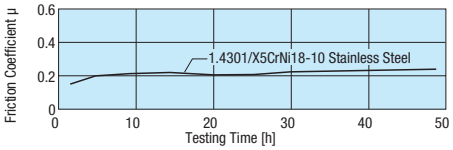




■Test Data of High Precision BFLB Bushing

Ring on Disk Test

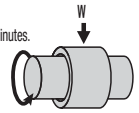
<Test Conditions>
Mating MaterialSurface : 1.4301/X5CrNi18-10
Pressure : 0.41MPa
Velocity : 1.833m/s{110m/min}
Lubrication : Unlubricated

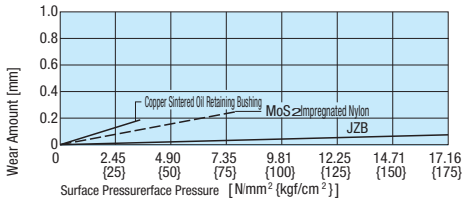


■Test Data of JZ Resin Bushing

Journal Rotation Test

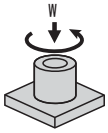
<Test Conditions>
Bushing : **JZB35-20**
Surface Pressure : 0.42N/mm2 {4.0kgf/cm2} is cumulatively loaded every 5 minutes.
Velocity : 1.133m/s{68m/min}
Lubrication : Greased at assembly

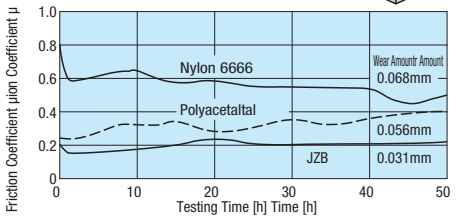




Thrust Rotation Test

<Test Conditions>
Mating Material : 1.1191/C45E (Surface Roughness 3μmRy)
Surface Pressure : 2.94N/mm2{30kgf/cm2}
Velocity : 0.167m/s{10m/min}
Testing Time : 50h
Lubrication : Unlubricated

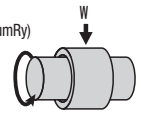


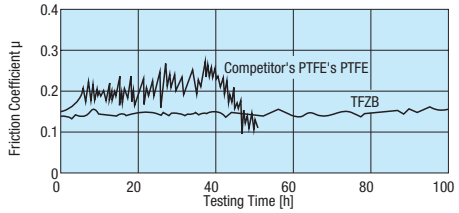


■Test Data of TF Resin Bushing

Journal Rotation Test

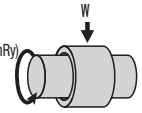
<Test Conditions>
Bushing : **TFZB10-10**
Mating Material : 1.4305/X10CrNiS18-9 (Surface Roughness 1.2μmRy)
Surface Pressure : 1.96N/mm2{20kgf/cm2}
Velocity : 0.500m/s{30m/min}
Testing Time : 100h
Lubrication : Unlubricated

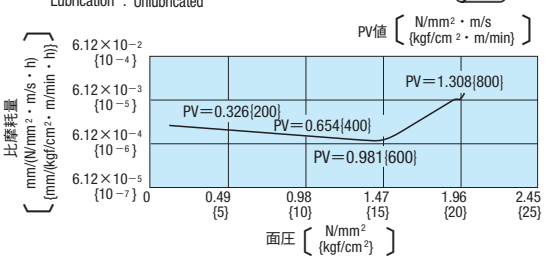




Journal Rotation Test

<Test Conditions>
Bushing : **TFZB10-10**
Mating Material : 1.4305/X10CrNiS18-9 (Surface Roughness 1.2μmRy)
Surface Pressure : 0.49~1.96N/mm2{5~20kgf/cm2}
Velocity : 0.667m/s{40m/min}
Lubrication : Unlubricated





Oil Free Bushings Guide

Oil Free Bushings Shape · Materials Selection List

Type					Type	Lubrication	Maximum Allowable Load		Maximum Allowable Speed		Maximum Allowable PV Value		Features	Page
							N/mm²	kgf/cm²	m/s	m/min	N/mm2, m/s	kgf/cm2, m/min		
Copper Alloy Type	Straight		Standard	Inner Dia. E7	MPBR	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Oil free, best suited for use in high load and low speed operations. Provides high friction resistance when oil film formation is discouraged by reciprocating motions or frequent starts and stops.	P.332
						Regular			1.00	60	3.25	1,990		
				Inner Dia. F7	MPBZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		P.331
						Regular			1.00	60	3.25	1,990		
				Inner Dia. G6	MPBP MPBZP	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	High Precision version of the above. Fine accuracy of inner diameter tolerances allow more precise sliding.	P.332
						Regular			1.00	60	3.25	1,990		
			Thin Wall	Inner Dia. E7	MPBRU	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Provided thinner to be comparable to Multi-Layer MD Bushings. Space-saving.	P.332
						Regular			1.00	60	3.25	1,990		
				Inner Dia. F7	MPBZU	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		P.333
						Regular			1.00	60	3.25	1,990		
				Inner Dia. G6	MPBPU	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	High Precision version of the above. Fine accuracy of inner diameter tolerances allow more precise sliding.	P.332
						Regular			1.00	60	3.25	1,990		
			With Oil Groove	Inner Dia. F7	MPBAZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Lubrication frequency can be reduced by gathering initial grease in oil groove.	P.333
						Regular			1.00	60	3.25	1,990		
	Shoulder		Standard	Inner Dia. E7	MPFZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Optimal for use in high load and low speed.	P.333
						Regular			1.00	60	3.25	1,990		
			Thin Wall	Inner Dia. E7	MPFZU	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Thin Wall Type of the above. Provided thinner to be comparable to Multi-Layer MD Bushings. Space-saving.	
						Regular			1.00	60	3.25	1,990		
	Thrust		Standard	Inner Dia. E7	MPGZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Blended lubricant into the flange so that one bushing can bear radial load and thrust load at the same time. 3 types are available: Standard, Flat Head Screw Hole and Low Head Screw Hole.	P.334
						Regular			1.00	60	3.25	1,990		
			Fleat-head Countersunk Screw Hole	Inner Dia. F7	MPSZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
			Low Head Cap Screw Hole	Inner Dia. F7	MPKZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
	Flange Integrated		Standard	Inner Dia. F7	MPTZ MPTSZ MPTNZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Flange Integrated Type reduces assembly time. Requires less space compared to Flanged Copper Alloy Built-in Type. 3 types are available: Standard Flanged, Pilot Flanged, Center Flanged.	P.335
						Regular			1.00	60	3.25	1,990		
				Inner Dia. G6	MPTP MPTNP	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
			Pilot	Inner Dia. F7	MPIZ MPITZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		P.336
						Regular			1.00	60	3.25	1,990		
			Center	Inner Dia. F7	MPCZ MPCTZ	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
Bronze Type	Straight		Standard	Inner Dia. E7	SHBR	Regular	10	102	1.66	100	1.65	1,000	Bushings made by adding special components into bronze casting and soaking porous castings with lubricant. Excels in abrasion and baking resistance under lubricated conditions. Best suited for high-speed and low-load condition under lubricated conditions. Lubrication frequency can be reduced. 4 types are available: Standard Inner Dia. E7 and F7, Shouldered, Flange Integrated.	P.337
						Oil			5.0	300	3.25	2,000		
				Inner Dia. F7	SHBZ	Regular	10	102	1.66	100	1.65	1,000		
						Oil			5.0	300	3.25	2,000		
	Shoulder		Standard	Inner Dia. E7	SHFZ	Unlubricated	10	102	1.66	100	1.65	1,000		
						Regular			5.0	300	3.25	2,000		
	Flange Integrated		Standard	Inner Dia. F7	SHTZ SHTNZ	Regular	10	102	1.66	100	1.65	1,000		P.338
						Oil			5.0	300	3.25	2,000		
Copper Alloy Type	With Male Thread Housing -Built-in Copper Alloy Bushings-		With Male Thread Housing	Single	MPNT	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Thread machined on the body of the case and assembly with only 1pc of special nut can reduce assembly process compared to conventional flange type.	P.338
						Regular			1.00	60	3.25	1,990		
				Double	MPNTW	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
	Flanged -Built-in Copper Alloy Bushings-		Standard	Single	MF_S MF_S-S MF_SC MF_SC-S SMF_S SMF_S-S MF_S-DS	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Reduced the time of manufacturing and assembling the housing. Compatible with Linear Bushing Standard Flanged, Pilot Flanged and Center Flanged Type. 3 types are available: Single, Double and Long. Space-saving Compact Type is available in 2 types: Single and Double (Only for Standard and Pilot). ※"-S" signifies Built-in Non-Contact Sealed Type. ※"-DS" signifies Built-in Contact Sealed Type.	P.339 P.340
						Regular			1.00	60	3.25	1,990		
				Double	MF_W MF_W-S MF_WC MF_WC-S MF_W-DS	Unlubricated			0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
				Long	MF_L MF_L-S	Unlubricated			0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
			Pilot	Single	MFI_S MFI_S-S MFI_SC MFI_SC-S	Unlubricated			0.5	30	1.65	1,010		P.341 P.342
						Regular			1.00	60	3.25	1,990		
				Double	MFI_W MFI_W-S MFI_WC MFI_WC-S	Unlubricated			0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
				Long	MFI_L MFI_L-S	Unlubricated			0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		

Type					Type	Lubrication	Maximum Allowable Load		Maximum Allowable Speed		Maximum Allowable PV Value		Features	Page
							N/mm²	kgf/cm²	m/s	m/min	N/mm2, m/s	kgf/cm2, m/min		
Copper Alloy Type	Flanged -Built-in Copper Alloy Bushings-		Center	Double	MFC_W MFC_W-S	tt	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Refer to P.329	P.343
						Regular			1.00	60	3.25	1,990		
			Small Flanged	Single	MFST MFST-S	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	Best suited for space-savings. The strength is about equal to or higher than that of the conventional Flanged Oil Free Bushings even under moment loads.	P.343
						Regular			1.00	60	3.25	1,990		
	Housing Units -Built-in Copper Alloy Bushing-		Tall Block	Single	MHUTS MHUTS-S MHCTS MHCTS-S	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010	These can reduce the time of manufacturing and assembling the housing. Added Space-saving Compact Type to the lineup of the conventional products compatible with the Linear Bushing Housing Units. 2 types are available: Single and Double.	P.345 P.346
						Regular			1.00	60	3.25	1,990		
				Double	MHUTW MHUTW-S MHCTW MHCTW-S	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
			Wide Block	Single	MHUAS MHUAS-S MHCAS MHCAS-S	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
				Double	MHUAW MHUAW-S MHCAW MHCAW-S	Unlubricated	29.0 *98.0	296 *1,000	0.5	30	1.65	1,010		
						Regular			1.00	60	3.25	1,990		
Casting Type	Straight		Standard		SMZ	Unlubricated	5	51	0.15	9	0.5	306	Oil free, high performance in medium load and low speed. The spirally embedded Molybdenum Disulfide lubricant enables a low friction coefficient in both reciprocal and oscillating motion. 4 types are available: Standard, Flanged, Flange Integrated and Housing Unit Type.	P.347
						Regular	8	82	0.25	15	0.8	490		
	Shoulder		Standard		SMZF	Unlubricated	5	51	0.15	9	0.5	306		
						Regular	8	82	0.25	15	0.8	490		
	Housing Units		Short / Long		MHSR	Unlubricated	5	51	0.15	9	0.5	306		
						Regular	8	82	0.25	15	0.8	490		
	Flange Integrated		Standard		SMZH	Unlubricated	5	51	0.15	9	0.5	306		
						Regular	8	82	0.25	15	0.8	490		
Multi-Layer MD Type	Straight		Standard		MDZB	Unlubricated	49.0 *137	500 *1,400	0.65	39	3.60	2,200	Thin wall, light weight and compact. Consistently-low friction coefficient and high abrasion resistance under high load and low speed conditions. With lubricating oil, high PV values can be obtained even under medium and high speed operations. Excels in chemical resistance.	P.348
	Shoulder		Standard		MDZF	Unlubricated	49.0 *137	500 *1,400	0.65	39	3.60	2,200		
	Housing Units		Tall Block	Single	MDBA MDBAC	Unlubricated	49.0 *137	500 *1,400	0.65	39	3.60	2,200	Housing Unit Type of the above. Housing Type can reduce the time of manufacturing and assembling the housing. 2 types are available: Single and Double.	P.350
				Double	MDBAW	Unlubricated	49.0 *137	500 *1,400	0.65	39	3.60	2,200		
			Wide Block	Single	MDWBA	Unlubricated	49.0 *137	500 *1,400	0.65	39	3.60	2,200		
	Flanged -Multi-Layer MD Bushing Built-in Type-		Standard	Single	MD_A	Unlubricated	49.0 *137	500 *1,400	0.65	39	3.60	2,200	Flanged Type of the above. Flanged Type can reduce the time of manufacturing and assembling the housing. 2 types are available: Single and Double.	P.349
				Double	MD_AW	Unlubricated	49.0 *137	500 *1,400	0.65	39	3.60	2,200		
High Precision Type	Straight		Standard		BFLB	Unlubricated	6	61	3.33	200	0.98	600	Oil free, thin wall, light weight and compact. Fine accuracy of inner and outer diameter tolerances allow easy mounting. Maintains high abrasion resistance and low friction coefficient under high speed condition. Mild metals such as Aluminum can be used as mating materials.	P.349
Polyacetal Resin Type	Straight		Standard		JZB	Unlubricated	17.5	179	0.85	51	2.45	1,500	Oil-free, excels in load capacities and abrasion resistance. With low static friction coefficient, provides high velocity properties. Prevents stick-slips and rasping noise. Conforms to Food Sanitation Laws.	P.351
	Shoulder		Standard		JZF	Unlubricated	17.5	179	0.85	51	2.45	1,500		
	Flanged -Built-in Polyacetal-		Standard	Single	JFMA JFRA	Unlubricated	17.5	179	0.85	51	2.45	1,500	Built-in Polyacetal bushings can reduce the time of manufacturing and assembling the housing. Compatible with Linear Bushing Standard Flanged and Housing Unit Tall Block Type.	P.352
	Housing Units -Built-in Polyacetal-		Tall Block	Single	JFBA	Unlubricated	17.5	179	0.85	51	2.45	1,500		
PTFE Resin Type	Straight		Standard		TFZB	Unlubricated	7	71	1.65	99	1	612	Oil free, low static friction coefficient on start-up and no stick slips during operation. Maintains high abrasion resistance and low friction coefficient under high speed condition. Excels in chemical resistance and conforms to Food Sanitation Laws. Mild metals such as Aluminum can be used as mating materials.	P.351
	Shoulder		Standard		TFZF	Unlubricated	7	71	1.65	99	1	612		

*Allowable static surface pressure (no sliding motion or sliding at extremely low speed)

Listed values are not standard values but reference values.

Oil Free Bushings

-Copper Alloy Straight Standard: Thin Wall I.D.F7 O.D.m6 Type-

Price Reduction 5%

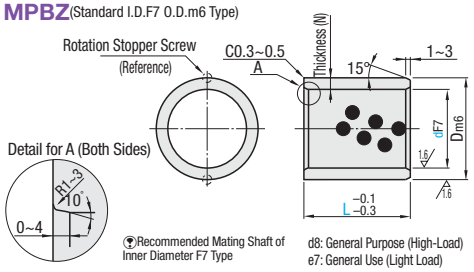
CAD data

■Standard / Thin Wall I.D. F7 O.D. m6 Type

RoHS



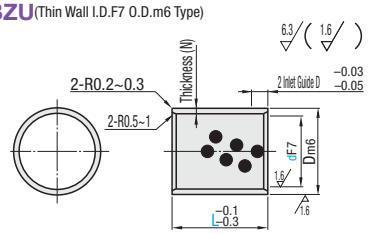
MPBZ(Standard I.D.F7 O.D.m6 Type)



Recommended Mating Shaft of Inner Diameter F7 Type

d8: General Purpose (High-Load)
e7: General Use (Light Load)

MPBZU(Thin Wall I.D.F7 O.D.m6 Type)



f8: High Precision Use
g6: High Precision Use (Intermittent Operation)

M Material: High Tensile Brass Alloy
Solid Lubricant Embedded

Part Number Type	dF7		L	MPBZ Dm6 (*1)	MPBZ Thickness (N)	MPBZ * Rotation Stopper Screws (Ref.)	MPBZU Dm6 (*1)	MPBZU Thickness (N)
MPBZ MPBZU	5	+0.022 +0.010	8 (9) 10 12 (15)	9	2	M4x8	7	1
	6		8 (9) 10 12 15 16 (19) (20)	10			8	
	8	+0.028 +0.013	8 (9) 10 12 15 16 (19) 20 (25)	12			10	
	10		8 (9) 10 12 15 16 (19) 20 25 (30)	14			12	
	12	+0.034 +0.016	(8) (9) 10 12 15 16 (19) 20 25 (30) (35)	18	3		15	1.5
	13		(9) 10 12 15 16 (19) 20 25 (30) (35)	19			16	
	15		(9) 10 12 15 16 (19) 20 25 30 (35) (40)	21			18	
	16		(9) 10 12 15 16 (19) 20 25 30 (35) (40)	22			20	2
	18		(9) (10) 12 15 16 (19) 20 25 30 (35) (40)	24		M5x8	22	
	20	+0.041 +0.020	(9) (10) (12) 15 16 (19) 20 25 30 (35) 40 (50) (60)	28	4		24	
	20A		(9) (10) (12) (15) (16) (19) (20) (25) (30) (35) (40) (50)	30	5		-	
	25		(12) 15 16 (19) 20 25 30 (35) 40 (50) (60)	33	4		29	
	25A		(12) (15) (16) (19) (20) (25) (30) (35) (40) (50) (60)	35	5		-	
	30		(12) 15 16 (19) 20 25 30 (35) 40 (50) (60) (70)	38	4	M6x16	34	
	35	+0.050 +0.025	20 25 30 (35) 40 (50) (60) (70)	44	4.5		40	
	40		20 25 30 (35) 40 50 (60) (70) (80)	50	5		45	2.5
	50		30 (35) 40 50 (60) (70) (80)	62	6	M8x16	55	
	60	+0.060 +0.030	(50) (60) (70) (80)	75	7.5		-	-
	80		(60) (70) (80)	96	8		-	-
	100	+0.071 +0.036	(80) (100)	120	10		-	-

* L dimensions in ( ) are only available for MPBZ.

Tolerance H7 (*2) to D dimensions (*1) is recommended for Housing Diameter. (Refer to Table 1) * Indicated Dimensions of Rotation Stopper Screw are recommended dimensions.

■Table 1

D	Outer Dia. m6 (*1)	Housing Dia. H7 (*2)
7~10	+0.015 +0.006	+0.015 0
11~18	+0.018 +0.007	+0.018 0
19~30	+0.021 +0.008	+0.021 0
31~50	+0.025 +0.009	+0.025 0
51~80	+0.030 +0.011	+0.030 0
81~120	+0.035 +0.013	+0.035 0

■Features of Thin Wall Type

- Provided thinner to be comparable to Multi-Layer MD Bushings.
- Applicable to both reciprocal and oscillating motions.
- Space Saving.
- Excels in abrasion resistance compared to Multi-Layer MD Bushings or Resin Bushings. Usable under high-load conditions.

Price - MPBZ

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~199
Discount Rate	€ Unit Price	5%	15%	35%
Days to Ship	Standard			

For orders larger than indicated amounts, please request a quotation.

- MPBZU

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~64	65~79	80~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated amounts, please request a quotation.

MPBZ

Part Number Type	d	€ Unit Price L8	L9	L10	L12	L15	L16	L19	L20	L25	L30	L35	L40	L50	L60	L70	L80	L100
MPBZ	5	●	●	●	●	●												
	6	●	●	●	●	●	●	●	●									
	8	●	●	●	●	●	●	●	●	●								
	10	●	●	●	●	●	●	●	●	●	●							
	12	●	●	●	●	●	●	●	●	●	●	●						
	13		●	●	●	●	●	●	●	●	●	●						
	15		●	●	●	●	●	●	●	●	●	●	●					
	16		●	●	●	●	●	●	●	●	●	●	●					
	18		●	●	●	●	●	●	●	●	●	●	●					
	20		●	●	●	●	●	●	●	●	●	●	●	●				
	20A		●	●	●	●	●	●	●	●	●	●	●	●				
	25				●	●	●	●	●	●	●	●	●	●	●			
	25A				●	●	●	●	●	●	●	●	●	●	●			
	30				●	●	●	●	●	●	●	●	●	●	●	●		
	35									●	●	●	●	●	●	●	●	
	40									●	●	●	●	●	●	●	●	●
	50													●	●	●	●	●
	60																	
	80																	
	100																	

MPBZU

Part Number Type	d	€ Unit Price L8	L10	L12	L15	L16	L20	L25	L30	L40	L50
MPBZU	5	●	●	●							
	6	●	●	●	●	●					
	8	●	●	●	●	●	●				
	10	●	●	●	●	●	●	●			
	12		●	●	●	●	●	●			
	13		●	●	●	●	●	●			
	15		●	●	●	●	●	●	●		
	16		●	●	●	●	●	●	●		
	18			●	●	●	●	●	●		
	20				●	●	●	●	●	●	
	25				●	●	●	●	●	●	
	30										
	35										
	40										
	50										

Order Example

Part Number	-	L
MPBZ10	-	15
MPBZU16	-	20

Days to Ship

6 Days

2 Days

P.87

Oil Free Bushings

-Copper Alloy Straight Standard: Thin Wall I.D.E7 O.D.r6 / I.D.G6 O.D.m6 / I.D.G6 O.D.h6 Type-

CAD data

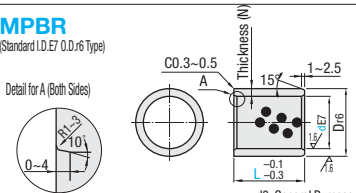
■Standard / Thin Wall I.D. E7 O.D. r6 Type

RoHS



MPBR

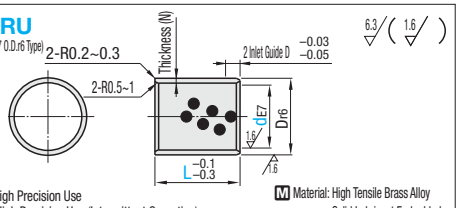
(Standard I.D.E7 O.D.r6 Type)



Recommended Mating Shafts for I.D. E7 O.D. r6 Type

MPBRU

(Thin Wall I.D.E7 O.D.r6 Type)



d8: General Purpose (High-Load)
e7: General Use (Light Load)
f8: High Precision Use
g6: High Precision Use (Intermittent Operation)

M Material: High Tensile Brass Alloy Solid Lubricant Embedded

Part Number Type	dE7		L	MPBR Dr6 (*1)	MPBR Thickness (N)	MPBRU Dr6 (*1)	MPBRU Thickness (N)
MPBR MPBRU	5	+0.032 +0.020	8 10 (12) (15)	9	2	7	1
	6	+0.040 +0.025	8 10 12 15 16 (20)	10		8	
	8		8 10 12 15 16 (20)	12		10	
	10		(8) 10 12 15 16 (20) (25)	14		12	
* L dimensions in ( ) are only available for MPBR.	12	+0.050 +0.032	(10) 12 15 16 20 (25)	18	3	15	1.5
	15		12 15 16 20 (25)	21		18	
	16		12 15 16 20 25 (30) (40)	22		20	2
	20	+0.061 +0.040	15 16 20 25 30 (40) (50)	28	4	24	
	25		16 20 25 30 (40) (50)	33		29	
	30		16 20 25 30 (40) (50)	38		34	

Tolerance H7 (*2) to D dimensions (*1) is recommended for housing diameter.

D	Outer Dia. r6 (*1)	Housing Dia. H7 (*2)
7~10	+0.028 +0.019	+0.015 0
11~18	+0.034 +0.023	+0.018 0
19~30	+0.041 +0.028	+0.021 0
31~50	+0.050 +0.034	+0.025 0

Features of Thin Wall Type P.331

■Features of Inner Diameter E7 Outer Diameter r6 Type

- Less likely to pull-out than I.D. F7 O.D. m6 Type.
- Inner Diameter after Press-Fitted is almost equal to I.D.F7 O.D.m6 Type. (See below for Inner Dia. variations after Press-Fitted)

■Copper Alloy Bushings: Inner Dia. variations after Press-Fitted (Reference)

Housing Diameter Tolerance: H7

Type	I.D. E7 O.D. r6	I.D. F7 O.D. m6
Standard	99.84%	99.95%
Thin Wall	99.83%	99.94%

Data above are not guaranteed but obtained by test.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~64	65~79	80~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation. To be quoted

Part Number Type	d	€ Unit Price L8	L10	L12	L15	L16	L20	L25	L30	L40	L50
MPBR	5										
	6										
	8										
	10										
	12										
	15										
	16										
	20										
	25										
	30										

Part Number Type	d	€ Unit Price L8	L10	L12	L15	L16	L20	L25	L30
MPBRU	5								
	6								
	8								
	10								
	12								
	15								
	16								
	20								
	25								
	30								

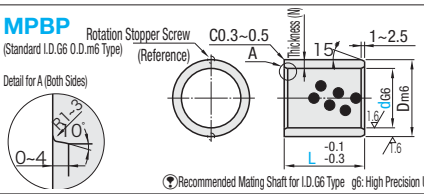
■Standard / Thin Wall I.D. G6 O.D. m6 Type

RoHS



MPBP

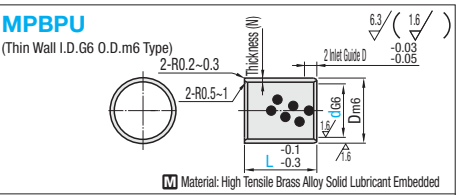
(Standard I.D.G6 O.D.m6 Type)



Recommended Mating Shaft for I.D.G6 Type g6: High Precision Use

MPBPU

(Thin Wall I.D.G6 O.D.m6 Type)



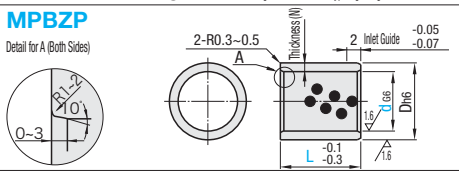
M Material: High Tensile Brass Alloy Solid Lubricant Embedded

■Standard I.D.G6 O.D.h6 Type

RoHS



MPBZP



■How to Use

-Keep the clearance with shafts to a minimum, then use with highly precise Linear and Rotary Motion.
-Use of Loctite adhesives is highly recommended because outer diameter tolerance is h6.

Mating Shaft g6: High Precision Use

M Material: High Tensile Brass Alloy Solid Lubricant Embedded

Part Number Type	dG6		L	MPBP Dm6 (*1)	MPBP Thickness (N)	MPBP * Rotation Stopper Screws (Ref.)	MPBPU Dm6 (*1)	MPBPU Thickness (N)	MPBZP Dh6 (*3)	MPBZP Thickness (N)
MPBP MPBPU MPBZP	5	+0.012 +0.004	(8) (10) (12) (15)	9	2	M4x8	7	1	-	2
	6		8 10 (12) (15) (16)	10			8		10	
	8	+0.014 +0.005	10 (12) (15) (16) (20)	12			10		12	
	10		10 12 15 16 (20) (25)	14			12		14	
* L dimensions in ( ) are only available for MPBZ. MPBP/MPBPU only * d - L dimension 5-15 is only available for MPBP.	12	+0.017 +0.006	12 15 16 20 (25)	18	3		15	1.5	18	3
	13		12 15 16 20 (25)	19			16		19	
	15		12 15 16 20 (25)	21			18		21	
	16		12 15 16 20 25	22			20		22	
	20	+0.020 +0.007	15 16 20 25 30	28	4	M5x8	24	2	28	4
	25		16 20 25 30 40	33			29		33	
	30		16 20 25 30 40	38			34		38	

For Housing Diameter, Tolerance G7 (*2) to D dimensions (*1), and tolerance H7 (*4) to D dimension (*3) are recommended.

* Indicated values of Rotation Stopper Screws are recommended dimensions.

D	MPBP Outer Dia. m6 (*1)	MPBPU Housing Dia. G7 (*2)	MPBZP Outer Dia. h6 (*3)	MPBZP Housing Dia. H7 (*4)
7~10	+0.015 +0.006	+0.020 +0.005	0 -0.009	+0.015 0
11~18	+0.018 +0.007	+0.024 +0.006	0 -0.011	+0.018 0
19~30	+0.021 +0.008	+0.028 +0.007	0 -0.013	+0.021 0
31~50	+0.025 +0.009	+0.034 +0.009	0 -0.016	+0.025 0

Features of Thin Wall Type P.331

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~64	65~79	80~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated quantity, please request a quotation. To be quoted

d-L	€ Unit Price MPBP	MPBPU	MPBZP
5-8			
10			
12			
15			
6-8			
10			
12			
15			
16			
8-10			
12			
15			
16			
20			
10-10			
12			
15			

d-L	€ Unit Price MPBP	MPBPU	MPBZP
10-16			
20			
25			
12-12			
15			
16			
20			
25			
13-12			
15			
16			
20			
25			
15-12			
15			
16			
20			

d-L	€ Unit Price MPBP	MPBPU	MPBZP
15-25			
16-12			
15			
16			
20			
25			
20-15			
16			
20			
25			
30			
25-16			
20			
25			
30			
40			
30-16			

d-L	€ Unit Price MPBP	MPBPU	MPBZP
30-20			
25			
30			
40			

Order Example: Part Number - L
MPBR12 - 12
MPBP20 - 15

Days to Ship: 6 Days P.87

Oil Free Bushings

-Copper Alloy with Oil Groove · Standard with Shoulder · Thin Wall Type-

Price Reduction 5%

CAD data

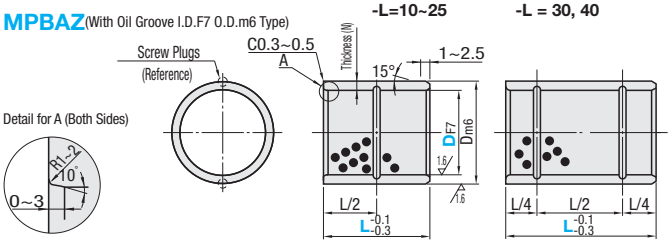
■With Oil Groove

RoHS



MPBAZ(With Oil Groove I.D.F7 O.D.m6 Type)

-L=10~25 -L = 30, 40



6.3 (1.6)

Recommended Mating Shaft
d8: General Purpose (High-Load)
e7: General Use (Light Load)
f8: High Precision Use
g6: High Precision Use (Intermittent Operation)

M Material: High Tensile Brass Alloy
Solid Lubricant Embedded

Part Number Type	dF7	L One Groove (Center)	L Two Grooves	Dm6	Thickness (N)	* Rotation Stopper Screws (Ref.)	€ Unit Price L10	L12	L15	L16	L20	L25	L30	L40
MPBAZ	10 +0.028 +0.013	10 12 15 16		14 +0.018	2	M4x8								
	12	12 15 16 20		18 +0.007										
	13 +0.034 +0.016	12 15 16 20		19	3									
	15	12 15 20		21 +0.021 +0.008										
	16	12 15 16 20 25		22										
	20	15 16 20 25 30		28										
	25 +0.041 +0.020	20 25 30 40		33 +0.025	4	M5x8								
	30	20 25 30 40		38 +0.009										

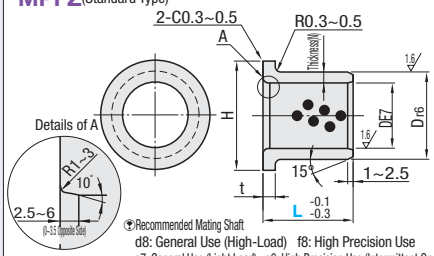
Tolerance H7 (*2) to D dimensions is recommended for housing diameter. (Refer to Table 1 on P.331) * Indicated Dimensions of Rotation Stopper Screw are recommended dimensions.

■Standard with Shoulder · Thin Wall

RoHS

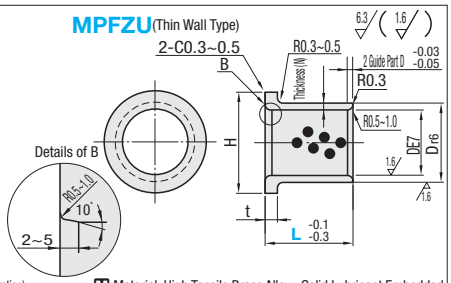


MPFZ(Standard Type)



Recommended Mating Shaft
d8: General Use (High-Load) f8: High Precision Use
e7: General Use (Light Load) g6: High Precision Use (Intermittent Operation)

MPFZU(Thin Wall Type)



M Material: High Tensile Brass Alloy Solid Lubricant Embedded

Part Number Type	dE7	L	MPFZ Dr6	Thickness (N)	H	0 t-0.1	MPFZU Dr6	Thickness (N)	H	0 t-0.1	Housing Dia.(Recommended Dimensions) MPFZ Reference Dimension	MPFZ Tolerance (H7)	MPFZU Reference Dimension	MPFZU Tolerance (H7)
MPFZ MPFZU	5 +0.032 +0.020	10 12	9 +0.028 +0.019	2	14	2	7 +0.028 +0.019	1	11	2	9	+0.015 0	7	+0.015 0
	6	10 12 15	10		16		8		12		10		8	
	8 +0.040 +0.025	10 12 15 20	12 +0.034 +0.023		20		10		14		12	+0.018 0	10	
	10	10 12 15 20 (25) (30)	14		22		12		16		14		12	
	12 +0.050 +0.032	10 12 15 20 25 30	18	3	25	3	15 +0.034 +0.023	1.5	21	3	18		15	+0.018 0
	13	(10) 12 15 20 (25) (30)	19		26		16		22		19		16	
	15	10 12 15 20 25 (30)	21		28		18		24		21	+0.021 0	18	
	16	12 15 20 25 30 (35) (40)	22 +0.041 +0.028		29		20 +0.041 +0.028	2	26		22		20	
	18	(15) (20) (25) (30) (35) (40)	24		32		-	-	-	-	24		-	+0.021 0
	20 +0.061 +0.040	15 20 25 30 (35) 40	30	5	40	5	24 +0.041 +0.028	2	32	4	30		24	
	25	(15) (20) (25) (30) (35) 40 50	35		45		29		37		35		29	
	30	(20) (25) 30 (35) 40 50	40 +0.050 +0.034		50		34 +0.050 +0.034		42		40	+0.025 0	34	+0.025 0
	35 +0.075 +0.050	(20) (25) (30) (35) (40) (50)	45		60		-	-	-	-	45		-	-
	40	(20) (25) (30) (35) (40) (50)	50		65		-	-	-	-	50		-	-
	50	(30) (35) (40) (50) (60)	60 +0.060 +0.041		75		-	-	-	-	60	+0.030 0	-	-

* L dimensions in ( ) are only available for MPFZ.

Price

- MPBAZ

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~79	80~99
Discount Rate	Standard € Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

- MPFZ

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~199
Discount Rate	Standard € Unit Price	5%	15%	35%
Days to Ship	Standard			

For orders larger than indicated amounts, please request a quotation.

- MPFZU

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~79	80~99
Discount Rate	Standard € Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Order Example

Part Number	-	L	
MPBAZ10	-	15	2 Days
MPFZ20	-	30	
MPFZU12	-	15	

Days to Ship 6 Days P.87

Alterations

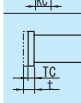
Part Number	-	L	-	(HC · KC · TC)
MPFZ30	-	30	-	HC48.5-KC20.5-TC4.1

8 Days

⊗Not applicable to MPBAZ.
⊗Not applicable to MPFZU (Thin Wall Type).

Part Number Type	d	€ Unit Price L10	L12	L15	L20	L25	L30	L35	L40	L50	L60
MPFZ	5										
	6										
	8										
	10										
	12										
	13										
	15										
	16										
	18										
	20										
	25										
	30										
	35										
	40										
	50										

Part Number Type	d	€ Unit Price L10	L12	L15	L20	L25	L30	L40	L50
MPFZU	5								
	6								
	8								
	10								
	12								
	13								
	15								
	16								
	20								
	25								
	30								

Alterations	Code	Spec.	Price Adder
	HC	Shoulder Diameter 0.1mm Increment Order Code HC48.5 D+2<HC<H	d5~d20 2,00 d25~d50 3,00
	KC	Shoulder Cut 0.1mm Increment Order Code KC4.5 D/2<KC<H/2	d5~d20 2,00 d25~d50 3,00
	TC	Shoulder Thickness 0.1mm Increment Order Code TC4.1 t/2<TC<t ⊗Overall Length will be shorter by t-TC.	d5~d20 2,00 d25~d50 3,00

Oil Free Bushings

-Copper Alloy Thrust Type-

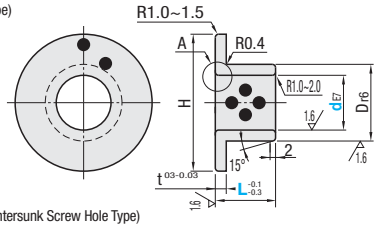
CAD data

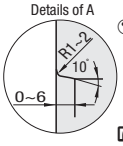
Features: It can bear radial journal load and thrust load at the same time.

Thrust Type RoHS



MPGZ (Standard Type)





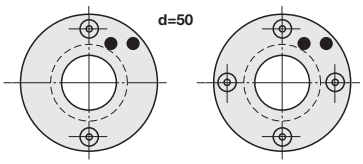


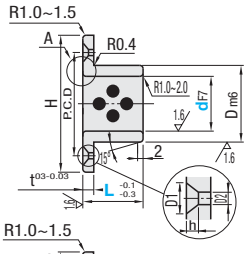
Recommended Mating Shaft
d8: General Purpose (High-Load)
e7: General Use (Light Load)
f8: High Precision Use
g6: High Precision Use (Intermittent Operation)

M Material: High Tensile Brass Alloy
Solid Lubricant Embedded

MPSZ (Flathead Countersunk Screw Hole Type)

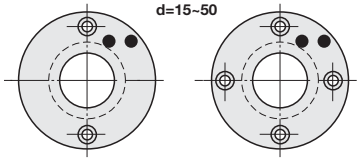
d=6~40 d=50

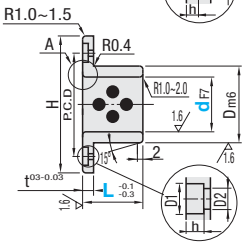




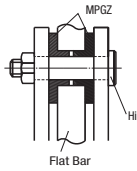
MPKZ (Low Head Screw Hole Type)

d=6~12 d=15~50





Example



Part Number Type	dE7	L	Dr6		H	t	Housing Dia.(Recommended Dimensions) Reference Dimension	Tolerance (H7)
MPGZ (Standard Type)	6 +0.035 +0.020	10 12	12	+0.034 +0.023	22	3	12	+0.018 0
	8 +0.040 +0.025	10 12 15	14		25		14	
	10 +0.025	10 12 15 20	16				16	
	12 +0.050 +0.032	10 12 15 20 25	18		30		18	+0.021 0
	13	12 15 20 25	19				19	
	15	12 15 20 25	21	+0.041 +0.028	35		21	
	16	12 15 20 25 30	22				22	
	18	14 20 25 30 35	24		40		24	
	20 +0.061 +0.040	14 20 25 30 35 40	28		45	5	28	
	25	14 20 25 30 35 40	33		50		33	
	30	20 25 30 35 40	38	+0.050 +0.034	55		38	+0.025 0
	35 +0.075 +0.050	20 25 30 35 40	44		65		44	
	40	25 30 35 40 45 50	50		70	7	50	
	50	30 35 40 45 50 60	62	+0.060 +0.041	90	8	62	+0 -0.030

Part Number Type	dF7	L	Dm6		MPSZ H	MPSZ Mounting Hole P.C.D	MPSZ Mounting Hole d1	MPSZ Mounting Hole d2	MPSZ Mounting Hole h	MPSZ Mounting Hole Flat-head Countersunk Screw	MPSZ t	MPKZ H	MPKZ Mounting Hole P.C.D	MPKZ Mounting Hole d1	MPKZ Mounting Hole d2	MPKZ Accessories Hexagon Socket Low Head Cap Screw	MPKZ t	Housing Dia. (Recommended Dimensions) Reference Dimension	Tolerance (H7)
MPSZ (Flathead Countersunk Screw Hole Type)	6 +0.035 +0.020	10 12	10	+0.018 +0.007	25	15	8.5	3.5	2.5	M3	3	25	17	6	3.5	2.2	M3-10 x 2pcs.	4	10	+0 -0.015
	8 +0.028	12 15	12		28	18						27	19						12	+0.018 0
	10 +0.013	12 15 20	14		30	20						29	21						14	
	12	12 15 20	18		40	28						36	26	7.5	4.5	3	M4-12 x 2pcs.	5	18	
	15 +0.034	12 15 20	21		50	35						39	29				M4-12 x 4pcs.		21	+0.021 0
	16 +0.016	12 15 20 25 30	22	+0.021 +0.008								40	30						22	
	18	20 25 30	24									42	32						24	
MPKZ (Low Head Screw Hole Type)	20 +0.041	20 25 30 35 40	28									49	38	9	5.5	3.7	M5-16 x 4pcs.	6	28	
	25 +0.020	20 25 30 35 40	33		55	40						54	43						33	+0.025 0
	30	20 25 30 35 40	38	+0.025 +0.009	60	45	13	6	3.5	M5	5	63	50	11	6.6	4.2	M6-20 x 4pcs.	8	38	
	35	20 25 30 35 40	44		70	52						69	56						44	
	40 +0.050	25 30 35 40 45	50		80	60	16	7	4.5	M6	7	82	66	14	9	5.2	M8-25 x 4pcs.	10	50	
	50 +0.025	30 35 40 45	62	+0.030 +0.009	100	75					8	94	78						62	+0 -0.030

Price

Volume Discounte (Round down to one Cent.) P.87

Quantity	1~49	50~64	65~79	80~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

d-L	€ Unit Price MPGZ	MPSZ	MPKZ
6-10			
6-12			
8-10			
8-12			
8-15			
10-10			
10-12			
10-15			
10-20			
12-10			
12-12			
12-15			
12-20			

d-L	€ Unit Price MPGZ	MPSZ	MPKZ
12-25			
13-12			
13-15			
13-20			
13-25			
15-12			
15-15			
15-20			
15-25			
16-12			
16-15			
16-20			
16-25			

d-L	€ Unit Price MPGZ	MPSZ	MPKZ
16-30			
18-14			
18-20			
18-25			
18-30			
18-35			
20-14			
20-20			
20-25			
20-30			
20-35			
20-40			
25-14			

d-L	€ Unit Price MPGZ	MPSZ	MPKZ
25-20			
25-25			
25-30			
25-35			
25-40			
30-20			
30-25			
30-30			
30-35			
30-40			
35-20			
35-25			
35-30			

d-L	€ Unit Price MPGZ	MPSZ	MPKZ
35-35			
35-40			
40-25			
40-30			
40-35			
40-40			
40-45			
40-50			
50-30			
50-35			
50-40			
50-45			
50-50			
50-60			

Order Example

Part Number	-	L
MPGZ10	-	15
MPSZ12	-	15
MPKZ16	-	20

Days to Ship: MPGZ 6 Days P.87 / MPSZ, MPKZ 2 Days

Flange Integrated Oil Free Bushings

-Copper Alloy Standard Flanged I.D.F7 · I.D.G6 Type-

CAD Data

■Standard Flanged Inner Dia. F7 • G6 Type

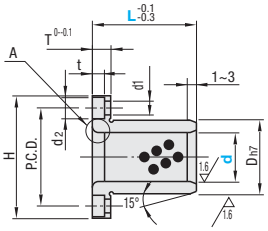
RoHS

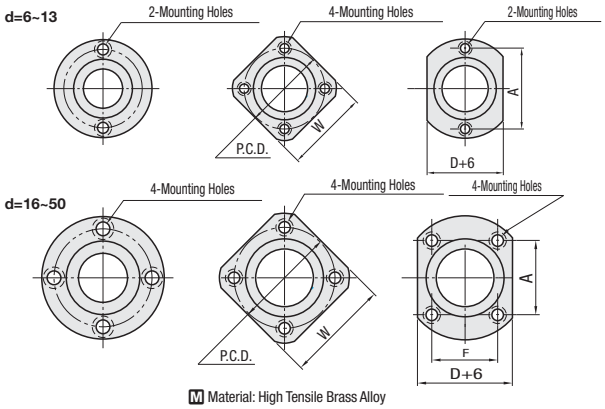


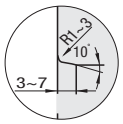
Round Flange **MPTZ**(Inner Dia. F7) **MPTP**(Inner Dia. G6)

Square Flange **MPTSZ**(Inner Dia. F7)

Compact **MPTNZ**(Inner Dia. F7) **MPTNP**(Inner Dia. G6)







Recommended Mating Shaft of Inner Diameter F7 Type
d8: General Purpose (High-Load)
e7: General Use (Light Load)
f8: High Precision Use
g6: High Precision Use (Intermittent Operation)

Recommended Mating Shaft of I.D. G6 Type
g6: High Precision Use

M Material: High Tensile Brass Alloy
Solid Lubricant Embedded

A Accessories: Hexagon Socket Low Head Cap Screws 2~4 pcs.

Part Number Type	dF7		L	Dh7		H	T	t	d1	d2	P.C.D.	W	F	A	Accessories Hexagon Socket Low Head Cap Screw
I.D. F7 Type MPTZ MPTSZ MPTNZ	6	+0.022 +0.010	15 20	10	0 -0.015	25	4	2.2	3.5	6	17	20	-	17	M3-10x2 *(4)
	8	+0.028 +0.013	20 25	12	0 -0.018	27					19	22		19	
	10		20 25 30	14		29					21	23		21	
	12	+0.034 +0.016	20 25 30	18		36	5	3	4.5	7.5	26	28		26	M4-12x2 *(4)
	13		20 25 30 35	19	0 -0.021	37					27	29		27	
	16		20 25 30 35 40	22		40					30	31	18	24	M4-12x4
	20	+0.041 +0.020	25 30 35 40 50	28		49	6	3.7	5.5	9	38	38	22	31	M5-16x4
	25		30 35 40 50 60	33		54					43	42	25	35	
	30		35 40 50 60 70	38	0 -0.025	63	8	4.2	6.6	11	50	50	30	40	M6-20x4
	35	+0.050 +0.025	50 60 70	44		69					56	54	36	43	
	40		60 70 80	50		82	10	5.2	9	14	66	64	38	54	M8-25x4
	50		70 80 100	62	0 -0.030	94					78	73	50	60	

* Values in ( ) are qty. of screws included in MPTSZ.

Part Number Type	dG6		L	Dh7		H	T	t	d1	d2	P.C.D	F	A	Accessories Hexagon Socket Low Head Cap Screw
Inner Dia. G6 Type MPTP MPTNP	6	+0.012 +0.004	15	10	0 -0.015	25	4	2.2	3.5	6	17	-	17	M3-10x2
	8	+0.014 +0.005	20	12	0 -0.018	27					19		19	
	10		25	14		29					21		21	
	12	+0.017 +0.006	25 30	18		36	5	3	4.5	7.5	26		26	M4-12x2
	13		25 30 35	19	0 -0.021	37					27		27	
	16		25 30 35 40	22		40					30	18	24	M4-12x4
	20	+0.020 +0.007	30 35 40	28		49	6	3.7	5.5	9	38	22	31	M5-16x4
	25		30 35 40	33		54					43	25	35	
	30		35 40 50	38	0 -0.025	63	8	4.2	6.6	11	50	30	40	M6-20x4

Price

■Volume Discount (Round down to one Cent.) P87

• MPTZ • MPTSZ • MPTNZ

Quantity	1~29	30~34	35~39	40~49
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

• MPTP • MPTNP

Quantity	1~29	30~34	35~39	40~49
Discount Rate		5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated quantity, please request a quotation.

Part Number Type	d-L	€ Unit Price MPTZ	MPTSZ	MPTNZ
MPTZ MPTSZ MPTNZ	6-15			
	20			
	8-20			
	25			
	10-20			
	25			
	30			
	12-20			
	25			
	30			
	13-20			

d-L	€ Unit Price MPTZ	MPTSZ	MPTNZ
13-25			
30			
35			
16-20			
25			
30			
35			
40			
20-25			
30			
35			

d-L	€ Unit Price MPTZ	MPTSZ	MPTNZ
20-40			
50			
25-30			
35			
40			
50			
60			
30-35			
40			
50			
60			

d-L	€ Unit Price MPTZ	MPTSZ	MPTNZ
30-70			
35-50			
60			
70			
40-60			
70			
80			
50-70			
80			
100			

Part Number Type	d-L	€ Unit Price MPTP	MPTNP
MPTP MPTNP	6-15		
	8-20		
	10-25		
	12-25		
	30		
	13-25		
	30		
	35		
	16-25		
	30		
	35		

d-L	€ Unit Price MPTP	MPTNP
16-40		
20-30		
35		
40		
25-30		
35		
40		
30-35		
40		
50		

Order Example: Part Number - L
MPTZ12 - 30
MPTP16 - 35

Days to Ship: 6 Days P87

2 Days

Flange Integrated Oil Free Bushings / Oil Free Copper Alloy Washers

-Copper Alloy Pilot Flanged · Center Flanged Type-

-Flat Countersunk Screw · Low Head Cap Screw Type-

Price Reduction 5%

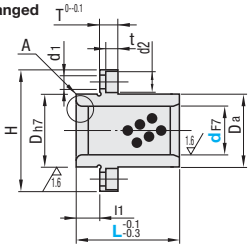
CAD Data

■Pilot Flanged · Center Flanged Type

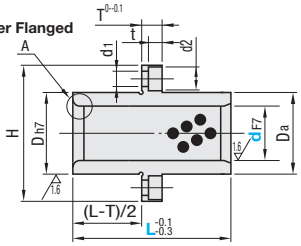
RoHS



Pilot Flanged Type



Center Flanged Type

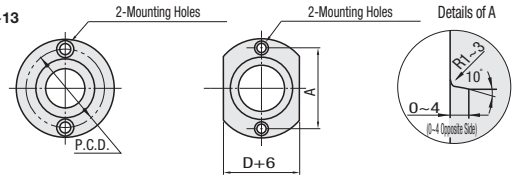


Round Flange
MPIZ (Pilot Flanged)
MPCZ (Center Flanged)

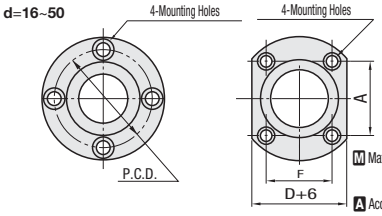
Compact
MPITZ (Pilot Flanged)
MPCTZ (Center Flanged)

6.3 (1.6)

d=8~13



d=16~50



Recommended Mating Shaft
d8: General Purpose (High-Load)
e7: General Use (Light Load)
f8: High Precision Use
g6: High Precision Use (Intermittent Operation)

M Material: High Tensile Brass Alloy Solid Lubricant Embedded

A Accessories: Hexagon Socket Low Head Cap Screws 2~4 pcs.

Part Number Type	dF7		L	Dh7		Da	L1	H	T	t	d1	d2	P.C.D.	F	A	Accessories Hexagon Socket Low Head Cap Screw
Pilot Flanged Type MPIZ MPITZ	8	+0.028 +0.013	20 (25)	12	0 -0.018	11.5	5	27	4	2.2	3.5	6	19	-	19	M3-10x2
	10		25 30	14		13.5	6	29					21		21	
	12		25 30	18		17.5		36	5	3	4.5	7.5	26		26	M4-12x2
	13	+0.034 +0.016	(25) (30) 35	19	0 -0.021	18.5		37					27		27	
	16		25 30 35 40	22		21.5		40					30	18	24	M4-12x4
Center Flanged Type MPCZ MPCTZ	20	+0.041 +0.020	30 35 40 50	28		27.5	8	49	6	3.7	5.5	9	38	22	31	M5-16x4
	25		(30) (35) (40) (50) 60	33	0 -0.025	32.5		54					43	25	35	
	30		(35) (40) (50) (60) 70	38		37.5	10	63	8	4.2	6.6	11	50	30	40	M6-20x4
	35	+0.050 +0.025	(50) 70	44		43.5		69					56	36	43	
	40		(60) (70) 80	50		49.5	13	82	10	5.2	9	14	66	38	54	M8-25x4
	50		(70) 100	62	0 -0.030	61.5		94					78	50	60	

* L dimensions in ( ) are Pilot Flanged Type only

d-L	€ Unit Price MPIZ	MPITZ	MPCZ	MPCTZ
8-20				
25				
10-25				
30				
12-25				
30				
13-25				
30				
35				
16-25				
30				
35				

d-L	€ Unit Price MPIZ	MPITZ	MPCZ	MPCTZ
16-40				
20-30				
35				
40				
50				
25-30				
35				
40				
50				
60				
30-35				
40				

d-L	€ Unit Price MPIZ	MPITZ	MPCZ	MPCTZ
30-50				
60				
70				
35-50				
70				
40-60				
70				
80				
50-70				
100				

Part Number - L
MPIZ12 - 30
MPCZ16 - 30

6 Days P.87

■Volume Discount (Round down to one Cent.) P.87

• MPITZ

Quantity	1~29	30~34	35~39	40~49
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

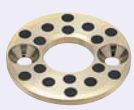
• Others

Quantity	1~29	30~34	35~39	40~49
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

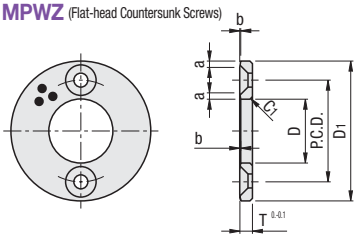
For orders larger than indicated amounts, please request a quotation.

■Fleat-head Countersunk Screw Type

RoHS



MPWZ (Flat-head Countersunk Screws)



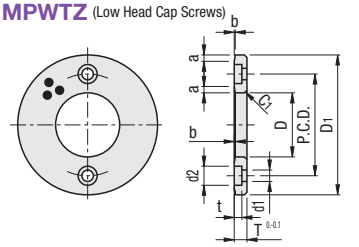
M Material: High Tensile Brass Alloy Solid Lubricant Embedded

■Low Head Bolt Type

RoHS



MPWTZ (Low Head Cap Screws)



M Material: High Tensile Brass Alloy Solid Lubricant Embedded

Part Number Type	No.	T	Tolerance	D	Tolerance	D1	Mounting Hole P.C.D.	Quantity	MPWZ Fleat-head Countersunk Screw	MPWTZ d1	MPWTZ d2	MPWTZ t	Chamfers a	Chamfers b	€ Unit Price MPWZ	€ Unit Price MPWTZ
MPWZ MPWTZ	6	3(4)	0 -0.1	6.2	+0.2 +0.1	25	15	2	M3	3.5	6	2.4	1.5	0.3		
	8			8.2		28	18									
	10			10.2		30	20									
	12			12.2		40	28						2			
	13			13.2												
	15			15.2		50	35									
	16			16.2										0.4		
	18			18.2												
	20	5		20.2		55	40		M5	4.5	7.5	3	2.5			
	25			25.2												
	30			30.2		60	45									
	35			35.2		70	50									
	40	7		40.2		80	60	4	M6	5.5	9	4	3	0.5		
	50	8		50.3		100	75						4	0.6		

* For MPWTZ, T dimensions of No.6~18 are values in ( ).
* For Hexagon Socket Low Head Cap Screws, refer to P.2-189
* Indicated Dimensions of Fleat-head Countersunk Screws are recommended dimensions.

Order Example
Part Number
MPWZ18
MPWTZ15

Days to Ship
6 Days P.87
2 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~199
Discount Rate	€ Unit Price	5%	15%	35%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushings

-Bronze Straight I.D.F7 O.D.m6 · I.D.E7 O.D.r6 Type / Bronze Shoulder Type-

Price Reduction

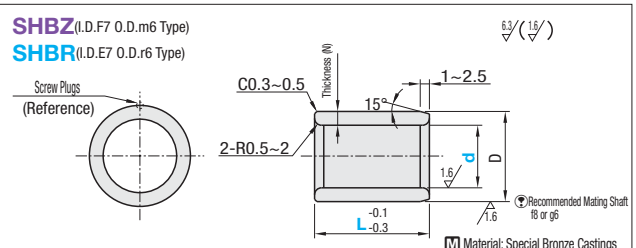
CAD Data

For features, see below.

Straight Type RoHS



SHBZ(I.D.F7 O.D.m6 Type)
SHBR(I.D.E7 O.D.r6 Type)



Ensure the bushing remains well lubricated.

Material: Special Bronze Castings
Allowable Temperature: -40~150°C

Features of Bronze Type

-Suited for high speed and low load under lubricated conditions.
-Excels in friction, heat and corrosion resistance under lubricated conditions.
- Lubrication frequency can be reduced.
- Alterations on Overall Length are available.

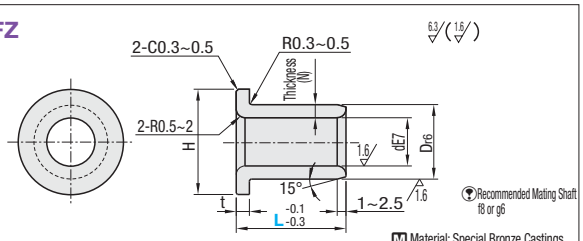
Part Number Type	d	F7	E7	L	D	m6	r6	Thickness (N)	* Housing Dia. Reference Dimension	Tolerance (H7)	* Rotation Stopper Screws (Reference)
SHBZ (I.D. F7 O.D. m6 Type) SHBR (I.D. E7 O.D. r6 Type)	5	+0.022 +0.010	+0.032 +0.020	8 10 12 15	9	+0.015 +0.006	+0.028 +0.019	2	9	+0.015 0	M4x8
	6			8 10 12 15 20	10				10		
	8	+0.028 +0.013	+0.040 +0.025	8 10 12 15 20 25	12	+0.018 +0.007	+0.034 +0.023		12	+0.018 0	
	10			8 10 12 15 20 25	14				14		
	12			10 12 15 20 25	18			3	18		
	13	+0.034 +0.016	+0.050 +0.032	15 20	19	+0.021 +0.008	+0.041 +0.028		19	+0.021 0	
	15			10 12 15 20 25	21				21		
	16			10 12 15 20 25 30 40	22				22		
	20	+0.041 +0.020	+0.061 +0.040	15 20 25 30 40 50	28			4	28		M5x8
	25			20 25 30 40 50	33	+0.025 +0.009	+0.050 +0.034		33	+0.025 0	
	30			25 30 40 50 60	38				38		M6x16

* Indicated dimensions of Housing Dia. and Rotation Stopper Screws are recommended dimensions. For working on SHBZ, Rotation Stopper Screws are recommended.

Shoulder Type RoHS



SHFZ



Ensure the bushing remains well lubricated.

Material: Special Bronze Castings
Allowable Temperature: -40~150°C

Features of I.D.E7 O.D.r6

- Less likely to pull-out than I.D.F7 O.D.m6 Type.
- Inner Diameter after Press-Fit is almost equal to I.D.F7 O.D.m6 Type.

Bronze Bushings: Inner Dia. variations after Press-Fitted (Ref. value)

Housing Diameter: H7

I.D. E7 O.D. r6	I.D. F7 O.D. m6
99.82%	99.94%

Data above are obtained by test, not guaranteed.

Part Number Type	dE7		L	Dr6		Thickness (N)	H	0 t-0.1	* Housing Dia. Reference Dimension	Tolerance (H7)	€ Unit Price L10	L12	L15	L20	L25	L30	L40	L50
SHFZ	5	+0.032	10 12	9	+0.028	2	14	2	9	+0.015 0								
	6	+0.020	10 12 15	10	+0.019		16		10									
	8	+0.040	10 12 15 20	12	+0.034 +0.023		20		12	+0.018 0								
	10	+0.025	10 12 15 20	14			22		14									
	12		10 12 15 20 25 30	18		3	25	3	18									
	13	+0.050 +0.032	12 15 20	19	+0.041 +0.028		26		19	+0.021 0								
	15		10 12 15 20 25	21			28		21									
	16		12 15 20 25 30	22			29		22									
	20	+0.061 +0.040	15 20 25 30 40	30		5	40	5	30	+0.025 0								
	25		30 40 50	35	+0.050 +0.034		45		35									
	30		30 40 50	40			50		40									

* Housing diameters listed here are recommended dimensions.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~49	50~64	65~79	80~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

SHBZ · SHFZ

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	10%	20%	30 %

Order Example

Part Number	-	L
SHBZ12	-	15
SHBR16	-	20
SHFZ16	-	20

Days to Ship

6 Days P87 2 Days

Alterations

Part Number - L - (LC) 8 Days
SHBZ20 - 20 - LC10

Alteration	Code	Spec. d	min SHBZ SHBR	min SHFZ	Price Adder
LC	LC	5 6 8 10	5	7	d5~d20 2,00
	Full Length Specify in 1mm Increment. Order Code min≤LC<L	12 13 15 16	7	10	d25 · 30 3,00
		20		12	
		25 30	10	15	

Type	d	€ Unit Price L8	L10	L12	L15	L20	L25	L30	L40	L50	L60
SHBZ	5										
	6										
	8										
	10										
	12										
	13										
	15										
	16										
	20										
	25										
	30										

Type	d	€ Unit Price L8	L10	L12	L15	L20	L25	L30	L40	L50	L60
SHBR	5										
	6										
	8										
	10										
	12										
	13										
	15										
	16										
	20										
	25										
	30										

Oil Free Bushings

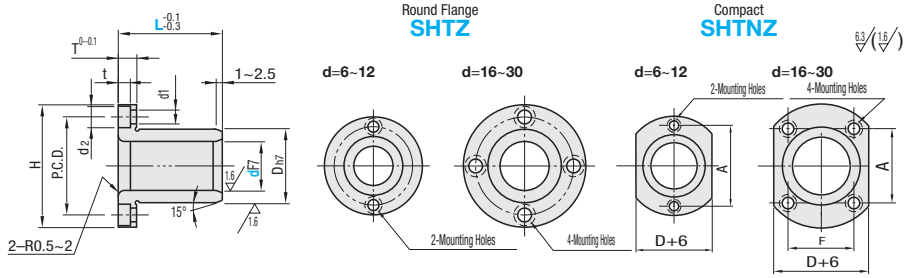
-Bronze Standard Flanged Type / Oil Free Bushings with Male Thread Housing (Built-in Copper Alloy)-

CAD Data

Standard Flanged Type

RoHS





Recommended Mating Shaft f8 or g6

M Material: Special Bronze Castings
Allowable Temperature: -40~150°C
A Accessories: Hexagon Socket Low Head Cap Screws 2~4 pcs.

Ensure the bushing remains well lubricated.

Part Number Type	d F7		L	D_{h7}		H	T	t	d_1	d_2	P.C.D.	F	A	Accessories Hexagon Socket Low Head Cap Screw
SHTZ SHTNZ	6	+0.022 +0.010	15	10	0 -0.015	25	4	2.2	3.5	6	17	-	17	M3-10x2
	8	+0.028	20 25	12	0 -0.018	27					19		19	
	10	+0.013	25 30	14		29					21		21	
	12	+0.034	25 30	18		36	5	3	4.5	7.5	26		26	M4-12x2
	16	+0.016	25 30 35 40	22	0 -0.021	40					30	18	24	M4-12x4
	20	+0.041	30 35 40 50	28		49	6	3.7	5.5	9	38	22	31	M5-16x4
	25	+0.020	30 35 40 50 60	33	0 -0.025	54					43	25	35	
	30		35 40 50 60 70	38		63	8	4.2	6.6	11	50	30	40	M6-20x4

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~34	35~39	40~49
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Alterations

Part Number - L - (LC)
SHTZ20 - 30 - LC20

8 Days

Type	d	€ Unit Price L15	L20	L25	L30	L35	L40	L50	L60	L70
SHTZ	6									
	8									
	10									
	12									
	16									
	20									
	25									
	30									

Type	d	€ Unit Price L15	L20	L25	L30	L35	L40	L50	L60	L70
SHTNZ	6									
	8									
	10									
	12									
	16									
	20									
	25									
	30									

Alteration	Code	Spec.			Price Adder
	LC	Full Length Specify in 1mm Increment. Order Code min≤LC<L	d	min	d6~d20 2,00 d25·30 3,00
			6	9	
			8		
			10	12	
			12		
			16		
			20	13	
			25	16	
			30	18	

Order Example

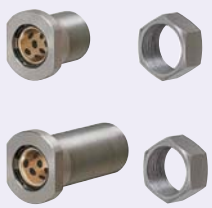
Part Number	-	L
SHTZ16	-	25
SHTNZ16	-	40

Days to Ship 6 Days P.87

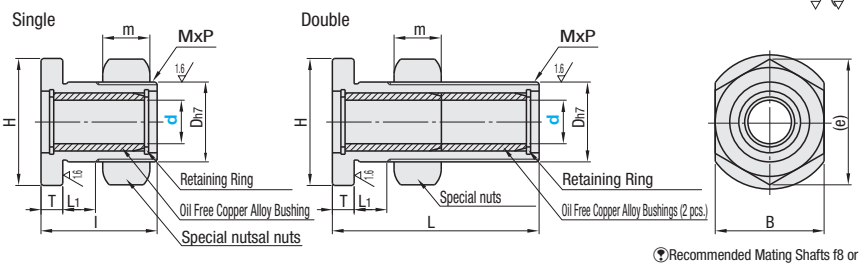
Features Machining and assembly process to the assembling plate can be reduced by changing from the conventional tapping hole x 4 to H7 hole x 1.
Removing counterbored holes for screw mounting from the flange made the flange diameter up to 17mm smaller, resulting in space savings.
The nut was developed for this product with a compact design with opposite sides and angles are the same thickness as JIS Type 3.

With Male Thread Housing Oil Free Bushings

RoHS



Case	Type	Housing M Material	Housing S Surface Treatment	Tightening Nut M Material	Tightening Nut S Surface Treatment	Bushings M Material
Single	MPNT	1.0038/ S235JR	Electroless Nickel Plating	1.1191/C45E	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded
Double	MPNTW					



Recommended Mating Shafts f8 or g6

Part Number Type	d	D	L Single	L Double	L_1	T	H	B	M	m	(e)	€ Unit Price MPNT	€ Unit Price MPNTW
Single MPNT Double MPNTW	6	14	22	37	5	5	20	17	14x1.5	8	19.6		
	8	18	27	47	5	5	25	21	18x1.5	11	24.3		
	10	20	32	57	5	6	30	24	20x1.5	12	27.7		
	12	22	32	57	10	6	32	27	22x1.5	13	31.2		
	13	24	32	57	10	6	35	30	24x1.5	14	34.6		
	16	27	37	67	10	6	40	32	27x1.5	16	37.0		
	20	33	42	77	10	8	45	38	33x1.5	20	43.9		
	25	40	58	108	10	8	55	46	40x1.5	25	53.1		
	30	48	68	128	10	10	65	55	48x1.5	29	63.5		

<Dimensions of Special Nuts>

M	m	Special nut B	Special nut (e)	JIS Type 3 B	JIS Type 3 (e)
14	8	17	19.6	22	25.4
18	11	21	24.3	27	31.2
20	12	24	27.7	30	34.6
22	13	27	31.2	32	37.0
24	14	30	34.6	36	41.6
27	16	32	37.0	41	47.3
33	20	38	43.9	50	57.7
40	25	46	53.1	-	-
48	29	55	63.5	75	86.5

Order Example

Part Number
MPNT6
MPNTW16

Days to Ship 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Standard Flanged Oil Free Bushings-Compact Type-

-Built-in Copper Alloy Bushings Single · Double Type-

Price Reduction 20%

CAD Data

For Features of With Non-Contact Seals, refer to **P.340**

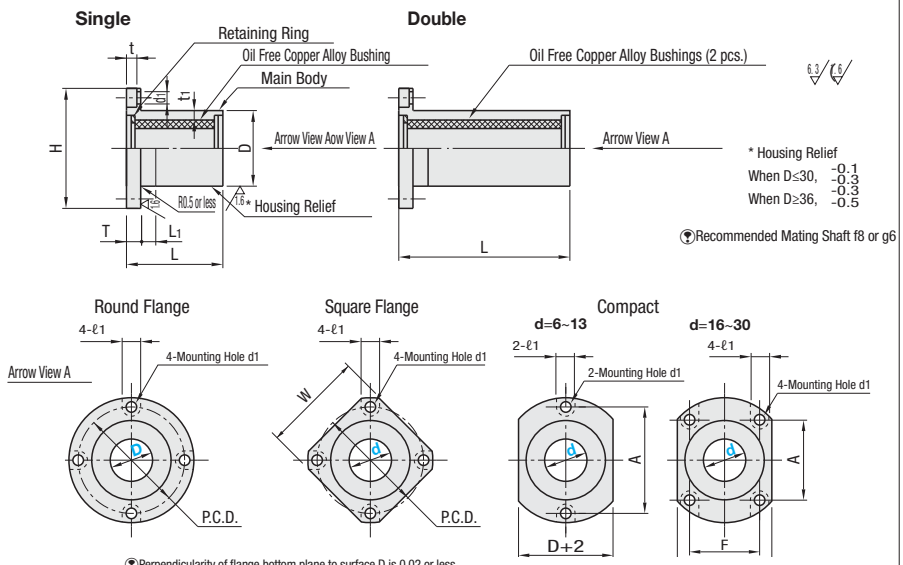
■Compact Type

RoHS



With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

Housing Type	Type			Seal	Housing		Bushings
	Round Flange	Square Flange	Compact		Material	Surface Treatment	Material
Single	MFMSC	MFKSC	MFNSC	No Seal	1.0038/ S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded
	MFMSC-S	MFKSC-S	MFNSC-S	With Non-Contact Seals			
Double	MFMWC	MFKWC	MFNWC	No Seal			
	MFMWC-S	MFKWC-S	MFNWC-S	With Non-Contact Seals			



Perpendicularity of flange bottom plane to surface D is 0.02 or less.

Part Number Type				d	Tolerance	D	Tolerance	L Single	L Double	L1	H	T	d1	ℓ1	t	t1	P.C.D.	W	F	A
		Round Flange	Square Flange	Compact																
Single	(No Seal)	MFMSC	MFKSC	MFNSC	6	+0.022 0	12	0 -0.018	22	37	5	25	5	3.5	6	3.1	1.5	20	20	-	20
					8	+0.028 0	15		27	47		28					2.0	23	22	-	23
					10		18		32	57		35	6	4.5	7.5	4.1	2.0	28	27	-	28
	(With Non-Contact Seals)	MFMSC-S	MFKSC-S	MFNSC-S	12	+0.034 0	20	0 -0.021			10	37					2.0	30	29	-	30
					13		21					38					2.0	31	29	-	31
Double	(No Seal)	MFMWC	MFKWC	MFNWC	16		26		37	67		43					2.0	36	33	19	30
	(With Non-Contact Seals)	MFMWC-S	MFKWC-S	MFNWC-S	20	+0.041 0	30		42	77		50	8	5.5	9	5.1	2.0	41	38	21	36
					25		36	0 -0.025	58	108		56					2.5	47	42	27	38
					30		42		68	128		65	10	6.6	11	6.1	3.0	55	49	30	46

Price

■Volume Discount (Round down to one Cent.) **P87**

Quantity	1~9	10~14	15~19
Discount Rate	€ Unit Price	5%	10%
Days to Ship	Standard	To be quoted	

For orders larger than indicated amounts, please request a quotation.

d	(No Seal) € Unit Price						(With Non-Contact Seals) € Unit Price					
	Single			Double			Single			Double		
	MFMSC	MFKSC	MFNSC	MFMWC	MFKWC	MFNWC	MFMSC-S	MFKSC-S	MFNSC-S	MFMWC-S	MFKWC-S	MFNWC-S
6												
8												
10												
12												
13												
16												
20												
25												
30												

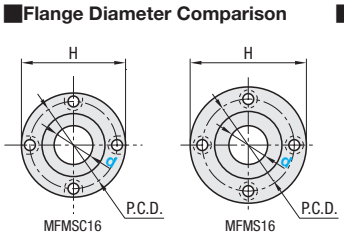
■Features of Compact Type

Thinning the outer cylinder and cutting out mounting holes from the flange have made the flange diameter compact.
This compact type is up to 5mm smaller in P.C.D. and up to 9mm smaller in flange diameter than the Standard Type shown on next page.
Best suited for space-saving.

■Comparison of Flange Diameter (H dimension) and P.C.D. of MFMS and MFMSC

d	H			P.C.D		
	MFMS	MFMSC	Reduced Value	MFMS	MFMSC	Reduced Value
6	28	25	-3	20	20	0
8	32	28	-4	24	23	-1
10	40	35	-5	29	28	-1
12	42	37	-5	32	30	-2
13	43	38	-5	33	31	-2
16	48	43	-5	38	36	-2
20	54	50	-4	43	41	-2
25	62	56	-6	51	47	-4
30	74	65	-9	60	55	-5

■Flange Diameter Comparison



■Strength Test Results of Compact and Standard Types P.341

Order Example — Part Number: MFMSC6, MFMSC-S25

Days to Ship — - No Seal: 6 Days P.87

- With Non-Contact Seals: 8 Days — Express A 5,00 EUR / piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Standard Flanged Oil Free Bushings-Standard Type-

-Built-in Copper Alloy Bushings Single · Double · Long Type-

CAD Data

For Features of With Dust Seals and With Non-Contact Seals, see below. Flanged Height-Adjusting Spacers are selectable. P.288

Standard Type

RoHS



(With Non-Contact Seals)



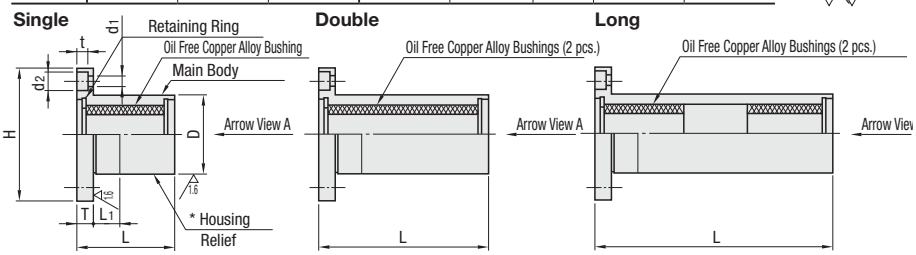
(With Dust Seals)

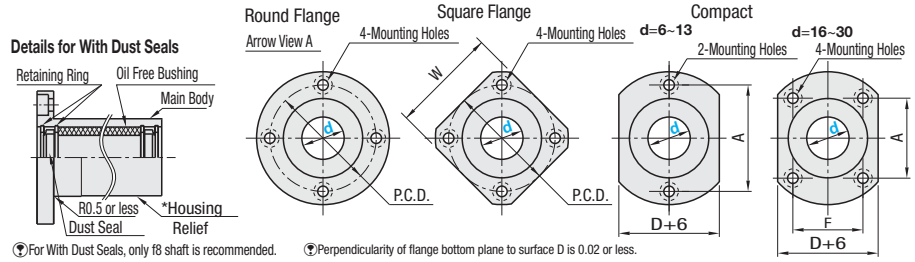


Housing Type	Type: Round Flange	Type: Square Flange	Type: Compact	Seal	Seals: M Material	Housing: M Material	Housing: S Surface Treatment	Bushings: M Material
Single	MFMS	MFKS	MFNS	No Seal	-	1.0038/S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded
	MFMS-S	MFKS-S	MFNS-S	With Non-Contact Seals	Teflon Resin			
	MFMS-DS	-	MFNS-DS	With Dust Seals	Nitrile Rubber			
	SMFMS	SMFKS	SMFNS	No Seal	-	1.4301/X5CrNi18-10	-	
	SMFMS-S	SMFKS-S	SMFNS-S	With Non-Contact Seals	Teflon Resin			
Double	MFMW	MFKW	MFNW	No Seal	-	1.0038/S235JR	Electroless Nickel Plating	
	MFMW-S	MFKW-S	MFNW-S	With Non-Contact Seals	Teflon Resin			
	MFMW-DS	-	MFNW-DS	With Dust Seals	Nitrile Rubber			
Long	MFML	MFKL	-	No Seal	-			
	MFML-S	MFKL-S	-	With Non-Contact Seals	Teflon Resin			

* Housing Relief
When D≤28, $^{-0.1}_{-0.3}$
When D≥32, $^{-0.3}_{-0.5}$

Recommended Mating Shaft f8 or g6





For With Dust Seals, only f8 shaft is recommended.

Perpendicularity of flange bottom plane to surface D is 0.02 or less.

Part Number Type		Round Flange	Square Flange	Compact	d	Tolerance	D	Tolerance	L: No Seal · With Non-Contact Seals: Single	Double	Long	L: With Dust Seals: Single	Double	L1	H	T	d1	d2	t	P.C.D.	W	F	A
• Single	(No Seal)	MFMS	MFKS	MFNS	6	+0.022 0	12	0 -0.018	22	37	52	-	-	5	28	5	3.5	6	3.1	20	22	-	20
	(With Non-Contact Seals)	MFMS-S	MFKS-S	MFNS-S	8	+0.028 0	15		27	47	67	-	-		32					24	25	-	24
	(With Dust Seals)	MFMS-DS		MFNS-DS	10		19		32	57	82	-	-		40	6	4.5	7.5	4.1	29	30	-	29
	(No Seal)	SMFMS	SMFKS	SMFNS	12	+0.034 0	21	0 -0.021				-	-	10	42					32	32	-	32
	(With Non-Contact Seals)	SMFMS-S	SMFKS-S	SMFNS-S	13		23					-	-		43					33	34	-	33
					16*		28		37	67	97	45	75		48					38	37	22	31
• Double	(No Seal)	MFMW	MFKW	MFNW	20*	+0.041 0	32	0 -0.025	42	77	112	51	86		54	8	5.5	9	5.1	43	42	24	36
	(With Non-Contact Seals)	MFMW-S	MFKW-S	MFNW-S	25*		40		58	108	158	70	120		62					51	50	32	40
	(With Dust Seals)	MFMW-DS		MFNW-DS	30*		45		68	128	188	81	141		74					60	58	35	49
					35	+0.050 0	52	0 -0.030	68	128	-	-	-		82	10	6.6	11	6.1	67	64	-	-
• Long	(No Seal)	MFML	MFKL		40		60		80	150	-	-	-	15	96	13	9	14	8.1	78	75	-	-
	(With Non-Contact Seals)	MFML-S	MFKL-S		50		80		90	170	-	-	-		116					98	92	-	-

With Dust Seals are only available in * marked sizes.

Features: with Dust Seals / with Non-Contact Seals

- Contact Seals built into With Dust Seals Type prevent small dust from Sliding Contact Surface.
- For Sliding resistance of With Dust Seals, refer to Sliding Resistance Test Data.
- Employed Dust Seals are SER series of SAKAGAMI SEISAKUSHO LTD.
- With Non-Contact Seals are provided to prevent large dust entry. Clearance between shafts and bushings (approx. 0.1mm) lower the sliding resistance than With Dust Seals.

Dust Seals Sliding Resistance Test

d	Sliding resistance (N)	SAKAGAMI SEISAKUSHO LTD. Dust Seals
16	6	SER16
20	7	SER20
25	8	SER25
30	12	SER30

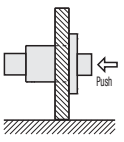
Values are for reference only.

Test Conditions

1. Tester: Push-Pull Gauge
2. Bushings: Copper Alloy Type
3. Shaft: MISUMI f8 shaft

Testing Method

Measured the load when the shaft started to move.
* Speed 1mm/s approx.



Price -MFMS · MFMS-S · MFMW-S MFNS · MFNS-S · MFKS-S

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

-Others

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Delivery Time	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

1.0038/S235JR Housing Price List

d	(No Seal) € Unit Price: Single MFMS	MFKS	MFNS	Double MFMW	MFKW	MFNW	Long MFML	MFKL	(With Non-Contact Seals) € Unit Price: Single MFMS-S	MFKS-S	MFNS-S	Double MFMW-S	MFKW-S	MFNW-S	Long MFML-S	MFKL-S
6																
8																
10																
12																
13																
16																
20																
25																
30																
35																
40																
50																

1.4301/X5CrNi18-10 Housing Price List

d	(No Seal) € Unit Price SMFMS	SMFKS	SMFNS	(With Non-Contact Seals) € Unit Price SMFMS-S	SMFKS-S	SMFNS-S
8						
10						
12						
16						
20						

With Dust Seals Price List

d	(With Dust Seals) € Unit Price: Single MFMS-DS	MFNS-DS	Double MFMW-DS	MFNW-DS
16				
20				
25				
30				

Order Example: Part Number MFMS6 MFMS-S6

Days to Ship: - No Seal · With Non-Contact Seals (Except SMFKS-S) 6 Days P.87 | 2 Days

- SMFKS-S · With Dust Seals 8 Days

Express A 5,00 EUR / piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

NEW

Flanged Oil Free Bushings Pilot Type-Compact Type-
-Built-in Copper Alloy Bushings Single · Double Type-

Price Reduction 20%

CAD Data

For Features of With Non-Contact Seals, refer to **P.340**

■Compact Type

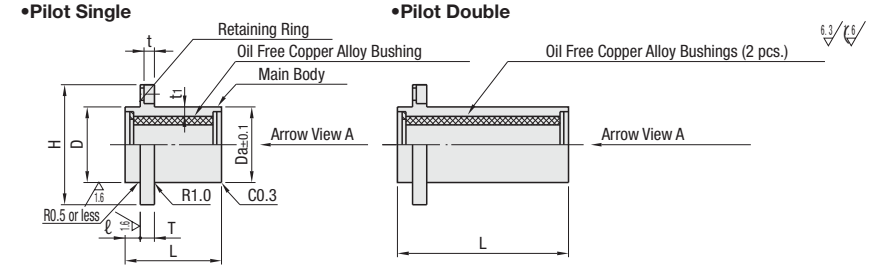
RoHS

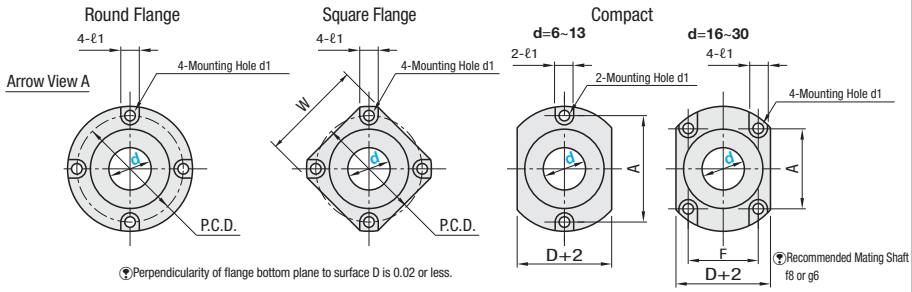


* With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

Housing Type	Type: Round Flange	Type: Square Flange	Type: Compact	Seal	Housing: Material	Housing: Surface Treatment	Bushings: Material
Single	MFIMSC	MFIKSC	MFINSC	No Seal	1.0038/ S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded
	MFIMSC-S	MFIKSC-S	MFINSC-S	With Non-Contact Seals			
Double	MFIMWC	MFIKWC	MFINWC	No Seal			
	MFIMWC-S	MFIKWC-S	MFINWC-S	With Non-Contact Seals			

•Pilot Single **•Pilot Double**





Perpendicularity of flange bottom plane to surface D is 0.02 or less.

Recommended Mating Shaft f8 or g6

Part Number Type		Round Flange	Square Flange	Compact
•Single	(No Seal)	MFIMSC	MFIKSC	MFINSC
	(With Non-Contact Seals)	MFIMSC-S	MFIKSC-S	MFINSC-S
•Double	(No Seal)	MFIMWC	MFIKWC	MFINWC
	(With Non-Contact Seals)	MFIMWC-S	MFIKWC-S	MFINWC-S

d	Tolerance	D	Tolerance	Da	L Single	L Double	ℓ	H	T	d1	ℓ1	t	t1	P.C.D.	W	F	A
6	+0.022 0	12	0 -0.018	11.8	22	37	5	25	5	3.5	6	3.1	1.5	20	20	-	20
8	+0.028 0	15		14.8	27	47		28					2.0	23	22	-	23
10		18		17.8	32	57	6	35	6	4.5	7.5	4.1	2.0	28	27	-	28
12	+0.034 0	20	0 -0.021	19.8				37					2.0	30	29	-	30
13		21		20.8				38					2.0	31	29	-	31
16		26		25.8	37	67		43					2.0	36	33	19	30
20	+0.041 0	30		29.8	42	77	8	50	8	5.5	9	5.1	2.0	41	38	21	36
25		36	0 -0.025	35.6	58	108		56					2.5	47	42	27	38
30		42		41.6	68	128	10	65	10	6.6	11	6.1	3.0	55	49	30	46

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Discount Rate	€ Unit Price	5%	10%
Days to Ship	Standard	To be quoted	

For orders larger than indicated amounts, please request a quotation.

d	(No Seal) € Unit Price: Single MFIMSC	MFIKSC	MFINSC	Double MFIMWC	MFIKWC	MFINWC	(With Non-Contact Seals) € Unit Price: Single MFIMSC-S	MFIKSC-S	MFINSC-S	Double MFIMWC-S	MFIKWC-S	MFINWC-S
6												
8												
10												
12												
13												
16												
20												
25												
30												

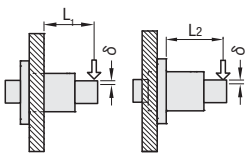
■Outer Cylinder Strength of Flanged Oil Free Bushings

■Test Conditions

1. Tester: Universal tensile compression testing machine
2. Bushing: Copper Alloy Type
3. Shaft: MISUMI's Hardening g6 Shaft

■Testing Method

Load(*) and displacement measured when the shaft is deflected 1 degree.
(*) Load at approx. 5% of the tensile strength of 1.0038/S235JR



■Strength Test Data

d	Dimension: D MFMS MFIMS	D MFMSC MFIMSC	Thickness of Outer Cylinder (mm) MFMS MFIMS	Thickness of Outer Cylinder (mm) MFMSC MFIMSC	Standard Flanged: L1	Load (N) MFMS	Load (N) MFMSC	Displacement (mm)	Pilot Flanged: L2	Load (N) MFIMS	Load (N) MFIMSC	Displacement (mm)
6	12	12	1.5	1.5	22	686	660	0.38	22	681	643	0.38
8	15	15	2.0	2.0	27	1310	1178	0.47	27	1507	1285	0.47
10	19	18	2.5	2.0	31	2024	1656	0.54	30	1866	1518	0.52
12	21	20	2.5	2.0	26	3068	2520	0.45	30	3973	3320	0.52
13	23	21	3.0	2.0	26	3568	3032	0.45	30	4217	3765	0.52
16	28	26	3.0	2.0	31	5506	4894	0.54	35	6028	5107	0.61
20	32	30	3.0	2.0	34	5652	4926	0.59	36	6748	6251	0.63
25	40	36	4.5	2.5	50	7977	6592	0.87	52	9243	7461	0.91
30	45	42	4.5	3.0	58	10799	9719	1.01	58	10545	9109	1.01

Values are for reference only.

Order Example: Part Number MFIMSC6 / MFIKWC-S25

Days to Ship

•No Seal: 6 Days P.87

•With Non-Contact Seals: 8 Days

Express A 5,00 EUR / piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Flanged Oil Free Bushings Pilot Type-Standard Type-

-Built-in Copper Alloy Bushings Single · Double · Long Type-

CAD Data

For Features of With Non-Contact Seals, refer to **P.340** Flanged Height-Adjusting Spacers are selectable. **P.288**

Standard Type

RoHS

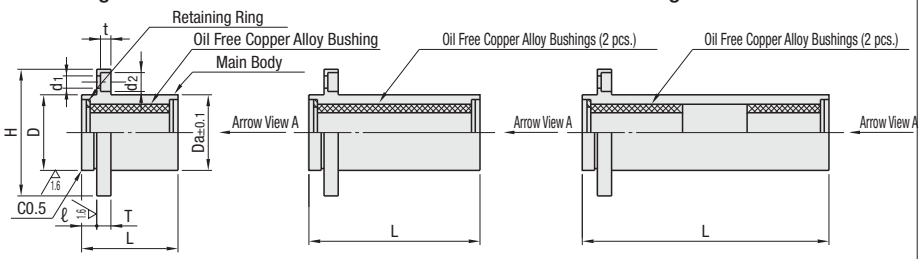


* With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

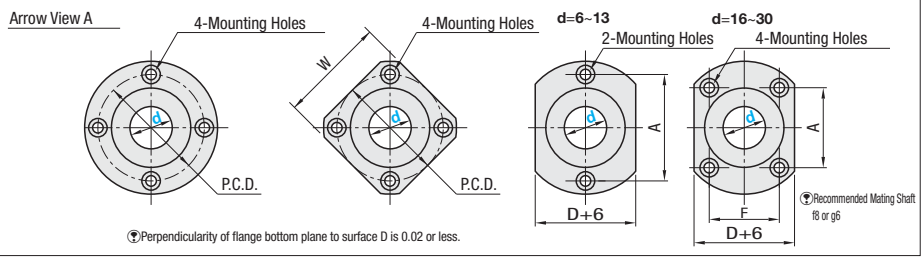
Housing Type	Type			Seal	Housing		Bushings
	Round Flange	Square Flange	Compact		M Material	S Surface Treatment	M Material
Single	MFIMS	MFIKS	MFINS	No Seal	1.0038/S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded
	MFIMS-S	MFIKS-S	MFINS-S	- With Non-Contact Seals			
Double	MFIMW	MFIKW	MFINW	No Seal			
	MFIMW-S	MFIKW-S	MFINW-S	- With Non-Contact Seals			
Long	MFIML	MFIKL	-	No Seal			
	MFIML-S	MFIKL-S	-	- With Non-Contact Seals			

6.3 / 1.6

•Pilot Single **•Pilot Double** **•Pilot Long**



Round Flange Square Flange Compact



Perpendicularity of flange bottom plane to surface D is 0.02 or less.

Part Number Type		Round Flange	Square Flange	Compact	d	Tolerance	D	Tolerance	Da	L Single	L Double	L Long	ℓ	H	T	d1	d2	t	P.C.D.	W	F	A
					6	+0.022 0	12	0 -0.018	11.8	22	37	52	5	28	5	3.5	6	3.1	20	22	-	20
					8	+0.028 0	15		14.8	27	47	67		32					24	25	-	24
• Single	(No Seal)	MFIMS	MFIKS	MFINS	10		19		18.8					40					29	30	-	29
	(With Non-Contact Seals)	MFIMS-S	MFIKS-S	MFINS-S	12	+0.034 0	21	0 -0.021	20.8	32	57	82	6	42	6	4.5	7.5	4.1	32	32	-	32
					13		23		22.8					43					33	34	-	33
					16		28		27.8	37	67	97		48					38	37	22	31
• Double	(No Seal)	MFIMW	MFIKW	MFINW	20		32		31.6	42	77	112	8	54	8	5.5	9	5.1	43	42	24	36
	(With Non-Contact Seals)	MFIMW-S	MFIKW-S	MFINW-S	25	+0.041 0	40	0 -0.025	39.6	58	108	158		62					51	50	32	40
					30		45		44.6	68	128	188	10	74	10	6.6	11	6.1	60	58	35	49
• Long	(No Seal)	MFIML	MFIKL		35		52		51.6	68	128	-	10	82					67	64	-	-
	(With Non-Contact Seals)	MFIML-S	MFIKL-S		40	+0.050 0	60	0 -0.030	59.6	80	150	-	13	96	13	9	14	8.1	78	75	-	-
					50		80		79.6	90	170	-	13	116					98	92	-	-

d	(No Seal) € Unit Price								(With Non-Contact Seals) € Unit Price							
	Single			Double			Long		Single			Double			Long	
	MFIMS	MFIKS	MFINS	MFIMW	MFIKW	MFINW	MFIML	MFIKL	MFIMS-S	MFIKS-S	MFINS-S	MFIMW-S	MFIKW-S	MFINW-S	MFIML-S	MFIKL-S
6																
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35																
40																
50																

Order Example — Part Number: MFIMS6, MFIMS-S6

Days to Ship

•No Seal · With Non-Contact Seals (Except Long Type): **6 Days** **P.87**

•MFIML-S · MFIKL-S: **8 Days**

Express A | 5,00 EUR / piece **P.88**

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Flanged Oil Free Bushings / Small Flanged Oil Free Bushings

-Built-in Copper Alloy Bushings Center Flanged Type- -Built-in Copper Alloy Bushings Female Thread Hole Type-

CAD Data

For Features of With Non-Contact Seals, refer to **P.340** Flanged Height-Adjusting Spacers are selectable. P.288

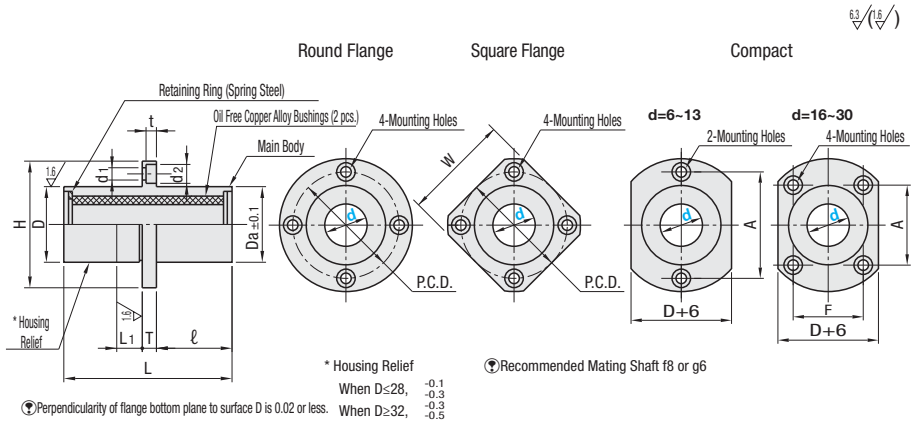
■Center Flanged Type

RoHS



With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

Type			Seal	Housing		Bushings
Round Flange	Square Flange	Compact		M Material	S Surface Treatment	M Material
MFCMW	MFCKW	MFCNW	No Seal	1.0038/S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded
MFCMW-S	MFCKW-S	MFCNW-S	- With Non-Contact Seals			



Perpendicularity of flange bottom plane to surface D is 0.02 or less.

* Housing Relief
When D≤28, $^{-0.1}_{-0.3}$
When D≥32, $^{-0.3}_{-0.5}$

Recommended Mating Shaft f8 or g6

Part Number Type	d	Tolerance	D	Tolerance	Da	L	L1	ℓ	H	T	d1	d2	t	P.C.D.	W	F	A	(No Seal) € Unit Price Round Flange	Square Flange	Compact	(With Non-Contact Seals) € Unit Price Round Flange	Square Flange	Compact
																		MFCMW	MFCKW	MFCNW	MFCMW-S	MFCKW-S	MFCNW-S
Round Flange	6	$^{+0.022}_{0}$	12	$^{0}_{-0.018}$	11.8	37	5	16	28	5	3.5	6	3.1	20	22	-	20						
(No Seal) MFCMW	8	$^{+0.028}_{0}$	15		14.8	47		21	32					24	25	-	24						
(With Non-Contact Seals) MFCMW-S	10		19		18.8				40					29	30	-	29						
Square Flange	12	$^{+0.034}_{0}$	21	$^{0}_{-0.021}$	20.8	57	10	25.5	42	6	4.5	7.5	4.1	32	32	-	32						
(No Seal) MFCKW	13		23		22.8				43					33	34	-	33						
(With Non-Contact Seals) MFCKW-S	16		28		27.8	67		30.5	48					38	37	22	31						
Compact	20	$^{+0.041}_{0}$	32	$^{0}_{-0.025}$	31.6	77		34.5	54	8	5.5	9	5.1	43	42	24	36						
(No Seal) MFCNW	25		40		39.6	108		50	62					51	50	32	40						
(With Non-Contact Seals) MFCNW-S	30		45		44.6	128		59	74	10	6.6	11	6.1	60	58	35	49						

[Features]
- 5 to 8 mm smaller in flange diameter (H dimension) compared to conventional Flanged Oil Free Bushings. Suited for space-saving.
- Outer cylinder strength test has proven that these bushings are as capable of maintaining strength under moment load as conventional Flanged Oil Free Bushings, or better.

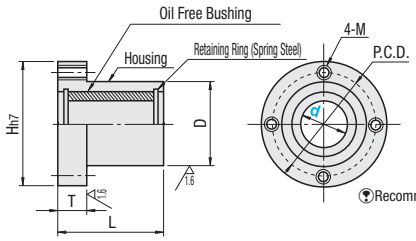
■Small Flanged Type

RoHS



With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

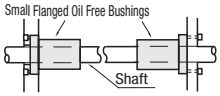
Type	Seal	Housing M Material	Housing S Surface Treatment	Bushings M Material
MFST	No Seal	1.0038/S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded
MFST-S	With Non-Contact Seals			



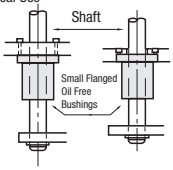
Recommended Mating Shaft f8 or g6

Example

(1) Horizontal Use



(2) Vertical Use



Part Number Type	d	Tolerance	D	L	Hh7	T	M	P.C.D.	€ Unit Price MFST	MFST-S
	6	$^{+0.022}_{0}$	12	22	23	6	M3	17		
	8	$^{+0.028}_{0}$	15	27	27			21		
MFST	10		19	32	34	8	M4	26		
(No Seal)	12	$^{+0.034}_{0}$	21		37			29		
	13		23		38			30		
MFST-S	16		28	37	43			35		
(With Non-Contact Seals)	20	$^{+0.041}_{0}$	32	42	48	10	M5	39		
	25		40	58	56			47		
	30		45	68	66	12	M6	55		

Order Example Part Number MFCMW6 MFST10

Days to Ship 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushing Housing Units

-Flanged Type · Tall Block Type-

CAD Data

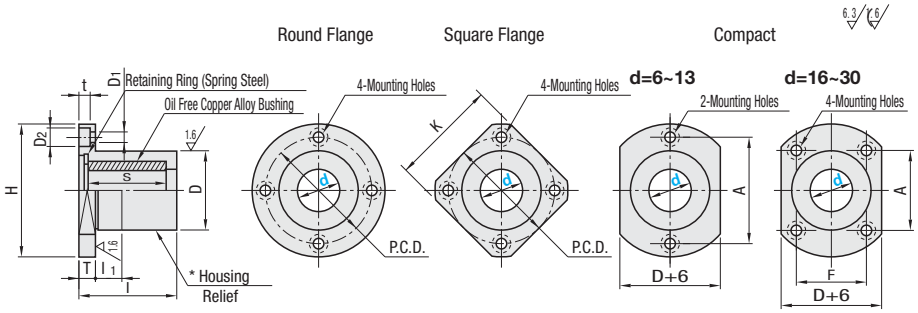
■Flanged Type

RoHS

<Reference: Cut-out Photo>



Type			Seal	Housing		Bushings
Round Flange	Square Flange	Compact		M Material	S Surface Treatment	M Material
MPRA	MPSA	MPCA	No Seal	1.0038/S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded



* Housing Relief When D≤26, $^{-0.1}_{-0.3}$ When D≥30, $^{-0.3}_{-0.5}$

Recommended Mating Shaft f8 or g6

Effective length of D Tolerance below is L1. Perpendicularity of flange bottom plane to surface D is 0.02 or less.

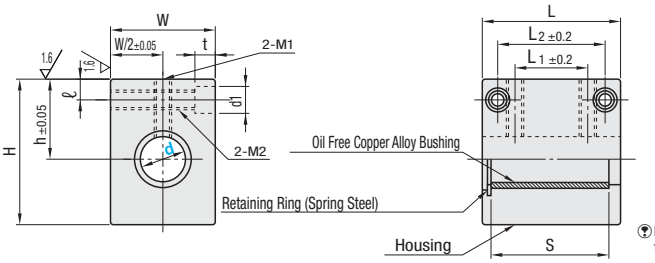
Part Number Type	d	Tolerance	D	Tolerance	L	L1	S	H	T	d1	d2	t	P.C.D.	K	F	A	€ Unit Price MPRA	MPSA	MPCA
MPRA Round Flange MPSA Square Flange MPCA Compact	6	$^{+0.022}_{+0.010}$	15	0 -0.018	21	5	15	32	5	3.5	6	3.1	23	23	-	23			
	8	+0.028 +0.013	17		26		20	34					25	25	-	25			
	10		20		32		25	39	6	4.5	7.5	4.1	29	29	-	29			
	12	+0.034 +0.016	24	0 -0.021	32	10	25	44					34	34	-	34			
	13		26		32		25	46					36	36	-	36			
	16		30		37		30	50					40	40	26	30			
	20	+0.041 +0.020	36	0 -0.025	42		35	62	8	5.5	9	5.1	48	48	30	38			
	25		42		57		50	68					54	54	36	40			
	30		48		67		60	78	10	6.6	11	6.1	62	62	40	48			

■Tall Block Type

RoHS



Type	Seal	Housing		Bushings
		M Material	S Surface Treatment	M Material
MPBA	No Seal	1.0038/S235JR	Electroless Nickel Plating	High Tensile Brass Alloy Solid Lubricant Embedded



Recommended Mating Shaft f8 or g6

Part Number Type	d	Tolerance	h	W	H	L	L1	L2	ℓ	S	M1	M2	d1xt	€ Unit Price
MPBA	6	$^{+0.022}_{+0.010}$	14	16	22	22	6	14	5	15	M3	M4	6x5 (For M3 screws)	
	8	+0.028 +0.013	16	20	26	27	11	19		20				
	10		19	26	32	37	17	27	6	30	M5	M5	8x6 (For M4 screws)	
	12	+0.034 +0.016	20	28	34									
	13		25	30	43		14	26	7		M6	M6	9x7 (For M5 screws)	
	16		27	36	49	47	24	36		40				
	20	+0.041 +0.020	31	42	54	57	28	44	8	50	M8	M8	11x8 (For M6 screws)	
	25		37	52	65	67	30	50	9	60	M10	M10	14x10 (For M8 screws)	
	30		40	58	71									

Order Example — Part Number: MPRA10, MPBA16

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushing Housing Units

-Tall Block Compact · Wide Block Compact Type-

CAD Data

For Features of With Non-Contact Seals, refer to **P.340**

■Tall Block Compact Type

RoHS

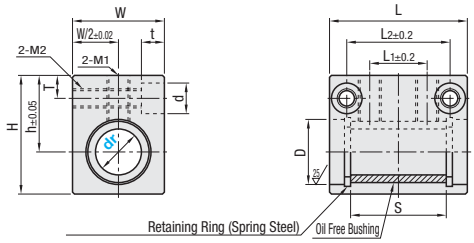




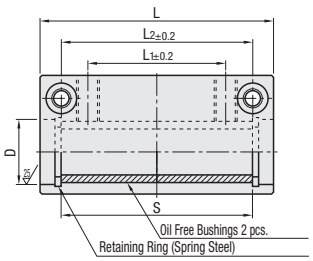
With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

Type		Seal	Housing		Bushings
			M Material	S Surface Treatment	M Material
Single	MHCTS	No Seal	Aluminum Alloy	Clear Anodizing	High Tensile Brass Alloy Solid Lubricant Embedded
	MHCTS-S	With Non-Contact Seals			
Double	MHCTW	No Seal			
	MHCTW-S	With Non-Contact Seals			

-Single



-Double



6.3 (25)

Recommended Mating Shafts: f8 or g6

Part Number Type	dr	Tolerance	h	W	H	D	L Single	L Double	L1 Single	L1 Double	L2 Single	L2 Double	S Single	S Double	T	M1	M2	dxt		€ Unit Price MHCTS	MHCTS-S	MHCTW	MHCTW-S
Single MHCTS (No Seal) MHCTS-S (With Non-Contact Seals)	10	+0.028 0	17	20	26	15	37	62	13	36	25	50	24.8	49.6	5	M6	M5	8x6	(For M4 screws)				
	12	+0.034 0	18	22	28	17	37	62	14	36	26	50	24.8	49.6	5	M6	M5	8x6					
	13		19	24	30	18	38	68	14	42	27	55	24.8	49.6	5.5	M6	M6	9x7	(For M5 screws)				
	16		21	28	35	22.2	42	78	15	52	28	65	29.8	59.6	5.5	M6	M6	9x7					
Double MHCTW (No Seal) MHCTW-S (With Non-Contact Seals)	20	+0.041 0	24	34	40	26	48	85	21	58	34	70	34.8	69.6	5.5	M6	M6	9x7					
	25		30	42	50	32	56	120	25	80	42	100	49.8	99.6	8	M8	M8	11x8	(For M6 screws)				
	30		33	48	57	37	68	128	37	90	54	110	59.8	119.6	8	M8	M8	11x8					

For Features of With Non-Contact Seals, refer to **P.340**

■Wide Block Compact Type

RoHS



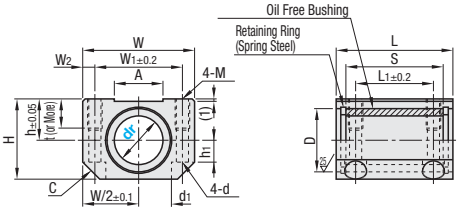


With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

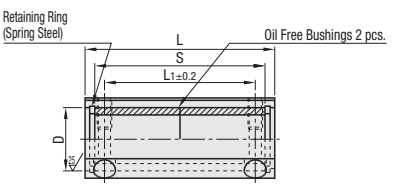
Type		Seal	Housing		Bushings
			M Material	S Surface Treatment	M Material
Single	MHCAS	No Seal	Aluminum Alloy	Clear Anodizing	High Tensile Brass Alloy Solid Lubricant Embedded
	MHCAS-S	With Non-Contact Seals			
Double	MHCAW	No Seal			
	MHCAW-S	With Non-Contact Seals			

6.3 (25)

-Single



-Double



Recommended Mating Shafts: f8 or g6

Part Number Type	dr	Tolerance	h	W	H	D	L Single	L Double	L1 Single	L1 Double	S Single	S Double	W1	W2	M	d	d1	t	h1	A	C	€ Unit Price MHCAS	MHCAS-S	MHCAW	MHCAW-S
Single MHCAS (No Seal) MHCAS-S (With Non-Contact Seals)	10	+0.028 0	10	30	19	15	32	56	22	46	24.8	49.6	22	4	M5	4.3	8	12	4	15	5				
	12	+0.034 0	11	34	21	17	34	58	24	48			24	5					5						
	13		12	34	23	18													6						
	16		14	40	27	22.2	42	68	32	58	29.8	59.6	30						7	20	6				
Double MHCAW (No Seal) MHCAW-S (With Non-Contact Seals)	20	+0.041 0	17	46	33	26	48	78		66	34.8	69.6	36		M6	5.1	9		9		7				
	25		20	54	39	32	62	110	42	92	49.8	99.6	42	6	M8	7.0	11	18	11	30	8				
	30		24	58	47	37	70	128	50	110	59.8	119.6	46						13		10				

Order Example

Part Number
MHCTS16
MHCAS20

Days to Ship

- No Seal · With Non-Contact Seals (MHCTW-S · MHCAS-S)

6 Days P.87

- MHCTS-S · MHCAW-S

8 Days | Express A | 5,00 EUR / piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushing Housing Units

- Tall Block · Wide Block Type-

CAD Data

For Features of With Non-Contact Seals, refer to **P.340**

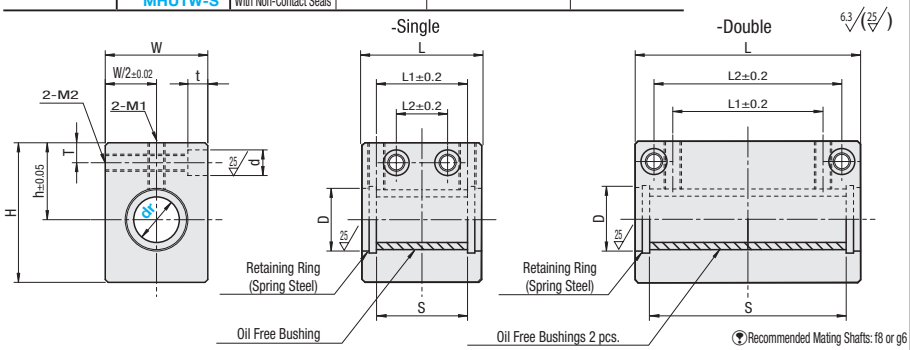
■Tall Block Type

RoHS



With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

Type		Seal	Housing		Bushings
			M Material	S Surface Treatment	M Material
Single	MHUTS	No Seal	Aluminum Alloy	Clear Anodizing	High Tensile Brass Alloy Solid Lubricant Embedded
	MHUTS-S	With Non-Contact Seals			
Double	MHUTW	No Seal			
	MHUTW-S	With Non-Contact Seals			



Recommended Mating Shafts: f8 or g6

Part Number Type	dr	Tolerance	h	W	H	D	L Single	L Double	L1 Single	L1 Double	L2 Single	L2 Double	S Single	S Double	T	M1	M2	dxt		€ Unit Price MHUTS	MHUTS-S	MHUTW	MHUTW-S
Single MHUTS (No Seal) MHUTS-S (With Non-Contact Seals)	10	+0.028 0	19	26	32	15	37	62	27	36	15	50	24.8	49.6	6	M6	M5	8x6	(For M4 screws)				
	12	+0.034 0	20	28	34	17	37	62	27	36	15	50	24.8	49.6	6	M6	M5	8x6					
	13		25	30	43	18	38	68	28	42	16	55	24.8	49.6	7	M6	M6	9x7	(For M5 screws)				
	16		27	36	49	22.2	42	78	32	52	18	65	29.8	59.6	7	M6	M6	9x7					
Double MHUTW (No Seal) MHUTW-S (With Non-Contact Seals)	20	+0.041 0	31	42	54	26	48	85	36	58	18	70	34.8	69.6	8	M8	M8	11x8	(For M6 screws)				
	25		37	52	65	32	56	120	42	80	22	100	49.8	99.6	9	M10	M10	14x10	(For M8 screws)				
	30		40	58	71	37	68	128	44	90	22	110	59.8	119.6	9	M10	M10	14x10					

For Features of With Non-Contact Seals, refer to **P.340**

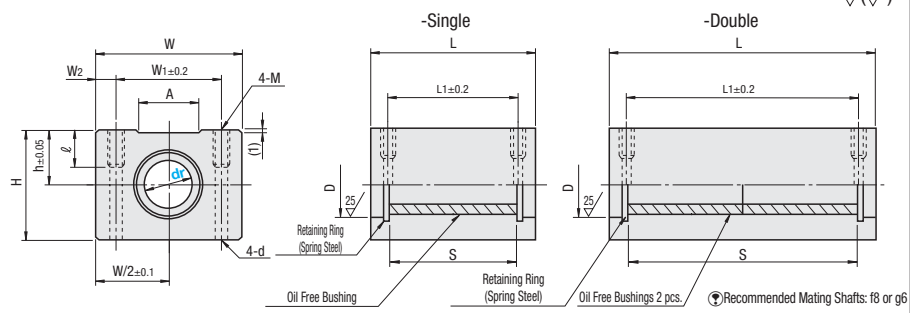
■Wide Block Type

RoHS



With Non-Contact Seals
Teflon seal of 0.3mm thick is attached on the inner side of each retaining ring.

Type		Seal	Housing		Bushings
			M Material	S Surface Treatment	M Material
Single	MHUAS	No Seal	Aluminum Alloy	Clear Anodizing	High Tensile Brass Alloy Solid Lubricant Embedded
	MHUAS-S	With Non-Contact Seals			
Double	MHUAW	No Seal			
	MHUAW-S	With Non-Contact Seals			



Recommended Mating Shafts: f8 or g6

Part Number Type	dr	Tolerance	h	W	H	D	L Single	L Double	L1 Single	L1 Double	S Single	S Double	W1	W2	M	d	ℓ	A	€ Unit Price MHUAS	MHUAS-S	MHUAW	MHUAW-S
Single MHUAS (No Seal) MHUAS-S (With Non-Contact Seals)	10	+0.028 0	13	44	30	15	32	56	21	46	24.8	49.6	28	8	M5	4.3	12	20				
	12	+0.034 0	15	44	30	17	34	58	26	50	24.8	49.6	30.5	6.75	M5	4.3	12	20				
	13		15	44	30	18	34	58	26	50	24.8	49.6	33	5.5	M5	4.3	12	20				
	16		19	54	42	22.2	42	68	34	60	29.8	59.6	36	9	M5	4.3	12	26				
Double MHUAW (No Seal) MHUAW-S (With Non-Contact Seals)	20	+0.041 0	21	54	42	26	48	78	40	70	34.8	69.6	40	7	M6	5.2	12	26				
	25		26	78	60	32	62	110	50	100	49.8	99.6	54	12	M8	7	18	38				
	30		30	78	60	37	70	128	58	110	59.8	119.6	58	10	M8	7	18	38				

Order Example — Part Number: MHUTS16, MHUAS20

Days to Ship: 6 Days (P.87) / 2 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushings / Oil Free Bushing Housing Unit

-Casting Type- -Cast Bushing Built-in Type-

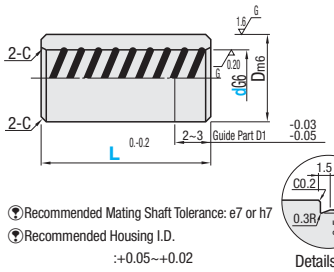
CAD Data

■Straight Type Shoulder Type

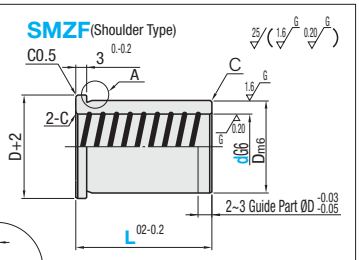


RoHS

SMZ(Straight Type)



SMZF(Shoulder Type)



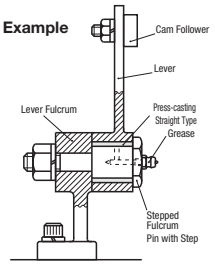
Details of A

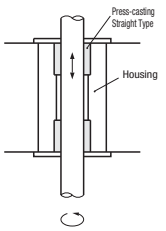
Recommended Mating Shaft Tolerance: e7 or h7

Recommended Housing I.D.
:+0.05~+0.02

M Material: EN-JL 1040/EN-GJL-250
Special Solid Lubricant

ex Example





Part Number Type	dG6		L	Dm6		C	SMZ € Unit Price Qty. 1~9	SMZ Volume Discount Qty. 1~50	SMZF € Unit Price Qty. 1~9	SMZF Volume Discount Qty. 1~20
Straight Type SMZ Shoulder Type SMZF	6	+0.014 +0.005	*6 8 10 12	10		0.3				
	8		8 10 12 15	12	+0.018 +0.007					
	10		10 12 15 20	16						
	12	+0.017 +0.006	10 12 15 20 25	18						
	15		15 20 25 30	22	+0.021 +0.008					
	16		15 20 25 30	23						
	20	+0.020 +0.007	20 25 30 40	28		0.5				
	25		25 30 40 50	32	+0.025 +0.009					
	30		30 40 50 60	38						

*marked L dimension is available for SMZ only.

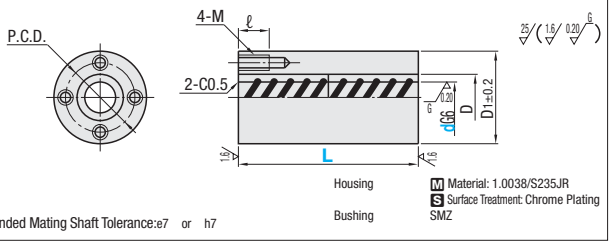
For orders larger than indicated amounts, please request a quotation.

■Housing Unit Type



RoHS

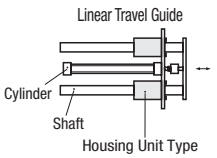
MHSR



Recommended Mating Shaft Tolerance:e7 or h7

M Material: 1.0038/S235JR
S Surface Treatment: Chrome Plating
SMZ

ex Example



Part Number Type	d	L (1 Bushing) Short Type	L (2 Bushings) Long Type	D	D1	Mxℓ	P.C.D.	Mass (g) Short Type	Mass (g) Long Type	Short Type € Unit Price Qty. 1~9	Short Type Volume Discount Qty. 10~20	Long Type € Unit Price Qty. 1~9	Long Type Volume Discount Qty. 10~20
MHSR	8	15	30	12	30	4x8	21	77	154				
	10	20	40	16	34		25	130	260				
	12	25	40	18	36		27	177	284				
	15	30	50	22	42	5x10	32	284	474				
	20	40	60	28	48		38	469	939				
	25	50	80	32	52		42	641	1025				
	30	60	100	38	60	6x12	49	999	1665				

Order Example: Part Number - L
SMZ12 - 20
MHSR15 - 50

Days to Ship: 6 Days P.87

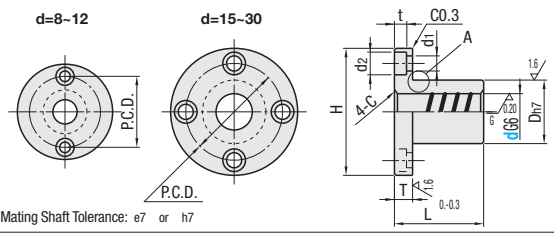
For orders larger than indicated amounts please request a quotation.

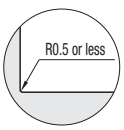
■Flanged Type



RoHS

SMZH





Details of A

Recommended Mating Shaft Tolerance: e7 or h7

M Material: EN-JL 1040/EN-GJL-250
Special Solid Lubricant

Part Number Type	dG6	Tolerance	Dh7	Tolerance	L	H	T	d1	d2	t	P.C.D.	Mass (g)	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~20
SMZH	8	+0.014 +0.005	15	0 -0.013	20	32	5	3.5	6	3.1	24	45		
	10		19	0 -0.016	25	40	6	4.5	7.5	4.1	29	85		
	12	+0.017 +0.006	21		30	42					32	103		
	15		28		40	48					38	180		
	20	+0.020 +0.007	32	0 -0.019	50	54	8	5.5	9	5.1	43	280		
	25		40		60	62					51	270		
	30		45		70	74	10	6.6	11	6.1	60	670		

Order Example: Part Number
SMZH10

Days to Ship: 8 Days

Express A | 3,00 EUR / 1piece P.88

For orders larger than indicated amounts please request a quotation.

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Oil Free Bushings / Thrust Washers

-Multi-Layer MD Bushing Straight · Shoulder Type-

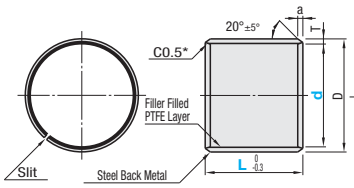
CAD Data

■Straight · Shoulder

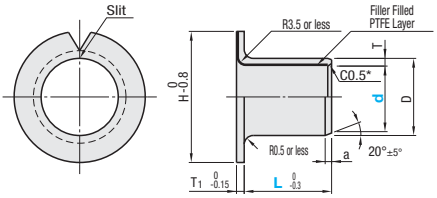
RoHS



MDZB(Straight Type)



MDZF(Shoulder Type)



O.D. Chamfers

When T=1.0, a0.5
When T=1.5, a0.8
When T=2.0, a1.0
When T=2.5, a1.0

Applicable to Linear and Rotary Motion.

*1. Bushings with inner diameter d<10 are only de-burred lightly instead of full chamfering.
2. Chamfering is C0.3 when the inner diameter is d≥10 and the plate thickness is 1.0.

M Material: Filler Added PTFE Layer
Sintered Bronze layer
Steel-backed Metal Layer (1.0330/DC01: Tin Plating)
Allowable Temperature -195~280°C

There may be some color variations.

Part Number Type	d	L	MDZB D	MDZB D Tolerance	MDZB T	MDZB T Tolerance	MDZF D	MDZF H	MDZF T·T1	MDZF D Tolerance	* Shaft Diameter Reference Dimension	* Shaft Diameter Tolerance
Straight Type MDZB Shoulder Type MDZF	3	3 -4 5 -6	5	+0.047 +0.017	1.0	0 -0.025	4.6	7	0.8	0 -0.025	3	-0.025 -0.034
	4	-3 4 -5 6 (8)	6				5.6	9			4	-0.025 -0.037
	5	-3 4 5 6 (8)	7	+0.055 +0.025			7	10	1.0		5	
	6	-3 -4 5 6 8 (10) (12)	8				8	12			6	
	8	-5 6 8 10 12 (15)	10				10	15			8	-0.025 -0.040
	10	6 8 10 12 15 (20)	12	+0.060 +0.030			12	18			10	
	12	6 8 10 12 15 (20)	14				14	20	1.0		12	
	13	(8) 10 (12) 15 (20)	15				15	21			13	
	15	(8) 10 12 15 20 (25)	17	+0.065 +0.035			17	23			15	-0.025 -0.043
	16	10 (12) 15 20 (25)	18	+0.070 +0.035			18	24			16	
	18	10 12 15 20 (25) (30)	20	+0.075 +0.040			20	26			18	
	20	10 12 15 20 25 (30)	23	+0.080	1.5	0 -0.030	23	31		0 -0.030	20	
	22	10 12 15 20 (25) (30)	25	+0.045			25	33	1.5		22	-0.025 -0.046
	25	10 12 15 20 25 (30) (35)	28	+0.085 +0.050			28	36			25	
	30	12 15 20 25 30 (35) (40) (50)	34	+0.090 +0.050			34	42			30	
	35	12* 20 25 30 (35) 40 (50)	39	+0.095	2.0		39	49	2.0		35	
	40	12 (15) 20 25 30 (35) 40 (50)	44	+0.055			44	54			40	-0.025 -0.050
	50	20 (25) 30 (35) 40 (50) (60)	55	+0.105 +0.060	2.5	0 -0.040	55	65	2.5	0 -0.040	50	

L dimensions in ( ) are only available for MDZB.
L dimension marked with * are only available for MDZF.

D	* Housing Dia. H7	Inner Diameter after Press-Fit Tolerance (Reference Value)
3~6	+0.012 0	+0.062 0
7~10	+0.015 0	+0.065 0
11~18	+0.018 0	+0.068 0
19~20	+0.021 0	+0.071 0
21~30		+0.081 0
31~50	+0.025 0	+0.085 0
51~80	+0.030 0	+0.110 0

* Housing dia. and shaft dia. listed here are recommended dimensions. MDZB is a rolled bushing with a slit. Indicated values of D tolerance are reference after press-fitted into ring gauge (±0.002).

Part Number Type	d	€ Unit Price L3	L4	L5	L6	L8	L10	L12	L15	L20	L25	L30	L35	L40	L50	L60
MDZB	3															
	4															
	5															
	6															
	8															
	10															
	12															
	13															
	15															
	16															
	18															
	20															
	22															
	25															
	30															
	35															
	40															
	50															

Part Number Type	d	€ Unit Price L3	L4	L5	L6	L8	L10	L12	L15	L20	L25	L30	L40
MDZF	3												
	4												
	5												
	6												
	8												
	10												
	12												
	13												
	15												
	16												
	18												
	20												
	22												
	25												
	30												
	35												
	40												
	50												

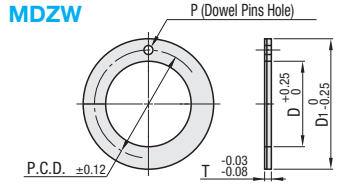
Housing Unit with built-in MDZB is also available. P.349-350

■Thrust Washers

RoHS



MDZW



M Material: Filler Added 1.0330/DC01 Layer
Sintered Bronze layer
Steel-backed Metal Layer (SPC: Tin Plating)
Heat Resistant Temperature -195~280°C

Part Number Type	No.	T	D	D1	Mounting Hole P	Mounting Hole Tolerance	Mounting Hole P.C.D.	Bushing I/D	€ Unit Price
MDZW	6	1.5	8	16	1.0	+0.30 +0.10	12	6	
	8		10	18			14	8	
	10		12	24	1.5	+0.375 +0.125	18	10	
	12		14	26	2.0		20	12	
	14		16	30			23	13	
	16		18	32			25	15, 16	
	18		20	36	3.0		28	18	
	20		22	38			30	20	
	22		24	42			33	22	
	25		28	48	4.0		38	25	
	30		32	54			43	30	
	35		38	62			50	35	
	40		42	66			54	40	
	50	2.0	52	78			65	50	

There may be some color variations.

Order Example

Part Number	-	L
MDZB8	-	5
MDZF12	-	15
MDZW6		

6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

- MDZB

Quantity	1~49	50~99	100~199
Applicable Price	€ Unit Price	Volume Discount	
	Price List	25%	40%
Days to Ship	Standard		

For orders larger than indicated amounts, please request a quotation.

- MDZF

Quantity	1~49	50~74	75~99	100~199
Discount Rate	€ Unit Price	5%	15%	35%
Days to Ship	Standard			

For orders larger than indicated amounts, please request a quotation.

- MDZF

Quantity	1~49	50~74	75~99	100~199
Discount Rate	€ Unit Price	20%	40%	60%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushings / Flanged Oil Free Bushings

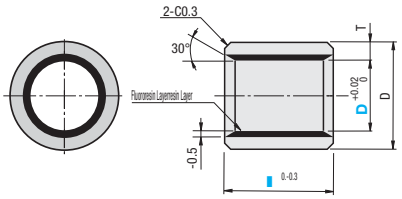
-High Precision Type-　-Built-in Multi-Layer MD Bushing Type-

CAD Data

■High Precision Type RoHS



BFLB



Applicable to Linear and Rotary Motion.
Loctite is recommended to affix bushings.

■Features

- BFLB is specifically effective if the mating material is soft such as stainless steel, aluminum, brass, etc. (Soft mating material is hardly damaged.)
- Superior in relative wear amount: 1.6 x 10 - 7mm3/Nm and abrasion resistance. (It varies depending on condition of use.)

M Material: Base Material: EN AW-2017/AlCu4MgSi
Sliding Material: Fluororesin
* Base and sliding materials are bonded.
Heat Resistant Temperature　-50~140°C

Part Number Type	d	L	D	Tolerance	T	€ Unit Price L5~8	L10~15	L20~25
BFLB	4	5 6	7	0 -0.015	1.5			
	5	5 6 8	8					
	6	5 6 8 10 12	9					
	8	6 8 10 12 15	11					
	10	6 8 10 12 15 20	13					
	12	10 12 15 20	15					
	16	15 20 25	19	0 -0.020				

Order Example　Part Number - L　BFLB10 - 10

Days to Ship　6 Days　P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~64	65~79	80~99
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

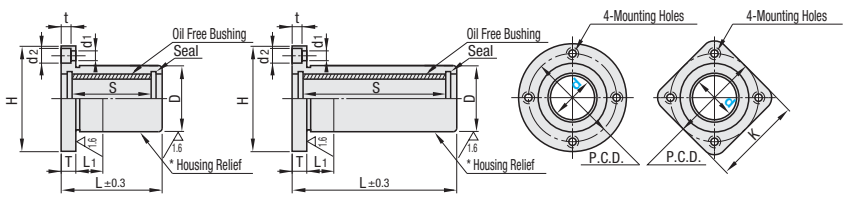
Flanged Height-Adjusting Spacers are selectable. P.288

■Flanged Type RoHS



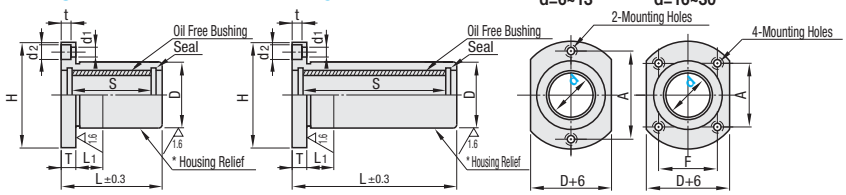
MDRA(Round Flange Single)　**MDRAW**(Round Flange Double)
MDSA(Square Flange Single)　**MDSAW**(Square Flange Double)

6.3 (1.6)



MDCA(Compact Flange Single)　**MDCAW**(Compact Flange Double)

d=6~13　d=16~30



Bushing　: MDZB (P.348)
Seals　: NBR (ORing)
* Housing Relief　When D≤28, D -0.1 -0.3
When D≤32, D -0.3 -0.5

Perpendicularity of flange bottom plane to surface D is 0.02 or less.
Effective length of D Tolerance below is L1.

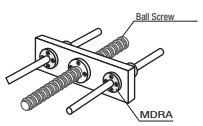
M Material: Aluminum Alloy (Housing)
S Surface Treatment: Clear Anodizing

Part Number Type	d	Tolerance	D	Tolerance	L Single	L Double	L1	S Single	S Double	H	T	d1	d2	t	P.C.D.	K	F	A	€ Unit Price MDRA	MDRAW	MDSA	MDSAW	MDCA	MDCAW
MDRA MDRAW (Round Flange)	6	+0.065 0	12	0 -0.013	19	32	5	13	26	28	5	3.5	6	3.1	20	22	-	20						
	8		15		24	38		18	32	32					24	25		24						
	10		19		29	50		21	42	40					29	30		29						
MDSA MDSAW (Square Flange)	12	+0.068 0	21	0 -0.016	30	51	10	21.6	42.6	42	6	4.5	7.5	4.1	32	32		32						
	13		23		32	51		23.6	42.6	43					33	34		33						
	16		28		37	63		26.6	52.6	48					38	37	22	31						
MDCA MDCAW (Compact Flange)	20	+0.081 0	32	0 -0.019	42	73		31.6	62.6	54	8	5.5	9	5.1	43	42	24	36						
	25		40		59	103		48.6	92.6	62					51	50	32	40						
	30	+0.085 0	45		64	115		51.6	102.6	74	10	6.6	11	6.1	60	58	35	49						

Order Example　Part Number　MDRA10

Days to Ship　6 Days　P.87

Example



Price

■Volume Discount (Round down to one Cent.) P.87

-MDCA

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

For orders larger than indicated amounts, please request a quotation.

-Except MDCA

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushing Housing Units

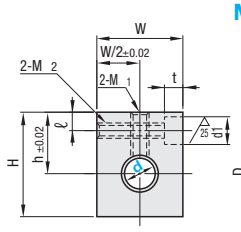
-Built-in Multi-Layer MD Bushing Type-

CAD Data

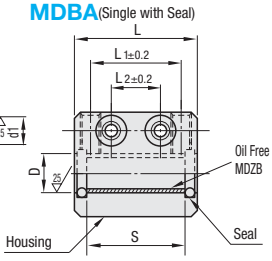
■Tall Block Type

RoHS

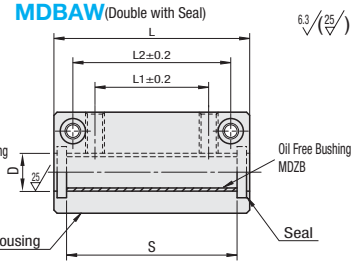




MDBA(Single with Seal)



MDBAW(Double with Seal)



6.3 (25)

Bushing : MDZB (**P.348**)
Seals : NBR (ORing)

M Material: Aluminum Alloy (Housing)

S Surface Treatment: White Alumite

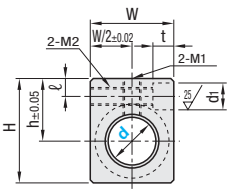
Part Number Type	d	Tolerance	h	W	H	D	Single L	Single L1	Single L2	Single S	Double L	Double L1	Double L2	Double S	ℓ	M1	M2	d1xt	€ Unit Price MDBA	€ Unit Price MDBAW
MDBA MDBAW	6	+0.065 0	14	16	22	8.1	27	18	9	21	-	-	-	-	5	M4	M4	6x5 (For M3 screws)		
	8		16	20	26	10.1	32	20	10	26	-	-	-	-		M5				
	10	+0.068 0	19	26	32	12.2	39	27	15	31	62	36	50	54	6	M6	M5	8x6 (For M4 screws)		
	12		20	28	34	14.3	40			32				54						
	13		25	30	43	15.3	42	28	16	34	68	42	55	60	7		M6	9x7 (For M5 screws)		
	16		27	36	49	18.3	47	32	18	37	78	52	65	68						
	20	+0.081 0	31	42	54	23.4	52	36		42	85	58	70	75	8	M8	M8	11x8 (For M6 screws)		
	25		37	52	65	28.4	69	42	22	59	120	80	100	110	9	M10	M10	14x10 (For M8 screws)		
	30	+0.085 0	40	58	71	34.4	74	44		62	128	90	110	116						

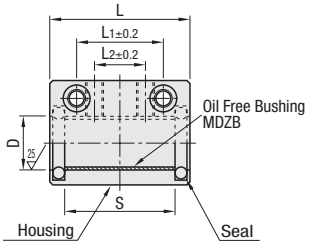
■Tall Block Compact Type

RoHS



MDBAC





6.3 (25)

Bushing : MDZB (**P.348**)
Seals : NBR (ORing)

M Material: Aluminum Alloy (Housing)

S Surface Treatment: White Alumite

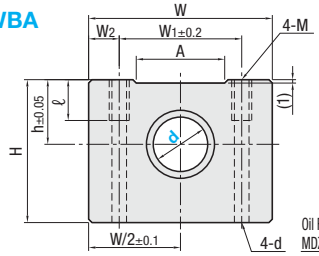
Part Number Type	d	Tolerance	h	W	H	D	L	L1	L2	S	ℓ	M1	M2	d1xt	€ Unit Price
MDBAC	10	+0.068 0	17	20	26	12.2	39	25	13	31	5	M6	M5	8x6 (For M4 screws)	
	12		18	22	28	14.3	40	26	14	32	5				
	13		19	24	30	15.3	42	27	14	34	5.5		M6	9x7 (For M5 screws)	
	16		21	28	35	18.3	47	28	15	37	5.5				
	20	+0.081 0	24	34	40	23.4	52	34	21	42	5.5				
	25		30	42	50	28.4	69	42	25	59	8	M8	M8	11x8 (For M6 screws)	
	30	+0.085 0	33	48	57	34.4	74	54	37	62	8				

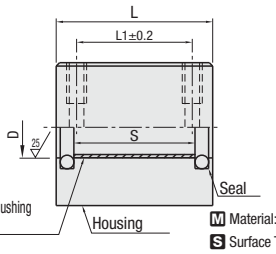
■Wide Block Type

RoHS



MDWBA





6.3 (25)

Bushing : MDZB (**P.348**)
Seals : NBR (ORing)

M Material: Aluminum Alloy (Housing)

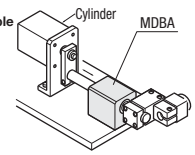
S Surface Treatment: White Alumite

Part Number Type	d	Tolerance	h	W	H	D	L	L1	S	W1	W2	M	d	ℓ	A	€ Unit Price
MDWBA	6	+0.065 0	9	34	20	8.1	27	15	21	20	7	M4	3.4	8	10	
	8		11	34	20	10.1	32	18	26	24	5	M4	3.4	8	10	
	10	+0.068 0	13	44	30	12.2	39	21	31	28	8	M5	4.3	12	20	
	12		15	44	30	14.3	40	26	32	30.5	6.75	M5	4.3	12	20	
	16		19	54	42	18.3	47	34	37	36	9	M5	4.3	12	26	
	20	+0.081 0	21	54	42	23.4	52	40	42	40	7	M6	5.2	12	26	
	25		26	78	60	28.4	67	50	59	54	12	M8	7	18	38	
	30	+0.085 0	30	78	60	34.4	74	58	62	58	10	M8	7	18	38	

Order Example — Part Number: MDBA10, MDBAC12, MDWBA16

Days to Ship — 6 Days P.87

Example



Price

■Volume Discount (Round down to one Cent.) P.87

-MDBA

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

-Except MDBA

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

For orders larger than indicated amounts, please request a quotation.

Oil Free Bushings

-Polyacetal Resin Type / PTFE Resin Type-

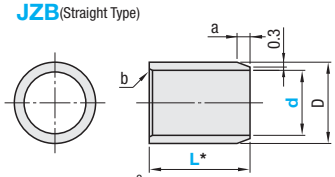
CAD Data

■Straight · Shouldered (Polyacetal Resin Type)

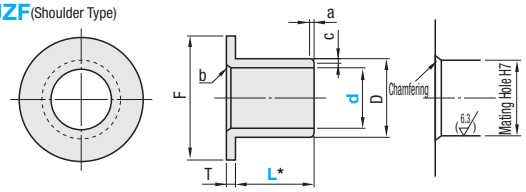
RoHS



JZB(Straight Type)



JZF(Shoulder Type)



* When L≤10, tolerance $^{0}_{-0.3}$
When L≥12, tolerance $^{0}_{-0.5}$

M Material: Polyacetal Resin
Lubricant and Special Filler Added Allowable Temperature -40~80°C

Part Number Type	d (Tolerance after press-fitted)		L	D		F	T		Chamfers a	b	c	* Housing Dia. Reference Dia.	Tolerance (H7)	* Shaft Diameter Reference Dimension	Tolerance (H7)
Straight Type JZB	3	$^{-0.008}_{-0.033}$	3 4 5	5	+0.107	8	1	0 -0.10	1*	C0.3	0.3	5	+0.012 0	3	$^{0}_{-0.010}$
	4	+0.095 +0.045	3 4 5 6	6	+0.032	9						6		4	0 -0.012
	5		3 4 5 6 *8	7	+0.157 +0.045	10						7	+0.015 0	5	
	6		-3 *4 5 6 8 10	8		12						8		6	
	8		5 6 8 10 12 15	10		15			1			10		8	0 -0.015
	10		6 8 10 12 15 20	12		18						12		10	
	12	+0.120 +0.060	8 10 12 15 20	14	+0.193 +0.058	20						14	+0.018 0	12	
	15		10 12 15 20 25	17		23						17		15	0 -0.018
	16		10 12 15 20 25	18		24						18		16	
Shoulder Type JZF	18		12 15 20 25 30	20	+0.221	26			1	R0.4		20		18	
	20	+0.145	(12) 15 20 25 30	23	+0.071	31						23	+0.021 0	20	
	22	+0.075	20 30	25	+0.231	33	1.5					25		22	0 -0.021
	25	+0.170	20 25 30	28	+0.081	36		0 -0.15				28		25	
	30	+0.090	20 25 30 40	34	+0.290	42	2					34		30	
	35	+0.215	25 30 40	39	+0.095	49						39	+0.025 0	35	
	40	+0.115	30 40 50	44	$^{+0.340}_{+0.115}$	54			2	R0.6	0.5	44		40	0 -0.025
	50	$^{+0.235}_{+0.135}$	30 40 50	55	$^{+0.430}_{+0.130}$	65	2.5			R0.8		55	$^{+0.030}_{0}$	50	

* When selecting 3-3, 4-3, 4-4, 4-6, 5-3, 5-4, 6-4 and 6-5 of Straight Type, a=0.5. d tolerance is the value after press-fitted into ring gauge of d±0.002. *Housing diameters and shaft diameters listed here are recommended dimensions.
*marked L dimension is available for JZB only L dimension in ( ) is available for JZF only.

Price

■Volume Discount (Round down to one Cent.) P87
- JZB · JZF

Quantity	1~49	50~99	100~199
Applicable Price	€ Unit Price	Volume Discount	
	Price List	10%	18%
Days to Ship	Standard		

For orders larger than indicated amounts, please request a quotation.

JZB

Type	d	€ Unit Price L3	L4	L5	L6	L8	L10	L12	L15	L20	L25	L30	L40	L50
JZB	3													
	4													
	5													
	6													
	8													
	10													
	12													
	15													
	16													
	18													
	20													
	22													
	25													
	30													
	35													
	40													
	50													

JZF

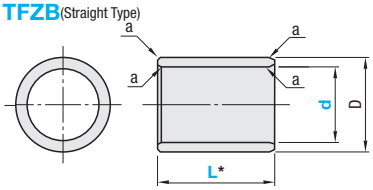
Type	d	€ Unit Price L3	L4	L5	L6	L8	L10	L12	L15	L20	L25	L30	L40	L50
JZF	3													
	4													
	5													
	6													
	8													
	10													
	12													
	15													
	16													
	18													
	20													
	22													
	25													
	30													
	35													
	40													
	50													

■Straight · Shouldered (PTFE Resin Type)

RoHS

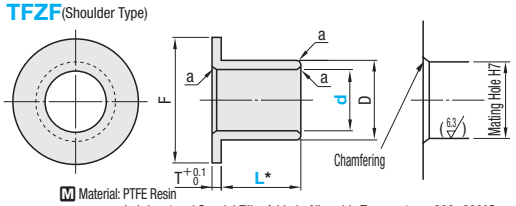


TFZB(Straight Type)



*L Dimension Tolerance...8≥L $^{0}_{-0.2}$ (TFZB · TFZF)
10≤L $^{0}_{-0.25}$ (TFZB)

TFZF(Shoulder Type)



M Material: PTFE Resin
Lubricant and Special Filler Added Allowable Temperature -200~200°C

Part Number Type	d (Tolerance before press-fitted)		L	D		* Housing Dia. Reference Dimension	Tolerance (H7)	Inner Diameter after Press-Fit Tolerance (Reference Value)	* Shaft Diameter Reference Dimension	Tolerance (g6)	F	T	Chamfers a
Straight Type TFZB	3	+0.179 +0.129	3 5	6	+0.090 +0.040	6	+0.012 0	+0.120 +0.070	3	$^{-0.002}_{-0.008}$	9	1.5	C0.3
	4		3 5 8	7		7	+0.015 0	+0.122 +0.072	4	-0.004 -0.012	11		
	5		5 8 10	8		8			5		12		
	6	$^{+0.132}_{+0.032}$	5 8 10	9		9		$^{+0.125}_{+0.075}$	6				
	8	$^{+0.127}_{+0.027}$	8 10 12 15	12	+0.100 +0.050	12	+0.018 0	$^{+0.081}_{+0.038}$	8	-0.005 -0.014	16	2	C0.5
Shoulder Type TFZF	10	$^{+0.118}_{+0.018}$	8 10 12 15	14		14		$^{+0.044}_{+0.001}$	10		18		
	12	$^{+0.212}_{+0.102}$	10 12 15 20	16		16		$^{+0.048}_{+0.005}$	12	-0.006 -0.017	20		
	16	$^{+0.239}_{+0.169}$	12 15 20 25	22		22	+0.021 0	$^{+0.175}_{+0.105}$	16		28	3	C0.8
	20	$^{+0.293}_{+0.183}$	15 20 25 30	26	$^{+0.118}_{-0.048}$	26		$^{+0.768}_{+0.648}$	20	$^{-0.007}_{-0.028}$	32		

Dimension tolerance is measured at +25°C. d tolerance is the value before press-fitted into housing. *Housing diameters and shaft diameters listed here are recommended dimensions.

Price - TFZB · TFZF

■Volume Discount (Round down to one Cent.) P87

Quantity	1~49	50~74	75~99	100~199
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

For orders larger than indicated amounts, please request a quotation.

TFZB

Part Number Type	d	€ Unit Price L3	L5	L8	L10	L12	L15	L20	L25	L30
TFZB	3									
	4									
	5									
	6									
	8									
	10									
	12									
	16									
	20									

TFZF

Part Number Type	d	€ Unit Price L3	L5	L8	L10	L12	L15	L20	L25	L30
TFZF	3									
	4									
	5									
	6									
	8									
	10									
	12									
	16									
	20									

Order Example

Part Number	-	L
JZB10	-	12
TFZF12	-	15

Days to Ship: 6 Days P87

Oil Free Resin Washers / Flanged Oil Free Bushings / Housing Unit
-Polyacetal Bushings Built-in Type-

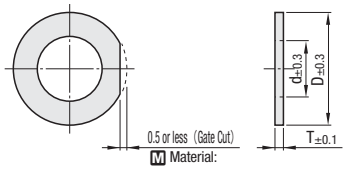
CAD Data

■Oil Free Resin Washers

RoHS



JZW



Ⓜ Material:
Polyacetal
Lubricating Oil and Special Filler Added
Allowable Temperature -40~80°C

Part Number Type	No.	T	d	D	€ Unit Price
JZW	8	1.5	8.5	17	
	10	2	10.5	24	
	12		12.5	28	
	17		17	30	
	21		21	37	
	23		23	39	

Ⓟ Flanged Height-Adjusting Spacers are selectable. P.288

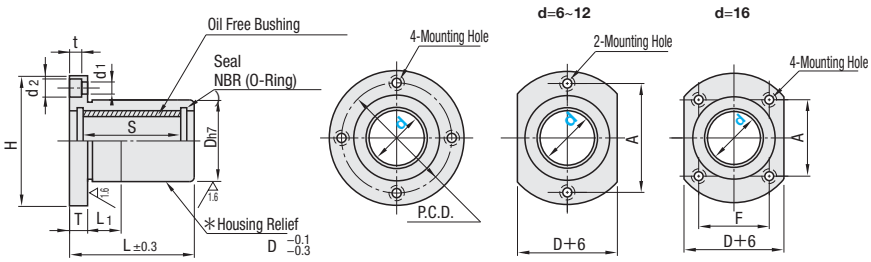
■Flanged Oil Free Bushings

RoHS



Type		Housing		Bushings	
Round Flange	Compact	Ⓜ Material	Ⓢ Surface Treatment	Ⓜ Material	
JFMA	JFRA	Aluminum Alloy	Clear Anodizing	Polyacetal	JZB

6.3 / 1.6



Part Number Type	d	Tolerance	D_{h7}	Tolerance	L	L_1	S	H	T	d_1	d_2	t	P.C.D.	F	A	€ Unit Price JFMA	€ Unit Price JFRA
JFMA JFRA	6	+0.095 +0.045	12	0 -0.018	19	5	13	28	5	3.5	6	3.1	20	-	20		
	8	+0.120 +0.060	15		24		18	32					24		24		
	10		19	0 -0.021	29		21	40	6	4.5	7.5	4.1	29		29		
	12		21		30	10	21.6	42					32		32		
	16		28		37		26.6	48					38	22	31		

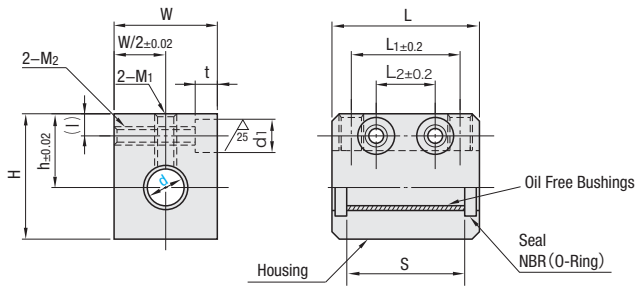
■Oil Free Bushing Housing Units

RoHS



Type	Housing		Bushings	
	Ⓜ Material	Ⓢ Surface Treatment	Ⓜ Material	
JFBA	Aluminum Alloy	Clear Anodizing	Polyacetal	JZB

6.3 / 25



Part Number Type	d	Tolerance	h	W	H	L	L_1	L_2	S	ℓ	M_1	M_2	d1xt	€ Unit Price
JFBA	6	+0.095 +0.045	14	16	22	27	18	9	21	5	M4	M4	6x5 (For M3 screws)	
	8	+0.120 +0.060	16	20	26	32	20	10	26		M5			
	10		19	26	32	39	27	15	31	6	M6	M5	8x6 (For M4 screws)	
	12		20	28	34	40			31.6					
	16		27	36	49	47	32	18	36.6	7		M6	9x7 (For M5 screws)	

Order Example — Part Number: JZW10, JFRA10, JFBA8

Days to Ship: 6 Days P.87

Price

■Volume Discount (Ⓟ Round down to one Cent.) P.87

- JZW

Quantity	1~49	50~74	75~99	100~199
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard			

Ⓟ For orders larger than indicated amounts, please request a quotation.

- JFRA

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard		To be quoted	

Ⓟ For orders larger than indicated amounts, please request a quotation.

- JFMA · JFBA

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%
Days to Ship	Standard	To be quoted		

Ⓟ For orders larger than indicated amounts, please request a quotation.

Single Axis Robots · Actuators

Single Axis Robots · Actuators





Product Name	Single Axis Robot RS1 · 2 · 3	Single Axis Robot RSH1 · 2 · 3
Page	363~368	369~374

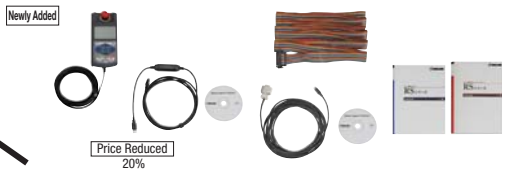






Single Axis Robot RSD · RSDG1 · 2 · 3 Rod Type	Single Axis Robot Clean Room Specification RS1C · 2C · 3C	Single Axis Robot Clean Room Specification RSH1C · 2C · 3C
375~380	381~386	387~392







Single Axis Robot Controllers	Single Axis Robot Options	Single Axis Robot Maintenance Items
393	395	396





Single Axis Actuator LX20 · 26 · 30 · 45 Standard Type without Bracket	Single Axis Actuator LX20 · 26 · 30 · 45 without Cover and Bracket
409 · 415 · 421 · 427	411 · 417 · 423 · 429





Motor Adapter Centering Tools for Single Actuator LX	Single Axis Actuator LX30 · 45 Motor Folded Type
413 · 419 · 425 · 431	433~436





Two Axes Mounting Brackets for Single Axis Actuators	Linear Encoders (Linear Scales)
437	438







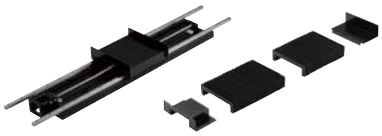
Single Axis Actuator LX20 · 26 · 30 · 45 with Motor Standard Type	Single Axis Actuator X20 · 26 · 30 · 45 with Motor Cover Type	Setup Software (with USB Cable)
441· 445 · 449 · 453	443 · 447 · 451 · 455	457



Cables for Single Axis Actuator LX with Motor
460



Single Axis Units -Rolled · Precision Ball Screw Type-
463~466



Single Axis Units - Rolled Ball Screw Type - w/Bellows-
467



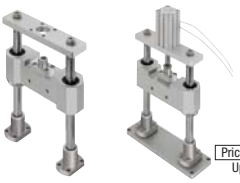
Single Axis Units -Rolled Ball Screw Type w/Cover-
469

NEW



Single Axis Units -Precision Ball Screw Type - w/Cover-
471

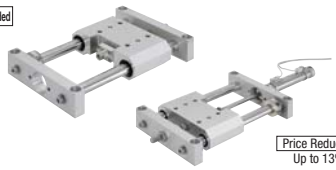
Newly Added



Price Reduced
Up to 13%

Pneumatic Module Units (Vertical)
475

Newly Added



Price Reduced
Up to 13%

Pneumatic Module Units (Horizontal)
477

NEW



Pneumatic Module Units (Linear Guides)
479

Newly Added



Manually Operated Units -Standard · High Load Capacity Type-
481



Price Reduced
20%

Manually Operated Units - Symmetrical Action Dual Carriage
483

NEW



Manually Operated Units -with Position Indicator-
485

NEW



Manually Operated Units -Handwheel Direction Configurable Type-
486

NEW



Manually Operated Units -Elevator Type-
487

NEW



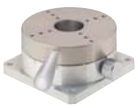
Manually Operated Units -Elevator Type with Position Indicator-
488

NEW



Manually Operated Units -Elevator Type Handwheel Direction Configurable-
489

NEW



Manually Operated -Rotary Tables-
490



Price Reduced
16%

Motor Driven Units
491



Price Reduced
19%

Motor driven Unit – Symmetrical Action Dual Carriage
493

Single Axis Robot · Actuator Product List

RS Series

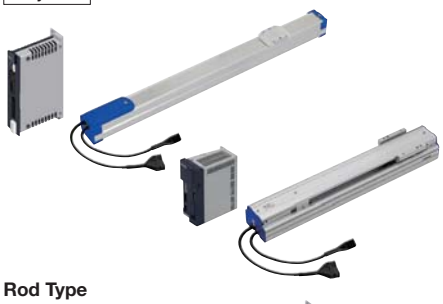
Single Axis Robots: Simple operation, Low Cost, Shortened lead time Slider and Rod Type are lined up.

RS SINGLE AXIS ROBOT

P.357~P.400

Slider Type

Newly Added



Rod Type



Features

-Slider, rod, motor and etc. integrated Robot, easy operation controller and cables are all in a set.
-No need for complex robot language programming
-Easy positioning operations by point data entry and I/O signals from a controller.
-Serial communication functions are newly added to write and read point data.

Specifications

Items	Slider Type		Rod Type
	Small · Economical Robots RS1 / 2 / 3 Series	Large-sized Heavy Load Capacity Robo RSH1 / 2 / 3 Series	Small · Economical Robots RSD1 / 2 / 3 Series
Load Capacity	Horizontal: ~ 12kg Vertical: ~ 4kg	Horizontal: ~ 80kg Vertical: ~ 16kg	Horizontal: ~ 60kg Vertical: ~ 30kg
Stroke	50 ~ 800mm (Specified in 50mm increments)	150 ~ 1050mm (Specified in 50mm increments)	50 ~ 300mm (Specified in 50mm increments)
Maximum Velocity	~1000mm/sec	~1800mm/sec	~500mm/sec
Positioning Repeatability	±0.02mm	±0.02mm / ±0.01mm	±0.02mm

Days to Ship **10 Days**

Price **496,00 EUR~**

LX Series

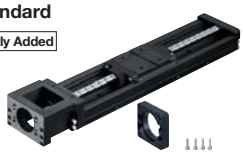
High Rigidity · High Precision · Compactness Compatible to various motors and 8rd day shipping challenging to standard lead time in the industry.

LX Linear eXcellence

P.401~P.460

Standard

Newly Added





With Motor



Features

- High rigidity steel base and rust resistant LTBC without fluoropolymer layer on top.
- Precision ground ball screws and preload enable low noise and high precision performance.
- Positioning repeatability is ±5μm. (Precision Grade ±3μm)
- Large Lead Type and Low Particulate Generation Grease compatible product variations
- Precision Certificates are enclosed with precision grade products.
- Mitsubishi Electric and Oriental Motor's motor-mounted type are lined up.

Specifications

Type	Lead (mm)	Screw Shaft Dia.	Maximum Effective Stroke (mm)
LX20	1/5	Ø6	236.5
LX26	2/5	Ø8	317
LX30	5/10	Ø10	529.5
LX45	10/20	Ø15	497.9

Days to Ship **8 Days**

* Standard L dimension type only

Price **373,00 EUR~**

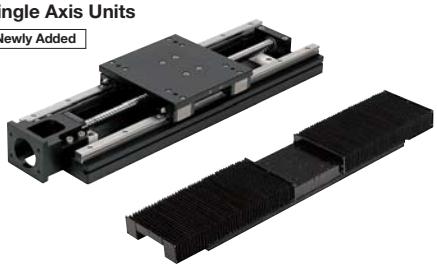
KU Series

Best for conveying heavy objects. Shipping cost is small.
Compatible with manually operated and simply electrically operated jigs

P.461 ~ P.472 · P.481 ~ P.494

Single Axis Units

Newly Added



Manually Operated Units

Newly Added





Features

- Standardized in-house built mechanism most commonly used by customers.
- Dedicated aluminum extrusion bases and Linear Guides support high loads.
- 150 and 200 mm-wide Tables support large work pieces.
- For Single Axis Units, rolled and precision ball screws are selectable.
- For manually operated units combined with trapezoidal lead screws, indicator-equipped type, elevator type and rotational stages are added to the lineup.

Specifications

Type	KUA · KUB KUH · KUT	KUAJ · KUBJ KUAC · KUBC KUHC · KUTC	KUE KUED etc.	KUG · KUGD KUK · KUKD
Applications	Positioning of Heavy Loads Multi point positioning		Simple Jig Positioning	
Types	Standard	Dust · Splash Proof	Manual	Motorized
Name	Single Axis Units	Single Axis Units Bellows / Covers	Manually Operated Units	Motor Driven Units
Drive Source	AC Servo / Stepping Motor		Handwheel	AC Motor
Drive Transmission	Precision / Rolled Ball Screws	Rolled Ball Screws	Trapezoidal Lead Screws	

Days to Ship **13 Days**

Price **468,00 EUR~**

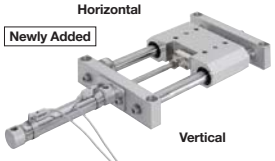
MA Series

Pneumatically driven end-point positioning for simple transfers
Cost effective - costs 20% less than the total of individual units

P.475~P.480

Horizontal

Newly Added



Vertical

Newly Added



Linear Guide Type



Features

- Air cylinder driven horizontal / vertical Integrated Motion Units
- Units combined with MISUMI Standard products save the trouble of designing and building
- With or without cylinder is selectable.

Mounting orientation
Horizontal Type:Vertical, Horizontal and Wall mounting is possible.
Parts can be mounted on top of slider.
Vertical Type:Vertical mounting
Slider components can be mounted on either of 3 surfaces.

Specifications

Unit Configuration	Cylinder Diameter	Cylinder Stroke (mm)	Reference Thrust Force (kN)			
			0.4MPa		0.5MPa	
			Instroke	Outstroke	Instroke	Outstroke
Horizontal **MAH**	Ø25	100~300	0.17	0.2	0.21	0.25
	Ø32	150~350	0.28	0.32	0.35	0.4
	Ø40	200~400	0.44	0.5	0.55	0.63
Vertical **MAT**	Ø25	30, 50	0.15	0.2	0.19	0.25
	Ø32	30, 50	0.24	0.32	0.3	0.4
	Ø40	30, 50	0.42	0.50	0.53	0.63
	Ø50	30, 50	0.66	0.79	0.82	0.98
	Ø63	30, 50	1.12	1.25	1.40	1.56
Linear Guide Type **MAC**	Ø32	100~350	0.2	0.3	0.3	0.4
	Ø40	100~350	0.4	0.5	0.5	0.6
	Ø50	100~350	0.6	0.7	0.8	0.9

Days to Ship **13 Days**

Price **298,00 EUR~**

MISUMI Single Axis Robot RS Series

RS SINGLE AXIS ROBOT

Complete Multi Point Positioning System in One Package. ····· **Simple Operation**

Robot Body+Controller+Cable ····· **EUR 498,00~**

Short Lead Time for 50mm Stroke Increments ····· **10th Day Shipping**

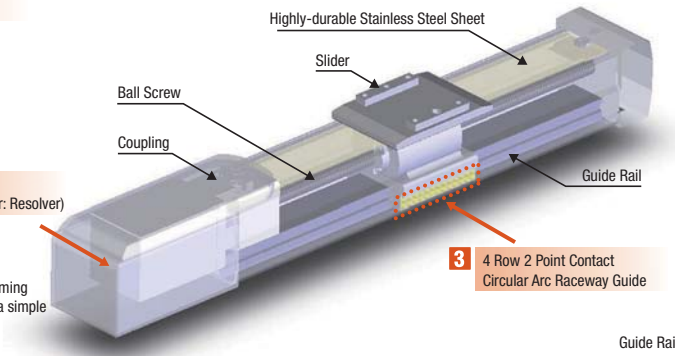
Small · Economical Robots RS1/2/3 Series

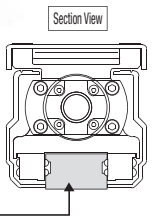
Load Capacity: ~ 12kg (horizontal) ~ 4kg (vertical)

2 Controller (Incremental Type)



1 Stepping Motor
(Position Detector: Resolver)





-No need for complex robot language programming
-Speed and acceleration can be configured in a simple process.
-Maximum positioning points: 255
*Above conditions are also applicable to RSH1/2/3 controllers.

Large Heavy Load Capacity Robot RSH1/2/3 Series

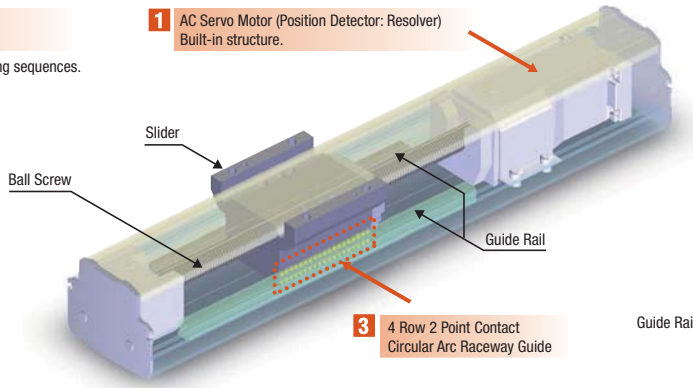
Load Capacity: ~80kg (horizontal) ~16kg (vertical)

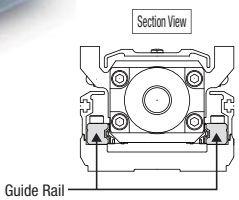
2 Controller
(Absolute Type / Incremental Type)

* Absolute encoder requires no homing sequences.



1 AC Servo Motor (Position Detector: Resolver)
Built-in structure.





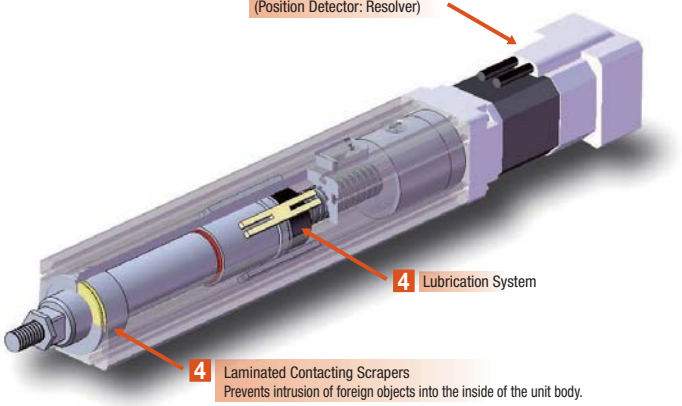
Small, Rod Type RSD,RSDG1/2/3 Series

Load Capacity: ~ 60kg (horizontal) ~ 30kg (vertical)

2 Controller
(Incremental Type)



1 Stepping Motor
(Position Detector: Resolver)



Features of RS Series

1 Resolver

Resolver is: Simple structure with no active electronics used,resistant to high and low temperatures, shock, electronic noises, dust, oil, etc. Used for applications including automotive, railways and aerospace.

Resolver for detection of motor shaft angle has realized higher reliability than the conventional optical encoders.



Resolver Optical Encoder

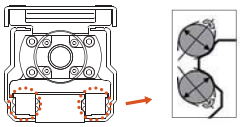
2 Control Method

Unique vector control method is used for RS1/2/3 and RSD1/2/3.
Stepping motor with high performance equal to that of AC servo motor.

Slider Type Features (RS, RSH1/2/3)

3 4 Row 2 Point Contact Circular Arc Raceway Guide

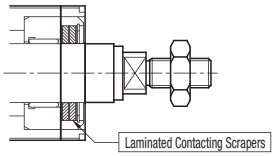
High self compensating ability leads to the smooth operation even if rigidity and accuracy on robot mounting surface is low.
Due to little differential slip, it can maintain stable performance under heavy loads.



Features of Rod Type (RSD, RSDG1/2/3)

4 Laminated Contacting Scraper and Lubrication System

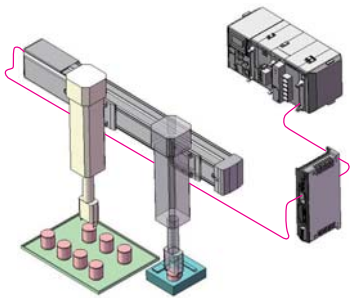
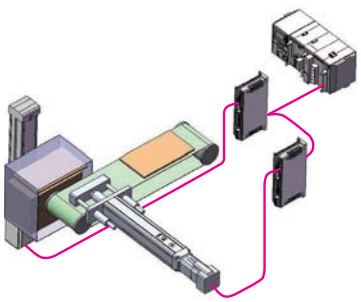
Laminated contacting structure removes foreign objects and prevents them from intruding into the inside of the unit body.
Lubrication equipment inside the unit body provides long term maintenance-free condition.



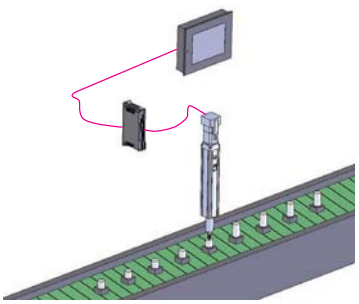
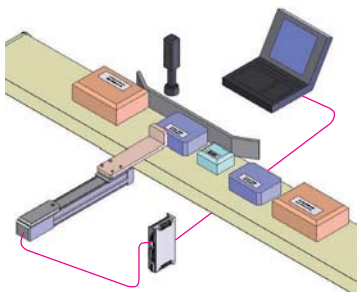
Example of Operation Pattern

Selectable operation pattern according to the application.

Positioning Operation

Position Commands	Pitch Commands
Parts Assembly (Slider)	**Stocker (Slider · Rod)**
Operation: Hand move and positioning Control: I/O Control	Operation: Stacker storage rack pitch feed Control: Use remote commands to control multiple axes
	

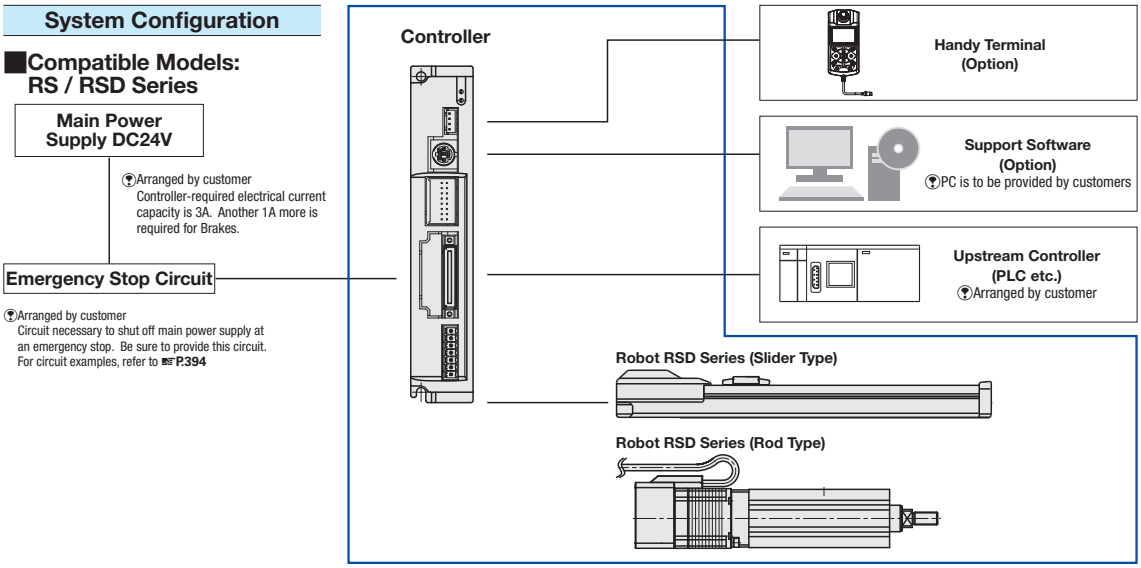
Push-and-Hold Operation

Press Fitting (Rod)	Lineup · Inspection (Slider)
Operation: Press fitting a pin in a part Control: Online Command Control	Operation: Move to a specified position and push parts against the wall to be aligned Control: Control with Support Software (RS-Manager)
	

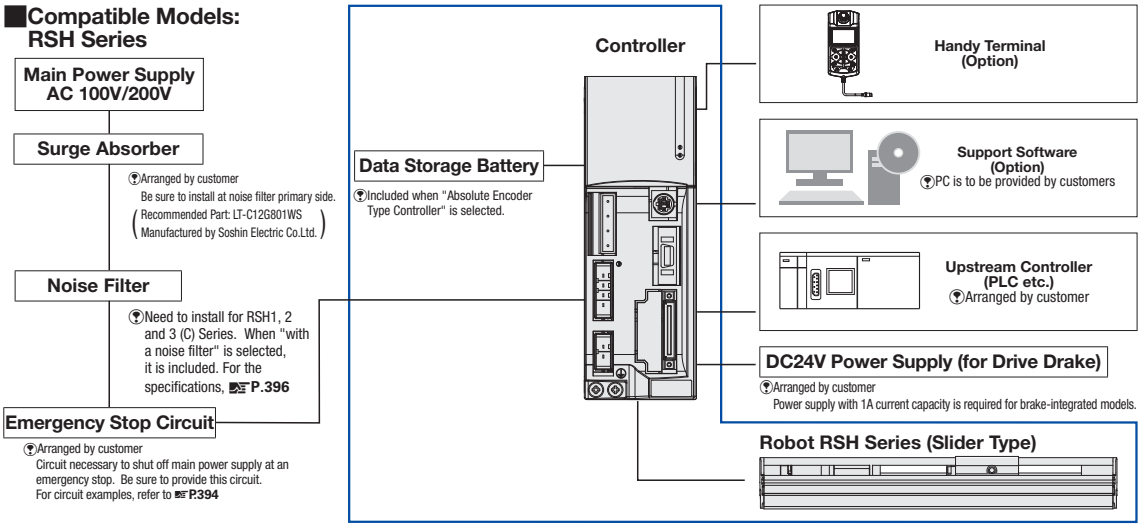
Control Functions

System Configuration

■Compatible Models: RS / RSD Series



■Compatible Models: RSH Series



Data Structure

Misumi's controller for single axis robots can store up to 255 locations.

The data consists of "point data (drive / location / velocity etc.)" and "parameter (load I/O contents etc)".
Items 1 to 11 below can be set by point data.

Data → Point Data: P1~P255

	Items	Descriptions
1	Operation Type	Configures target location / pitch and driving pattern for positioning/pushing/connection etc.
2	Position	location and pitch of movement.
3	Velocity	Maximum operating velocity
4	Acceleration	Operating acceleration
5	Deceleration	Deceleration during operation (Ratio to acceleration)
6	Pushing	Current limits for push operation
7	Zone -	Individual zone output range
8	Zone +	
9	Proximity Range	Output range of vicinity signal.
10	Branch	Branch setting when positioning completed or connection setting for joint operation
11	Flags	Setting of other bit information (binary digit) for operation.

Data → Parameters

Operational Parameters	Operation-related parameters such as return to home.
I/O Parameter	Selection of terminal assignment and input / output function.
Option Parameter	Option-related parameters such as CC-Link etc.
Control Parameter	Parameter unique to linked robots (Set at initialization)

How to Enter Data

Data can be entered from support software or handy terminal.

■Support Software



Data can be arranged using PC. Useful on initialization.
Teaching is possible while online when actuator is activated.

Input Example

Point No.	Operation Type	Position	Velocity	Acceleration	Deceleration	Pushing	Zone -	Zone +	Proximity Range	Branch	Flags
P1	ABS	0.00	100	100	100	100	0.00	0.00	1.00	0	0
P2	ABS	100.00	100	100	100	100	0.00	0.00	1.00	0	0
P3	INC	50.00	80	40	100	100	0.00	0.00	1.00	0	0
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

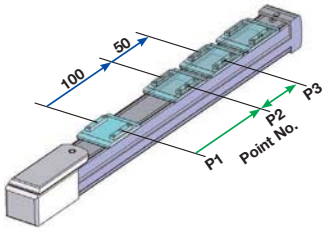
■Handy Terminal



Data can be arranged directly without using PC.
Teaching is possible when actuator is activated.

Input Example

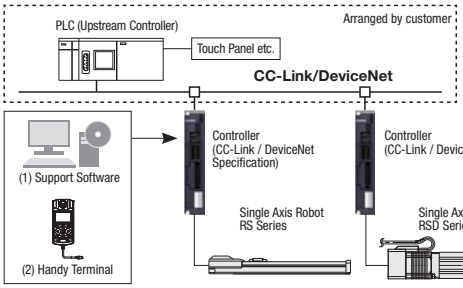
Point Arrangement			
P	1		
1.	Drive	ABS	-
2.	Position	100.00	mm
3.	Speed	100	%
4.	Acceleration	100	%
⋮	⋮	⋮	



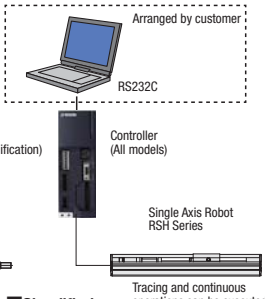
[Operations Based On Input Example]
(1)Point No.P1 (ABS Operation)
Move to 0mm
(2)Point No.P2 (ABS Operation)
Move to 100mm from 0mm
(3)Point No.P3 (INC Operation)
Move to 150mm from 100mm
(Ⓟ Expressed in an absolute position)

Operation Example

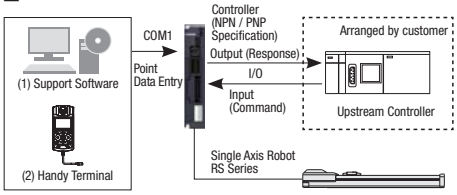
■Remote Command Control via CC-Link or DeviceNet



■RS232C Online Command Control

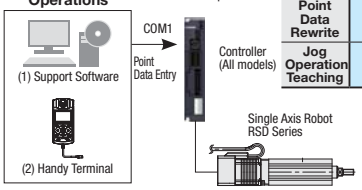


■Parallel Communication I/O Control



■Simplified Operations

Tracing and continuous operations can be executed based on entered point data.

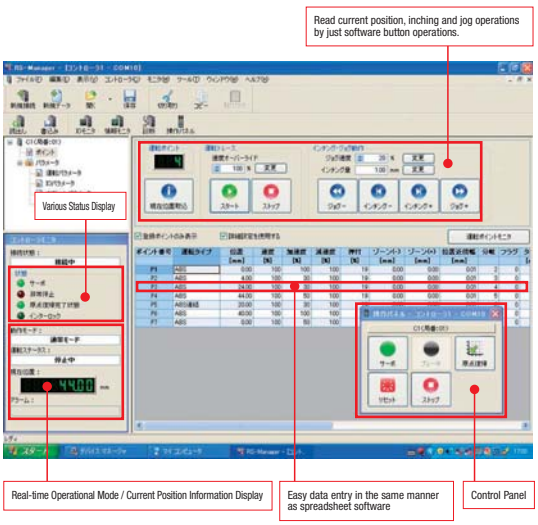


Communication Method	Remote Command Control (CC-Link / DeviceNet Specification) Communication Specifications ☞P.394	Online Command Control (RS232C Specification) Communication Specifications ☞P.394	I/O Control
Robot Linked Qty.	Maximum Number of Nodes	1	1
Upstream Controller	PLC etc.	PC Touch Panel PC	PLC etc.
Position Move	0	0	0
Speed / Acceleration Rewrite	0	0	X
Current Position Read	0	0	X
Point Data Rewrite	0	0	X
Jog Operation Teaching	0	0	0

Support Software (RS-Manager) Features

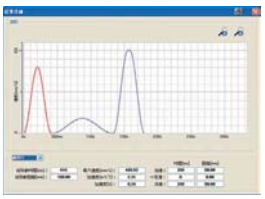
■RS-Manager Operation Screen

Easy to create and edit point data on a PC
Teaching and test run can be performed in on-line operation.



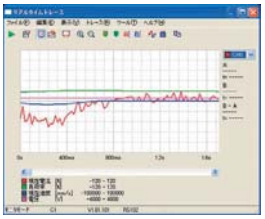
■Cycle Time Simulation Functions

Based on entered robot operational conditions and point data, simulation can be run to obtain time required for point-to-point operations. Predetermined operations allow efficient adjustments.



■Real-time Tracing Functions

Various information can be monitored in real time.
Saving each item data will assist in scheduled maintenance.
Also, helpful in unexpected troubles and analysis by comparing with data under normal conditions.



Real-time tracing items (Simultaneous monitoring on 4 items at a max.)	
- Voltage	- Current Value
- Commanded Speed	- Current Speed
- Commanded Current Value	- Internal Temp.
- I/O Status	- Present Current Value
- Word I/O Status	- Motor Load Factor

Lineup · Spec List
(Slider · Rod Type)

Selection Steps

(1) Load Capacity
Spec List
Select from "Max. Load Capacity"

(2) Stroke
Spec List
Select from "Stroke"

(3) Cycle Timeor Max Velocity
Select from "Cycle Time Graphs" or "Max. Speed"

(4) Check for Details
Spec List
Check for details on product pages

(Note 1) When "Absolute Encoder Type" is required, please select from RSH1(C), 2(C) or 3(C).
(Note 2) Select from RS_C for clean specification models.(Alteration to Low Particulate grease is possible with standard model)

Spec

■Slider Type

For selections, please use Selection Guide on **P.1905**

Type	Lead	Environmental Specification	Max Load Capacity Weight (kg)		Max. Push Force (N)	Maximum Velocity (mm/sec) * Values in the list are the maximum velocity. Stroke (mm)																						Position Detector	Controller Input Power Supply	Standards Applicable	Pages
			Horizontal	Vertical		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050				
RS1	2	Standard Specification	6	4	150		100																				Resolver Incremental Method	DC24V (±10%)	RoHS CE* Applicable	P.363
	6		4	2	90		300																						
	12		2	1	45		600																						
RS2	6		10	2	90		300											280	250	220	190								P.365
	12		6	1	45		600											560	500	440	380								
	20		4	-	27		1000											933	833	733	633								
RS3	6		12	4	120		300											280	250	220	190								P.367
	12		8	2	60		600											560	500	440	380								
	20		6	-	36		1000											933	833	733	633								
RSH1	6	Standard Specification	40	8	283	-	360										324	270	234	216	180						Resolver Absolute Method / Incremental Method	AC Single Phase 100~115V 200~230V (±10%)		P.369
	12		20	4	141		720										648	540	468	432	360								
	20		12	-	84		1200										1080	900	780	720	600								
RSH2	5		50	16	339		300											255	225	195	180	165	150	135	120				P.371
	10		40	8	169		600											510	450	390	360	330	300	270	240				
	20		20	4	84		1200											1020	900	780	720	660	600	540	480				
	30		7	-	56		1800											1530	1350	1170	1080	990	900	810	720				
RSH3	5		80	-	339		300											255	225	195	180	165	150	135	120	105			P.373
	10		60	-	169		600											510	450	390	360	330	300	270	240	210			
	20		30	-	84		1200											1020	900	780	720	660	600	540	480	420			
RS1C	2	Clean Spec.	6	4	150		100																				Resolver Incremental Method	DC24V (±10%)		P.381
	6		4	2	90		300																						
	12		2	1	45		600																						
RS2C	6		10	2	90		300											280	250	220	190								P.383
	12		6	1	45		600											560	500	440	380								
	20		4	-	27		1000											933	833	733	633								
RS3C	6		12	4	120		300											280	250	220	190								P.385
	12		8	2	60		600											560	500	440	380								
	20		6	-	36		1000											933	833	733	633								
RSH1C	6	Clean Spec.	40	8	283	-	360										324	270	234	216	180						Resolver Absolute Method / Incremental Method	AC Single Phase 100~115V 200~230V (±10%)		P.387
	12		20	4	141		720										648	540	468	432	360								
	20		12	-	84		1000											950	800	700	650								
RSH2C	5		50	16	339		300												255	225	195	180	165	150	135	120			P.389
	10		40	8	169	-	600												510	450	390	360	330	300	270	240			
	20		20	4	84		1000													900	800	700	650	600	550	500			
RSH3C	5		80	-	339		300											264	225	195	180	165	150	135	120	105			P.391
	10		60	-	169		600											528	450	390	360	330	300	270	240	210			
	20		30	-	84		1000												900	800	700	650	600	550	500	420			

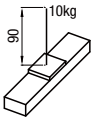
■Rod Type

Type	Lead	Appearance	Maximum Load Capacity (kg)		Max. Push Force (N)	Maximum Velocity (mm/sec) * Values in the list are the maximum velocity. Stroke (mm)						Position Detector	Controller Input Power Supply	Standards Applicable	Pages
			Horizontal	Vertical		50	100	150	200	250	300				
RSD1	6	Standard Specification	20	8	100		250			-		Resolver Incremental Method	DC24V (±10%)	RoHS CE* Applicable	P.375
	12		10	4	75		500								
RSD2	2		45	25	600		80			72	53				P.377
	6		40	12	300		250			220	160				
	12		25	5	150		500			440	320				
RSD3	2		60	30	900		50								P.379
	6		55	20	550		150								
	12		50	10	250		300								
RSDG1	6	Support Guide Specifications	20	7.5	100		250			-					P.375
	12		10	3.5	75		500								
RSDG2	2		45	24	600		80			72	53				P.377
	6		40	11	300		250			220	160				
	12		25	4	150		500			440	320				
RSDG3	2		60	28.5	900		50								P.379
	6		55	18.5	550		150								
	12		50	8.5	250		300								

Notes on CE Marking

MISUMI Robot Series provide parts to be incorporated into customers' devices and equipment. According to EC Directive, it is declared that these are supplied in an incomplete state. Therefore, no CE marks are attached.
Please check for EC Directive compatibility with robot built-in device or equipment (finished products) by customers. For details, please see Instruction Manual.

Selection Examples
-(Slider Type)-



Positioning Operation Selection Example

[Selection Criteria] Horizontal Load Capacity 10kg, Stroke 500mm, Positioning Time less than 1.0sec, overhang dimension is 90mm to A direction in the picture. (Standard Environment)

(1)(2) Select a model with the max. load capacity of 10kg (in horizontal position) and moving stroke of 500mm from "Spec List" on left page.

<Selection Example>
· RS2 Lead 6
· RS3 Lead 6
· RSH1 Lead 20

■Slider Type For selections, please use Selection Guide on P.1905

Type	Lead	Environmental Specification	Max Load Capacity Weight (kg) Horizontal	Vertical	Max. Push Force (N)	Maximum Velocity (mm/sec) * Values in the list are the maximum velocity. Stroke (mm)	Position Detector	Controller Input Power Supply	Standards Applicable	Pages
RS1	2	Standard Specification	6	4	150	100	Resolver Incremental Method	DC24V (±10%)		P.363
	6		4	2	90	300				
	12		2	1	45	600				
RS2	6		10	2	90	300 280 250 220 190				P.365
	12		6	1	45	600 560 500 440 380				
	20		4	-	27	1000 933 833 733 633				
RS3	6		12	4	120	300 280 250 220 190				P.367
	12		8	2	60	600 560 500 440 380				
	20		6	-	36	1000 933 833 733 633				
RSH1	6	Standard Specification	40	8	283	360 324 270 234 216 180	Resolver Absolute Method	AC Single Phase		P.369
	12		20	4	141	720 648 540 468 432 360				
	20					1200 1080 900 780 720 600				

50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050

255 225 195 180 165 150 135 120
390 360 330 300 270 240

(3) Select a model capable of positioning within 1.0 sec from "Cycle Time Graph" on P.397~400

<Example> Check RSH1 Lead 20 positioning time

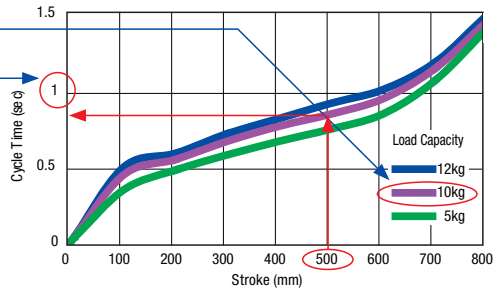
· Select 10kg for load capacity.

· The graph indicates positioning time is less than 1.0 sec.

· The table indicates positioning time is 0.83 sec.

(Note) The graph and table indicate calculated values, and these may vary depending on operating conditions.

Likewise, check the positioning time for RS2 Lead 6 and RS3 Lead 6



<Selection Example>
· RS2 Lead 6 1.78sec
· RS3 Lead 6 1.83sec
· RSH1 Lead 20 0.83sec

▶ - RSH1 Lead 20

sec

st	0	100	200	300	400	500	600	700	800
12kg	0	0.48	0.57	0.70	0.80	0.90	0.99	1.17	1.48
10kg	0	0.43	0.53	0.65	0.75	0.83	0.93	1.13	1.44
5kg	0	0.33	0.46	0.56	0.65	0.73	0.83	1.05	1.39

(4) Select a model whose gravity center of load is within allowable overhang.

<Example> Check RSH1 Lead 20 allowable overhanging loads

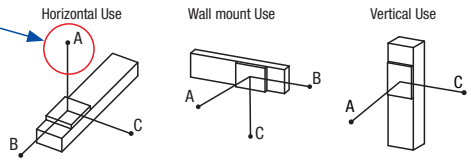
· Check the direction.

· The table indicates the overhung is 100mm.

(Note) Values are actual measurement and may vary depending on operating conditions.

Ex.: RSH1 Lead 20

■ Allowable Overhang Load



Horizontal Use (Unit [mm])

Lead	Mass	A	B	C
20	12kg	85	25	43
	10kg	100	32	54
	5kg	197	76	120

<Selection Example>
· RSH1 Lead 20 100mm

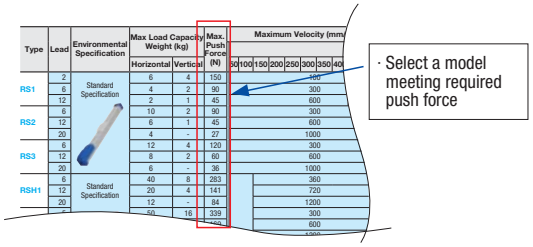
▶ - Select RSH1 Lead 20

(Note) When more than one model is suggested, please select a model with the largest load capacity. When overhang is 0, please additionally use guides and the like to support load mass.

Push Operation Selection Example

Confirm maximum compression force and allowable static moment. For selection expect push operation, refer to Selection Example of Models for Positioning Operation.

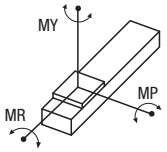
(1) Check maximum push force



· Select a model meeting required push force

(2) Check allowable static moment

Ex.: RSH1



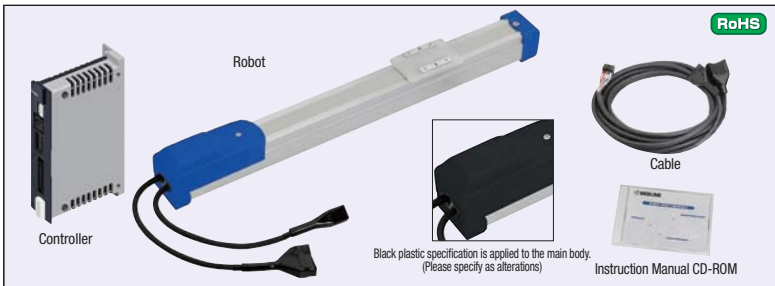
· Check if the allowable static moment is larger than the moment generated by the compression force.

(Unit [Nm])

MY	70
MP	95
MR	110

Single Axis Robots RS1 -Straight-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



RoHS

Components: Robot / Controller / Cable

Accessory F

Accessory	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) · Power Connector · Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Components	Guide Rail	Slider	Side Covers
M Material	Steel	Aluminum	Aluminum
S Surface Treatment	-	-	Anodize

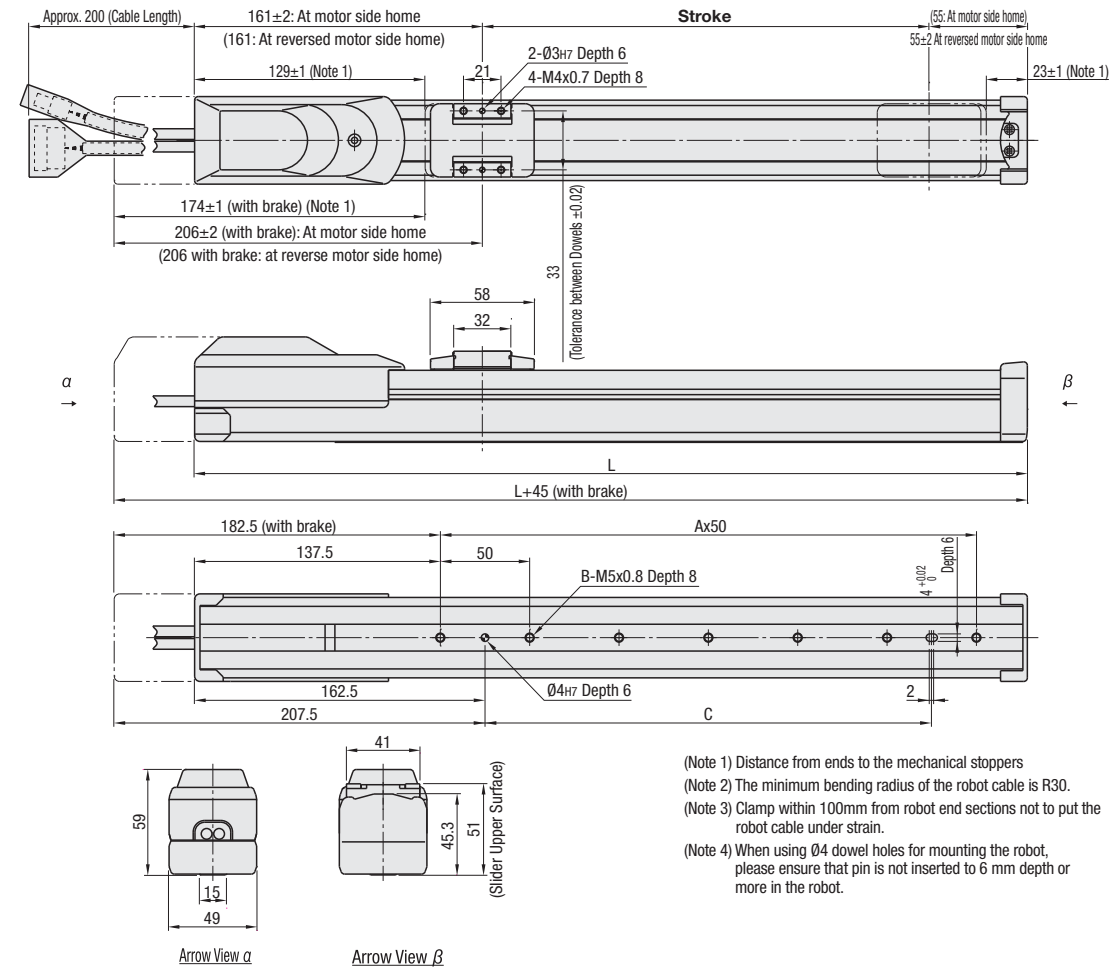
General Specifications

Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Controller Specification P.393 Cycle Time Graph P.397 Clean Spec. P.381

Standard Specifications Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Maximum Load Capacity (kg) Vertical	Maximum Push Force (N)	Stroke (mm)	Maximum Velocity (mm/sec)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points
RS1	02	±0.02	6	4	150	50~400 (50 Pitch)	100	10,000 km or more	DC24V ±10%	255 points
	06		4	2	90		300			
	12		2	1	45		600			



(Note 1) Distance from ends to the mechanical stoppers

(Note 2) The minimum bending radius of the robot cable is R30.

(Note 3) Clamp within 100mm from robot end sections not to put the robot cable under strain.

(Note 4) When using Ø4 dowel holes for mounting the robot, please ensure that pin is not inserted to 6 mm depth or more in the robot.

Dimensions · Mass

Type	Stroke (mm)	50	100	150	200	250	300	350	400
RS1	L	266	316	366	416	466	516	566	616
	A	2	3	4	5	6	7	8	9
	B	3	4	5	6	7	8	9	10
	C	50	100	150	200	250	300	350	400
	Mass (kg)	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3

The mass of "with brake" type is 0.2kg heavier.

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections			
Type	Lead (mm)	with or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS1	02 06 12	Without: **Leave blank** With: **B**	C1 DC24V±10%	NPN: N PNP: P CC-Link: C DeviceNet: D	1 3 5 10 (Elastic Cable)	50~400 (50mm Increment)

(1) Choose "with brake" type for use in vertical applications.

Order Example

Part Number	-	Controller	-	I/O Module	-	Cable Length	-	Stroke
RS102B	-	C1	-	N	-	3	-	400

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)							
	50	100	150	200	250	300	350	400
RS1_ _								
RS1_ _B								

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 unit(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

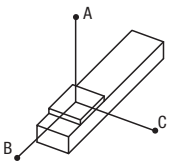
Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
<Ex.> For RS102-C1-N-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
379,00 EUR + 135,00 EUR + 55,00 EUR = 569,00 EUR

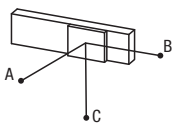
Allowable Overhang Load

- Horizontal Use



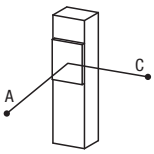
mm				
Lead	Mass	A	B	C
02	6kg	863	40	60
	4kg	869	61	92
06	4kg	567	56	84
	3kg	556	76	112
	2kg	687	116	169
12	2kg	667	107	152
	1kg	807	218	292

- Wall Mount Use



mm				
Lead	Mass	A	B	C
02	6kg	39	26	789
	4kg	72	48	829
06	4kg	63	43	507
	3kg	92	62	516
	2kg	149	102	656
12	2kg	133	93	611
	1kg	274	204	776

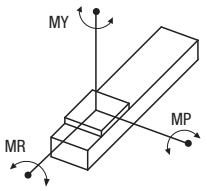
- Vertical Use



mm			
Lead	Mass	A	C
02	4kg	53	53
	2kg	118	118
06	2kg	107	107
	1kg	223	223
12	1kg	204	204
	0.5kg	407	408

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
16	19	17

Alterations

Part Number	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	-	(G, E, etc.)
RS102B	-	C1	-	N	-	3	-	400	-	G-E

<Price Examples> The prices are for the part numbers on the left.

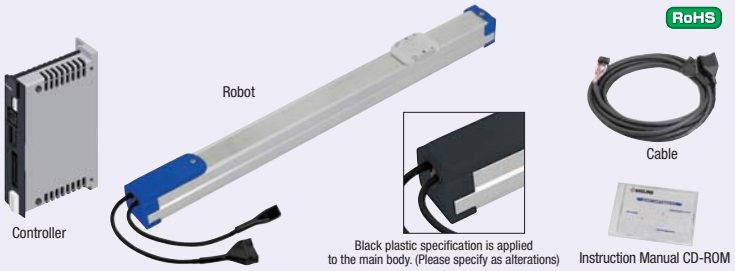
(Robot Body Price)	+	(Controller Price)	+	(Cable Price)	+
514,00 EUR	+	135,00 EUR	+	55,00 EUR	+
(Grease Type Alteration Charge)	+	(Home Position Alteration Charge)	=	Total Price	
45,00 EUR	+	0,00 EUR	=	749,00 EUR	

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
Code	G	E	H	D	S	R	T	MJ · ME	KJ · KE	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.
Price Adder	45,00	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00

For option purchase, please refer to **P.395.** All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots RS2 -Straight-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



Controller Specification ☞ P.393 Cycle Time Graph ☞ P.397 Clean Spec. ☞ P.383

■ **Components:** Robot / Controller / Cable

■ **Accessory**

	Controller I/O Specifications		
A Accessory	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Guide Rail	Slider	Side Covers
M Material	Steel	Aluminum	Aluminum
S Surface Treatment	-	-	Anodize

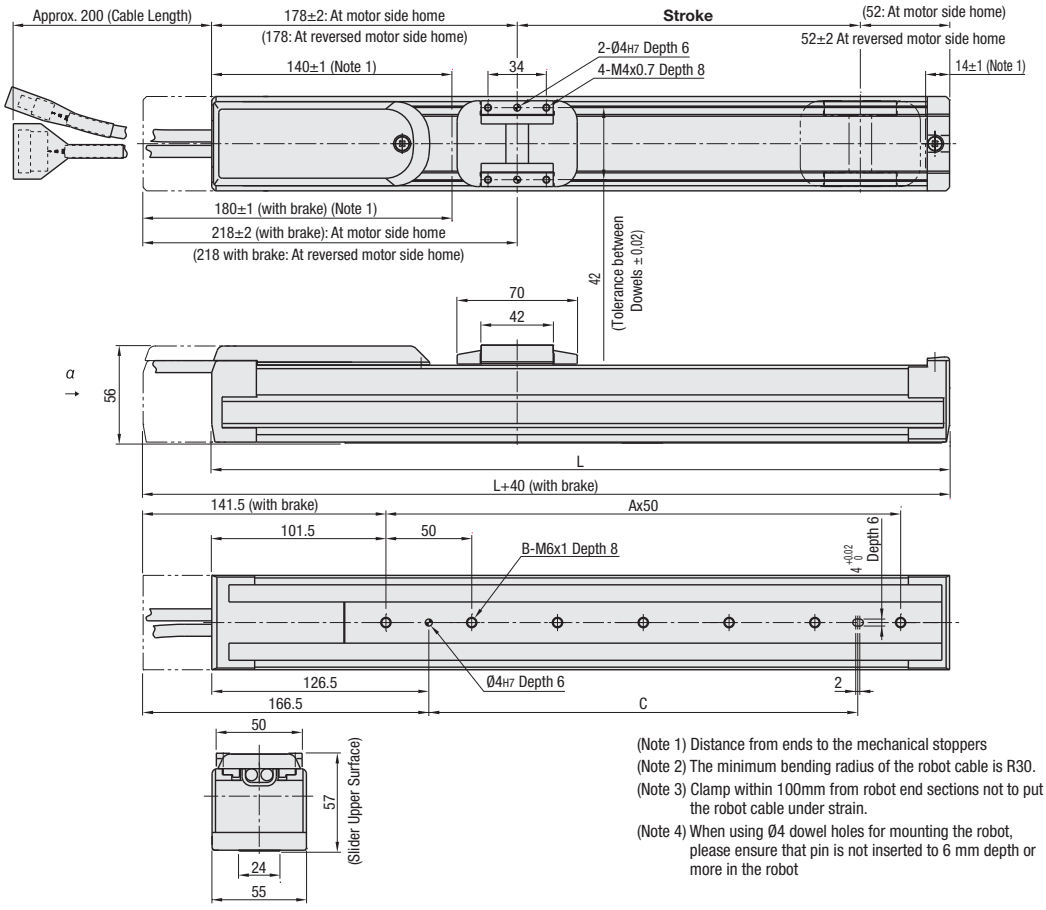
■ **General Specifications**

Ball Screws	Motor	Position Detector	Service Ambient Temp. / Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (No condensation)

■Standard Specifications Terminology ☞P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Max. Load Capacity (kg) Horizontal	Max. Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (Note) (mm/sec)	Rated Running Life	Controller Input Power Supply	Max. Positioning Points
RS2	06	±0.02	10	2	90	50~800 (50 Pitch)	300~190	10,000 km or more	DC24V ±10%	255 points
	12		6	1	45		600~380			
	20		4	-	27		1000~633			

(Note) Maximum speed differs depending on the strokes. See the maximum speed chart on next page.



(Note 1) Distance from ends to the mechanical stoppers

(Note 2) The minimum bending radius of the robot cable is R30.

(Note 3) Clamp within 100mm from robot end sections not to put the robot cable under strain.

(Note 4) When using Ø4 dowel holes for mounting the robot, please ensure that pin is not inserted to 6 mm depth or more in the robot

■Dimensions / Mass

Type	Stroke (mm)	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS2	L	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
	A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0

(The mass of "with brake" type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections			
Type	Lead (mm)	with or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS2	06 12 20	Without: **Leave blank** With: **B**	**C1** DC24V±10%	NPN: **N** PNP: **P** CC-Link: **C** DeviceNet: **D**	**5** **10** (Elastic Cable)	**50~800** (50mm Increment)

(1) Choose w/ brake type for use in vertical alignment. (W/ break type is not available for Lead 20)

Order Example

Part Number	-	Controller	-	I/O Module	-	Cable Length	-	Stroke
RS206B	-	C1	-	N	-	3	-	400

Days to Ship: **10 Days**

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS2_ _																
RS2_ _B																

(1)For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 unit(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

Note

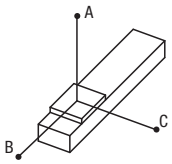
Power interruption circuit is not installed in this controller to be available for various safety levels. Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price

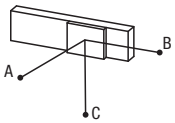
<Ex.> For RS206-C1-N-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
379,00 EUR + 135,00 EUR + 55,00 EUR = 569,00 EUR

Allowable Overhang Load

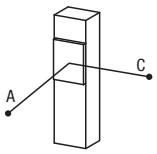
- Horizontal Use



- Wall Mount Use



- Vertical Use



mm

Lead	Mass	A	B	C
06	10kg	344	29	62
	8kg	332	37	79
	4kg	503	78	165
12	6kg	335	47	95
	4kg	347	72	139
20	4kg	334	67	120
	2kg	413	139	218

mm

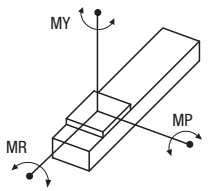
Lead	Mass	A	B	C
06	8kg	47	22	355
	6kg	76	35	377
	4kg	134	63	496
12	6kg	63	31	263
	4kg	109	57	300
20	4kg	92	51	265
	2kg	192	123	372

mm

Lead	Mass	A	C
06	2kg	148	148
	1kg	312	312
12	1kg	286	286
	0.5kg	578	579

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
25	33	30

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 50~600	650	700	750	800
RS2	06	300	280	250	220	190
	12	600	560	500	440	380
	20	1000	933	833	733	633

Alterations

Part Number	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	- (G, E, etc.)
RS206B	-	C1	-	N	-	3	-	400	- G-E

<Price Examples> The prices are for the part numbers on the left.

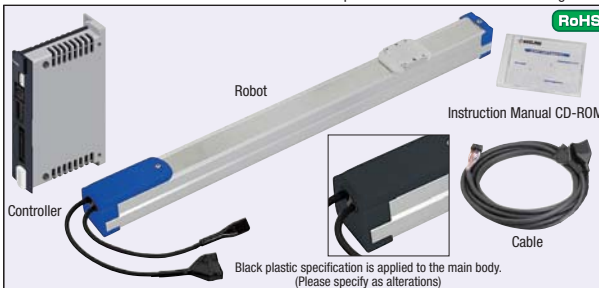
(Robot Body Price)	+	(Controller Price)	+	(Cable Price)	+	(Grease Type Alteration Charge)	+	(Home Position Alteration Charge)	=	Total Price
514,00 EUR	+	135,00 EUR	+	55,00 EUR	+	45,00 EUR	+	0,00 EUR	=	749,00 EUR

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
Code	G	E	H	D	S	R	T	MJ/ME	KJ/KE	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language, ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.
Price Adder	45,00	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00

(1)For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots RS3 -Straight-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



RoHS

■ **Components:** Robot · Controller · Cable

■ **Accessory**

	Controller I/O Specifications		
A Accessory	NPN · PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) · Power Connector · Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

■ **Robot Material · Surface Treatment**

Components	Guide Rail	Slider	Side Covers
M Material	Steel	Aluminum	Aluminum
S Surface Treatment	-	-	Anodize

■ **General Specifications**

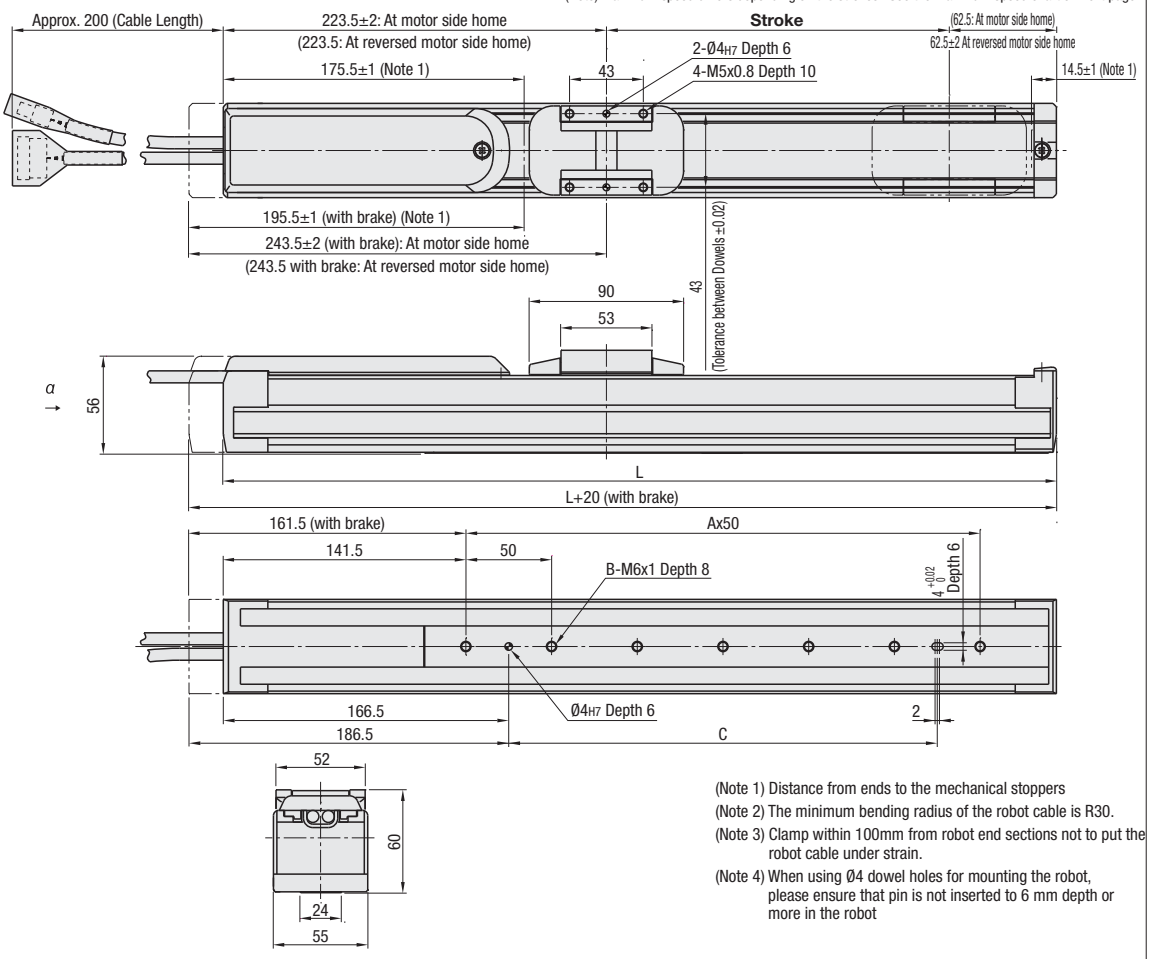
Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Controller Specification ☞ P.393 Cycle Time Graph ☞ P.398 Clean Spec. ☞ P.385

■Standard Specifications Terminology ☞P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg)		Maximum Push Force (N)	Stroke (mm)	Maximum Velocity (Note) (mm/sec)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points
			Horizontal	Vertical						
RS3	06	±0.02	12	4	120	50~800 (50 Pitch)	300~190	10,000 km or more	DC24V ±10%	255 points
	12		8	2	60		600~380			
	20		6	-	36		1000~633			

(Note) Maximum speed differs depending on the strokes. See the maximum speed chart on next page.



(Note 1) Distance from ends to the mechanical stoppers

(Note 2) The minimum bending radius of the robot cable is R30.

(Note 3) Clamp within 100mm from robot end sections not to put the robot cable under strain.

(Note 4) When using Ø4 dowel holes for mounting the robot, please ensure that pin is not inserted to 6 mm depth or more in the robot

■Dimensions / Mass

Type	Stroke (mm)	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS3	L	336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
	A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3

The mass of "with brake" type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections			
Type	Lead (mm)	with or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS3	06 12 20	Without: Leave blank With: B	C1 DC24V±10%	NPN: N PNP: P CC-Link: C DeviceNet: D	1 3 5 10 (Elastic Cable)	50~800 (50mm Increment)

(1) Choose w/ brake type for use in vertical alignment. (W/ break type is not available for Lead 20)

Order Example

Part Number	-	Controller	-	I/O Module	-	Cable Length	-	Stroke
RS306B	-	C1	-	N	-	3	-	400

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS3_ _																
RS3_ _B																

(1)For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 unit(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

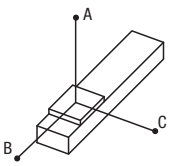
Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

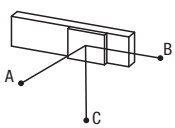
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
<Ex.> For RS306-C1-N-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
424,00 EUR + 135,00 EUR + 55,00 EUR = 614,00 EUR

Allowable Overhang Load

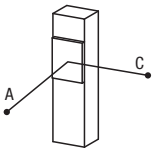
· Horizontal Use



· Wall Mount Use



· Vertical Use



mm

Lead	Mass	A	B	C
06	12kg	465	39	64
	10kg	442	47	78
	8kg	480	61	100
	6kg	573	83	136
12	8kg	403	56	88
	6kg	399	76	118
	4kg	500	118	179
20	6kg	352	71	104
	4kg	366	109	148
	2kg	599	225	291

mm

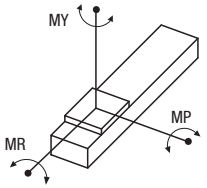
Lead	Mass	A	B	C
06	12kg	28	17	338
	10kg	43	26	355
	8kg	64	39	413
	6kg	101	62	519
12	8kg	55	34	305
	6kg	85	55	334
	4kg	146	96	449
20	6kg	71	49	262
	4kg	118	88	309
	2kg	262	203	554

mm

Lead	Mass	A	C
06	4kg	113	113
	2kg	244	245
12	2kg	224	224
	1kg	458	459

Allowable Static Moment

· Moment Diagram



N·m

MY	MP	MR
32	38	34

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 50~600	650	700	750	800
	06	300 (250)	280 (250)	250	220	190
	12	600 (500)	560 (500)	500	440	380
	20	1000	933	833	733	633

(1)Value in ( ) is for usage in vertical application.

<Price Examples> The prices are for the part numbers on the left.

(Robot Body Price) + (Controller Price) + (Cable Price) +
559,00 EUR + 135,00 EUR + 55,00 EUR +
(Grease Type Alteration Charge) + (Home Position Alteration Charge) = Total Price
45,00 EUR + 0,00 EUR = 794,00 EUR

Alterations

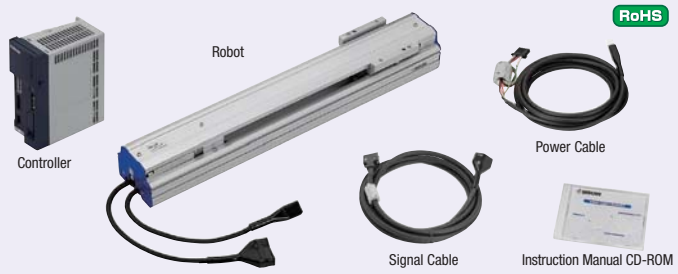
Part Number	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	-	(G, E, etc.)
RS306B	-	C1	-	N	-	3	-	400	-	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
Code	G	E	H	D	S	R	T	MJ/ME	KJ/KE	BC
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.
Price Adder	45,00	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00

(1)For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots RSH1 -Straight-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



RoHS

■ **Components:** Robot Body / Controller / Cable / (Battery) / (Noise Filter)

■ **Accessory**

	Controller I/O Specifications		
A Accessory	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM / Power Connector / EXT Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Covers
M Material	Aluminum	Steel	Aluminum	Aluminum
S Surface Treatment	Anodize	-	Anodize	Anodize

■ **General Specifications**

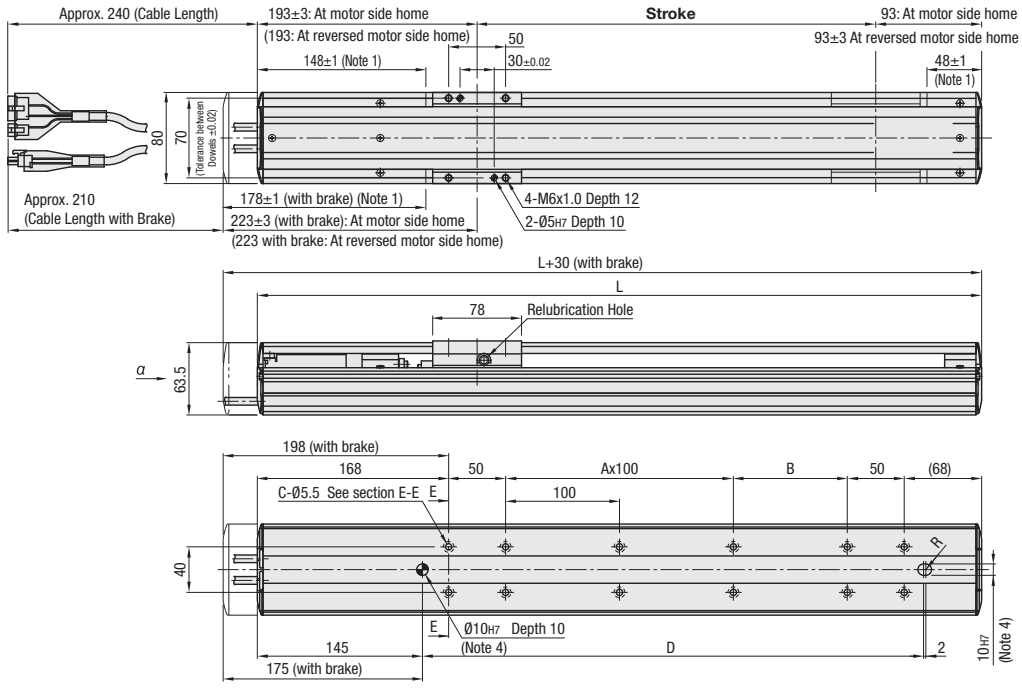
Ball Screws	Motor	Position Detector	Service Ambient Temp. / Humidity
Ø12 (C10 Rolled)	AC Servo Motors 100W	Resolver	0 ~ 40°C, 35 ~ 85%RH (No condensation)

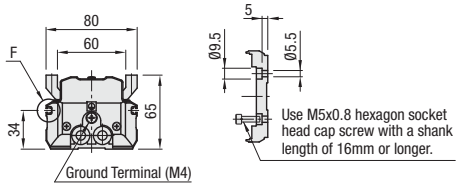
Controller Specification ☞ P.393 Cycle Time Graph ☞ P.398 Clean Spec. ☞ P.387

■Standard Specifications Terminology ☞P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Vertical	Rated Force (N)	Maximum Velocity (Note) (mm/sec)	Stroke (mm)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points
RSH1	06	±0.02	40	8	283	360~180	150~800 (50 Pitch)	10,000 km or more	Single-phase AC 100~115V 200~230V ±10%	255 points
	12		20	4	141	720~360				
	20		12	-	84	1200~600				

(Note) Maximum speed differs depending on the strokes. See the maximum speed chart on next page.





(Note 1) Distance from ends to the mechanical stoppers

(Note 2) Washer or other equivalent material can not be installed inside the body at installation.

(Note 3) Minimum bending radius of the cable is R50.

(Note 4) When using Ø10 dowel holes for mounting the robot, please ensure that pin is not inserted to 10 mm depth or more in the robot.

* Recommended flat nut size: M3 (6x6xt1.6)

■Dimensions / Mass

Type	Stroke (mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RSH1	L	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
	A	0	0	1	1	2	2	3	3	4	4	5	5	6	6
	B	100	150	100	150	100	150	100	150	100	150	100	150	100	150
	C	8	8	10	10	12	12	14	14	16	16	18	18	20	20
	D	240	290	340	390	440	490	540	590	640	690	740	790	840	890
	Mass (kg)	3.6	3.9	4.2	4.4	4.7	5.0	5.3	5.6	5.9	6.2	6.4	6.7	7.0	7.3

(P)The mass of w/ brake type becomes 0.3kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections					
Type	Lead (mm)	with or w/o Brake (1)	Controllers (2)	I/O Module	W/ or w/o Noise Filter (3)	Cable Length	Stroke (mm)
RSH1	06 12 20	Without: Leave blank With: B	Specifications / Power Supply: Absolute encoders (with Data Storage Battery) C21A; Incremental Type C21B AC100~115V AC200~230V: C22A; C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	Without: F0 With: F1 Specifications P.396	Standards: Flex 3.5m: 3; 3.5m: R3 5m: 5; 5m: R5 10m: 10; 10m: R10	150~800 (50mm Increment)

(1) Choose w/ brake type for use in vertical alignment. (W/ break type is not available for Lead 20) (2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(3) This product needs a noise filter. When separately procured by customers, please select "none". Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Order Example

Part Number	Controller	I/O Module	W/ or w/o Nose Filter	Cable Length	Stroke
RSH106B	C22A	N	F1	3	400

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)						
	150/200	250/300	350/400	450/500	550/600	650/700	750/800
RSH1__							
RSH1__B							

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types / I/O	€ Unit Price 1 ~ 5 unit(s) Absolute Encoders (+ Data Storage Battery)	Incremental Type
N		
P		
C		
D		

Cable Price

Cable Length (Standard)	€ Unit Price 1 ~ 5 pc(s).	Cable (Elastic)	€ Unit Price 1 ~ 5 pc(s).
3		R3	
5		R5	
10		R10	

Noise Filter Price

W/ or w/o Noise Filter	€ Unit Price 1 ~ 5 unit(s)
Without: F0	
With: F1	

(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter) = Total Price

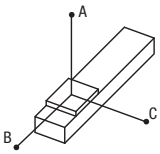
<Ex.> For RSH106-C22A-N-F1-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter Price) = Total Price
1054,00 EUR + 523,00 EUR + 82,00 EUR + 33,00 EUR = 1692,00 EUR

Note

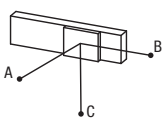
Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit.
Circuit Examples P.394

Allowable Overhang Load

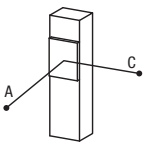
- Horizontal Use



- Wall Mount Use



- Vertical Use



mm

Lead	Mass	A	B	C
06	40kg	113	0	8
	30kg	140	6	20
	20kg	214	16	43
	10kg	403	43	113
12	20kg	103	14	33
	15kg	139	22	51
	10kg	203	39	87
	5kg	364	89	188
20	12kg	85	25	43
	10kg	100	32	54
	5kg	197	76	120

mm

Lead	Mass	A	B	C
06	40kg	0	0	0
	30kg	0	0	14
	20kg	25	9	157
	10kg	94	36	369
12	20kg	15	6	55
	15kg	33	15	100
	10kg	69	32	172
	5kg	171	81	340
20	12kg	27	15	55
	10kg	37	23	72
	5kg	104	67	174

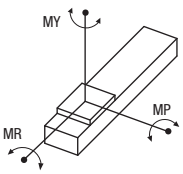
mm

Lead	Mass	A	C
06	8kg	46	46
	6kg	69	69
	4kg	113	113
	2kg	244	245
12	4kg	98	99
	3kg	137	138
	2kg	214	216
	1kg	447	448

When overhang is 0, please additionally use guides and the like to support load mass.

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
70	95	110

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 150~550	600	650	700	750	800
RSH1	06	360	324	270	234	216	180
	12	720	648	540	468	432	360
	20	1200	1080	900	780	720	600

<Price Examples> The prices are for the part numbers on the left.

(Robot Body Price)	+ (Controller Price)	+ (Noise Filter Price)	+ (Cable Price)	+ (Grease Type Alteration Charge)	+ (Home Position Alteration Charge)	= Total Price
1324,00 EUR	+ 523,00 EUR	+ 33,00 EUR	+ 82,00 EUR	+ 45,00 EUR	+ 0,00 EUR	= 2007,00 EUR

Alterations

Part Number	Controller Types	I/O Types	Noise Filter W/ or w/o	Cable	Stroke	(G, E, etc.)
RSH106B	C22A	N	F1	3	400	G-E

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
Code	G	E	H	D	S	R	T	MJ/ME	KJ/KE
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ Communication Cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O Cable is included. It is required for NPN / PNP. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language
Price Adder	45,00	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00

For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Add. Spec. Single Axis Robots RSH2 -Straight-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

RoHS



Controller Specification P.393 Cycle Time Graph P.399 Clean Spec. P.389

■ **Components:** Robot Body / Controller / Cable / (Battery) / (Noise Filter)

■ **Accessory**

Accessory	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM / Power Connector / EXT Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

■ **Robot Material / Surface Treatment**

Components	Base Frame	Guide Rail	Slider	Side Covers
M Material	Aluminum	Steel	Aluminum	Aluminum
S Surface Treatment	Anodize	-	Anodize	Anodize

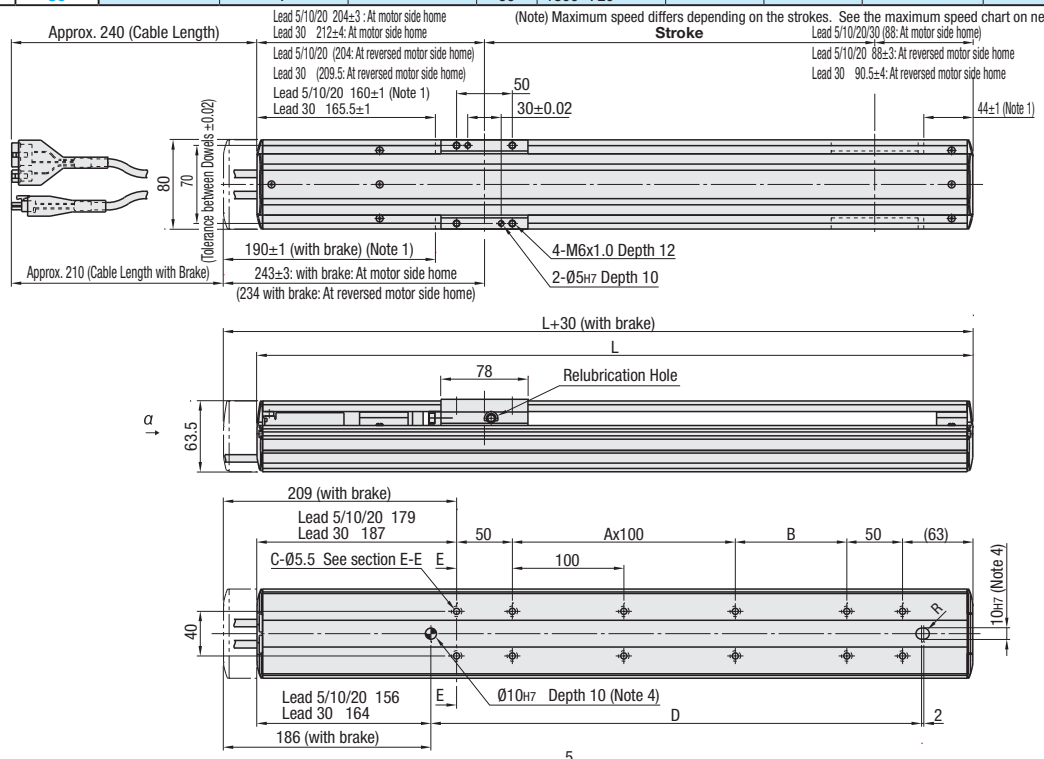
■ **General Specifications**

Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo Motors 100W	Resolver	0 ~ 40°C, 35 ~ 85%RH (No condensation)

■Standard Specifications Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg)		Rated Force (N)	Maximum Velocity (Note) (mm/sec)	Stroke (mm)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points
			Horizontal	Vertical						
RSH2	05	±0.01	50	16	339	300~120	150~1050 (50 Pitch)	10,000 km or more	Single-phase AC 100~115V 200~230V ±10%	255 points
	10		40	8	169	600~240				
	20		20	4	84	1200~480				
	30		7	-	56	1800~720				

(Note) Maximum speed differs depending on the strokes. See the maximum speed chart on next page.



(Note 1) Distance from ends to the mechanical stoppers

(Note 2) Washer or other equivalent material can not be installed inside the body at installation.

(Note 3) Minimum bending radius of the cable is R50.

(Note 4) When using Ø10 dowel holes for mounting the robot, please ensure that pin is not inserted to 10 mm depth or more in the robot.

■Dimensions / Mass

Type	Stroke (mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH2	L (Lead 5 / 10 / 20)	442	492	542	592	642	692	742	792	842	892	942	992	1042	1092	1142	1192	1242	1292	1342
	L (Lead30)	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
	A	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9
	B	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100
	C	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
	D	240	290	340	390	440	490	540	590	640	690	740	790	840	890	940	990	1040	1090	1140
	Mass (kg)	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.2	9.5

(T)The mass of w/ brake type becomes 0.3kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections					
Type	Lead (mm)	with or w/o Brake (1)	Controllers (2)	I·O Module	W· or w·o Noise Filter (3)	Cable Length	Stroke (mm)
RSH2	05 10 20 30	Without: Leave blank With: B	Specifications / Power Supply / Absolute encoders (with Data Storage Battery) / Incremental Type AC100~115V AC200~230V	NPN: N PNP: P CC-Link: C DeviceNet: D	Without: F0 With: F1 Specifications P.396	Standards: 3.5m: 3, 5m: 5, 10m: 10 Flex: 3.5m: R3, 5m: R5, 10m: R10	150~1050 (50mm Increment)

(1)Choose w/ brake type motor for vertical applications. (Break type is not available for Lead 30)
(2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(3) This product needs a noise filter. When separately procured by customers, please select "none".
Please be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Order Example

Part Number	-	Controller	-	I/O Module	-	W/ or w/o Nose Filter	-	Cable Length	-	Stroke
RSH205B	-	C22A	-	N	-	F1	-	3	-	400

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)									
	150/200	250/300	350/400	450/500	550/600	650/700	750/800	850/900	950/1000	1050
RSH2__										
RSH2__B										

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types I·O	€ Unit Price 1 ~ 5 unit(s) Absolute Encoders (with Data Storage Battery)	Incremental Type
N		
P		
C		
D		

Cable Price

Cable Length (Standard)	€ Unit Price 1 ~ 5 pc(s).	Cable Length (Elastic)	€ Unit Price 1 ~ 5 pc(s).
3		R3	
5		R5	
10		R10	

Noise Filter Price

W/ or w/o Noise Filter	€ Unit Price 1 ~ 5 pc(s)
Without: F0	
With: F1	

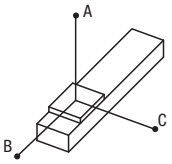
Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter) = Total Price
<Ex.> For RSH205-C22A-N-F1-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter Price) = Total Price
1350,00 EUR + 523,00 EUR + 82,00 EUR + 33,00 EUR = 1988,00 EUR

Allowable Overhang Load

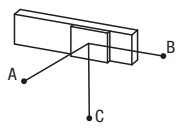
- Horizontal Use



mm

Lead	Mass	A	B	C
05	50kg	51	0	0
	40kg	138	4	12
	30kg	170	10	29
	20kg	249	23	62
10	40kg	35	0	6
	30kg	74	8	20
	20kg	121	20	46
	10kg	251	56	122
20	20kg	58	14	26
	15kg	76	24	39
	10kg	116	45	69
	5kg	211	108	147
30	7kg	78	43	49
	5kg	112	80	80

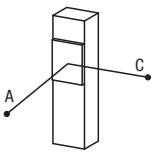
- Wall Mount Use



mm

Lead	Mass	A	B	C
05	50kg	0	0	0
	40kg	0	0	0
	30kg	0	0	0
	20kg	19	7	140
10	40kg	0	0	0
	30kg	0	0	0
	20kg	7	0	30
	10kg	85	39	202
20	20kg	0	0	0
	15kg	7	0	16
	10kg	38	26	69
	5kg	119	89	176
30	7kg	21	19	34
	5kg	55	57	77

- Vertical Use



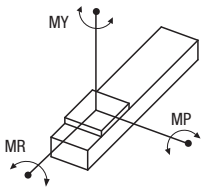
mm

Lead	Mass	A	C
05	16kg	19	19
	15kg	22	22
	10kg	47	48
	5kg	123	124
10	8kg	57	58
	6kg	85	86
	4kg	141	143
	2kg	310	311
20	4kg	106	110
	2kg	236	240

When overhang is 0, please additionally use guides and the like to support load mass.

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
70	95	110

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 150~650	700	750	800	850	900	950	1000	1050
	05	300	255	225	195	180	165	150	135	120
	10	600	510	450	390	360	330	300	270	240
	20	1200	1020	900	780	720	660	600	540	480
	30	1800	1530	1350	1170	1080	990	900	810	720

Alterations

Part Number	-	Controller Types	-	I/O Types	-	Noise Filter W· or w·o	-	Cable	-	Stroke	- (G, E, etc.)
RSH205B	-	C22A	-	N	-	F1	-	3	-	400	- G-E

<Price Examples> The prices are for the part numbers on the left.

(Robot Body Price)	+	(Controller Price)	+	(Noise Filter Price)	+
1620,00 EUR	+	523,00 EUR	+	33,00 EUR	+

(Cable Price)	+	(Grease Type Alteration Charge)	+	(Home Position Alteration Charge)	=	Total Price
82,00 EUR	+	45,00 EUR	+	0,00 EUR	=	2303,00 EUR

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
Code	G	E	H	D	S	R	T	MJ/ME	KJ/KE
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ Communication Cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O Cable is included. It is required for NPN / PNP. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language
Price Adder	45,00	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00

For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Add. Spec. Single Axis Robots RSH3 -Straight-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



RoHS

Components: Robot Body / Controller / Cable / (Battery) / (Noise Filter)

Accessory

Accessory	Controller I/O Specifications		
A	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM / Power Connector / EXT Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Components	Base Frame	Guide Rail	Slider	Side Covers
M Material	Aluminum	Steel	Aluminum	Aluminum
S	Anodize	-	Anodize	Anodize

General Specifications

Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo Motors 100W	Resolver	0 ~ 40°C, 35 ~ 85%RH (No condensation)

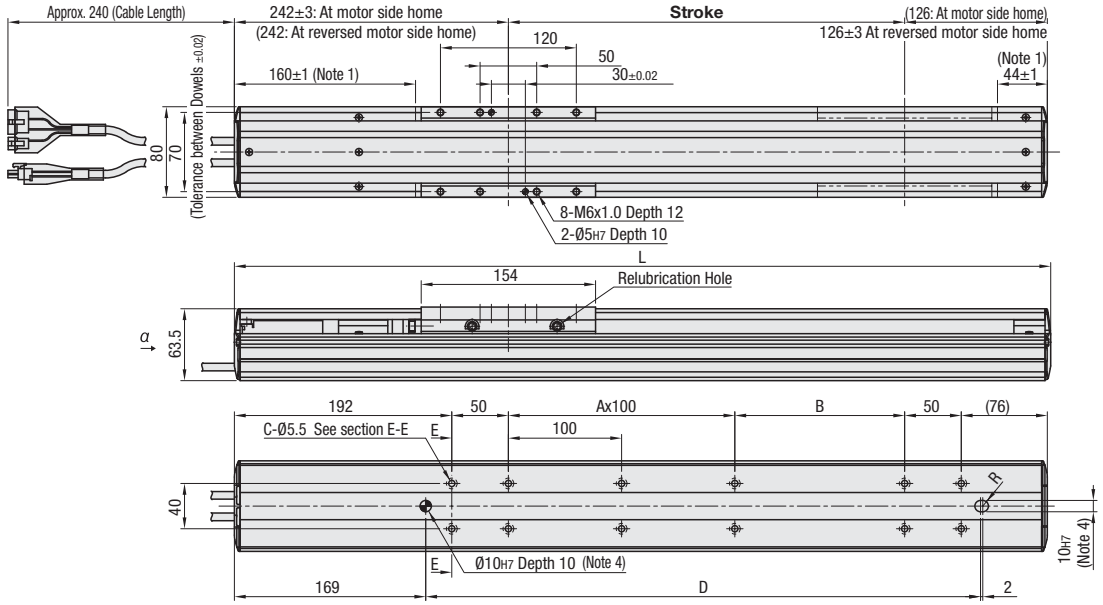
Controller Specification P.393 Cycle Time Graph P.400 Clean Spec. P.391

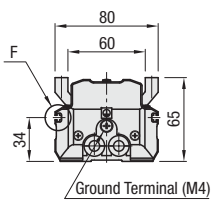
Standard Specifications

Terminology P.396

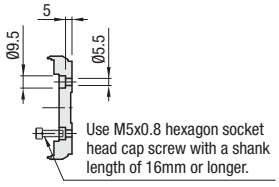
Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Rated Force (N)	Maximum Velocity (Note) (mm/sec)	Stroke (mm)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points
RSH3	05	±0.01	80	339	300~105	150~1050 (50 Pitch)	10,000 km or more	AC100~115V AC200~230V ±10%	255 points
	10		60	169	600~210				
	20		30	84	1200~420				

(Note) Maximum speed differs depending on the strokes. See the maximum speed chart on next page.

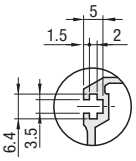




Arrow View α



Section E-E



* Recommended flat nut size: M3 (6 x 6 x t1.6)

Part F: Detail of T slot

(Note 1) Distance from ends to the mechanical stoppers
(Note 2) Washers or other equivalent materials can not be installed inside the body at installation.
(Note 3) Minimum bending radius of the cable is R50.
(Note 4) When using Ø10 dowel holes for mounting the robot, please ensure that pin is not inserted to 10 mm depth or more in the robot.Make sure that pin is not inserted to 10 mm depth or more in the robot.

Dimensions / Mass

Type	Stroke (mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH3	L	518	568	618	668	718	768	818	868	918	968	1018	1068	1118	1168	1218	1268	1318	1368	1418
	A	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9
	B	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150
	C	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26
	D	290	340	390	440	490	540	590	640	690	740	790	840	890	940	990	1040	1090	1140	1190
	Mass (kg)	4.7	5.0	5.3	5.6	5.9	6.2	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.7	10.0	10.3

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections				
Type	Lead (mm)	with or w/o Brake (1)	Controllers (2)	I/O Module	W/ or w/o Noise Filter (3)	Cable	Stroke (mm)
RSH3	05 10 20	Without: Leave blank With: B	Power Supply / Specifications: AC100~115V C21A C21B; AC200~230V C22A C22B (Absolute encoders (with Data Storage Battery) / Incremental Type)	NPN: N PNP: P CC-Link: C DeviceNet: D	Without: F0 With: F1 Specifications P.396	Standards: 3.5m:3, 5m:5, 10m:10; Flex: 3.5m:R3, 5m:R5, 10m:R10	150~1050 (50mm Increment)

(1) Choose w/ brake type for use in vertical alignment. (W/ break type is not available for Lead 20) (2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive. (3) This product needs a noise filter. When separately procured by customers, please select "none". Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Order Example

Part Number	-	Controller	-	I/O Module	-	W/ or w/o Nose Filter	-	Cable	-	Stroke
RSH305B	-	C22A	-	N	-	F1	-	3	-	400

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)									
	150/200	250/300	350/400	450/500	550/600	650/700	750/800	850/900	950/1000	1050
RSH3__										

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types / I/O	€ Unit Price 1 ~ 5 unit(s) C21A/C22A Absolute Encoders (with Data Storage Battery)	C21B/C22B Incremental Type
N		
P		
C		
D		

Cable Price

Cable (Standard)	€ Unit Price 1 ~ 5 pc(s).	Cable (Elastic)	€ Unit Price 1 ~ 5 pc(s).
3		R3	
5		R5	
10		R10	

Noise Filter Price

W/ or w/o Noise Filter	€ Unit Price 1 ~ 5 unit(s)
Without: F0	
With: F1	

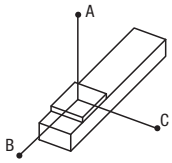
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter) = Total Price
<Ex.> For RSH305-C22A-N-F1-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter Price) = Total Price
1530,00 EUR + 1530,00 EUR + 523,00 EUR + 82,00 EUR = 33,00 EUR

Note

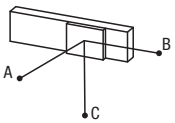
Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

Allowable Overhang Load

- Horizontal Use



- Wall Mount Use



mm

Lead	Mass	A	B	C
05	80kg	601	20	17
	60kg	714	34	29
	40kg	851	63	54
	20kg	1094	148	127
10	60kg	382	30	25
	40kg	479	57	47
	20kg	629	137	111
20	30kg	279	70	50
	20kg	334	116	81
	10kg	573	256	176

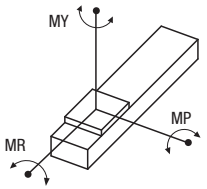
mm

Lead	Mass	A	B	C
05	80kg	0	0	0
	60kg	0	0	0
	40kg	22	26	604
	20kg	96	112	1005
10	60kg	0	0	0
	40kg	15	19	270
	20kg	80	99	545
20	30kg	20	29	160
	20kg	53	75	255
	10kg	147	215	515

When overhang is 0, please additionally use guides and the like to support load mass.

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
128	163	143

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 150~600	650	700	750	800	850	900	950	1000	1050
RSH3	05	300	255	225	195	180	165	150	135	120	105
	10	600	510	450	390	360	330	300	270	240	210
	20	1200	1020	900	780	720	660	600	540	480	420

Alterations

Part Number	-	Controller Types	-	I/O Types	-	Noise Filter W/ or w/o	-	Cable Length	-	Stroke	-	(G, E, etc.)
RSH305B	-	C22A	-	N	-	F1	-	3	-	400	-	G-E

<Price Examples> The prices are for the part numbers on the left.
(Robot Body Price) + (Controller Price) + (Noise Filter Price) +
1530,00 EUR + 523,00 EUR + 33,00 EUR +
(Cable Price) + (Grease Type Alteration Charge) + (Home Position Alteration Charge) = Total Price
82,00 EUR + 45,00 EUR + 0,00 EUR = 2213,00 EUR

Alterations	Grease Type Alteration	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
Code	G	E	H	D	S	R	T	MJ/ME	KJ/KE
Spec.	Grease is changed to low particle generation grease. (NSK LG2)	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ Communication Cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O Cable is included. It is required for NPN / PNP Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language
Price Adder	45,00	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00

For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots Rod Type

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



RoHS

Controller Specification P.393

Structural Components: Robot / Controller / Cable

Accessory

	Controller I/O Specifications		
A Accessory	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Type	Components	Body	Rods	Cover	Shaft	Ball Bushing
RSD1	M Material	Aluminum	Steel	ABS	-	-
	S Surface Treatment	Acrylic Paint	-	-	-	-
RSDG1	M Material	Aluminum	Steel	ABS	Steel	Steel
	S Surface Treatment	Acrylic Paint	-	-	-	-

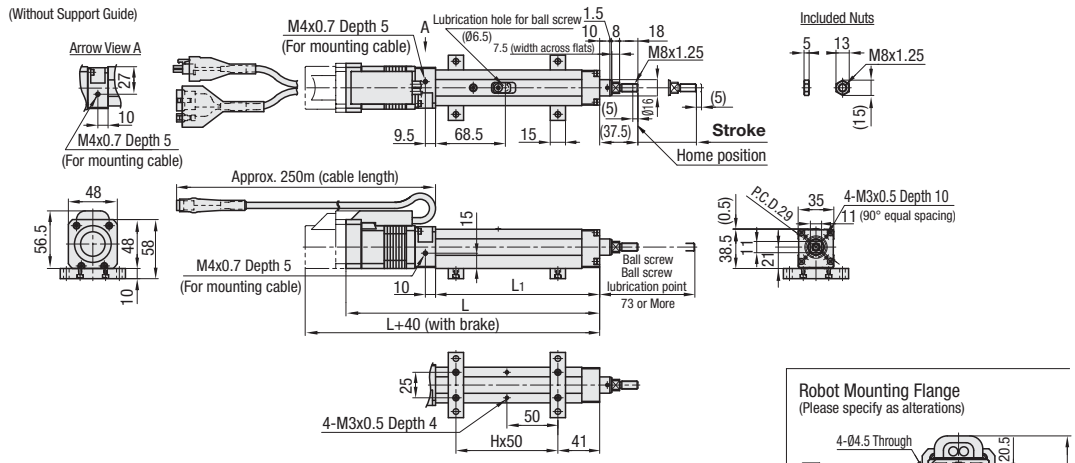
General Specifications

Type	Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
RSD1 RSDG	Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (Ensure no condensation)

Standard Specifications Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Vertical RSD1	Vertical RSDG1	Maximum Push Force (N)	Rated Running Life※1	Lost Motion (mm)	Rod Non-rotational Accuracy (degrees) RSD1	Rod Non-rotational Accuracy (degrees) RSDG1	Stroke (mm)	Maximum Velocity※2 (mm/sec)	Controller Input Power Supply	Maximum Positioning Points
RSD1	06	±0.02	~20	~8	~7.5	100	5000 km or more	0.1 or less	±1.0	±0.05	50~200 (50 Pitch)	~250	DC24V ±10%	255 points
RSDG1	12		~10	~4	~3.5	75						~500		

※1. Vertical travel service life varies depending on load capacity. Please check Service Life Table. ※2 Maximum speed varies depending on load capacity. Please refer to Speed-Load Capacity Table.



(Note 1) Load can be applied only in axial direction.
Please use externally mounted guides together so that no radial load is applied on the rods.
(Note 2) Width Across Flats orientation is not fixed in relation to the base surface.
(Note 3) drawing illustrates installed robot mounting feet.
Hole quantity K is as indicated in Dimensions Table.
(Note 4) To ensure straight line travel, please use with Support Guides.
(Note 5) The minimum bending radius of the robot cable is R30.
(Note 6) Please clamp the robot cables to avoid loads.

Dimensions

Type	Stroke (mm)	50	100	150	200
RSD1 RSDG1	L_1	161	211	261	311
	L	249	299	349	391
	H	2	3	4	5
	K	6	8	10	12

Mass (kg)

Type	Stroke (mm) 50	100	150	200
RSD1	1.1	1.3	1.4	1.6
RSDG1	1.5	1.7	1.9	2.1

※The mass of "with brake" type is 0.2kg heavier.

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections			
Type	Lead (mm)	with or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RSD1 RSDG1	06 12	Without: Leave blank With: B	C1 DC24V±10%	NPN: N PNP: P CC-Link: C DeviceNet: D	1 3 5 10 (Elastic Cable)	50~200 (50mm Increment)

(1) Choose "with brake" type for use in vertical applications.

Order Example

Part Number	-	Controller	-	I/O Module	-	Cable Length	-	Stroke
RSD106B	-	C1	-	N	-	3	-	150

10 Days
Days to Ship

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 3 unit(s) Stroke (mm)			
	50	100	150	200
RSD1__				
RSD1__B				
RSDG1__				
RSDG1__B				

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 pc.(s)
C1	N	
	P	
	C	
	D	

Cable Price

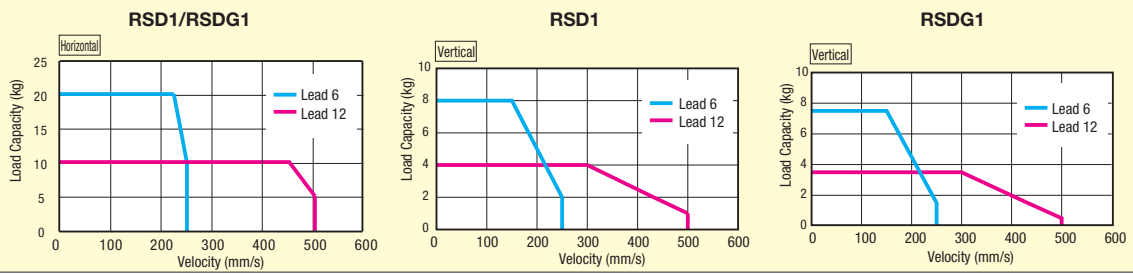
Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

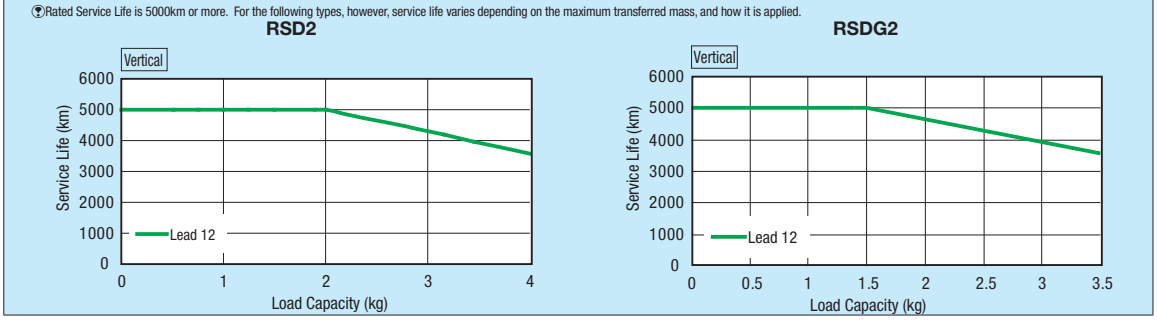
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
<Example> For Order Number
(Robot Price) + (Controller Price) + (Cable Price) = Total Price
491,00 EUR + 135,00 EUR + 55,00 EUR = 681,00 EUR

Velocity - Maximum Load Capacity Table



Service Life Table

Rated Service Life is 5000km or more. For the following types, however, service life varies depending on the maximum transferred mass, and how it is applied.



Alterations

Part Number	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	-	(E, H, etc.)
RSD106B	-	C1	-	N	-	3	-	200	-	S-MJ

Alterations	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations	Robot Mounting Foot Plate	Robot Mounting Flange
Code	H	D	S	R	T	MJ/ME	KJ/KE	BC	HP	VP
Spec.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual MJ: Japanese Language ME: English Language	For Controllers Instruction Manual KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.	2 plates are included for horizontal mount. Specifications P.395	1 plate is included for vertical mount. Specifications P.395
Price Adder	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00	23,00	23,00

For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots RSD2 / RSDG2 Rod Type

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



Controller Specification P.393

Structural Components: Robot / Controller / Cable

Accessory

A Accessory	Controller I/O Specifications		
	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM / Power Connector / Dummy Connector / 6 Mounting Nuts		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Type	Components	Body	Rods	Cover	Shaft	Ball Bushing
	M Material	Aluminum	Steel	ABS	-	-
	S Surface Treatment	Acrylic Paint	-	-	-	-
	M Material	Aluminum	Steel	ABS	Steel	Steel
	S Surface Treatment	Acrylic Paint	-	-	-	-

General Specifications

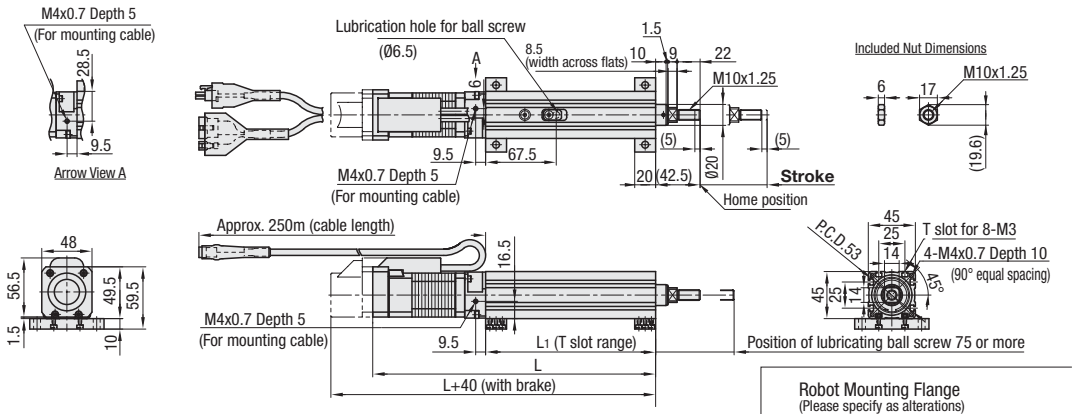
Type	Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
	Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0 – 40°C, 35 – 85%RH (Ensure no condensation)

Standard Specifications Terminology P.396

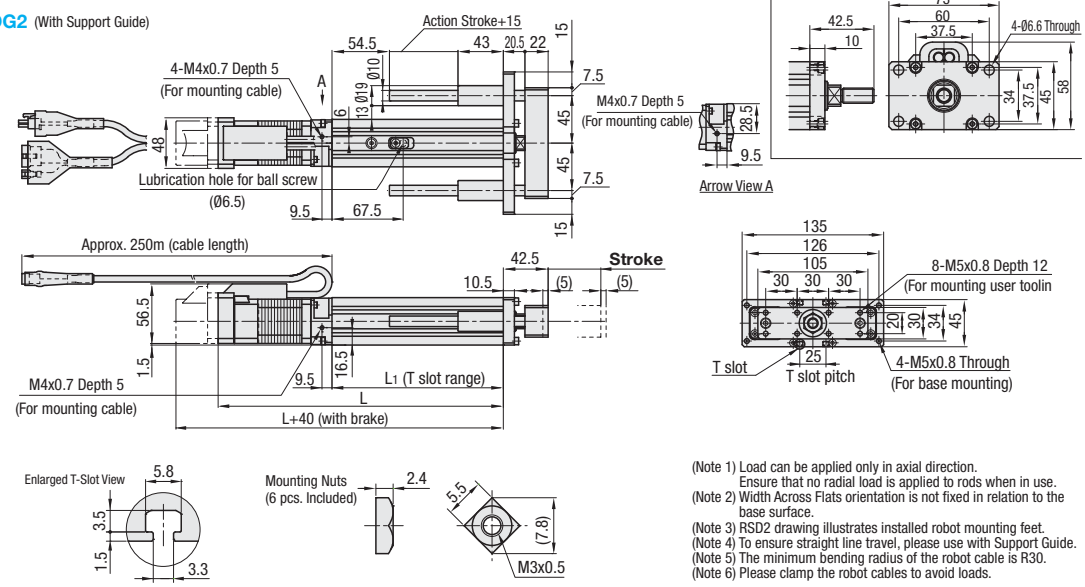
Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Vertical RSD2	Vertical RSDG2	Maximum Push Force (N)	Rated Running Life 1	Lost Motion (mm)	Rod Non-rotational Accuracy (degrees) RSD2	RSDG2	Stroke (mm)	Maximum Velocity 2 (mm/sec)	Controller Input Power Supply	Maximum Positioning Points
RSD2 RSDG2	02	±0.02	~45	~25	~24	600	5000 km or more	0.1 or less	±1.0	±0.05	50~300 (50 Pitch)	~80	DC24V ±10%	255 points
	06		~40	~12	~11	300						~250		
	12		~25	~5	~4	150						~500		

1. Vertical travel service life varies depending on load capacity. Please check Service Life Table. 2 Maximum speed varies depending on load capacity. Please refer to Speed-Load Capacity Table.

RSD2 (Without Support Guide)



RSDG2 (With Support Guide)



(Note 1) Load can be applied only in axial direction. Ensure that no radial load is applied to rods when in use.
(Note 2) Width Across Flats orientation is not fixed in relation to the base surface.
(Note 3) RSD2 drawing illustrates installed robot mounting feet.
(Note 4) To ensure straight line travel, please use with Support Guide.
(Note 5) The minimum bending radius of the robot cable is R30.
(Note 6) Please clamp the robot cables to avoid loads.

Dimensions

Type	Stroke (mm)	50	100	150	200	250	300
RSD2 RSDG2	L1	162.5	212.5	262.5	312.5	362.5	412.5
	L	270.5	320.5	370.5	420.5	470.5	520.5

Mass (kg)

Type	Stroke (mm) 50	100	150	200	250	300
RSD2	1.4	1.7	1.9	2.2	2.4	2.7
RSDG2	2.0	2.4	2.7	3.0	3.3	3.7

The mass of "with brake" type is 0.2kg heavier.

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections			
Type	Lead (mm)	with or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RSD2 RSDG2	02 06 12	Without:**Leave blank** With:**B**	C1 DC24V±10%	NPN:**N** PNP:**P** CC-Link:**C** DeviceNet:**D**	1 3 5 10 (Elastic Cable)	50~300 (50mm Increment)

(1) Choose "with brake" type for use in vertical applications.

Order Example

Part Number	-	Controller	-	I/O Module	-	Cable Length	-	Stroke
RSD206B	-	C1	-	N	-	3	-	150

Days to Ship **10 Days**

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 3 unit(s) Stroke (mm)					
	50	100	150	200	250	300
RSD2__						
RSD2__B						
RSDG2__						
RSDG2__B						

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 pc.(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

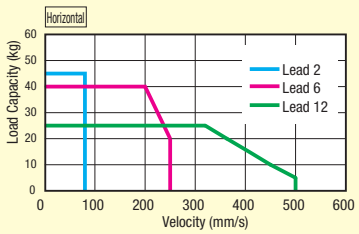
Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

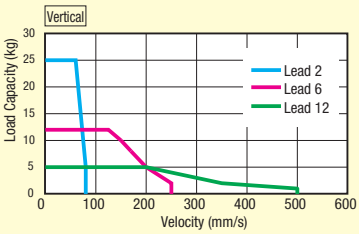
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
<Example> For Order Number RSD206B-C1-N-3-150,
(Robot Price) + (Controller Price) + (Cable Price) = Total Price
450,00 + 135,00 EUR + 55,00 EUR = 640,00 EUR

Velocity - Maximum Load Capacity Table

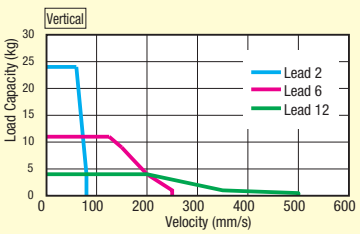
RSD2/RSDG2



RSD2



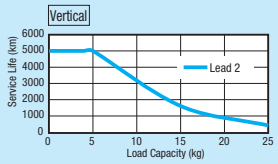
RSDG2



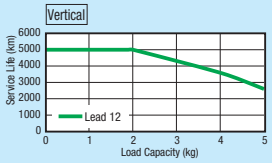
Service Life Table

Rated Service Life is 5000km or more. For the following types, however, service life varies depending on the maximum transferred mass, and how it is applied.

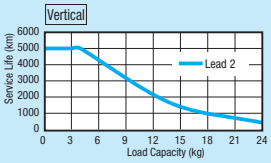
RSD2



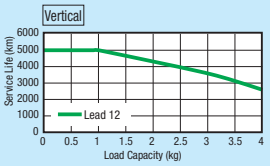
RSD2



RSDG2



RSDG2



Alterations

Part Number	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	-	(E, H, etc.)
RSD206B	-	C1	-	N	-	3	-	200	-	S-MJ

Alterations	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations	Robot Mounting Foot Plate	Robot Mounting Flange
Code	H	D	S	R	T	MJ/ME	KJ/KE	BC	HP	VP
Spec.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual MJ: Japanese Language ME: English Language	For Controllers Instruction Manual KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.	2 plates and 12 nuts are included for horizontal mounting. Specifications P.395	1 plate is included for vertical mounting. Specifications P.395
Price Adder	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00	28,00	23,00

For option purchase, please refer to P.395

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots RSD3 / RSDG3 Rod Type

All machine directive 2006/42/EC related documents as operation manuals are available in english only!



Controller Specification P.393

Structural Components: Robot / Controller / Cable

Accessory

	Controller I/O Specifications		
A Accessory	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM · Power Connector / Dummy Connector · 6 Mounting Nuts		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Type	Components	Body	Rods	Cover	Shaft	Ball Bushing
RSD3	M Material	Aluminum	Steel	ABS	-	-
	S Surface Treatment	Acrylic Paint	-	-	-	-
RSDG3	M Material	Aluminum	Steel	ABS	Steel	Steel
	S Surface Treatment	Acrylic Paint	-	-	-	-

General Specifications

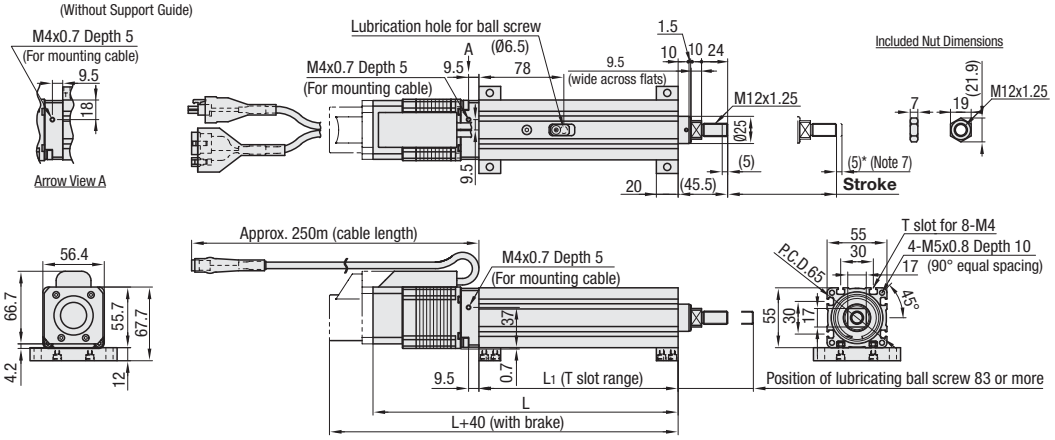
Type	Ball Screws	Motor	Position Detector	Service Ambient Temperature · Humidity
RSD3 RSDG3	Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (Ensure no condensation)

Standard Specifications Terminology P.396

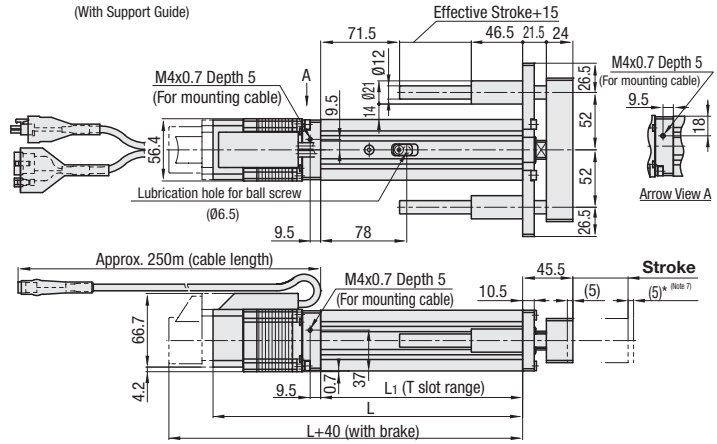
Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Vertical RSD3	Vertical RSDG3	Maximum Push Force (N)	Rated Running Life※1	Lost Motion (mm)	Rod Non-rotational Accuracy (degrees) RSD3	Rod Non-rotational Accuracy (degrees) RSDG3	Stroke (mm)	Maximum Velocity※2 (mm/sec)	Controller Input Power Supply	Maximum Positioning Points
RSD3 RSDG3	02	±0.02	~60	~30	~28.5	900	5000 km or more	0.1 or less	±1.0	±0.05	50~300 (50 Pitch)	~50	DC24V ±10%	255 points
	06		~55	~20	~18.5	550						~150		
	12		~50	~10	~8.5	250						~300		

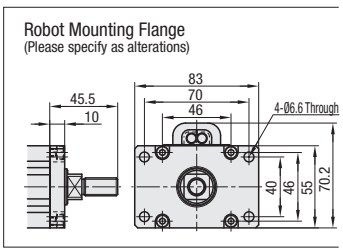
※1. Vertical travel service life varies depending on load capacity. Please check Service Life Table. ※2 Maximum speed varies depending on load capacity. Please refer to Speed-Load Capacity Table.

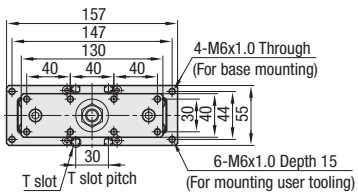
(Without Support Guide)

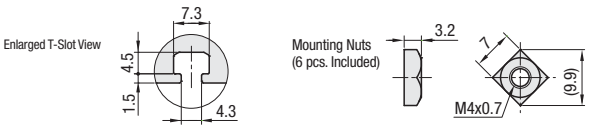


(With Support Guide)









(Note 1) Load can be applied only in axial direction.
Please use externally mounted guides together so that no radial load is applied on the rods.
(Note 2) Width Across Flats orientation is not fixed in relation to the base surface.
(Note 3) RSD3 drawing illustrates installed robot mounting feet.
(Note 4) To ensure straight line travel, please use with Support Guide.
(Note 5) The minimum bending radius of the robot cable is R30.
(Note 6) Please clamp the robot cables to avoid loads.
(Note 7) (5) is 27mm only for Lead 2.

Dimensions

Type	Stroke (mm)	50	100	150	200	250	300
RSD3 RSDG3	L1	183	233	283	333	383	433
	L	280.5	330.5	380.5	430.5	480.5	530.5

Mass (kg)

Type	Stroke (mm) 50	100	150	200	250	300
RSD3	2.2	2.6	3.0	3.3	3.7	4.1
RSDG3	3.1	3.6	4.1	4.5	5.0	5.5

※The mass of "with brake" type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections			
Type	Lead (mm)	with or w/o Brake (1)	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RSD3 RSDG3	02 06 12	Without: Leave blank With: B	C1 DC24V±10%	NPN: N PNP: P CC-Link: C DeviceNet: D	1 3 5 10 (Elastic Cable)	50~300 (50mm Increment)

(1) Choose "with brake" type for use in vertical applications.

Order Example

Part Number	-	Controller	-	I·O Module	-	Cable Length	-	Stroke
RSD306B	-	C1	-	N	-	3	-	150

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 3 unit(s) Stroke (mm)					
	50	100	150	200	250	300
RSD3__						
RSD3__B						
RSDG3__						
RSDG3__B						

(For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 pc.(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

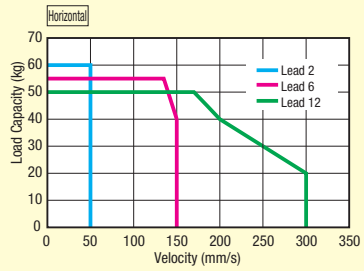
Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

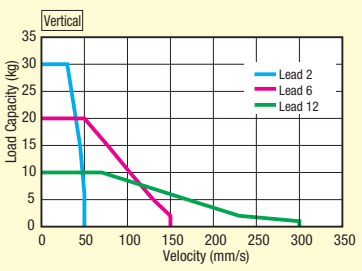
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
<Example> For RSD306B-C1-N-3-150,
(Robot Price) + (Controller Price) + (Cable Price) = Total Price
494,00 EUR + 135,00 EUR + 55,00 EUR = 684,00 EUR

Velocity - Maximum Load Capacity Table

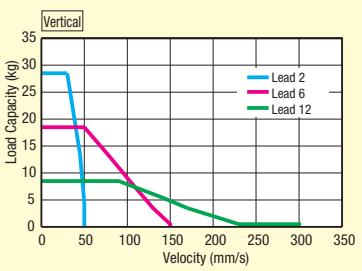
RSD3/RSDG3



RSD3



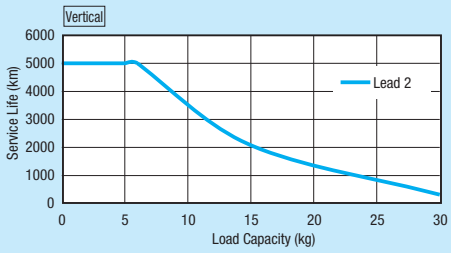
RSDG3



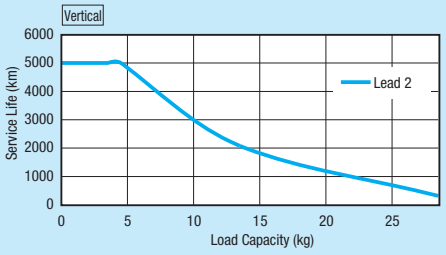
Service Life Table

(Rated Service Life is 5000km or more. For the following types, however, service life varies depending on the maximum transferred mass, and how it is applied.

RSD3



RSDG3



Alterations

Part Number	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	-	(E, H, etc.)
RSD306B	-	C1	-	N	-	3	-	200	-	S-MJ

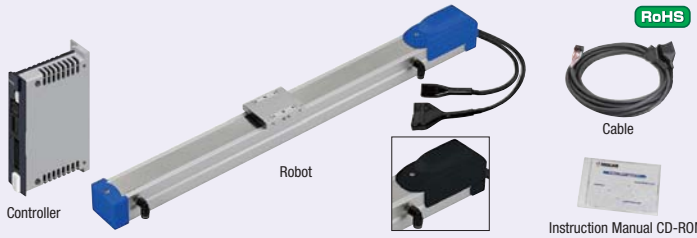
Alterations	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations	Robot Mounting Foot Plate	Robot Mounting Flange
Code	H	D	S	R	T	MJ/ME	KJ/KE	BC	HP	VP
Spec.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual MJ: Japanese Language ME: English Language	For Controllers Instruction Manual KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.	2 plates and 8 nuts are included for horizontal mounting. Specifications P.395	1 plate is included for vertical mounting. Specifications P.395
Price Adder	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00	28,00	28,00

(For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots Clean Room Specification -Straight Type-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Features: Standard equipped with Suction Air Joint and Low Particulate Grease



RoHS

Components: Robot / Controller / Cable
Accessory F

Accessory	Controller I/O Specifications		
A	NPN · PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Components	Guide Rail	Slider	Side Covers
M Material	Steel	Aluminum	Aluminum
S Surface Treatment	-	-	Anodize

General Specifications

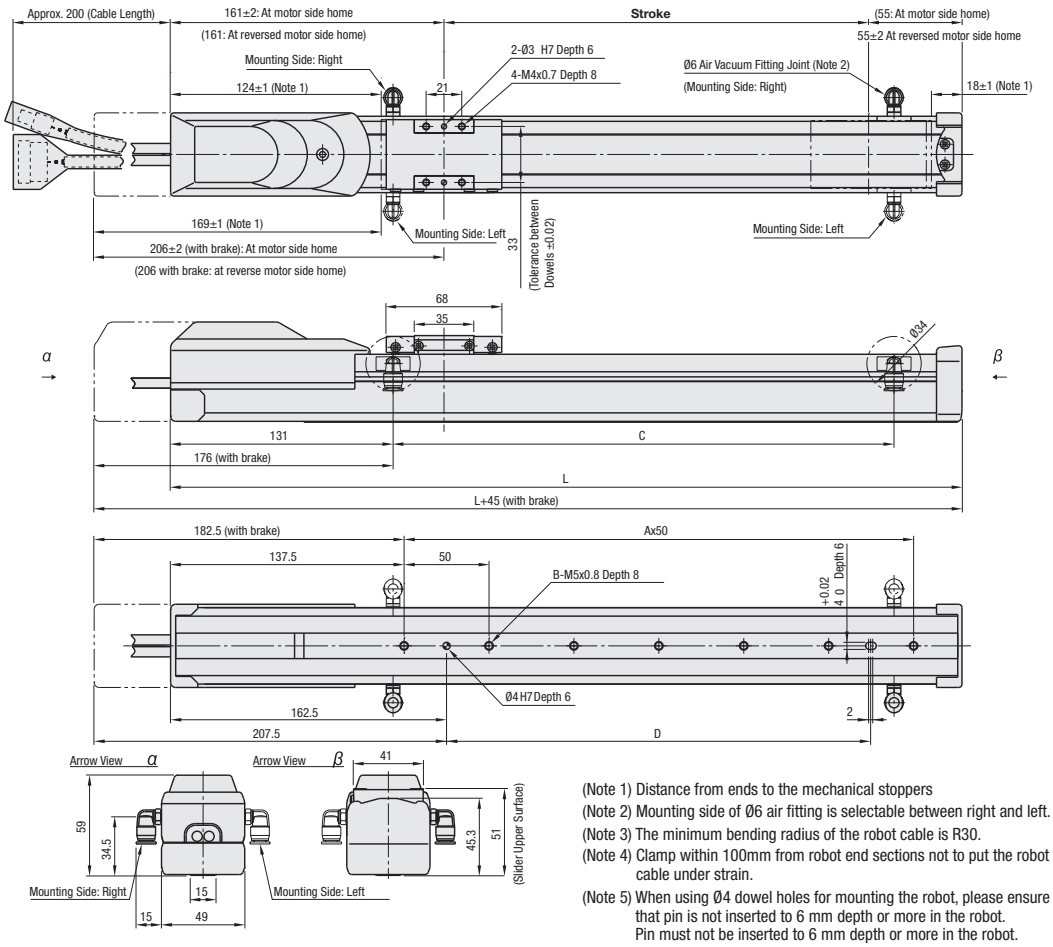
Ball Screws	Motor	Position Detector	Service Ambient Temperature · Humidity
Ø8 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Controller Specification P.393 Cycle Time Graph P.397

Standard Specifications Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg)		Maximum Push Force (N)	Stroke (mm)	Maximum Velocity (mm/sec)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points	Cleanliness (Note)	Suction (ℓ/min)
			Horizontal	Vertical								
RS1C	02	±0.02	6	4	150	50~400 (50 Pitch)	100	10,000 km or more	DC24V ±10%	255 points	CLASS10 (based on 0.1 µm per 1cf)	90
	06		4	2	90		300					
	12		2	1	45		600					

(Note) For 90ℓ/min suction with a suction blower, Ø6 suction air couplers installed side is selectable; right or left.



(Note 1) Distance from ends to the mechanical stoppers
(Note 2) Mounting side of Ø6 air fitting is selectable between right and left.
(Note 3) The minimum bending radius of the robot cable is R30.
(Note 4) Clamp within 100mm from robot end sections not to put the robot cable under strain.
(Note 5) When using Ø4 dowel holes for mounting the robot, please ensure that pin is not inserted to 6 mm depth or more in the robot. Pin must not be inserted to 6 mm depth or more in the robot.

Dimensions · Mass

Type	Stroke (mm)	50	100	150	200	250	300	350	400
RS1C	L	266	316	366	416	466	516	566	616
	A	2	3	4	5	6	7	8	9
	B	3	4	5	6	7	8	9	10
	C	95	145	195	245	295	345	395	445
	D	50	100	150	200	250	300	350	400
	Mass (kg)	1.5	1.7	1.8	1.9	2.0	2.1	2.3	2.4

(P)The mass of "with brake" type is 0.2kg heavier.

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections				
Type	Lead (mm)	with or w/o Brake (1)	Coupler Install Side	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS1C	02 06 12	Without:**Leave blank** With:**B**	Right:**R** Left:**L**	DC24V±10%	NPN:**N** PNP:**P** CC-Link:**C** DeviceNet:**D**	**1** **3** **5** **10** (Elastic Cable)	**50~ 400** (50mm Increment)

1) Choose "with brake" type for use in vertical applications.

Order Example

Part Number	-	Coupler Install Side	-	Controller	-	I/O Module	-	Cable Length	-	Stroke
RS1C02B	-	R	-	C1	-	N	-	3	-	400

Days to Ship 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)							
	50	100	150	200	250	300	350	400
RS1C__								
RS1C__B								

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 pc.(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

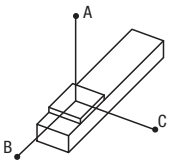
Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

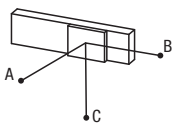
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
<Ex.> For
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
675,00 EUR + 675,00 EUR + 135,00 EUR =1485,00 EUR

Allowable Overhang Load

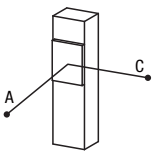
· Horizontal Use



· Wall Mount Use



· Vertical Use



mm

Lead	Mass	A	B	C
02	6kg	863	40	60
	4kg	869	61	92
06	4kg	567	56	84
	3kg	556	76	112
	2kg	687	116	169
12	2kg	667	107	152
	1kg	807	218	292

mm

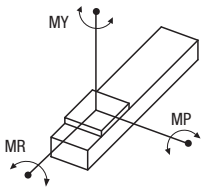
Lead	Mass	A	B	C
02	6kg	39	26	789
	4kg	72	48	829
06	4kg	63	43	507
	3kg	92	62	516
	2kg	149	102	656
12	2kg	133	93	611
	1kg	274	204	776

mm

Lead	Mass	A	C
02	4kg	53	53
	2kg	118	118
06	2kg	107	107
	1kg	223	223
12	1kg	204	204
	0.5kg	407	408

Allowable Static Moment

· Moment Diagram



N·m

MY	MP	MR
16	19	17

<Price Examples> The prices are for the part numbers on the left.

(Robot Body Price)	+	(Controller Price)	+	(Cable Price)	+
810,00 EUR	+	135,00 EUR	+	55,00 EUR	+

(Home Position Alteration Charge)	+	(Handy Terminal Standard Model)	=	Total Price
0,00 EUR	+	343,00 EUR	=	1343,00 EUR

Alterations

Part Number	-	Coupler Install Direction	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	-	(E · H ··· etc.)
RS1C02B	-	R	-	C1	-	N	-	3	-	400	-	E-H

Alterations	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
Code	E	H	D	S	R	T	MJ/ME	KJ/KE	BC
Spec.	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ Communication Cable is included. Specifications P.359, 395	Support Software Communication Cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.
Price Adder	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00

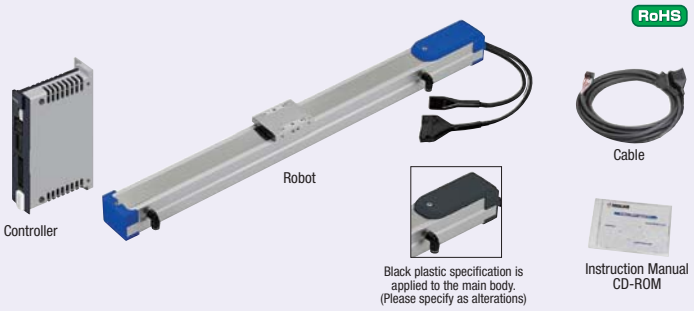
For option purchase, please refer to P.395

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots Clean Room Specification RS2C -Straight Type-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Features: Standard equipped with Suction Air Joint and Low Particulate Grease



RoHS

Components: Robot / Controller / Cable

Accessory

Accessory	Controller I/O Specifications		
A	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) / Power Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Components	Guide Rail	Slider	Side Covers
M Material	Steel	Aluminum	Aluminum
S Surface Treatment	-	-	Anodize

General Specifications

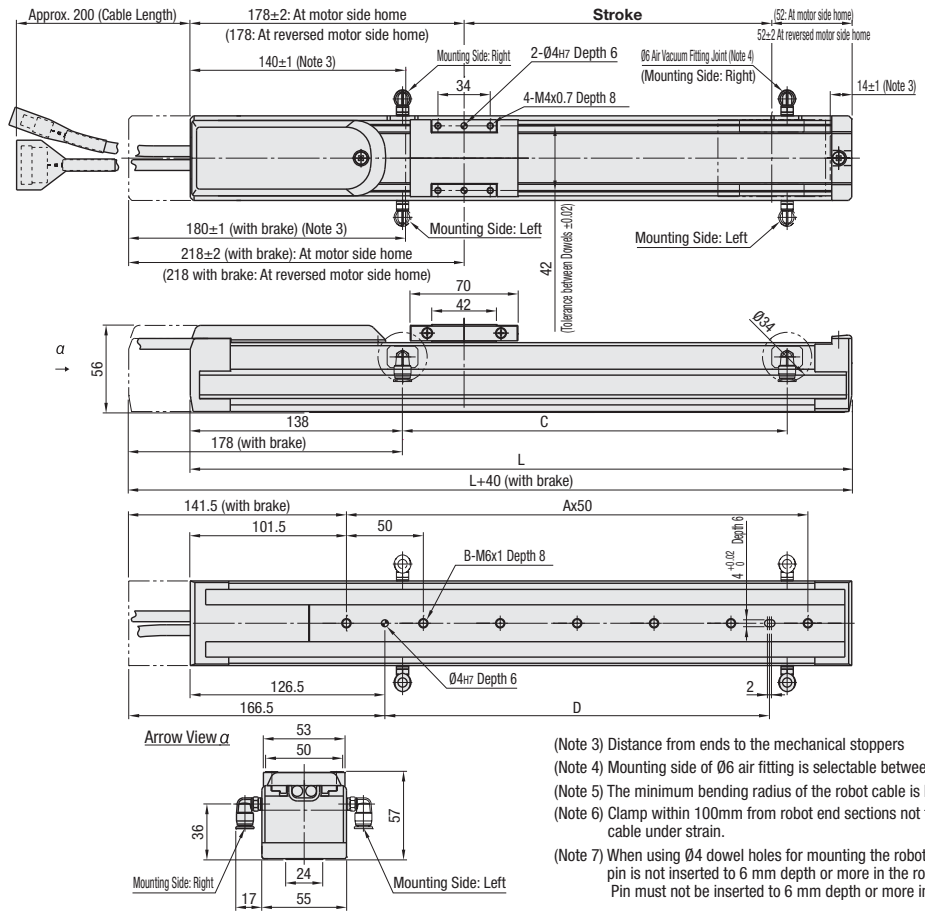
Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Controller Specification P.393 Cycle Time Graph P.397

Standard Specifications Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Max. Load Capacity (kg) Horizontal	Max. Load Capacity (kg) Vertical	Max. Push Force (N)	Stroke (mm)	Max. Velocity (Note 1) (mm/sec)	Rated Running Life	Controller Input Power Supply	Max. Positioning Points	Cleanliness (Note 2)	Suction (ℓ/min)
RS2C	06	±0.02	10	2	90	50~800 (50 Pitch)	300~190	10,000 km or more	DC24V ±10%	255 points	CLASS10 (based on 0.1 µm per 1cf)	90
	12		6	1	45		600~380					
	20		4	-	27		1000~633					

(Note 1) Maximum speed varies depending on stroke. Please see Maximum Speed Table on the right page. (Note 2) In the case of 90ℓ/min suction with a suction blower.



(Note 3) Distance from ends to the mechanical stoppers

(Note 4) Mounting side of Ø6 air fitting is selectable between right and left.

(Note 5) The minimum bending radius of the robot cable is R30.

(Note 6) Clamp within 100mm from robot end sections not to put the robot cable under strain.

(Note 7) When using Ø4 dowel holes for mounting the robot, please ensure that pin is not inserted to 6 mm depth or more in the robot Pin must not be inserted to 6 mm depth or more in the robot.

Dimensions / Mass

Type	Stroke (mm)	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS2C	L	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
	A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	C	90	140	190	240	290	340	390	440	490	540	590	640	690	740	790	840
	D	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.6	4.8	5.0

The mass of "with brake" type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections				
Type	Lead (mm)	with or w/o Brake (1)	Coupler Install Side	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS2C	06 12 20	Without:**Leave blank** With:**B**	Right:**R** Left:**L**	**C1** DC24V±10%	NPN:**N** PNP:**P** CC-Link:**C** DeviceNet:**D**	**1** **3** **5** **10** (Elastic Cable)	**50~ 800** (50mm Increment)

(1) Choose w/ brake type for use in vertical alignment. (W/ break type is not available for Lead 20)

Order Example

Part Number	-	Coupler Install Side	-	Controller	-	I/O Module	-	Cable Length	-	Stroke
RS2C06B	-	R	-	C1	-	N	-	3	-	400

Days to Ship **10 Days**

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS2C__																
RS2C__B																

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 pc.(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

Note

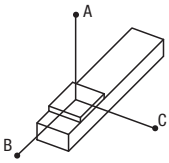
Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price

<Ex.> For RS2C06-R-C1-N-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
675,00 EUR + 135,00 EUR + 55,00 EUR = 865,00 EUR

Allowable Overhang Load

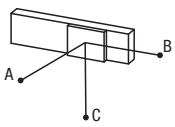
- Horizontal Use



mm

Lead	Mass	A	B	C
06	10kg	344	29	62
	8kg	332	37	79
	4kg	503	78	165
12	6kg	335	47	95
	4kg	347	72	139
20	4kg	334	67	120
	2kg	413	139	218

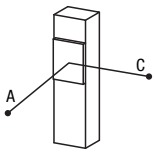
- Wall Mount Use



mm

Lead	Mass	A	B	C
06	8kg	47	22	355
	6kg	76	35	377
	4kg	134	63	496
12	6kg	63	31	263
	4kg	109	57	300
20	4kg	92	51	265
	2kg	192	123	372

- Vertical Use

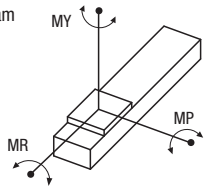


mm

Lead	Mass	A	C
06	2kg	148	148
	1kg	312	312
12	1kg	286	286
	0.5kg	578	579

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
25	33	30

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 50~600	650	700	750	800
RS2C	06	300	280	250	220	190
	12	600	560	500	440	380
	20	1000	933	833	733	633

<Price Examples> The prices are for the part numbers on the left.

(Robot Body Price)	+	(Controller Price)	+	(Cable Price) +
810,00 EUR	+	135,00 EUR	+	55,00 EUR +
(Home Position Alteration Charge)	+	(Handy Terminal Standard Model)	=	Total Price
0,00 EUR	+	343,00 EUR	=	1343,00 EUR

Alterations

Part Number	-	Coupler Install Direction	-	Controller Types	-	I/O Types	-	Cable Length	-	Stroke	-	(E, H, etc.)
RS2C06B	-	R	-	C1	-	N	-	3	-	400	-	E-H

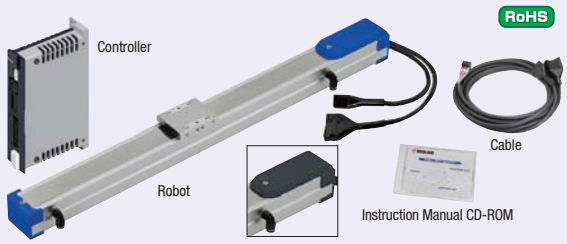
Alterations	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
Code	E	H	D	S	R	T	MJ/ME	KJ/KE	BC
Spec.	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ Communication Cable is included. Specifications P.359, 395	Support Software RS232C Communication Cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.
Price Adder	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00

For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Add. Spec. Single Axis Robots Clean Room Specification RS3C -Straight Type-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Features: Standard equipped with Suction Air Joint and Low Particulate Grease



RoHS

Black plastic specification is applied to the main body.
(Please specify as alterations)

Controller Specification P.393 Cycle Time Graph P.398

Components: Robot · Controller · Cable

Accessory F

Accessory	Controller I/O Specifications		
	NPN · PNP	CC-Link	DeviceNet
	Instruction Manual (CD-ROM) · Power Connector · Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material · Surface Treatment

Components	Guide Rail	Slider	Side Covers
M Material	Steel	Aluminum	Aluminum
S Surface Treatment	-	-	Anodize

General Specifications

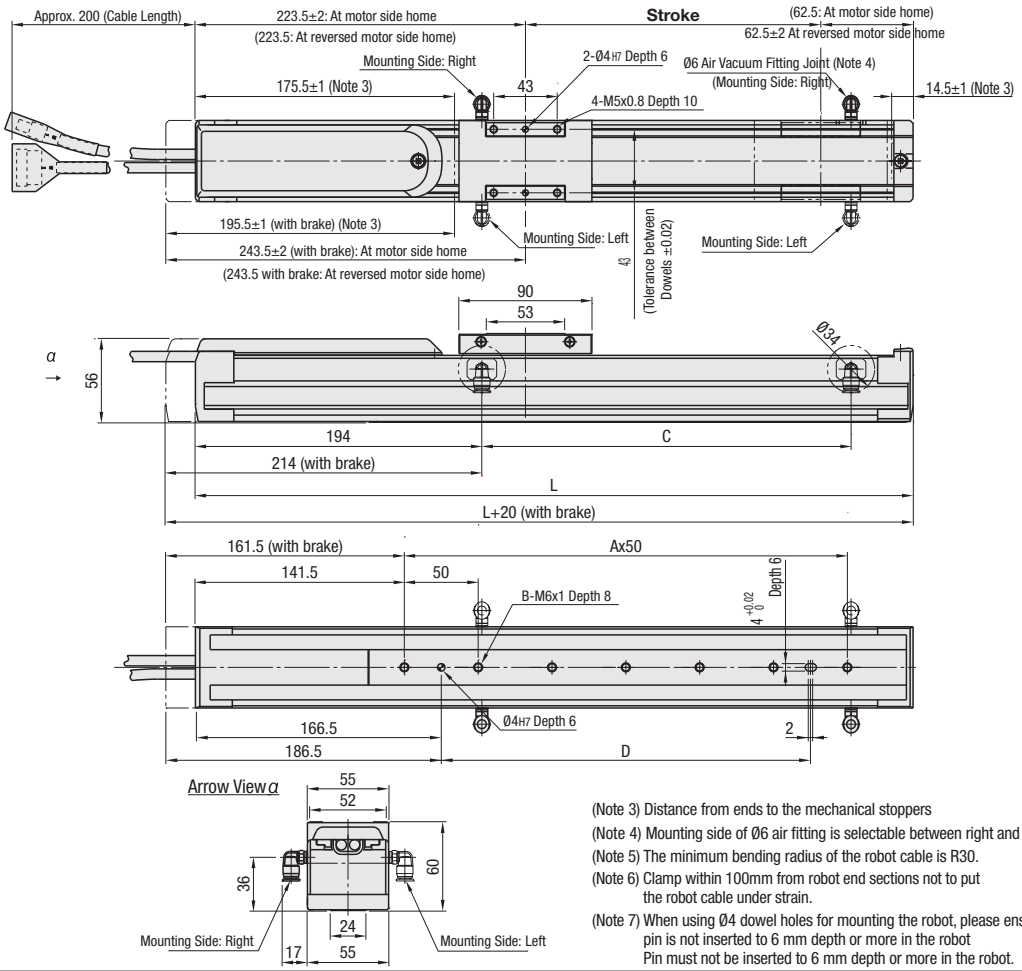
Ball Screws	Motor	Position Detector	Service Ambient Temperature · Humidity
Ø12 (C10 Rolled)	Stepping	Resolver (Incremental)	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Standard Specifications

Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Maximum Load Capacity (kg) Vertical	Maximum Push Force (N)	Stroke (mm)	Maximum Velocity (Note 1) (mm/sec)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points	Cleanliness (Note 2)	Suction (ℓ/min)
RS3C	06	±0.02	12	4	120	50~800 (50 Pitch)	300~190	10,000 km or more	DC24V ±10%	255 points	CLASS10 based on 0.1 μm per 1cf	90
	12		8	2	60		600~380					
	20		6	-	36		1000~633					

(Note 1) Maximum speed varies depending on stroke. Please see Maximum Speed Table on the right page. (Note 2) In the case of 90ℓ/min suction with a suction blower.



(Note 3) Distance from ends to the mechanical stoppers

(Note 4) Mounting side of Ø6 air fitting is selectable between right and left.

(Note 5) The minimum bending radius of the robot cable is R30.

(Note 6) Clamp within 100mm from robot end sections not to put the robot cable under strain.

(Note 7) When using Ø4 dowel holes for mounting the robot, please ensure that pin is not inserted to 6 mm depth or more in the robot Pin must not be inserted to 6 mm depth or more in the robot.

Dimensions / Mass

Type	Stroke (mm)	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS3C	L	336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
	A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	C	90	140	190	240	290	340	390	440	490	540	590	640	690	740	790	840
	D	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
	Mass (kg)	2.5	2.7	2.9	3.1	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4

The mass of "with brake" type is 0.2kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections				
Type	Lead (mm)	with or w/o Brake (1)	Coupler Install Side	Controller	I/O Module	Cable Length (m)	Stroke (mm)
RS3C	06 12 20	Without: Leave blank With: B	Right: R Left: L	C1 DC24V±10%	NPN: N PNP: P CC-Link: C DeviceNet: D	1 3 5 10 (Elastic Cable)	50~ 800 (50mm Increment)

(1) Choose w/ brake type for use in vertical alignment. (W/ break type is not available for Lead 20)

Order Example

Part Number		Coupler Install Side		Controller		I/O Module		Cable Length		Stroke
RS3C06B	-	R	-	C1	-	N	-	3	-	400

Price

Days to Ship 10 Days

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RS3C__																
RS3C__B																

(For orders larger than indicated quantity, please request a quotation.)

Controller Price

Types	I/O Module	€ Unit Price 1 ~ 5 pc.(s)
C1	N	
	P	
	C	
	D	

Cable Price

Cable Length (m)	€ Unit Price 1 ~ 5 pc(s).
1	
3	
5	
10	

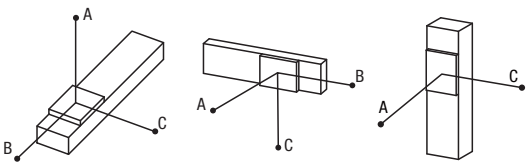
Note

Power interruption circuit is not installed in this controller to be available for various safety levels. Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
<Ex.> For RS3C06-R-C1-N-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) = Total Price
757,00 EUR + 135,00 EUR + 55,00 EUR = 947,00 EUR

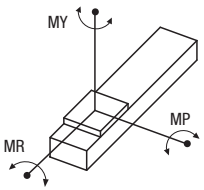
Allowable Overhang Load

· Horizontal Use · Wall Mount Use · Vertical Use



Allowable Static Moment

· Moment Diagram



N·m

MY	MP	MR
32	38	34

mm

Lead	Mass	A	B	C
06	12kg	465	39	64
	10kg	442	47	78
	8kg	480	61	100
	6kg	573	83	136
12	8kg	403	56	88
	6kg	399	76	118
	4kg	500	118	179
20	6kg	352	71	104
	4kg	366	109	148
	2kg	599	225	291

mm

Lead	Mass	A	B	C
06	12kg	28	17	338
	10kg	43	26	355
	8kg	64	39	413
	6kg	101	62	519
12	8kg	55	34	305
	6kg	85	55	334
	4kg	146	96	449
20	6kg	71	49	262
	4kg	118	88	309
	2kg	262	203	554

mm

Lead	Mass	A	C
06	4kg	113	113
	2kg	244	245
12	2kg	224	224
	1kg	458	459

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 50~600	650	700	750	800
RS3C	06	300 (250)	280 (250)	250	220	190
	12	600 (500)	560 (500)	500	440	380
	20	1000	933	833	733	633

(Values in ( ) are for vertical applications.)

<Price Examples> The prices are for the part numbers on the left.
(Robot Body Price) + (Controller Price) + (Cable Price) +
892,00 EUR + 135,00 EUR + 55,00 EUR +
(Home Position Alteration Charge) + (Handy Terminal Standard Model) = Total Price
0,00 EUR + 343,00 EUR = 1425,00 EUR

Alterations

Part Number		Coupler Install Direction		Controller Types		I/O Types		Cable Length		Stroke		(E, H, etc.)
RS3C06B	-	R	-	C1	-	N	-	3	-	400	-	E-H

Alterations	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual	Main Body Plastic Color Alterations
Code	E	H	D	S	R	T	MJ/ME	KJ/KE	BC
Spec.	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ Communication Cable is included. Specifications P.359, 395	Support Software RS232C Communication Cable is included. Specifications P.395	I/O cable is included. Required for NPN · PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language	Change the robot plastic parts color to black.
Price Adder	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00	5,00

(For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots Clean Room Specification RSH1C -Straight Type-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Features: Standard equipped with Suction Air Joint and Low Particulate Grease



Controller Specification P.393 Cycle Time Graph P.399

Components: Robot Body / Controller / Cable / (Battery) / (Noise Filter)

Accessory

	Controller I/O Specifications		
A Accessory	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM / Power Connector / EXT Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Components	Base Frame	Guide Rail	Slider	Side Covers
M Material	Aluminum	Steel	Aluminum	Aluminum
S	Anodize	-	Anodize	Anodize

General Specifications

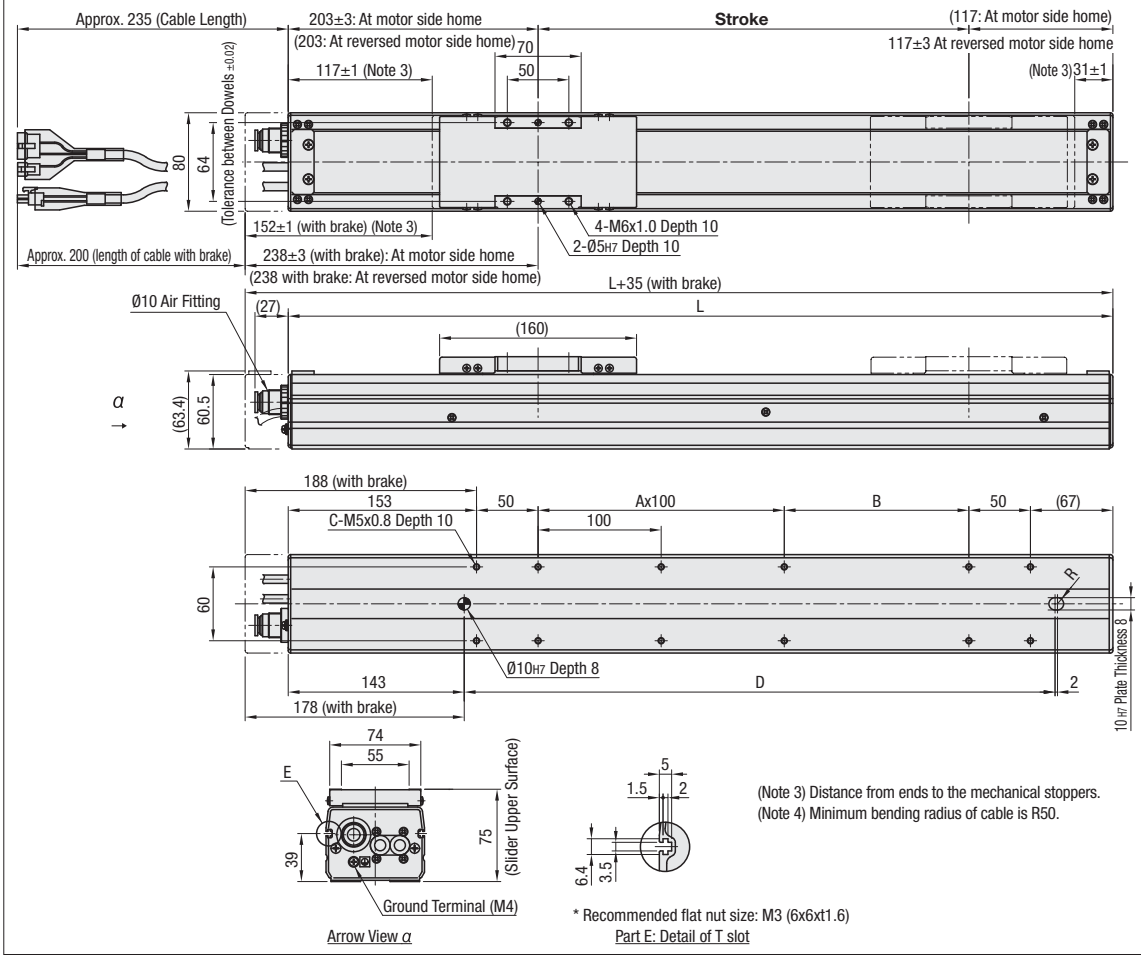
Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø12 (C10 Rolled)	AC Servo Motors 100W	Resolver	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Standard Specifications

Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Maximum Load Capacity (kg) Vertical	Rated Force (N)	Maximum Velocity (Note 1) (mm/sec)	Stroke (mm)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points	Clean-liness (Note 2)	Suction (ℓ/min)
RSH1C	06	±0.02	40	8	283	360~180	150~800 (50 Pitch)	10,000 km or more	Single-phase AC 100~115V 200~230V ±10%	255 points	CLASS10 based on 0.1 µm per 1cf	90
	12		20	4	141	720~360						
	20		12	-	84	1000~650						

(Note 1) Maximum speed varies depending on stroke. Please see Maximum Speed Table on the right page. (Note 2) In the case of 90ℓ/min suction with a suction blower.



(Note 3) Distance from ends to the mechanical stoppers.
(Note 4) Minimum bending radius of cable is R50.

Dimensions / Mass

Type	Stroke (mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800
RSH1C	L	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120
	A	0	1	1	2	2	3	3	4	4	5	5	6	6	7
	B	150	100	150	100	150	100	150	100	150	100	150	100	150	100
	C	8	10	10	12	12	14	14	16	16	18	18	20	20	22
	D	280	330	380	430	480	530	580	630	680	730	780	830	880	930
	Mass (kg)	3.6	3.9	4.1	4.4	4.7	5.0	5.3	5.6	5.9	6.2	6.4	6.7	7.0	7.3

The mass of w/ brake type becomes 0.3kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections				
Type	Lead (mm)	with or w/o Brake (1)	Controllers (2)	I/O Module	W/ or w/o Noise Filter (3)	Cable	Stroke (mm)
RSH1C	06 12 20	Without:Leave blank With:B	Power Supply / Specifications: Absolute encoders (with Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN: N PNP: P CC-Link: C DeviceNet: D	Without: F0 With: F1 Specifications P.396	Standards: 3.5m: 3, 5m: 5, 10m: 10 Flex: 3.5m: R3, 5m: R5, 10m: R10	150~800 (50mm Increment)

(1) Choose w/ brake type for use in vertical alignment. (W/ break type is not available for Lead 20)
(2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(3)This product needs a noise filter. When separately procured by customers, please select "none". Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Order Example

Part Number	-	Controller	-	I/O Module	-	W/ or w/o Nose Filter	-	Cable	-	Stroke
RSH1C06B	-	C22A	-	N	-	F1	-	3	-	400

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)						
	150/200	250/300	350/400	450/500	550/600	650/700	750/800
RSH1C__							
RSH1C__B							

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types / I/O	€ Unit Price 1 ~ 5 unit(s) C21A/C22A Absolute Encoders (with Data Storage Battery)	C21B/C22B Incremental Type
N		
P		
C		
D		

Cable Price

Cable (Standard)	€ Unit Price 1 ~ 5 pc(s).	Cable (Elastic)	€ Unit Price 1 ~ 5 pc(s).
3		R3	
5		R5	
10		R10	

Noise Filter Price

W/ or w/o Noise Filter	€ Unit Price 1 ~ 5 unit(s)
Without:F0	
With:F1	

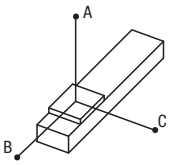
Note

Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit. Circuit Examples P.394

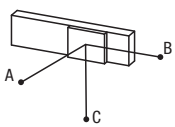
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter) = Total Price
<Example> For C06-C22A-N-F1-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter Price) = Total Price
1549,00 EUR + 523,00 EUR + 82,00 EUR + 33,00 EUR = 2187,00 EUR

Allowable Overhang Load

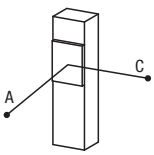
- Horizontal Use



- Wall Mount Use



- Vertical Use



mm

Lead	Mass	A	B	C
06	40kg	168	7	20
	30kg	162	11	31
	20kg	225	20	54
	10kg	406	47	124
12	20kg	112	18	40
	15kg	144	26	41
	10kg	207	43	92
	5kg	364	92	192
20	12kg	115	31	57
	10kg	131	39	69
	5kg	245	85	146

mm

Lead	Mass	A	B	C
06	40kg	0	0	0
	30kg	0	0	0
	20kg	18	6	127
	10kg	87	33	353
12	20kg	7	4	32
	15kg	26	12	83
	10kg	62	29	158
	5kg	164	78	328
20	12kg	29	16	66
	10kg	42	24	88
	5kg	121	71	211

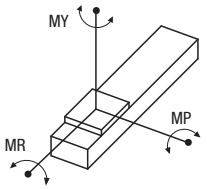
mm

Lead	Mass	A	C
06	8kg	34	40
	6kg	62	62
	4kg	106	96
	2kg	237	238
12	4kg	91	92
	3kg	130	132
	2kg	207	209
	1kg	440	442

When overhang is 0, please additionally use guides and the like to support load mass.

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
70	95	110

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 150~550	600	650	700	750	800
RSH1C	06	360	324	270	234	216	180
	12	720	648	540	468	432	360
	20	1000	1000	950	800	700	650

<Price Examples> The prices are for the part numbers on the left.
(Robot Body Price) + (Controller Price) + (Noise Filter Price) +
1819,00 EUR + 523,00 EUR + 33,00 EUR +
(Cable Price) + (Home Position Alteration Charge) + (Handy Terminal Standard Model) = Total Price
82,00 EUR + 0,00 EUR + 343,00 EUR = 2800,00 EUR

Alterations

Part Number	-	Controller Types	-	I/O Types	-	Noise Filter W/ or w/o	-	Cable	-	Stroke	-	(E, H, etc.)
RSH1C06B	-	C22A	-	N	-	F1	-	3	-	400	-	E-H

Alterations	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
Code	E	H	D	S	R	T	MJ/ME	KJ/KE
Spec.	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language
Price Adder	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00

For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots Clean Room Specification RSH2C -Straight Type-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Features: Standard equipped with Suction Air Joint and Low Particulate Grease



Controller Specification P.393 Cycle Time Graph P.400

Components: Robot Body / Controller / Cable / (Battery) / (Noise Filter)

Accessory

	Controller I/O Specifications		
A Accessory	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM / Power Connector / EXT Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Components	Base Frame	Guide Rail	Slider	Side Covers
M Material	Aluminum	Steel	Aluminum	Aluminum
S	Anodize	-	Anodize	Anodize

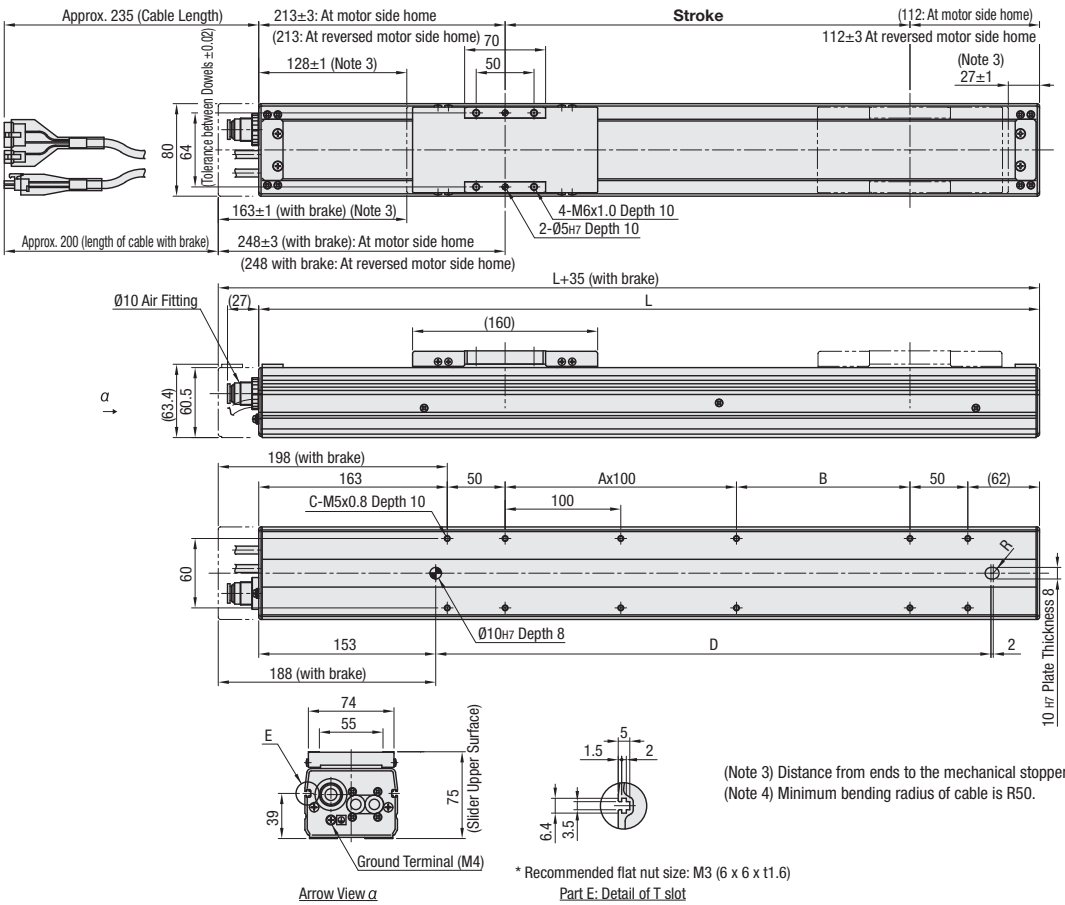
General Specifications

Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo Motors 100W	Resolver	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Standard Specifications Terminology P396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Maximum Load Capacity (kg) Vertical	Rated Force (N)	Max. Velocity (Note 1) (mm/sec)	Stroke (mm)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points	Cleanliness (Note 2)	Suction (ℓ/min)
RSH2C	05	±0.01	50	16	339	300~120	150~1050 (50 Pitch)	10,000 km or more	Single-phase AC 100~115V 200~230V ±10%	255 points	CLASS10 based on 0.1 µm per 1cf	90
	10		40	8	169	600~240						
	20		20	4	84	1000~500						

(Note 1) Maximum speed varies depending on stroke. Please see Maximum Speed Table on the right page. (Note 2) In the case of 90ℓ/min suction with a suction blower.



(Note 3) Distance from ends to the mechanical stoppers.
(Note 4) Minimum bending radius of cable is R50.

Dimensions / Mass

Type	Stroke (mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH2C	L	475	525	575	625	675	725	775	825	875	925	975	1025	1075	1125	1175	1225	1275	1325	1375
	A	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9
	B	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150
	C	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26
	D	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180
	Mass (kg)	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.2	9.5

The mass of w/ brake type becomes 0.3kg heavier.

RS
SINGLE AXIS ROBOT

CE Certified

See notes on CE Marking P.396

CAD Data

Part Number			Selections					
Type	Lead (mm)	with or w/o Brake (1)	Controllers (2)	I/O Module	W/ or w/o Noise Filter (3)	Cable		Stroke (mm)
RSH2C	05 10 20	Without:Leave blank With:B	Specifications Power Supply / Absolute encoders (with Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN:N PNP:P CC-Link:C DeviceNet:D	Without:F0 With:F1 Specifications P.396	Standards: 3.5m:3, 5m:5, 10m:10 Flex: 3.5m:R3, 5m:R5, 10m:R10		150~1050 (50mm Increment)

(1)Choose with brake type motor when using actuator in vertical application.
(2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(3) This product needs a noise filter. When separately procured by customers, please select "none". Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Order Example

Part Number	-	Controller	-	I/O Module	-	W/ or w/o Nose Filter	-	Cable Length	-	Stroke
RSH2C05B	-	C22A	-	N	-	F1	-	3	-	400

Days to Ship: 10 Days

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)									
	150/200	250/300	350/400	450/500	550/600	650/700	750/800	850/900	950/1000	1050
RSH2C__										
RSH2C__B										

For orders larger than indicated quantity, please request a quotation.

Controller Price

Types / I/O	€ Unit Price 1 ~ 5 unit(s) C21A/C22A Absolute Encoders (with Data Storage Battery)	C21B/C22B Incremental Type
N		
P		
C		
D		

Cable Price

Cable (Standard)	€ Unit Price 1 ~ 5 pc(s).	Cable (Elastic)	€ Unit Price 1 ~ 5 pc(s).
3		R3	
5		R5	
10		R10	

Noise Filter Price

W/ or w/o Noise Filter	€ Unit Price 1 ~ 5 unit(s)
Without:F0	
With:F1	

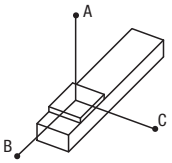
Note

Power interruption circuit is not installed in this controller to be available for various safety levels. Please be sure to build an external power interruption circuit and form an emergency stop circuit.
Circuit Examples P.394

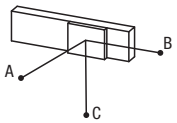
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter) = Total Price
<Example> For RSH2C05-C22A-N-F1-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter Price) = Total Price
1890,00 EUR + 523,00 EUR + 82,00 EUR + 33,00 EUR = 2528,00 EUR

Allowable Overhang Load

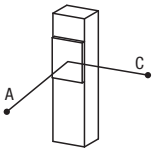
- Horizontal Use



- Wall Mount Use



- Vertical Use



mm

Lead	Mass	A	B	C
05	50kg	33	6	18
	40kg	96	10	28
	30kg	188	16	43
	20kg	256	29	76
10	40kg	69	8	18
	30kg	90	14	31
	20kg	127	25	55
	10kg	251	61	130
20	20kg	95	22	41
	15kg	100	33	56
	10kg	149	55	89
	5kg	259	122	179

mm

Lead	Mass	A	B	C
05	50kg	0	0	0
	40kg	0	0	0
	30kg	0	0	0
	20kg	24	9	152
10	40kg	0	0	0
	30kg	0	0	0
	20kg	10	4	37
	10kg	87	41	197
20	20kg	0	0	0
	15kg	17	10	39
	10kg	53	32	97
	5kg	147	100	220

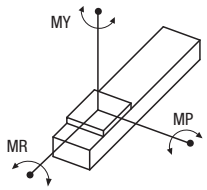
mm

Lead	Mass	A	C
05	16kg	9	9
	15kg	12	12
	10kg	37	38
	5kg	113	114
10	8kg	47	49
	6kg	75	77
	4kg	131	133
	2kg	300	302
20	4kg	111	115
	2kg	255	260

When overhang is 0, please additionally use guides and the like to support load mass.

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
70	95	110

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 150~650	700	750	800	850	900	950	1000	1050
RSH2C	05	300	255	225	195	180	165	150	135	120
	10	600	510	450	390	360	330	300	270	240
	20	1000	1000	900	800	700	650	600	550	500

<Price Examples> The prices are for the part numbers on the left.

(Robot Body Price) + (Controller Price) + (Noise Filter Price) + (Cable Price) +
2160,00 EUR + 523,00 EUR + 33,00 EUR + 82,00 EUR +

(Home Position Alteration Charge) + (Handy Terminal Standard Model) = Total Price
0,00 EUR + 343,00 EUR = 3141,00 EUR

Alterations

Part Number	-	Controller Types	-	I/O Types	-	Noise Filter W/ or w/o	-	Cable	-	Stroke	-	(E, H, etc.)
RSH2C05B	-	C22A	-	N	-	F1	-	3	-	400	-	E-H

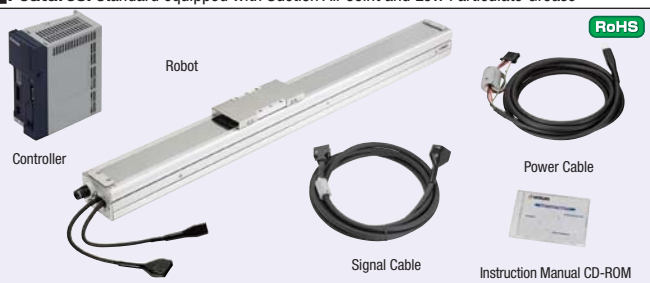
Alterations	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
Code	E	H	D	S	R	T	MJ/ME	KJ/KE
Spec.	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language
Price Adder	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00

For option purchase, please refer to P.395 All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Single Axis Robots Clean Room Specification RSH3C -Straight Type-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Features: Standard equipped with Suction Air Joint and Low Particulate Grease



Controller Specification P.393 Cycle Time Graph P.400

Components: Robot Body / Controller / Cable / (Battery) / (Noise Filter)

Accessory

	Controller I/O Specifications		
A Accessory	NPN / PNP	CC-Link	DeviceNet
	Instruction Manual on CD-ROM / Power Connector / EXT Connector / Dummy Connector		
	-	CC-Link Connector	DeviceNet Connector

Robot Material / Surface Treatment

Components	Base Frame	Guide Rail	Slider	Side Covers
M Material	Aluminum	Steel	Aluminum	Aluminum
S	Anodize	-	Anodize	Anodize

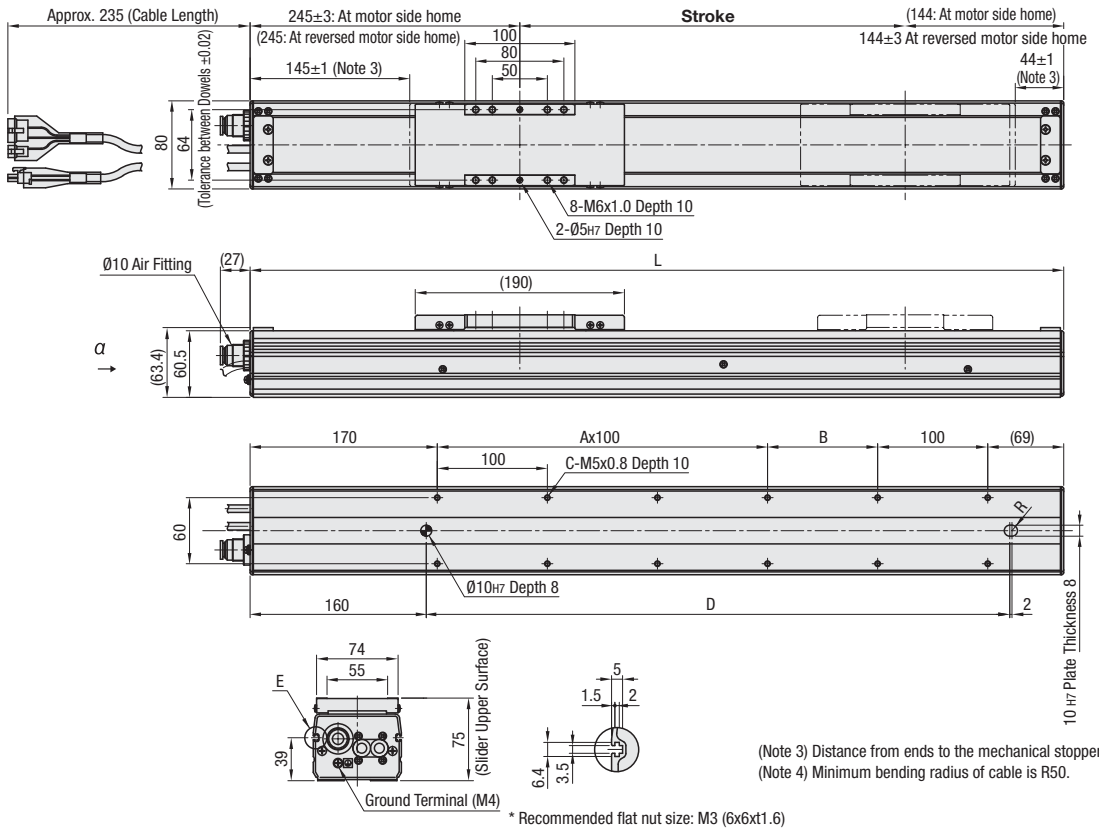
General Specifications

Ball Screws	Motor	Position Detector	Service Ambient Temperature / Humidity
Ø15 (C7 Rolled)	AC Servo Motors 100W	Resolver	0 ~ 40°C, 35 ~ 85%RH (No condensation)

Standard Specifications Terminology P.396

Type	Lead (mm)	Positioning Repeatability (mm)	Maximum Load Capacity (kg) Horizontal	Rated Force (N)	Maximum Velocity (Note 1) (mm/sec)	Stroke (mm)	Rated Running Life	Controller Input Power Supply	Maximum Positioning Points	Cleanliness (Note 2)	Suction (ℓ/min)
RSH3C	05	±0.01	80	339	300~105	150~1050 (50 Pitch)	10,000 km or more	100~115V 200~230V ±10%	255 points	CLASS10 (based on 0.1 µm per 1cf)	90
	10		60	169	600~210						
	20		30	84	1000~450						

(Note 1) Maximum speed varies depending on stroke. Please see Maximum Speed Table on the right page. (Note 2) In the case of 90ℓ/min suction with a suction blower.



(Note 3) Distance from ends to the mechanical stoppers.
(Note 4) Minimum bending radius of cable is R50.

* Recommended flat nut size: M3 (6x6xt1.6)

Dimensions / Mass

Type	Stroke (mm)	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
RSH3C	L	539	589	639	689	739	789	839	889	939	989	1039	1089	1139	1189	1239	1289	1339	1389	1439
	A	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10
	B	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100
	C	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
	D	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180	1230
	Mass (kg)	4.7	5.0	5.3	5.6	5.9	6.2	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.7	10.0	10.3

RS
SINGLE AXIS ROBOT

CE Certified

(?)See notes on CE Marking P.396

CAD Data

Part Number			Selections				
Type	Lead (mm)	with or w/o Brake (?)1)	Controllers (?)2)	I/O Module	W/ or w/o Noise Filter (?)3)	Cable	Stroke (mm)
RSH3C	05 10 20	Without:**Leave blank** With:**B**	Power Supply / Specifications: Absolute encoders (with Data Storage Battery) / Incremental Type AC100~115V: C21A / C21B AC200~230V: C22A / C22B	NPN:**N** PNP:**P** CC-Link:**C** DeviceNet:**D**	Without:**F0** With:**F1** Specifications P.396	Standards / Flex 3.5m:**3** / 3.5m:**R3** 5m:**5** / 5m:**R5** 10m:**10** / 10m:**R10**	150~1050 (50mm Increment)

(?)(2) Controllers are shipped with preset parameters for each type. Data storage batteries are outside the scope of RoHS Directive.
(?)2) This product needs a noise filter. When separately procured by customers, please select "none".
Be sure to install a surge absorber on the primary side of a noise filter. For details, please see the Instruction Manual.

Order Example

Part Number	-	Controller	-	I/O Module	-	W/ or w/o Nose Filter	-	Cable	-	Stroke
RSH3C05	-	C22A	-	N	-	F1	-	3	-	400

Days to Ship: **10 Days**

Price

Robot Body Price

Part Number	€ Unit Price 1 ~ 5 unit(s) Stroke (mm)									
	150/200	250/300	350/400	450/500	550/600	650/700	750/800	850/900	950/1000	1050
RSH3C__										

(?)For orders larger than indicated quantity, please request a quotation.

Controller Price

Types I/O	€ Unit Price 1 ~ 5 unit(s) C21A/C22A Absolute Encoders (with Data Storage Battery)	C21B/C22B Incremental Type
N		
P		
C		
D		

Cable Price

Cable (Standard)	€ Unit Price 1 ~ 5 pc(s).	Cable (Elastic)	€ Unit Price 1 ~ 5 pc(s).
3		R3	
5		R5	
10		R10	

Noise Filter Price

W/ or w/o Noise Filter	€ Unit Price 1 ~ 5 unit(s)
Without:F0	
With:F1	

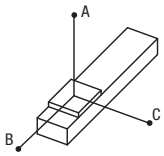
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter) = Total Price
<Example> For RSH3C-C22A-N-F1-3-400,
(Robot Body Price) + (Controller Price) + (Cable Price) + (Noise Filter Price) = Total Price
207,000 + 523,00 EUR + 82,00 EUR + 33,00 EUR =2708,00 EUR

Note

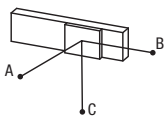
Power interruption circuit is not installed in this controller to be available for various safety levels.
Please be sure to build an external power interruption circuit and form an emergency stop circuit.
Circuit Examples P.394

Allowable Overhang Load

- Horizontal Use



- Wall Mount Use



mm

Lead	Mass	A	B	C
05	80kg	594	20	17
	60kg	707	34	29
	40kg	844	63	54
	20kg	1087	148	127
10	60kg	375	30	25
	40kg	472	57	47
	20kg	622	137	111
20	30kg	338	76	57
	20kg	401	125	92
	10kg	687	274	200

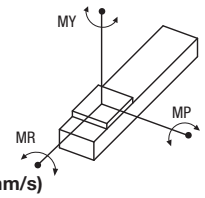
mm

Lead	Mass	A	B	C
05	80kg	0	0	0
	60kg	0	0	0
	40kg	15	18	505
	20kg	89	104	974
10	60kg	0	0	0
	40kg	8	11	196
	20kg	74	90	517
20	30kg	20	27	182
	20kg	56	76	302
	10kg	163	225	617

(?)When overhang is 0, please additionally use guides and the like to support load mass.

Allowable Static Moment

- Moment Diagram



N·m

MY	MP	MR
128	163	143

Max. Velocity (mm/s)

Type	Lead (mm)	Stroke (mm) 150~600	650	700	750	800	850	900	950	1000	1050
RSH3C	05	300	264	225	195	180	165	150	135	120	105
	10	600	528	450	390	360	330	300	270	240	210
	20	1000	1000	900	800	700	650	600	550	500	450

<Price Examples> The prices are for the part numbers on the left.
(Robot Body Price) + (Controller Price) + (Noise Filter Price) + (Cable Price) + (Home Position Alteration Charge) +
2070,00 EUR + 523,00 EUR + 33,00 EUR + 82,00 EUR + 0,00 EUR +
(Handy Terminal Standard Model) = Total Price
343,00 EUR = 3051,00 EUR

Alterations

Part Number	-	Controller Types	-	I/O Types	-	Noise Filter W/ or w/o	-	Cable	-	Stroke	-	(E, H, etc.)
RSH3C05	-	C22A	-	N	-	F1	-	3	-	400	-	E-H

Alterations	Change of Home Position	Handy Terminal Standard Specification	Handy Terminal w/ Deadman's Switch	Support Software W/ USB Communication Cable	Support Software W/ RS232C Communication Cable	I/O Cable	Robot Instruction Manual	Controller Instruction Manual
Code	E	H	D	S	R	T	MJ/ME	KJ/KE
Spec.	The home position is relocated to the opposite side of the motor.	Handy Terminal standard specifications are included. Specifications P.359, 395	Handy Terminal specifications w/ Deadman Switch are included. Specifications P.359, 395	Support Software USB w/ communication cable is included. Specifications P.359, 395	Support Software w/ RS232C communication cable is included. Specifications P.395	I/O cable is included. Required for NPN / PNP configurations. Specifications P.360, 395	For robot main structures. Instruction Manual is included. MJ: Japanese Language ME: English Language	For Controllers Instruction Manual is included. KJ: Japanese Language KE: English Language
Price Adder	Free of Charge	343,00	568,00	177,00	140,00	19,00	12,00	12,00

(?)For option purchase, please refer to **P.395** All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Add. Spec. Single Axis Robot Controllers -Specifications-

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

MISUMI's Single Axis Robot Controllers are compact and high performance. * Included for Robots as a standard equipment. Please select for maintenance and usage as a separate unit.

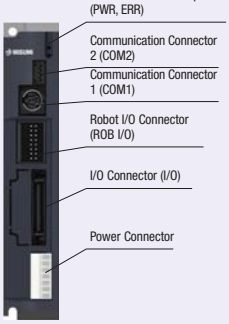
Part Number	Specifications	Controlled Robots	Input Power Supply
EXRS-C1	Incremental Type	RS1/2/3 RS1C/2C/3C RSD1/2/3 RSDG1/2/3	DC24V±10% 3A

Part Number	Specifications	Controlled Robots	Input Power Supply
EXRS-C21A	Absolute encoders (with Data Storage Battery)	RSH1/2/3 RSH1C/2C/3C	Single phase AC100 ~ 115V±10%
EXRS-C22A			Single phase AC200 ~ 230V±10%
EXRS-C21B	Incremental Type		Single phase AC100 ~ 115V±10%
EXRS-C22B			Single phase AC200 ~ 230V±10%

Controllers are shipped with preset parameters for each specification.

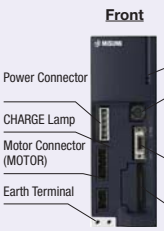
Part Name





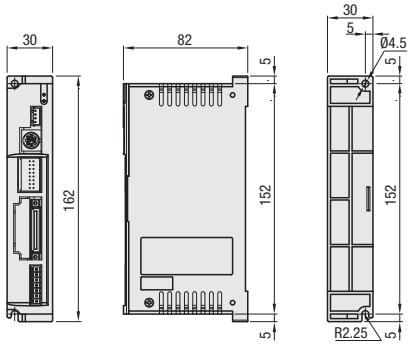
Part Name

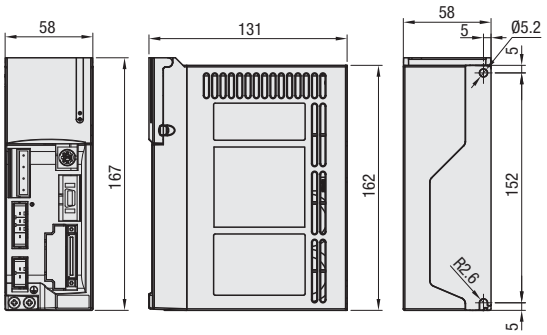












Part Number	I/O Module	€ Unit Price	Volume Discount	
		1 pc.	2~3 pcs.	4~5 pcs.
EXRS-C1	NPN:N			
	PNP:P			
	CC-Link:C			
	DeviceNet:D			

For orders larger than indicated quantity, please request a quotation.

Part Number	I/O Module	€ Unit Price	Volume Discount	
		1 pc.	2~3 pcs.	4~5 pcs.
EXRS-C21A/ C22A Absolute Encoders (with Data Storage Battery)	NPN:N			
	PNP:P			
	CC-Link:C			
	DeviceNet:D			
EXRS-C21B/ C22B Incremental Type	NPN:N			
	PNP:P			
	CC-Link:C			
	DeviceNet:D			

For orders larger than indicated quantity, please request a quotation.

Standard Specifications

Part Number	EXRS-C1	EXRS-C21A/BEXRS-C22A/B
No. of Controlled Axes	1 axis	
Controlled Robots	RS1/2/3/1C/2C/3C RSD1/2/3 RSDG1/2/3	RSH1/2/3/1C/2C/3C
External Dimensions	30mm (W)x162mm (H)x80mm (D)	58mm (W)x162mm (H)x131mm (D)
Main Body Mass	approx. 200g	approx. 1.1kg
Input Power Supply Voltage	DC24V±10% 3A	EXRS-C21A/B : Single phase AC100 ~ 115V±10% EXRS-C22A/B : Single phase AC200 ~ 230V±10%
Power Capacity	70VA	400VA
Position Detection Method	Resolver	Resolver with multiple rotation absolute functions
Resolution	20480P/rev	16384P/rev
Control Method	Closed loop vector control method	
Dielectric Strength Voltage	DC500V 1MΩ or more	
Memory Capacity	Point (255 pts), Parameters, Alarm log (50 items)	
Protection Features	Overload, overvoltage, temp., power module and excessive position deviation errors	
Operating / Storage Temp.	0 ~ 40 °C / -10 ~ 65°C	
Operating Humidity	35 ~ 85%RH (No condensation)	
Ambience	Indoors without direct sunlight. No corrosive and flammable gases, and oil mist and dust.	
Vibration Resistance	In each X, Y and Z direction 10~57Hz Half amplitude 0.075mm 57 ~ 150Hz 9.8m/s²	

Order Example

Part Number	-	I/O Module
EXRS-C1	-	N

Days to Ship: 10 Days

CE Certified

See notes on CE Marking P.396

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

EXT Connector Signal Table

Pin No.	Signal Name	Descriptions
1	+24V	Mechanical Brake Power Input
2	0V	(Provided by customer)
3	ES+	Emergency Stop Input Internal Power Supply
4	ES1	Emergency Stop Input 1
5	ES2	Emergency Stop Input 2
6	ES-	Emergency Stop Ready Signal (Open: Emergency Stop)
7	MPRDY1	Main Power Supply Ready Output Contacts
8	MPRDY2	(DC24V Transistor Output)

I/O Connector Signal Table (NPN / PNP Specifications)

Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
A1	+COM	A11	PIN6	B1	POUT0	B11	OUT2
A2	+COM	A12	PIN7	B2	POUT1	B12	OUT3
A3	(NC)	A13	JOG+	B3	POUT2	B13	BUSY
A4	(NC)	A14	JOG-	B4	POUT3	B14	END
A5	PIN0	A15	MANUAL	B5	POUT4	B15	/ALM
A6	PIN1	A16	ORG	B6	POUT5	B16	SRV-S
A7	PIN2	A17	/LOCK	B7	POUT6	B17	(NC)
A8	PIN3	A18	STARTITEACH	B8	POUT7	B18	(NC)
A9	PIN4	A19	RESET	B9	OUT0	B19	-COM
A10	PIN5	A20	SERVO	B10	OUT1	B20	-COM

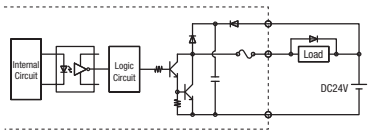
Signal Feature Descriptions

Types	Signal Name	Meaning	Descriptions
Input	PIN0~7	Point No. Set 0~7	· Specify point No. for positioning operation · Specify point No. for current position teachings. (in manual operation mode)
	JOG+	Jog Move (+)	Jog moves in + direction when ON (in manual mode)
	JOG-	Jog Move (-)	Jog moves in - direction when ON (in manual mode)
	MANUAL	Manual Mode	ON: Manual Mode
	ORG	Return to Home	Start Homing
	/LOCK	Interlock	ON: Movable, OFF: Immovable, OFF while in movement: Deceleration Stop
	START	Start	Start positioning operation by specified point No.
	TEACH	Current Position Teach	Teach current position for specified point No. (in manual operation mode)
	RESET	Reset	· Reset alarm · Reset point No. output · Clear remaining travel distance in relative positioning operation
	SERVO	Servo ON	ON: Turn ON Servo, OFF: Turn OFF Servo
Output	POUT0~7	Output point No. 0~7	· Output point No. to be activated by positioning operation · Output alarm No. in the event of alarm status.
	OUT0	Control output 0	Assigned by following outputs based on parameters · Zone Output · Individual Zone Output · Manual Mode Status · Completion of Return to Home, Clamp Position, Alarm Output · Proximity Output, Moving
	OUT1	Control output 1	
	OUT2	Control output 2	
	OUT3	Control output 3	
	ZONE	Zone Output	ON output when robot moves into the zones set by parameters.
	PZONE	Individual Zone Output	ON output when moving into the zones specified by each point
	MANU-S	Manual Mode	ON in manual mode
	ORG-S	Completion of Homing	Output ON with the completion of return to home.
	TLM-S	in clamp position	ON while in push operation
	/WARN	Alarm Output	ON while in alarm status
	NEAR	Proximity Range Output	ON Output in the proximity of positioning operation completion.
	MOVE	In Motion	ON in motion
	BUSY	In Operation	ON in operation
	END	Completion of Operation	Output operation results ON at normal stop
	/ALM	Alarm	ON in normal status, OFF Output in the event of alarm status
	SRV-S	Servo Status	Output ON when servo is ON.

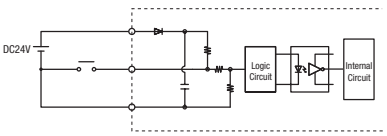
I/O Circuit Diagram

NPN Specifications

■Output Area

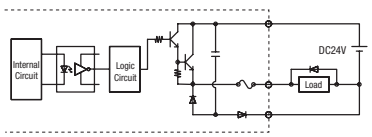


■Input Area

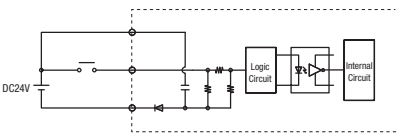


PNP Specifications

■Output Area



■Input Area



I/O Specifications

Selectable from 5 options according to controller specifications.

Types	Descriptions
NPN	16 Input / DC24V±10% / 4mA/1point / +Common 16 Outputs - DC24V±10%, 50mA/1 point, 0.4A max. total / 8 points, Sinking
PNP	16 Input / DC24V±10% / 4mA/1point / -Common 16 Outputs - DC24V±10%, 50mA/1 point, 0.4A max. total / 8 points, Sourcing
CC-Link	CC-Link applicable to Ver1.10, Remote Device Station (1)
DeviceNet	DeviceNet Slave 1 Node

Communication Specifications

■CC-Link Network Board Specification

Items	CC-Link Network Specification				
Communications Protocol	CC-Link V1.10				
Station	Remote Device Station				
No. of Stations Occupied	1 Station				
Station Number Setting	1 ~ 64 (42 units at a max)				
Communication Speed Setting	156Kbps	625Kbps	2.5Mbps	5Mbps	10Mbps
Total Extended Distance	1200m	900m	400m	160m	100m
Monitor LED	RUN / ERR / SD / RD				

■DeviceNet Network Board Specification

Items	DeviceNet		
Compatible DeviceNet Specification	Volume 1 Release2.0/Volume 2 Release2.0		
Device Type	Generic Device		
MAC ID Setting	0~63		
Communication Speed Setting	125kpbs	250kbps	500kbps
Total Extended Distance	500m	250m	100m
Monitor LED	Module, Network		

■RS232C Communication Specification

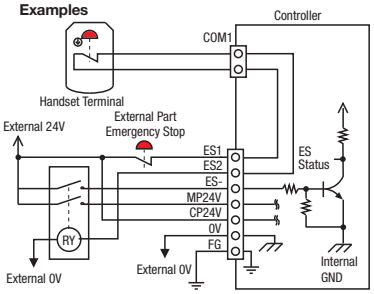
Items	Specifications
Transmission Rate	38400bps
Data Bit Length	8 bits
Stop Bit Length	1 bit
Parity	Odd
Control Method	Not provided
Transmission Method	Full-duplex Communications
Synchronizing Method	Asynchronous Type

Main Power Shutdown Circuit Examples

Examples of circuits necessary to interrupt the main power by emergency stop.

■Controller EXRS-C1 Circuit Examples

Applicable Robots: RS1 / 2 / 3 (P.363~368) RSD1 / 2 / 3 (P.375~380) RS1C / 2C / 3C (P.381~386) RSDG1 / 2 / 3 (P.375~380)

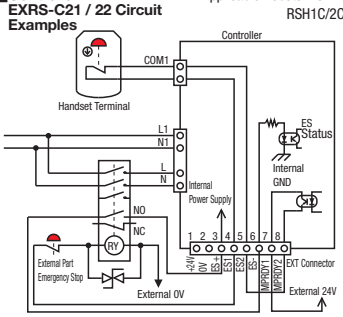


See instruction manual for examples of circuits for handy terminals with Deadman switches.

Note: Power interruption circuit is not installed in this controller to be available for various safety levels. Please be sure to provide an external power interruption circuit and form an emergency stop circuit.

■Controller EXRS-C21 / 22 Circuit Examples

Applicable Robots: RSH1 / 2 / 3 (P.369~374) RSH1C/2C/3C(P.387~392)



See instruction manual for examples of circuits for handy terminals with Deadman switches.

Add. Spec. Single Axis Robot Controllers -Specifications / Options-

Price Reduction 20%

Options

All machine directive 2006/42/EC related documents as operation manuals are available in english only!

■ Handy Terminal

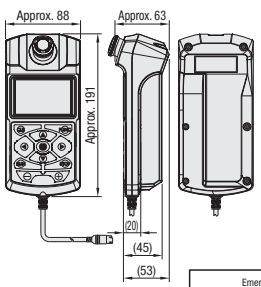
RoHS



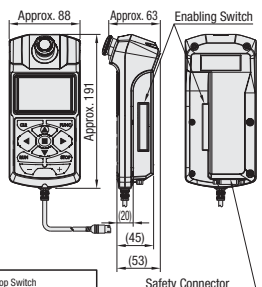
Part Number	EXRS-H1	EXRS-HD1
Emergency Stop Button	Normally Closed Input (with lock)	
Deadman's Switch	w/o	W / 3 Position Enable Switch
Operating Temp.	0°C ~ 40°C	
Operating Humidity	35% ~ 85%RH (No condensation)	
Main Body Mass	Approx. 450g	
Cable Length	3.5m	
Applicable Controllers	EXRS-C1/C21/C22	

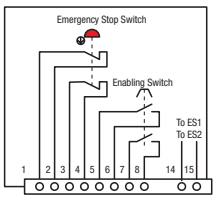
Part Number	€ Unit Price	Volume Discount	
	1 pc.	2~3 pcs.	4~5 pcs.
EXRS-H1			
EXRS-HD1			

EXRS-H1



EXRS-HD1





Safety Connector
Used to build an external safety circuit with emergency stop and enabling switch.

When using a handy Terminal within the Robot movable envelope, please use EXRS-HD1 to build safety circuits outside.

■ Support Software (with USB Communication Cable / RS232C Communication Cable)

Part Number	Communication Cable Length	Applicable Controller	€ Unit Price	Volume Discount	
			1 pc.	2 / 3 pcs.	4 / 5 pcs.
EXRS-ST1	5m	EXRS-C1/C21/C22			
EXRS-ST2					

RoHS

EXRS-ST1



USB Communication Cable

EXRS-ST2

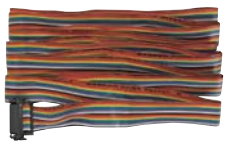


RS232C Communication Cable

* The cables are for communications between controller and PC. *USB driver is included in Support Software.

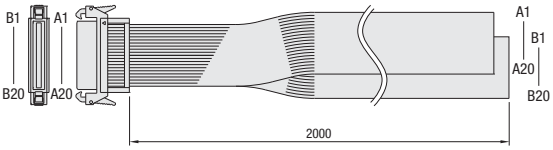
■ I/O Cable

RoHS



Part Number	EXRS-CB1
Cable Length	2m
Applicable Controllers	EXRS-C1/C21/C22

Part Number	€ Unit Price	Volume Discount	
	1 pc.	2~3 pcs.	4~5 pcs.
EXRS-CB1			



Pin No.	Signal	Cable Color	Pin No.	Signal	Cable Color	Pin No.	Signal	Cable Color	Pin No.	Signal	Cable Color
A1	+COM	BR	A11	PIN6	BR	B1	POUT0	BR	B11	OUT2	BR
A2	+COM	R	A12	PIN7	R	B2	POUT1	R	B12	OUT3	R
A3	(NC)	OR	A13	JOG+	OR	B3	POUT2	OR	B13	BUSY	OR
A4	(NC)	Y	A14	JOG-	Y	B4	POUT3	Y	B14	END	Y
A5	PIN0	G	A15	MANUAL	G	B5	POUT4	G	B15	/ALM	G
A6	PIN1	BL	A16	ORG	BL	B6	POUT5	BL	B16	SRV-S	BL
A7	PIN2	V	A17	/LOCK	V	B7	POUT6	V	B17	(NC)	V
A8	PIN3	GY	A18	START/TEACH	GY	B8	POUT7	GY	B18	(NC)	GY
A9	PIN4	W	A19	RESET	W	B9	OUT0	W	B19	-COM	W
A10	PIN5	BL	A20	SERVO	BL	B10	OUT1	BL	B20	-COM	BL

* Connection end to external device is non-terminated.

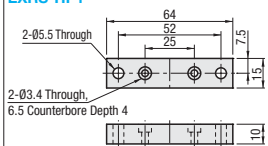
■ Instruction Manual

Part Number	Language	Type	Applicable Model	€ Unit Price 1 volume	Volume Discount 2 or 3 volumes	Volume Discount 4 or 5 volumes
EXRS-MJ1	Japanese	For robot main structures.	RS1/2/3 RSD 1/2/3 RSDG 1/2/3			
EXRS-MJ2			RSH1/2/3			
EXRS-MJ3		For robot main structures. (Clean Specifications)	RS1C/2C/3C			
EXRS-MJ4			RSH1C/2C/3C			
EXRS-KJ1		For Controllers	EXRS-C1			
EXRS-KJ2			EXRS-C21/C22			
EXRS-ME1	English	For robot main structures.	RS1/2/3 RSD1/2/3 RSDG1/2/3			
EXRS-ME2			RSH1/2/3			
EXRS-ME3		For robot main structures. (Clean Specifications)	RS1C/2C/3C			
EXRS-ME4			RSH1C/2C/3C			
EXRS-KE1		For Controllers	EXRS-C1			
EXRS-KE2			EXRS-C21/C22			

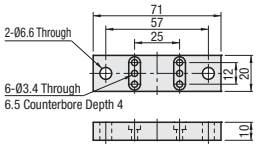


■ Rod Type Dedicated Feet and Flanges

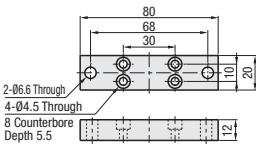
EXRS-HP1



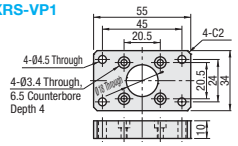
EXRS-HP2



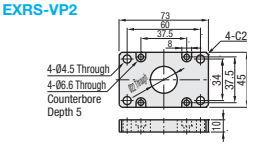
EXRS-HP3



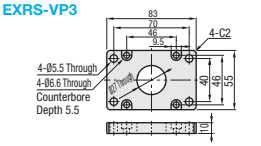
EXRS-VP1



EXRS-VP2



EXRS-VP3



Part Number	Applicable Models	Specifications	Components (1 set)
EXRS-HP1	RSD1 RSDG1	Foot Plate	Mounting Plate 2 pcs.
EXRS-VP1	RSD1	Flange	Mounting Plate 1 pc.
EXRS-HP2	RSD2 RSDG2	Foot Plate	Mounting Plate 2 pcs. Square Nuts 12 pcs.
EXRS-VP2	RSD2	Flange	Mounting Plate 1 pc.
EXRS-HP3	RSD3 RSDG3	Foot Plate	Mounting Plate 2 pcs. Square Nuts 8 pcs.
EXRS-VP3	RSD3	Flange	Mounting Plate 1 pc.

Part Number	€ Unit Price 1 Set	2 Sets	3 Sets
EXRS-HP1			
EXRS-VP1			
EXRS-HP2			
EXRS-VP2			
EXRS-HP3			
EXRS-VP3			

Order Example | Part Number EXRS-H1

For orders larger than indicated quantity, please request a quotation.

Days to Ship 10 Days

Maintenance Products

Maintenance Products

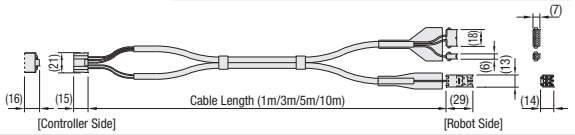
■Power / Signal-integrated Cables (Elastic)

(Controller EXRS-C1 ←→ For Robot RS1 / 2 / 3 / 1C / 2C / 3C)
(Controller EXRS-C1 ←→ for Robot RSD1 / 2 / 3, RSDG1 / 2 / 3)

RoHS

Part Number	Cable Length (m)	€ Unit Price 1 pc.	Volume Discount 2~3 pcs.	Volume Discount 4~5 pcs.
EXRS-CT1	1			
	3			
	5			
	10			





■Data Storage Battery

Part Number	€ Unit Price 1 pc.	Volume Discount 2 ~ 3 pcs.	Volume Discount 4 ~ 5 pcs.
EXRS-BA1			



*Battery for absolute data back-up.
Applicable Controllers EXRS-C21/C22
**Equipped as standard to absolute model controllers.
Replacement cycle is approx. one year.
*This product is outside the scope of RoHS Directive.

■Power / Signal Cables

(Controller EXRS-C21/C22← →for Robot RSH1 / 2 / 3 / 1C / 2C / 3C)

RoHS

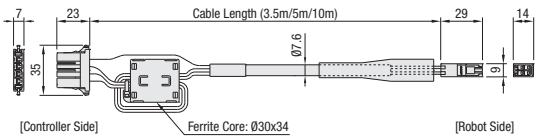


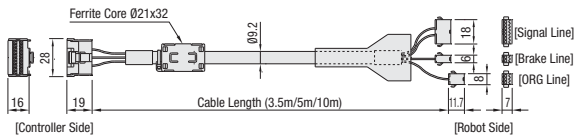
Power Cable



Signal Cable

Part Number	Type	Cable Length	€ Unit Price 1 pc.	Volume Discount 2~3 pcs.	Volume Discount 4~5 pcs.
EXRS-CM1	Power	3.5m:3			
		5m:5			
		10m:10			
EXRS-CR1 (Standard)	Single	3.5m:3			
		5m:5			
		10m:10			
EXRS-CR2 (Elastic)		3.5m:3			
		5m:5			
		10m:10			





■Noise Filter

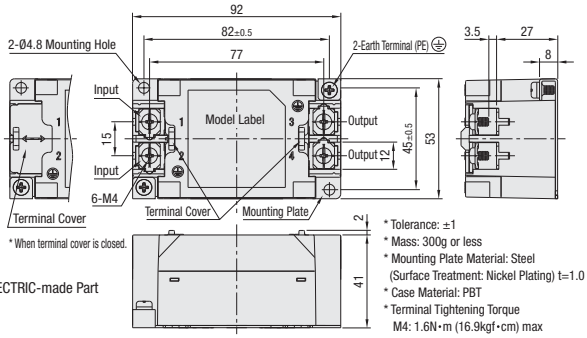
RoHS

Part Number	Rated Voltage	Rated Current	€ Unit Price 1 pc.	Volume Discount 2~3 pcs.	Volume Discount 4~5 pcs.
EXRS-NF1	AC250V/ DC250V	10A			

As this product uses push-down type terminal block, it is shipped in the state below.
* Terminal Cover is stored.
* Terminal block screws are kept on the upper side.



*This listed products are made by COSEL.
*Other recommended products: SOSHIN ELECTRIC-made Part Number: NF2010A-UP



* Tolerance: ±1
* Mass: 300g or less
* Mounting Plate Material: Steel (Surface Treatment: Nickel Plating) t=1.0
* Case Material: PBT
* Terminal Tightening Torque M4: 1.6N•m (16.9kgf•cm) max

Order Example | Part Number: EXRS-CT1 | - | Cable Length: 5

For orders larger than indicated quantity, please request a quotation.

Days to Ship 10 Days

Terminology

■Repeatability
Variations in stop positions when positioning moves approached in one direction from one starting location are made.

■Maximum Carrying Load Capacity
Maximum load that can be placed on the carriage. A sum of the work and the tooling must not exceed this value.
Take Allowable Overhang in consideration if the work C.G. is offset from the table center.

■Maximum Push Force
Maximum thrust force the slider can generate while not moving. Do not perform push and hold actions with shock loading since that may cause failures. Additionally, do not exceed 60% of the Static Load Capacity when the push point is offset from the slider's guide center.

■Rated Force
Continuous force that can be generated. For work holding and pushing operations, keep under the Rated Force (approx. 60%)
Do not perform shock loading operations even under the Rated Force as that may cause failures.
Do not exceed 60% of the Static Load Capacity when the static push point is offset from the slider's guide center.

■Rated Running Life
Total running distance where 90% of the robots under the same operating condition will reach without failures.

■Allowable Overhang Load
Indicates offset distance of tool/work C.G. to the slider's guide center.
It depends on the work load weight and lifetime running distance of more than 10,000km is achieved when the center of gravity is within permissive overhung. The published values are calculated based on automatically configured acceleration values per given carried mass.

■Allowable Static Moment
Moment load value applicable on the slider top surface while the robot is static.
For dynamic applications, overhang value must be determined with running life in consideration.

■Lost Motion
A difference in position values when positioning moves are made to a specified coordinate from positive direction and negative direction.

■Rod Non-rotational Accuracy
Rod play in the rotational direction.

Notes on CE Marking

MISUMI Robot Series provide parts to be incorporated into customers' device and equipment. According to EC Directive, it is declared that these are supplied in an incomplete state. Therefore, no CE marks are attached.
Please check for EC Directive compatibility with robot built-in device or equipment (finished products) by customers. For details, please see Instruction Manual.
All machine directive 2006/42/EC related documents as operation manuals are available in english only!

Warranty

■Warranty Terms
Comply with "Warranty Standards" printed on "Mechanical Standard Components for Factory Automation" catalog.
■Warranty Period
One year from shipment date or within the first 2400 hours of operation whichever comes first

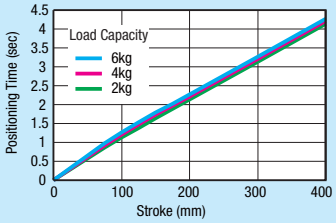
Contact Info.

For inquiries, please contact us at:
MISUMI Europa GmbH
TEL:+49 (0) 6196 77 46 0
FAX: +49 (0) 6196 77 46 364

Cycle Time Graph (1)

RS1 / RS1C Cycle Time Graph (Product Page: RS1 P.363/RS1C P.381)

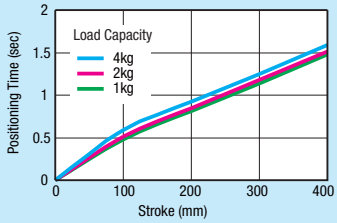
Horizontal Lead 2



sec

st	0	100	200	300	400
6kg	0	1.27	2.27	3.27	4.27
4kg	0	1.21	2.21	3.21	4.21
2kg	0	1.14	2.14	3.14	4.14

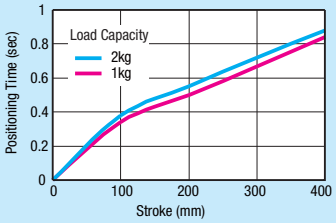
Horizontal Lead 6



sec

st	0	100	200	300	400
4kg	0	0.59	0.92	1.25	1.59
2kg	0	0.51	0.85	1.18	1.51
1kg	0	0.48	0.81	1.14	1.48

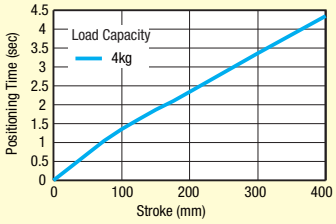
Horizontal Lead 12



sec

st	0	100	200	300	400
2kg	0	0.38	0.55	0.72	0.88
1kg	0	0.34	0.50	0.67	0.84

Vertical Lead 2

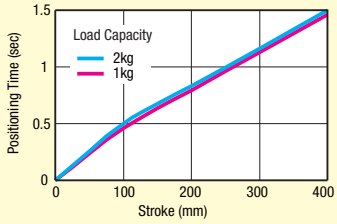


sec

st	0	100	200	300	400
4kg	0	1.35	2.35	3.35	4.35

There is no positioning time variation for Lead 2 Vertical Spec.

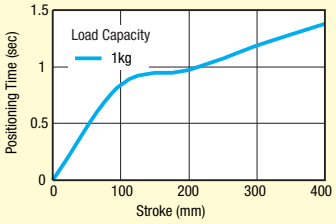
Vertical Lead 6



sec

st	0	100	200	300	400
2kg	0	0.50	0.83	1.16	1.50
1kg	0	0.46	0.79	1.13	1.46

Vertical Lead 12

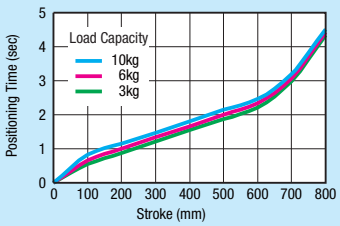


sec

st	0	100	200	300	400
1kg	0	0.84	0.97	1.19	1.38

RS2 / RS2C Cycle Time Graph (Product Pages: RS2 P.365/RS2C P.383)

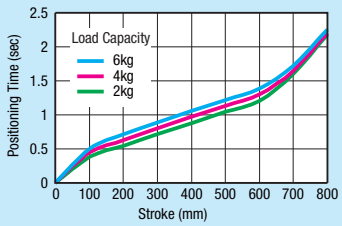
Horizontal Lead 6



sec

st	0	100	200	300	400	500	600	700	800
10kg	0	0.83	1.14	1.47	1.81	2.14	2.47	3.20	4.51
6kg	0	0.66	0.99	1.33	1.66	1.99	2.33	3.07	4.42
3kg	0	0.55	0.88	1.22	1.55	1.88	2.22	2.98	4.35

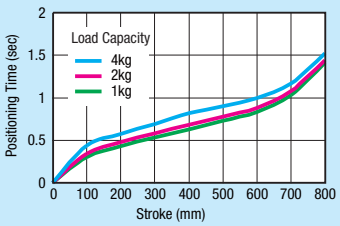
Horizontal Lead 12



sec

st	0	100	200	300	400	500	600	700	800
6kg	0	0.50	0.72	0.89	1.06	1.22	1.39	1.72	2.25
4kg	0	0.45	0.63	0.80	0.97	1.13	1.30	1.65	2.20
2kg	0	0.38	0.55	0.72	0.88	1.05	1.21	1.60	2.18

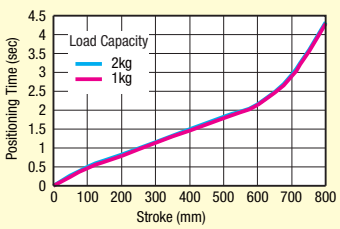
Horizontal Lead 20



sec

st	0	100	200	300	400	500	600	700	800
4kg	0	0.44	0.57	0.69	0.82	0.90	1.00	1.17	1.52
2kg	0	0.34	0.48	0.58	0.68	0.78	0.88	1.08	1.44
1kg	0	0.30	0.43	0.53	0.63	0.73	0.83	1.03	1.41

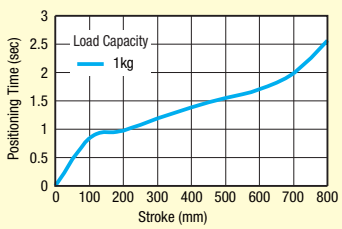
Vertical Lead 6



sec

st	0	100	200	300	400	500	600	700	800
2kg	0	0.50	0.83	1.16	1.50	1.83	2.16	2.94	4.32
1kg	0	0.46	0.79	1.13	1.46	1.79	2.13	2.91	4.29

Vertical Lead 12



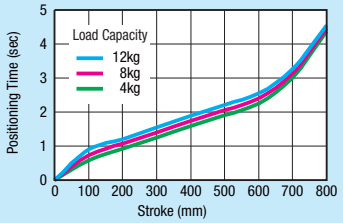
sec

st	0	100	200	300	400	500	600	700	800
1kg	0	0.84	0.97	1.19	1.38	1.55	1.71	1.99	2.57

Refer to the information below when calculating positioning time (Ex. P.362)
Values in the graph and table are actual measurement and may vary depending on operating conditions.

RS3 / RS3C Cycle Time Graph (Product Pages: RS3 P.367/RS3C P.385)

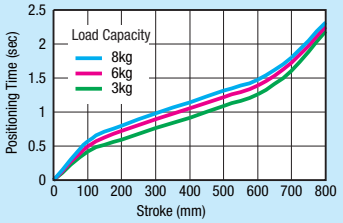
Horizontal Lead 6



sec

st	0	100	200	300	400	500	600	700	800
12kg	0	0.90	1.21	1.55	1.88	2.21	2.55	3.26	4.56
8kg	0	0.74	1.07	1.40	1.73	2.07	2.40	3.13	4.46
4kg	0	0.59	0.92	1.25	1.59	1.92	2.25	3.01	4.37

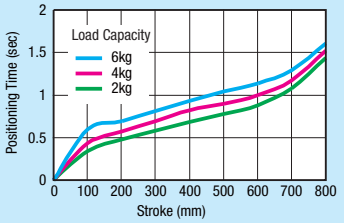
Horizontal Lead 12



sec

st	0	100	200	300	400	500	600	700	800
8kg	0	0.57	0.80	0.98	1.14	1.31	1.48	1.80	2.32
6kg	0	0.50	0.72	0.89	1.06	1.22	1.39	1.72	2.25
3kg	0	0.42	0.59	0.76	0.92	1.09	1.26	1.61	2.19

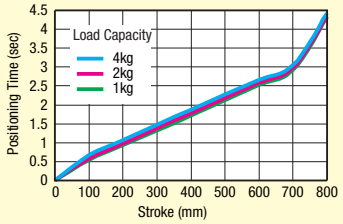
Horizontal Lead 20



sec

st	0	100	200	300	400	500	600	700	800
6kg	0	0.60	0.69	0.81	0.93	1.04	1.14	1.29	1.61
4kg	0	0.44	0.57	0.69	0.82	0.90	1.00	1.17	1.52
2kg	0	0.34	0.48	0.58	0.68	0.78	0.88	1.08	1.44

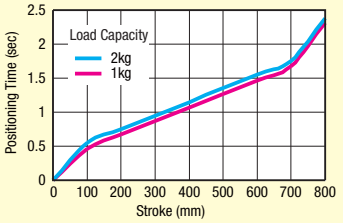
Vertical Lead 6



sec

st	0	100	200	300	400	500	600	700	800
4kg	0	0.67	1.07	1.47	1.87	2.27	2.67	3.07	4.42
2kg	0	0.58	0.98	1.38	1.78	2.18	2.58	2.98	4.35
1kg	0	0.53	0.93	1.33	1.73	2.13	2.53	2.93	4.31

Vertical Lead 12

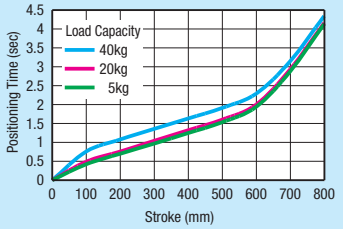


sec

st	0	100	200	300	400	500	600	700	800
2kg	0	0.55	0.75	0.95	1.15	1.35	1.55	1.75	2.38
1kg	0	0.46	0.67	0.87	1.07	1.27	1.47	1.67	2.31

RSH1 Cycle Time Graph (Product Pages: RSH1 P.369)

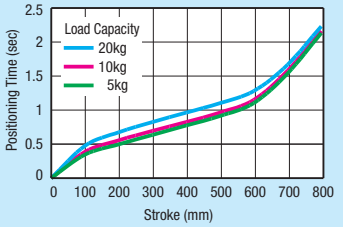
Horizontal Lead 6



sec

st	0	100	200	300	400	500	600	700	800
40kg	0	0.76	1.08	1.36	1.63	1.91	2.29	3.15	4.34
20kg	0	0.49	0.76	1.04	1.32	1.60	2.00	2.93	4.16
5kg	0	0.42	0.70	0.97	1.25	1.53	1.94	2.88	4.13

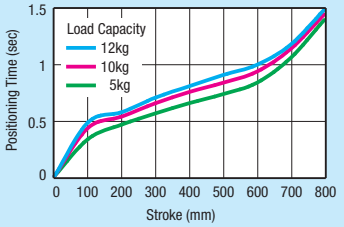
Horizontal Lead 12



sec

st	0	100	200	300	400	500	600	700	800
20kg	0	0.48	0.68	0.83	0.97	1.11	1.29	1.68	2.25
10kg	0	0.39	0.56	0.70	0.83	0.97	1.16	1.59	2.18
5kg	0	0.35	0.50	0.64	0.78	0.92	1.11	1.55	2.15

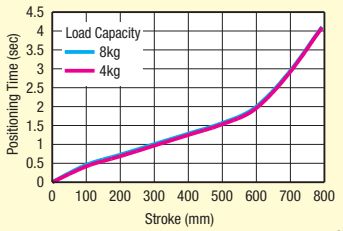
Horizontal Lead 20



sec

st	0	100	200	300	400	500	600	700	800
12kg	0	0.48	0.57	0.70	0.80	0.90	0.99	1.17	1.48
10kg	0	0.43	0.53	0.65	0.75	0.83	0.93	1.13	1.44
5kg	0	0.33	0.46	0.56	0.65	0.73	0.83	1.05	1.39

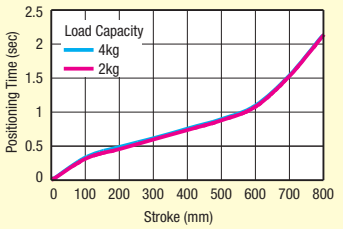
Vertical Lead 6



sec

st	0	100	200	300	400	500	600	700	800
8kg	0	0.46	0.73	1.01	1.29	1.57	1.98	2.91	4.15
4kg	0	0.42	0.69	0.97	1.25	1.53	1.94	2.88	4.13

Vertical Lead 12



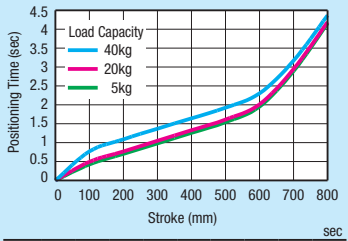
sec

st	0	100	200	300	400	500	600	700	800
4kg	0	0.33	0.48	0.61	0.75	0.89	1.09	1.53	2.13
2kg	0	0.31	0.45	0.59	0.73	0.87	1.07	1.52	2.12

Cycle Time Graph (2)

RSH1C Cycle Time Graph (Product Page: RSH1C P.387)

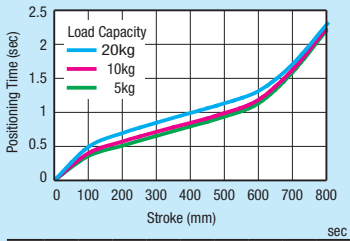
Horizontal Lead 6



sec

st	0	100	200	300	400	500	600	700	800
40kg	0	0.76	1.08	1.36	1.63	1.91	2.29	3.15	4.34
20kg	0	0.49	0.76	1.04	1.32	1.60	2.00	2.93	4.16
5kg	0	0.42	0.70	0.97	1.25	1.53	1.94	2.88	4.13

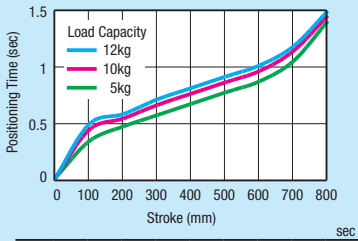
Horizontal Lead 12



sec

st	0	100	200	300	400	500	600	700	800
20kg	0	0.48	0.68	0.83	0.97	1.11	1.29	1.68	2.25
10kg	0	0.39	0.56	0.70	0.83	0.97	1.16	1.59	2.18
5kg	0	0.35	0.50	0.64	0.78	0.92	1.11	1.55	2.15

Horizontal Lead 20

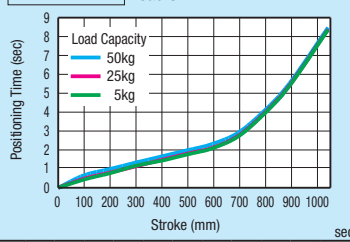


sec

st	0	100	200	300	400	500	600	700	800
12kg	0	0.48	0.57	0.70	0.80	0.90	1.00	1.17	1.48
10kg	0	0.43	0.53	0.65	0.75	0.85	0.95	1.13	1.44
5kg	0	0.33	0.46	0.56	0.66	0.76	0.86	1.04	1.39

RSH2 Cycle Time Graph (Product Page: RSH2 P.371)

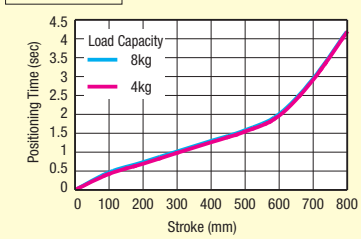
Horizontal Lead 5



sec

st	0	100	200	300	400	500	600	700	800	900	1050
50kg	0	0.67	1.00	1.34	1.67	2.00	2.34	2.94	4.09	5.58	8.56
25kg	0	0.48	0.81	1.14	1.48	1.81	2.14	2.77	3.96	5.48	8.46
5kg	0	0.44	0.77	1.17	1.44	1.77	2.11	2.74	3.93	5.45	8.44

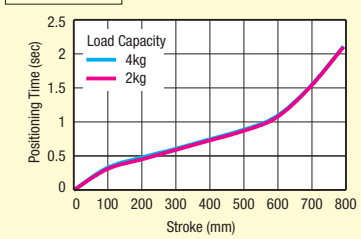
Vertical Lead 6



sec

st	0	100	200	300	400	500	600	700	800
8kg	0	0.46	0.73	1.01	1.29	1.57	1.98	2.91	4.15
4kg	0	0.42	0.69	0.97	1.25	1.53	1.94	2.88	4.13

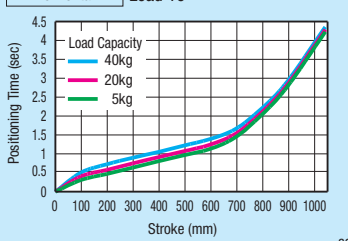
Vertical Lead 12



sec

st	0	100	200	300	400	500	600	700	800
4kg	0	0.33	0.48	0.61	0.75	0.89	1.09	1.53	2.13
2kg	0	0.31	0.45	0.59	0.73	0.87	1.07	1.52	2.12

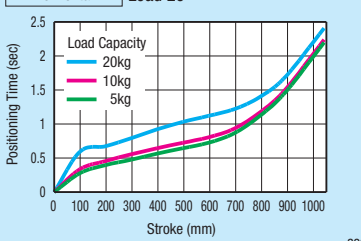
Horizontal Lead 10



sec

st	0	100	200	300	400	500	600	700	800	900	1050
40kg	0	0.51	0.73	0.90	1.06	1.23	1.40	1.67	2.20	2.92	4.40
20kg	0	0.41	0.58	0.75	0.92	1.08	1.25	1.54	2.10	2.84	4.33
5kg	0	0.31	0.47	0.64	0.81	0.97	1.14	1.45	2.03	2.78	4.27

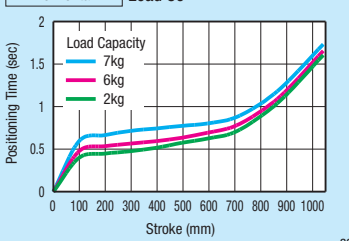
Horizontal Lead 20



sec

st	0	100	200	300	400	500	600	700	800	900	1050
20kg	0	0.60	0.68	0.80	0.93	1.04	1.13	1.23	1.41	1.71	2.43
10kg	0	0.34	0.46	0.56	0.65	0.73	0.81	0.94	1.18	1.52	2.26
5kg	0	0.28	0.40	0.48	0.57	0.65	0.73	0.87	1.13	1.48	2.22

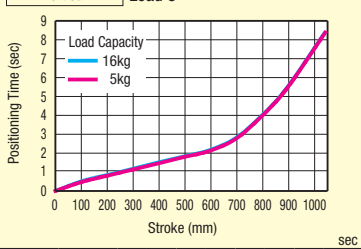
Horizontal Lead 30



sec

st	0	100	200	300	400	500	600	700	800	900	1050
7kg	0	0.60	0.67	0.72	0.75	0.78	0.81	0.87	1.03	1.27	1.75
6kg	0	0.48	0.54	0.57	0.60	0.64	0.70	0.77	0.94	1.18	1.67
2kg	0	0.40	0.45	0.48	0.52	0.58	0.63	0.70	0.88	1.13	1.62

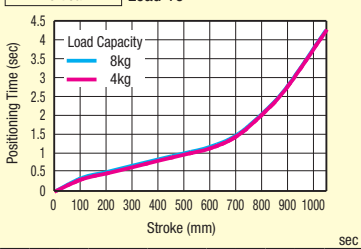
Vertical Lead 5



sec

st	0	100	200	300	400	500	600	700	800	900	1050
16kg	0	0.52	0.85	1.18	1.52	1.85	2.18	2.81	3.98	5.50	8.49
5kg	0	0.47	0.81	1.14	1.47	1.81	2.14	2.77	3.95	5.47	8.46

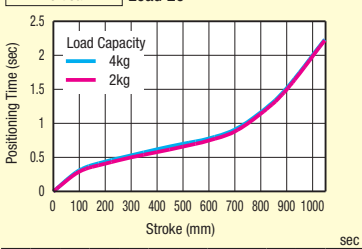
Vertical Lead 10



sec

st	0	100	200	300	400	500	600	700	800	900	1050
8kg	0	0.35	0.51	0.68	0.85	1.01	1.18	1.48	2.05	2.80	4.29
4kg	0	0.31	0.47	0.64	0.81	0.97	1.14	1.45	2.03	2.78	4.27

Vertical Lead 20



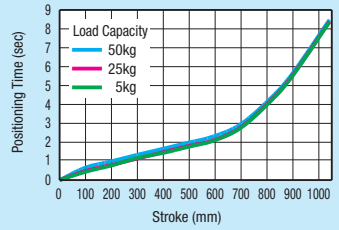
sec

st	0	100	200	300	400	500	600	700	800	900	1050
4kg	0	0.31	0.44	0.53	0.62	0.70	0.78	0.91	1.16	1.51	2.24
2kg	0	0.29	0.41	0.50	0.58	0.66	0.75	0.88	1.14	1.49	2.23

Refer to the information below when calculating positioning time (Ex. P.362)
Values in the graph and table are actual measurement and may vary depending on operating conditions.

RSH2C Cycle Time Graph (Product Page: RSH2C P.389)

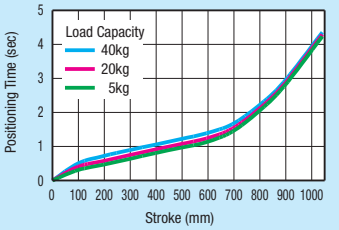
Horizontal Lead 5



sec

st	0	100	200	300	400	500	600	700	800	900	1050
50kg	0	0.67	1.00	1.34	1.67	2.00	2.34	2.94	4.09	5.58	8.56
25kg	0	0.48	0.81	1.14	1.48	1.81	2.14	2.77	3.96	5.48	8.46
5kg	0	0.44	0.77	1.17	1.44	1.77	2.11	2.74	3.93	5.45	8.44

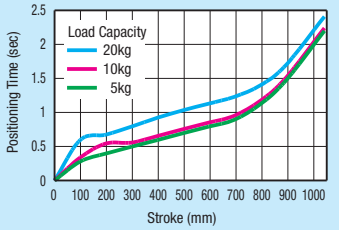
Horizontal Lead 10



sec

st	0	100	200	300	400	500	600	700	800	900	1050
40kg	0	0.51	0.73	0.90	1.06	1.23	1.40	1.67	2.20	2.92	4.40
20kg	0	0.41	0.58	0.75	0.92	1.08	1.25	1.54	2.10	2.84	4.33
5kg	0	0.31	0.47	0.64	0.81	0.97	1.14	1.45	2.03	2.78	4.27

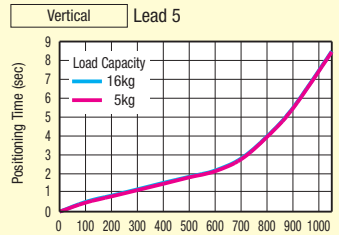
Horizontal Lead 20



sec

st	0	100	200	300	400	500	600	700	800	900	1050
20kg	0	0.60	0.68	0.80	0.93	1.04	1.14	1.24	1.41	1.71	2.43
10kg	0	0.34	0.55	0.56	0.66	0.76	0.86	0.96	1.18	1.52	2.26
5kg	0	0.28	0.40	0.50	0.60	0.70	0.80	0.90	1.13	1.48	2.22

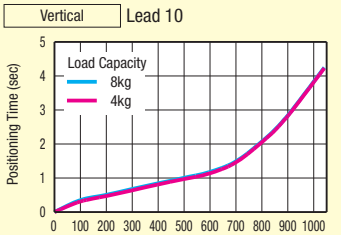
Vertical Lead 5



sec

st	0	100	200	300	400	500	600	700	800	900	1050
16kg	0	0.52	0.85	1.18	1.52	1.85	2.18	2.81	3.98	5.50	8.49
5kg	0	0.47	0.81	1.14	1.47	1.81	2.14	2.77	3.95	5.47	8.46

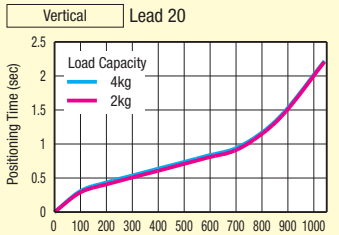
Vertical Lead 10



sec

st	0	100	200	300	400	500	600	700	800	900	1050
8kg	0	0.35	0.51	0.68	0.85	1.01	1.18	1.48	2.05	2.80	4.29
4kg	0	0.31	0.47	0.64	0.81	0.97	1.14	1.45	2.03	2.78	4.27

Vertical Lead 20

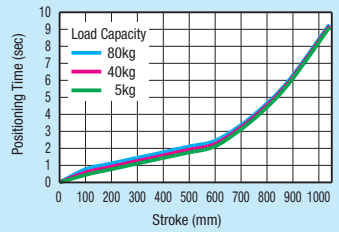


sec

st	0	100	200	300	400	500	600	700	800	900	1050
4kg	0	0.31	0.44	0.54	0.64	0.74	0.84	0.94	1.16	1.51	2.24
2kg	0	0.29	0.41	0.51	0.61	0.71	0.81	0.91	1.14	1.49	2.23

RSH3 Cycle Time Graph (Product Page: RSH3 P.373)

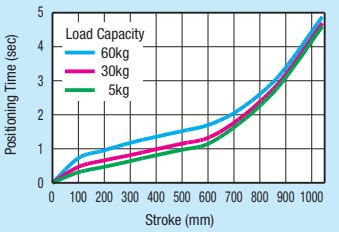
Horizontal Lead 5



sec

st	0	100	200	300	400	500	600	700	800	900	1050
80kg	0	0.77	1.12	1.45	1.78	2.12	2.45	3.34	4.59	6.20	9.37
40kg	0	0.59	0.93	1.26	1.59	1.93	2.26	3.20	4.47	6.10	9.28
5kg	0	0.44	0.77	1.11	1.44	1.77	2.11	3.08	4.37	6.01	9.20

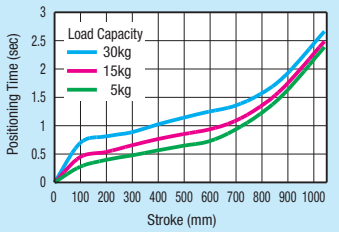
Horizontal Lead 10



sec

st	0	100	200	300	400	500	600	700	800	900	1050
60kg	0	0.73	0.96	1.18	1.36	1.53	1.70	2.04	2.59	3.35	4.93
30kg	0	0.47	0.66	0.82	0.99	1.16	1.32	1.75	2.36	3.15	4.74
5kg	0	0.31	0.47	0.64	0.81	0.97	1.14	1.61	2.24	3.05	4.64

Horizontal Lead 20

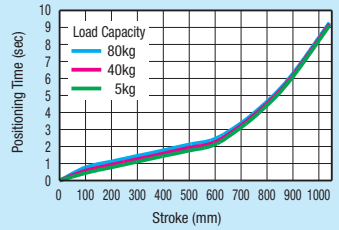


sec

st	0	100	200	300	400	500	600	700	800	900	1050
30kg	0	0.70	0.82	0.89	1.03	1.15	1.26	1.36	1.57	1.91	2.69
15kg	0	0.45	0.54	0.66	0.77	0.86	0.94	1.09	1.35	1.73	2.51
5kg	0	0.28	0.40	0.48	0.57	0.65	0.73	0.93	1.22	1.61	2.41

RSH3C Cycle Time Graph (Product Page: RSH3C P.391)

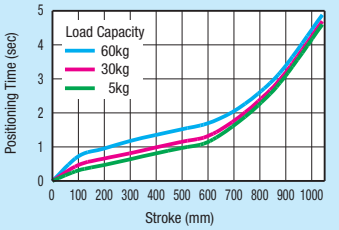
Horizontal Lead 5



sec

st	0	100	200	300	400	500	600	700	800	900	1050
80kg	0	0.77	1.12	1.45	1.78	2.12	2.45	3.34	4.59	6.20	9.37
40kg	0	0.59	0.93	1.26	1.59	1.93	2.26	3.20	4.47	6.10	9.28
5kg	0	0.44	0.77	1.11	1.44	1.77	2.11	3.08	4.37	6.01	9.20

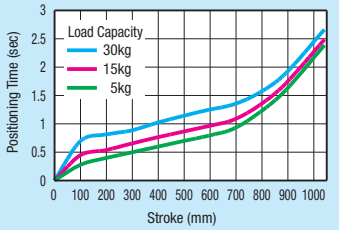
Horizontal Lead 10



sec

st	0	100	200	300	400	500	600	700	800	900	1050
60kg	0	0.73	0.96	1.18	1.36	1.53	1.70	2.04	2.59	3.35	4.93
30kg	0	0.47	0.66	0.82	0.99	1.16	1.32	1.75	2.36	3.15	4.74
5kg	0	0.31	0.47	0.64	0.81	0.97	1.14	1.61	2.24	3.05	4.64

Horizontal Lead 20



sec

st	0	100	200	300	400	500	600	700	800	900	1050
30kg	0	0.70	0.82	0.89	1.03	1.15	1.26	1.36	1.57	1.91	2.69
15kg	0	0.45	0.54	0.66	0.77	0.87	0.97	1.09	1.35	1.73	2.51
5kg	0	0.28	0.40	0.50	0.60	0.70	0.80	0.93	1.22	1.61	2.41

Single Axis Actuator LX Overview

High Accuracy · Compact · Excellent Cost vs. Performance

Single Axis Actuator

Fully Support Customers for Automation Equipment Designs

High Accuracy High Grade accuracies applied as standard. (for all standard grade products)

Manufactured by MISUMI-Suruga Seiki Co. Ltd., reputable XY Stage producer.
Positioning repeatability of ±5μ guaranteed. Precision Grade (±3μm) is selectable.

Compact Exceptional low-profile design

Low-profile achieved by the integral structure of blocks. Best for space-saving.

Excellent Cost vs. Performance High Grade specs. are offered at reasonable Standard Grade prices.

High Grade accuracy at Standard Grade prices (373,00 EUR ~). Automate equipment cost reduction accomplished..

8th day Shipping Challenging to Standard lead time In the Industry

Structures and Features

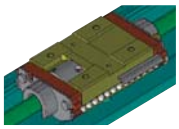
Feature 1 Base Length variations that allow flexible designs

Feature 2 Space saving low-profile stage

Feature 3 Locating dowel holes on the base

Feature 4 Locating dowel holes on blocks (Cover Type)

Standard Type

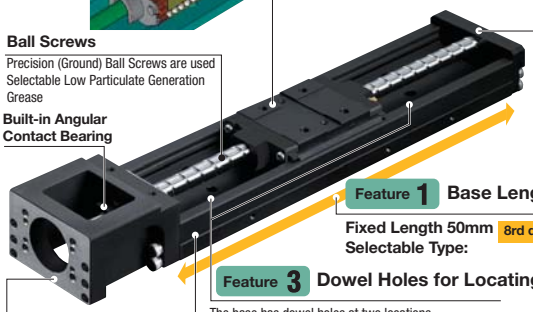


Block
Integral Structure of Ball Screw Nuts and Linear Guide Mechanism

Deep Groove

Ball Screws
Precision (Ground) Ball Screws are used
Selectable Low Particulate Generation Grease

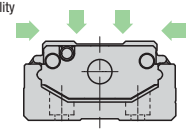
Built-in Angular Contact Bearing



Feature 1 Base Length
Fixed Length 50mm Selectable Type: 8rd day Shipping

Feature 3 Dowel Holes for Locating
The base has dowel holes at two locations.
Easy assembly · Enhanced reproducibility

Base
High-rigidity JIS STKM
The side surface has sensor mounting tapped holes.
Anti-rust surface treatment and sliding-promote LTBC plating



Motor Bracket
Applicable for each manufacturer's servo and stepping motors
The units without bracket are also provided.

Rail Shape
Double Row Gothic Arch Configuration
Compactness and high rigidity with four direction equal load capability accomplished.

Cover Type

Feature 4 Dowel Holes for Locating
Cover Block has dowel holes at two locations.
2 Dowel Holes
Easy assembly · Enhanced reproducibility



Design Patent and Utility Model Right Obtained



Feature 2 Low-profile Design
Block Integral Structure
Cover Type Blocks also achieve low-profile.

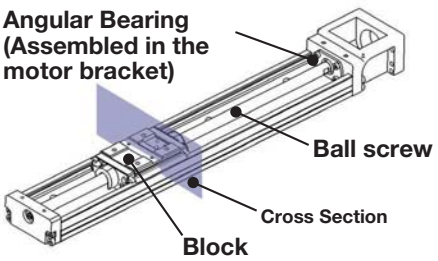
Cover Type Height		
	LX20	27mm
	LX26	33mm
	LX30	40mm
	LX45	57mm

Single Axis Actuator LX Load Ratings · Allowable Moment List

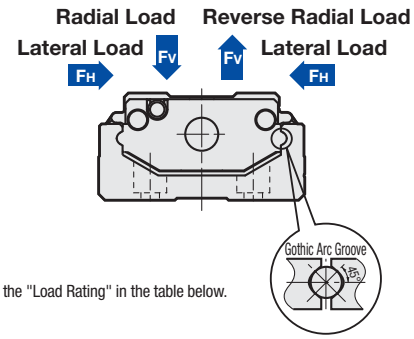
Load Directions

The Rails employ Double Row Gothic Arch Grooves, and are compact and low-profile.

Outline View



Enlarged Double Row Gothic Arch Grooves Sectional View



- Rail
  Equal basic load rating in all four directions: radial, reverse radial and lateral directions. For values refer to the "Load Rating" in the table below.

- Ball Screw
  Preload is applied to precision (ground) ball screw. Integrating structure of the block and ball screw nut allows axial loads to be applied.
  For Basic Load Rating in axial directions, please see "Load Rating" Table below.

- Bearing (fixed side)
  Angular bearings are integrated in the motor bracket allowing loads in the axial direction to be applied. For values of the basic load rating in the axial direction refer to the "Load Rating" in the table below.

Load Ratings

Values are indicated by sections.

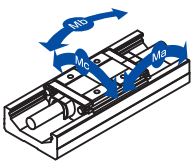
	Type	LX 2001	LX 2005	LX 2602	LX 2605	LX 3005-B	LX 3010-B	LX 3005-S	LX 3010-S	LX 4510-B	LX 4520-B	LX 4510-S	LX 4520-S
	Block	Long		Long		Long		Short		Long		Short	
Rails	Basic Dynamic Load Ratings C (N)	3277		6522		9732		6305		18450		11826	
	Basic Static Load Ratings C_0 (N)	6199		11871		17218		9271		32441		17175	
	Radial Clearance (μm)	-3~0		-4~0		-4~0		-4~0		-6~0		-6~0	
Ball Screws	Basic Dynamic Load Ratings Ca (N)	482	822	1712	1600	1831	1129	1831	1129	4167	2499	4167	2499
	Basic Static Load Ratings C_{0a} (N)	642	1026	2251	2097	2389	1386	2389	1386	5945	3381	5945	3381
	Shaft Diameter (mm)	6	6	8	8	10	10	10	10	15	15	15	15
	Lead (mm)	1	5	2	5	5	10	5	10	10	20	10	20
	Root Diameter	5.3	4.918	6.4	6.46	8.2	8.2	8.2	8.2	11.7	11.7	11.7	11.7
	Ball Center Diameter (mm)	6.15	6.3	8.3	8.3	10.3	10.3	10.3	10.3	15.5	15.75	15.5	15.75
Bearing (fixed side) Axial Direction	Basic Dynamic Load Ratings Ca (N)	730		1637		2702		2702		4355		4355	
	Allowable Static Load P_{0a} (N)	461		1205		2197		2197		4106		4106	

*Rail load ratings are indicated per block.
*For actual life calculations, please use our Technical Calculation Software.

Allowable Moment

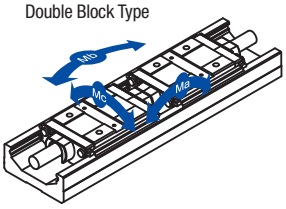
Moment loads can be applied in all three directions.

Single Block Type



Ma: Pitch Moment

Double Block Type



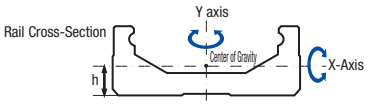
Mb: Yaw Moment
Mc: Roll Moment

Type	Block Qty.	Block Types	Allowable Static Moment (N · m)		
			Ma	Mb	Mc
LX20	1	Long	27	27	93
	2		353	353	186
LX26	1	Long	70	70	225
	2		902	902	450
LX30	1	Long	126	126	387
	2		1515	1515	774
	1	Short	63	63	208
	2		579	579	417
LX45	1	Long	291	291	972
	2		3945	3945	1944
	1	Short	145	145	515
	2		1444	1444	1029

*Double Block Type values are those when two blocks in contact with each other.
The table above lists reference values in static state.
For actual life calculations, please use our Technical Calculation Software.

Rail Rigidity

Rails with Lower Center of Gravity and High Rigidity



Type	Cross Sectional Moment of Inertia (mm^4)		Center of Gravity (mm)	Mass (kg/100mm)
	Ix	Iy	h	W
LX20	$3.2x10^3$	$5.2x10^4$	4.4	0.22
LX26	$1.0x10^4$	$1.4x10^5$	6.1	0.37
LX30	$2.5x10^4$	$3.1x10^5$	7.8	0.60
LX45	$8.8x10^4$	$10.4x10^5$	11.0	1.10

IX: Cross Sectional Moment of Inertia around X-axis IY: Cross Sectional Moment of Inertia around Y-axis

Single Axis Actuator LX Maximum Travel Speed / Accuracy Standards

Maximum Travel Speed

■Max. Velocity (mm/s)

Type	Lead (mm)	Rail Length L (mm)											
		80	100	125	150	200	250	300	350	400	450	500	550	600
LX20	1	190	190	-	190	190	-	-	-	-	-	-	-	-
	5	-	694	-	694	694	694	633	-	-	-	-	-	-
LX26	2	-	290	-	290	290	290	290	-	-	-	-	-	-
	5	-	-	-	521	521	521	521	521	446	-	-	-	-
LX30	5	-	-	410	410	410	410	410	410	410	410	370	300	250
	10	-	-	-	830	830	830	830	830	830	830	740	600	500

Type	Lead (mm)	Rail Length L (mm)					
		340	390	440	490	540	590
LX45	10	550	550	550	550	550	550
	20	1110	1110	1110	1110	1110	1110

*Values in the table are calculated on basis of critical speed and DN value of ball screws.
Note that these are not guarantee data considering motor rotational speed, operating conditions, etc.

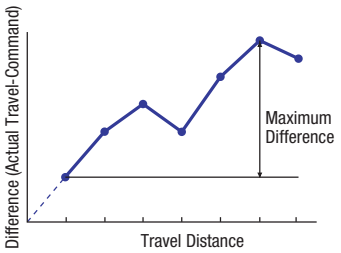
■Accuracy Standards

Accuracy Standard Items	LX20		LX26		LX30 (L=400 or less)		LX30 (L=exceeding 400)		LX45	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02	0.06	0.02	0.06	0.02	0.1	0.025	0.1	0.025
Positioning Repeatability (mm)	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003
Backlash (mm)	0.01	0.003	0.01	0.003	0.02	0.003	0.02	0.003	0.02	0.003
Parallelism (mm)	0.025	0.01	0.025	0.01	0.025	0.01	0.035	0.015	0.035	0.015
Starting Torque (N・cm)	1.2		2		4		4		10	

Accuracy Standards

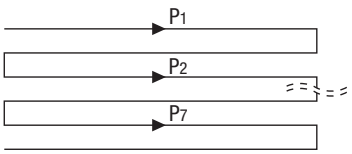
- Positioning Accuracy

Positioning is performed from a reference position incrementally in one direction, and measured.
Measurement values are the maximum difference between actual travel distance and commanded distance.
For standard values, please see "Accuracy Standards Table".



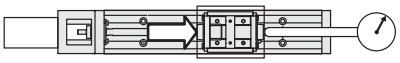
- Positioning Repeatability

Repeat positioning and measurement seven times at the same point in a specified direction.
1/2 of the maximum difference with "±" given is the measurement value.
For standard values, please see "Accuracy Standards Table".



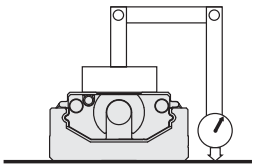
- Backlash

Loads are applied to the block from the reference position, and then released.
The difference between the reference position and returned value is the measurement value.
For standard values, please see "Accuracy Standards Table".



- Running Parallelism

A dial indicator is installed from the block to the reference surface.
Measurements are taken while travelling.
The maximum difference taken by the measurement is the measurement value.
For standard values, please see "Accuracy Standards Table".



Cautions for using Single-axis Actuator LX / Low Particle Grease

■Maintenance

- Routine Inspections:

Recommended inspection frequency is once per 3 to 6 months.
Please check for proper lubrication conditions, clean-up and grease refill.
Check on mounting screws for looseness.

- Lubrication:

The recommended lubricants are shown as below.
LX20, LX26 and LX30 Series => Showa Shell Sekiyu-made Alvania Grease S No.2
LX45 Series => Showa Shell Sekiyu-made Cartridge Grease EP2
Low Particle Generation Type => NSK LG2
Recommended greasing cycle is per 6 months or 1,000km under normal operating conditions.
* Lubrication intervals, however, depend on usage conditions and environments.

■Cautions for Operating Environments:

Ensure that it is used at an ambient temperature of 50°C or less. It is recommended to provide mechanical stoppers to prevent overrun.

- Allowable Rotational Speed

Size-specific allowable rotational speed is indicated below.

Part Number	Lead	Rail Length	Allowable Rotational Speed (min^{-1})
LX20	1	80~300	6000
	5		
LX26	2	100~400	6000
	5	100~350	6000
		400	5350
LX45	10	340~590	3300
	20	340~590	3330

Part Number	Lead	Rail Length	Allowable Rotational Speed (min^{-1})
LX30	5	150~450	4920
		500	4440
		550	3600
		600	3000
	10	150~450	4980
		500	4440
		550	3600
		600	3000

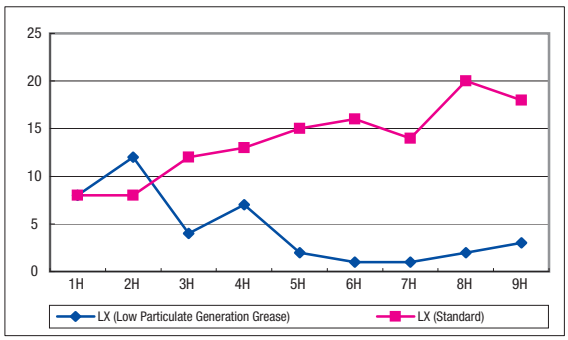
■About Single-axis Actuator LX Low Particle Grease

The products are shipped with low particle grease applied or high cleanliness environments.
LG2 (Made by NSK Ltd.) generates less particles and exhibits excellent corrosion resistance.
For part number selections, please see each product page.

■Low Particulate Generation Grease Performance Table

	Items	Conditions	Unit	Measurement Method	LG2 (Made by NSK Ltd.)
Grease Performance	Thickener	-	-	-	Lithium Type
	Base Oil	-	-	-	Mineral Oil + Synthetic Hydrocarbon Oil
	Base Oil Kinetic Viscosity	40°C	mm^2/s	JIS K2220 5.19	30
	Worked Penetration	-	-	JIS K2220 5.3	207
	Dropping Point	-	°C	JIS K2220 5.4	200
	Evaporation	99°C x 22hr	wt%	-	1.40%
	Oil Separation	100°C x 24hr	wt%	JIS K2220 514	0.80%
	Operating Temp.	In Air	°C	-	-10~80

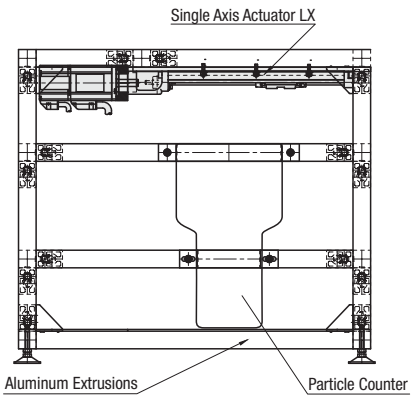
■Particulate Generation Comparison



0.3μm or larger particle count (m^3)

Measuring Time	1H	2H	3H	4H	5H	6H	7H	8H	9H
LX (Low Particulate Generation Grease)	8	12	4	7	2	1	1	2	3
LX (Standard)	8	8	12	13	15	16	14	20	18

■Particle Generation Test Evaluation Equipment Outline



<Evaluation Conditions>
Clean Room Class 100 (in a clean room)
Room Temperature 24°C±2°C Humidity 45%±5%
(Particle Counter Name)
Hand-held Particle Counter KR-12A (Rion Co., Ltd.)
Tested Actuator: LX2001-B1-A2040-200
Motor Speed: 3000rpm

Clean Room Class 100/ISO Class 5
The measurement results meet the conditions above.
(* These are not guaranteed values but reference values.
Values considerably varies depending on operating environment)

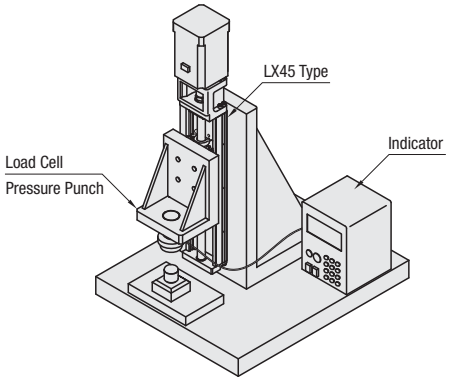
Actuator LX / Application Examples

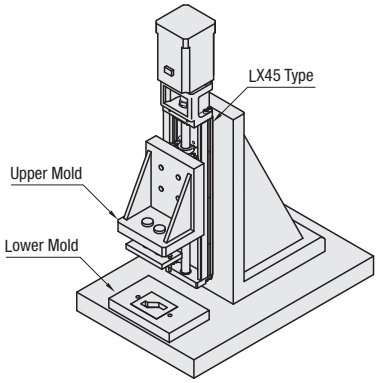
**Linear Axis Actuator LX is the actuator in which ball screw and linear guide are incorporated.
High Precision Positioning Type and High Speed & Heavy Load Capacity Type are available.
Standard lead type is for precise positioning, high lead type for high-speed operation.
Suruga Seiki Co. Ltd., reputable XY Stage producer, manufactures these actuators.**
- Please see P.401 to P.460 for product details.

■Servo Press Machine

Use as pressure axis for servo press machine.

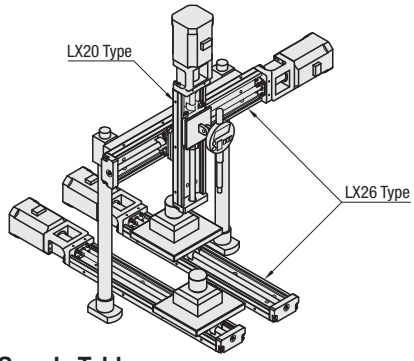
-Reliable high rigid flame
-Standardized dowel holes on case plate for operation with heavy load.
(Dowel Pins are not only for setting a position but support Shear Load.)





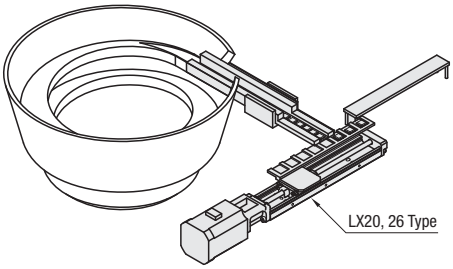
■Measurement Unit

Use in combination with Servo Motor for measuring process.
-Possible only with our high precision actuators.
-Compatible with various products due to its compactness.



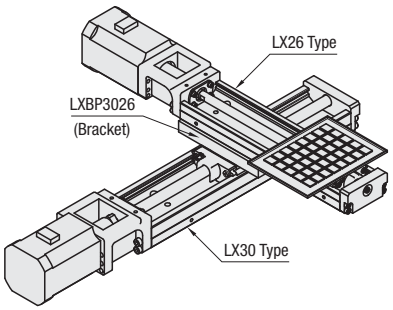
■Precision Conveyance

Best suited for high precision conveyance
-Advanced precision will guarantee operation.



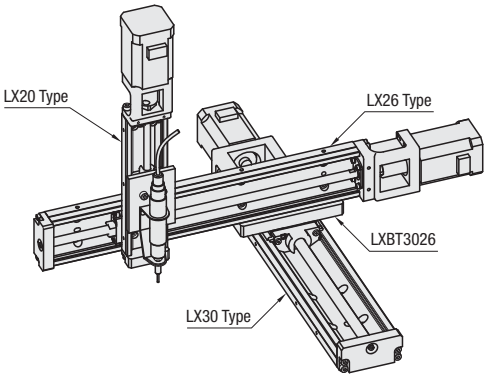
■Part Supply Table

Part supply by connecting two axes
-Mounting Bracket will be included.



■Painting Unit

Painting Unit by connecting three axes.
-Be able to design to your needs.
-Bracket is included; part design is not necessary



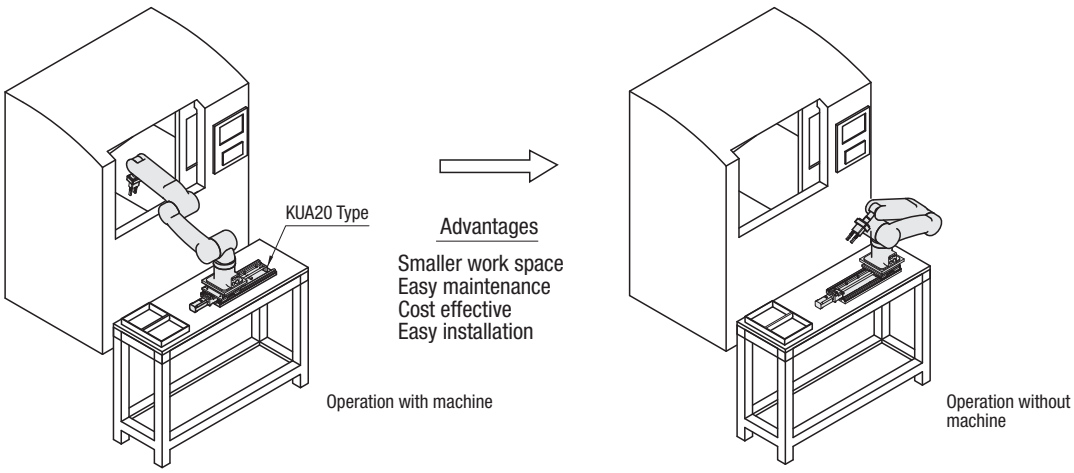
Single Axis Actuator KU / Application Examples

CAD Data

Single Axis Unit KU is the unit in which ball screw and linear guide are incorporated.
Usable for small motorized actuator or movable table of Loader as well as conveying heavy load.
Bellows type and cover type are available for better operating environment.
Suruga Seiki Co. Ltd., well established as XY Stage, manufactures unit body.
- Please see P.461 to P.474 for product details.

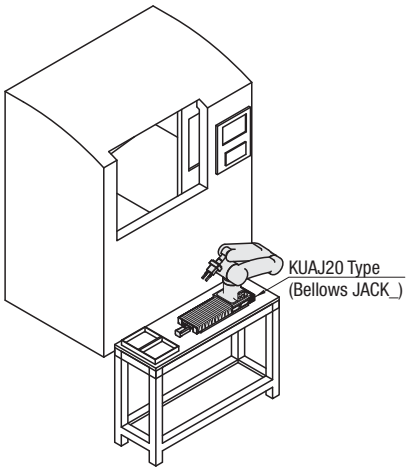
■Put in/Take off Work in Machine Tool

-Single axis actuator can be used to give space for a rationalized robot system.



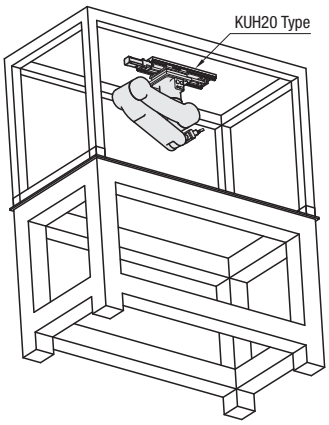
■Put in/Take off Work (Bellows · Cover Type)

-Usable where drops of water or dust exist
Bellows can be used as safety covers.



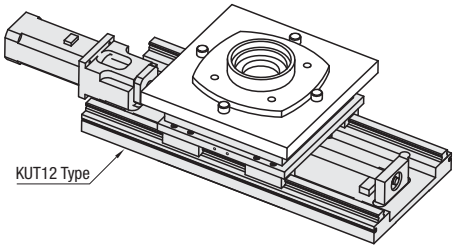
■Work Alignment

-Can be mounted on the wall or ceiling due to high rigidity.



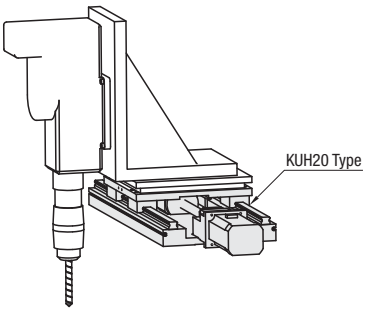
■Precision Table of Large Parts

-Bellows or covers are selectable when used where drops of water or dust exist.
-Ball screw grade is selectable according to precision.
-Precision Ball Screw (C5) is adopted for KUH·KUT.



■Drill Head

-Available for heavy industrial processing.

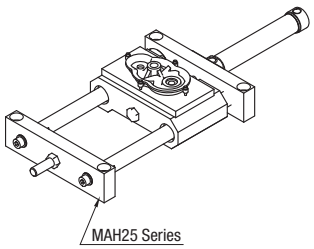


Air Modules / Application Example

Standardized air module units. Applicable for transporting and transferring tasks in vertical and horizontal applications.

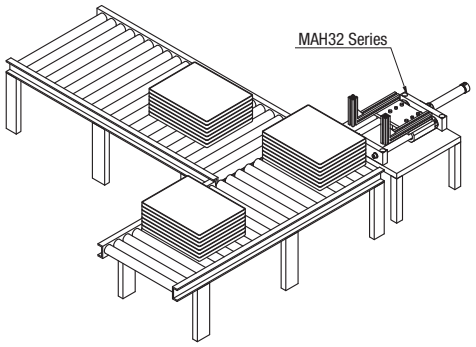
■Workpiece Transfer

· Small and lightweight parts to large and heavy parts can be transported.



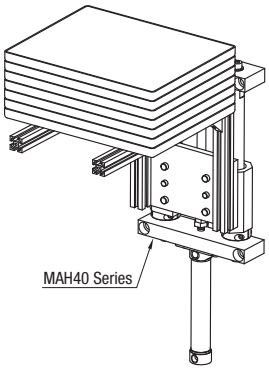
■Pallet Transfer

· Simple and convenient structure advantages of pneumatic equipment saves labor of installing add-on parts.



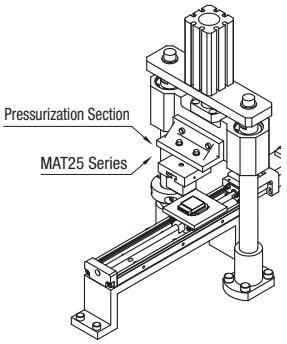
■Return Conveyor Lift

· Used for lifts in vertical installation



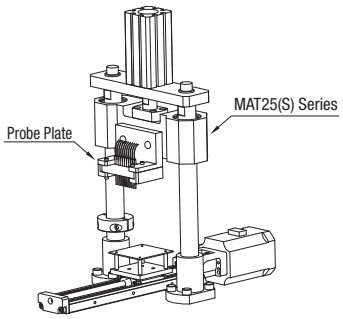
■Press Unit for Small Parts

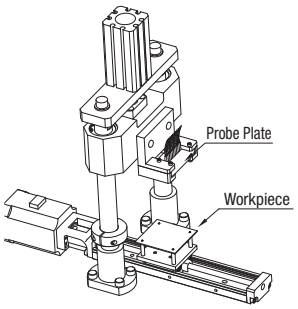
Lead frame forming and PC board presses.
Press force can be adjusted by air supply pressure.



■Probe Up/Down Unit for Electrical Inspection

Applicable for various work pieces by replacing the probe head.
There are three tooling mount surfaces.



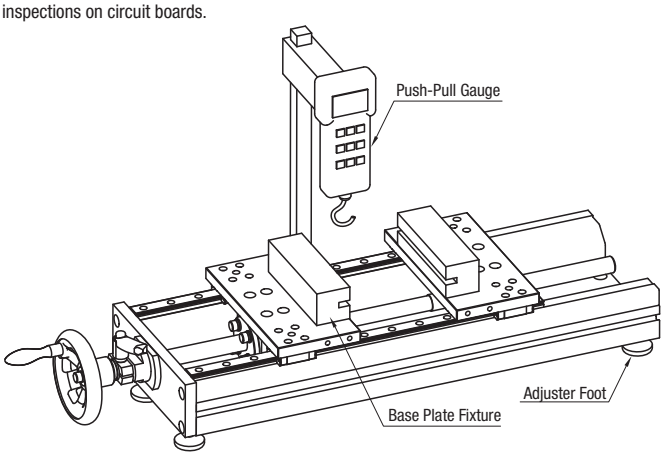


CAD Data

Simplified manually operated units and easy operating units requiring no control settings.

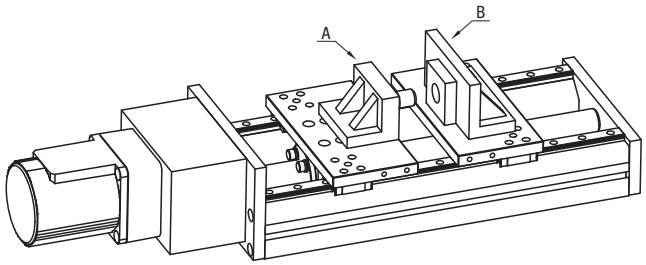
■Served as an Inspection Jig

Used as a work piece fixture outfit with inspection jig for sampling inspections on circuit boards.



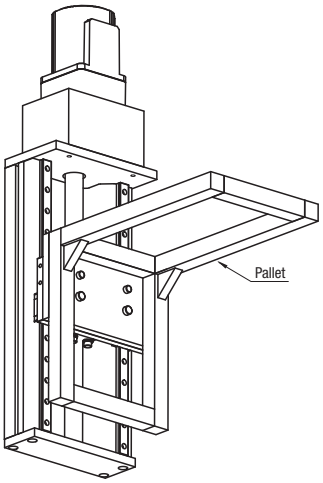
■Press-fit Fixture

Can be used for a light press fitting fixture.
Can be made to handle various work pieces by replacing the A and B blocks.
It can be used in both compression and tensioning processes as a tension adjuster for sheets, textile and wire materials and in tensioning process.



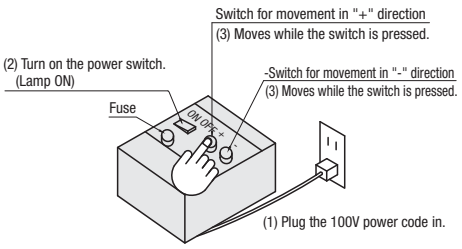
■Transfers

Used to move work pieces vertically.



■Motorized Unit Operations

Just push the desired directional button.



Single Axis Actuator LX20 Standard Type

Design Patent and Utility Model Right Obtained

RoHS



<No Motor Bracket Type>

Specifications	
LX20	
Standards	
Screw Shaft Diameter (mm)	6
Lead (mm)	1, 5
Accuracy	High Grade · Precision Grade

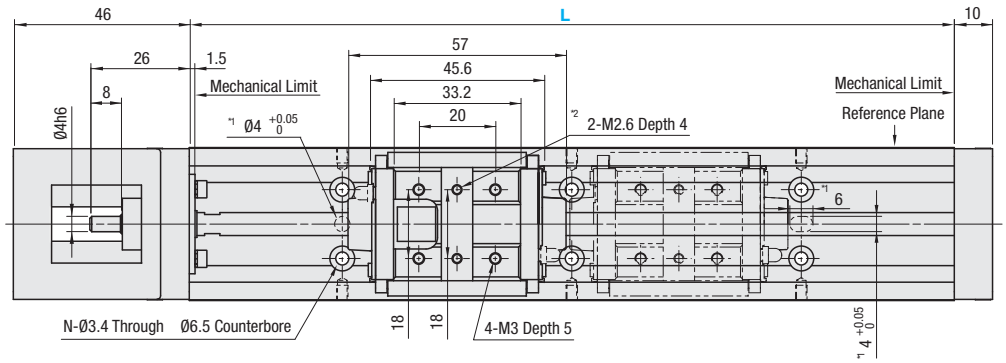
A Accessory

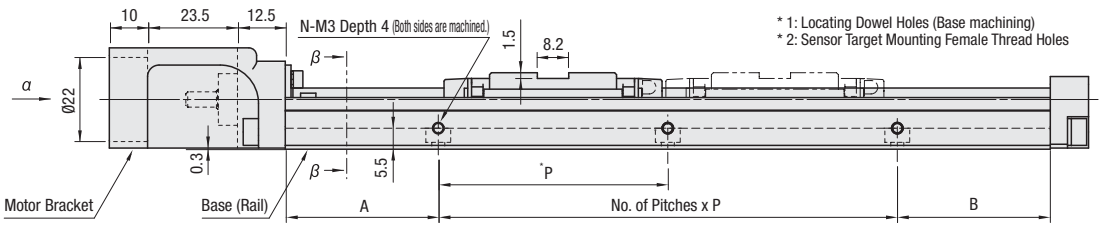
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5
S Surface Treatment: Black Anodize
(2) 4 Adapter Plate Screws M Material: 1.4567/X3CrNiCu18-9-4
(P) No accessory is included for No Motor Bracket Type.

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 1	LX2001	LX2001P	LX2001G	LX2001PG
Lead 5	LX2005	LX2005P	LX2005G	LX2005PG

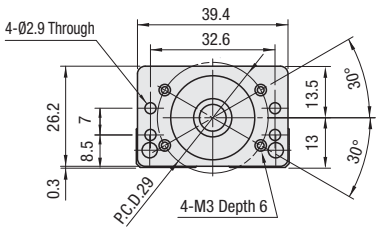
(P) Low Particulate Generation Grease Information **P.404**

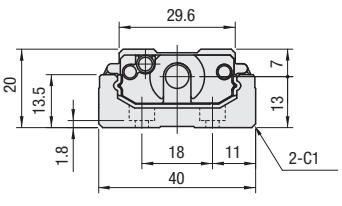
Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	HRC58~62





*Only in the case of 80mm base overall length, the sensor rail mounting hole pitch is 50mm
Base mounting hole pitches are all P=60.

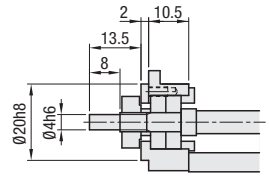




Cross-section View β-β

No Motor Bracket Type

* For details of the mounting parts, refer to **P.413**



(P) Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
(P) For Double Block Type, effective strokes are the values when two blocks in contact with each other.
(P) For Double Block Type, double-dashed lined blocks are not connected with the ball screw

CAD Data

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Effective Stroke		Mounting Hole Dimensions				
High Grade	* Precision Grade				Single Block	Double Blocks	A	P	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX2001 LX2005 (Low Particulate Generation Grease) LX2001G LX2005G	(Standard Grease) LX2001P LX2005P (Low Particulate Generation Grease) LX2001PG LX2005PG	(1 pc.) B1 (2 pcs.) B2	(Servo Motors) A2025 A2028 A2038 A2040 E2040 (Stepping Motors) T2028 T2042 (Without attachment) N (Without Motor Bracket) F	80	16.5	-	10	60	10	1	4
				100	36.5	-	20	60	20	1	4
				150	86.5	-	15	60	15	2	6
				200	136.5	79.5	40	60	40	2	6
				250	186.5	149.5	35	60	35	3	8
				300	236.5	199.5	30	60	30	4	10

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
* Precision Certificate is enclosed with precision grade products.
* Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

■Accuracy Standards

Precision certificate is enclosed with precision grade products.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02
Backlash (mm)	0.01	0.003
Positioning Repeatability(mm)	±0.005	±0.003
Running Parallelism(mm)	0.025	0.01
Starting Torque (N • cm)	1.2	1.2

■Allowable Static Load · Moment

Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N • m)		
		Ma	Mb	Mc
1	6199	27	27	93
2	12398	353	353	186

Reference values are for a static state. For life calculation, use our technical calculation software.
For allowable static moment, please see **P.402**.

■Moment of Inertia

Base Length (L)	Moment of Inertia (kg • cm²)			
	LX2001		LX2005	
	Single Block	Double Blocks	Single Block	Double Blocks
80	0.0047	-	-	-
100	0.0049	-	0.0054	-
150	0.0053	-	0.0059	-
200	0.0058	0.0058	0.0063	0.0069
250	-	-	0.0068	0.0074
300	-	-	0.0073	0.0078

■Mass

Base Length (L)	Total Mass (kg)	
	Single Block	Double Blocks
80	0.40	-
100	0.45	-
150	0.58	-
200	0.71	0.79
250	0.83	0.92
300	0.96	1.05

■Maximum Velocity

Base Length (L)	Part Number	
	LX2001	LX2005
80	190	-
100	190	694
150	190	694
200	190	694
250	-	694
300	-	633

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A2025	25	Yasukawa Electric Corporation	10W/20W/30W
A2028	28	Mitsubishi Electric Corporation	10W/20W/30W
A2038	38	Panasonic	30W/50W/100W
E2040	40	SIEMENS	50W/100W
A2040	40	Yasukawa Electric Corporation	30W/50W
		Mitsubishi Electric Corporation	50W
		Sanyo Denki Co.,Ltd.	30W/50W
		Omron Corporation	30W/50W
		Keyence Corporation	50W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T2028	28	Oriental Motor	2-phase / 5-phase / α Step
T2042	42		2-phase / 5-phase / α Step

For Motor Adapter Plate detail drawings and applicable motor model details, please see **P.413**.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX2001	-	B1	-	A2025	-	200

Days to Ship

High Grade Standard Grease LX2001 · 2005: **8 Days**

Standard GreasePrecision Grade LX2001P · 2005P: **10 Days**

Low Particulate Generation Grease Without Motor Bracket: **13 Days**

All bracket-less products are shipped on the 13th day after order received.
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L=80 (Lead 1 Only)	L=100	L=150	L=200	L=250 (Lead 5 Only)	L=300 (Lead 5 Only)	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX20_ _-B1-_							Servo Stepping No Adapter	1	6	1
LX20_ _-B2-_								2		
LX20_ _-B1-F							No Bracket	1		5
LX20_ _-B2-F								2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
LX20_ _Series sensor set can be specified as an alteration.
Alteration Details **P.414**

■Precision Grade · Low Particulate Generation Grease Price Increase

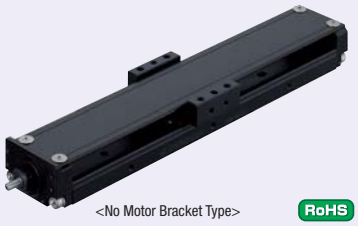
Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price

Single Axis Actuator LX20 Cover Type

Design Patent and Utility Model Right Obtained





<No Motor Bracket Type>

RoHS

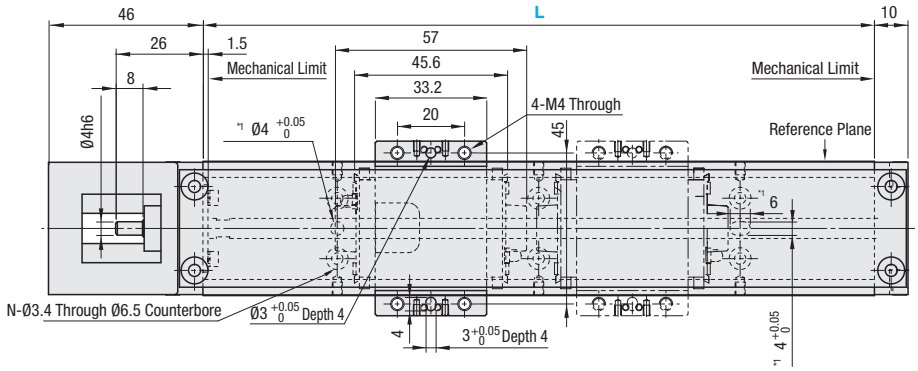
Specifications	
LX20	
Cover	
Screw Shaft Diameter (mm)	6
Lead (mm)	1, 5
Accuracy	High Grade · Precision Grade
A Accessory	

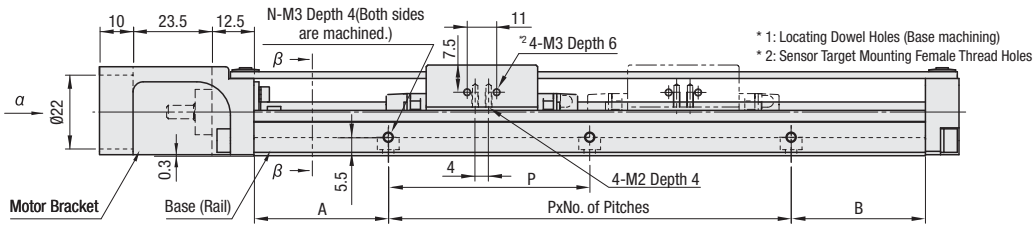
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5
S Surface Treatment: Black Anodize
(2) 4 Adapter Plate Screws M Material: 1.4567/X3CrNiCu18-9-4
※No accessory is included for No Motor Bracket Type.

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 1	LX2001C	LX2001CP	LX2001CG	LX2001CPG
Lead 5	LX2005C	LX2005CP	LX2005CG	LX2005CPG

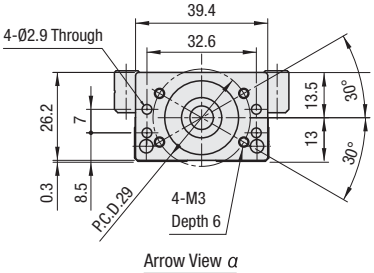
※Low Particulate Generation Grease Information **P404**

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62

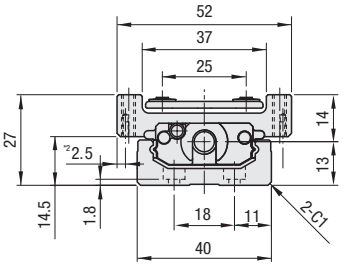




*Only in the case of 80mm base overall length, the sensor rail mounting hole pitch is 50mm
Base mounting hole pitches are all P=60.

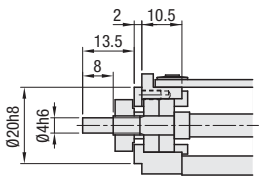


Arrow View α



Section View β-β

No Motor Bracket Type
* For details of the mounting parts, **P413**



※Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
※For Double Block Type, effective strokes are the values when two blocks in contact with each other.

※For Double Block Type, double-dashed lined blocks are not connected with the ball screw

CAD Data

Part Number		Block Qty.	Motor	Base	Effective Stroke		Mounting Hole Dimensions				
High Grade	* Precision Grade		Attachments	Overall Length (L)	Single Block	Double Blocks	A	P	B	No. of pitches	Hole Qty. (N)
(Standard Grease) LX2001C LX2005C (Low Particulate Generation Grease) LX2001CG LX2005CG	(Standard Grease) LX2001CP LX2005CP (Low Particulate Generation Grease) LX2001CPG LX2005CPG	(1 pc.) B1 (2 pcs.) B2	(Servo Motors) A2025 A2028 A2038 A2040 E2040 (Stepping Motors) T2028 T2042 (Without attachment) N (Without Motor Bracket) F	80	16.5	-	10	60	10	1	4
				100	36.5	-	20	60	20	1	4
				150	86.5	-	15	60	15	2	6
				200	136.5	79.5	40	60	40	2	6
				250	186.5	149.5	35	60	35	3	8
				300	236.5	199.5	30	60	30	4	10

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
* Precision Certificate is enclosed with precision grade products.
* Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

■Accuracy Standards

Precision certificate is enclosed with precision grade products.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02
Backlash (mm)	0.01	0.003
Positioning Repeatability (mm)	±0.005	±0.003
Running Parallelism (mm)	0.025	0.01
Starting Torque (N • cm)	1.2	1.2

■Allowable Static Load · Moment

Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N • m)		
		Ma	Mb	Mc
1	6199	27	27	93
2	12398	353	353	186

Reference values are for a static state. For life calculation, use our technical calculation software.
For allowable static moment, please see **P.402.**

■Moment of Inertia

Base Length (L)	Moment of Inertia (kg • cm²)			
	LX2001C		LX2005C	
	Single Block	Double Blocks	Single Block	Double Blocks
80	0.0047	-	-	-
100	0.0049	-	0.0059	-
150	0.0053	-	0.0063	-
200	0.0058	0.0058	0.0068	0.0078
250	-	-	0.0073	0.0083
300	-	-	0.0077	0.0088

■Mass

Base Length (L)	Total Mass (kg)	
	Single Block	Double Blocks
80	0.51	-
100	0.56	-
150	0.69	-
200	0.81	0.97
250	0.94	1.10
300	1.07	1.23

■Maximum Velocity

Base Length (L)	Part Number	
	LX2001C	LX2005C
80	190	-
100	190	694
150	190	694
200	190	694
250	-	694
300	-	633

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A2025	25	Yasukawa Electric Corporation	10W/20W/30W
A2028	28	Mitsubishi Electric Corporation	10W/20W/30W
A2038	38	Panasonic	30W/50W/100W
E2040	40	SIEMENS	50W/100W
A2040	40	Yasukawa Electric Corporation	30W/50W
		Mitsubishi Electric Corporation	50W
		Sanyo Denki Co.,Ltd.	30W/50W
		Omron Corporation	30W/50W
		Keyence Corporation	50W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T2028	28	Oriental Motor	2-phase / 5-phase / α Step
T2042	42		2-phase / 5-phase / α Step

For Motor Adapter Plate detail drawings and applicable motor model details, please see **P.413**.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX2001C	-	B1	-	A2025	-	300

Days to Ship

High Grade Standard Grease LX2001C · 2005C	Standard Grease Precision Grade LX2001CP · 2005CP	Low Particulate Generation Grease Without Motor Bracket
8 Days	10 Days	13 Days

All No Bracket products are shipped on the 13th day after order received.
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L=80 (Lead 1 Only)	L=100	L=150	L=200	L=250 (Lead 5 Only)	L=300 (Lead 5 Only)	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX20_ _C-B1-_							Servo Stepping No Adapter	1	6	1
LX20_ _C-B2-_								2		5
LX20_ _C-B1-F							No Bracket	1		
LX20_ _C-B2-F								2		

■Precision Grade · Low Particulate Generation Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

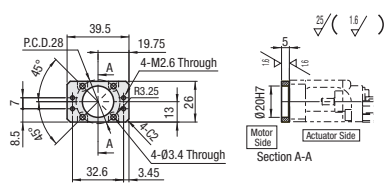
Listed Price + € Unit Price = Product Price

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
LX20_ _Series sensor set can be specified as alterations.
Alteration Details☞**P.414**

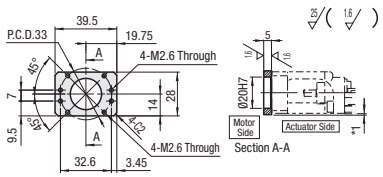
Single Actuator LX20 Motor Adapter Plates / Motor Adapter Centering Tools

Note:*Marked area indicates where the Motor Adapter protrudes beyond the Rail. Special attention must be given.

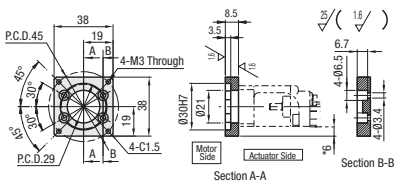
A2025
Servo
25



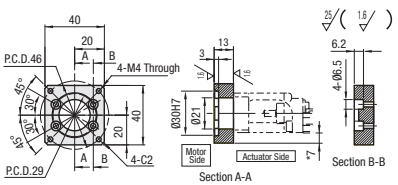
A2028
Servo
28



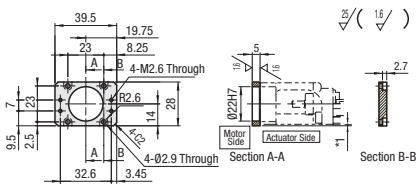
A2038
Servo
38



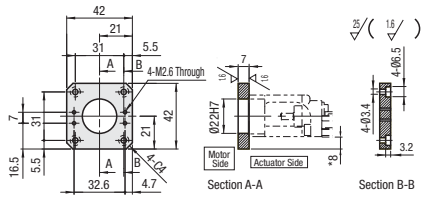
A2040
Servo
40



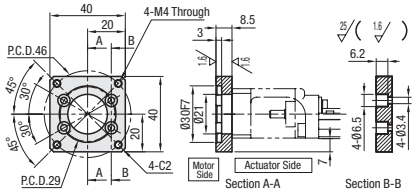
T2028
Stepping
28



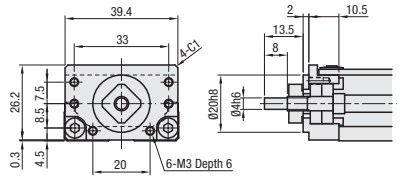
T2042
Stepping
42



E2040
Servo
40



F
No Motor
Bracket Type



■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product number	Wattage	Recommended Coupling
A2025	25	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCPW16 (P.963) MCSLC16 (P.964)
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
A2028	28	Mitsubishi Electric Corporation	HC-AQ013	10W	
			HC-AQ023	20W	
			HC-AQ033	30W	
A2038	38	Panasonic	MSMD-5A	50W	CPDT19 (P.965)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
E2040	40	SIEMENS	1FK7011-5	50W	CPDW19 (P.965)
			1FK7015-5	100W	

■Stepping Motor Application Table

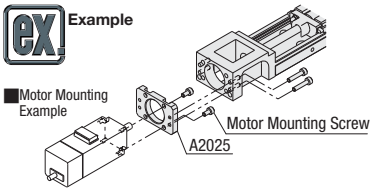
Part Number	Flange Size	Manufacturer	MotorPart Number	Type	Recommended Coupling
T2028	28	Oriental Motor	CSK22	2-phase	SCPW16 (P.963) MCSLC16 (P.964)
			CSK52	5-phase	
			ASC3*	α Step	
T2042	42		UMK24*/PK24*	2-phase	
			CSK24		
			RK54	5-phase	
			UPK54*/PK54*		
			AS46,ASC46,AR46	α Step	

Part Number	Flange Size	Manufacturer	MotorPart Number	Wattage	Recommended Coupling
A2040	40	Yasukawa Electric Corporation	SGMJV-A5	50W	SCPW16 (P.963) MCSLC16 (P.964) CPDT19 (P.965)
			SGMAH-A5	50W	
			SGMAS-A5	50W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-KFS053	50W	
			HF-KP053	50W	
		Sanyo Denki Co.,Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-U03030	30W	
			R88M-U05030	50W	
		Keyence Corporation	MV-M05 (D)	50W	
			SV-M005	50W	

Product numbers and specifications of motors are subject to change.
Please check the manufactures' information.
Applicable motors and couplings are not limited to the above listed products.
Please confirm each mounting dimension.

Example

■Motor Mounting Example



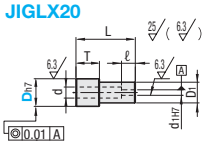
Secure included Motor Adapter to the Motor
Motor, coupling and motor mounting screws are not included.

■ **Motor Adapter Centering Tools**



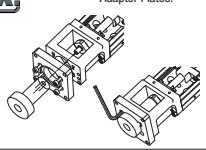
RoHS

JIGLX20



M Material: EN AW-5056/AlMg5
S Surface Treatment: White Anodize

Example Please use for centering of Motor Adapter Plates.



Part Number	D	Corresponding Attachments	d	D1	d1	L	T	ℓ	€ Unit Price 1 ~ 5 pc(s).
JIGLX20	20	A2028	8	15	4	43	17	10	
	30	A2038/A2040	8	15	4	47	13	10	

Order Example Part Number - D
JIGLX20 - 20

Days to Ship 6 Days

Single Axis Actuator LX
Sensor Sets (Alterations)

■Proximity Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Proximity Sensor (Mounting Components)	Sensor Rail		Sensor (*Qty per sensor included)		Sensor Target		Code (_is sensor Qty.)	€ Unit Price (Stroke up to 150)			€ Unit Price (Stroke 200 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Mounting Screws (1 pc.)	Fixing Nuts (1 pc.)	Sensor Target (1 pc.)	Sensor Target Mounting Screws		Sensor Qty.			Sensor Qty.		
									1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX20_ _	GX-F8A (ON when near)	SENAT3_H	CBM3-6	CBSST3-8	LBNR3	- (Original)	Flat Head Screw M2.6-4 (1pc)	XA_						
	GX-F8B (ON when away)							XB_						
LX20_ _C	GX-F8A (ON when near)						CBM3-6 (2 pcs.)	FA_						
	GX-F8B (ON when away)							FB_						

■Photo Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (_is sensor Qty.)	€ Unit Price (Stroke up to 150)			€ Unit Price (Stroke 200 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		Sensor Qty.			Sensor Qty.		
											1 pc.	2 pcs.	3 Pcs.	1 pc.	pcs.	3 Pcs.
LX20_ _	PM-L24	SENAT3_H	CBM3-6	- (Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM2-6 (2 pcs.)	M2 Small Flat Washers (2 pcs.) Spring Washers (2 pcs.)	- (Original)	Flat Head Screw M2.6-4 (1pc)	SP_						
LX20_ _C									CBM3-6 (2 pcs.)	MP_						

■Photo Sensor Type (Omron Corporation) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (_is sensor Qty.)	€ Unit Price (Stroke up to 200)			€ Unit Price (Stroke 250 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		Sensor Qty.			Sensor Qty.		
											1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX20_ _	EE-SX91-R 1M	SENAT3_H	CBM3-6	- (Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	M3 Small Washers (2 pcs.)	- (Original)	Flat Head Screw M2.6-4 (1pc)	OP_						
LX20_ _C									CBM3-6 (2 pcs.)	EP_						

* Some of sensor targets and brackets are original products. For ordering the unit alone, please contact MISUMI FA Mechanical Group.
*Sensors are not sold separately. Please contact each sensor supplier for purchasing separately.

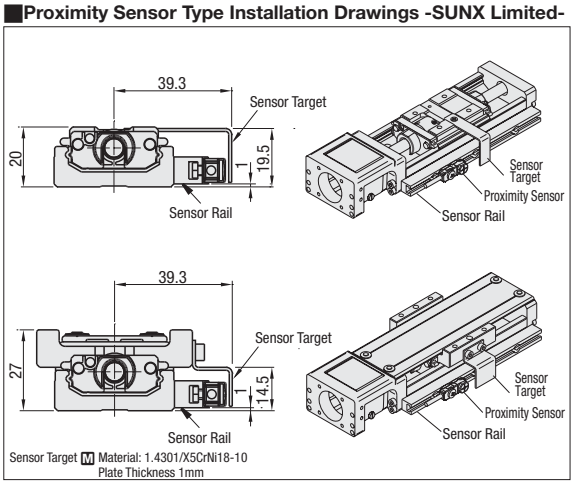
Alterations

Part Number		Block Qty.		Motor Adapter Plates		Base Overall Length (L)		(Code)
LX2001	-	B1	-	A2025	-	300	-	XA2
LX2005C	-	B1	-	A2028	-	200	-	EP3

*Sensor quantity is entered as the "Code" value.

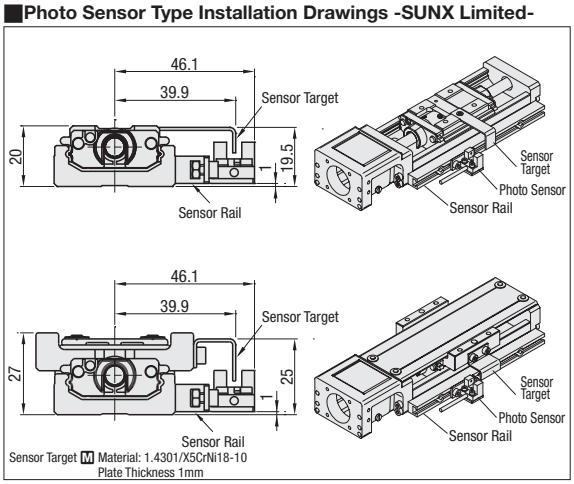
Days to Ship 8 Days

■Proximity Sensor Type Installation Drawings -SUNX Limited-



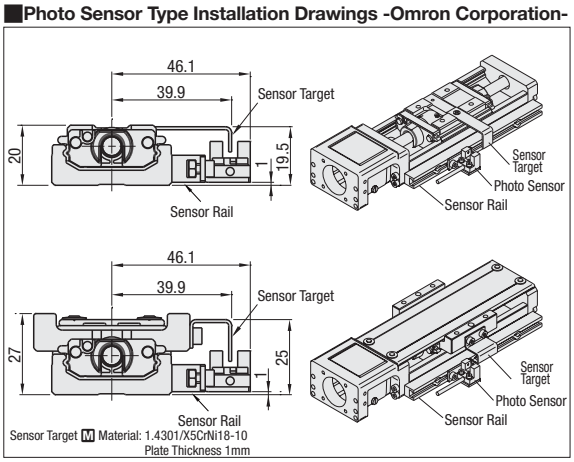
Sensor Target M Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

■Photo Sensor Type Installation Drawings -SUNX Limited-



Sensor Target M Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

■Photo Sensor Type Installation Drawings -Omron Corporation-



Sensor Target M Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

SUNX and Omron photo sensors are the same in outside dimensions.
Please access each sensor manufacture's website for the specifications of sensors in use.
Sensor specifications are not available on our catalogues.

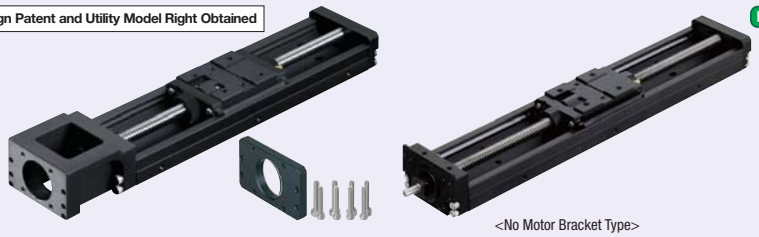
■Cautions

-Sensor set is shipped with LX Actuator.
Please assemble parts by customers.
-Please check for all included parts immediately after unpacking.
Some small parts can be lost.
Please handle the products with great care.

Single Axis Actuator LX26 Standard Type

Design Patent and Utility Model Right Obtained

RoHS



<No Motor Bracket Type>

Specifications	
LX26	
Standards	
Screw Shaft Ø (mm)	8
Lead (mm)	2, 5
Accuracy	High Grade / Precision Grade

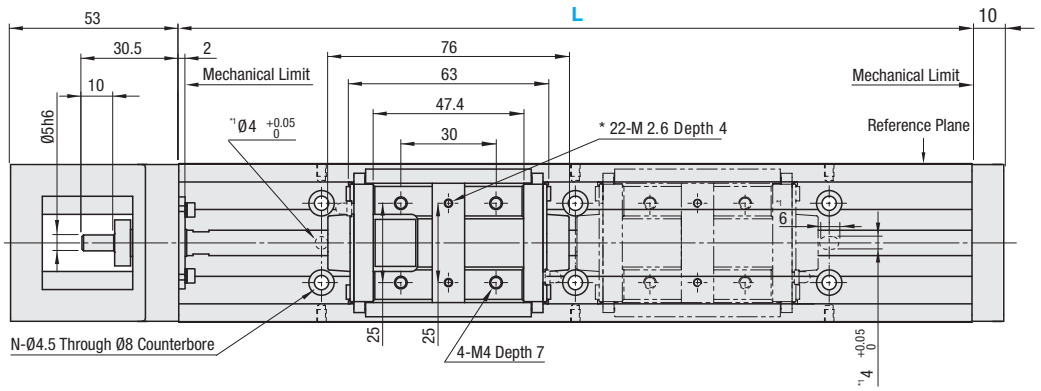
A Accessory

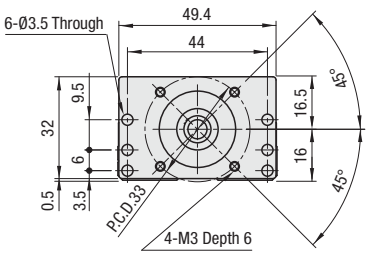
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5
S Surial Treatment: Black Anodize
(2) 4 Adapter Plate Screws
M Material: 1.4567/X3CrNiCu18-9-4
No accessory is included for No Motor Bracket Type.

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 2	LX2602	LX2602P	LX2602G	LX2602PG
Lead 5	LX2605	LX2605P	LX2605G	LX2605PG

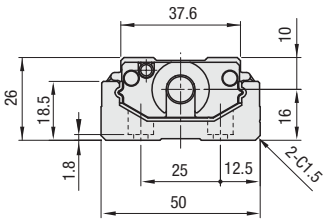
Low Particulate Generation Grease Information **P.404**

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	HRC58~62





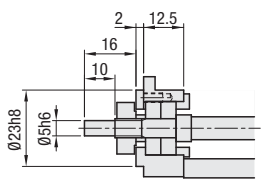
Arrow View α



Cross-section View β-β

No Motor Bracket Type

* For details of the mounting parts, **P.419**



Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
For Double Block Type, effective strokes are the values when two blocks in contact with each other.

For Double Block Type, double-dashed lined blocks are not connected with the ball screw

CAD Data

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Effective Stroke		Mounting Hole Dimensions				
High Grade	* Precision Grade				Single Block	Double Blocks	A	P	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX2602 LX2605 (Low Particulate Generation Grease) LX2602G LX2605G	(Standard Grease) LX2602P LX2605P (Low Particulate Generation Grease) LX2602PG LX2605PG	(1 pc.) B1 (2 pcs.) B2	(Servo Motors) A2625 A2628 A2638 A2640 E2640 (Stepping Motors) T2628 T2642 (Without attachment) N (Without Motor Bracket) F	100	17	-	10	80	10	1	4
				150	67	-	35	80	35	1	4
				200	117	-	20	80	20	2	6
				250	167	91	45	80	45	2	6
				300	217	141	30	80	30	3	8
				350	267	191	15	80	15	4	10
				400	317	241	40	80	40	4	10

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
* Precision Certificate is enclosed with precision grade products.
* Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.
* B1 (1 block) is the only option for Lubrication Unit MX-equipped products

■Accuracy Standards

Precision certificate is enclosed with precision grade products.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02
Backlash (mm)	0.01	0.003
Positioning Repeatability (mm)	±0.005	±0.003
Running Parallelism (mm)	0.025	0.01
Starting Torque (N • cm)	2	2

■Allowable Static Load / Moment

Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N • m)		
		Ma	Mb	Mc
1	11871	70	70	225
2	23742	902	902	450

Reference values are for a static state. For life calculation, use our technical calculation software.
For allowable static moment, please see **P.402**.

■Moment of Inertia

Base Length (L)	Moment of Inertia (kg • cm²)			
	LX2602		LX2605	
	Single Block	Double Blocks	Single Block	Double Blocks
100	0.0140	-	-	-
150	0.0155	-	0.0166	-
200	0.0169	-	0.018	-
250	0.0184	0.0186	0.0194	0.0207
300	0.0198	0.020	0.0209	0.0222
350	-	-	0.0223	0.0236
400	-	-	0.0238	0.0251

■Mass

Base Length (L)	Total Mass (kg)	
	Single Block	Double Blocks
100	0.87	-
150	0.95	-
200	1.16	-
250	1.37	1.57
300	1.58	1.78
350	1.79	1.99
400	2.00	2.20

■Maximum Velocity

Base Length (L)	Part Number	
	LX2602	LX2605
100	290	-
150	290	521
200	290	521
250	290	521
300	290	521
350	-	521
400	-	446

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A2625	25	Yasukawa Electric Corporation	10W/20W/30W
A2628	28	Mitsubishi Electric Corporation	10W/20W/30W
A2638	38	Panasonic	30W/50W/100W
E2640	40	SIEMENS	50W/100W
A2640	40	Yasukawa Electric Corporation	30W/50W
		Mitsubishi Electric Corporation	50W
		Sanyo Denki Co.,Ltd.	30W/50W
		Omron Corporation	30W/50W
		Keyence Corporation	50W/100W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T2628	28	Oriental Motor	2-phase / 5-phase / α Step
T2642	42		2-phase / 5-phase / α Step

For Motor Adapter Plate detail drawings and applicable motor model details, please see **P.419**.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX2602	-	B1	-	A2640	-	300

Days to Ship

High Grade Standard Grease LX2602 / 2605	Standard Grease Precision Grade LX2602P / 2605P	Low Particulate Generation Grease Without Motor Bracket
8 Days	10 Days	13 Days

All No Bracket products are shipped on the 13th day after order received.
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L=100 (Lead 2 Only)	L=150	L=200	L=250	L=300	L=350 (Lead 5 Only)	L=400 (Lead 5 Only)	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX26_ _-B1-_								Servo Stepping No Adapter	1	8	2
LX26_ _-B2-_									2		5
LX26_ _-B1-F								No Bracket	1		
LX26_ _-B2-F									2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
LX26_ _Series sensor sets can be specified as alterations.Alteration Details P.420

■Precision Grade / Low Particulate Generation Grease Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price

Single Axis Actuator LX26 Cover Type

Design Patent and Utility Model Right Obtained



RoHS

Specifications	
LX26	
Cover	
Screw Shaft Diameter (mm)	8
Lead (mm)	2 · 5
Accuracy	High Grade · Precision Grade

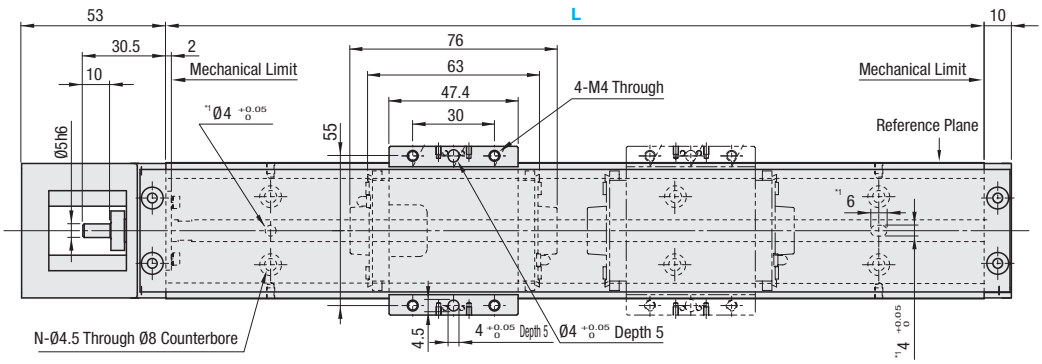
A Accessory

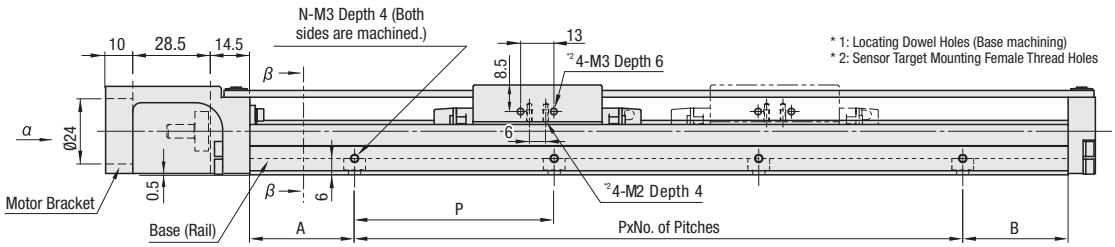
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5 S Surface Treatment: Black Anodize
(2) 4 Adapter Plate Screws M Material: 1.4567/X3CrNiCu18-9-4
※No accessory is included for No Motor Bracket Type.

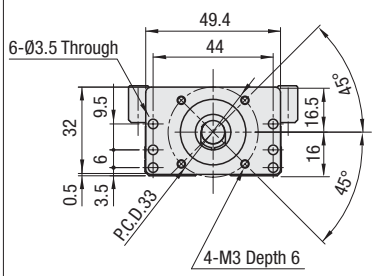
Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 2	LX2602C	LX2602CP	LX2602CG	LX2602CPG
Lead 5	LX2605C	LX2605CP	LX2605CG	LX2605CPG

※Low Particulate Generation Grease Information **P.404**

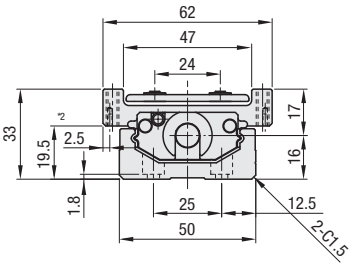
Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62





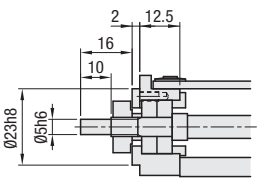


Arrow View α



Section View β-β

No Motor Bracket Type
* For details of the mounting parts, **P.419**



※Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
※For Double Block Type, effective strokes are the values when two blocks in contact with each other.

※For Double Block Type, double-dashed lined blocks are not connected with the ball screw

CAD Data

Part Number		Block Qty.	Motor	Base	Effective Stroke		Mounting Hole Dimensions				
High Grade	* Precision Grade		Attachments	Overall Length (L)	Single Block	Double Blocks	A	P	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX2602C LX2605C (Low Particulate Generation Grease) LX2602CG LX2605CG	(Standard Grease) LX2602CP LX2605CP (Low Particulate Generation Grease) LX2602CPG LX2605CPG	(1 pc.) B1 (2 pcs.) B2	(Servo Motors) A2625 A2628 A2638 A2640 E2640 (Stepping Motors) T2628 T2642 (Without attachment) N (Without Motor Bracket) F	100	17	-	10	80	10	1	4
				150	67	-	35	80	35	1	4
				200	117	-	20	80	20	2	6
				250	167	91	45	80	45	2	6
				300	217	141	30	80	30	3	8
				350	267	191	15	80	15	4	10
				400	317	241	40	80	40	4	10

■Accuracy Standards

Precision certificate is enclosed with precision grade products.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02
Backlash (mm)	0.01	0.003
Positioning Repeatability(mm)	±0.005	±0.003
Running Parallelism(mm)	0.025	0.01
Starting Torque (N • cm)	2	2

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
* Precision Certificate is enclosed with precision grade products.
* Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

■Allowable Static Load · Moment

Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N • m)		
		Ma	Mb	Mc
1	11871	70	70	225
2	23742	902	902	450

Reference values are for a static state. For life calculation, use our technical calculation software.
For allowable static moment, please see **P.402**.

■Moment of Inertia

Base Length (L)	Moment of Inertia (kg • cm²)			
	LX2602C		LX2605C	
	Single Block	Double Blocks	Single Block	Double Blocks
100	0.0141	-	-	-
150	0.0156	-	0.0173	-
200	0.017	-	0.0188	-
250	0.0185	0.0188	0.0202	0.0222
300	0.0199	0.0202	0.0216	0.0237
350	-	-	0.0231	0.0251
400	-	-	0.0245	0.0266

■Mass

Base Length (L)	Total Mass (kg)	
	Single Block	Double Blocks
100	1.07	-
150	1.15	-
200	1.36	-
250	1.57	1.89
300	1.78	2.10
350	1.99	2.31
400	2.20	2.52

■Maximum Velocity

Base Length (L)	Part Number	
	LX2602C	LX2605C
100	290	-
150	290	521
200	290	521
250	290	521
300	290	521
350	-	521
400	-	446

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A2625	25	Yasukawa Electric Corporation	10W/20W/30W
A2628	28	Mitsubishi Electric Corporation	10W/20W/30W
A2638	38	Panasonic	30W/50W/100W
E2640	40	SIEMENS	50W/100W
A2640	40	Yasukawa Electric Corporation	30W/50W
		Mitsubishi Electric Corporation	50W
		Sanyo Denki Co.,Ltd.	30W/50W
		Omron Corporation	30W/50W
		Keyence Corporation	50W/100W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T2628	28	Oriental Motor	2-phase / 5-phase / α Step
T2642	42		2-phase / 5-phase / α Step

For Motor Adapter Plate detail drawings and applicable motor model details, please see **P.419**.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX2602C	-	B1	-	A2628	-	300

Days to Ship

High Grade Standard Grease LX2602C · 2605C	Standard Grease Precision Grade LX2602CP · 2605CP	Low Particle Generation Grease- No Motor Bracket
8 Days	10 Days	13 Days

All No Bracket products are shipped on the13th day after order received.
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L=100 (Lead 2 Only)	L=150	L=200	L=250	L=300	L=350 (Lead 5 Only)	L=400 (Lead 5 Only)	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX26_ _C-B1-_								Servo Stepping No Adapter	1	8	2
LX26_ _C-B2-_									2		5
LX26_ _C-B1-F								No Bracket	1		
LX26_ _C-B2-F									2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
LX26_ _C Series sensor set can be specified as alterations.
Alteration Details **P.420**

■Precision Grade · Low Particulate Generation Grease Price Increase

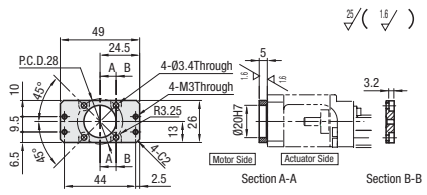
Specifications	€ Unit Price
Precision Grade	
Change to Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price

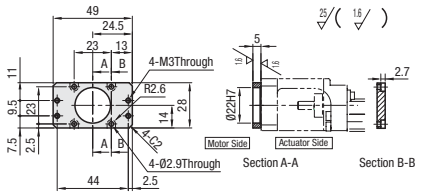
Single Axis Actuator LX26 Motor Adapter Plates / Motor Adapter Centering Tools

Note:*Marked area indicates where the Motor Adapter protrudes beyond the Rail. Special attention must be given.

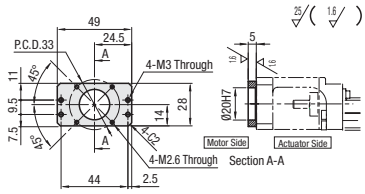
A2625
Servo
25



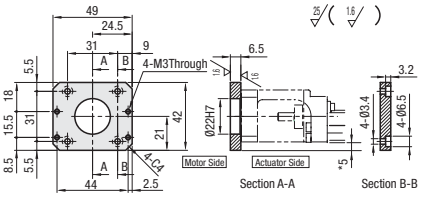
T2628
Stepping
28



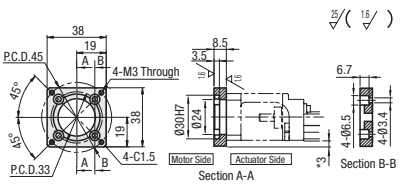
A2628
Servo
28



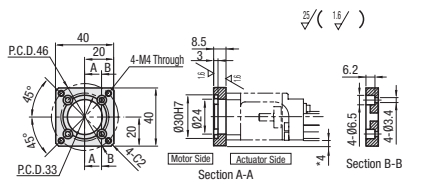
T2642
Stepping
42



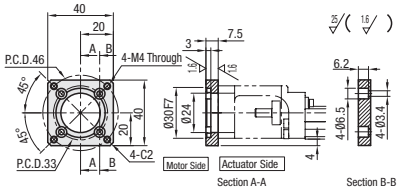
A2638
Servo
38



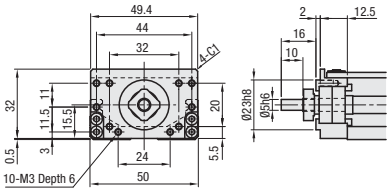
A2640
Servo
40



E2640
Servo
38



F
No Motor
Bracket Type



■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A2625	25	Yasukawa Electric Corporation	SGMMJ-A1	10W	SCXW21 (P.963) SCPW21 (P.963) MCSLC16 (P.964) MCSLC20 (P.964) CPDW19 (P.965)
			SGMMJ-A2	20W	
			SGMMJ-A3	30W	
A2628	28	Mitsubishi Electric Corporation	HC-AQ013	10W	
			HC-AQ023	20W	
			HC-AQ033	30W	
A2638	38	Panasonic	MSMD-5A	50W	SCXW21 (P.963) SCPW21 (P.963) MCSLC20 (P.964) CPDW19 (P.965)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
E2640	40	ⓟSIEMENS	1FK7011-5	50W	CPDW19 (P.963) MCSLC20 (P.964)
			1FK7015-5	100W	

■Stepping Motor Application Table

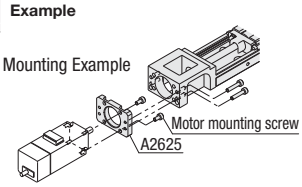
Part Number	Flange Size	Manufacturer	Product number	Type	Recommended Coupling
T2628	28	Oriental Motor	CSK22	2-phase	SCXW21(P.963) SCPW21(P.963) MCSLC16 (P.964) MCSLC20 (P.964) CPDW19 (P.965)
			CSK52	5-phase	
			ASC3*	α Step	
T2642	42		UMK24*/PK24*	2-phase	
			CSK24		
			RK54	5-phase	
			UPK54*/PK54*		
			AS46,ASC46,AR46	α Step	

Part Number	Flange Size	Manufacturer	Product number	Wattage	Recommended Coupling
A2640	40	Yasukawa Electric Corporation	SGMJV-A5	50W	SCXW21 (P.963) SCPW21 (P.963) MCSLC16 (P.964) MCSLC20 (P.964) CPDW19 (P.965)
			SGMAH-A5	50W	
			SGMAS-A5	50W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-KFS053	50W	
			HF-KP053	50W	
		Sanyo Denki Co.,Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-U03030	30W	
			R88M-U05030	50W	
		Keyence Corporation	MV-M05 (D)	50W	
			SV-M005	50W	

ⓟProduct numbers and specifications of motors are subject to change. Please check the manufactures' information.
ⓟApplicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.
ⓟShaft insert depth in coupling will be 0.5mm shorter on each side when used with Siemens motor.

Example

■Motor Mounting Example



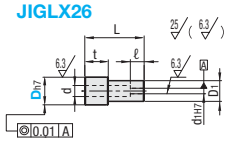
Secure included Motor Adapter to the Motor
ⓟMotor, coupling and motor mounting screws are not included.

■Motor Adapter Centering Tools



RoHS

JIGLX26

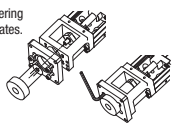


M Material: EN AW-5056/AlMg5
S Surface Treatment: White Anodize

Part Number	D	Corresponding Attachments	d	D1	d1	L	T	ℓ	€ Unit Price 1 ~ 5 pc(s).
JIGLX26	20	A2628	8	15	5	47.5	17	12	
	30	A2638/A2640	8	15	5	49.5	13	11	

Example

Please use for centering of Motor Adapter Plates.



Order Example

Part No.	-	D
JIGLX26	-	20

Days to Ship 6 Days

ⓟFor orders larger than indicated quantity, please request a quotation.

Single Axis Actuator LX26 Sensor Sets (Alterations)

■Proximity Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Proximity Sensor (Mounting Components)	Sensor Rail		Sensor (*Qty per sensor included)		Sensor Target		Code (_is sensor qty.)	€ Unit Price (Stroke up to 200) Sensor Qty.			€ Unit Price (Stroke 250 or more) Sensor Qty.		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Mounting Screws (1 pc.)	Fixing Nuts (1 pc.)	Sensor Target 1 pc.	Sensor Target Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX26_ _	GX-F8A (ON when near)	SENAT3_H	CBM3-6	CBSST3-8	LBNR3	- (Original)	Flat Head Screw M2.6-4 (1pc)	XA_						
	GX-F8B (ON when away)							XB_						
LX26_ _C	GX-F8A (ON when near)						CBM3-6 (2 pcs.)	FA_						
	GX-F8B (ON when away)							FB_						

■Photo Sensor Type (SUNX Limited-made) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (_is sensor qty.)	€ Unit Price (Stroke up to 200) Sensor Qty.			€ Unit Price (Stroke 250 or more) Sensor Qty.		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX26_ _	PM-L24	SENAT3_H	CBM3-6	- (Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM2-6 (2 pcs.)	M2 Small Flat Washers (2 pcs.) Spring Washers (2 pcs.)	- (Original)	Flat Head Screw M2.6-4 (1pc)	SP_						
LX26_ _C									CBM3-6 (2 pcs.)	MP_						

■Photo Sensor Type (Omron Corporation) -Set Part Specification-

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		Code (_is sensor qty.)	€ Unit Price (Stroke up to 200) Sensor Qty.			€ Unit Price (Stroke 250 or more) Sensor Qty.		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX26_ _	EE-SX91-R 1M	SENAT3_H	CBM3-6	- (Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	Small Flat Washers (2 pcs.)	- (Original)	Flat Head Screw M2.6-4 (1pc)	OP_						
LX26_ _C									CBM3-6 (2 pcs.)	EP_						

* Some of sensor targets and brackets are original products. For ordering the unit alone, please contact MISUMI FA Mechanical Group.
* Sensors are not sold separately. Please contact each sensor supplier for purchasing separately.

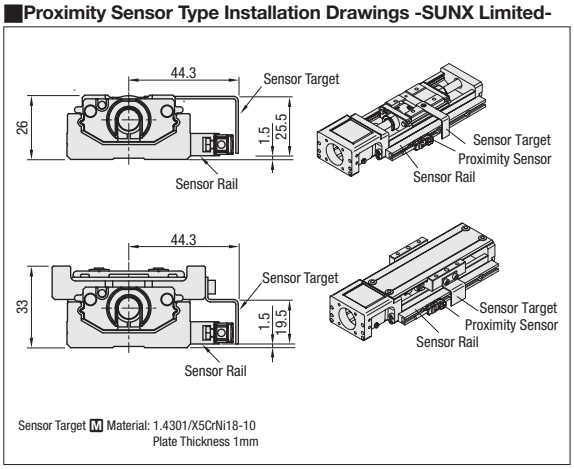
Alterations

Part Number		Block Qty.		Motor Adapter Plates		Base Overall Length (L)		(Code)
LX2602	-	B1	-	A2628	-	400	-	SP2
LX2605C	-	B1	-	A2638	-	200	-	MP2

*Sensor quantity is entered as the "Code" value.

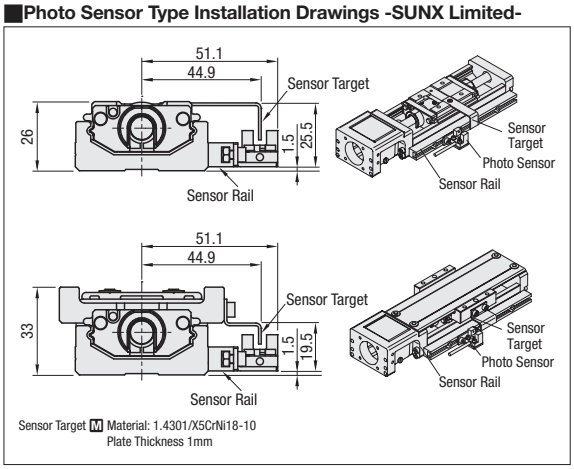
Days to Ship 13 Days

■Proximity Sensor Type Installation Drawings -SUNX Limited-



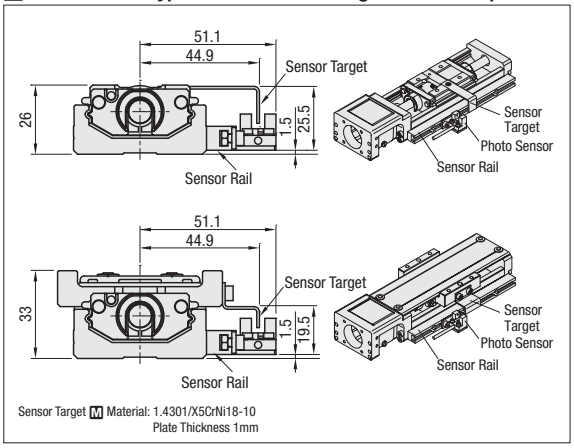
Sensor Target Ⓜ Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

■Photo Sensor Type Installation Drawings -SUNX Limited-



Sensor Target Ⓜ Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

■Photo Sensor Type Installation Drawings -Omron Corporation-



Sensor Target Ⓜ Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

Ⓟ SUNX and Omron photo sensors are the same in outside dimensions.
Ⓟ Please access each sensor manufacture's website for the specifications of sensors in use. Sensor specifications are not available on our catalogues.

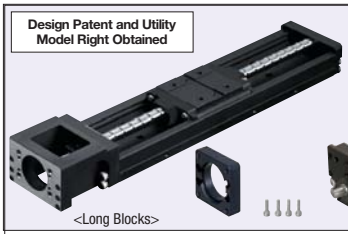
■Cautions

-Sensor set is shipped with LX Actuator.
Please assemble parts by customers.
-Please check for all included parts immediately after unpacking.
Some small parts can be lost. Please handle the products with great care.

Single Axis Actuator LX30 Standard Type

Design Patent and Utility Model Right Obtained

RoHS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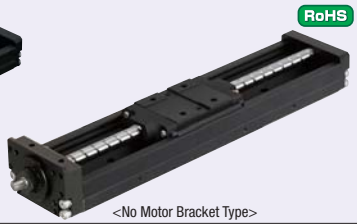

<No Motor Bracket Type>

Specifications	
LX30	
Standards	
Screw Shaft Diameter (mm)	10
Lead (mm)	5 · 10
Accuracy	High Grade · Precision Grade
A Accessory	

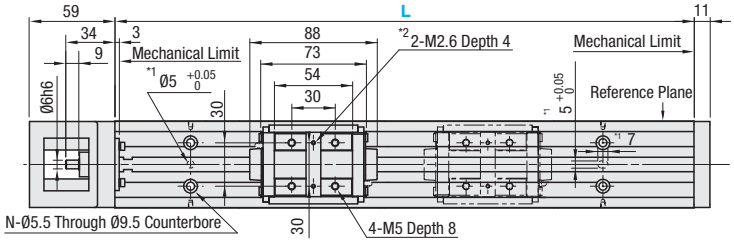
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5 S Surial Treatment: Black Anodize
(2) 4 Adapter Plate Screws M Material: 1.4567/X3CrNiCu18-9-4
No accessory is included for No Motor Bracket Type.

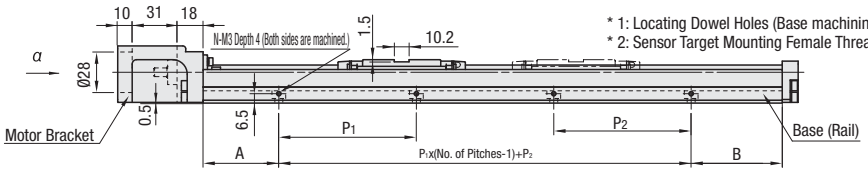
Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 5	LX3005	LX3005P	LX3005G	LX3005PG
Lead 10	LX3010	LX3010P	LX3010G	LX3010PG

Low Particulate Generation Grease Information P.404

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	HRC58~62

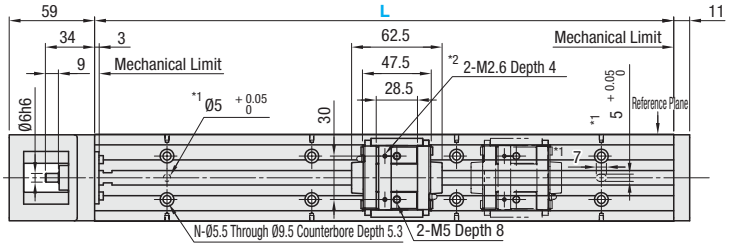
Long Blocks

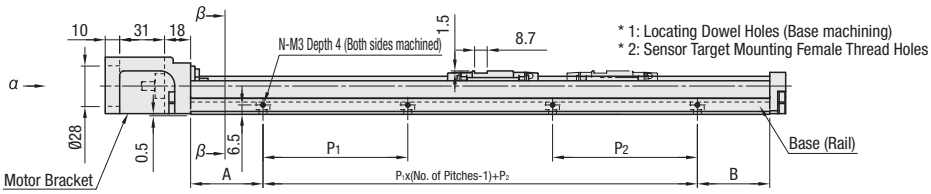




* 1: Locating Dowel Holes (Base machining)
* 2: Sensor Target Mounting Female Thread Holes

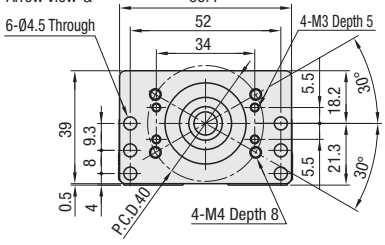
Short Blocks



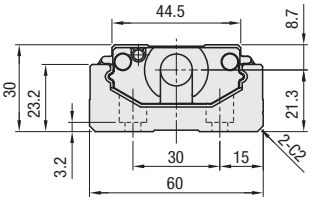


* 1: Locating Dowel Holes (Base machining)
* 2: Sensor Target Mounting Female Thread Holes

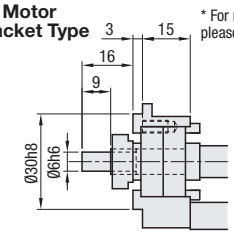
Arrow View α



Section View β-β



No Motor Bracket Type



* For mounting details, please see P.425.

Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
For Double Block Type, effective strokes are the values when two blocks in contact with each other.

For Double Block Type, double-dashed lined blocks are not connected with the ball screw

CAD Data

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Mounting Hole Dimensions					
High Grade	* Precision Grade				A	P_1	P_2	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX3005 LX3010 (Low Particulate Generation Grease) LX3005G LX3010G	(Standard Grease) LX3005P LX3010P (Low Particulate Generation Grease) LX3005PG LX3010PG	Long Blocks (1 pc.)B1 (2 pcs.)B2 ※For B2 L≥300 Short Blocks (1 pc.)S1 (2 pcs.)S2	(Servo) A3038 A3040 E3040 (Stepping) T3042 T3056.4 T3060 (Without attachment) N (Without Motor Bracket) F	125	12.5	-	100	12.5	1	4
				150	25	-	100	25	1	4
				200	50	-	100	50	1	4
				250	50	100	50	50	2	6
				300	50	100	100	50	2	6
				350	50	100	50	50	3	8
				400	50	100	100	50	3	8
				450	50	100	50	50	4	10
				500	50	100	100	50	4	10
				550	50	100	50	50	5	12
				600	50	100	100	50	5	12

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
* Precision Certificate is enclosed with precision grade products.
* No Attachment Type consists of an actuator and bracket. Please note that it is different from No Motor Bracket Type.

■Accuracy Standards

※Precision certificate is enclosed with precision grade products.

Accuracy Standards	Up to L=400		L=400 or more	
	High Grade	Precision Grade	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02	0.1	0.025
Backlash (mm)	0.02	0.003	0.02	0.003
Positioning Repeatability(mm)	±0.005	±0.003	±0.005	±0.003
Running Parallelism(mm)	0.025	0.01	0.035	0.015
Starting Torque (N · cm)	4			

■Allowable Static Load / Moment

Block Types	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m)		
			Ma	Mb	Mc
Long Block	B1	17218	126	126	387
	B2	34436	1515	1515	774
Short Block	S1	9271	63	63	208
	S2	18542	579	579	417

※Reference values are for a static state. Please use our Technical Calculation Software for life calculations.
※For allowable static moment, please see **P.402**.

■Effective Stroke · Moment of Inertia · Mass

Base Length (L)	Effective Stroke LX30_ _ _				Moment of Inertia (kg · cm²) LX3005				LX3010				Total Mass (kg) LX30_ _ _			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
125	29	-	54.5	-	0.0436	-	0.0428	-	-	-	-	-	1.30	-	1.18	-
150	54	-	79.5	17	0.0454	-	0.0446	0.0474	0.0513	-	0.0482	0.0591	1.47	-	1.35	1.53
200	104	-	129.5	67	0.0491	-	0.0483	0.0494	0.055	-	0.0518	0.0564	1.81	-	1.68	1.86
250	154	-	179.5	117	0.0528	-	0.052	0.0531	0.0587	-	0.0555	0.0601	2.14	-	2.02	2.2
300	204	116	229.5	167	0.0565	0.0584	0.0557	0.0568	0.0624	0.0702	0.0592	0.0638	2.48	2.79	2.35	2.53
350	254	166	279.5	217	0.0602	0.0621	0.0594	0.0605	0.0661	0.0739	0.0629	0.0675	2.81	3.12	2.69	2.87
400	304	216	329.5	267	0.0638	0.0658	0.063	0.0642	0.0698	0.0776	0.0666	0.0712	3.15	3.46	3.02	3.21
450	354	266	379.5	317	0.0675	0.0695	0.0667	0.0679	0.0735	0.0812	0.0703	0.0749	3.49	3.79	3.36	3.54
500	404	316	429.5	367	0.0712	0.0732	0.0704	0.0716	0.0772	0.0849	0.074	0.0785	3.82	4.13	3.7	3.88
550	454	366	479.5	417	0.0749	0.0768	0.0741	0.0753	0.0808	0.0886	0.0777	0.0822	4.16	4.47	4.03	4.21
600	504	416	529.5	467	0.0786	0.0805	0.0778	0.0789	0.0845	0.0923	0.0813	0.0859	4.49	4.8	4.37	4.55

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A3038	38	Panasonic	30W/50W/100W
A3040	40	Yasukawa Electric Corporation	30W/50W/100W
		Mitsubishi Electric Corporation	50W/100W
		Sanyo Denki Co.,Ltd.	30W/50W/100W
		Omron Corporation	30W/50W/100W
		Keyence Corporation	50W/100W
E3040	40	SIEMENS	30W/50W/100W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T3042	42	Oriental Motor	2-phase / 5-phase / α Step
T3056.4	56.4		2-phase / 5-phase / α Step
T3060	60		2-phase / 5-phase / α Step

※For Motor Adapter Plate detail drawings and compatible Motor details,**P.425**

■Maximum Velocity

Max. Velocity (mm/s)	L125~L450	L460~L500	L510~L550	L560~L600
LX3005_	410	370	300	250
LX3010_	830	740	600	500

※The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX3010	-	B1	-	A3040	-	600

Days to Ship

High Grade Standard Grease LX3005 · 3010: **8 Days**

Standard GreasePrecision Grade LX3005P · 3010P: **10 Days**

Low Particle Generation Grease-No Motor Bracket: **13 Days**

※All No Bracket products are shipped on the 13th day after order received.
※For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L=125 (Lead 5 Only)	L=150	L=200	L=250	L=300	L=350	L=400	L=450	L=500	L=550	L=600	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX30_ _-B1/S1-_												Servo Stepping No Adapter	1	10	5
LX30_ _-B2/S2-_													2		
LX30_ _-B1/S1-F												No Bracket	1		10
LX30_ _-B2/S2-F													2		

■Precision Grade · Low Particulate Generation Grease Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

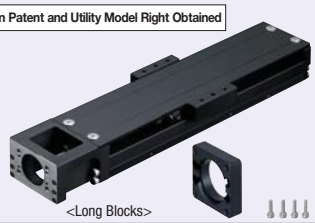
※Listed Price + € Unit Price = Product Price

※For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
※LX30_ _Series sensor set can be specified as an alteration.
Alteration Details **P.426**

Single Axis Actuator LX30 Cover Type

Design Patent and Utility Model Right Obtained

RoHS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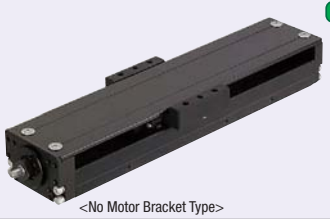
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Specifications	
LX30	
Cover	
Screw Shaft Diameter (mm)	10
Lead (mm)	5, 10
Accuracy	High Grade / Precision Grade

A Accessory

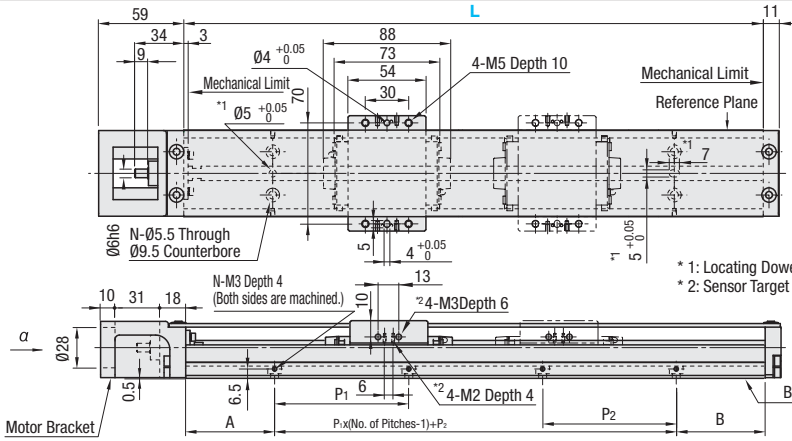
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5
S Surial Treatment: Black Anodize
(2) 4 Adapter Plate Screws M Material: 1.4567/X3CrNiCu18-9-4
No accessory is included for No Motor Bracket Type.

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 5	LX3005C	LX3005CP	LX3005CG	LX3005CPG
Lead 10	LX3010C	LX3010CP	LX3010CG	LX3010CPG

Low Particulate Generation Grease Information **P.404**

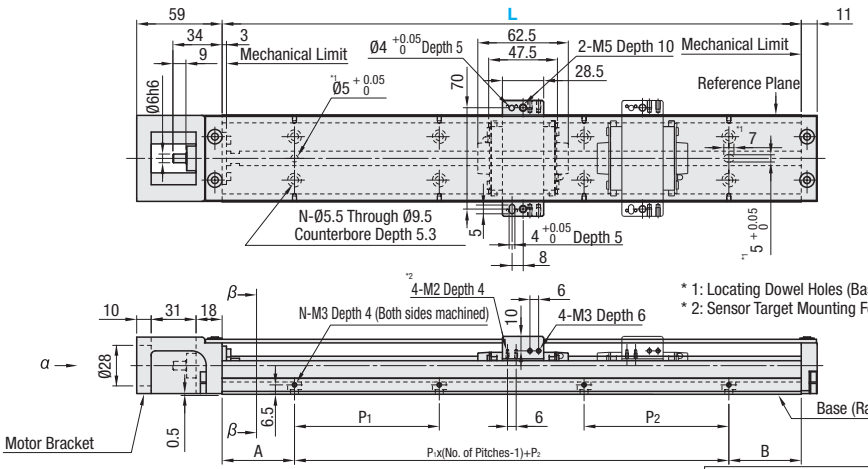
Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62

Long Blocks

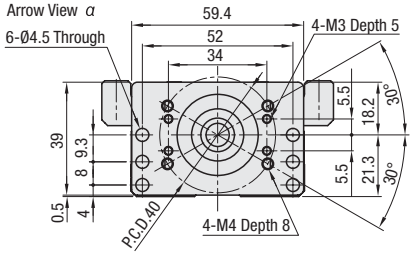


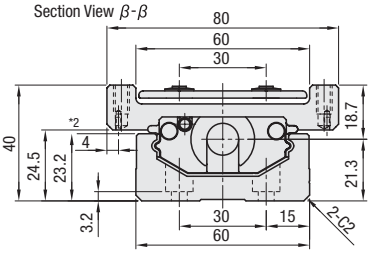
* 1: Locating Dowel Holes (Base machining)
* 2: Sensor Target Mounting Female Thread Holes

Short Blocks



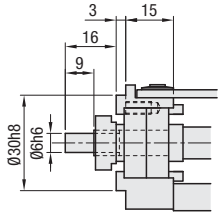
* 1: Locating Dowel Holes (Base machining)
* 2: Sensor Target Mounting Female Thread Holes





No Motor Bracket Type

* For mounting details, please see P.425.



Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
For Double Block Type, effective strokes are the values when two blocks in contact with each other.
For Double Block Type, double-dashed lined blocks are not connected with the ball screw

CAD Data

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Mounting Hole Dimensions					
High Grade	* Precision Grade				A	P_1	P_2	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX3005C LX3010C	(Standard Grease) LX3005CP LX3010CP	Long Blocks (1 pc.)B1 (2 pcs.)B2 For B2 L≥300	(Servo) A3038 A3040 E3040	125	12.5	-	100	12.5	1	4
				150	25	-	100	25	1	4
				200	50	-	100	50	1	4
				250	50	100	50	50	2	6
			(Stepping) T3042 T3056.4 T3060	300	50	100	100	50	2	6
				350	50	100	50	50	3	8
				400	50	100	100	50	3	8
				450	50	100	50	50	4	10
			(Without attachment) N	500	50	100	100	50	4	10
			(Without Motor Bracket) F	550	50	100	50	50	5	12
(Low Particulate Generation Grease) LX3005CG LX3010CG	(Low Particulate Generation Grease) LX3005CPG LX3010CPG	Short Blocks (1 pc.)S1 (2 pcs.)S2		600	50	100	100	50	5	12

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends. * Precision Certificate is enclosed with precision grade products.
* No Attachment Type consists of an actuator and bracket. Please note that it is different from No Motor Bracket Type.

Accuracy Standards

Precision certificate is enclosed with precision grade products.

Accuracy Standards	Up to L=400		L=400 or more	
	High Grade	Precision Grade	High Grade	Precision Grade
Positioning Accuracy (mm)	0.06	0.02	0.1	0.025
Backlash (mm)	0.02	0.003	0.02	0.003
Positioning Repeatability(mm)	±0.005	±0.003	±0.005	±0.003
Running Parallelism(mm)	0.025	0.01	0.035	0.015
Starting Torque (N · cm)	4			

Allowable Static Load · Moment

Block Types	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m)		
			Ma	Mb	Mc
Long Block	B1	17218	126	126	387
	B2	34436	1515	1515	774
Short Block	S1	9271	63	63	208
	S2	18542	579	579	417

Reference values are for a static state. Please use our Technical Calculation Software for life calculations.
For allowable static moment, please see P.402.

Effective Stroke · Moment of Inertia · Mass

Base Length (L)	Effective Stroke LX30__C				Moment of Inertia (kg · cm²) LX3005C				Moment of Inertia (kg · cm²) LX3010C				Total Mass (kg) LX30__C			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
125	29	-	54.5	-	0.0452	-	0.0436	-	-	-	-	-	1.75	-	1.50	-
150	54	-	79.5	17	0.0471	-	0.0455	0.0475	0.0579	-	0.516	0.0596	1.92	-	1.67	1.98
200	104	-	129.5	67	0.0507	-	0.0492	0.0512	0.0616	-	0.0553	0.0633	2.25	-	2	2.32
250	154	-	179.5	117	0.0544	-	0.0528	0.0548	0.0653	-	0.059	0.067	2.59	-	2.34	2.66
300	204	116	229.5	167	0.0581	0.0617	0.0565	0.0585	0.069	0.0833	0.0626	0.0707	2.92	3.49	2.67	2.99
350	254	166	279.5	217	0.0618	0.0654	0.0602	0.0622	0.0727	0.087	0.0663	0.0743	3.26	3.83	3.01	3.33
400	304	216	329.5	267	0.0655	0.0691	0.0639	0.0659	0.0764	0.0907	0.07	0.078	3.6	4.16	3.35	3.66
450	354	266	379.5	317	0.0692	0.0728	0.0676	0.0696	0.08	0.0944	0.0737	0.0817	3.93	4.5	3.68	4
500	404	316	429.5	367	0.0729	0.0764	0.0713	0.0733	0.0837	0.0981	0.0774	0.0854	4.27	4.83	4.02	4.33
550	454	366	479.5	417	0.0765	0.0801	0.075	0.077	0.0874	0.1018	0.0811	0.0891	4.6	5.17	4.35	4.67
600	504	416	529.5	467	0.0802	0.0838	0.0787	0.0807	0.0911	0.1054	0.0848	0.0928	4.94	5.51	4.69	5.01

Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A3038	38	Panasonic	30W/50W/100W
A3040	40	Yasukawa Electric Corporation	30W/50W/100W
		Mitsubishi Electric Corporation	50W/100W
		Sanyo Denki Co.,Ltd.	30W/50W/100W
		Omron Corporation	30W/50W/100W
		Keyence Corporation	50W/100W
E3040	40	SIEMENS	30W/50W/100W

Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T3042	42	Oriental Motor	2-phase / 5-phase / α Step
T3056.4	56.4		2-phase / 5-phase / α Step
T3060	60		2-phase / 5-phase / α Step

For Motor Adapter Plate detail drawings and compatible Motor details, P.425

Maximum Velocity

Max. Velocity (mm/s)	L150~L450	L460~L500	L510~L550	L560~L600
LX3005__	410	370	300	250
LX3010__	830	740	600	500

The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX3010C	-	B1	-	A3040	-	600

Price

Precision Grade / Low Particulate Generation Grease Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price

Days to Ship

High Grade Standard Grease LX3005C · 3010C	Standard Grease Precision Grade LX3005CP · 3010CP	Low Particle Generation Grease- No Motor Bracket
8 Days	10 Days	13 Days

All No Bracket products are shipped on the 13th day after order received.
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

High Grade € Unit Price 1 ~ 2 pc(s).

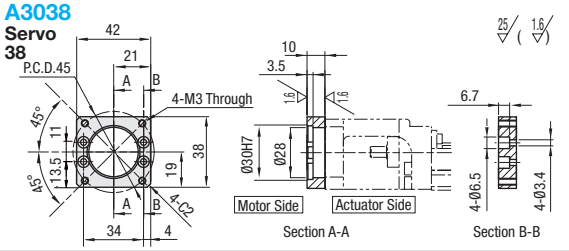
Part Number	L=125 (Lead 5 Only)	L=150	L=200	L=250	L=300	L=350	L=400	L=450	L=500	L=550	L=600	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX30__C-B1/S1-_												Servo Stepping No Adapter	1	10	5
LX30__C-B2/S2-_													2		
LX30__C-B1/S1-F												No Bracket	1		10
LX30__C-B2/S2-F													2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
LX30__C Series sensor set can be specified as an alteration. Alteration Details P.426

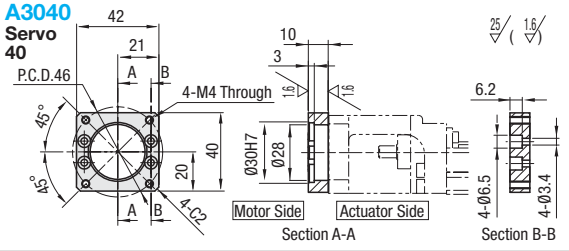
Single Actuator LX30 Motor Adapter Plates / Motor Adapter Centering Tools

Note:*Marked area indicates where the Motor Adapter protrudes beyond the Rail. Special attention must be given..

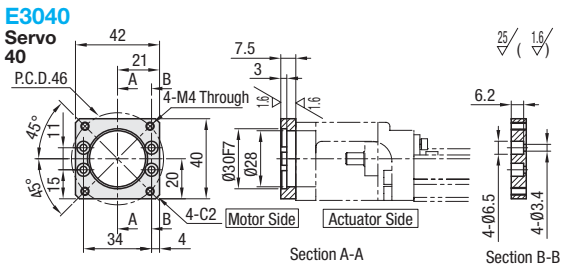
A3038
Servo 38



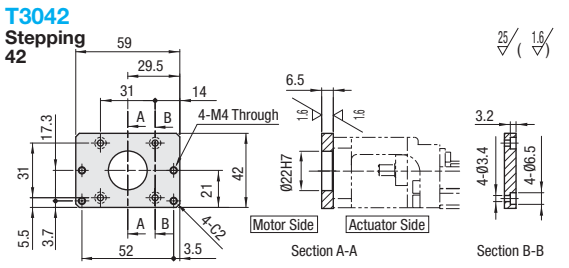
A3040
Servo 40



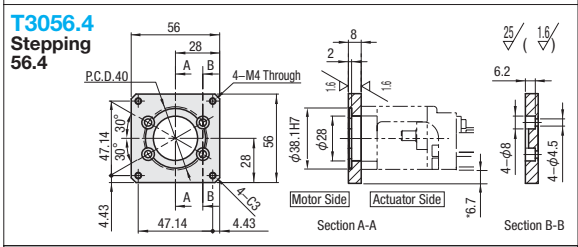
E3040
Servo 40



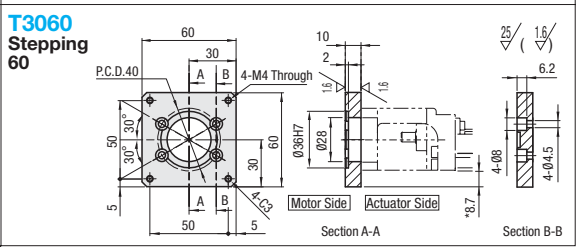
T3042
Stepping 42



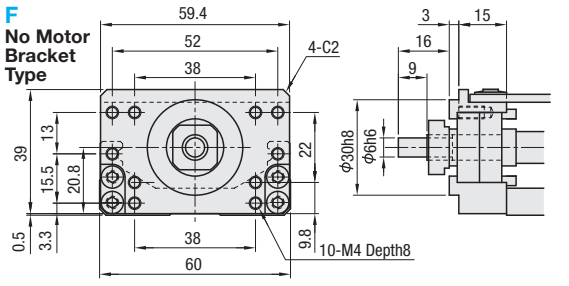
T3056.4
Stepping 56.4



T3060
Stepping 60



F
No Motor Bracket Type



Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.
For standard details, please see P.421 to 424.

Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Product number	Wattage	Recommended Couplings
A3038	38	Panasonic	MSMD-5A	50W	SCXW21 (P.963) SCPW21 (P.963) MCSLC20 (P.964) CPDW19 (P.965)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
A3040	40	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5	50W	
			SGMAH-01	100W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-MFS13	100W	
		Sanyo Denki Co.,Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
			Q1AA04010D	100W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-W10030	100W	
		Keyence Corporation	MV-M05 / SV-M005	50W	
			MV-M10 / SV-M010	100W	
E3040	40	SIEMENS	1FK7011-5	50W	MCSLC25(P.964) CPDW25(P.965)
			1FK7015-5	100W	

Shaft length in coupling will be 0.5mm shorter on each side when used with Siemens motor.

Stepping Motor Application Table

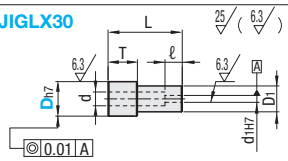
Part Number	Flange Size	Manufacturer	Product number	Type	Recommended Coupling
T3042	42	Oriental Motor	UMK24*/PK24*	2-phase	SCXW21 (P.963) SCPW21 (P.963) MCSLC20 (P.964) CPDW19 (P.965)
			UPK54*/PK54*	5-phase	
			AS46,ASC46,AR46	α Step	
T3056.4	56.4		UMK26*/PK26*	2-phase	
T3060	60		UPK56*/PK56*	5-phase	
			AS6*,ASC66,AR66	α Step	

Motor Adapter Centering Tools



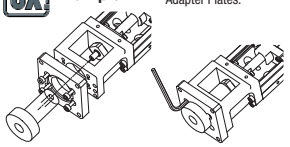
RoHS

JIGLX30



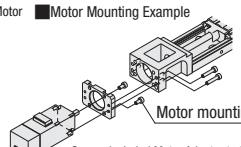
M Material: EN AW-5056/AlMg5
S Surface Treatment: White Anodize

Example



Please use for centering of Motor Adapter Plates.

Motor Mounting Example



Secure included Motor Adapter to the Motor
Motor, coupling and motor mounting screws are not included.

Part Number	D	Corresponding Attachments	d	D1	d1	L	T	ℓ	€ Unit Price 1 ~ 5 pc(s).
JIGLX30	30	A3038/A3040	10	20	6	52.5	13	10	
	38.1	T3056.4	10	20	6	51	12	10	
	36	T3060	10	20	6	53	12	10	

Order Example: Part Number - D → JIGLX30 - 30

Days to Ship: 6 Days

Single Axis Actuator LX30 Sensor Sets (Alterations)

■Proximity Sensor Type (SUNX Limited-made) -Set Part Specification-

When L=250 · 350 · 450 or 550, mounting orientations are as the drawing below.

LX Part Numbers	Proximity Sensor	Sensor Rail		Sensor (*Qty per sensor included)		Sensor Target		code (_ is the no. of pcs.)	€ Unit Price (Stroke up to 300)			€ Unit Price (Stroke 350 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Mounting Screws (1 pc.)	Fixing Nuts (1 pc.)	Sensor Target 1 pc.	Mounting Screws		Sensor Qty.			Sensor Qty.		
									1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX30_ _-B_	GX-F12A (ON when near)	SENC3_H	CBM3-6	CBSST3-8	LBNR3	-(Original)	Flat Head Screw M2.6-4 (1pc)	XA_						
	GX-F12B (ON when away)							XB_						
LX30_ _-S_	GX-F12A (ON when near)							XAS_						
	GX-F12B (ON when away)							XBS_						
LX30_ _C-B_	GX-F12A (ON when near)	SENAT3_H					CBM3-6 (2 pcs.)	FA_						
	GX-F12B (ON when away)							FB_						
LX30_ _C-S_	GX-F12A (ON when near)							FAS_						
	GX-F12B (ON when away)							FBS_						

■Photo Sensor Type (SUNX Limited-made) -Set Part Specification-

When L=250 · 350 · 450 or 550, mounting orientations are as the drawing below.

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		code (_ is the no. of pcs.)	€ Unit Price (Stroke up to 300)			€ Unit Price (Stroke 350 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		Sensor Qty.			Sensor Qty.		
											1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX30_ _-B_	PM-L24	SENC3_H	CBM3-6	-(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM2-6 (2 pcs.)	M2 Small Flat Washers (2 pcs.) Spring Washers (2 pcs.)	-(Original)	Flat Head Screw M2.6-4 (1pc)	SP_						
LX30_ _-S_										SPS_						
LX30_ _C-B_		SENAT3_H							CBM3-6 (2 pcs.)	MP_						
LX30_ _C-S_										MPS_						

■Photo Sensor Type (Omron Corporation) -Set Part Specification-

When L=250 · 350 · 450 or 550, mounting orientations are as the drawing below.

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor (*Qty per sensor included)				Sensor Target		code (_ is the no. of pcs.)	€ Unit Price (Stroke up to 300)			€ Unit Price (Stroke 350 or more)		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		Sensor Qty.			Sensor Qty.		
											1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX30_ _-B_	EE-SX91-R 1M	SENC3_H	CBM3-6	-(Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	M3 Small Washers (2 pcs.)	-(Original)	Flat Head Screw M2.6-4 (1pc)	OP_						
LX30_ _-S_										OPS_						
LX30_ _C-B_		SENAT3_H							CBM3-6 (2 pcs.)	EP_						
LX30_ _C-S_										EPS_						

* Some of sensor targets and brackets are original products. For ordering the unit alone, please contact MISUMI FA Mechanical Group.
*Sensors are not sold separately. Please contact each sensor supplier for purchasing separately.

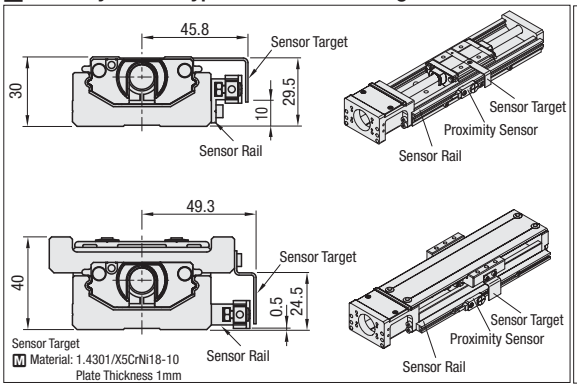
Alterations

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)	-	(Code)
LX3010	-	B1	-	A3040	-	600	-	XA2
LX3005	-	B1	-	A3040	-	600	-	SPS3

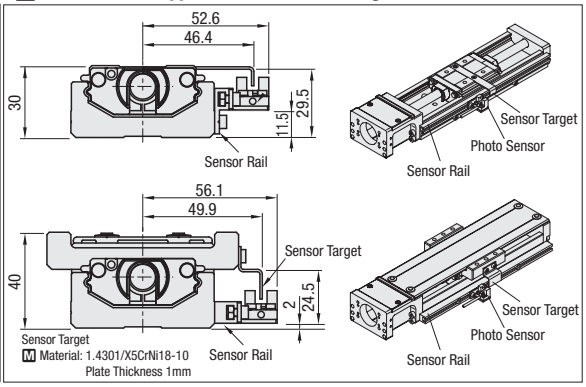
*Sensor quantity is entered as the "Code" value.

Days to Ship: 13 Days

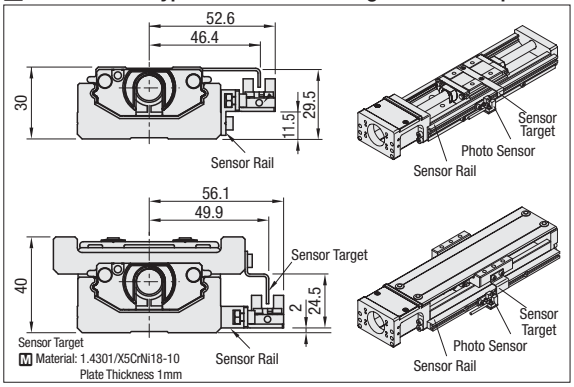
■Proximity Sensor Type Installation Drawings -SUNX Limited-



■Photo Sensor Type Installation Drawings -SUNX Limited-



■Photo Sensor Type Installation Drawings -Omron Corporation-



SUNX and Omron photo sensors are the same in outside dimensions.
Please access each sensor manufacture's website for the specifications of sensors in use.
Sensor specifications are not available on our catalogues.

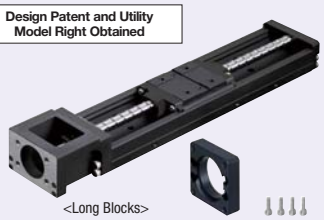
■Cautions

-Sensor set is shipped with LX Actuator.
Please assemble parts by customers.
-Please check for all included parts immediately after unpacking.
Some small parts can be lost.
Please handle the products with great care.

Single Axis Actuator LX45 Standard Type

Design Patent and Utility Model Right Obtained

RoHS



<Long Blocks>



<No Motor Bracket Type>

Specifications	
LX45	
Standards	
Screw Shaft Diameter (mm)	15
Lead (mm)	10, 20
Accuracy	High Grade / Precision Grade

AAccessory

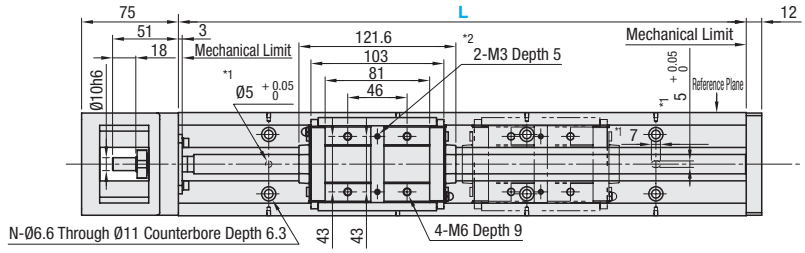
(1) Motor Adapter Plate
M Material: EN AW-5052/AlMg2,5
S Surface Treatment: Black Anodize
(2) 4 Adapter Plate Screws
M Material: 1.4567/X3CrNiCu18-9-4
No accessory is included for No Motor Bracket Type.

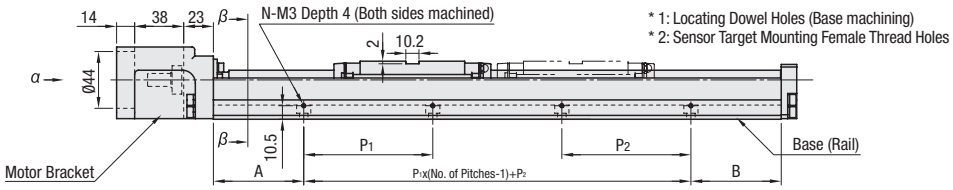
Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 10	LX4510	LX4510P	LX4510G	LX4510PG
Lead 20	LX4520	LX4520P	LX4520G	LX4520PG

Low Particulate Generation Grease Information **P.404**

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Stopper	Precision Ball Screw (ground)
MMaterial	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	NBR	1.7242/16CrMo4
SSurface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	-	-
HHardness	Induction Hardening HRC58~64	HRC58~62	-	-	-	HRC58~62

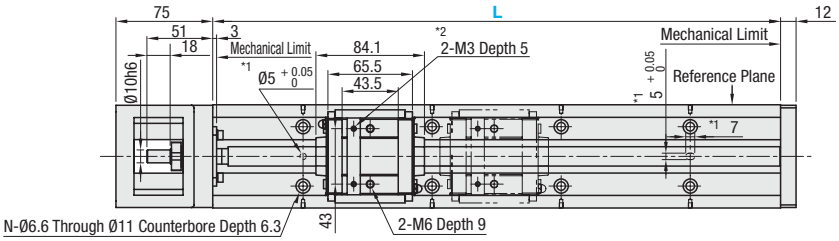
Long Blocks

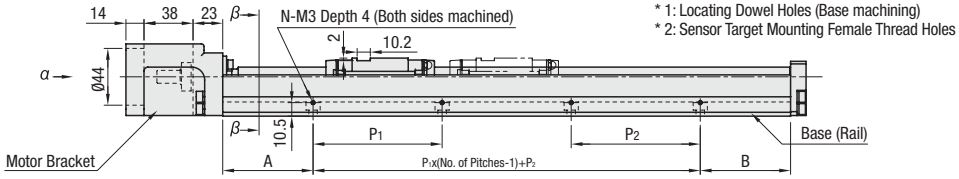




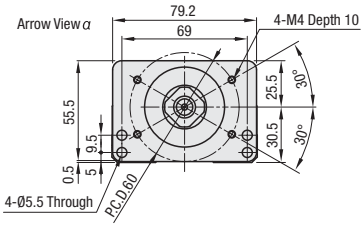
* 1: Locating Dowel Holes (Base machining)
* 2: Sensor Target Mounting Female Thread Holes

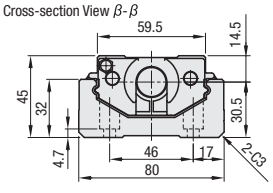
Short Blocks



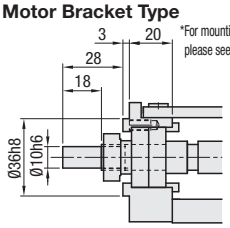


* 1: Locating Dowel Holes (Base machining)
* 2: Sensor Target Mounting Female Thread Holes





No Motor Bracket Type



*For mounting details, please see **P.431.**

Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
For Double Block Type, effective strokes are the values when two blocks in contact with each other.
For Double Block Type, double-dashed lined blocks are not connected with the ball screw.

CAD Data

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Mounting Hole Dimensions					
High Grade	*Precision Grade				A	P_1	P_2	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX4510 LX4520	(Standard Grease) LX4510P LX4520P	Long Blocks (1 pc.) B1 (2 pcs.) B2	(Servo) A4538 A4540 MA4560 A4560 E4540 E4555	340	70	100	100	70	2	6
				390	70	100	50	70	3	8
(Low Particulate Generation Grease) LX4510G LX4520G	(Low Particulate Generation Grease) LX4510PG LX4520PG	Short Blocks (1 pc.) S1 (2 pcs.) S2	(Stepping) T4560	440	70	100	100	70	3	8
			(Without Attachment) N	490	70	100	50	70	4	10
				540	70	100	100	70	4	10
			(Without Motor Bracket) F	590	70	100	50	70	5	12

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
* Precision Certificate is enclosed with precision grade products.
* Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

■Accuracy Standards

Precision certificate is enclosed with precision grade products.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (mm)	0.1	0.025
Backlash (mm)	0.02	0.003
Positioning Repeatability (mm)	±0.005	±0.003
Running Parallelism (mm)	0.035	0.015
Starting Torque (N · cm)	10	

■Allowable Static Load · Moment

Block Types	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m)		
			Ma	Mb	Mc
Long Block	B1	32441	291	291	972
	B2	64882	3945	3945	1944
Short Block	S1	17175	145	145	515
	S2	34350	1444	1444	1029

Reference values are for a static state. Please use our Technical Calculation Software for life calculations.
For allowable static moment, please see P.402.

■Effective Stroke · Moment of Inertia · Mass

Base Length (L)	Effective Stroke LX45_ _ _				Moment of Inertia (kg · cm²) LX4510				Moment of Inertia (kg · cm²) LX4520				Total Mass (kg) LX45_ _ _			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
340	210.4	88.8	247.9	163.8	0.2528	0.2762	0.2429	0.2565	0.3242	0.4179	0.2847	0.3389	5.77	6.69	5.37	5.91
390	260.4	138.8	297.9	213.8	0.2723	0.2957	0.2624	0.276	0.3437	0.4374	0.3042	0.3584	6.37	7.29	5.98	6.51
440	310.4	188.8	347.9	263.8	0.2918	0.3152	0.282	0.2955	0.3632	0.4569	0.3237	0.3779	6.97	7.9	6.58	7.11
490	360.4	238.8	397.9	313.8	0.3113	0.3347	0.3015	0.315	0.3827	0.4764	0.3432	0.3974	7.57	8.5	7.18	7.71
540	410.4	288.8	447.9	363.8	0.3308	0.3543	0.321	0.3345	0.4022	0.4959	0.3627	0.4169	8.18	9.1	7.78	8.31
590	460.4	338.8	497.9	413.8	0.3503	0.3738	0.3405	0.354	0.4217	0.5154	0.3823	0.4364	8.78	9.7	8.39	8.92

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A4538	38	Panasonic	30W/50W/100W
A4540	40	Yasukawa Electric Corporation	30W/50W/100W
		Mitsubishi Electric Corporation	50W/100W
		Sanyo Denki Co.,Ltd.	30W/50W/100W
		Omron Corporation	30W/50W/100W
		Keyence Corporation	50W/100W
MA4560	60	Panasonic	100W/200W/300W
A4560	60	Yasukawa Electric Corporation	200W/400W
		Mitsubishi Electric Corporation	200W/400W
		Sanyo Denki Co.,Ltd.	200W/400W
		Omron Corporation	200W/400W
		Keyence Corporation	200W/400W

Part Number	Flange Size	Manufacturer	Wattage
E4540	40	SIEMENS	50W/100W
E4555	55	SIEMENS	380W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T4560	60	Oriental Motor	5-phase / α Step

For Motor Adapter Plate detail drawings and compatible Motor details, P.431

■Maximum Speed

	Max. Velocity (mm/s)
LX4510_	550
LX4520_	1110

The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX4510	-	B1	-	A4540	-	540

Days to Ship

High Grade Standard Grease LX4510 · 4520	Standard Grease Precision Grade LX4510P · 4520P	Low Particle Generation Grease- No Motor Bracket
8 Days	10 Days	13 Days

All No Bracket products are shipped on the 13th day after order received.
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

■Precision Grade · Low Particulate Generation Grease Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price

High Grade € Unit Price 1 ~ 2 pc(s).

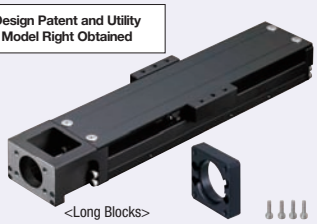
Part Number	L=340	L=390	L=440	L=490	L=540	L=590	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX45_ _-B1/S1-_							Servo Stepping No Adapter	1	15	10
LX45_ _-B2/S2-_								2		20
LX45_ _-B1/S1-F							No Bracket	1		
LX45_ _-B2/S2-F								2		

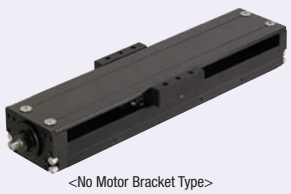
For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
LX45_ _Series sensor set can be specified as an alteration.
Alteration Details P.432

Single Axis Actuator LX45 Cover Type

Design Patent and Utility Model Right Obtained

RoHS





Specifications	
LX45	
Cover	
Screw Shaft Diameter (mm)	15
Lead (mm)	10, 20
Accuracy	High Grade / Precision Grade

A Accessory

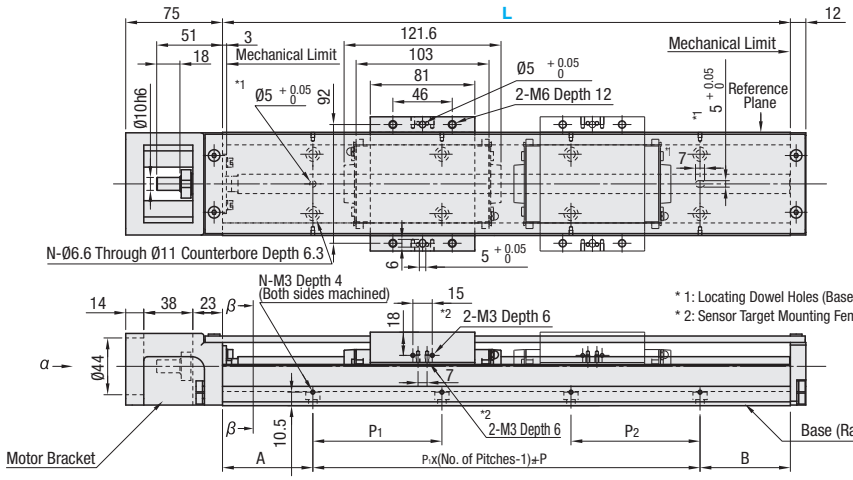
(1) Motor Adapter Plate
M Matreial: EN AW-5052/AlMg2,5
S Surface Treatment: Black Anodize
(2) 4 Adapter Plate Screws M Matreial: 1.4567/X3CrNiCu18-9-4
Ⓨ No accessory is included for No Motor Bracket Type.

Standard L Dimensions	Standard Grease		Low Particulate Generation Grease	
	High Grade	Precision Grade	High Grade	Precision Grade
Lead 10	LX4510C	LX4510CP	LX4510CG	LX4510CPG
Lead 20	LX4520C	LX4520CP	LX4520CG	LX4520CPG

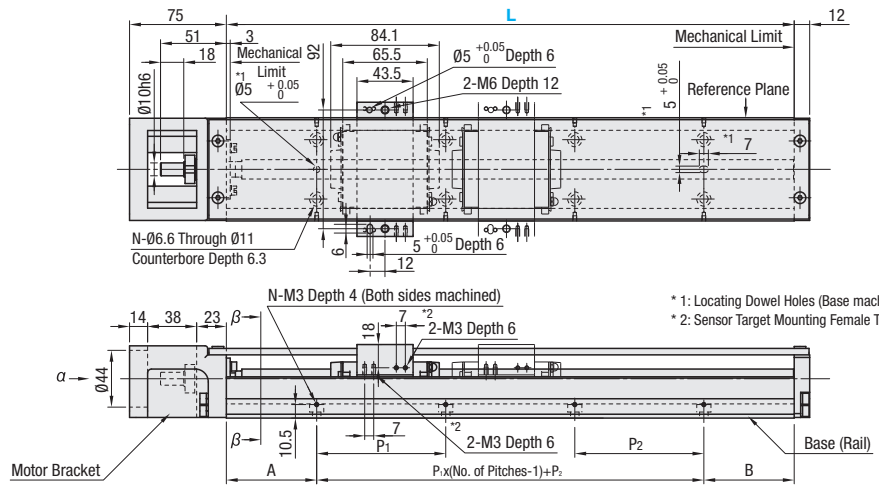
Ⓨ Low Particulate Generation Grease Information **P.404**

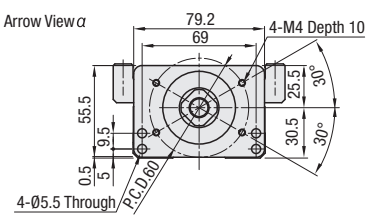
Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AC-46100/G-AlSi12Cu	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62

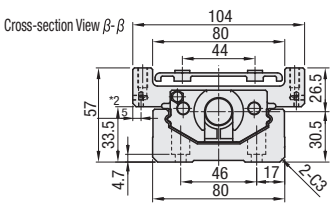
Long Blocks



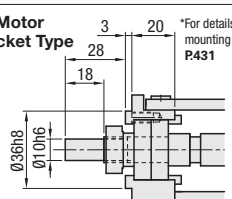
Short Blocks







No Motor Bracket Type



*For details of the mounting area, **P.431**

Ⓨ Effective stroke allows for 2.5 mm clearance on each side from mechanical limits, i.e., 5mm in total.
Ⓨ For Double Block Type, effective strokes are the values when two blocks in contact with each other.
Ⓨ For Double Block Type, double-dashed lined blocks are not connected with the ball screw.

■LX Related information
Specifications P. 401 ~ P. 404
Coupling P. 961 ~ P. 970
Proximity Sensor P. 1745 ~ P. 1754
Photo Sensor / Rail P. 1725 ~ P. 1744
Selection / Life Calculation Example P. 1905 ~ P. 1908

CAD Data

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Mounting Hole Dimensions					
High Grade	*Precision Grade				A	P_1	P_2	B	No. of Pitches	Hole Qty. (N)
(Standard Grease) LX4510C LX4520C	(Standard Grease) LX4510CP LX4520CP	Long Blocks (1 pc.) B1 (2 pcs.) B2	(Servo) A4538 A4540 MA4560 A4560 E4540 E4555	340	70	100	100	70	2	6
				390	70	100	50	70	3	8
			(Stepping) T4560	440	70	100	100	70	3	8
(Low Particulate Generation Grease) LX4510CG LX4520CG	(Low Particulate Generation Grease) LX4510CPG LX4520CPG	Short Blocks (1 pc.) S1 (2 pcs.) S2	(Without Attachment) N	490	70	100	50	70	4	10
				540	70	100	100	70	4	10
			(Without Motor Bracket) F	590	70	100	50	70	5	12

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.
* Precision Certificate is enclosed with precision grade products.
* Attachment-less type consists of an actuator and bracket. Please note that it is different from motor bracket-less type.

■Accuracy Standards

Precision certificate is enclosed with precision grade products.

Accuracy Standards	High Grade	Precision Grade
Positioning Accuracy (mm)	0.1	0.025
Backlash (mm)	0.02	0.003
Positioning Repeatability(mm)	±0.005	±0.003
Running Parallelism(mm)	0.035	0.015
Starting Torque (N · cm)	10	

■Allowable Static Load · Moment

Block Types	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m)		
			Ma	Mb	Mc
Long Block	B1	32441	291	291	972
	B2	64882	3945	3945	1944
Short Block	S1	17175	145	145	515
	S2	34350	1444	1444	1029

Reference values are for a static state. Please use our Technical Calculation Software for life calculations.
For allowable static moment, please see P.402.

■Effective Stroke · Moment of Inertia · Mass

Base Length (L)	Effective Stroke LX45_ _C				Moment of Inertia (kg · cm²) LX4510C				LX4520C				Total Mass (kg) LX45_ _C			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
340	210.4	88.8	247.9	163.8	0.2674	0.3053	0.2507	0.272	0.3825	0.5344	0.3157	0.4008	6.59	8.09	5.94	6.78
390	260.4	138.8	297.9	213.8	0.2869	0.3249	0.2702	0.2915	0.402	0.5539	0.3352	0.4203	7.23	8.73	6.57	7.41
440	310.4	188.8	347.9	263.8	0.3064	0.3444	0.2897	0.311	0.4215	0.5734	0.3547	0.4399	7.86	9.36	7.2	8.04
490	360.4	238.8	397.9	313.8	0.3259	0.3639	0.3092	0.3305	0.441	0.5929	0.3742	0.4594	8.49	9.99	7.84	8.68
540	410.4	288.8	447.9	363.8	0.3454	0.3834	0.3287	0.35	0.4605	0.6124	0.3937	0.4789	9.13	10.63	8.47	9.31
590	460.4	338.8	497.9	413.8	0.3649	0.4029	0.3482	0.3695	0.48	0.6319	0.4132	0.4984	9.76	11.26	9.1	9.94

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
A4538	38	Panasonic	30W/50W/100W
A4540	40	Yasukawa Electric Corporation	30W/50W/100W
		Mitsubishi Electric Corporation	50W/100W
		Sanyo Denki Co.,Ltd.	30W/50W/100W
		Omron Corporation	30W/50W/100W
		Keyence Corporation	50W/100W
MA4560	60	Panasonic	100W/200W/300W
A4560	60	Yasukawa Electric Corporation	200W/400W
		Mitsubishi Electric Corporation	200W/400W
		Sanyo Denki Co.,Ltd.	200W/400W
		Omron Corporation	200W/400W
		Keyence Corporation	200W/400W

Part Number	Flange Size	Manufacturer	Wattage
E4540	40	SIEMENS	50W/100W
E4555	55	SIEMENS	380W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
T4560	60	Oriental Motor	5-phase / α Step

For Motor Adapter Plate detail drawings and compatible Motor details, P.431

■Maximum Speed

Max. Velocity (mm/s)	
LX4510	550
LX4520	1110

The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Order Example

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)
LX4510C	-	B1	-	A4540	-	540

Price

■Precision Grade · Low Particulate Generation Grease Price Increase

Specifications	€ Unit Price
Precision Grade	
Low Particulate Generation Grease	

Listed Price + € Unit Price = Product Price

Days to Ship

High Grade Standard Grease LX4510C · 4520C	Standard GreasePrecision Grade LX4510CP · 4520CP	Low Particle Generation Grease-No Motor Bracket
8 Days	10 Days	13 Days

All No Bracket products are shipped on the 13th day after order received.
For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

High Grade € Unit Price 1 ~ 2 pc(s).

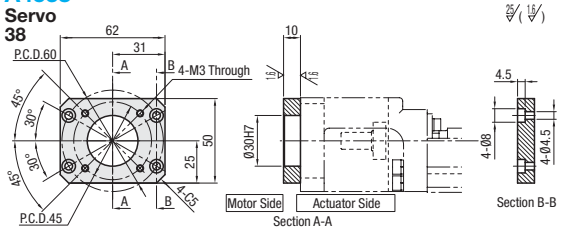
Part Number	L=340	L=390	L=440	L=490	L=540	L=590	Attachments	Block Qty.	Screw Shaft Dia.	Lead
LX45_ _C-B1/S1-_							Servo Stepping No Adapter	1	15	0,1
LX45_ _C-B2/S2-_								2		
LX45_ _C-B1/S1-F							No Bracket	1		0,2
LX45_ _C-B2/S2-F								2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.
LX45_ _Series sensor set can be specified as alterations.
Alteration Details P.432

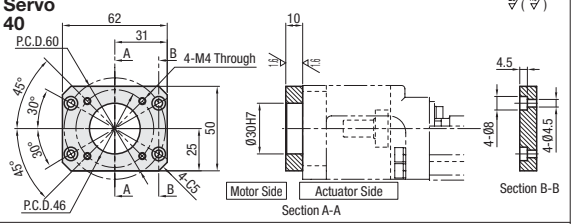
Single Actuator LX45 Motor Adapter Plates / Motor Adapter Centering Tools

CAD Data

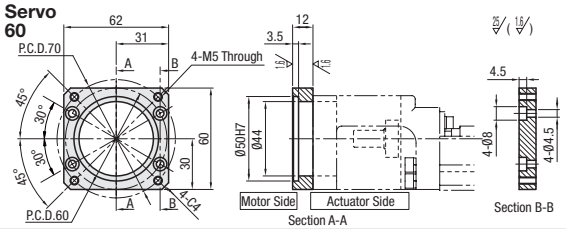
A4538
Servo 38



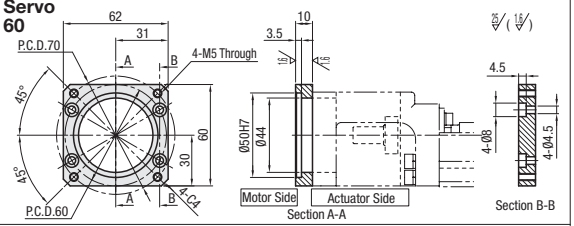
A4540
Servo 40



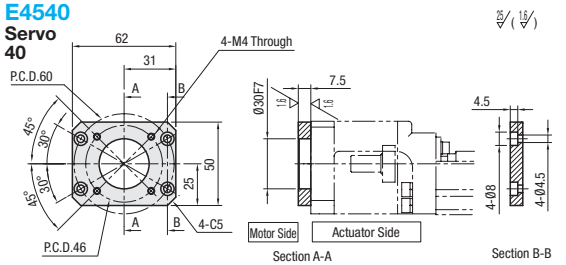
MA4560
Servo 60



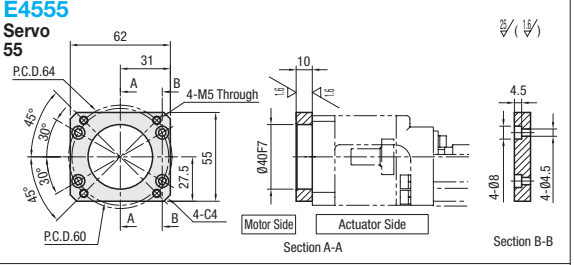
A4560
Servo 60



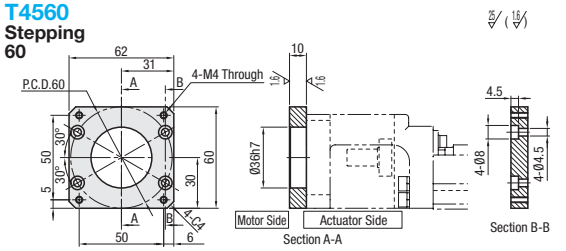
E4540
Servo 40



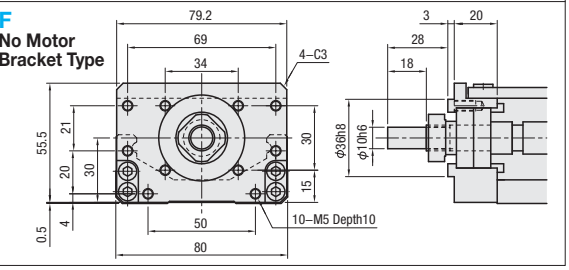
E4555
Servo 55



T4560
Stepping 60



F
No Motor Bracket Type



Part No.	Flange Size	Manufacturer	Product Number	Wattage	Recommended Coupling
A4538	38	Panasonic	MSMD-5A	50W	SCXW28 (P.963) SCPW28 (P.963) CPDW25 (P.965)
			MSMA-3A	30W	
			MSMA-5A	50W	
			MSMA-01	100W	
A4540	40	Yasukawa Electric Corporation	SGMJV-A5	50W	
			SGMAH-A5	50W	
			SGMAH-01	100W	
			SGMPH-01	100W	
		Mitsubishi Electric Corporation	HC-MFS053	50W	
			HC-MFS13	100W	
		Sanyo Denki Co.,Ltd.	Q1AA04003D	30W	
			Q1AA04005D	50W	
			Q1AA04010D	100W	
		Omron Corporation	R88M-W03030	30W	
			R88M-W05030	50W	
			R88M-W10030	100W	
		Keyence Corporation	MV-M05 / SV-M005	50W	
			MV-M10 / SV-M010	50W	
MA4560	60	Panasonic	MQMA-01	100W	
			MQMA-02	200W	
			MQMA-03	300W	

Part Number	Flange Size	Manufacturer	Product number	Wattage	Recommended Coupling
E4540	40	SIEMENS	1FK7011-5	50W	SCXW34 (P.963) SCPW34 (P.963) CPDW32 (P.965)
			1FK7015-5	100W	
E4555	55	SIEMENS	1FK7022-5	380W	
A4560	60	Yasukawa Electric Corporation	SGMJV-02	200W	
			SGMJV-04	400W	
		Mitsubishi Electric Corporation	HC-MFS 23	200W	
			HC-KFS 23		
			HC-MFS 43	400W	
			HC-KFS 43		
		Sanyo Denki Co.,Ltd.	Q1AA06020D	200W	
			Q1AA06040D	400W	
		Omron Corporation	R88M-W20030	200W	
			R88M-W40030	400W	
		Keyence Corporation	MV-M20 / SV-M020	200W	
			MV-M40 / SV-M040	400W	

Part Number	Flange Size	Manufacturer	Product number	Type	Recommended Coupling
T4560	60	Oriental Motor	UPK56*/PK56*	5-phase	SCXW28, SCPW28 CPDW25
			AS6*, ASC66, AR66	α Step	

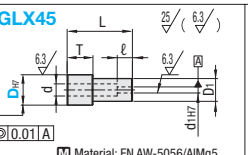
Product numbers and specifications of motors are subject to change. Please check the manufactures' information. Applicable motors and couplings are not limited to the above listed products. Please confirm each mounting dimension.

■ Motor Adapter Centering Tools



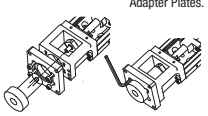
RoHS

JIGLX45



M Material: EN AW-5056/AlMg5
S Surface Treatment: White Anodize

Example Please use for centering of Motor Adapter Plates.



Part Number	D	Corresponding Attachments	d	D1	d1	L	T	ℓ	€ Unit Price 1 ~ 5 pc(s).
JIGLX45	30	A4538/A4540	15	25	10	62	22	20	
	50	A4560/MA4560	15	25	10	61.5	13.5	20	
	36	T4560	15	25	10	62	22	20	

Order Example: Part No. JIGLX45 - D 30

Days to Ship: 6 Days

Single Axis Actuator LX45 Sensor Sets (Alterations)

■Proximity Sensor Type (SUNX Limited-made) -Set Part Specification-

When L=390, 490 or 590, mounting orientations are as the drawing below.

LX Part Numbers	Proximity Sensor	Sensor Rail		Sensor (*Qty per sensor included.)		Sensor Target		Code (_is sensor qty.)	€ Unit Price (Stroke up to 440) Sensor Qty.			€ Unit Price (Stroke 490 or more) Sensor Qty.		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Mounting Screws (1 pc.)	Fixing Nuts (3 pcs.)	Sensor Target 1 pc.	Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX45_ _-B_	GX-F12A (ON when near)	SENC3_H	CBM3-6	CBSST3-8	LBNR3	- (Original)	Flat Head Screw M3-5 (1pc)	XA_						
LX45_ _-S_	GX-F12B (ON when away)							XB_						
LX45_ _C-B_	GX-F12A (ON when near)					- (Original)	CBM3-6 (2 pcs.)	FA_						
	GX-F12B (ON when away)							FB_						
LX45_ _C-S_	GX-F12A (ON when near)							FAS_						
	GX-F12B (ON when away)							FBS_						

■Photo Sensor Type (SUNX Limited-made) -Set Part Specification-

When L=390, 490 or 590, mounting orientations are as the drawing below.

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor				Sensor Target		Code (_is sensor qty.)	€ Unit Price (Stroke up to 440) Sensor Qty.			€ Unit Price (Stroke 490 or more) Sensor Qty.		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX45_ _-B_ LX45_ _-S_	PM-L24	SENC3_H	SCB3-6	- (Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	M2 Small Flat Washers (2 pcs.) Spring Washers (2 pcs.)	- (Original)	Flat Head Screw M2.6-4 (1pc)	SP_						
LX45_ _C-B_								- (Original)	CBM3-6 (2 pcs.)	MP_						
LX45_ _C-S_										MPS_						

■Photo Sensor Type (Omron Corporation) -Set Part Specification-

When L=390, 490 or 590, mounting orientations are as the drawing below.

LX Part Numbers	Photo Sensor	Sensor Rail		Sensor				Sensor Target		Code (_is sensor qty.)	€ Unit Price (Stroke up to 200) Sensor Qty.			€ Unit Price (Stroke 250 or more) Sensor Qty.		
		Rail (1 pc.)	Mounting Screws (Pitch +1 pc.)	Sensor Bracket	Bracket Mounting Screws Nuts	Sensor Mounting Screws	Sensor Mounting Washers	Sensor Target (1 pc.)	Sensor Target Mounting Screws		1 pc.	2 pcs.	3 Pcs.	1 pc.	2 pcs.	3 Pcs.
LX45_ _-B_ LX45_ _-S_	EE-SX91-R 1M	SENC3 _H	SCB3-6	- (Original)	CBM3-6 (2 pcs.) LBNR3 (2 pcs.)	CBM3-6 (2 pcs.)	M3 Small Flat Washers (2 pcs.)	- (Original)	Flat Head Screw M2.6-4 (1pc)	OP_						
LX45_ _C-B_								- (Original)	CBM3-6 (2 pcs.)	EP_						
LX45_ _C-S_										EPS_						

* Some of sensor targets and brackets are original products. For ordering the unit alone, please contact MISUMI FA Mechanical Group.
* Sensors are not sold separately. Please contact each sensor supplier for purchasing separately.

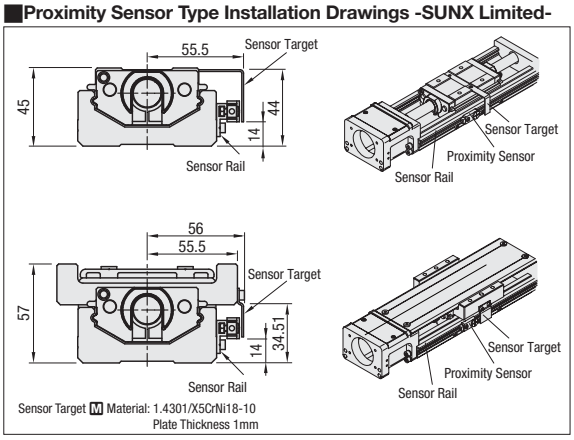
Alterations

Part Number	-	Block Qty.	-	Motor Adapter Plates	-	Base Overall Length (L)	-	(Code)
LX4510	-	B1	-	A4540	-	590	-	XA1
LX4520C	-	B1	-	A4560	-	340	-	EP2

*Sensor quantity is entered as the "Code" value.

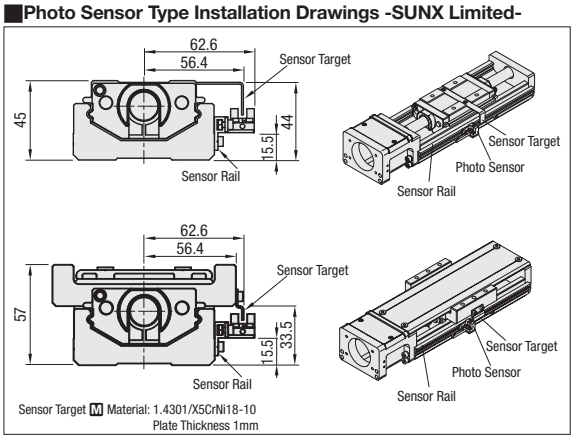
Days to Ship 13 Days

■Proximity Sensor Type Installation Drawings -SUNX Limited-



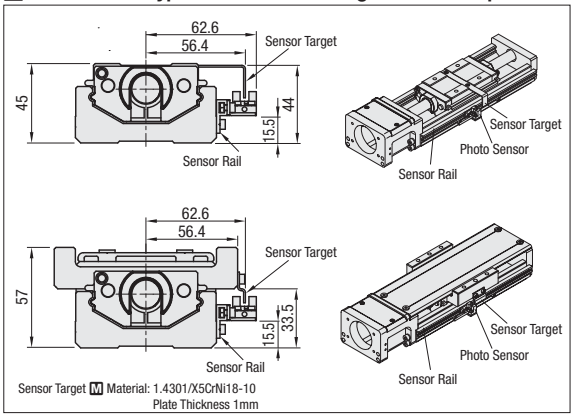
Sensor Target M Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

■Photo Sensor Type Installation Drawings -SUNX Limited-



Sensor Target M Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

■Photo Sensor Type Installation Drawings -Omron Corporation-



Sensor Target M Material: 1.4301/X5CrNi18-10
Plate Thickness 1mm

SUNX and Omron photo sensors are the same in outside dimensions.
Please access each sensor manufacture's website for the specifications of sensors in use. Sensor specifications are not available on our catalogues.

■Cautions

-Sensor set is shipped with LX Actuator.
Please assemble parts by customers.
-Please check for all included parts immediately after unpacking.
Some small parts can be lost. Please handle the products with great care.

Single Axis Actuator LX30 Motor Folded Type

RoHS



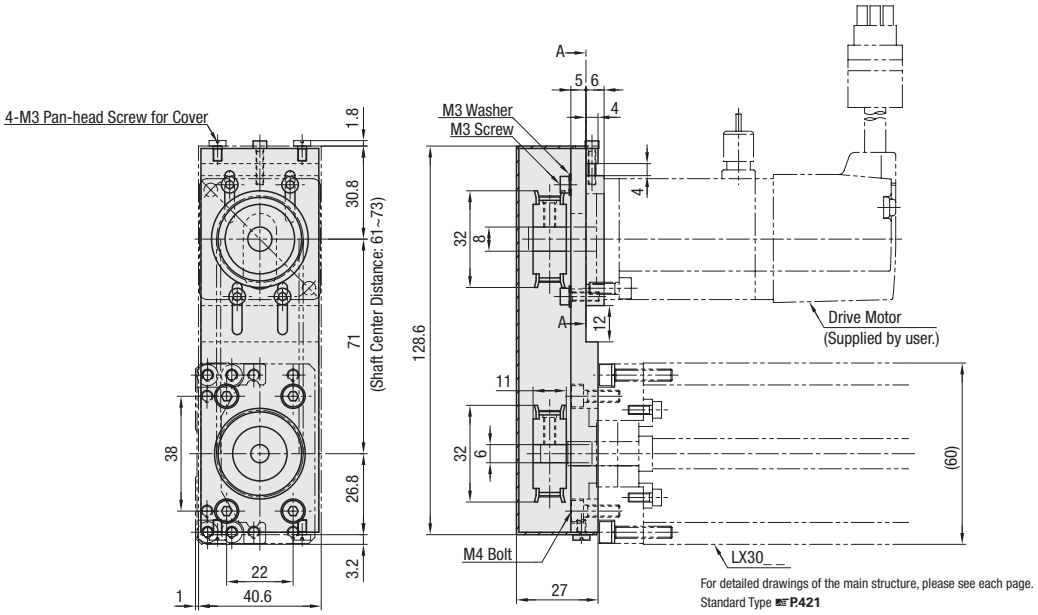
Specifications	
LX30	
Standard / Cover	
Screw Shaft Diameter (mm)	10
Lead (mm)	5, 10
Accuracy	High Grade

A Accessory

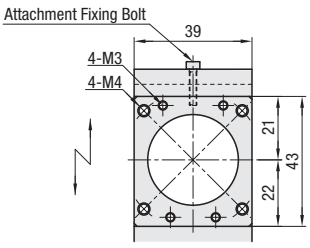
(1) Motor Adapter Plate
M Material: Steel
S Surface Treatment: LTBC Plating
(2) 4 Adapter Plate Screws
M Material: 1.4567/X3CrNiCu18-9-4
(3) High Torque Timing Pulley
Part Number: HTPA44S2M060
(4) High Torque Timing Belt
Part Number: HTBN230S2M-60

Standard L Dimensions	Standard Grease	
	High Grade Standards	High Grade with Cover
Lead 5	LXR3005	LXR3005C
Lead 10	LXR3010	LXR3010C

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS SCM Material	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-6063/ AlMg0,7Si	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62



For detailed drawings of the main structure, please see each page.
Standard Type ☞P.421
Cover Type ☞P.423



Arrow View A-A

<Motor Adapter Plate>
*For Motor Adapter Plate dimensions details, please see the right page.

※The set consists of the Actuator and accessories

CAD Data

Part Number		Block Qty.	Motor Attachments	Base Overall Length (L)	Detailed Mounting Hole Dimensions P.421,423					
					A	P_1	P_2	B	No. of Pitches	Hole Qty. (N)
(High Grade Standards)	(High Grade with Cover)	Long Blocks (1 pc.) B1 (2 pcs.) B2 For B2 L≥300	(Servo) RA3038 RA3040	125	12.5	-	100	12.5	1	4
LXR3005	LXR3005C			150	25	-	100	25	1	4
LXR3010	LXR3010C			200	50	-	100	50	1	4
				250	50	100	50	50	2	6
				300	50	100	100	50	2	6
			(Stepping) RT3042	350	50	100	50	50	3	8
				400	50	100	100	50	3	8
		Short Blocks (1 pc.) S1 (2 pcs.) S2	(Without attachment) N	450	50	100	50	50	4	10
				500	50	100	100	50	4	10
				550	50	100	50	50	5	12
				600	50	100	100	50	5	12

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.

■Effective Stroke · Mass

Base Length (L)	Effective Stroke LXR30_ _ _				Total Mass (kg) LXR30_ _				LXR30_ _C			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
125	29	-	54.5	-	1.55	-	1.43	-	2.01	-	1.75	-
150	54	-	79.5	17	1.72	-	1.60	1.78	2.17	-	1.92	2.23
200	104	-	129.5	67	2.06	-	1.93	2.11	2.50	-	2.25	2.57
250	154	-	179.5	117	2.39	-	2.27	2.45	2.84	-	2.59	2.91
300	204	116	229.5	167	2.73	3.04	2.60	2.78	3.17	3.74	2.92	3.24
350	254	166	279.5	217	3.06	3.37	2.94	3.12	3.51	4.08	3.26	3.58
400	304	216	329.5	267	3.40	3.71	3.27	3.46	3.85	4.41	3.60	3.91
450	354	266	379.5	317	3.74	4.04	3.61	3.79	4.18	4.75	3.93	4.25
500	404	316	429.5	367	4.07	4.38	3.95	4.13	4.52	5.08	4.27	4.58
550	454	366	479.5	417	4.41	4.72	4.28	4.46	4.85	5.42	4.60	4.92
600	504	416	529.5	467	4.74	5.05	4.62	4.80	5.19	5.76	4.94	5.26

For Moment of Inertia, please see each page. Standard type P.421 Cover Type P.423

Order Example

Part Number	Block Qty.	Motor Adapter Plates	Base Overall Length (L)	
LXR3010C	B1	RA3040	600	
LXR3010C	B1	RA3040	600	NBP

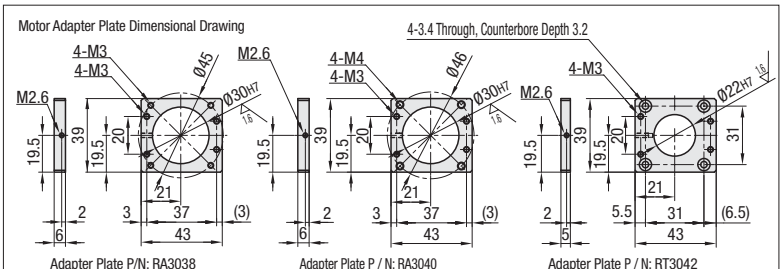
Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Alterations

Alteration	Code	Spec.	Price Adder
No Belt · No Pulley	NBP	Excluded from the set.	

Motor Adapter Plate Dimensional Drawing



Adapter Plate P/N: RA3038 | Adapter Plate P / N: RA3040 | Adapter Plate P / N: RT3042

■Accuracy Standards

Accuracy Standards	Up to L=400 High Grade	L=400 or more High Grade
Positioning Accuracy (mm)	0.06	0.1
Backlash (mm)	0.02	0.02
Positioning Repeatability (mm)	±0.005	±0.005
Running Parallelism (mm)	0.025	0.035
Starting Torque (N · cm)	4	

■Allowable Static Load · Moment

Block Types	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m) Ma	Mb	Mc
Long Block	B1	17218	126	126	387
	B2	34436	1515	1515	774
Short Block	S1	9271	63	63	208
	S2	18542	579	579	417

Reference values are for a static state. Please use our Technical Calculation Software for life calculations.
For allowable static moment, please see P.402.

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
RA3038	38	Panasonic	30W/50W/100W
RA3040	40	Yasukawa Electric Corporation	30W/50W/100W
		Mitsubishi Electric Corporation	50W/100W
		Sanyo Denki Co.,Ltd.	30W/50W/100W
		Omron Corporation	30W/50W/100W
		Keyence Corporation	50W/100W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Type
RT3042	42	Oriental Motor	2-phase / 5-phase / α / Step

For Motor Adapter Plate detail drawings and compatible Motor details, P.431

■Maximum Velocity

Max. Velocity (mm/s)	L125~L450	L500	L550	L600
LXR3005_ _	410	370	300	250
LXR3010_ _	830	740	600	500

The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Price

High Grade € Unit Price 1 ~ 2 pc(s).

Part Number	L=125 (Lead 5 Only)	L=150	L=200	L=250	L=300	L=350	L=400	L=450	L=500	L=550	L=600	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LXR30_ _-B1/S1-_												Servo Stepping No Adapter	1	10	5
LXR30_ _-B2/S2-_													2		
LXR30_ _C-B1/S1-_													1		10
LXR30_ _C-B2/S2-_													2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Single Axis Actuator LX45 Motor Folded Type

RoHS



Specifications	
LX45	
Standard · Cover	
Screw Shaft Diameter (mm)	15
Lead (mm)	10, 20
Accuracy	High Grade

A Accessory

(1) Motor Adapter Plate
- M Material: Steel
- S Surface Treatment: LTBC Plating

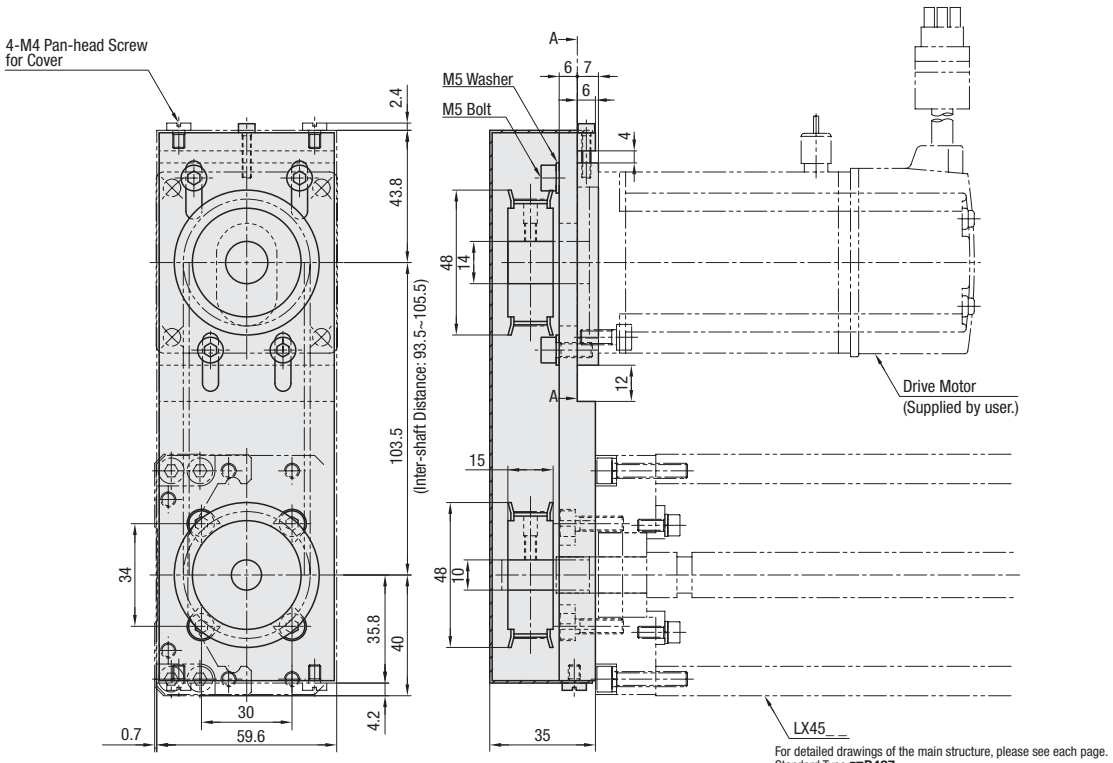
(2) 4 Adapter Plate Screws
- M Material: 1.4567/X3CrNiCu18-9-4

(3)High Torque Timing Pulley
- Part Number: HTPA44S3M100

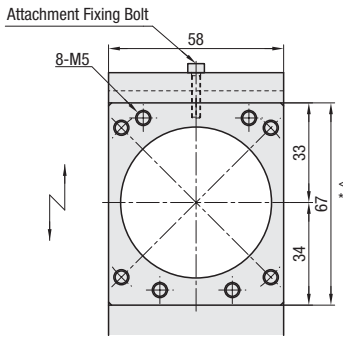
(4)High Torque Timing Belt
- Part Number: HTBN339S3M-100

Standard L Dimensions	Standard Grease	
	High Grade Standards	High Grade with Cover
Lead 10	LXR4510	LXR4510C
Lead 20	LXR4520	LXR4520C

Components	Base (Rail)	Block	Motor Bracket	Support-side Bearing Housing	Cover	Stopper	Precision Ball Screw (ground)
M Material	JIS STKM	JIS CM Material	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	NBR	1.7242/16CrMo4
S Surface Treatment	LTBC Plating	LTBC Plating	Black Baked Paint Finish	Black Anodize	Black Anodize	-	-
H Hardness	Induction Hardening HRC58 ~ 64	HRC58~62	-	-	-	-	HRC58~62



For detailed drawings of the main structure, please see each page.
Standard Type ☞P.427
Cover Type ☞P.429



Arrow View A-A

<Motor Adapter Plate>
*For Motor Adapter Plate dimensions details, please see the right page.

The set consists of the Actuator and accessories

CAD Data

Part Number	Block Qty.	Motor Attachments	Base Overall Length (L)	Detailed Mounting Hole Dimensions P.427,429					
				A	P1	P2	B	No. of Pitches	Hole Qty. (N)
(High Grade Standards) LXR4510 LXR4520 / (High Grade with Cover) LXR4510C LXR4520C	Long Blocks (1 pc.)B1 (2 pcs.)B2 / Short Blocks (1 pc.)S1 (2 pcs.)S2	(Servo) RA4560 / (Stepping) RT4560 / (Without attachment) N	340	70	100	100	70	2	6
			390	70	100	50	70	3	8
			440	70	100	100	70	3	8
			490	70	100	50	70	4	10
			540	70	100	100	70	4	10
			590	70	100	50	70	5	12

* Effective stroke is indicated in dimensions with a margin of 2.5 mm each from the ends.

■Effective Stroke · Moment of Inertia · Mass

Base Length (L)	Effective Stroke LXR45_ _ _				Total Mass (kg) LXR45_ _				LXR45_ _C			
	B1	B2	S1	S2	B1	B2	S1	S2	B1	B2	S1	S2
340	210.4	88.8	247.9	163.8	6.42	7.34	6.02	6.56	7.24	8.74	6.59	7.43
390	260.4	138.8	297.9	213.8	7.02	7.94	6.63	7.16	7.88	9.38	7.22	8.06
440	310.4	188.8	347.9	263.8	7.62	8.55	7.23	7.76	8.51	10.01	7.85	8.69
490	360.4	238.8	397.9	313.8	8.22	9.15	7.83	8.36	9.14	10.64	8.49	9.33
540	410.4	288.8	447.9	363.8	8.83	9.75	8.43	8.96	9.78	11.28	9.12	9.96
590	460.4	338.8	497.9	413.8	9.43	10.35	9.04	9.57	10.41	11.91	9.75	10.59

For Moment of Inertia, please see each page. Standard type P.427 Cover Type P.429

Order Example

Part Number	Block Qty.	Motor Adapter Plates	Base Overall Length (L)
LXR4510	B1	RA4560	540

Part Number	Block Qty.	Motor Adapter Plates	Base Overall Length (L)	(NBP)
LXR4510	B1	RA4560	540	NBP

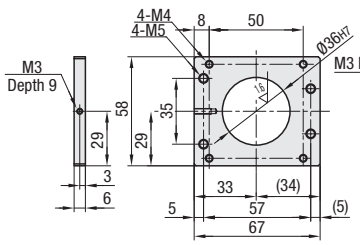
Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

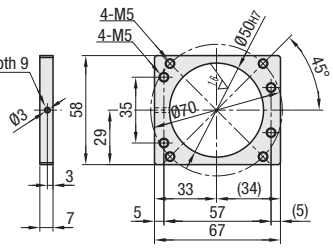
Alterations

Alteration	Code	Spec.	Price Adder
No Belt · No Pulley	NBP	Excluded from the set.	

Motor Adapter Plate Dimensional Drawing



Adapter Plate Part Number: RT4560



Adapter Plate Part Number: RA4560

■Servo Motor Application Table

Part Number	Flange Size	Manufacturer	Wattage
RA4560	60	Yasukawa Electric Corporation	200W/400W
		Mitsubishi Electric Corporation	200W/400W
		Sanyo Denki Co.,Ltd.	200W/400W
		Omron Corporation	200W/400W
		Keyence Corporation	200W/400W

■Stepping Motor Application Table

Part Number	Flange Size	Manufacturer	Types
RT4560	60	Oriental Motor	5-phase / α Step

For Motor Adapter Plate detail drawings and compatible Motor details, P.431

■Accuracy Standards

Accuracy Standards	High Grade
Positioning Accuracy (mm)	0.1
Backlash (mm)	0.02
Positioning Repeatability (mm)	±0.005
Running Parallelism (mm)	0.035
Starting Torque (N · cm)	10

■Allowable Static Load · Moment

Block Types	Block Qty.	Static Load Capacity (N)	Allowable Static Moment (N · m) Ma	Mb	Mc
Long Block	B1	32441	291	291	972
	B2	64882	3945	3945	1944
Short Block	S1	17175	145	145	515
	S2	34350	1444	1444	1029

Reference values are for a static state. Please use our Technical Calculation Software for life calculations.
For allowable static moment, please see P.402.

■Maximum Velocity

Max. Velocity (mm/s)	
LXR4510_	550
LXR4520_	1110

The maximum speeds are reference values derived from ball screw critical speeds and DN values but not guarantee data considering the motor's conditions.

Price

Part Number	High Grade € Unit Price 1 ~ 2 unit(s) L=340	L=390	L=440	L=490	L=540	L=590	Motor Attachments	Block Qty.	Screw Shaft Dia.	Lead
LXR45__-B1/S1-_							Servo Stepping	1	15	10
LXR45__-B2/S2-_								2		
LXR45__C-B1/S1-_							No Adapter	1		20
LXR45__C-B2/S2-_								2		

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Two Axes Mounting Brackets for Single Axis Actuators

CAD Data

Features: Brackets combined with LX Actuators are standardized to meet customers' requests.

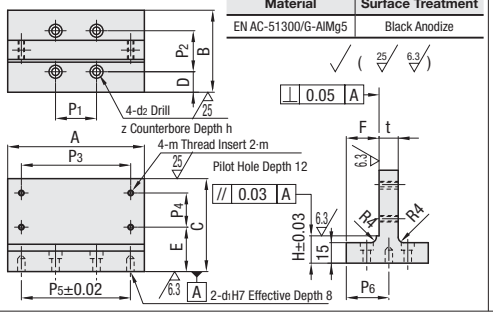
X-Y Axis Brackets



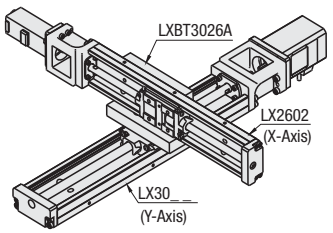
RoHS

LXBT

Material	Surface Treatment
EN AC-51300/G-AlMg5	Black Anodize



Example



Part Number Type	Part Number No.	LX Combination Y / X axis	A	B	C	D	E	F	T	H	P1	P2	P3	P4	P5	P6	d1	m	d2	z	h	€ Unit Price 1 ~ 2 pc(s).
LXBT	3026A	30__ / 26__ (C)	112	53.5	75	12	35.5	20.5	15	23	30	30	80	25	-	-	-	M4	5.5	9.5	5.5	
	3026B	30__C / 26__ (C)									70				70	26.5	4					
	3030A	30__ / 30__ (C)					35			20	30		100	30	-	-	-	M5				
	3030B	30__C / 30__ (C)									70				70	26.5	4					
	4530A	45__ / 30__ (C)		79.5	90	17	42	31	21	27	43	46	100		-	-	-		6.5	11	7	
	4530B	45__C / 30__ (C)									92				92	39.5	5					
	4545A	45__ / 45__ (C)					37			20	43		100	46	-	-	-	M6				
	4545B	45__C / 45__ (C)									92				92	39.5	5					

LXBT_ _ _ _A Y axis is only applicable to Standard Type, and LXBT_ _ _ _B Y axis is to Cover Type.

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

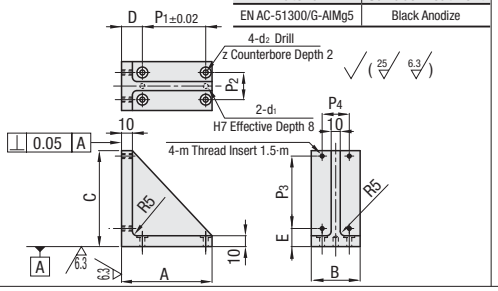
X-Z Axis Brackets



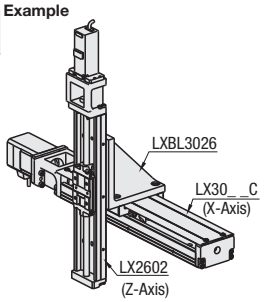
RoHS

LXBL

Material	Surface Treatment
EN AC-51300/G-AlMg5	Black Anodize



Example



Part Number Type	Part Number No.	LX Combination X / Z axis	A	B	C	D	E	P1	P2	P3	P4	m	d1	d2	z	€ Unit Price 1 ~ 2 pc(s).
LXBL	3026	30__C / 26__ (C)	100	54	110	23	15	70	30	80	25	M4	4	5.5	12	
	3030	30__C / 30__ (C)					5			100	30	M5				
	4530	45__C / 30__ (C)	128	80	115	27	7.5	92	46				5	6.5	13	
	4545	45__C / 45__ (C)									46	M6				

LXBL_ _ _ _X axis is only applicable to Cover Type. P1 tolerance is only applicable for d1.

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

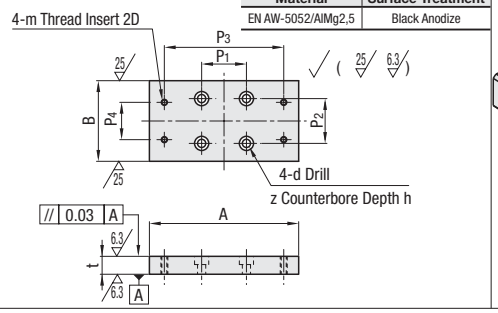
X-Y Axis Horizontal Brackets



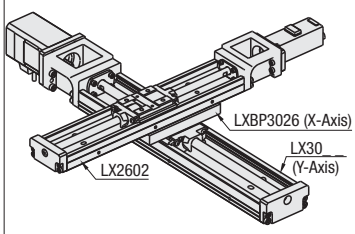
RoHS

LXBP

Material	Surface Treatment
EN AW-5052/AlMg2,5	Black Anodize



Example



Part Number Type	Part Number No.	LX Combination Y / X axis	A	B	T	P1	P2	P3	P4	m	D	z	h	€ Unit Price 1 ~ 2 pc(s).
LXBP	3026	30__ / 26__ (C)	100	54	12	30	30	80	25	M4	5.5	9.5	6	
	3030	30__ / 30__ (C)	112					100	30	M5				
	4530	45__ / 30__ (C)		80	15	43	46				6.5	11	7	
	4545	45__ / 45__ (C)							46	M6				

LXBP_ _ _ _Y axis is only applicable to Standard Type.

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

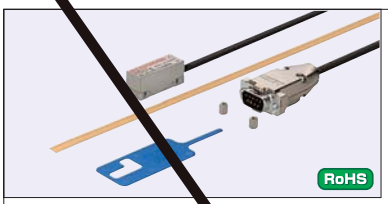
Order Example — Part Number: LXBP3026

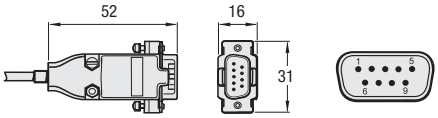
Days to Ship
- LXBT · LXBL: 6 Days P.87
- LXBP: 8 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

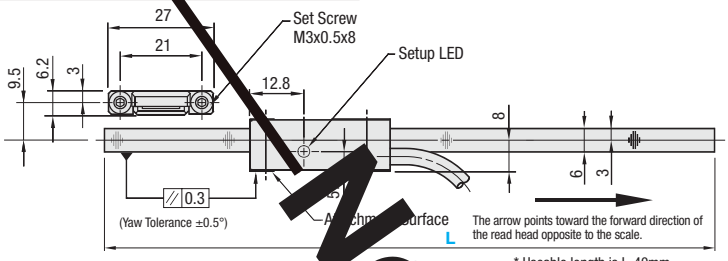
Linear Encoders (Linear Scales)

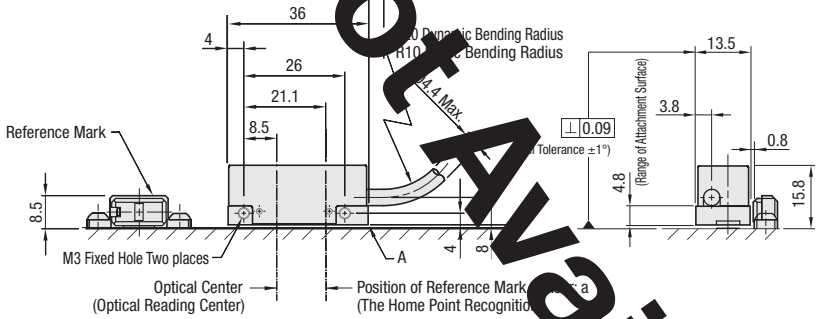
CAD Data



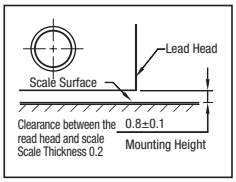


D-Sub 9 Pin Male Plug





Enlarged View A



■D-Sub 9 Pin Connector Specification

Function	Signal	Pin No.	Color
Electrical Power	5V	5	Brown
	0V	1	White
Incremental Signal	A+	2	Green
	A-	6	Yellow
	B+	4	Blue
	B-	8	Red
Reference Mark Limit Switch	Z+/Q-	3	Pink
	Z-/Q+	7	Gray
Shield	Internal	9	Inner Shield
	External	Case	Outer Shield

Not Available

Part Name	Items	Specifications
Read Head	Resolution	SRGH24X=1μm / SRGH24Z=0.5μ SRGH24Z=0.1μm
	Max. Velocity (m/s)	SRGH24X=5 (m/s), SRGH24Z=3 (m/s) SRGH24Z=0.25 (m/s)
	Lowest Recommended Value of Counter Clock Frequency (MHz)	Encoder Velocity (m/s) / Resolution (μm) x Safety Factor Note) Select 4 (MHz) or more for 0.1 μm resolution.
	Power Supply	DC5V±5% (120mA)
	Ripple	200mVpp at Max. frequency 500KHz
	Temperature	In storage: -20°C ~ 70°C In operation: 0°C ~
	Humidity	In operation, max. relative humidity 80% (No condensation) In storage, max. relative humidity 95% (No condensation)
	Water Resistance	IP40
	Acceleration	While in motion: 500m/s² BS EN 60068-2-7:1993
	Shocks (Non-Op.)	1000m/s², 6ms, 1/2sine BS EN 60068-2-7:1993
	Vibration (in motion)	55HZ ~ 2000HZ: 100m/s² at a max BS EN 60068-2-6: 19
	Mass	Read Head 11g Cable 38g/m
	Electromagnetic Interference Compatibility (EMC)	BS EN 61326
	Cable Length	Double Shield Type, Max. O.D. 4.4mm Cable. Fatigue life: 20 x 10^6 cycles or more by bending radius 20mm
	Cable Specifications	Cable Length: 1.5m with D-Sub 9 Pin Male Plug
	Electrical Integration	Read Head is designed in compliance with the relevant ECM Standards. Be sure to follow the appropriate installation, shielding and grounding procedures to fully comply with ECM.
Scale	Type	Reflective gold plated steel tape, protective lacquer coated, backed with double side adhesive tape.
	Compatible Host Material	Metal, Ceramics and Composites (Steel, Aluminum, Ceramics, etc.) with Thermal Expansion Coefficient up to 0 ~ 22μm/m/°C.
	Linear Expansion Coefficient	The scale tape clamped on both ends using an epoxy cement will make the expansion coefficient equal with the host base. (24 hours required for epoxy cement to cure completely)
	Ends Anchor Method	Epoxy cemented end clamping method. Less than 1μm migration of the ends at -20~50°C.
	Operational Specifications	Temp.: -10 ~ 120°C Humidity: Relative humidity 80% (No condensation)
Reference Mark	Type	Magnetically actuated
	Repeatability	Output is synchronized with incremental signal. Position: Repeatability (unidirectional) is maintained at temperature of ±20°C. Magnetic field: ±0.02T constant or variable ±7.5T/s

Part Number	Scale Overall Length L Specify in 50mm Increments	€ Unit Price 1 ~ 4 pc(s).						
		L100~300	L350~550	L600~800	L850~1050	L1100~1300	L1350~1550	L160 2000
	100~2000							
	100~2000							
	100~2000							

Order Example

Part Number - L
- 800

Days to Ship

10 Days

Alterations

Part Number - L - (NR · NE · NB)
- 800 - NR

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Alterations	Code	Spec.	Price Adder
No Reference Mark	NR	Excluded from the set.	
No End Clamp	NE	Excluded from the set.	
No Adhesive	NB	Excluded from the set.	

Motor Driven Single Axis Actuator LX - Overview

High precision single axis actuator LX with pre-assembled motor and peripheral parts

High Accuracy	**Precision grade: precision class Repeatable positioning accuracy: ±3 μm.**
Reduced Precedural Steps	**A unit consists of motor and peripheral parts. Accuracy of the unit is inspected before shipment. (Inspection Sheet attached).**
Wide Motor Variation	**Selectable from AC Servo Motor of Mitsubishi Electric Corporation and Stepping Motor of Oriental Motor. Amplifier and driver are included. Upstream controller will be provided at customer's end.**

Shortened lead time of just 8 days!

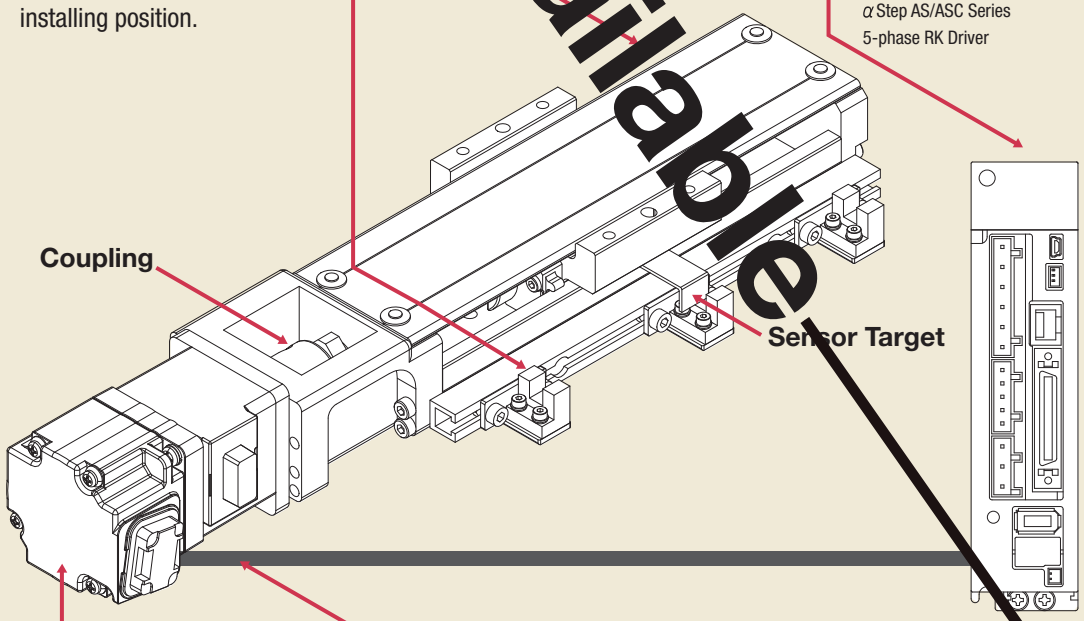
Fully support customer for reduction of assembly steps and manufacturing work loads.

Not Available

Single Axis Actuator LX Precision Grade **Selectable from Standard Type and Cover Type**

Sensor / Sensor Rail
Selectable from left/right installing position.

Amplifier · Driver
Mitsubishi Electric JC Series Servo Amplifier,Oriental Motor αStep AS/ASC Series 5-phase RK Driver



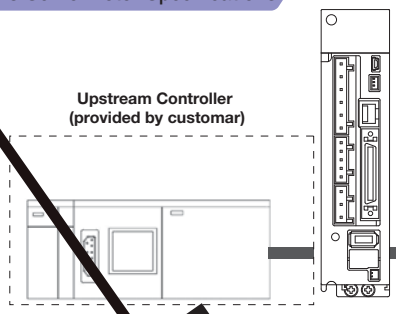
Cable
Cables compatible with each motor and driver will be included.(3m).
Terminals are finished and easy to connect. Cables other than 3m are available.

Motor
AC Servo Motor: Mitsubishi Electric 50W/100W/400W
Stepping Motor: Oriental Motor αStep AS/ASC Series 5-phase RK Series

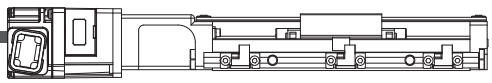
Spec List

Mitsubishi Electric AC Servo Motor Specifications

■Structural Drawing



AC Servo Amplifier
J3 Series



AC Servo Motor
HF-KP Series

Astonishing Low Price!

Set price ranging from **EUR 1650,00~**

High Presicion Single Actuator LX

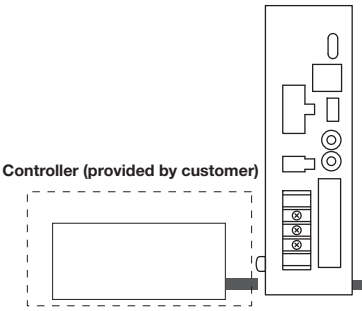
■Specifications

Actuator	Motor	Motor Output	Amplifier	Repeatable Positioning Accuracy (mm)	Load Capacity (kg) Horizontal	Load Capacity (kg) Vertical	Max. Velocity (mm/sec) Horizontal	Max. Velocity (mm/sec) Vertical	Stroke (mm)	Page
	HF-KP053(B)	50W	MR-J3-[illegible]	±0.003	15	2	50	50	30~130 (50Pitch)	P.441~444
					10		250	250		
					20	5	100	100	60~210 (50Pitch)	P.445~448
					18		250	250		
	HF-KP13(B)	100W			32	8	235	250	40~490 (50Pitch)	P.449~452
					24		450	400		
	HF-KP43(B)	400W	MR-J3-[illegible]		40	16	400	375	200~450 (50Pitch)	P.453~456
					24		450	450		

* Load capacity and max. velocity are reference values obtained by verifications. These vary depending on driving condition.
* The horizontal values are for motors without brake, and the [illegible]es are for motors with a brake.
* Acceleration /Deceleration Distance: 25mm each LXM3010 and LXM4520: 50mm each

Oriental Motor Stepping Motor Specifications

■Structural Drawing



Driver
AS/[illegible]5-phase RK Series



Stepping Mo[illegible]
αStep/5-phase [illegible]

Astonishing Low Price!

Set price ranging from **EUR 1113,00~**

High Presicion Single Actuator LX

■Specifications

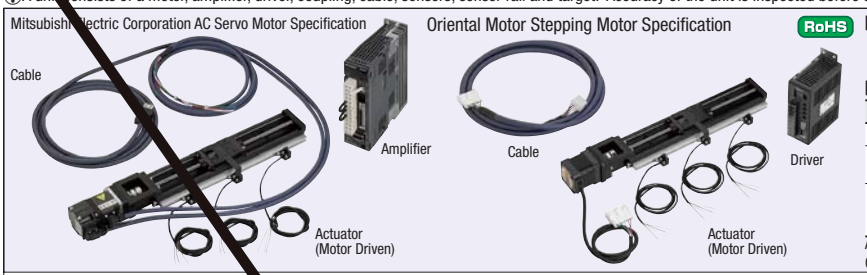
Actuator	Motor, Driver Set.	Motor Output	Repeatable Positioning Accuracy (mm)	Load Capacity (kg) Horizontal	Load Capacity (kg) Vertical	Max. Velocity (mm/sec) Horizontal	Max. Velocity (mm/sec) Vertical	Stroke (mm)	Page
	ASC36AK	α Step	±0.003	15	2	30	–	30~130 (50Pitch)	P.441~444
	AS46AA/MA	α Step				45	50		
	RK545AA/AMA	5-phase				40	3[illegible]		
	ASC36AK	α Step		10		125	–		
	AS46AA/MA	α Step				200	225		
	RK545AA/AMA	5-phase				120	115		
	ASC36AK	α Step		20	5	45	–	60~210 (50Pitch)	P.445~448
	AS46AA/MA	α Step				90	90		
	RK545AA/AMA	5-phase				55	45		
	ASC36AK	α Step		18		100	–		
	AS46AA/MA	α Step				175	175		
	RK545AA/AMA	5-phase				105	80		
	AS46AA/MA	α Step		32	8	160	150	40~490 (50Pitch)	P.449~452
	AS66AAE/MAE	α Step				175	160		
	RK545AA/AMA	5-phase				90	70		
	RK566AAE/AMAE	5-phase				150	140		
	AS46AA/MA	α Step		24		250	200		
	AS66AAE/MAE	α Step				275	275		
	RK545AA/AMA	5-phase				135	10		
	RK566AAE/AMAE	5-phase				210	45		
	AS66AAE/MAE	α Step		40	16	200	175	200~450 (50Pitch)	P.453~456
	RK566AAE/AMAE	5-phase				165	25		
	AS66AAE/MAE	α Step		24		300	200		
	RK566AAE/AMAE	5-phase				255	10		

* Load capacity and max. velocity are reference values obtained by verifications. These vary depending on driving condition.
* The horizontal values are for motors without brake, and the vertical values are for motors with a brake.
* Acceleration /Deceleration Distance: 25mm each LXM3010 and LXM4520: 50mm each

Not Available

Motor Driven Single Axis Actuator LX20
Standard Type

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)



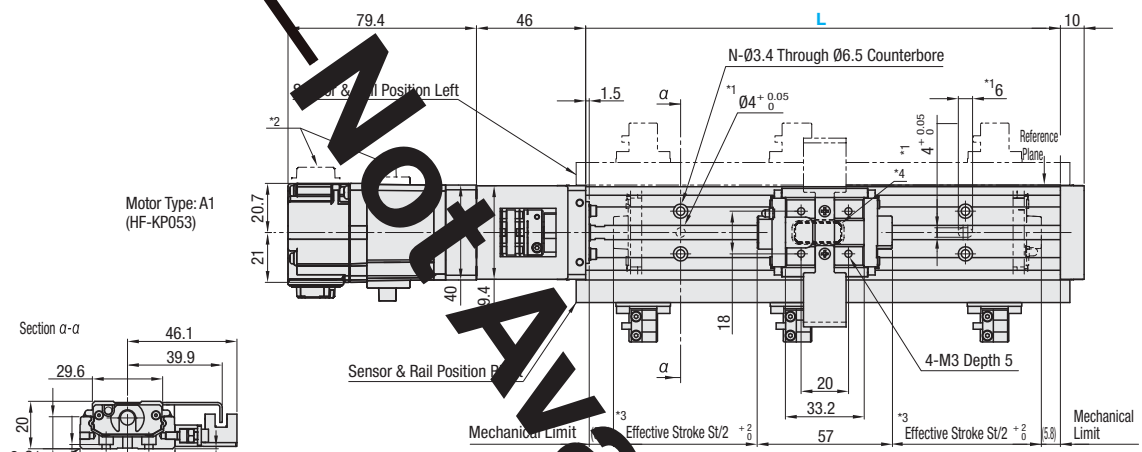
Components
Actuator · Amplifier · Driver · Cable
Accessories: Amplifier · Driver Instruction Manuals

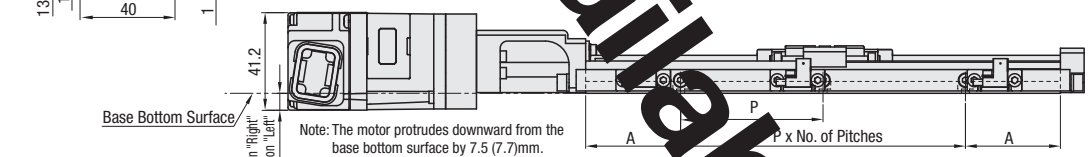
Actuator

	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

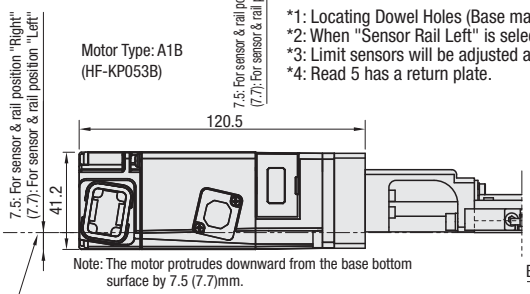
Amplifier · Driver Specifications P.457-458-459
Cable Specifications P.460

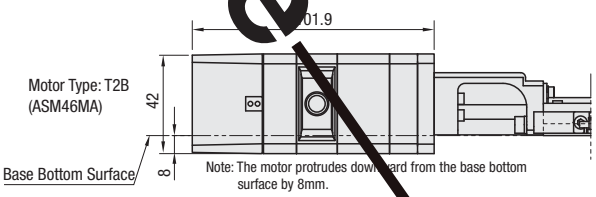
Not Available

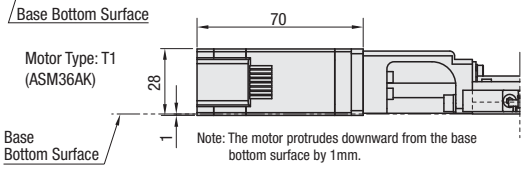


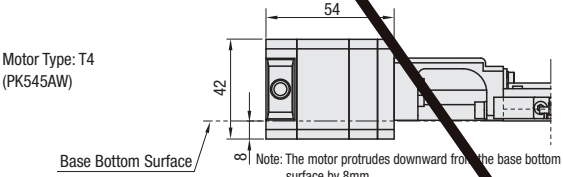


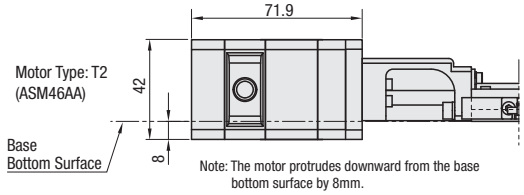
*1: Locating Dowel Holes (Base machining)
*2: When "Sensor Rail Left" is selected, the motor cable location will be on Left.
*3: Limit sensors will be adjusted at positions to make effective stroke St/2 +2 0.
*4: Read 5 has a return plate.

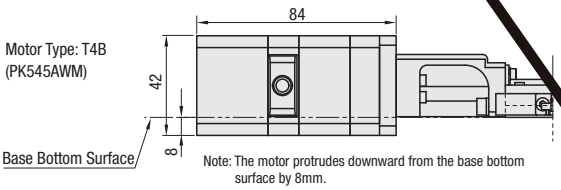












Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy(mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N・m)		
							Ma	Mb	Mc
	1	Ø6 (ground)	±0.003	0.02	0.01	0.003	27	27	93
	5								

* For Allowable Static Load Moment, see **P.402**

Load Capacity / Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A1 (B)	15	2	50	50
	Oriental Motor	T1		-	30	-
		T2 (B)		2	45	50
		T4 (B)			40	35
	Mitsubishi Electric Corporation	A1 (B)	10	2	250	250
	Oriental Motor	T1		-	125	-
		T2 (B)			200	225
		T4 (B)			120	115

* Reference values are obtained by verifications. These vary depe[illegible]d capacity and max. velocity.
* The horizontal values are for motors without brake, and the verti[illegible]es are for brake motors.
* Acceleration / Deceleration Distance: 25mm each

Dimensions / Actuator Main Structure Mass

Part Number	Specification Item	Base Overall Length L (mm)		
		100	150	200
	Effective Stroke St	30	80	130
	A	20	15	40
	P	60	60	60
	No. of pitches	1	2	2
	Hole Qty. (N)	4	6	6
	Main Structure Mass (kg)	0.67	0.81	0.94

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selection					
	Motor Variations	Driver Variation	Cable (Note 1)	Sensor Qty (Note 2)	Sensor / Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	w/ cables (3m): **3** Without: **N**	2 units: **2** 3 units: **3** Without: **N**	Right: **R** Left: **L**	**100~200** (50 Pitch)

Order Example

Part Number	-	Motor Type	-	Amplifier Driver Variation	-	Cable Length	-	Sensor Qty.	-	Sensor & Rail Position	-	Base Length L
	-		-		-	3	-	3	-	R	-	200

List of Controls

Manufacturer Name	Motor Variation						Amplifier / Driver Variation			Motor Drivers Manufacturer Set Part Numbers
	Selection	Motor	Manufacturer Part Numbers	Output / Variations	Brake (Note 3)	Weight (kg)	Selection	Power Supply	Manufacturer Part Numbers	
Mitsubishi Electric Corporation		AC Servo	HF-KP053	50W	w/o	0.3		AC200V	MR-J3-10A (General-purpose A Type)	-
			HF-KP053B		w/	0.65				
Oriental Motor		Step-ping	ASM36AK	α Step	w/o	0.22		DC24V	ASD10B-K	ASC36AK
			ASM46AA			0.5		Single phase 100V	ASD13A-A	AS46AA
			ASM46MA		w/	0.6			ASD13A-A	AS46MA
			PK545AW	5-phase	w/o	0.4			RKD507-A	RK545AA
			PK545AWM		w/	0.52			RKD507M-A	RK545AMA

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Source Cable	For Brakes Cables	Encoder Cables
Mitsubishi Electric Corporation	A1	1 pc. SVPM-J3HF1-B-3-02S	-	1 pc. SVEM-J3HF1-B-3
	A1B		1 pc. SVPM-J3HF1B-B-3-02S	
Oriental Motor	T1	1 pc. STPO-AS1-B-3	-	-
	T2			
	T2B		Customer provided	
	T4	1 pc. STPO-RK1-A-3	-	
	T4B	1 pc. STPO-RK2-A-3		

(Note 1-1) When "with cables" is selected, cables in Cable Configuration List are included. For the specifications, ☞P.460
(Note 1-2) When other than the standard cables (3m) are required, please select "w/o cable" option and separately order cables from the cables listed on Cables on **P.460**
(Note 2-1) When "w/o sensor" is selected, sensor rail comes with the unit but sensor target will not be included.
(Note 2-2) The sensor cable ends will need to be terminated by the customer. For details, See FPML24 on **P.1740**
(Note3) Please use brake motors for vertical applications.
(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship: **13 Days** ※For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price: (Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
<Ex.> For LXM2001-A1-AM10-3-3-R-200,
1584,00 EUR (Actuator Body Price + Control Price) + 81,00 EUR (Cable Price) + 28,00 EUR = (Sensor Price)Sales Price = 1693,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variations	Amplifier / Driver Variations	€ Unit Price 1 ~ 2 unit(s)		
			L100	L150	L200

※For orders larger than indicated quantity, please request a quotation.

Cable Price

Motor Variations	€ Unit Price	
	With Cable (3m)	w/o Cable

※Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Prices

Sensor Qty.	€ Unit Price

Not Available

Motor Driven Single Axis Actuator
LX20 Cover Type

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

Mitsubishi Electric Corporation AC Servo Motor Specification



Oriental Motor Stepping Motor Specification



Components
Actuator · Amplifier · Driver · Cable
Accessories: Amplifier · Driver Instruction Manuals

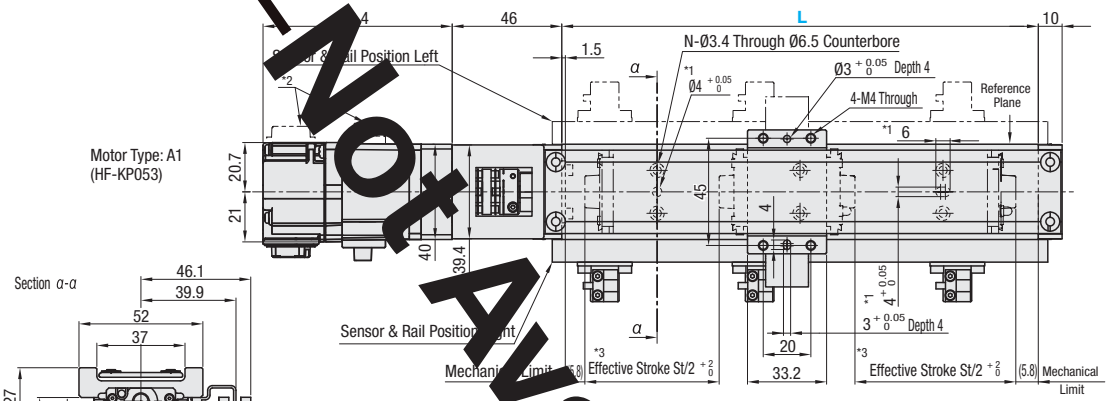
Actuator

	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

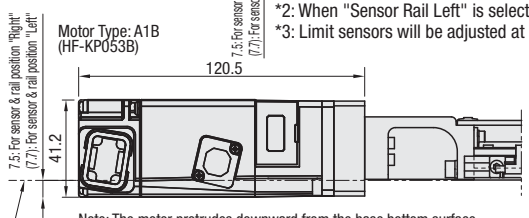
RoHS

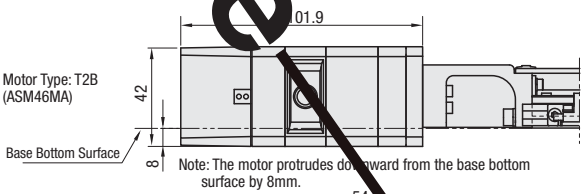
Amplifier · Driver Specifications P.457-458-459
Cable Specifications P.460

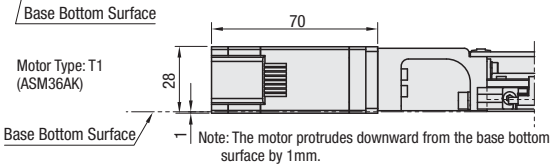
Not Available

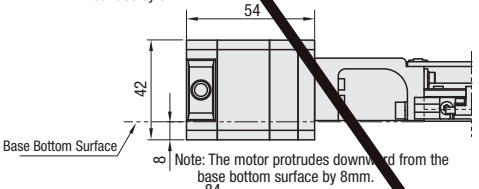


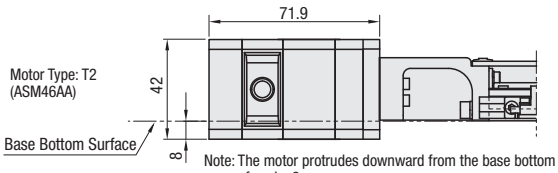
*1: Locating Dowel Holes (Base machining)
*2: When "Sensor Rail Left" is selected, the motor cable location will also be on Left.
*3: Limit sensors will be adjusted at positions to make effective stroke St.

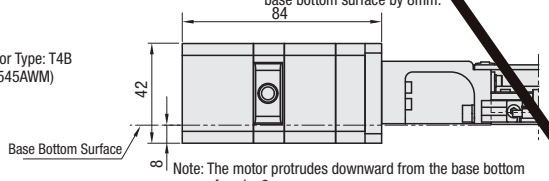












CAD Data

Standard Specifications

* For Allowable Static Load · Moment, see **P.402**

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N • m)		
							Ma	Mb	Mc
	1 5	Ø6 (ground)	±0.003	0.02	0.01	0.003	27	27	93

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A1 (B)	15	2	50	50
	Oriental Motor	T1		-	30	-
		T2 (B)		2	45	50
		T4 (B)			40	35
	Mitsubishi Electric Corporation	A1 (B)	10	2	250	250
	Oriental Motor	T1		-	125	-
		T2 (B)		2	200	225
		T4 (B)			120	115

* Reference values are obtained by verifications. These vary depending on [illegible] capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for [illegible] motors.
* Acceleration · Deceleration Distance: 25mm each

Dimensions · Actuator Main Structure Mass

Part Number	Specification Item	Base Overall Length L (mm)		
		100	150	200
	Effective Stroke St	30	80	130
	A	20	15	40
	P	60	60	60
	No. of Pitches	1	2	2
	Hole Qty. (N)	4	6	6
	Main Structure Mass (kg)	0.69	0.83	0.95

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selection					
	Motor Variation	Amplifier · Driver Variation	Cable (Note 1)	Sensor Qty (Note 2)	Sensor · Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	[illegible]bles (3m): 3 Without: N	2 units: 2 3 units: 3 Without: N	Right: R Left: L	100~200 (50 Pitch)

Order Example - Motor Type - Amplifier · Driver Variation - [illegible] Length - Sensor Qty. - Sensor & Rail Position - Base Length L

List of Controls

Manufacturer Name	Motor Variation						Amplifier · Driver Variations			Motor Drivers Manufacturer Set Part Numbers
	Selection	Motor	Manufacturer Part Number	Output · Variation	Brake	Weight (kg)	Selection	Power Supply	Manufacturer Part Numbers	
Mitsubishi Electric Corporation	A1	AC Servo		50W	w/o	0.35	With: **AM10** Without: **N**(Note 4)			
	A1B				w/	0.5				
Oriental Motor	T1	Stepping		α Step	w/o	0.22	D1			
	T2						D2			
	T2B				w/	0.6	D2			
	T4			5-phase	w/o		D4			
	T4B				w/	0.52	D6			

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Source Cables	For Brakes Cables	Encoder Cables
Mitsubishi Electric Corporation	A1			
	A1B			
Oriental Motor	T1			
	T2			
	T2B			
	T4			
	T4B			

(Note 1-1) When "with cables" is selected, cables in Cable Configuration List are included. For the specifications, ☞**P.460**
(Note 1-2) When other than the standard cables (3m) are required, please select "w/o cable" option and separately choose from the cables listed on Cables on **P.460**
(Note 2-1) When "w/o sensor" is selected, sensor rail comes with the unit but sensor target will not be included.
(Note 2-2) The sensor cable ends will need to be terminated by the customer. For details, See FPML24 on **P.1746**.
(Note3)Please use brake motors for vertical applications.
(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship **13 Days** ?For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price (Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
<Ex.> For
1636,00 EUR (Actuator Body Price + Controller Price) + 81,00 EUR (Cable Price) + 28,00 EUR = (Sensor Price)Sales Price = 1745,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variations	Amplifier · Driver Variations	€ Unit Price 1 ~ 2 unit(s)		
			L100	L150	L200

?For orders larger than indicated quantity, please request a quotation.

Cable Price

Motor Variations	€ Unit Price	
	With Cable (3m)	w/o Cable

?Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Price

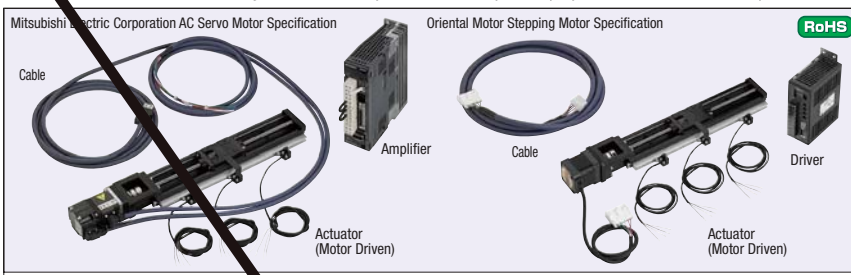
Sensor Qty.	€ Unit Price

Not Available

Motor Driven Single Axis Actuator LX26 Standard Type

NEW

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target.
Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)



RoHS

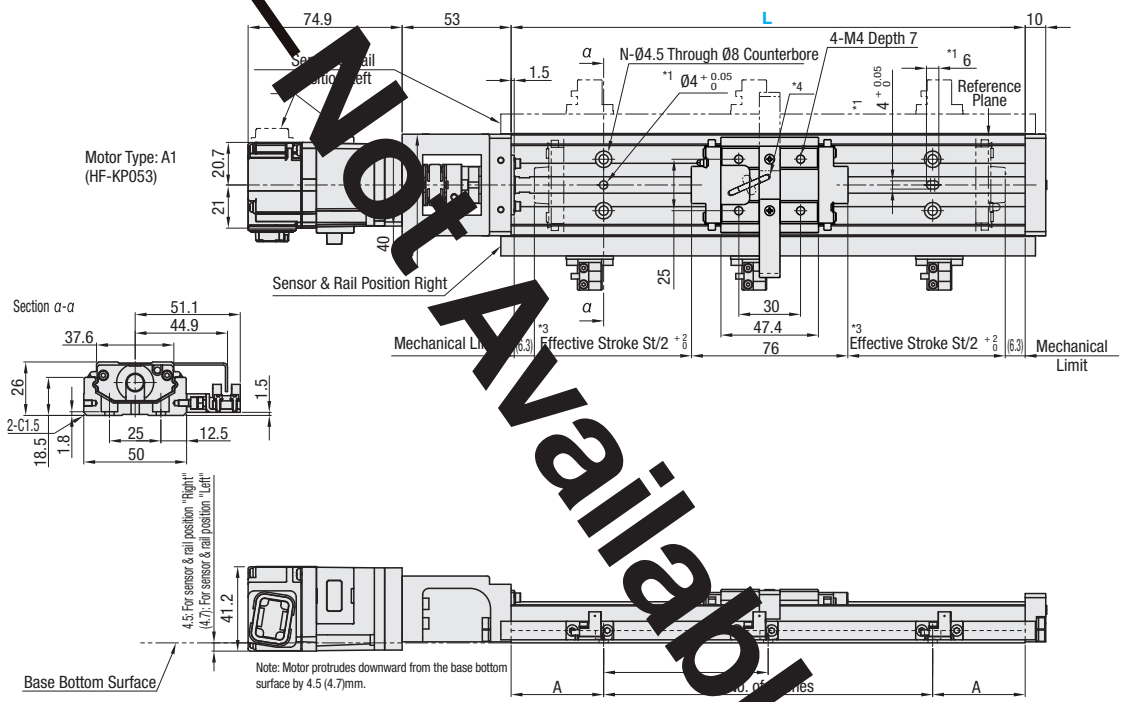
Components
Actuator · Amplifier · Driver · Cable
Accessories: Amplifier · Driver Instruction Manuals

Actuator

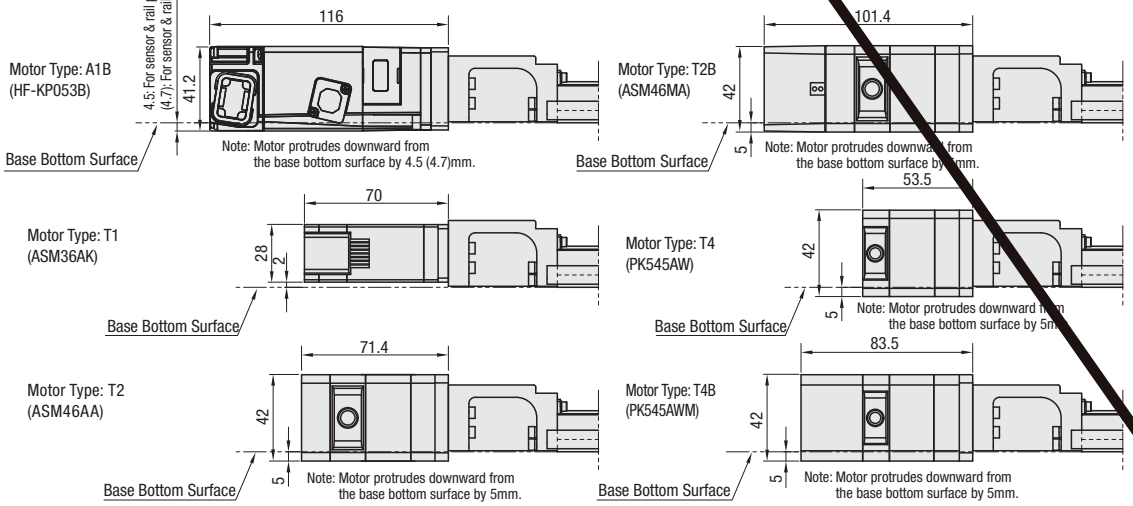
	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

Amplifier · Driver Specifications ☞P.457-458-459
Cable Specifications ☞P.460

Not Available



* 1: Locating Dowel Holes (Base machining)
* 2: When "Sensor Rail Left" is selected, the motor cable location will also be left.
* 3: Limit sensors will be adjusted at positions to make effective stroke St/2.
* 4: Read 5 has a return tube.



Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N・m)		
							Ma	Mb	Mc
	2	Ø8 (ground)	±0.003	0.02	0.01	0.003	70	70	225
	5								

* For Allowable Static Load Moment, see **P.402**

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A1 (B)	20	5	100	100
	Oriental Motor	T1		-	45	-
		T2 (B)		5	90	90
		(B)			55	45
	Mitsubishi Electric Corporation	A1	18	5	250	250
	Oriental Motor	T1		-	100	-
		T2 (B)		5	175	175
		T4 (B)			105	80

* Reference values are obtained by verifications. These vary depending on the capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for motors with brake.
* Acceleration / Deceleration Distance: 25mm each

Dimensions · Actuator Main Structure Mass

Part Number	Specification Items	Base Overall Length L (mm)			
		150	200	250	300
	Effective Stroke St	60	110	160	210
	A	35	20	45	30
	P	80	80	80	80
	No. of Pitches	1	2	2	3
	Hole Qty. (N)	4	6	6	8
	Main Structure Mass (kg)	1.08	1.30	1.51	1.73

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selection					
	Motor Variation	Amplifier / Driver Variation	Cable (Note 1)	Sensor Qty (Note 2)	Sensor / Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	cables (3m): 3 Without: N	2 units: 2 3 units: 3 Without: N	Right: R Left: L	150~300 (50 Pitch)

Order Example

Part Number	-	Motor Type	-	Amplifier Variation	-	Cable Length	-	Sensor Qty.	-	Sensor & Rail Position	-	Base Length L
	-		-		-	3	-	3	-	R	-	300

List of Controls

Manufacturer Name	Motor Variation						Amplifier · Driver Variation			Motor Drivers Manufacturer Set Part Numbers
	Selection	Motor	Manufacturer Part Number	Output · Variation	Brake (Note 3)	Weight (kg)	Selection	Power Supply	Manufacturer Part Numbers	
Mitsubishi Electric Corporation		AC Servo	HF-KP053	50W	w/o	0.35		AC200V	MR-J3-10A (General-purpose A Type)	-
			HF-KP053B		w/	0.5				
Oriental Motor		Stepping	ASM36AK	α Step	w/o	0.5		DC24V	ASD10B-K	ASC36AK
			ASM46AA					Single phase AC100V	ASD13A-A	AS46AA
			ASM46MA		w/	0.6			ASD13A-A	AS46MA
			PK545AW	5-phase	w/o	0.4			RKD507-A	RK545AA
			PK545AWM		w/	0.52			RKD507M-A	RK545AMA

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Type	Motor Power Source Cable	For Brakes Cables	Encoder Cables
Mitsubishi Electric Corporation	A1	1 pc. SVPM-J3HF1-B-3-02S	-	1 pc. SVEM-J3HF1-B-3
	A1B		1 pc. SVPM-J3HF1B-B-3-02S	
Oriental Motor	T1	1 pc. STPO-AS1-B-3	-	-
	T2			
	T2B		Customer provided	
	T4	1 pc. STPO-RK1-A-3	-	
	T4B	1 pc. STPO-RK2-A-3		

(Note 1-1) When "w/ cables" is selected, cables in Cable Configuration List are included. For the specifications ☞**P.460**

(Note 1-2) When other than standard cables (3m) are required, please select "w/o cable" option and separately purchase from the cables listed on Cables Page **P.460**

(Note 2-1) When "w/o sensor" is selected, sensor rail comes with the unit but sensor target will not be included.

(Note 2-2) The sensor cable end wires need to be terminated by the customer. For details, See FPM Catalog on Page **P.446**.

(Note3) Please use brake motors for vertical applications.

(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

(Actuator Price) + (Controller / Cable / Sensor Price) = Total Price

<Ex.> For LXM2602-A1-AM10-3-3-R-200,

1643,00 EUR (Actuator Body Price + Controller Price) + 81,00 EUR (Cable Price) + 28,00 EUR = (Sensor Price) Sales Price = 1752,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variation	Amplifier / Driver Variation	€ Unit Price 1 ~ 2 unit(s)			
			L150	L200	L250	L300

For orders larger than indicated quantity, please request a quotation.

Cable Price

Motor Variation	€ Unit Price	
	With Cable (3m)	w/o Cable

Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Price

Sensor Qty.	€ Unit Price

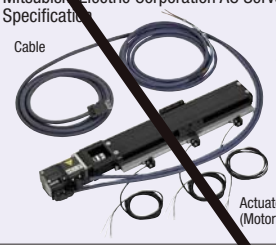
Not Available

Motor Driven Single Axis Actuator
LX26 Cover Type

NEW

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

Mitsubishi Electric Corporation AC Servo Motor Specification





Oriental Motor Stepping Motor Specification

RoHS



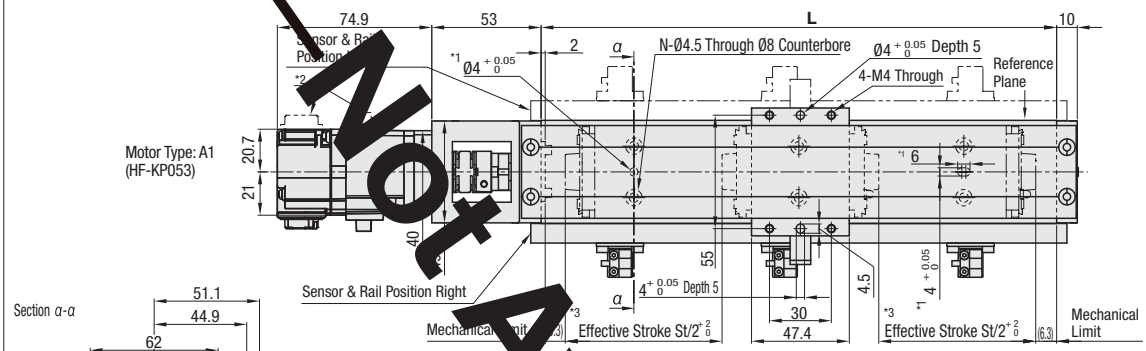
Components
Actuator / Amplifier / Driver / Cable
Accessories: Amplifier / Driver Instruction Manuals

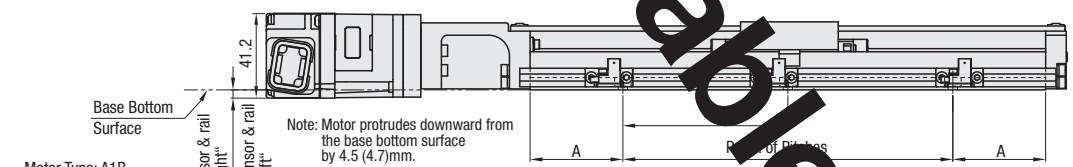
Actuator

	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

Amplifier / Driver Specifications P.457-458-459
Cable Specifications P.460

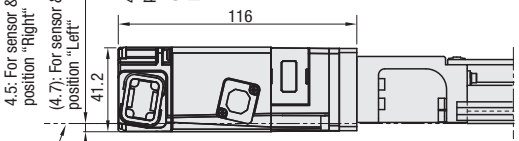
Not Available



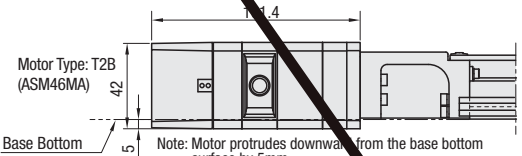


Motor Type: A1B
(HF-KP053B)

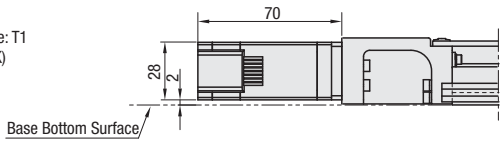
* 1: Locating Dowel Holes (Base machining)
* 2: When "Sensor Rail Left" is selected, the motor cable location will also be on Left.
* 3: Limit sensors will be adjusted at positions to make effective stroke St/2 +2 0



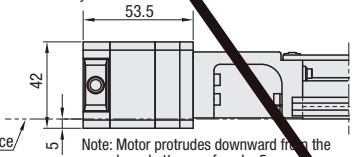
Motor Type: T2B
(ASM46MA)



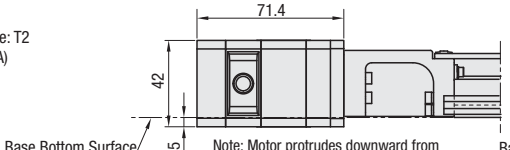
Motor Type: T1
(ASM36AK)



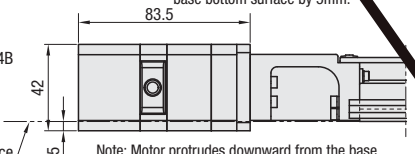
Motor Type: T4
(PK545AW)



Motor Type: T2
(ASM46AA)



Motor Type: T4B
(PK545AWM)



Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N · m)		
							Ma	Mb	Mc
	2	Ø8 (ground)	±0.003	0.02	0.01	0.003	70	70	225
	5								

* For Allowable Static Load Moment, see **P.402**

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A1 (B)	20	5	100	100
	Oriental Motor	T1		-	45	-
		T2 (B)		5	90	90
		T4 (B)			55	45
	Mitsubishi Electric Corporation	A1 (B)	18	5	250	250
	Oriental Motor	T1		-	100	-
		T2 (B)		5	175	175
		T4 (B)			105	80

* Reference values are obtained by verifications. These vary depending on load capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for brake motors.
* Acceleration / Deceleration Distance: 25mm each

Dimensions · Actuator Main Structure Mass

Part Number	Specification Item	Base Overall Length L (mm)			
		150	200	250	300
	Effective Stroke St	60	110	160	210
	A	35	20	45	30
	P	80	80	80	80
	No. of pitches	1	2	2	3
	Hole Qty. (N)	4	6	6	8
	Main Structure Mass (kg)	1.27	1.49	1.71	1.93

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selection					
	Motor Variation	Amplifier / Driver Variation	Cable (Note 1)	Sensor Qty (Note 2)	Sensor / Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	w/ Cables (3m)3 Without:N	2 units:2 3 units:3 Without:N	Right:R Left:L	150~300 (50 Pitch)

Order Example

Part Number	-	Motor Type	-	Amplifier / Driver Variation	-	Cable Length	-	Sensor Qty.	-	Sensor & Rail Position	-	Base Length L
	-		-			3	-	3	-	R	-	300

List of Controls

Manufacturer Name	Motor Variation						Amplifier / Driver Variation			Motor Drivers Manufacturer Set Part Number
	Selection	Motor	Manufacturer Part Numbers	Output / Variations	Brake (Note 3)	Weight kg	Selections	Power Supply	Manufacturer Part Number	
Mitsubishi Electric Corporation		AC Servo	HF-KP053	50W	w/o	0.3		AC200V	MR-J3-10A (General-purpose A Type)	-
			HF-KP053B		w/	0.5				
Oriental Motor		Stepping	ASM36AK	α Step	w/o	0.2		DC24V	ASD10B-K	ASC36AK
			ASM46AA			0.5		Single phase AC100V	ASD13A-A	AS46AA
			ASM46MA		w/	0.6			ASD13A-A	AS46MA
			PK545AW	5-phase	w/o	0.4			RKD507-A	RK545AA
			PK545AWM		w/	0.52			RKD507M-A	RK545AMA

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Types	Motor Power Source Cables	For Brakes Cables	Encoder Cables
Mitsubishi Electric Corporation	A1	1 pc. SVPM-J3HF1-B-3-02S	-	1 pc. SVEM-J3HF1-B-3
	A1B		1 pc. SVPM-J3HF1B-B-3-02S	
Oriental Motor	T1	1 pc. STPO-AS1-B-3	-	-
	T2			
	T2B		Customer provided	
	T4	1 pc. STPO-RK1-A-3	-	
	T4B	1 pc. STPO-RK2-A-3		

(Note 1-1) When "w/ cables" is selected, cables in Cable Configuration List are included. For the specifications, **P.460**
(Note 1-2) When other than the standard cables (3m) are required, please select "w/o cables" and separately choose from the cables listed on Cables on **P.**
(Note 2-1) When "w/o sensor" is selected, sensor rail comes with the unit but sensor target will not be included.
(Note 2-2) The sensor cable ends will need to be terminated by the customer. For details, see FPML24 on **P.1746**.
(Note3) Please use brake motors for vertical applications.
(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

(Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
<Ex.> For LXM26021C-A1-AM10-3-3-R-200,
1695,00 EUR (Actuator Price + Control Price) + 81,00 EUR (Cable Price) + 28,00 EUR = (Sensor Price)Sales Price = 1804,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variations	Amplifier / Driver Variations	€ Unit Price 1 ~ 2 unit(s)			
			L150	L200	L250	L300

For orders larger than indicated quantity, please request a quotation.

Cable Price

Motor Variations	€ Unit Price	
	With Cable (3m)	w/o Cable

Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Price

Sensor Qty.	€ Unit Price

Not Available

Motor Driven Single Axis Actuator
LX30 Standard Type

NEW

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

Mitsubishi Electric Corporation AC Servo Motor Specification



Oriental Motor Stepping Motor Specification



RoHS

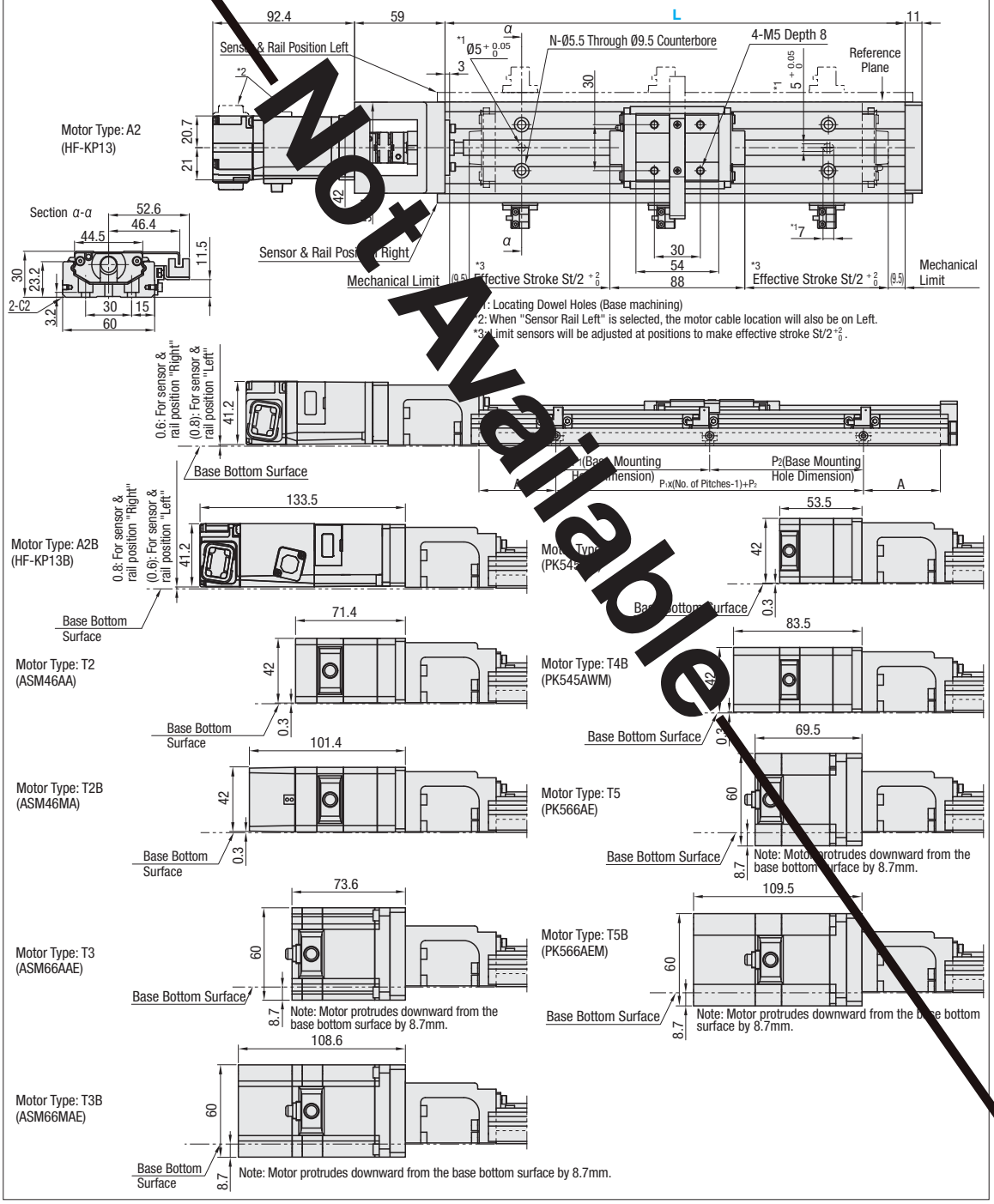
Components
Actuator / Amplifier / Driver / Cable
Accessories: Amplifier / Driver Instruction Manuals

Actuator

	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

Amplifier / Driver Specifications P.457-458-459
Cable Specifications P.460

Not Available



Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)		Parallelism (mm)		Backlash (mm)	Allowable Static Moment (N·m)		
				Up to L=400	L=450 or more	Up to L=400	L=450 or more		Ma	Mb	Mc
	5	Ø10 (ground)	±0.003	0.02	0.025	0.01	0.015	0.003	126	126	387
	10										

* For Allowable Static Load Moment, see **P.402**

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A2 (B)	32	8	235	250
	Oriental Motor	T2 (B)			160	150
		T3 (B)			175	160
		T4 (B)			90	70
		T5 (B)			150	140
	Mitsubishi Electric Corporation	A2 (B)	24	8	450	400
	Oriental Motor	T2 (B)			250	200
		T3 (B)			275	275
		T4 (B)			135	10
		T5 (B)			210	45

* Reference values are obtained by verifications. These vary depending on load capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for motors with brake motors.
* Acceleration / Deceleration Distance: 25mm each LX3010: 50mm each

Dimensions · Actuator Main Structure Mass

Part Number	Specification Items	Base Overall Length L (mm)									
		150	200	250	300	350	400	450	500	550	600
	Effective Stroke St	40	90	140	190	240	290	340	390	440	490
	A	25	50	50	50	50	50	50	50	50	50
	P_1	-	-	100	100	100	100	100	100	100	100
	P_2	100	100	50	100	50	100	50	100	50	100
	No. of pitches	1	1	2	2	3	3	4	4	5	5
	Hole Qty. (N)	4	4	6	6	8	8	10	10	12	12
	Main Structure Mass (kg)	1.64	1.99	2.32	2.67	3.01	3.36	3.70	4.04	4.39	4.73

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selection					
	Motor Variation	Amplifier · Driver Variation	Cable (Note 1)	Sensor Qty (Note 2)	Sensor / Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	w/ cables (3m): **3** Without: **N**	2 units: **2** 3 units: **3** Without: **N**	Right: **R** Left: **L**	**150~600** (50 Pitch)

Order Example

Part Number	-	Motor Type	-	Amplifier / Driver Variation	-	Cable Length	-	Sensor Qty.	-	Sensor & Rail Position	-	Base Length L
	-		-		-	3	-	3	-	R	-	600

List of Controls

Manufacturer Name	Motor Variation					Amplifier / Driver Variation			Motor Drivers Manufacturer Set Part Numbers
	Selection	Motor	Manufacturer Part Number	Output / Variations	Brake (Note 3)	Weight (kg)	Selection	Power Supply	Manufacturer Part Number	
Mitsubishi Electric Corporation		AC Servo	HF-KP13	100W	w/o	0.66	Standard:**AM** With cables(Note 4)	AC200V	MR-J3-10A (General-purpose A Type)	-
			HF-KP13B		w/	0.8				
Oriental Motor		Stepping	ASM46AA	α Step	w/o	0.5			ASD13A-A	AS46AA
			ASM66AAE			0.85			ASD24A-A	AS66AAE
			PK545AW	5-phase		0.4			RKD507-A	RK545AA
			PK566AE			0.8		Single phase AC100V	RKD514L-A	RK566AAE
			ASM46MA	α Step	w/	0.6			ASD13A-A	AS46MA
			ASM66MAE			1.1			ASD24A-A	AS66MAE
			PK545AWM	5-phase		0.52			RKD507M-A	RK545AMA
			PK566AEM			1.1			RKD514LM-A	RK566AMAE

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Variation	Motor Power Cable	Brake Cable	Encoder Cable
Mitsubishi Electric Corporation	A2	1 pc.	-	1 pc.
	A2B	SVPM-J3HF1-B-3-02S	1 pc. SVPM-J3HF1B-B-3-02S	SVEM-J3HF1-B-3
Oriental Motor	T2	1 pc. STPO-AS1-B-3	-	-
	T3			
	T4	1 pc. STPO-RK1-A-3	-	
	T5			
	T2B	1 pc. STPO-AS1-B-3	Customer provided	
	T3B	1 pc. STPO-AS1B-B-3	-	
	T4B	1 pc. STPO-RK2-A-3		
	T5B			

(Note 1-1) When "with cables" is selected, cables in Cable Configuration List are included. For the specifications, see **R**
(Note 1-2) When other than the standard cable (3m) are required, please select "w/o cable" option and separately choose from the cables listed on Cables Page **P.460**
(Note 2-1) When "w/o sensor" is selected, Sensor Rail comes with the unit but sensor target will not be included.
(Note 2-2) The sensor cable ends will need to be terminated by the customer. For details, See FPML24 on **P.1746**.
(Note3) Please use brake motors for vertical applications.
(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship **13 Days**

For orders of 3 or more identical models, Days to Ship estimate is provided.

Price (Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
<Ex.> For LXM3005-T2-D2-3-3-R-400,
1650,00 EUR (Actuator Body + Controller) + 100,00 EUR (Cable) + 28,00 EUR (Sensor) Sales Price = 1778,00 EUR

For orders larger than indicated quantity, please request a quotation.

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variation	Amplifier / Driver Variations	€ Unit Price 1 ~ 2 unit(s)									
			L150	L200	L250	L300	L350	L400	L450	L500	L550	L600

Cable Price

Motor Variation	€ Unit Price	
	With cables (3m)	w/o Cable

Sensor Price

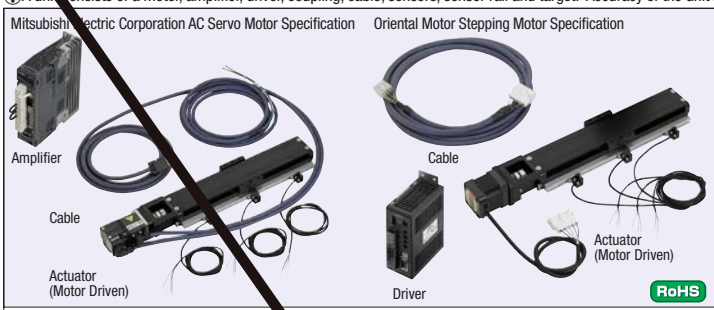
Sensor Qty.	€ Unit Price

Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Not Available

Motor Driven Single Axis Actuator
LX30 Cover Type

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

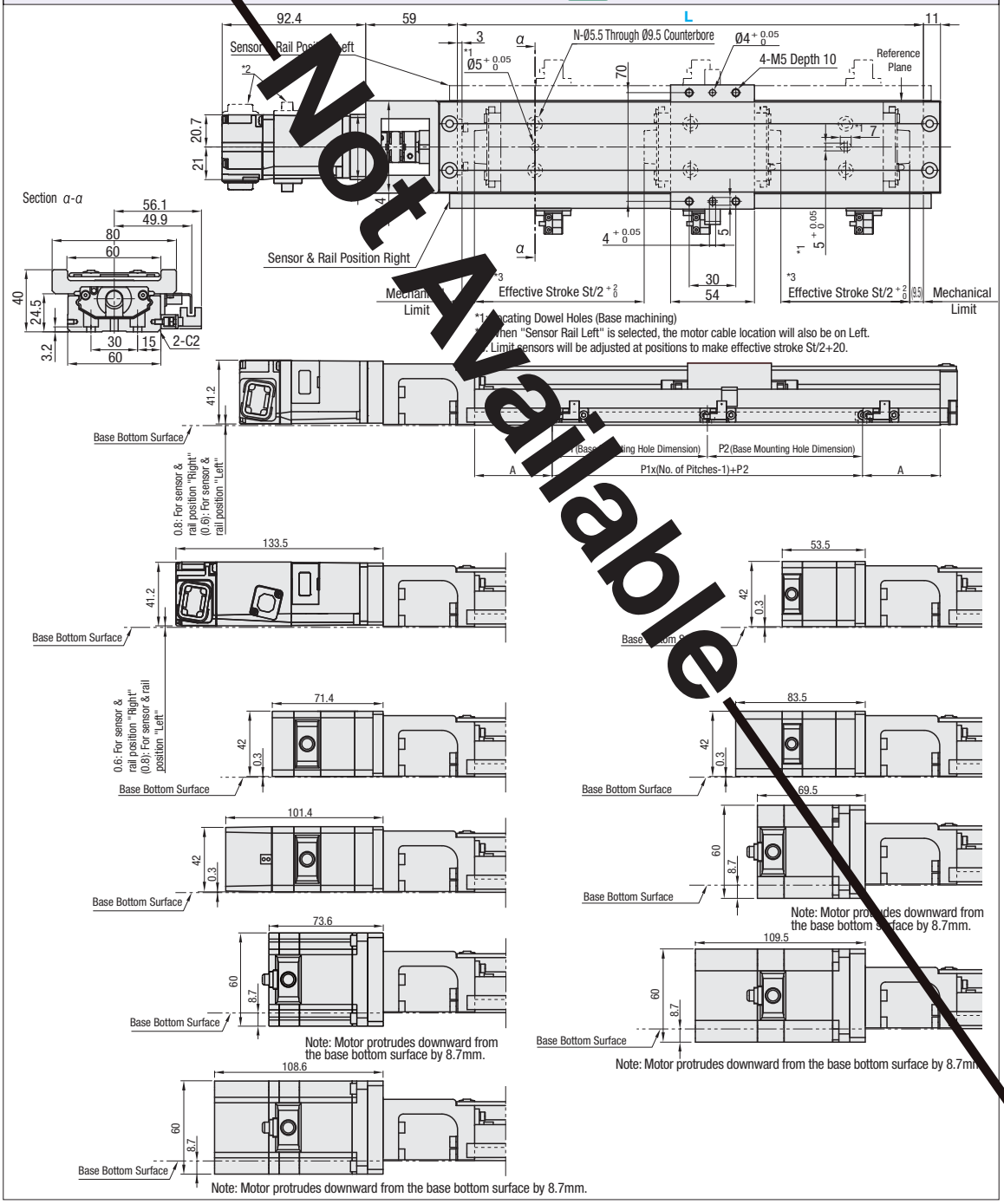


Components
Actuator · Amplifier · Driver · Cable
Accessories: Amplifier · Driver Instruction Manuals

Actuator

	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

Amplifier · Driver Specifications P.457,458,459
Cable Specifications P.460



Not Available

Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)		Parallelism (mm)		Backlash (mm)	Allowable Static Moment (N・m)		
				L=400 or less	L=450 or more	L=400 or less	L=450 or more		Ma	Mb	Mc
	5	Ø10 (ground)	±0.003	0.02	0.025	0.01	0.015	0.003	126	126	387

* For Allowable Static Load Moment, see **P.402**

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A2 (B)	32	8	235	250
	Oriental Motor	T2 (B)			160	150
		T3 (B)			175	160
		T4 (B)			90	70
		T5 (B)			150	140
	Mitsubishi Electric Corporation	A2 (B)			450	400
	Oriental Motor	T2 (B)		8	250	200
		T3 (B)			275	275
		T4 (B)			135	10
		T5 (B)			210	45

* Reference values are obtained by verifications. These vary depending on load capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for motors with brake.
* Acceleration / Deceleration Distance: 25mm each LX3010C: 50mm each

Dimensions · Actuator Main Structure Mass

Part Number	Specification Items	Base Overall Length L (mm)									
		150	200	250	300	350	400	450	500	550	600
	Effective Stroke St	40	90	140	190	240	290	340	390	440	490
	A	25	50	50	50	50	50	50	50	50	50
	P_1	-	-	100	100	100	100	100	100	100	100
	P_2	100	100	50	100	50	100	50	100	50	100
	No. of pitches	1	1	2	2	3	3	4	4	5	5
	Hole Qty. (N)	4	4	6	6	8	8	10	10	12	12
	Main Structure Mass (kg)	2.09	2.43	2.78	3.12	3.47	3.82	4.16	4.50	4.84	5.19

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selections					
	Motor Variation	Amplifier · Driver Variation	Cable (Note 1)	Sensor Qty (Note 2)	Sensor · Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	w/ cables (3m) 3 w/o cable N	2 units: 2 3 units: 3 Without: N	Right: R Left: L	150~600 (50 Pitch)

Order Example Part Number - Motor Type - Amplifier · Driver Variation - Cable Length - Sensor Qty. - Sensor & Rail Position - Base Length L

List of Controls

Manufacturer Name	Motor Variation						Amplifier · Driver Variation			Motor Drivers Manufacturer Set Part Numbers
	Selection	Motor	Manufacturer Part Numbers	Output · Variations	Brake (Note 3)	Weight (kg)	Selection	Power Supply	Manufacturer Part Number	
Mitsubishi Electric Corporation	A2	AC Servo		100W	w/o		With:AM10 Without:N (Note 4)			
	A2B				w/	0.8				
Oriental Motor	T2	Stepping		α Step 5-phase	w/o		D2			
	T3					0.8	D3			
	T4						D4			
	T5					0.8	D5			
	T2B			α Step 5-phase	w/	0.6				
	T3B					1.1	D3			
	T4B					0.52	D6			
	T5B					1.1				

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Variation	Motor Power Cable	Brake Cable	Encoder Cable
Mitsubishi Electric Corporation	A2			
	A2B			
Oriental Motor	T2			
	T3			
	T4			
	T5			
	T2B			
	T3B			
	T4B			
	T5B			

Days to Ship 13 Days

For ordering of multiple identical models, Days to Ship estimate is provided.

(Note 1-1) When "with cables" is selected, cables in Cable Configuration List are included. For the specifications, ☞**P.460**
(Note 1-2) When other than the standard cables (3m) are required, please select "w/o cable" option and separately choose from the cables listed on Cables on ☞**P.460**
(Note 2-1) When "w/o sensor" is selected, sensor rail comes with the unit but sensor target will not be included.
(Note 2-2) The sensor cable ends will need to be terminated by the customer. For details, See PML24 on **P.1746**.
(Note3)Please use brake motors for vertical applications.
(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Price (Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
<Ex.> For
1702,00 EUR (Actuator Body + Controller) + 100,00 EUR (Cable) + 28,00 EUR (Sensor) Sales Price = 1830,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variation	Amplifier · Driver Variations	€ Unit Price 1 ~ 2 unit(s)									
			L150	L200	L250	L300	L350	L400	L450	L500	L550	L600

For orders larger than indicated quantity, please request a quotation.

Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Cable Price

Motor Variations	€ Unit Price	
	With cable (3m)	w/o Cable

Sensor Price

Sensor Qty.	€ Unit Price

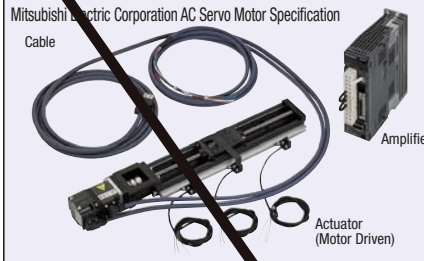
Not Available

Motor Driven Single Axis Actuator
LX45 Standard Type

NEW

A unit consists of a motor, amplifier, driver, coupling, cable, sensors, sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

Mitsubishi Electric Corporation AC Servo Motor Specification



Oriental Motor Stepping Motor Specification



RoHS

Components
Actuator / Amplifier / Driver / Cable
Accessories: Amplifier / Driver Instruction Manuals

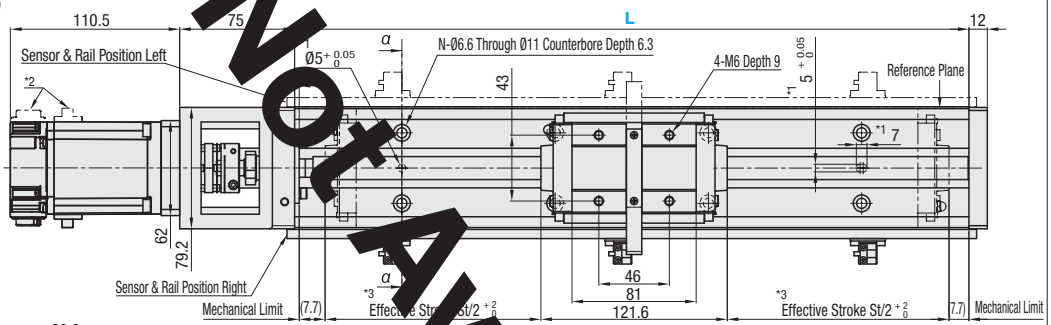
Actuator

	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

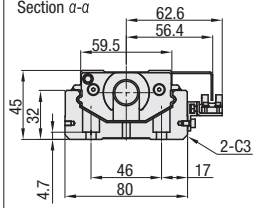
Amplifier / Driver Specifications P.457-458-459
Cable Specifications P.460

Not Available

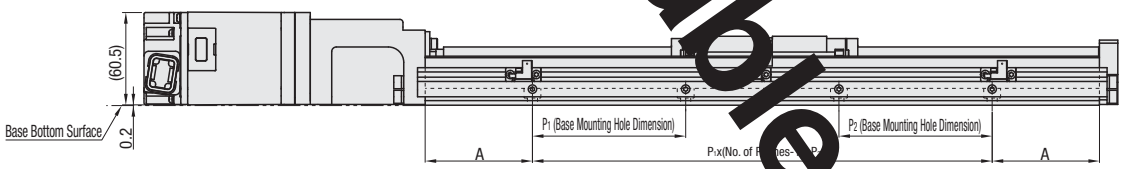
Motor Type: A3
(HF-KP43)



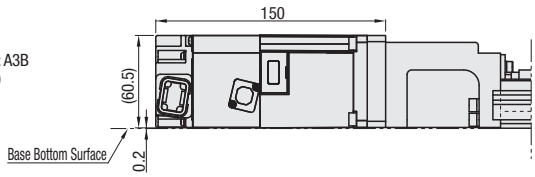
Section α-α



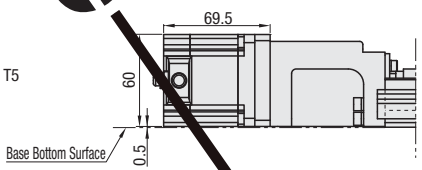
*1: Locating Dowel Holes (Base machining)
*2: When "Sensor Rail Left" is selected, the motor cable location will also be on Left.
*3: Limit sensors will be adjusted in position to make effective stroke St/2 +2 0.



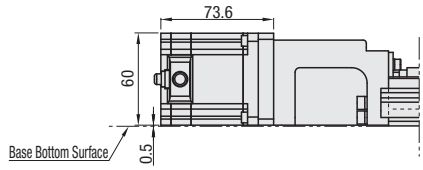
Motor Type: A3B
(HF-KP43B)



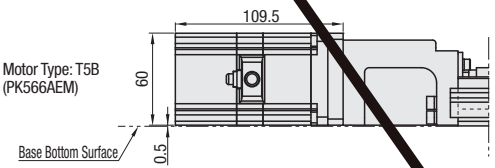
Motor Type: T5
(PK566AE)



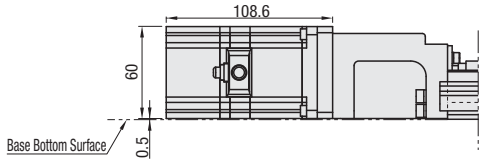
Motor Type: T3
(ASM66AAE)



Motor Type: T5B
(PK566AEM)



Motor Type: T3B
(ASM66MAE)



Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N・m)		
							Ma	Mb	Mc
	10	Ø15 (ground)	±0.003	0.025	0.015	0.003	291	291	972
	20								

* For Allowable Static Load Moment, see **P.402**

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A3 (B)	40	16	400	375
	Oriental Motor	T3 (B)			200	175
		T5 (B)			165	25
	Mitsubishi Electric Corporation	A3 (B)	24	16	450	450
	Oriental Motor	T3 (B)			300	200
		T5 (B)			255	10

* Reference values are obtained by verifications. These vary depending on load capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for brake motors.
* Acceleration / Deceleration Distance: 25mm each LX4520: 50mm each

Dimensions · Actuator Main Structure Mass

Part Number	Specification Items	Base Overall Length L (mm)					
		340	390	440	490	540	590
	Effective Stroke St	200	250	300	350	400	450
	A	70	70	70	70	70	70
	P_1	100	100	100	100	100	100
	P_2	100	50	100	50	100	50
	No. of pitches	2	3	3	4	4	5
	Hole Qty. (N)	6	8	8	10	10	12
	Main Structure Mass (kg)	6.06	6.68	7.29	7.91	8.54	9.17

*The main structure mass is the sum of an actuator, coupling, sensor rail, three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selections					
	Motor Variation	Amplifier · Driver Variations	Cable (Note 1)	Sensor Qty (Note 2)	Sensor · Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	Cables (3m) 3 Without: N	2 units: 2 3 units: 3 Without: N	Right: R Left: L	340~590 (50 Pitch)

Order Example: Part Number - Motor Type - Amplifier · Driver Variations - Cable Length - Sensor Qty. - Sensor & Rail Position - Base Length L

- - - 3 - 3 - R - 590

List of controls

Manufacturer Name	Motor Variation						Amplifier · Driver Variation			Motor Drivers Manufacturer Set Part Numbers
	Selection	Motor	Manufacturer Part Numbers	Output · Variation	Brake (Note 3)	Weight (kg)	Selection	Power Supply	Manufacturer Part Numbers	
Mitsubishi Electric Corporation		AC Servo	HF-KP43	400W	w/o	1.5		AC200V	MR-J3-40A (General-purpose A Type)	-
			HF-KP43B		w/	2				
Oriental Motor		Stepping	ASM66AAE	α Step	w/o	0.85		Single phase AC100V	ASD24A-A	AS66AAE
			PK566AE	5-phase		0.9			RKD514L-A	RK566AAE
			ASM66MAE	α Step	w/	1.1			ASD24A-A	AS66MAE
			PK566AEM	5-phase		1.1			RKD514LM-A	RK566AMAE

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer Name	Motor Variation	Motor Power Cable	Brake Cables	Encoder Cable
Mitsubishi Electric Corporation	A3	1 pc. SVPM-J3HF1-B-3-02S	-	1 pc. SVEM-J3HF1-B-3
	A3B		1 pc. SVPM-J3HF1B-B-3-02S	
Oriental Motor	T3	1 pc. STP0-AS1-B-3	-	-
	T5	1 pc. STP0-RK1-A-3	-	
	T3B	1 pc. STP0-AS1B-B-3		
	T5B	1 pc. STP0-RK2-A-3		

(Note 1) When "with cables" is selected, cables in Cable Configuration List are included. For the specifications, ☞ **P.460**
(Note 1-2) When other than the standard cables (3m) are required, please select "w/o cable" option and separately choose from the cables listed on Cables on **P.460**
(Note 2) When "w/o sensor" is selected, sensor rail comes with the unit, but sensor target will not be included.
(Note 2-2) The sensor cable ends will need to be terminated by the customer. For details, See FPML24 on **P.1746**.
(Note3) Please use brake motors for vertical applications.
(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

(Actuator Price) + (Controller / Cable / Sensor Price) = Total Price
<Ex.> For LXM4510-A3-AM40-3-3-R-590,
2617,00 EUR (Actuator Price + Control Price) + 81,00 EUR (Cable Price) + 28,00 EUR = (Sensor Price) → Sales Price = 2617,00 EUR

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Variation	Amplifier · Driver Variations	€ Unit Price 1 ~ 2 unit(s)					
			L340	L390	L440	L490	L540	L590

For orders larger than indicated quantity, please request a quotation.

Cable Price

Motor Variation	Unit Price	
	With Cable (3m)	w/o Cable

Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Price

Sensor Qty.	€ Unit Price

Not Available

Motor Driven Single Axis Actuator
LX45 Cover Type

NEW

A unit consists of a motor amplifier · driver · coupling · cable · sensors · sensor rail and target. Accuracy of the unit is inspected before shipment. (Inspection Certificate Included)

Mitsubishi Electric Corporation AC Servo Motor Specification



Oriental Motor Stepping Motor Specification



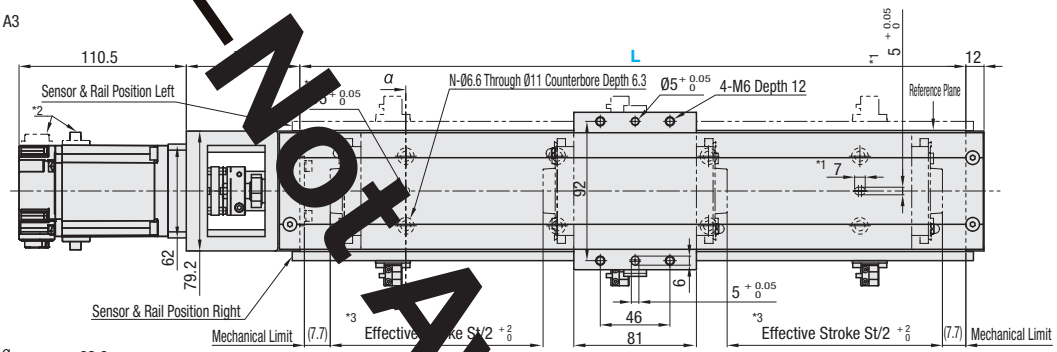
Actuator

	Base	Block
M Material	JIS STKM	JIS SCM Material
S Surface Treatment	LTBC Plating	
H Hardness	Induction Hardening HRC58~64	HRC58~62

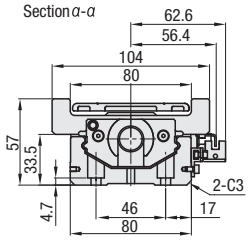
Amplifier · Driver Specifications P457-458-459
Cable Specifications P460

Not Available

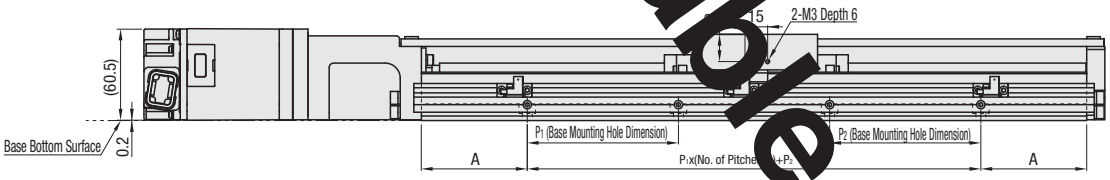
Motor Type: A3
(HF-KP43)



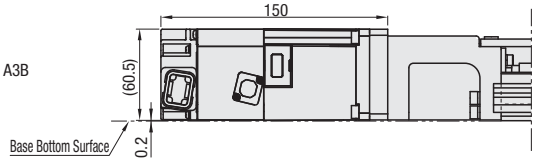
Section α-α



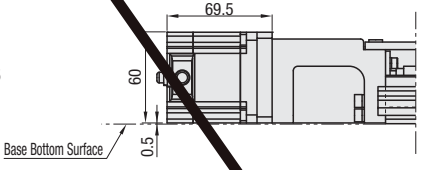
*1: Locating Dowel Holes (Base mounting)
*2: When "Sensor Rail Left" is selected, the motor cable location will also be on Left.
*3: Limit sensors will be adjusted at the factory to make effective stroke St/2 +2 0.



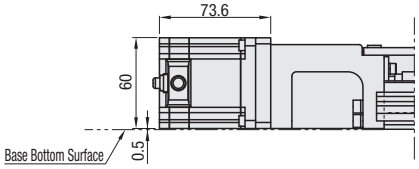
Motor Type: A3B
(HF-KP43B)



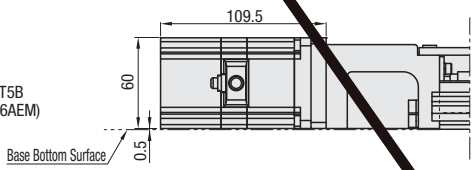
Motor Type: T5
(PK566AE)



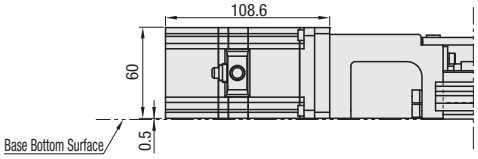
Motor Type: T3
(ASM66AAE)



Motor
Type: T5B
(PK566AEM)



Motor Type: T3B
(ASM66MAE)



Standard Specifications

Part Number	Lead (mm)	Ball Screw Shaft Diameter (mm)	Positioning Repeatability (mm)	Positioning Accuracy (mm)	Parallelism (mm)	Backlash (mm)	Allowable Static Moment (N · m)		
							Ma	Mb	Mc
	10	Ø15 (ground)	±0.003	0.025	0.015	0.003	291	291	972
	20								

* For Allowable Static Load Moment, see P.402

Load Capacity · Max. Velocity Correlation Table

Part Number	Manufacturer	Motor Type	Load Capacity (kg)		Max. Velocity (mm/s)	
			Horizontal	Vertical	Horizontal	Vertical
	Mitsubishi Electric Corporation	A3 (B)	40	16	400	375
	Oriental Motor	T3 (B)			200	175
		T5 (B)			165	25
	Mitsubishi Electric Corporation	A3 (B)	24	16	450	450
	Oriental Motor	T3 (B)			300	200
		T5 (B)			255	10

* Reference values are obtained by verifications. These vary depending on load capacity and max. velocity.
* The horizontal values are for motors without brake, and the vertical values are for brake motors.
* Acceleration / Deceleration Distance: 25mm each LX4520C: 50mm each

Dimensions · Actuator Main Structure Mass

Part Number	Specification Item	Base Overall Length L (mm)					
		340	390	440	490	540	590
	Effective Stroke St	200	250	300	350	400	450
	A	70	70	70	70	70	70
	P_1	100	100	100	100	100	100
	P_2	100	50	100	50	100	50
	No. of pitches	2	3	3	4	4	5
	Hole Qty. (N)	6	8	8	10	10	12
	Main Structure Mass (kg)	7.00	7.67	8.33	9.00	9.68	10.36

*The main structure mass is the sum of an actuator · coupling · sensor rail · three sensors and sensor target. For motor mass, please refer to Control List.

Part Number	Selection					
	Motor Type	Amplifier Driver Variation	Cable (Note1)	Sensor Qty (Note 2)	Sensor & Rail Position	Base Overall Length L (mm)
	List of controls Select from	List of controls Select from	w/ cables (3m) 3 Without: N	2 units: 2 3 units: 3 Without: N	Right: R Left: L	340~590 (50 Pitch)

Order Example

Part Number	-	Motor Type	-	Amplifier Driver Variations	-	Cable	-	Sensor Qty.	-	Sensor & Rail Position	-	Base Length L
	-		-		-	3	-	3	-	R	-	590

List of controls

Manufacturer	Motor Type						Amplifier / Driver Variation			Motor · Driver Manufacturer Part Set Number
	Selection	Motor	Manufacturer Part Number	Output / Variation	Brake (Note3)	Weight (kg)	Selection	Power Supply	Manufacturer Part Number	
Mitsubishi Electric Corporation		AC Servo Motors	HF-KP43	400W	w/o	1		AC200V	MR-J3-40A (General-purpose A Type)	-
			HF-KP43B		w/	1.1				
Oriental Motor		Stepping	ASM66AAE	α Step	w/o	0		Single phase AC100V	ASD24A-A	AS66AAE
			PK566AE	5-phase		0.8			RKD514L-A	RK566AAE
			ASM66MAE	α Step	w/	1			ASD24A-A	AS66MAE
			PK566AEM	5-phase		1.1			RKD514LM-A	RK566AMAE

Cable Configuration List

Cables are terminated and ready to connect to motor, amplifier and driver.

Manufacturer	Motor Type	Motor Power Cable	Brake Cable	Encoder Cable
Mitsubishi Electric Corporation	A3	1 pc. SVPM-J3HF1-B-3-02S	-	1 pc. SVEM-J3HF1-B-3
	A3B		1 pc. SVPM-J3HF1B-B-3-02S	
Oriental Motor	T3	1 pc. STPO-AS1-B-3	-	-
	T5	1 pc. STPO-RK1-A-3	-	
	T3B	1 pc. STPO-AS1B-B-3		
	T5B	1 pc. STPO-RK2-A-3		

(Note 1-1)When "with cables" is selected, cables in Cable Configuration List are included. For the specifications, ☞ P.460

(Note 1-2)When other than the standard cables (3m) are required, please select "w/o cable" option and separately choose from the cables listed. ☞ P.460

(Note 2-1)When "w/o sensor" is selected, sensor rail comes with the unit but sensor target will not be included.

(Note 2-2)The sensor cable ends will need to be terminated by the customer. For details, See FPML24 on P.1746.

(Note3) Please use brake motors for vertical applications.

(Note 4) When "w/o amplifier" is selected, no amplifier will be included.

Days to Ship: 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

(Actuator Price) + (Controller · Cable · Sensor Price) = Total Price

<Ex.> For LXM4510C-T3-D3-3-3-R-590,
2332,00 EUR (Actuator+Controller) + 100,00 EUR (Cable) + 28,00 EUR (Sensor) = 2460,00 EUR (Total price)

Actuator + Control Price (by Base Overall Length Lmm)

Part Number	Motor Type	Amplifier / Driver Variations	€ Unit Price 1 ~ 2 unit(s)					
			L340	L390	L440	L490	L540	L590

For orders larger than indicated quantity, please request a quotation.

Cable Price

Motor Variation	€ Unit Price	
	With Cable (3m)	w/o Cable

Cable prices are the total of each motor-compatible cable prices in Cable Configuration Table.

Sensor Price

Sensor Qty.	€ Unit Price

Not Available

Amplifier & Driver Specifications / Setup Software (with USB Cable)

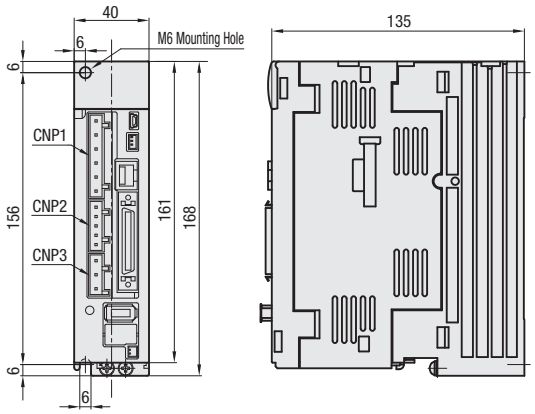
Mitsubishi Electric AC Servo MELSERVO-J3 Series

■Amplifier Basic Specifications

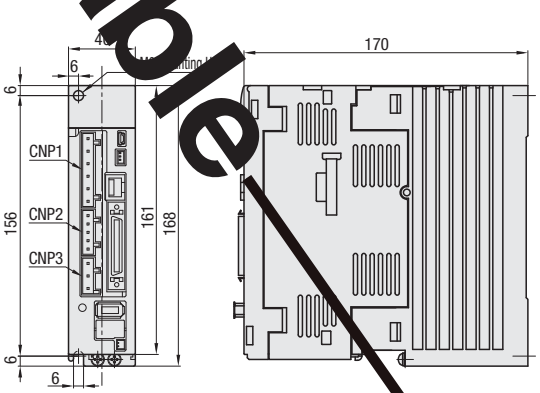
Servo Amplifier Model		MR-J3-10A/MR-J3-40A
Main Circuit Power Supply	Voltage · Frequency	Three-phase / Single-phase AC200 ~ 230V / 50, 60Hz
	Allowable Voltage Fluctuations	Three-phase AC200 ~ 230V: Three-phase AC170 ~ 253V Single-phase AC200 ~ 230V: Single-phase AC170 ~ 253V
	Allowable Frequency Fluctuations	within ±5%
Control Circuit Power Supply	Voltage · Frequency	Single-phase AC200 ~ 230V / 50, 60Hz
	Allowable Voltage Fluctuations	Single phase AC170 ~ 253V
	Allowable Frequency Fluctuations	within ±5%
	Input	30W
Interface Power Supply		DC24V±10% (Required Current Capacity: 300mA)
Regenerative Resistor Allowable Dissipation Power	Amplifier Built-in Resistor	10A: None 40A: 10W
Control Method		Sine Wave PWM Control / Current Control Type
Dynamic Brake		Built-in
Protection Features		Over current Cutoff, Regenerative Overvoltage Cutoff, Overload Cutoff (Electronic Thermal Protection), Servo Motor Over Temp. Protection, Encoder Error and Regenerative Error Protections, Low Voltage / Instantaneous Power Failure, Over speed and Excessive Error Protections
Position Control Mode	Maximum Input Pulse Frequency	1Mpps (Differential Receiver), 200kpps (Open Collector)
	Position Feedback Pulse	Encoder Resolution: 262144p/rev
	Command Pulse Multiplication	Electronic Gear A/B ratio A=1 ~ 1048576, B=1 ~ 10485761/10<A/B<2000
	In-position Range Setting	0 ~ ±10000pulse (Command Pulse Unit)
	Excess Error	±3 revolutions
	Torque Limit	Parameter Setting or External Analog Input Setting (DC 0 ~ +10V/Max. Torque)
Velocity Control Mode	Velocity Control Range	Analog Velocity Commands 1:2000, Internal Speed Commands 1:5000
	Analog Speed Command Input	DC 0 ~ ±10V/Rated Rotational Velocity
	Velocity Fluctuation Rate	±0.01% or less (Load Fluctuations 0 ~ 100%) 0% (Power Supply Fluctuations ±10%) ±0.2% or less (Ambient Temperature 25°C±10°C) Only by Analog Velocity Commands
	Torque Limit	Parameter Setting or External Analog Input Setting (DC 0 ~ +10V/Max. Torque)
Torque Control Mode	Analog Torque Command Input	DC 0 ~ ±8V/Max. Torque (Input Impedance 10 ~ 12kΩ)
	Velocity Limit	Parameter Setting or External Analog Input Setting (DC 0 ~ +10V/Rated Rotational Velocity)
Structure		Self-cooling, Open (IP00)
Environment	Ambient Temperature	0 ~ 55°C (No freezing), Storage: -20 ~ 65°C (No freezing)
	Ambient Humidity	90%RH or less (No condensation), Storage: 90%RH or less (No condensation)
	Ambience	Indoors (no direct sunlight), No corrosive gas, flammable gases, oil mist and dust
	Altitude	1000m or less above sea-level
	Vibrations	5.9m/s²
Mass		10A: 0.8kg 40A:1.0kg

■External Dimensional Drawings

MR-J3-10A



MR-J3-40A



■Setup Software (with USB Cable)

Used for Mitsubishi Electric AC Servo MELSERVO-J3 Series Amplifier gain adjustments.



Part Number	Cable Length	€ Unit Price
	3m	

Order Example: Part Number

Days to Ship: 8 Days

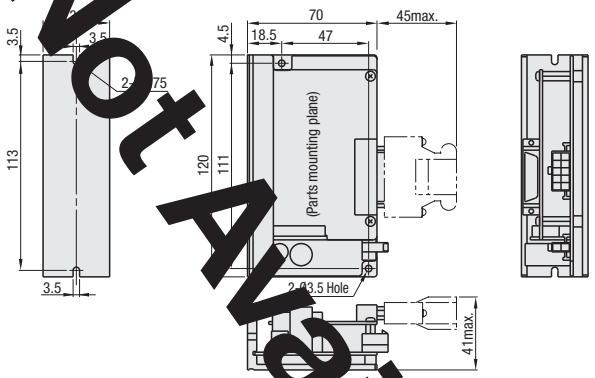
Not Available

Oriental Motor α-Step ASC36AK

■Driver Basic Specifications

Input Power Supply		DC24V±10%
Velocity · Position Control Commands		Pulse Input
Maximum Input Pulse Frequency		250 kHz (When pulse duty is 50%)
Protection Features		When the following protection functions are activated, alarm signals are sent to bring motor to a non-regenerative stop. Overload, Overvoltage and Velocity Error protections, and Over speed, EEPROM data error, Sensor error and System error
Input Signal		Opto-coupler input · Input resistance: 220Ω Input current: 7 ~ 20 mA [CW Pulse · CCW Pulse (Negative Logic Pulse Input), Pulse · Rotational Direction Switch (Negative Logic Pulse Input) · Current OFF · Alarm Clear · Resolution Switch]
Output Signal		Opto-coupler · Open-collector output Interface Condition: DC30V · 15mA or less (In-Position, Alarm and Timing) Transistor · Open-Collector output Interface Conditions: DC30V, 15 mA or less (Feedback Pulse A/B-phase)
Insulation Resistance		100MΩ or more measured at DC500V, by an Insulation Resistance Meter as shown below. · Heat sink - Power supply input terminals
Dielectric Strength Voltage		No abnormality is observed when applied for 1 min. as follows. · Heat sink - Power supply input terminals 0.5kV 50Hz or 60Hz
Operating Environment (In operation)	**Ambient Temperature**	0 ~ 40°C (No freezing)
	Ambient Humidity	H or less (No condensation)
	Ambience	orrosive gases or dust. No direct contact with water or oil.

■External Dimensional Drawings

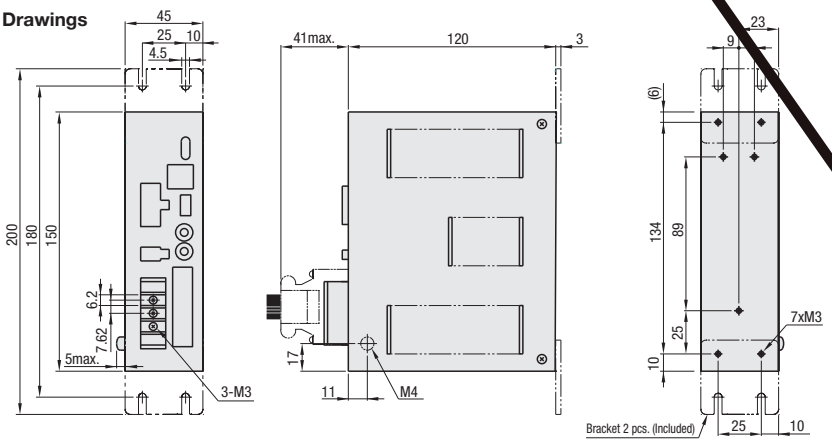


Oriental Motor α-Step AS46AA (MA) / AS66AAE (MAE)

■Driver Basic Specifications

Input Power Supply		Single phase AC100-115V -15~+10% 50/60Hz
Velocity · Position Control Commands		Pulse Input
Maximum Input Pulse Frequency		250 kHz (When pulse duty is 50%)
Protection Features		When the following protection functions are activated, alarm signals are sent to bring motor to a non-regenerative stop. Over Temp., Overload, Overvoltage, Velocity error and Over current protections, and Over s protections, EEPROM data error, Sensor error and System error
Input Signal		Opto-coupler input · Input resistance: 220Ω Input current: 7 ~ 20 mA [Pulse CCW Pulse (Negative Logic Pulse Input), Pulse · Rotational Direction Switch (Negative Logic Pulse Input) · Current OFF · Alarm Clea tch]
Output Signal		Opto-coupler · Open-collector output External Use Conditions: DC30V, 15mA s (In-position and Alarm) Transistor Open-collector output External Use Conditions: DC30V, 15 mA or ss edback Pulse A/B-phase) Line Driver Output 26C31 (Timing, Feedback Pulse A/B-phase)
Insulation Resistance		100MΩ or more measured at DC500V, by an Insulation Resistance Meter as shown elow · Frame - Power supply input terminals · Signal I/O - Power supply input terminals
Dielectric Strength Voltage		No abnormality is observed when applied for 1 min. as follows. · Frame - Power supply input terminals 1.5kV 50Hz or 60Hz · Signal - Power supply input outputerminals 2.3kV 50Hz or 60Hz
Operating Environment (In operation)	**Ambient Temperature**	0 ~ +50°C (No freezing)
	Ambient Humidity	85%RH or less (No condensation)
	Ambience	No corrosive gases or dust. No direct contact with water or oil.

■External Dimensional Drawings



Not Available

Amplifier / Driver Specifications

Oriental Motor 5-phase Stepping Motors RK545AA (AMA) / RK566AAE (AMAE)

■Driver Basic Specifications

Input Signal	**Input Method**	Opto-coupler input: Input resistance 220Ω, Input current 10 ~ 20 mA Opto-coupler "ON": +4.5 ~ 5V, Opto-coupler "OFF": 0 ~ +1V (Voltage between terminals)
	CW Pulse Signal (Pulse Signal)	CW direction step command signal (Step command for Step & Dir. input mode) is negative logic (low going) pulse, width 2.5µs or more, rise/fall time 2µs or less, pulse duty 50% or less. Motor will take one step when the pulse input goes from "ON" to "OFF". Max pulse frequency 200kHz (at 50% pulse duty)
	CCW Pulse Signal (Directional Signal)	CCW direction step command signal (Step & Dir. input mode: Dir. Opto-coupler ON=CW, OFF=CCW) is negative logic (low going) pulse, width 2.5µs or more, rise/fall time 2µs or less, pulse duty 50% or less. Motor will take one step when the pulse input goes from "ON" to "OFF". Max pulse frequency 200kHz (at 50% pulse duty)
	Electromagnetic Brake Release Signal*	When Opto-coupler is "ON", electromagnetic brake is released to enable motor operation. When Opto-coupler is "OFF", electromagnetic brake is applied to hold the motor shaft.
	Step Angle Switch Signal	When Opto-coupler is "OFF", DATA1 is selected, when ON, DATA2 is selected.
Output Signal	**Output Type**	Opto-coupler / Open-collector Output Interface Conditions: DC24V or less, 15mA or less
	Excitation Timing Signal	When excitation sequence is at step "0", signal is sent. (Opto-coupler is "ON") Ex.) 0.72°/step (Divide by 1): Signal output every 10 pulses 0.072°/step (Divide by 10): Signal output every 100 pulses
	Over temp. Signal	Output is turned off when the driver's internal temperature rises to approximately 80°C (176°F) or above. (Opto-coupler: OFF)
Functions		Automatic current reduction, automatic current OFF, step angle switch, pulse input method switch, electromagnetic brake function switch*, smooth drive function, power saving mode*
Display (LED)		Power input, excitation timing signal output, over temp. signal output
Cooling Method		Natural Air Cooled Method
Insulation Resistance		100MΩ or more measured at DC500V by an Insulation Resistance Meter as shown below. - Power input terminal - Protective earth terminal, Motor output terminal - Protective earth terminal, Electromagnetic brake power output terminal* - Protective earth terminal - Signal I/O terminal - Power supply input terminal, Signal I/O terminal - Motor output terminal, Signal I/O terminal - Electromagnetic brake power output terminal*
Dielectric Strength Voltage		No abnormality is observed when applied for 1 min. as follows. (AC1.5kV/1.8kV 50Hz or 60Hz) - Power input terminal - Protective earth terminal, Motor output terminal - Protective earth terminal, Electromagnetic brake power output terminal* - Protective earth terminal (1.5kV) - Signal I/O terminal - Power supply input terminal, Signal I/O terminal - Motor output terminal, Signal I/O terminal - Electromagnetic brake power output terminal* (1.8kV)
Operating Environment (In operation)	**Ambient Temperature**	0 ~ +50°C (No freezing)
	Ambient Humidity	85%RH or less (No condensation)
	Ambience	No corrosive gases or dust. No direct contact with water or oil.

* Motors with Electromagnetic Brake only

RK545AA (AMA)

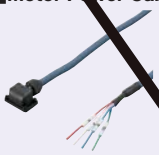
RK566AAE (AMAE)

Cables

Recommended for use with Motor Driven Single Axis Actuator LX. A 3m long cable is included as the standard accessory; if different cable length is required, please order the cable separately.
Other than listed on this page, FA Electronics Catalog lists more various items with Shield or custom alterations. For details, please see Wiring Parts and PC Parts FA Electronics Catalog 2009. **P.1045**~**1047** (Cable for Mitsubishi Electric J3 Series) **P.1101** (Cable for Oriental Motor)

Cable for Mitsubishi Electric J3 Series

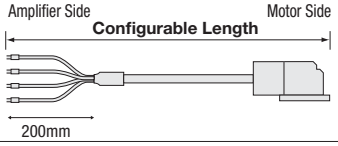
■Motor Power Cable / Brake Cable



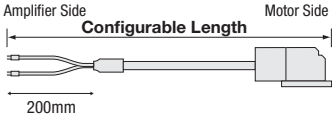
When motor w/ brake is selected, please use both cables for power supply and brake. The cable is pulled out from the load side.

RoHS

For Power Supply:

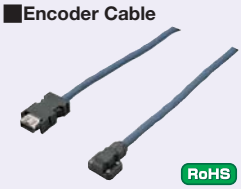


For Brake:



Cable Type	Part Number	Cable Type	Configurable Length (m)	Insulation Strip Length (Amplifier Side)	€ Unit Price	€ Unit Price/m	Applicable Actuators	Applicable Motor Type	Applicable Amplifier Type
For Power Supply		B (Movable)	0.2~30 (0.1mm Increment)	02S (200mm)			LXM20/26	A1: HF-KP053 (50W)	AM10:MR-J3-10A
							LXM30	A2: HF-KP13 (100W)	
							LXM45	A3: HF-KP43 (400W)	AM40:MR-J3-40A
For Brakes							LXM20/26	A1B: HF-KP053B (50W)	AM10:MR-J3-10A
							LXM30	A2B: HF-KP13B (100W)	
							LXM45	A3B: HF-KP43B (400W)	AM40:MR-J3-40A

■Encoder Cable

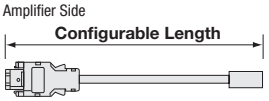


RoHS

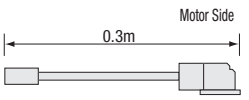
Standard Type: (Length: up to 10m)



Long Distance Amplifier-side Extension: (Length: up to 50m)



Long Distance Motor-side Extension: (Length 0.3m)



The cable is pulled out from the load side. In the case of 10~50m, please use both long distance type amplifier side and motor side extension cables.

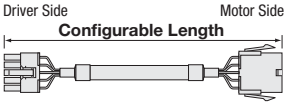
Cable Type	Part Number	Cable Type	Configurable Length (m) 0.1mm Increment	€ Unit Price	€ Unit Price/m	Applicable Actuators / Motor Type / Amplifier Type		
Standard Type		B (Movable)	0.2~10			LXM20/26	A1 (B): HF-KP053 (B) (50W)	AM10:MR-J3-10A
Long Distance Type Amplifier Side Extension		D (with Shield / for Flex Type)	10~20			LXM30	A2 (B): HF-KP13 (B) (100W)	
			20~50			LXM45	A3 (B): HF-KP13 (B) (400W)	AM40:MR-J3-40A
Long Distance Type Motor Side Extension		B (Movable)	0.3					

Cable for Oriental Motors

■α Step Cable



RoHS

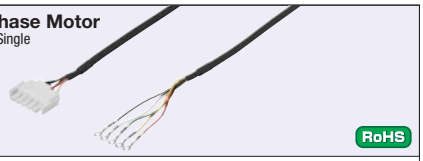


* STP0-AS1B type has a lead wire exit.

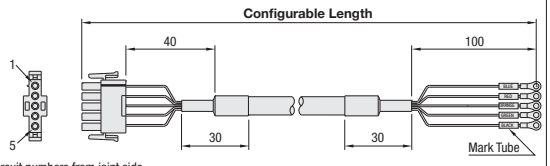
Part Number	Cable Type	Configurable Length (m)	€ Unit Price	€ Unit Price/m	Applicable Actuators / Motors / Motor - Driver Set Part Numbers		
	B (Movable)	0.2~20 (0.1mm Increment)			LXM20/26	T1/T2/T2B	ASC36AK/AS46AA/AS46MA
					LXM30/45	T3	AS66AAE
					LX30/45	T3B	AS66MAE

■Cable for 5-phase Motor

(Dedicated Cable for Single Axis Actuator LX)



RoHS



Circuit numbers from joint side

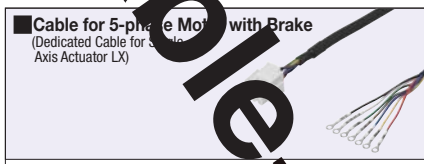
Wire Color	Pin
White	1
Red	2
Yellow	3
Green	4
Black	5

Mark	Wire Color
BLUE	White
RED	Red
ORANGE	Yellow
GREEN	Green
BLACK	Black

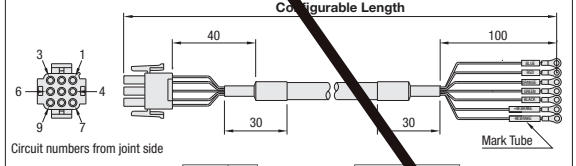
Part Number	Cable Type	Configurable Length (m)	€ Unit Price	€ Unit Price/m	Applicable Actuators / Motors / Motor - Driver Set Part Numbers		
	A (For Mounting)	0.2~20 (0.1mm Increment)			LXM30	T4/T5	RK545AA/RK56AAE
					LXM45	T5	RK56AAE

■Cable for 5-phase Motor with Brake

(Dedicated Cable for Single Axis Actuator LX)



RoHS



Circuit numbers from joint side

Wire Color	Pin
Blue	1
Red	2
Yellow	3
Green	4
Black	5
Brown	8
White	9

Mark	Wire Color
BLUE	Blue
RED	Red
ORANGE	Yellow
GREEN	Green
BLACK	Black
+M.BRAKE	Brown
-M.BRAKE	White

Part Number	Cable Type	Configurable Length (m)	€ Unit Price	€ Unit Price/m	Applicable Actuators / Motors / Motor - Driver Set Part Numbers		
	A (For Mounting)	0.2~20 (0.1mm Increment)			LXM30	T4B/T5B	RK545AMA/RK56AAE
					LXM45	T5B	RK56AMAE

Order Example

Part Number	-	Cable Type	-	Configurable Length	-	Insulation Strip Length*
	-	B	-	5	-	02S

* Insulation strip length can be specified for only.

Days to Ship

8 Days

Express A 5,00 EUR/ piece

P. 88

Estimate is provided for 11 or more identical pcs. Up to 5 pcs. (The 8th day shipping is only for 1 to 5 pc(s). of . Estimate is provided in each case for 6 pcs. or more)

Price

■Volume Discount (Round down to one Cent) **P. 87**

Quantity	1~9	10~49	50~99	100~299
Discount Rate	Price List	5%	10%	15%

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Calculation Method
Basic € Unit Price + "€ Unit Price/m" x "Specified Length" = Product Price

- Tolerance

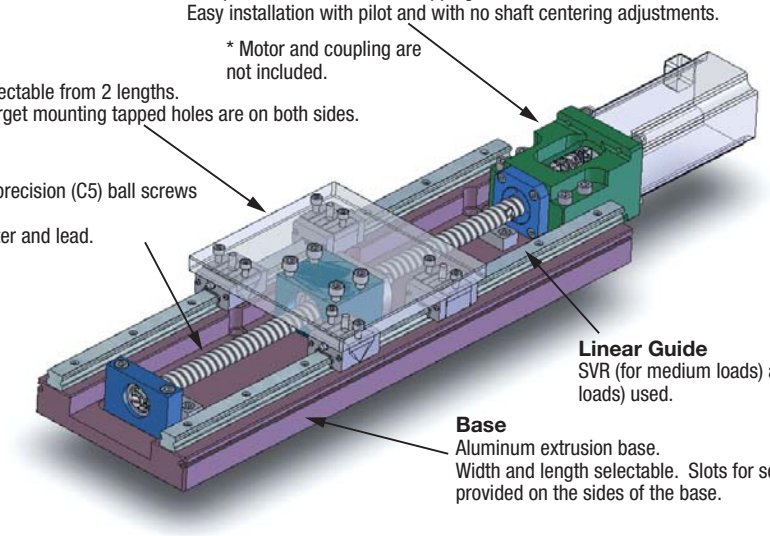
Configurable Length (m)	~0.9	1~4	4.1~50
Tolerance	±20mm	±50mm	± 3% of length

Not Available

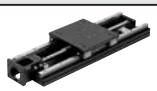
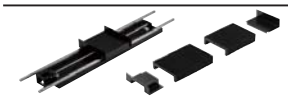
Single Axis Units - Overview

Single Axis Units best suited for high load transfer are shipped only at a part price and on the 13th day after order received!
Rolled Ball Screw, Precision Ball Screw, Bellows and Cover Type are lined up!

■Features



■Single Axis Unit List

Shape	Type	Product Name	Features	Page
	KUA KUB	Rolled Ball Screw Type	Single Axis Unit Series Basic Type Rolled Ball Screw (C10) is used, and best suited for heavy load transfer.	P.463
	KUH KUT	Precision Ball Screw Type	Precision Ball Screw (C5) is used. High Grade Type with improved precision and silent level.	P.465
	KUAJ KUBJ	Bellows Type Rolled Ball Screw Type	Bellows compatible type (Bellows are sold separately) ※ Bellows are sewn, and the body material is CR rubber. Coolants prevent intrusion of foreign objects, and response to special environments	P.467
	KUAC KUBC KUHC KUTC	Cover Type Rolled · Precision Ball Screw Type	Cover is provided as standard equipment. Measures for intrusion of foreign objects and safety. Easy maintenance.	P.469~472

■Moment of Inertia · Mass

Part Number		Moment of Inertia (kg · cm²)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUA KUB	12_ _(S)	0.658	0.667	0.677	0.686	0.696	0.706	0.715	0.725	-
	15_ _	0.724	0.747	0.771	0.794	0.818	0.841	0.864	0.888	0.911
	12_ _L (S)	0.661	0.670	0.680	0.689	0.699	0.709	0.718	0.728	-
	15_ _L	0.727	0.751	0.774	0.797	0.821	0.844	0.868	0.891	0.914
	20_ _L	0.970	1.044	1.118	1.192	1.266	1.340	1.414	1.488	1.562

Part Number		Weight (kg)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUA KUB	12_ _(S)	5.3	5.9	6.4	7.0	7.5	8.1	8.6	9.2	-
	15_ _	6.5	7.2	7.8	8.5	9.2	9.9	10.6	11.3	11.9
	12_ _L (S)	6.6	7.2	7.7	8.3	8.8	9.4	9.9	10.5	-
	15_ _L	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4
	20_ _L	11.4	12.5	13.6	14.7	15.8	16.9	18.0	19.1	20.2

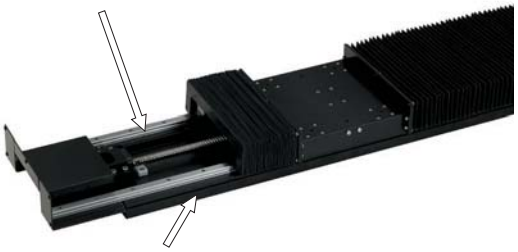
KU Series for Environmental Measures

Bellows and Cover Types are now available for safe usage of Single Axis Units, meeting customers' work environments.
Neither quotation nor delivery management are required. Maintenance fee will be considerably reduced.

■Bellows Specifications (P.467)

■Safety: Not only prevents dust and splashes but also prevents operators and clothing from being caught in the unit.
■Easy: Ordering procedure and installation are simple. Discussion over bellows specification is not required.
■Reduction: Easy to maintain. Longer operation time can be achieved with much fewer troubles.

○ Bellows keep from entry of foreign objects.
Protect unit components, and enable continuous machine operations under harsh conditions.



○ Easy Bellows installation with no complex adjustments.

○ Bellows encloses the entire driving part.
· MISUMI's bellows are quality and highly-durable sewn bellows.
· MISUMI's Bellows feature smooth movement and low noise.



○ Motor Bracket is applicable to each manufacturer's motors.
* Motor and coupling are not included.

⚠ Bellows are not included with this product. Please select bellows from P.468.

■Cover Specifications (P.469 ~ 472)

■Economical: Prevents components from falling off and dripping liquids. Protects machines economically.
■Easy: Easy procurement and installation. Easy machine cleaning and maintenance.
■Reduction: Reduced machine trouble. More advantages with less cost. Labor saving for customers.

○Cover prevents intrusion of foreign objects.
Keeps out foreign objects to roll into the unit and they are easily swept off.



○ Easy Cover installation with no tricky adjustments.

*Bellows Type is recommended for potential intrusion of foreign objects from side surfaces.



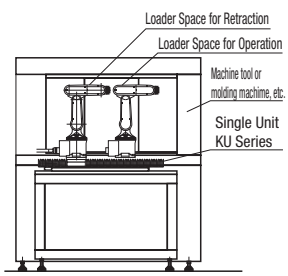
○ Motor Bracket is applicable to each manufacturer's motors.
* Motor and coupling are not included.

■Benefits from Bellows / Cover Specifications (Reference)

Cost reduction by 1620,00 EUR annually

With Bellows and Cover specifications, labor hours are reduced by 1/4
60 hrs for Routine Clean-up + 12 hrs for Scheduled Maintenance = 72 hrs
Annual Cost 1620,00 EUR (72 hrs x @30,00)=>2160,00 EUR
Adopting the specifications will reduce maintenance cost by 540,00 EUR
Note) Annually accumulated hrs are indicated. @30,00 is hourly labor cost.

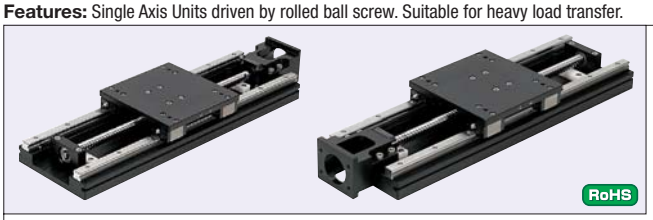
· KU Series Application Examples-



KU Series are not only used for transfers but also served as a retractor for loaders.
Using retraction units saves enough space available for machine tool change-over, clean up and operators working in manufacturing area, and dramatically improves operation efficiency.

Single Axis Units
-Rolled Ball Screw Type-

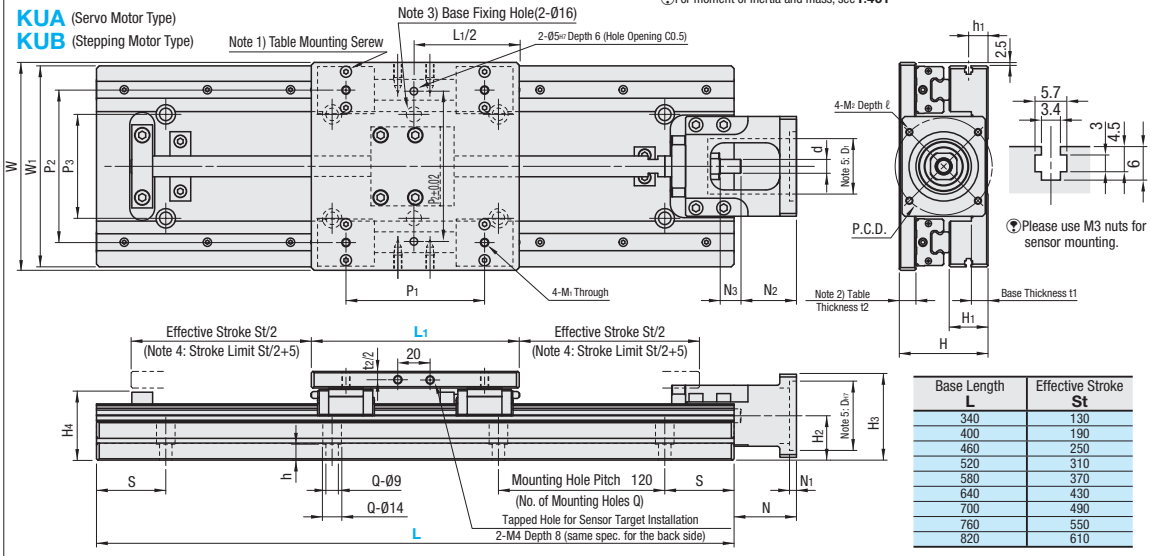
Features: Single Axis Units driven by rolled ball screw. Suitable for heavy load transfer.



Note 1) The number of Table Mounting Screws is 2 per block for SVR Linear Guides and 4 per block for SXR.
Note 2) When fixing a work piece to the table, make sure that screw lengths are not longer than plate thickness "t2".
Note 3) Only when W=150 and L1=150 or W=200 and L1=150, 200, access hole is provided.
Note 4) Stroke limit is the stroke at the point of contact with the stopper.
Note 5) Some motor brackets have D dimensions smaller than D1. When selecting couplings, please refer to "Coupling Application Examples Parts Numbers" below.

For KUB Motor installation interface drawing and dimensions, please see the right-hand page.
For moment of inertia and mass, see **P.461**

KUA (Servo Motor Type)
KUB (Stepping Motor Type)



Base Length L	Effective Stroke St
340	130
400	190
460	250
520	310
580	370
640	430
700	490
760	550
820	610

Part	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support Side Bearing Housing	Stopper
M Material	EN AW-6063/AlMg0,7Si-T6	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	1.1191/C45E	EN AW-5052/AlMg2,5	POM (White)
S Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-

Part Number Type	No.	Selections L Base Length	Selections L1 Table Length	W Table Width	H Height	H1 Guide Height	H2 Shaft Center Height	Ball Screws Part Number Type	Ball Screws Part Number Diameter	Ball Screws Part Number Lead	Linear Guides Part Number	Bearing Fixed Side (Support Units)	Bearing Support Side (Bearing Models)	Coupling Application Examples Part Numbers KUA	Coupling Application Examples Part Numbers KUB
KUA Servo Motor Driven Type / KUB Stepping Motor Driven Type	1204	340 400 460 520 580 640 700 760 820	100 150	150	55	21	28	BSSZ (Precision Grade C10)	12	4	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210									10					
	*1204S									4				-	CPDW32 MCSLC32
	*1210S									10					
	1505				64	28	32		15	5		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510									10					
	1520									20					
	1204L		150 200	200	55	21	28		12	4	SX2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210L									10					
	*1204LS									4				-	CPDW32 MCSLC32
	*1210LS									10					
	1505L				64	28	32		15	5		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510L									10					
	1520L									20					
	2005L				68	28	34		20	5	SX2R28	BRWE15	B6002ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	2010L				79	39	40			10					
	2020L				68	28	34			20					

*marked sizes are only applicable for KUB.

For size selections, please see Price List.

For details, please see **P.660 ~ 664** for ball screws, **P.559 ~ 562** for Linear Guides, **P.694** for Support Units, **P694 ~ 965** for Couplings. (Couplings are not included)
Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number Type	No.	Table W	Table t2	Table M1	Table P1	Table P2	Base W1	Base H4	Base t1	Base h1	Base Mounting Holes P3	Base Mounting Holes h	Base Mounting Holes Q	Base Mounting Holes S	* Motor Installation Interface (KUA) P.C.D.	D	D1	H3	N	N1	N2	N3	d	M2	ℓ
KUA Servo Motor Driven Type / KUB Stepping Motor Driven Type	1204 (S)	150	10	M6	L1=100 P1=50; L1=150 P1=100	110	145	42	10	13	75	9.5	L=340: Q W=150 6, W=200 6; L=400: 6, 8; L=460: 8, 8; L=520: 8, 10; L=580: 10, 10; L=640: 10, 12; L=700: 12, 12; L=760: 12, 14; L=820: 14, 14	L=340: S W=150 50, W=200 50; L=400: 80, 20; L=460: 50, 50; L=520: 80, 20; L=580: 50, 50; L=640: 80, 20; L=700: 50, 50; L=760: 80, 20; L=820: 50, 50	46	30	34	49	37	5	32	15	8	M4	8
	1210 (S)																								
	1505		12					49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510																								
	1520																								
	1204L (S)	200	10		L1=150 P1=80; L1=200 P1=130	160	195	42	10	13	120	9.5			46	30	34	49	37		32		8	M4	8
	1210L (S)																								
	1505L		12					49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510L																								
	1520L																								
	2005L				L1=150 P1=100; L1=200 P1=150	150		55		20								64								
	2010L							61		29								70	57.5		39.5	18	12		
	2020L							55		20								64							

* For KUB Motor installation interface dimensions, please see the right-hand page.

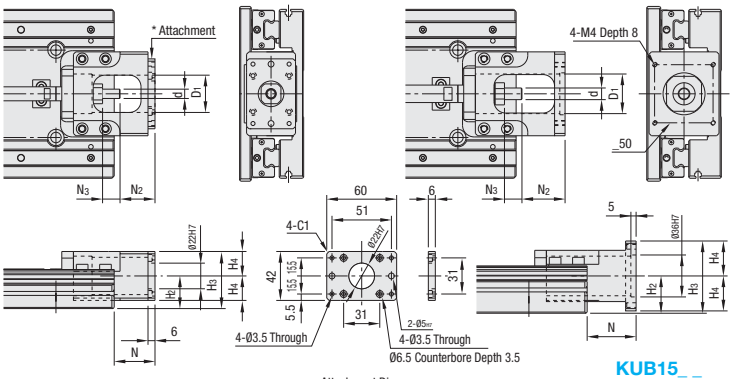
Order Example

Part Number	-	L	-	L1
KUA1204	-	340	-	150

Days to Ship: **13 Days**

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

■KUB Motor Mounting Interface



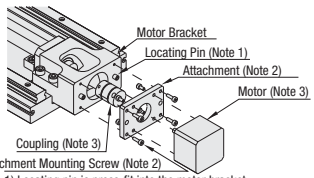
(?)Please see Motor Adapter Plate installation drawing.

KUB12_ _
KUB12_ _L

KUB12_ _S
KUB12_ _LS

KUB15_ _
KUB15_ _L
KUB20_ _L

■Mounting Instruction (KUT12_ _(L))



Note 1) Locating pin is press-fit into the motor bracket.
Note 2) A motor adapter plate and 4 pcs. of mounting screws M3x10 are included.
Note 3) Motor and coupling are not included.

Part Number		Motor Installation Interface (KUB)						
Type	No.	D_1	H_3	H_4	N	N_2	N_3	d
KUB Stepping Motor Driven Type	12_ _(L)	33.5	49	21	35	30	15	8
	*12_ _S (LS)		58	30	45	40		
	15_ _(L)	35.5	62		43	38		10
	2005L		64		58	40	18	12
	2010L		70					
	2020L		64					

(?)KUB12_ _S (LS) flanged surface (H_3 dimensions) protrudes downward from the base bottom surface by 2mm.

Price

Part Number		€ Unit Price 1 ~ 2 unit(s)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUA KUB	1204									
	1210									
	*1204S									
	*1210S									
	1505									
	1510									
	1520									
	1204L									
	1210L									
	*1204LS									
	*1210LS									
	1505L									
	1510L									
	1520L									
	2005L									
	2010L									
	2020L									

(?)*marked sizes are only applicable for KUB.

(?)For orders larger than indicated quantity, please request a quotation.

■Servo Motor Application Table

Part Number	Manufacturers	Part Number	Output (W)	Flange Angle
KUA12_ _(L)	Yasukawa Electric Corporation	SGMAH-A3	30	_40
		SGMAH-A5	50	
		SGMAH-01	100	
	Mitsubishi Electric Corporation	HC-MFS053	50	
		HF-MP053	50	
		HC-MFS13	100	
		HF-MP13	100	
	Sanyo Denki Co.,Ltd.	R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
	Omron Corporation	R88M-W03030	30	
		R88M-W05030	50	
		R88M-W10030	100	
KUA15_ _(L) KUA20_ _L	Yasukawa Electric Corporation	SGMAH-02	200	_60
		SGMAH-04	400	
	Mitsubishi Electric Corporation	HC-MFS23	200	
		HC-KFS23	200	
		HF-MP23	200	
		HA-KP23	200	
		HC-MFS43	400	
		HC-KFS43	400	
		HF-MP43	400	
		HA-KP43	400	
	Sanyo Denki Co.,Ltd.	R2AA06020F	200	
		R2AA06040F	400	
	Omron Corporation	R88M-W20030	200	
		R88M-W40030	400	

■Stepping Motor Application Table

Part Number	Manufacturers	Part Number	Flange Angle
KUB12_ _ KUB12_ _L	Oriental Motor (?)α Step is applicable to AS and ASC Series Standard Type.	α Step AS46 / ASC46	_42
		5-phase RK54* (PK543)	
		5-phase RK54* (PK544)	
		5-phase RK54* (PK545)	
KUB12_ _S KUB12_ _LS		α Step AS66 / ASC66	_60
		α Step AS69	
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	
KUB15_ _ KUB15_ _L KUB20_ _L		α Step AS66 / ASC66	_60
		α Step AS69	
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	

(?)Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
(?)Applicable motors are not limited to the above listed products. Please confirm each mounting dimensions.

Alterations

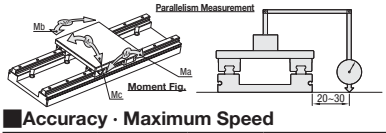
Part Number - L - L_1 - (KC · KLC...etc.)
KUA1204 - 340 - 150 - KC5

15 Days

■Allowable Static Load · Moment

Part Number		Static Load Capacity(kg)		Table Length	Allowable Static Moment (N·m)			Table Length	Allowable Static Moment (N·m)		
Type	No.	Horizontal	Vertical	L_1	Ma	Mb	Mc	L_1	Ma	Mb	Mc
KUA KUB	1204 (S)	1679.0	138.0	100	401.5	401.5	783.8	150	783.8	783.8	783.8
	1210 (S)		153.0				858.1				858.1
	1505										
	1510										
	1520										
	1204L (S)	2897.0	137.0	150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7
	1210L (S)		153.0								
	1505L										
	1510L										
	1520L										
	2005L	4345.0	169.0		1677.8	1677.8	3008.9		2411.3	2411.3	3008.9
	2010L										
	2020L										

(?)The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software (refer to the above address).
(?)For moment of inertia and mass, see **P.461**



■Accuracy · Maximum Speed

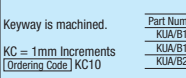
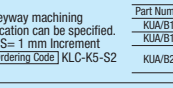
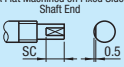
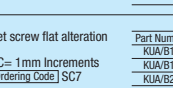
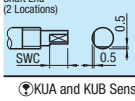
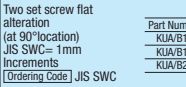
Part Number		(1) Repeatability Positioning Accuracy (mm)	(2) Parallelism (mm)	(3) Max. Velocity (mm/s)								
Type	No.			L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUA KUB	1204 (S, L, LS)	±0.03	L Parallelism	265	265	265	265	265	265	-	-	-
	1210 (S, L, LS)	±0.05	340 0.06	651	651	651	651	651	651	651	633	-
	1505 (L)	±0.05	400 0.07	264	264	264	264	264	264	264	264	264
	1510 (L)	±0.05	460 0.08	527	527	527	527	527	527	527	527	527
	1520 (L)	±0.05	520 0.09	1055	1055	1055	1055	1055	1055	1055	1055	1055
	2005L	±0.05	580 0.10	200	200	200	200	200	200	200	200	200
	2010L	±0.08	640 0.12	-	397	397	397	397	397	397	397	397
	2020L	±0.05	700 0.13	-	-	801	801	801	801	801	801	801
			760 0.14									
			820 0.15									

(1) Positioning Repeatability
Position and Measure moves are made to a predetermined point from one direction seven times. 1/2 of the maximum difference with "±" given is the measurement value.

(2) Parallelism
An actuator is fixed to a surface plate. Parallelism readings are taken from a carriage center mounted dial indicator (0.01 graduation) setup against the surface plate. Measurement is taken along 20~30mm from the side of the base. (See the illustration above)

(3) Maximum Velocity
Values in the table are calculated based on critical speed and DN value of ball screws. Note that these are not guaranteed data considering motor rotational speed, operating conditions, etc.

Coupling Side Ball Screw End Face Machining

Alterations	Code	Spec	Price Adder
Keyway Machining on Fixed Side Shaft End Detailed Keyway Dimensions ☞P651 	KC	Keyway is machined. KC = 1mm Increments [Ordering Code] KC10  Part Number / KC: KUA/B12 3≤KC≤14; KUA/B15 3≤KC≤14; KUA/B20 4≤KC≤19	16,00
Keyway Machining on Fixed Side Shaft End 	KLC	Keyway machining location can be specified. K,S= 1 mm Increment [Ordering Code] KLC-K5-S2  Part Number / K / S: KUA/B12 3≤K≤14 4≤K+S≤14; KUA/B15 4≤K≤19 5≤K+S≤19; KUA/B20	16,00
A Flat Machined on Fixed Side Shaft End 	SC	Set screw flat alteration SC= 1mm Increments [Ordering Code] SC7  Part Number: KUA/B12 5≤SC≤14; KUA/B15 5≤SC≤14; KUA/B20 5≤SC≤19	8,00
A Flat Machined on Fixed Side Shaft End (2 Locations) 	SWC	Two set screw flat alteration (at 90°location) JIS SWC= 1mm Increments [Ordering Code] JIS SWC  Part Number / JIS SWC: KUA/B12 5≤JIS SWC≤14; KUA/B15 5≤JIS SWC≤14; KUA/B20 5≤JIS SWC≤19	8,00

(?)KUA and KUB Sensor Set can be specified as an alteration. For details of alterations, see ☞P.473

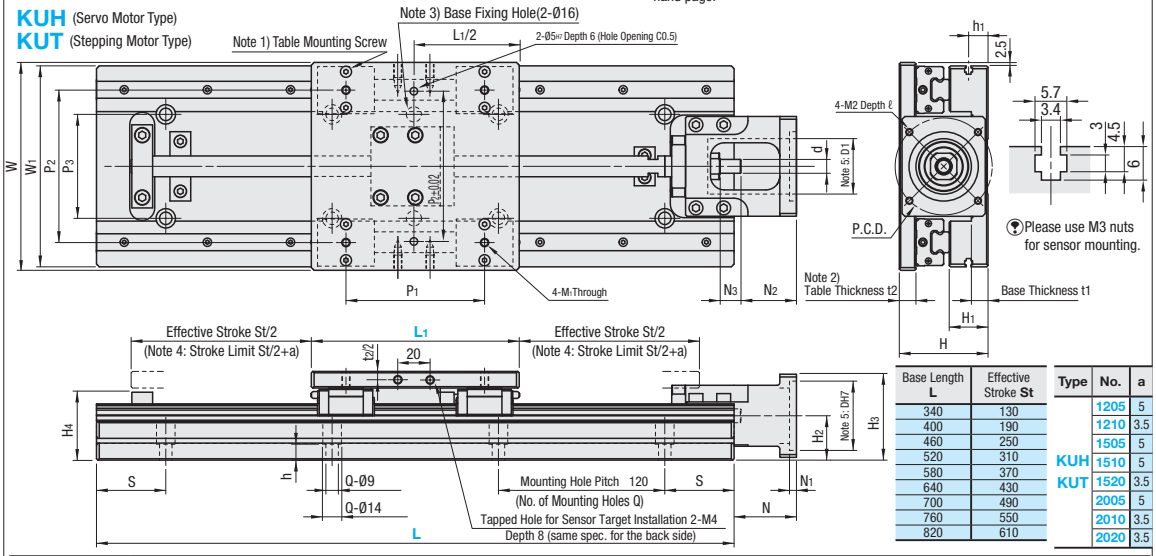
Single Axis Units
-Precision Ball Screw Type-

Features: Single Axis Units driven by precision ball screws. Improved accuracies and sound level.



Note 1) The number of Table Mounting Screws is 2 per block for SVR Linear Guides and 4 per block for SXR.
Note 2) When fixing a work piece to the table, make sure that screw lengths are not longer than plate thickness "t2".
Note 3) Only when W=150 and L1=150 or W=200 and L1=150 · 200, access hole is provided.
Note 4) Stroke limit is the stroke at the point of contact with the stopper.
Note 5) Some motor brackets have D dimensions smaller than D1. When selecting couplings, please refer to "Coupling Application Examples Parts Numbers" below.
For KUT Motor installation interface drawing and dimensions, please see the right-hand page.

KUH (Servo Motor Type)
KUT (Stepping Motor Type)



Base Length L	Effective Stroke St
340	130
400	190
460	250
520	310
580	370
640	430
700	490
760	550
820	610

Type	No.	a
KUH KUT	1205	5
	1210	3.5
	1505	5
	1510	5
	1520	3.5
	2005	5
	2010	3.5
	2020	3.5

Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support Side Bearing Housing	Stopper
M Material	EN AW-6063/AlMg0,7SiT6	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	1.1191/C45E	EN AW-5052/AlMg2,5	POM (White)
S Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-

Part Number Type	No.	Selections L Base Length	Selections L1 Table Length	W Table Width	H Height	H1 Guide Height	H2 Shaft Center Height	Ball Screws Type	Ball Screws Diameter	Ball Screws Lead	Linear Guides Part Number	Bearing Fixed Side (Support Units)	Bearing Support Side (Bearing Models)	Coupling Application Examples KUH	Coupling Application Part Numbers KUT
KUH Servo Motor Driven Type / KUT Stepping Motor Driven Type	1205	340 400 460 520 580 640 700 760 820	100 150	150	55	21	28	Precision Ball Screws (Precision Grade C5)	12	5	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210									10				-	CPDW32 MCSLC32
	*1205S									5					
	*1210S									10					
	1505				64	28	32		15	5		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510									10					
	1520									20					
	1205L		150 200	200	55	21	28		12	5	SX2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210L									10				-	CPDW32 MCSLC32
	*1205LS									5					
	*1210LS									10					
	1505L				64	28	32		15	5		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510L									10					
	1520L									20					
	2005L				68	28	34		20	5	SX2R28	BRWE15	B6002ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	2010L				79	39	40			10					
	2020L				79	39	40			20					

*marked sizes are only applicable for KUB. only applicable for KUT

For size selections, please see Price List.

For details, please P.660 ~ 664 for ball screws, P.559 ~ 562 for Linear Guides, P.694 for Support Units, P694 ~ 965 for Couplings. (Couplings are not included)
Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number Type	No.	Table W	t2	M1	P1	P2	Base W1	H4	t1	h1	Base Mounting Holes P3	h	Q	S	* Motor installation interface (KUH) P.C.D.	D	D1	H3	N	N1	N2	N3	d	M2	ℓ
KUH Servo Motor Driven Type / KUT Stepping Motor Driven Type	1205 (S)	150	10	M6	L1 100, P1 50; L1 150, P1 100	110	145	42	10	13	75	9.5	L 340: Q 6/6; 400: 6/8; 460: 8/8; 520: 8/10; 580: 10/10; 640: 10/12; 700: -/12; 760: -/14; 820: -/14	L 340: S 50/50; 400: 80/20; 460: 50/50; 520: 80/20; 580: 50/50; 640: 80/20; 700: -/50; 760: -/20; 820: -/50	46	30	34	49	37	5	32	15	8	M4	8
	1210 (S)																								
	1505		12					49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510																								
	1520																								
	1205L (S)	200	10		L1 150, P1 80; 200, 130	160	195	42	10	13	120	9.5			46	30	34	49	37		32		8	M4	8
	1210L (S)																								
	1505L		12					49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510L																								
	1520L							55		20								64							
	2005L				L1 150, P1 100; 200, 150	150		61		29								70	57.5		39.5	18	12		
	2010L							61		29								70							
	2020L																								

* For KUT Motor installation interface dimensions, please see the right-hand page.

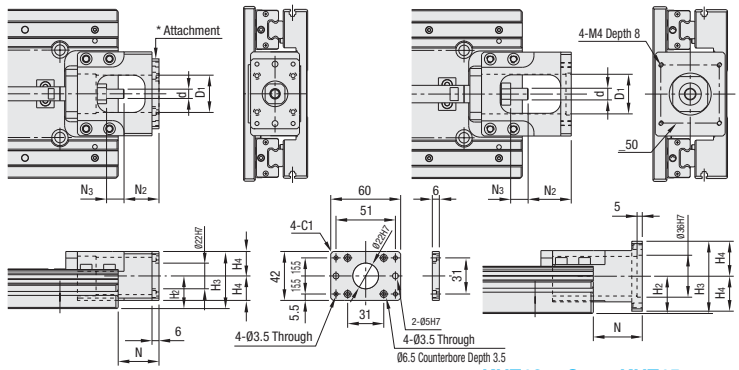
Order Example

Part Number	-	L	-	L1
KUH1205	-	340	-	150

Days to Ship: **13 Days**
For ordering 3 or more identical models, Days to Ship estimate is provided.

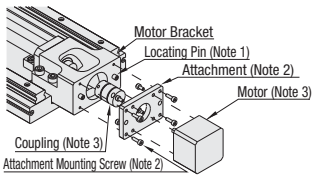
Sensor Set can be specified as alterations. For details of alterations, see P.473

■KUT Motor Installation Interface



Please see Motor Adapter Plate installation drawing.

■Motor Adapter Plate Installation Drawing (KUT12__(L))



Note 1) Locating pin is press-fit into the motor bracket.
Note 2) A motor adapter plate and 4 pcs. of mounting screws M3x10 are included.
Note 3) Motor and coupling are not included.

Part Number		Motor Installation Interface (KUT)						
Type	No.	D1	H3	H4	N	N2	N3	d
KUT Stepping Motor Driven Type	12__(L)	33.5	49	21	35	30	15	8
	*12__S (LS)		58	30	45	40		
	15__(L)	35.5	62		43	38		10
	2005L		64		58	40	18	12
	2010L		70					
	2020L							

KUB12__S (LS) flanged surface (H3 dimensions) protrudes downward from the base bottom surface by 2mm.

Price

Part Number		€ Unit Price 1 ~ 2 unit(s)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUH KUT	1205									
	1210									
	*1205S									
	*1210S									
	1505									
	1510									
	1520									
	1205L									
	1210L									
	*1205LS									
	*1210LS									
	1505L									
	1510L									
	1520L									
	2005L									
	2010L									
	2020L									

*marked sizes are only applicable for KUT.

For orders larger than indicated quantity, please request a quotation.

■Servo Motor Application Table

Part Number	Manufacturers	Part Number	Output (W)	Flange Angle
KUH12_ _(L)	Yasukawa Electric Corporation	SGMAH-A3	30	_40
		SGMAH-A5	50	
		SGMAH-01	100	
	Mitsubishi Electric Corporation	HC-MFS053	50	
		HF-MP053	50	
		HC-MFS13	100	
		HF-MP13	100	
	Sanyo Denki Co.,Ltd.	R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
	Omron Corporation	R88M-W03030	30	
		R88M-W05030	50	
		R88M-W10030	100	
KUH15_ _(L) KUH20_ _L	Yasukawa Electric Corporation	SGMAH-02	200	_60
		SGMAH-04	400	
	Mitsubishi Electric Corporation	HC-MFS23	200	
		HC-KFS23	200	
		HF-MP23	200	
		HA-KP23	200	
		HC-MFS43	400	
		HC-KFS43	400	
		HF-MP43	400	
		HA-KP43	400	
	Sanyo Denki Co.,Ltd.	R2AA06020F	200	
		R2AA06040F	400	
	Omron Corporation	R88M-W20030	200	
		R88M-W40030	400	

■Stepping Motor Application Table

Part Number	Manufacturers	Part Number	Flange Angle
KUT12_ _ KUT12_ _L	Oriental Motor	α Step AS46 / ASC46	_42
		5-phase RK54* (PK543)	
		5-phase RK54* (PK544)	
		5-phase RK54* (PK545)	
KUT12_ _S KUT12_ _LS		α Step AS66 / ASC66	_60
		α Step AS69	
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	
KUT15_ _ KUT15_ _L KUT20_ _L		α Step AS66 / ASC66	_60
		α Step AS69	
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	

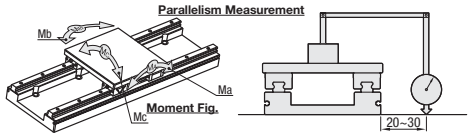
αStep is applicable to AS and ASC Series Standard Type.

Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors are not limited to the above listed products. Please confirm each mounting dimensions.

■Allowable Static Load · Moment

Part Number		Static Load Capacity(kg)		Table Length	Allowable Static Moment (N·m)			Table Length	Allowable Static Moment (N·m)		
Type	No.	Horizontal	Vertical	L1	Ma	Mb	Mc	L1	Ma	Mb	Mc
KUH KUT	1205 (S)	1679.0	138.0	100	401.5	401.5	783.8	150	783.8	783.8	783.8
	1210 (S)										
	1505		153.0				858.1				858.1
	1510										
	1520										
	1205L (S)	2897.0	137.0	150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7
	1210L (S)										
	1505L		153.0								
	1510L										
	1520L										
	2005L	4345.0	269.0		1677.8	1677.8	3008.9		2411.3	2411.3	3008.9
	2010L		169.0								
	2020L										

The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software (refer to the above address).



■Accuracy · Maximum Speed

Part Number		(1) Repeatability Positioning Accuracy (mm)	(2) Parallelism (mm)	(3) Max. Velocity (mm/s)								
Type	No.			L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUH KUT	1205 (S, L, LS)	±0.003	L / Parallelism: 340 0.06; 400 0.07; 460 0.08; 520 0.09; 580 0.10; 640 0.12; 700 0.13; 760 0.14; 820 0.15	486	486	486	-	-	-	-	-	-
	1210 (S, L, LS)	±0.003		972	972	972	972	766	611	-	-	-
	1505 (L)	±0.003		389	389	389	389	389	374	-	-	-
	1510 (L)	±0.003		778	778	778	778	778	749	-	-	-
	1520 (L)	±0.003		1556	1556	1556	1556	1556	1498	-	-	-
	2005L	±0.003		292	292	292	292	292	292	292	292	286
	2010L	±0.003		-	583	583	583	583	583	583	583	517
	2020L	±0.003		-	-	1167	1167	1167	1167	1167	1167	1027

(1) Positioning Repeatability
Position and Measure moves are made to a predetermined point from one direction seven times. 1/2 of the maximum difference with "±" given is the measurement value.

(2) Parallelism
An actuator is fixed to a surface plate. Parallelism readings are taken from a carriage center mounted dial indicator (0.01 graduation) setup against the surface plate. Measurement is taken along 20~30mm from the side of the base. (See the illustration above.)

(3) Maximum Velocity
Values in the table are calculated based on critical speed and DN value of ball screws.
Note that these are not guaranteed data considering motor rotational speed, operating conditions, etc.

■Moment of Inertia · Mass

Part Number		Moment of Inertia (kg·cm²)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUH	12__(S)	0.658	0.667	0.677	0.686	0.696	0.706	-	-	-
	15__	0.724	0.747	0.771	0.794	0.818	0.841	-	-	-
KUT	12__L (S)	0.661	0.670	0.680	0.689	0.699	0.709	-	-	-
	15__L	0.727	0.751	0.774	0.797	0.821	0.844	-	-	-
	20__L	0.970	1.044	1.118	1.192	1.266	1.340	1.414	1.488	1.562

Part Number		Weight (kg)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUH	12__(S)	5.3	5.9	6.4	7.0	7.5	8.1	-	-	-
	15__	6.5	7.2	7.8	8.5	9.2	9.9	-	-	-
KUT	12__L (S)	6.6	7.2	7.7	8.3	8.8	9.4	-	-	-
	15__L	8.0	8.8	9.6	10.4	11.2	12.0	-	-	-
	20__L	11.4	12.5	13.6	14.7	15.8	16.9	18.0	19.1	20.2

Alterations

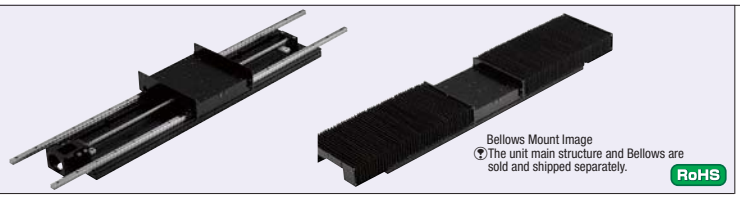
Part Number	-	L	-	L1	-	(A1 · B1...etc.)
KUH1205	-	340	-	150	-	A1

KUH and KUT Sensor Set can be specified as an alteration.
For details of alterations, see P.473

Single Axis Units / Single Axis Unit Bellows

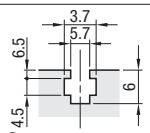
-Rolled Ball Screw Type w/Bellows-

Features: Single Axis Units, bellows mountable. ⓟBellows are not included in this product. Please select Bellows on the right page.



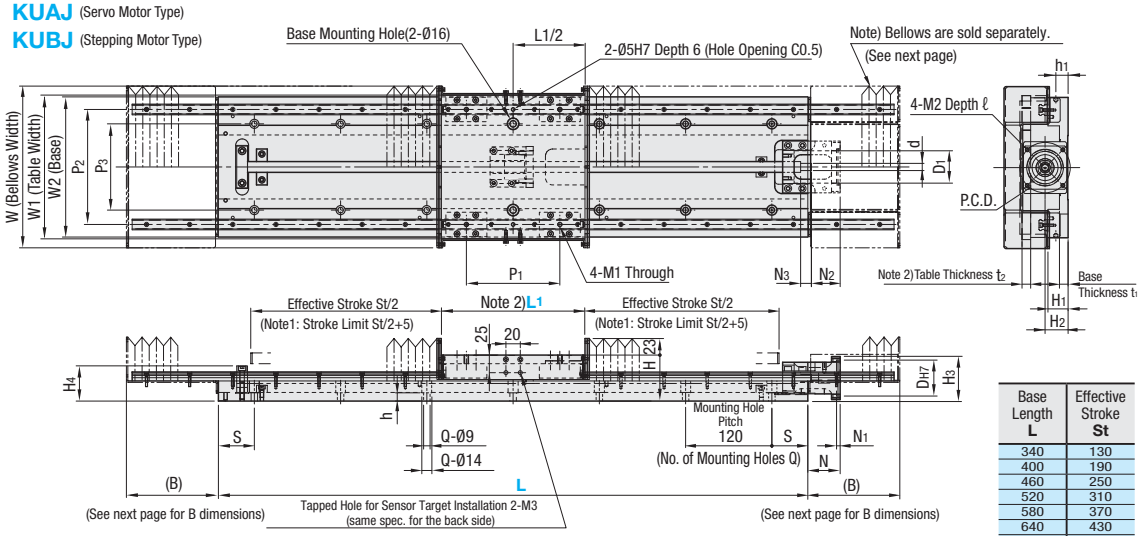
Bellows Mount Image
ⓟThe unit main structure and Bellows are sold and shipped separately.

RoHS



ⓟPlease use M3 nuts for sensor mounting.

KUAJ (Servo Motor Type)
KUBJ (Stepping Motor Type)



Base Length L	Effective Stroke St
340	130
400	190
460	250
520	310
580	370
640	430
700	490
760	550
820	610

Note 1) Stroke limit is the stroke at the point of contact with the stopper.
Note 2) Table plate should be made with L_1-2 dimension, considering that Bellows mounting screws go through the mounting bracket.
Note 3) Do not hang the unit inverted since the bellows could disengage from the unit.
Note 4) Some motor brackets have D dimensions smaller than D_1. When selecting couplings, please refer to "Coupling Application Examples Parts Numbers" below.

Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support-side Bearing Housing	Stopper	Bellows Mounting Plates
M Material	EN AW-6063-T6	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	1.1191/C45E	EN AW-5052/AlMg2,5	POM (White)	1.0330/DC01
S Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-	Electrodeposited Painting (Black)

Part Number Type	No.	Selections L Base Length	Selections L_1 Table Length	W Bellows Width	H Height	H_1 Guide Height	H_2 Shaft Center Height	Ball Screws Type	Ball Screws Ø	Ball Screws Lead	Linear Guides Part Number	Bearing Fixed Side (Support Units)	Bearing Support Side (Bearing Models)	Coupling Application Examples Part Numbers KUAJ	Coupling Application Examples Part Numbers KUBJ
KUAJ Servo Motor Driven Type	1204	340 400 460 520 580 640 700 760 820 ⓟFor size selections, please see Price List.	100 150	175	55	21	28	Rolled Ball Screws BSSZ Precision Grade C10	12	4	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210									10					
	1505				64	28	32		15	4		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510									10					
	1520									20					
KUBJ Stepping Motor Driven Type	1204L		150 200	225	55	21	28		12	4	SX2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210L									10					
	1505L				64	28	32		15	4		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510L									10					
	1520L									20					
	2005L			220	68	28	34		20	4	SX2R28	BRWE15	B6002ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	2010L				79	39	40			10					
	2020L				68	28	34			20					

ⓟFor details, please ☞ **P.660 ~ 664** for ball screws, ☞ **P.559 ~ 562** for Linear Guides, ☞ **P.694** for Support Units, ☞ **P694 · 965** for Couplings. (Couplings are not included)
ⓟCautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number Type	No.	Table W_1	Table t_2	Table M_1	Table P_1	Table P_2	Base W_2	Base H_4	Base t_1	Base h_1	Base Mounting Holes P_3	Base Mounting Holes h	* Motor Installation Interface (KUAJ) P.C.D.	D	D_1	H_3	N	N_1	N_2	N_3	d	M_2	ℓ
KUAJ Servo Motor Driven Type	1204	150	10	M6	L_1 100 / P_1 50; L_1 150 / P_1 100	110	145	42	10	13	75	9.5	46	30	34	49	37	5	32	15	8	M4	8
	1210																						
	1505		12					49	12	20		11.5	70	50	45	62	45		40		10	M5	10
	1510																						
	1520																						
KUBJ Stepping Motor Driven Type	1204L	200	10		L_1 150 / P_1 80; L_1 200 / P_1 130	160	195	42	10	13	120	9.5	46	30	34	49	37		32		8	M4	8
	1210L																						
	1505L		12					49	12	20		11.5	70	50	45	62	45		40		10	M5	10
	1510L																						
	1520L																						
	2005L				L_1 150 / P_1 100; L_1 200 / P_1 150	150		55		20						64							
	2010L							61		29						70	57.5		39.5	18	12		
	2020L							55		20						64							

Q	W1=150	W1=200
340	6	6
400	6	8
460	8	8
520	8	10
580	10	10
640	10	12
700	12	12
760	12	14
820	14	14

S	W1=150	W1=200
340	50	50
400	80	20
460	50	50
520	80	20
580	50	50
640	80	20
700	50	50
760	80	20
820	50	50

* KUBJ motor installation interface dimensions are the same as those of KUB. For details, see **P.464**

Order Example

Part Number	-	L	-	L_1
KUAJ1204	-	340	-	150

Days to Ship **13 Days**
ⓟFor ordering 3 or more identical models, Days to Ship estimate is provided.

Sensor Set can be specified as alterations.
For details of alterations, see ☞ **P.473**

Price

Part Number Type	No.	€ Unit Price 1 ~ 2 unit(s) L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAJ Servo Motor Driven Type	1204									
	1210									
	1505									
	1510									
	1520									
KUBJ Stepping Motor Driven Type	1204L									
	1210L									
	1505L									
	1510L									
	1520L									
	2005L									
	2010L									
	2020L									

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

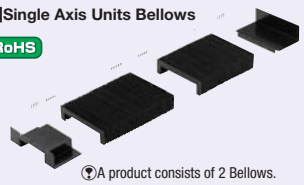
Mass

Part Number Type	No.	Mass (kg) L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAJ Servo Motor Driven Type	12__	5.7	6.3	6.8	7.4	7.9	8.6	9.1	9.7	-
	15__	6.9	7.6	8.2	8.9	9.6	10.3	-	-	-
KUBJ Stepping Motor Type	12__L	7.0	7.6	8.1	8.7	9.2	10.1	10.6	11.2	-
	15__L	8.4	9.2	10.0	11.1	11.9	12.7	13.5	14.3	15.1
	20__L	12.0	13.1	14.2	15.9	17.0	18.1	19.2	20.3	21.4

Applicable servo motors are the same as those for KUA. Please see **P.464**.
Applicable stepping motors are the same as those for KUB. Please see **P.464**.
KUBJ12__(L), however, is not applicable for 60mm square flanged Stepping Motors.
Static Load Capacity · Allowable Static Moment · Accuracy · Max Velocity
KUA values are applied to KUAJ Type, and KUB values to KUBJ Type. Please see **P.464**.
For moment of inertia, please see **P.461**.

Single Axis Units Bellows

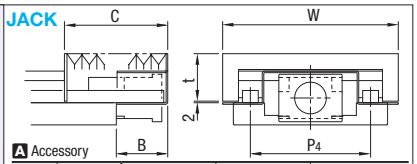
RoHS



A product consists of 2 Bellows.

Parts	Body	Slide Plates	End Plates
M Material	CR Rubber	Polyethylene	1.0330/DC01
S Surface Treatment	-	-	Electrodeposited Painting (Black)

JACK



A Accessory

Type	No.	Bellows Fixing Screws	Bracket Fixing Screws	Bracket (1) (2) (3) (4)
JACK	A · B · C · D	CB4-6 (20 pcs.)	CB3-12 (4 pcs.)	M Material: 1.0330/DC01 S Surface Treatment: Electrodeposited Painting (Black)
	E · F		CB3-12 (8 pcs.)	
	G		CB5-15 (4 pcs.)	
	H · I		CB5-15 (8 pcs.)	

Part Number Type	No.	Linear Guides Pitch (P4)	Bracket End Face Dimensions (B)	Bellows Width (W)	Bellows Height (T)	Bellows Collapsed Dimensions (C)
JACK	A	110	65	175	61	80
	B	110	65	175	61	110
	C	110	85	175	61	110
	D	160	65	225	61	50
	E	160	125	225	61	80
	F	160	125	225	61	110
	G	152	65	220	62	50
	H	152	125	220	62	80
	I	152	125	220	62	110

Burring nut machining leaves about 1.0mm protrusion on bracket back surface.

JACK_ (A ~ I in the table below is put in _.)

Single Axis Unit Model Numbers		Table Length	Base Length L L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAJ Servo Motor Driven Type	1204	100	A	A	A	A	A	B	-	-	-
		150						C	-	-	-
	1210	100						B	B	B	-
		150						C	C	C	-
	1505	100						-	-	-	-
		150						-	-	-	-
	1510	100						-	-	-	-
		150						-	-	-	-
	1520	100						-	-	-	-
		150						-	-	-	-
KUBJ Stepping Motor Driven Type	1204L	150	D	D	D	E	E	F	-	-	-
		200							-	-	-
	1210L	150							F	F	-
		200									-
	1505L	150						E			F
		200						F			
	1510L	150						E			
		200						F			
	1520L	150	-	-				E			
		200	-	-							
	2005L	150	G	G	G	H	H	I	I	I	I
		200						H			
	2010L	150	-					I			
		200	-					H			
	2020L	150	-	-				I			
		200	-	-				H			

Selection Example - Bellows applicable for KUAJ1204-460-150 Single Axis Units are JACKA.
Bellows applicable for KUBJ1204-640-150 Single Axis Units are JACKC.

Part Number Type	No.	Bellows Collapsed Dimensions (C)	Mass (kg)	€ Unit Price 1 ~ 2 pc(s).
JACK	A	80	1.42	
	B	110	1.55	
	C	110	1.64	
	D	50	1.38	
	E	80	2.02	
	F	110	2.12	
	G	50	1.32	
	H	80	2.02	
	I	110	2.12	

Collapsed Bellows dimensions are values for bellow folds in contact.
The mass is the sum of 2 Bellows and Brackets.
For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number JACKA

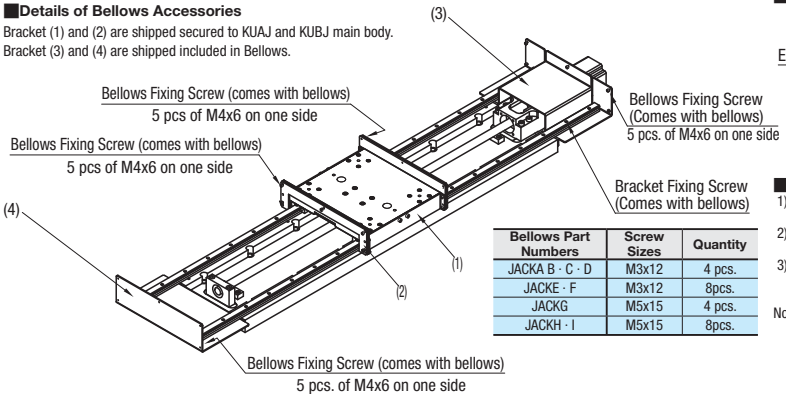
Days to Ship: 6 Days P.87

Product Features

1) MISUMI's Bellows material is CR rubber excellent in mechanical strength and weather resistance.
2) MISUMI's Bellows are sewn bellows.
Excellent in durability and long serviceability compared with molded and folded Bellows.
3) The narrowly spaced slide plates allow bellows smooth movements and low noise operations.
4) Sewn bellows exert force in contracting direction due to its structural nature. Return the carriage to the center position when the actuator is not in use to avoid loads in a certain direction.

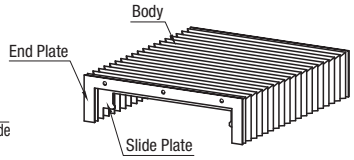
Details of Bellows Accessories

Bracket (1) and (2) are shipped secured to KUAJ and KUBJ main body.
Bracket (3) and (4) are shipped included in Bellows.



Bellows Part Numbers	Screw Sizes	Quantity
JACKA B · C · D	M3x12	4 pcs.
JACKE · F	M3x12	8pcs.
JACKG	M5x15	4 pcs.
JACKH · I	M5x15	8pcs.

Bellows Structural Drawing



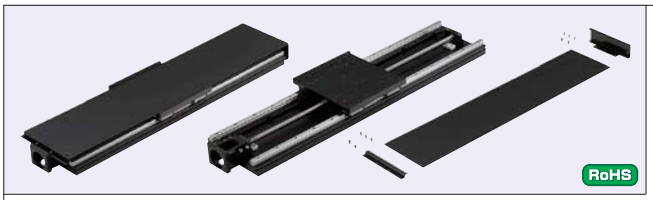
Bellows Mount Procedure

1) Align the Bellows slide plate with the groove of Single Axis Unit Linear Guide to insert.
2) Mount brackets (3) and (4) attached to the bellows to the end plate of the bellows with the enclosed screws.
3) Use included screws to secure brackets (1) (2) included with the table and (3)(4) included with Bellows to the Bellows end plate.

Note) Bellows can not be mounted after included brackets (3) and (4) are installed. Please follow the proper installation procedure above.

Single Axis Units
-Rolled Ball Screw Type w/Cover-

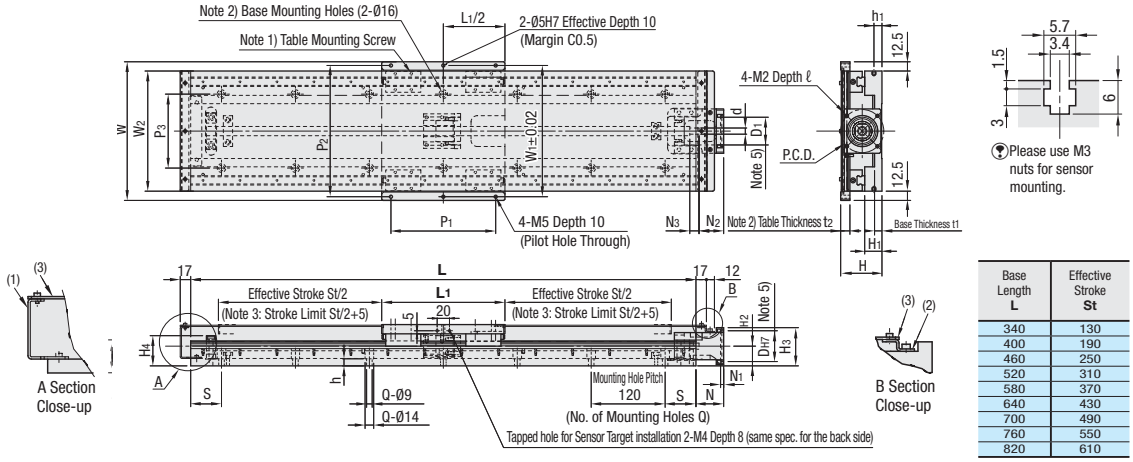
Features: Single Axis Units come with cover as standard equipment to prevent entry of foreign objects.



Note 1) The number of Table mounting screws is 2 per block for SVR Linear Guides and 4 per block for SXR.
Note 2) Only when W=170 and L_1=150, or W=220 and L_1=150 / 200, an access hole is provided.
Note 3) Stroke limit is the stroke at the point of contact with the stopper.
Note 4) Do not hang the unit inverted. The cover will sag large.
Note 5) Some motor brackets have D dimensions smaller than D_1.
When selecting couplings, please refer to "Coupling Application Examples Parts Numbers"below.

KUAC (Servo Motor Type)
KUBC (Stepping Motor Type)

A Accessory	M Material	S Surface Treatment	Qty.	Note
Bracket (1)	SECC	Electrodeposited Painting (Black)	1	-
Bracket (2)	SECC	Electrodeposited Painting (Black)	1	-
Cover (3)	EN AW-5052/AlMg2,5	Anodize (Black)	1	-
Hexagon Socket Set Screws M4x8	1.7220/34CrMo4	Trivalent Chromate (Black)	6	Screws for Covers
Hexagon Socket Set Screws M5x8	1.7220/34CrMo4	Trivalent Chromate (Black)	8	for Bracket Mounting



Base Length L	Effective Stroke St
340	130
400	190
460	250
520	310
580	370
640	430
700	490
760	550
820	610

Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support-side Bearing Housing	Stopper
M Material	EN AW-6063-T6	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	1.1191/C45E	EN AW-5052/AlMg2,5	POM (White)
S Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-

Part Number Type	No.	Selection: L Base Length	Selection: L_1 Table Length	W Table Width	W_1	H Height	H_1 Guide Height	H_2 Shaft Center Height	Ball Screws: Type	Ball Screws: Ø	Ball Screws: Lead	Linear Guides: Part Number	Bearing: Fixed Side (Support Units)	Bearing: Support Side (Bearing Models)	Coupling Application Examples Part No.: KUAC	Coupling Application Examples Part No.: KUBC
KUAC Servo Motor Driven Type	1204	340 400 460 520 580 640 700 760 820 (For size selections, please see Price List.)	100 150	170	159	65	21	28	Rolled Ball Screws BSSZ (Precision Grade C10)	12	4 10	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210															
	1505					74	28	32		15	5 10 20		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510															
	1520															
KUBC Stepping Motor Driven Type	1204L		150 200	220	209	65	21	28		12	4 10	SX2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210L															
	1505L					74	28	32		15	5 10 20		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510L															
	1520L															
	2005L					78	28	34		20	5 10	SX2R28	BRWE15	B6002ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	2010L					89	39	40								
	2020L					78	28	34			20					

For details, please ☞ **P.660 ~ 664** for ball screws, ☞ **P.559 ~ 562** for Linear Guides, ☞ **P.694** for Support Units, ☞**P694 ~ 965** for Couplings. (Couplings are not included)
Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number Type	No.	Table: W	Table: t2	Table: W_1	Table: P1 / P2	Base: W_2	Base: H_4	Base: t_1	Base: h_1	Base: P_3	Base: h	Base Mounting Holes: Q (L / W=170 / W=220)	Base Mounting Holes: S (L / W=170 / W=220)	* Motor Installation Interface (KUAC): P.C.D.	D	D_1	H_3	N	N_1	N_2	N_3	d	M_2	ℓ
KUAC Servo Motor Driven Type	1204	170	20	159	L_1 100 / P_1 70 / P_2 150 / 120 / 158	145	42	10	13	75	9.5	340: 6 / 6	340: 50 / 50	46	30	34	49	37	5	32	15	8	M4	8
	1210											400: 6 / 8	400: 80 / 20											
	1505		22				49	12	20		11.5	460: 8 / 8	460: 50 / 50	70	50	45	62	45		40		10	M5	10
	1510											520: 8 / 10	520: 80 / 20											
	1520											580: 10 / 10	580: 50 / 50											
KUBC Stepping Motor Driven Type	1204L	220	20	209	L_1 150 / P_1 120 / P_2 200 / 170 / 208	195	42	10	13	120	9.5	640: 10 / 12	640: 80 / 20	46	30	34	49	37		32		8	M4	8
	1210L											700: 12 / 12	700: 50 / 50											
	1505L		22				49	12	20		11.5	760: 12 / 14	760: 80 / 20	70	50	45	62	45		40		10	M5	10
	1510L											820: 14 / 14	820: 50 / 50											
	1520L																64							
	2005L				L_1 150 / P_1 120 / P_2 200 / 170 / 208		55	12	20								70	57.5		39.5	18	12		
	2010L						61		29															
	2020L						55		20								64							

* KUBC motor installation interface dimensions are the same as those of KUB. For details, see **P.464**

Order Example

Part Number	-	L	-	L_1
KUAC1204	-	340	-	150

Days to Ship 13 Days

Sensor Set can be specified as alterations. For details of alterations, see ☞ **P.473**

For ordering 3 or more identical models, Days to Ship estimate is provided. Days to Ship is to be estimated.

Cover Mounting Procedure

1) KUAC and KUBC are secured to device and table provided by customers.

2) Included brackets (1) and (2) are installed to the Single Axis Unit.

3)Lastly, secure included cover (3) to included brackets (1) and (2) installed in step 2).

Note) The graph and table indicate calculated values, and these may vary depending on operating conditions.
Brackets (1) and (2), and cover (3) and mounting screws are included in the product package. Please install bracket cover by customer.

Purposes of Use: KUAC and KUBC Series are best served as protection against dropped small parts to damage components, and for the area in which does not allow dripping of adhesive agent and oil.

Price

Part Number		€ Unit Price 1 ~ 2 unit(s)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAC Servo Motor Driven Type	1204									
	1210									
	1505									
	1510									
	1520									
KUBC Stepping Motor Driven Type	1204L									
	1210L									
	1505L									
	1510L									
	1520L									
	2005L									
	2010L									
	2020L									

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

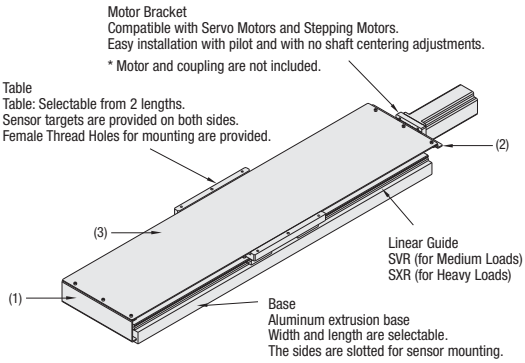
Servo Motor Application Table

Part Number	Manufacturers	Part Number	Output (W)	Flange Angle
KUAC12_ _(L)	Yasukawa Electric Corporation	SGMAH-A3	30	_40
		SGMAH-A5	50	
		SGMAH-01	100	
	Mitsubishi Electric Corporation	HC-MFS053	50	
		HF-MP053	50	
		HC-MFS13	100	
		HF-MP13	100	
	Sanyo Denki Co.,Ltd.	R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
	Omron Corporation	R88M-W03030	30	
		R88M-W05030	50	
		R88M-W10030	100	
KUAC15_ _(L) KUAC20_ _L	Yasukawa Electric Corporation	SGMAH-02	200	_60
		SGMAH-04	400	
	Mitsubishi Electric Corporation	HC-MFS23	200	
		HC-KFS23	200	
		HF-MP23	200	
		HA-KP23	200	
		HC-MFS43	400	
		HC-KFS43	400	
		HF-MP43	400	
		HA-KP43	400	
	Sanyo Denki Co., Ltd.	R2AA06020F	200	
		R2AA06040F	400	
	Omron Corporation	R88M-W20030	200	
		R88M-W40030	400	

Stepping Motor Application Table

Part Number	Manufacturers	Part Number	Flange Angle
KUBC12_ _ KUBC12_ _L	Oriental Motor	α Step AS46 / ASC46	_42
		5-phase RK54* (PK543)	
		5-phase RK54* (PK544)	
		5-phase RK54* (PK545)	
KUBC15_ _ KUBC15_ _L KUBC20_ _L		α Step AS6*	_60
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	

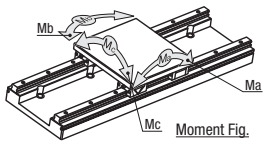
Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors are not limited to the above listed products. Please confirm each mounting dimensions.

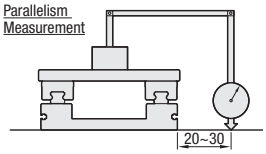


Allowable Static Load / Moment

Part Number		Static Load Capacity (kg)		Table Length	Allowable Static Moment (N·m)			Table Length	Allowable Static Moment (N·m)		
Type	No.	Horizont.	Vertical	L_1	Ma	Mb	Mc	L_1	Ma	Mb	Mc
KUAC Servo Motor Driven Type	1204	1679.0	138.0	100	401.5	401.5	783.8	150	783.8	783.8	783.8
	1210										
	1505		153.0				858.1				858.1
	1510										
	1520										
KUBC Stepping Motor Driven Type	1204L	2897.0	137.0	150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7
	1210L										
	1505L		153.0								
	1510L										
	1520L										
	2005L	4345.0	269.0		1677.8	1677.8	3008.9		2411.3	2411.3	3008.9
	2010L		169.0								
	2020L										

The table above lists reference values in static state. For actual life calculations, please use our Technical Calculation Software (refer to the above address).





Accuracy / Maximum Speed

Part Number		(1) Repeatability Positioning Accuracy (mm)	(2) Parallelism (mm)	(3) Max. Velocity (mm/s)								
Type	No.			L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAC Servo Motor Driven Type	1204 (L)	±0.03		265	265	265	265	265	265	-	-	-
	1210 (L)	±0.05		651	651	651	651	651	651	651	633	-
	1505 (L)	±0.05		264	264	264	264	264	264	264	264	264
	1510 (L)	±0.05		527	527	527	527	527	527	527	527	527
KUBC Stepping Motor Driven Type	1520 (L)	±0.05		1055	1055	1055	1055	1055	1055	1055	1055	1055
	2005L	±0.05		200	200	200	200	200	200	200	200	200
	2010L	±0.08		-	397	397	397	397	397	397	397	397
	2020L	±0.05		-	-	801	801	801	801	801	801	801

L	Parallelism
340	0.06
400	0.07
460	0.08
520	0.09
580	0.10
640	0.12
700	0.13
760	0.14
820	0.15

(1) Positioning Repeatability
Position and Measure moves are made to a predetermined point from one direction seven times. 1/2 of the maximum difference with "±" given is the measurement value.

(2) Parallelism
An actuator is fixed to a surface plate. Parallelism readings are taken from a carriage center mounted dial indicator (0.01 graduation) setup against the surface plate.
Measurement is taken along 20~30mm from the side of the base (See the illustration above)

(3) Maximum Velocity
Values in the table are calculated based on critical speed and DN value of ball screws. Note that these are not guaranteed data considering motor rotational speed, operating conditions, etc.

Moment of Inertia

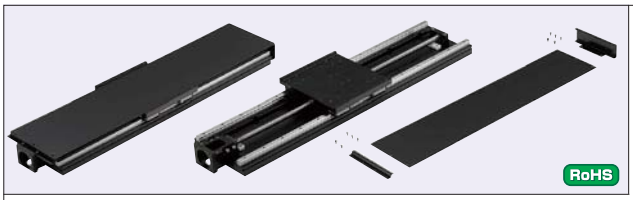
Part Number		Moment of Inertia (kg·cm²)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAC Servo Motor Driven T.	12__	0.658	0.667	0.677	0.686	0.696	0.706	0.715	0.725	-
	15__	0.724	0.747	0.771	0.794	0.818	0.841	0.864	0.888	0.911
KUBC Stepping Motor Driven Type	12__L	0.661	0.670	0.680	0.689	0.699	0.709	0.718	0.728	-
	15__L	0.727	0.751	0.774	0.797	0.821	0.844	0.868	0.891	0.914
	20__L	0.970	1.044	1.118	1.192	1.266	1.340	1.414	1.488	1.562

Mass

Part Number		Mass (kg)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUAC Servo Motor Driven Type	12__	5.8	6.5	7.0	7.7	8.2	8.9	9.4	10.1	-
	15__	7.1	7.8	8.5	9.2	10.0	10.7	11.4	12.2	12.8
	12__L	7.3	8.0	8.6	9.2	9.8	10.4	11.0	11.7	-
KUBC Stepping Motor Driven Type	15__L	8.8	9.6	10.5	11.4	12.2	13.1	13.9	14.8	15.7
	2005L/2020L	12.2	13.3	14.5	15.7	16.8	18.0	19.2	20.3	21.5
	2010L	12.2	13.4	14.5	15.7	16.9	18.0	19.2	20.4	21.5

Single Axis Units
-Precision Ball Screw Type w/Cover-

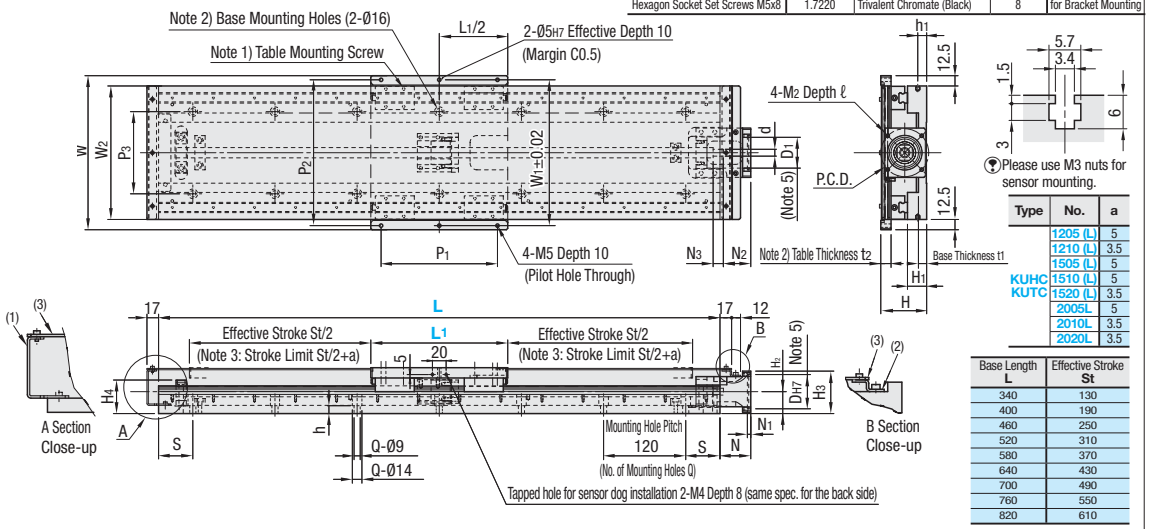
Features: Single Axis Units with Cover protect from dropping of foreign objects. Precision ball screws are used, improving accuracy and sound level.



KUHC (Servo Motor Type)
KUTC (Stepping Motor Type)

Note 1) The number of Table mounting screws is 2 per block for SVR Linear Guides and 4 per block for SXR.
Note 2) Only when W=170 and L_1=150, or W=220 and L_1=150 / 200, an access hole is provided.
Note 3) Stroke limit is the stroke at the point of contact with the stopper.
Note 4) Do not hang the unit inverted. The cover will sag large.
Note 5) Some motor brackets have D dimensions smaller than D_1. When selecting couplings, please refer to "Coupling Application Examples Parts Numbers" below.

A Accessory	M Material	S Surface Treatment	Quantity	Note
Bracket (1)	SECC	Electrodeposited Painting (Black)	1	-
Bracket (2)	SECC	Electrodeposited Painting (Black)	1	-
Cover (3)	EN AW-5052	Anodize (Black)	1	-
Hexagon Socket Set Screws M4x8	1.7220	Trivalent Chromate (Black)	6	Screws for Covers
Hexagon Socket Set Screws M5x8	1.7220	Trivalent Chromate (Black)	8	for Bracket Mounting



Type	No.	a
KUHC KUTC	1205 (L)	5
	1210 (L)	3.5
	1505 (L)	5
	1510 (L)	5
	1520 (L)	3.5
	2005L	5
	2010L	3.5
	2020L	3.5

Base Length L	Effective Stroke St
340	130
400	190
460	250
520	310
580	370
640	430
700	490
760	550
820	610

Parts	Base	Table	Motor Bracket	Nut Bracket	Fixed Side Support Unit	Support Side Bearing Housing	Stopper
M Material	EN AW-6063	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	1.1191/C45E	EN AW-5052/AlMg2,5	POM (White)
S Surface Treatment	Black Anodize	Black Anodize	Black Anodize	Black Anodize	Black Oxide	Black Anodize	-

Part Number Type	No.	Selections L Base Length	Selections L_1 Table Length	W Table Width	W_1	H Height	H_1 Guide Height	H_2 Shaft Center Height	Ball Screws Type	Ø	Lead	Linear Guides Part Number	Bearing Fixed Side (Support Units)	Bearing Support Side (Bearing Models)	Coupling Application Examples Part Numbers KUHC	KUTC
KUHC Servo Motor Driven Type	1205	340 400 460 520 580 640 700 760 820 (For size selections, please see Price List.)	100 150	170	159	65	21	28	Precision Ball Screws Precision (Grade C5)	12	5	SV2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210										10					
	1505					74	28	32		15	5		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510										10					
	1520										20					
KUTC Stepping Motor Driven Type	1205L		150 200	220	209	65	21	28		12	5	SX2R24	BRWE10	B608ZZ	CPDW25 MCSLC25	CPDW19 MCSLC20
	1210L										10					
	1505L					74	28	32		15	5		BRWE12	B6000ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	1510L										10					
	1520L										20					
	2005L					78	28	34		20	5	SX2R28	BRWE15	B6002ZZ	CPDW40 MCSLC40	CPDW32 MCSLC32
	2010L					89	39	40			10					
	2020L										20					

(For details, please ☞ **P.660 ~ 664** for ball screws, ☞ **P.559 ~ 562** for Linear Guides, ☞ **P.694** for Support Units, ☞ **P694 ~ 965** for Couplings. (Couplings are not included)
(Cautions are required when CPDW is used for 400W Servo Motors. Motor peak torque may exceed coupling allowable torque.

Part Number Type	No.	Table W	Table t_2	Table W_1	Table P1 / P2	Base W_2	Base H_4	Base t_1	Base h_1	Base P_3	Base h	Base Mounting Holes Q	Base Mounting Holes S	* Motor installation Interface (KUHC) P.C.D.	D	D_1	H_3	N	N_1	N_2	N_3	d	M_2	ℓ
KUHC Servo Motor Driven Type	1205	170	20	159	L_1=100: P1=70, P2=100; L_1=150: P1=120, P2=150	145	42	10	13	75	9.5	L=340: Q=6 (W=170), 6 (W=220); L=400: 6, 8; L=460: 8, 8; L=520: 8, 10; L=580: 10, 10; L=640: 10, 12; L=700: -, 12; L=760: -, 14; L=820: -, 14	L=340: S=50 (W=170), 50 (W=220); L=400: 80, 20; L=460: 50, 50; L=520: 80, 20; L=580: 50, 50; L=640: 80, 20; L=700: -, 50; L=760: -, 20; L=820: -, 50	46	30	34	49	37	5	32	15	8	M4	8
	1210																							
	1505		22				49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510																							
	1520																							
KUTC Stepping Motor Driven Type	1205L	220	20	209	L_1=150: P1=120, P2=150; L_1=200: P1=170, P2=200	195	42	10	13	120	9.5			46	30	34	49	37		32		8	M4	8
	1210L																							
	1505L		22				49	12	20		11.5			70	50	45	62	45		40		10	M5	10
	1510L																							
	1520L																							
	2005L				L_1=150: P1=120, P2=150; L_1=200: P1=170, P2=200		55		20								64							
	2010L						61		29					70	50	45	70	57.5		39.5	18	12		
	2020L																							

* KUTC motor installation interface dimensions are the same as those of KUB. For details, **P.464**

Order Example

Part Number	-	L	-	L_1
KUHC1205	-	340	-	150

Days to Ship 13 Days

(For ordering 3 or more identical models, Days to Ship estimate is provided.

Sensor Set can be specified as alterations.
For details of alterations, ☞ **P.473**

Cover Mounting Procedure

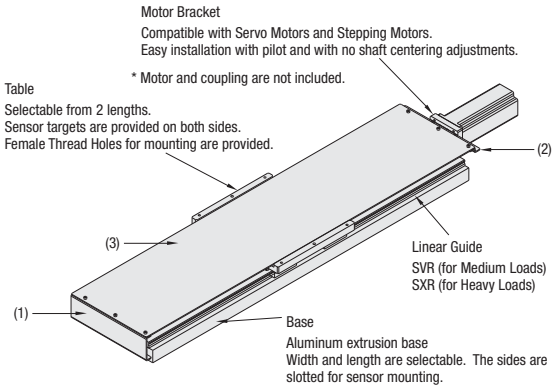
1) KUHC and KUTC are secured to a device or table provided by customers.

2) Included brackets (1) and (2) are installed to the Single Axis Unit.

3)Lastly, secure included cover (3) to included brackets (1) and (2) installed in step 2).

Note) The graph and table indicate calculated values, and these may vary depending on operating conditions.Brackets (1) and (2), and cover (3) and mounting screws are included in the product package.
Bracket cover mounted by the customers.

Purposes of Use: KUHC and KUTC Series are best served as protection against dropped small parts to damage components, and for the area in which does not allow dripping of adhesive agent and oil.



Price

Part Number		€ Unit Price 1 ~ 2 unit(s)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUHC Servo Motor Driven Type	1205									
	1210									
	1505									
	1510									
	1520									
KUTC Stepping Motor Driven Type	1205L									
	1210L									
	1505L									
	1510L									
	1520L									
	2005L									
	2010L									
	2020L									

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Allowable Static Load · Moment

Part Number		Static Load Capacity(kg)		Table Length L1	Allowable Static Moment (N·m)			Table Length L1	Allowable Static Moment (N·m)		
Type	No.	Horizontal	Vertical		Ma	Mb	Mc		Ma	Mb	Mc
KUHC Servo Motor Driven Type	1205	1679.0	138.0	100	401.5	401.5	783.8	150	783.8	783.8	783.8
	1210										
	1505		153.0				858.1				858.1
	1510										
	1520										
KUTC Stepping Motor Driven Type	1205L	2897.0	137.0	150	1092.3	1092.3	2103.7	200	1733.3	1733.3	2103.7
	1210L										
	1505L		153.0								
	1510L										
	1520L										
	2005L	4345.0	269.0		1677.8	1677.8	3008.9		2411.3	2411.3	3008.9
	2010L		169.0								
	2020L										

The table above lists reference values in static state.

Servo Motor Application Table

Part Number	Manufacturers	Part Number	Output (W)	Flange Angle
KUHC12__(L)	Yasukawa Electric Corporation	SGMAH-A3	30	_40
		SGMAH-A5	50	
		SGMAH-01	100	
	Mitsubishi Electric Corporation	HC-MFS053	50	
		HF-MP053	50	
		HC-MFS13	100	
		HF-MP13	100	
	Sanyo Denki Co.,Ltd.	R2AA04003F	30	
		R2AA04005F	50	
		R2AA04010F	100	
	Omron Corporation	R88M-W03030	30	
		R88M-W05030	50	
		R88M-W10030	100	
KUHC15__(L) KUHC20__L	Yasukawa Electric Corporation	SGMAH-02	200	_60
		SGMAH-04	400	
	Mitsubishi Electric Corporation	HC-MFS23	200	
		HC-KFS23	200	
		HF-MP23	200	
		HA-KP23	200	
		HC-MFS43	400	
		HC-KFS43	400	
		HF-MP43	400	
		HA-KP43	400	
	Sanyo Denki Co., Ltd.	R2AA06020F	200	
		R2AA06040F	400	
	Omron Corporation	R88M-W20030	200	
		R88M-W40030	400	

Stepping Motor Application Table

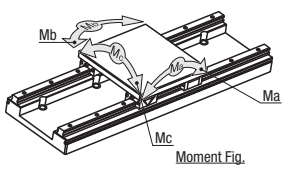
Part Number	Manufacturers	Part Number	Flange Angle
KUTC12__ KUTC12__L	Oriental Motor	α Step AS46 / ASC46	_42
		5-phase RK54* (PK543)	
		5-phase RK54* (PK544)	
		5-phase RK54* (PK545)	
KUTC15__ KUTC15__L KUTC20__L		α Step AS6*	_60
		5-phase RK56* (PK564)	
		5-phase RK56* (PK566)	
		5-phase RK56* (PK569)	

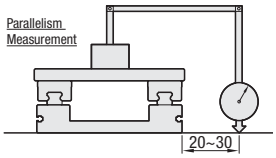
Product numbers and specifications of motors are subject to change. Please check the manufactures' information.
Applicable motors are not limited to the above listed products. Please confirm each mounting dimensions.

Alterations

Part Number	-	L	-	L1	-	(A1 · B1...etc.)
KUHC1205	-	340	-	150	-	A1

KUHC and KUTC Sensor Set can be specified as alterations. For details of alterations, P.473





Accuracy · Maximum Speed

Part Number		(1) Repeatability Positioning Accuracy (mm)	(2) Parallelism (mm)	(3) Max. Velocity (mm/s)								
Type	No.			L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUHC Servo Motor Driven Type	1205 (L)	±0.003	L / Parallelism	486	486	486	-	-	-	-	-	-
	1210 (L)	±0.003	340 / 0.06	972	972	972	972	766	611	-	-	-
	1505 (L)	±0.003	400 / 0.07	389	389	389	389	389	374	-	-	-
	1510 (L)	±0.003	460 / 0.08	778	778	778	778	778	749	-	-	-
KUTC Stepping Motor Driven Type	1520 (L)	±0.003	520 / 0.09	1556	1556	1556	1556	1556	1498	-	-	-
	2005L	±0.003	580 / 0.10	292	292	292	292	292	292	292	292	286
	2010L	±0.003	640 / 0.12	-	583	583	583	583	583	583	583	517
	2020L	±0.003	700 / 0.13	-	-	1167	1167	1167	1167	1167	1167	1027
			760 / 0.14									
			820 / 0.15									

(1) Positioning Repeatability
Position and Measure moves are made to a predetermined point from one direction seven times.
1/2 of the maximum difference with "±" given is the measurement value.

(2) Parallelism
An actuator is fixed to a surface plate. Parallelism readings are taken from a carriage center mounted dial indicator (0.01 graduation) setup against the surface plate.
Measurement is taken along 20~30mm from the side of the base (See the illustration above)

(3) Maximum Velocity
Values in the table are calculated based on critical speed and DN value of ball screws.
Note that these are not guaranteed data considering motor rotational speed, operating conditions, etc.

Moment of Inertia

Part Number		Moment of Inertia (kg·cm²)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUHC Servo Motor Driven Type	12__	0.658	0.667	0.677	0.686	0.696	0.706	-	-	-
	15__	0.724	0.747	0.771	0.794	0.818	0.841	-	-	-
	12__L	0.661	0.67	0.68	0.689	0.699	0.709	-	-	-
KUTC Stepping Motor Driven Type	15__L	0.727	0.751	0.774	0.797	0.821	0.844	-	-	-
	20__L	0.97	1.044	1.118	1.192	1.266	1.34	1.414	1.488	1.562

Mass

Part Number		Mass (kg)								
Type	No.	L=340	L=400	L=460	L=520	L=580	L=640	L=700	L=760	L=820
KUHC Servo Motor Driven Type	12__	5.8	6.5	7.0	7.7	8.2	8.9	-	-	-
	15__	7.1	7.8	8.5	9.2	10.0	10.7	-	-	-
	12__L	7.3	8.0	8.6	9.2	9.8	10.4	-	-	-
KUTC Stepping Motor Driven Type	15__L	8.8	9.6	10.5	11.4	12.2	13.1	-	-	-
	20__L	12.2	13.4	14.5	15.7	16.9	18.0	19.2	20.4	21.5

Single Axis Unit-dedicated Sensor Set Alteration List

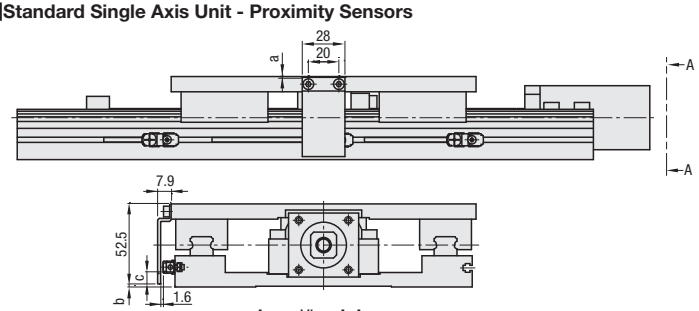
Sensor Set Alteration List

Types	Alterations		Code	Spec.	Price Adder
Proximity Sensor (SUNX-made)	Applicable Models	KUA/KUB/KUH/KUT	A1 B1	Proximity Sensor set is included. A1 · A2 · A3···›Proximity Sensor 3 units (made by SUNX: GX-F8A) B1 · B2 · B3···›Proximity Sensor 3 units (made by SUNX: GX-F8B) A sensor set consists of the components listed in the table below. Components: Sensor Target (1 pc.) / Proximity Sensor (3 Pcs.) / Mounting Bracket (3 Pcs.) / Sensor Mounting Screw (3 Pcs.) / Sensor Mounting Nut (3 Pcs.) / Sensor Target Screw (2 pcs.) Ordering Code A1	113,00
		KUAC/KUBC/KUHC/KUTC	A2 B2		
		KUAJ/KUBJ	A3 B3		
Photo Sensor (SUNX-made)	Applicable Models	KUA/KUB KUH/KUT	C1	Photo Sensor set is included. C1~C11···›Photo Sensor 3 units (made by SUNX: PM-L24) A sensor set consists of the components listed in the table below. Components: Sensor Target (1 pc.) / Photo Sensor (3 Pcs.) / Sensor Bracket (3 Pcs.) / Sensor Mounting Screw (6 pcs.) / Sensor Mounting Washer (6 pcs.) Components: Sensor Mounting Spring Washer (6 pcs.) / Sensor Target Screw (2 pcs.) / Bracket Mounting Screw (6 pcs.) / Bracket Mounting Nut (6 pcs.) Ordering Code C1	69,00
		12_ _/12_ _S/12_ _L (S) 15_ _/15_ _L	C2		
		KUA/KUB KUH/KUT	C3		
		2005L/2020L 2005L			
		KUA/KUB KUH/KUT	C4		
		2010L 2010L/2020L			
		KUAC/KUBC KUHC/KUTC	C5		
		12_ _/15_ _ 12_ _L/15_ _L			
		KUAC/KUBC KUHC/KUTC	C6		
		2005L/2020L 2005L			
		KUAC/KUBC KUHC/KUTC	C7		
		2010L 2010L/2020L			
		KUAJ/KUBJ	C8		
		12_ _/12_ _L			
		15_ _/15_ _L	C9		
		2005L/2020L	C10		
		2010L	C11		
Photo Sensor (made by OMRON)	Applicable Models	KUA/KUB KUH/KUT	D1	Photo Sensor set is included. D1~D11···›Photo Sensor 3 units (made by OMRON: EE-SX911-R1M) A sensor set consists of the components listed in the table below. Components: Sensor Target (1 pc.) / Photo Sensor (3 Pcs.) / Sensor Bracket (3 Pcs.) / Sensor Mounting Screw (6 pcs.) / Sensor Mounting Washer (6 pcs.) Components: Sensor Mounting Spring Washer (6 pcs.) / Sensor Target Screw (2 pcs.) / Bracket Mounting Screw (6 pcs.) / Bracket Mounting Nut (6 pcs.) Ordering Code D1	69,00
		12_ _/12_ _S/12_ _L (S) 15_ _/15_ _L	D2		
		KUA/KUB KUH/KUT	D3		
		2005L/2020L 2005L			
		KUA/KUB KUH/KUT	D4		
		2010L 2010L/2020L			
		KUAC/KUBC KUHC/KUTC	D5		
		12_ _/15_ _ 12_ _L/15_ _L			
		KUAC/KUBC KUHC/KUTC	D6		
		2005L/2020L 2005L			
		KUAC/KUBC KUHC/KUTC	D7		
		2010L 2010L/2020L			
		KUAJ/KUBJ	D8		
		12_ _/12_ _L			
		15_ _/15_ _L	D9		
		2005L/2020L	D10		
		2010L	D11		

Alterations — Part Number: L - L1 - (A1, B1...etc.) — Days to Ship: 13 Days

KUA1204 - 340 - 150 - A1

Standard Single Axis Unit - Proximity Sensors



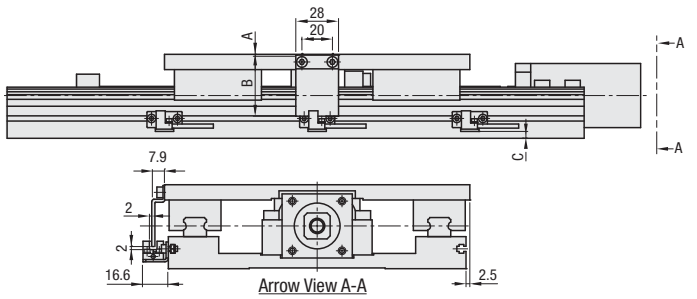
Arrow View A-A

Standard - Proximity Sensor Dimension Table

Applicable Models	Code	a	b	c
KUA/KUB/KUH/KUT 12_ _/12_ _S/12_ _L (S)	A1 B1	0.5	2	7.05
KUA/KUB/KUH/KUT 15_ _/15_ _L		1.5	10	6.05
KUA/KUB 2005L/2020L KUH/KUT 2005L		1.5	14	2.05
KUA/KUB 2010L KUH/KUT 2010L/2020L		1.5	25	0.05

KUA / KUB Series P.463
KUH / KUT Series P.465

Standard Single Axis Unit - Photo Sensors



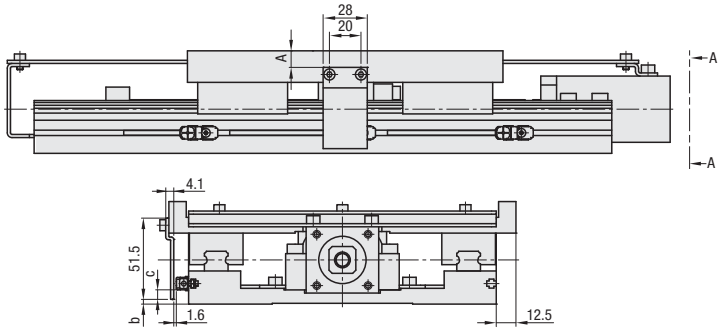
Arrow View A-A

Standard - Photo Sensor Dimension Table

Applicable Models	Code	a	b	c
KUA/KUB/KUH/KUT 12_ _/12_ _S/12_ _L (S)	C1 D1	0.5	40	4.5
KUA/KUB/KUH/KUT 15_ _/15_ _L	C2 D2	1.5	41	11.5
KUA/KUB 2005L/2020L KUH/KUT 2005L	C3 D3	1.5	45	11.5
KUA/KUB 2010L KUH/KUT 2010L/2020L	C4 D4	1.5	47	20.5

KUA / KUB Series P.463
KUH / KUT Series P.465

Single Axis Unit w/Cover - Proximity Sensors



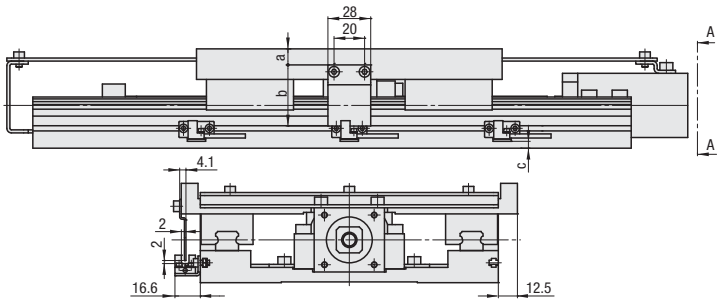
Arrow View A-A

Cover Specification Proximity Sensor Dimension Table

Applicable Models	Code	a	b	c
KUAC/KUBC/KUHC/KUTC 12_ _/12_ _S/12_ _L (S)	A2 B2	10.5	3	6.05
KUAC/KUBC/KUHC/KUTC 15_ _/15_ _L		12.5	10	6.05
KUAC/KUBC 2005L/2020L KUHC/KUTC 2005L		12.5	14	2.05
KUAC/KUBC 2010L KUHC/KUTC 2010L/2020L		12.5	25	0.05

KUAC / KUBC Series P.469
KUHC / KUTC Series P.471

Single Axis Unit w/Cover - Photo Sensors



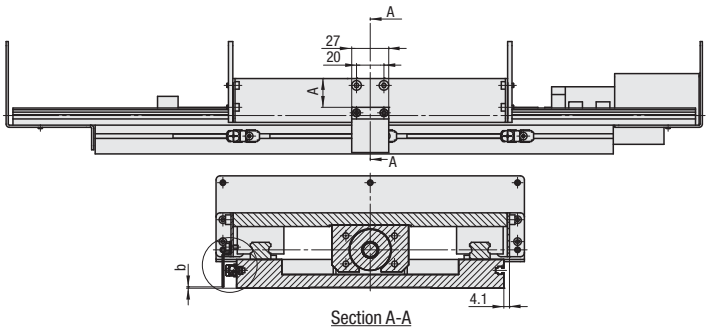
Arrow View A-A

Cover Specification Photo Sensor Dimension Table

Applicable Models	Code	a	b	c
KUAC/KUBC/KUHC/KUTC 12_ _/12_ _S/12_ _L (S)	C5 D5	10.5	40	4.5
KUAC/KUBC/KUHC/KUTC 15_ _/15_ _L		12.5	40	11.5
KUAC/KUBC 2005L/2020L KUHC/KUTC 2005L	C6 D6	12.5	44	11.5
KUAC/KUBC 2010L KUHC/KUTC 2010L/2020L	C7 D7	12.5	46	20.5

KUAC / KUBC Series P.469
KUHC / KUTC Series P.471

Single Axis Unit w/Bellows - Proximity Sensors

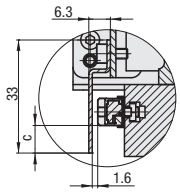


Section A-A

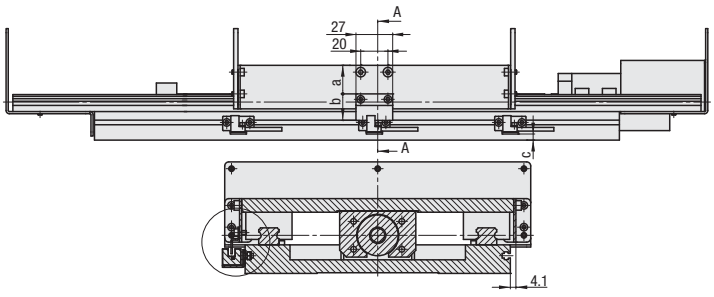
Bellows Specifications Proximity Sensor Dimension Table

Applicable Models	Code	a	b	c
KUAJ/KUBJ 12_ _/12_ _L	A3 B3	21	1	8.05
KUAJ/KUBJ 15_ _/15_ _L		22	9	7.05
KUAJ/KUBJ 2005L/2020L		21	14	2.05
KUAJ/KUBJ 2010L		21	25	0.05

KUAJ / KUBJ Series P.467



Single Axis Unit w/Bellows - Photo Sensors

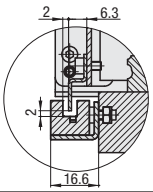


Section A-A

Bellows Specification Photo Sensor Dimension Table

Applicable Models	Code	a	b	c
KUAJ/KUBJ 12_ _/12_ _L	C8 D8	21	19.5	4.5
KUAJ/KUBJ 15_ _/15_ _L	C9 D9	22	20.5	11.5
KUAJ/KUBJ 2005L/2020L	C10 D10	21	25.5	11.5
KUAJ/KUBJ 2010L	C11 D11	21	27.5	20.5

KUAJ / KUBJ Series P.467

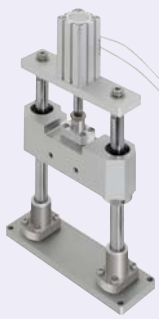


Pneumatic Module Units (Vertical)

Spec.Change Printed in Purple

■Air control module unit that requires no basic designing. To be used in vertical position for operations such as pressurization cutting and push motion.

RoHS



(With Cylinder With Base)



(Without Cylinder Without Base)

■Specifications List

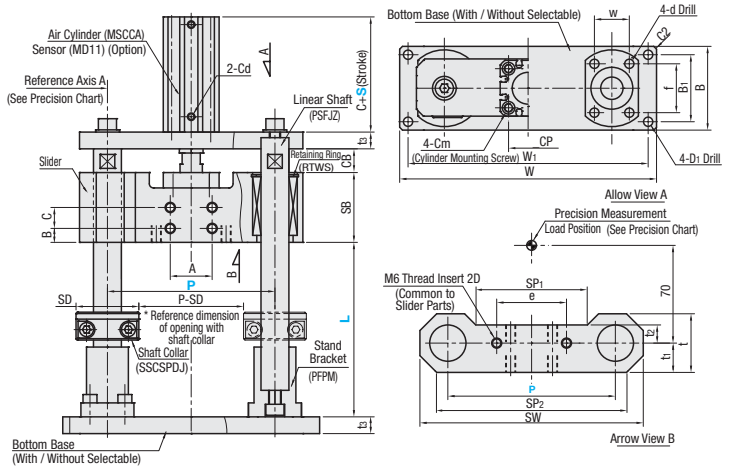
Part Number		Specifications	
Type	No.	Cylinder	Base
MAT25 MAT32 MAT40 MAT50 MAT63	NN (S)	N (w/o)	N (w/o)
	NB (S)	N (w/o)	B (w/)
	CN (S)	C (w/)	N (w/o)
	CB (S)	C (w/)	B (w/)

■Components

Parts	Base	Slider	Related Connecting Parts
MMaterial	EN AW-6063/ AlMg0,7Si	EN AW-6063/ AlMg0,7Si	JIS SUS
SSurface Treatment	White Alumite	White Alumite	-

1) Possible to select the unit without a cylinder and mount other manufacturer's cylinder.
2) Compatible cylinder diameters are Ø25, Ø32, Ø40, Ø50 and Ø63.
3) MAT25 is the only option for S Type. (MAT25 (S))
4) S Type shaft diameter is Ø16. (See the Components List below)

MAT25
MAT32
MAT40
MAT50
MAT63



■Module Components

Part Number		Component Name						
Type	No.	Cylinder	Linear Shafts	Floating Joints	Linear Bushings	Retaining Rings	Shaft Collars	Stand Brackets
MAT25	NNS · NBS	-	PSFJZ16 (Shaft Dia. 16)	FJUCS10	LMU16	RTWS28	SSCSPDJ16	PFPM16
	CNS · CBS	MSCCA25						
	NN · NB	-	PSFJZ20 (Shaft Dia. 20)		LMU20	RTWS32	SSCSPDJ20	PFPM20
	CN · CB	MSCCA25						
MAT32	NN · NB	-	PSFJZ25 (Shaft Dia. 25)	FJUCS14	LMU25	RTWS40	SSCSPDJ25	PFPM25
	CN · CB	MSCCA32						
MAT40	NN · NB	-						
	CN · CB	MSCCA40						
MAT50	NN · NB	-		FJUCS18				
	CN · CB	MSCCA50						
MAT63	NN · NB	-						
	CN · CB	MSCCA63						
Pages on Catalog		P.21371	P.115	P.21406	P.279	P.2254	P.250	P.1826

For details of the components above, please confirm on the relevant catalog pages.

Part Number		Selections			CB	C	CP	Cm	Cd	SB	Slider Dimensions											Stand Mounting Dimensions			Base Dimensions (When type with base is selected.)			SD
Type	No.	S	P	L (Specified in 10mm Increments)							P	SW	SP1	SP2	t	t1	t2	a	b	c	e	d	f	w	t3	D1		
MAT25	NN (S) NB (S) CN (S) CB (S)	30 50	120 150 200 S 120 Only	120~300 (S=30) 160~300 (S=50) When MAT25(S) is selected	17	- - 32.5	28	5	- - M5	50	120	160	70	130	46	25	12	40	15	-	60	When MAT25(S) is selected 5.5	32	20	12	6.6	40 S 35
MAT32	NN NB CN CB		150 200		27	- - 33	34	5	- - Rc1/8	68	150	200	100	170	52	27	15	60	10	20	80	When MAT25 is selected 6.6	35	25		9	
MAT40	NN NB CN CB					- - 39.5	40	6	- - Rc1/8	68	200	256	140	226	60	32	17	80	10	20	100	9	45	35			
MAT50	NN NB CN CB		200	120~250 (S=30) 160~250 (S=50)	32	- - 40.5	50	8	- - Rc1/4	72	P	W	B	W1	B1										15	11	45
MAT63	NN NB CN CB					- - 46	60	10	- - Rc1/4	72	120	184	60	172	50												
											150	240	75	220	60												
											200	288	75	270	60												

Order Example

Part Number	-	S	-	P	-	L
MAT25NN	-	30	-	120	-	180

Alterations

Part Number	-	S	-	P	-	L	-	(NSC · AS)
MAT25NN	-	30	-	120	-	180	-	NSC

Alteration	Code	Spec.	Price Adder
Without Shaft Collar	NSC	Excluding Shaft Collar	MAT25 (S) -10,00 MAT25 -13,00 MAT32, 40, 50, 63 -14,00
With Auto Switches	AS	Auto switches are included. Part Number MD11L3 2 pcs. Only applicable for cylinder units.	+41,00

Days to Ship **13 Days**

Price Reduction
Up to 15%

CAD Data

Price

Part Number		€ Unit Price 1 ~ 4 unit(s)															
		Cylinder Stroke S=30								Cylinder Stroke S=50							
Type	No.	L=120~200			L=210~250			L=260~300		L=160~200			L=210~250			L=260~300	
		Slider Pitch P			Slider Pitch P			Slider Pitch P		Slider Pitch P			Slider Pitch P			Slider Pitch P	
		120	150	200	120	150	200	150	200	120	150	200	120	150	200	150	200
MAT25	NNS																
	NBS																
	CNS																
	CBS																
	NN																
	NB																
	CN																
	CB																
MAT32	NN																
	NB																
	CN																
	CB																
MAT40	NN																
	NB																
	CN																
	CB																
MAT50	NN																
	NB																
	CN																
	CB																
MAT63	NN																
	NB																
	CN																
	CB																

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number		Mass (kg)															
		Cylinder Stroke S=30								Cylinder Stroke S=50							
Type	No.	L=120~200			L=210~250			L=260~300		L=160~200			L=210~250			L=260~300	
		P Slider Pitch			P Slider Pitch			P Slider Pitch		P Slider Pitch			P Slider Pitch			P Slider Pitch	
		120	150	200	120	150	200	150	200	120	150	200	120	150	200	150	200
MAT25	NNS	2.2	-	-	2.3	-	-	-	-	2.2	-	-	2.3	-	-	-	-
	NBS	2.5	-	-	2.7	-	-	-	-	2.5	-	-	2.7	-	-	-	-
	CNS	2.5	-	-	2.6	-	-	-	-	2.6	-	-	2.7	-	-	-	-
	CBS	2.9	-	-	3.0	-	-	-	-	3.0	-	-	3.1	-	-	-	-
	NN	2.7	3.1	3.8	3.0	3.4	4.0	3.6	4.3	2.7	3.1	3.8	3.0	3.4	4.0	3.6	4.3
	NB	3.1	3.8	4.5	3.4	4.0	4.8	4.2	5.0	3.1	3.8	4.5	3.4	4.0	4.8	4.2	5.0
	CN	3.1	3.5	4.1	3.3	3.7	4.3	3.9	4.6	3.1	3.5	4.2	3.4	3.8	4.4	4.0	4.7
	CB	3.5	4.1	4.9	3.7	4.3	5.1	4.6	5.4	3.5	4.2	4.9	3.8	4.4	5.2	4.7	5.4
MAT32	NN	-	5.0	5.9	-	5.4	6.3	5.8	6.7	-	5.0	5.9	-	5.4	6.3	5.8	6.7
	NB	-	5.8	6.8	-	6.2	7.1	6.5	7.5	-	5.8	6.8	-	6.2	7.1	6.5	7.5
	CN	-	5.5	6.4	-	5.9	6.7	6.3	7.1	-	5.6	6.5	-	6.0	6.8	6.4	7.2
	CB	-	6.2	7.2	-	6.6	7.6	7.0	8.0	-	6.3	7.3	-	6.7	7.7	7.1	8.1
MAT40	NN	-	5.0	5.9	-	5.4	6.3	5.8	6.7	-	5.0	5.9	-	5.4	6.3	5.8	6.7
	NB	-	5.8	6.8	-	6.1	7.1	6.5	7.5	-	5.8	6.8	-	6.1	7.1	6.5	7.5
	CN	-	5.5	6.4	-	5.9	6.8	6.3	7.2	-	5.6	6.5	-	6.0	6.9	6.4	7.3
	CB	-	6.3	7.3	-	6.6	7.6	7.0	8.0	-	6.4	7.4	-	6.7	7.7	7.1	8.1
MAT50	NN	-	-	6.6	-	-	7.0	-	7.4	-	-	6.6	-	-	7.0	-	7.4
	NB	-	-	7.9	-	-	8.3	-	8.7	-	-	7.9	-	-	8.3	-	8.7
	CN	-	-	7.3	-	-	7.7	-	8.0	-	-	7.5	-	-	7.9	-	8.3
	CB	-	-	8.6	-	-	8.9	-	9.3	-	-	8.8	-	-	9.2	-	9.6
MAT63	NN	-	-	6.6	-	-	7.0	-	7.4	-	-	6.6	-	-	7.0	-	7.4
	NB	-	-	7.9	-	-	8.3	-	8.7	-	-	7.7	-	-	8.3	-	8.7
	CN	-	-	7.7	-	-	8.1	-	8.5	-	-	7.9	-	-	8.2	-	8.6
	CB	-	-	9.0	-	-	9.4	-	9.8	-	-	9.2	-	-	8.5	-	9.9

Speed · Load Capacity · Force · Allowable Moment

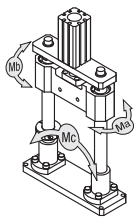
Type	P Slider Pitch	Slider Mass (Incl. Joint)	Maximum Speed (mm/s)	Load Capacity (kN)	Cylinder Thrust Force Reference Value (kN)								Allowable Static Moment (N·m)		
					at 0.4MPa		at 0.5MPa		at 0.6MPa		at 0.7MPa		Ma	Mb	Mc
					Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke			
MAT25 (S)	120	0.9	500	0.08	0.15	0.20	0.19	0.25	0.23	0.30	0.26	0.34	3.6	3.6	5.9
MAT25	120	0.9											4.8	4.8	6.9
	150	1.3											4.8	4.8	8.6
	200	1.8											4.8	4.8	11.4
MAT32	150	1.8		0.13	0.24	0.32	0.30	0.40	0.36	0.48	0.42	0.56	7.7	7.7	9.8
	200	2.6											7.7	7.7	13.1
MAT40	150	1.8		0.22	0.42	0.50	0.53	0.63	0.63	0.75	0.74	0.88	7.7	7.7	9.8
	200	2.6											7.7	7.7	13.1
MAT50	200	2.8		0.35	0.66	0.79	0.82	0.98	0.99	1.18	1.15	1.37	7.7	7.7	13.1
MAT63	200	2.8		0.59	1.12	1.25	1.40	1.56	1.68	1.87	1.96	2.18	7.7	7.7	13.1

Accuracy

Part Number	Running Parallelism to Reference Axis (Upright)					
	Under No Load			Under Load (reference)		
Type	Slider Pitch			Slider Pitch		
	120	150	200	120	150	200
MAT25 (S)	0.07	-	-	0.08	-	-
MAT25	0.07	0.07	0.07	0.10	0.10	0.10
MAT32	-	0.07	0.07	-	0.10	0.10
MAT40	-	0.07	0.07	-	0.10	0.10
MAT50	-	-	0.07	-	-	0.10
MAT63	-	-	0.07	-	-	0.10

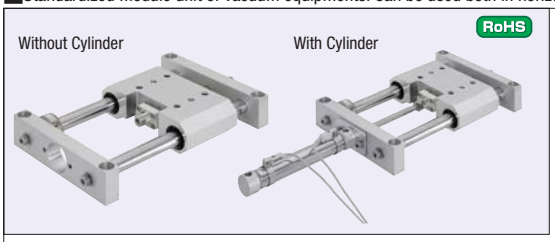
* 1) Measurement reference is Axis A.
2) Put surface "e" under load, apply 3kg mass in the position of 70mm from the shaft center, and measure.
3) Accuracy does not vary by difference in cylinder stroke.
4) Running parallelism values are for reference only.

Allowable Moment



Pneumatic Module Units (Horizontal)

■Standardized module unit of vacuum equipments. Can be used both in horizontal and vertical positions for work conveyance and transfer.



■Specifications List

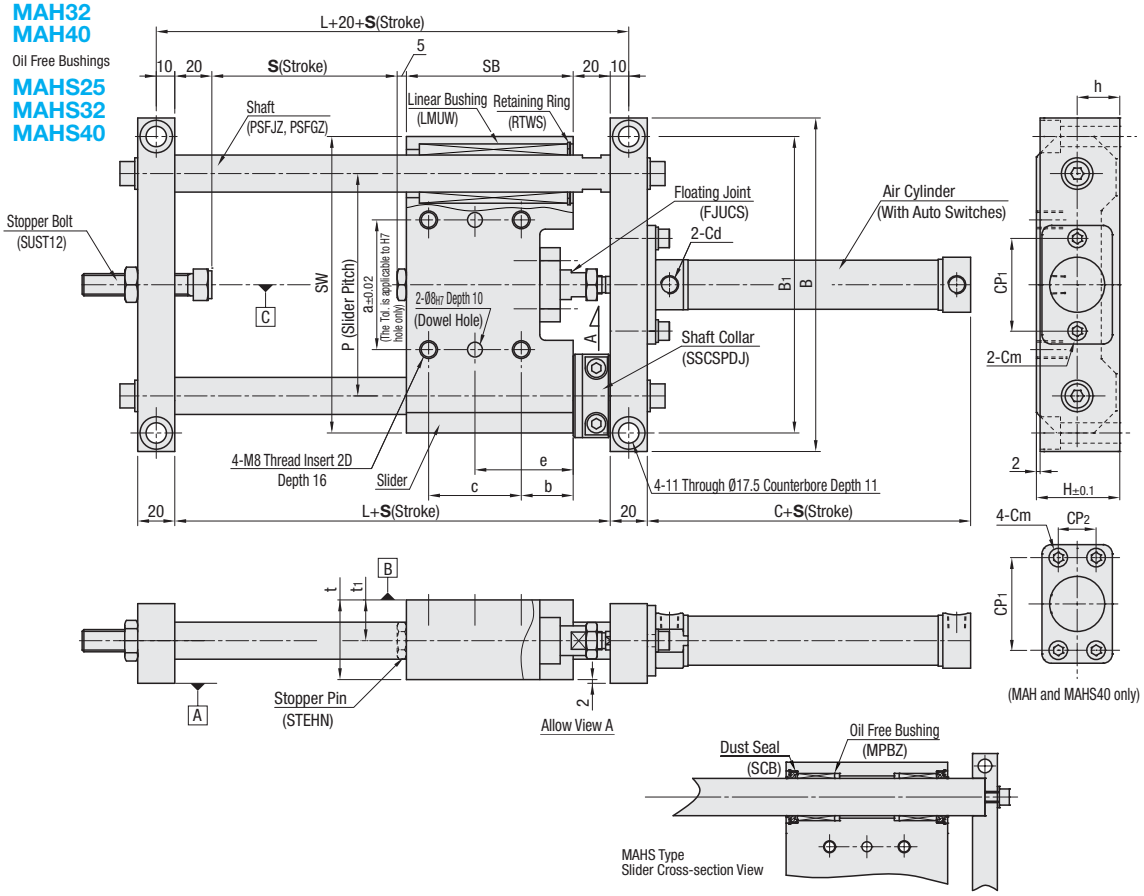
Part Number Type	No.	Specifications Cylinder
MAH25 MAH32 MAH40	N	N (w/o)
	C	C (w/)
MAHS25 MAHS32 MAHS40	N	N (w/o)
	C	C (w/)

■Components

Parts	Base	Slider	Related Connecting Parts
M Material	EN AW-6063/ AlMg0,7Si	EN AW-6063/ AlMg0,7Si	SUS
S Surface Treatment	Clear Anodize	Clear Anodize	-

(?)1) No auto switch is included for Cylinder Units.
2) Possible to select the unit without cylinder and mount other manufacturer's cylinder.
3) Compatible cylinder diameters are Ø25, Ø32 and Ø40.

Linear Bushings,
MAH25
MAH32
MAH40
Oil Free Bushings
MAHS25
MAHS32
MAHS40



■Module Components

Part Number Type	No.	Component Name Cylinder	Floating Joints	Shaft	MAH25/32/40 Linear Bushings	MAHS25/32/40 Oil Free Bushings	Stopper Bolts	Stopper Pins	Shaft Collars
MAH25	N	-	FJUCS10	PSFJZ20	LMUW20	MPBZ20-30	SUST12-60	STEHN17	SSCSPDJ20
MAHS25	C	Ø25 Pen-shaped		PSFGZ20					
MAH32	N	-	FJUCS10	PSFJZ25	LMUW25	MPBZ25-30	SUST12-60	STEHN17	SSCSPDJ25
MAHS32	C	Ø32 Pen-shaped		PSFGZ25					
MAH40	N	-	FJUCS14	PSFJZ30	LMUW30	MPBZ30-30	SUST12-60	STEHN17	SSCSPDJ30
MAHS40	C	Ø40 Pen-shaped		PSFGZ30					
Pages on Catalog		Original	P.2-1406	P.115	P.279	P.331	P.1427	P.1425	P.250

(?)For details of the components above, please confirm on the relevant catalog pages.

Part Number Type	No.	Selections S (Stroke)	P (Slider Pitch)	H	L	B	B1	C	Cd	CP1	CP2	Cm	h	SW	SB	t	t1	Slider Mounting Hole Locations a	b	c	e
MAH25 MAHS25	N	100 150 200 250 300 350 400 (?)For size selections please see Price List.	120	48	135	180	160	-	-	60	-	6	23	160	90	46	25	70	28	50	53
	C							66	Rc1/8												
MAH32 MAHS32	N		150	54	165	220	200	-	-	60	-		27	200	120	52	27	90	30	60	60
	C							68	Rc1/8												
MAH40 MAHS40	N		200	62	175	270	250	-	-	66	36		30	256	130	60	32	120	35	60	65
	C							93	Rc1/4												

Price Reduction
Up to 13%

CAD Data

Order Example

Part Number	-	S
MAH25N	-	250
MAHS40C	-	300

Alterations

Part Number	-	S	-	(NSC · CSA · AS)
MAH25N	-	200	-	NSC

Alterations	Code	Spec.	Price Adder	
Without Shaft Collar	NSC	Excluding Shaft Collar	MAH	0,25 -13,00
				0,32 -14,00
				0,40 -14,00
Stopper Alteration	CSA	Change to shock absorber from stopper bolt	+60,00	
With Auto Switches	AS	Auto switches are included. Part Number MSRCS 2 pcs. ⓘOnly applicable to cylinder units.	+35,00	

Days to Ship: 13 Days

Price

■MAH (Linear Bushings Type)

Part Number Type	No.	€ Unit Price 1 ~ 4 unit(s) Stroke 100	150	200	250	300	350	400
MAH25	N							
	C							
MAH32	N							
	C							
MAH40	N							
	C							

■MAHS (Oil Free Bushings Type)

Part Number Type	No.	€ Unit Price 1 ~ 4 unit(s) Stroke 100	150	200	250	300	350	400
MAHS25	N							
	C							
MAHS32	N							
	C							
MAHS40	N							
	C							

ⓘFor orders larger than indicated quantity, Days to Ship is to be estimated in each case.

■With Shock Absorbers (Changed from stopper bolt as alteration)

Orifice Type	Screw Shaft Dia.	Stroke mm	Max. Absorbed Energy J (kgf-m)	Max. Absorbed Energy Per Min. J/min (kgfm/min)	Max. Mass kg	Collision Velocity Range m/s	Max. Resistance Value N (kgf)	Max. Operating Cycle min^{-1}	Operating Temp. Range °C	Piston Rod Return Force N (kgf)
Single Orifice	M20x1.5	16	29.4 (3.0)	343 (35)	300	0.3~1	3528 (360)	60	-5~70	18.1 (1.84) or less

■Mass

ⓘFor details of outside dimensions, please refer to CAD data.

Part Number Type	No.	Weight (kg) Stroke 100	Stroke 150	Stroke 200	Stroke 250	Stroke 300	Stroke 350	Stroke 400
MAH25 MAHS25	N	3.7 (3.7)	4.0 (4.0)	4.2 (4.2)	4.5 (4.5)	4.7(4.7)	-	-
	C	4.2 (4.2)	4.5 (4.5)	4.8 (4.8)	5.1 (5.1)	5.4 (5.4)	-	-
MAH32 MAHS32	N	-	6.9 (6.9)	7.2 (7.3)	7.6 (7.7)	8.0 (8.1)	8.4 (8.5)	-
	C	-	7.5 (7.6)	8.0(8.0)	8.4(8.5)	8.9(9.0)	9.4(9.4)	-
MAH40 MAHS40	N	-	-	10.7(10.9)	11.2 (11.5)	11.8 (12.0)	12.3(12.6)	12.9 (13.1)
	C	-	-	11.8 (12.1)	12.5(12.8)	13.2(13.4)	13.8(14.1)	14.5(14.7)

ⓘMAHS mass is indicated in ( ).

■Speed · Allowable Load · Allowable Moment · Thrust Force · Running Parallelism

Type	Slider Pitch Distance P	Max. Speed (mm/s)	Load Capacity (kN)	Allowable Static Moment (N·m) Ma	Mb	Mc	Cylinder Thrust Force Reference Value (kN) at 0.4MPa In-stroke	Out-stroke	at 0.5MPa In-stroke	Out-stroke	at 0.6MPa In-stroke	Out-stroke	at 0.7MPa In-stroke	Out-stroke	Surface B with respect to surface A Running Parallelism	Dowel hole with respect to surface C Running Parallelism
MAH25	120	500	0.51	11.2	11.2	16.8	0.17	0.20	0.21	0.25	0.25	0.30	0.29	0.34	0.07	0.07
MAH32	150	500	0.57	18.1	18.1	24.2	0.28	0.32	0.35	0.40	0.42	0.48	0.48	0.56	0.07	0.07
MAH40	200	500	0.91	34.5	34.5	56.1	0.44	0.50	0.55	0.63	0.66	0.75	0.77	0.88	0.07	0.07

■Speed · Allowable Load · Allowable Moment · Thrust Force · Running Parallelism

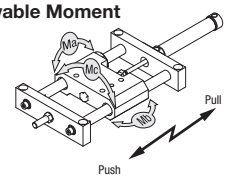
Type	Slider Pitch Dist. P	Max. Speed (mm/s)	Load Capacity (kN)	Allowable Static Moment (N·m) Ma	Mb	Mc	Cylinder Thrust Force Reference Value (kN) at 0.4MPa In-stroke	Out-stroke	at 0.5MPa In-stroke	Out-stroke	at 0.6MPa In-stroke	Out-stroke	at 0.7MPa In-stroke	Out-stroke	Surface B with respect to surface A Running Parallelism	Dowel hole with respect to surface C Running Parallelism
MAHS25	120	500	7.7	150	150	188	0.17	0.20	0.21	0.25	0.25	0.30	0.29	0.34	0.15	0.15
MAHS32	150	500	9.7	333	333	294	0.28	0.32	0.35	0.40	0.42	0.48	0.48	0.56	0.15	0.15
MAHS40	200	500	11.6	526	526	470	0.44	0.50	0.55	0.63	0.66	0.75	0.77	0.88	0.15	0.15

*1) Allowable load is for unit used in horizontal position. When unit used in vertical position multiply the given values by 0.6 to obtain reference load. 2) Running parallelism values are for reference only.

■Reference Deflection when Loaded

Type	Load that creates 0.1mm deflection when stroked (N) Stroke 100	150	200	250	300	350	400
MAH25 · MAHS25	1941	1074	661	435	302	-	-
MAH32 · MAHS32	-	1941	1248	849	603	444	-
MAH40 · MAHS40	-	-	2386	1639	1174	869	662

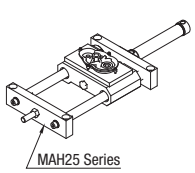
■Allowable Moment



Example

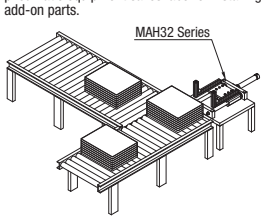
■Workpiece Transfer

-Possible to transfer parts ranging from small and light to large and heavy parts



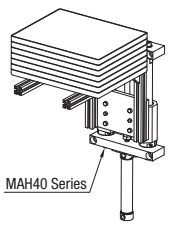
■Pallet Transfer

-Simple and convenient structure advantages of pneumatic equipment saves labor of installing add-on parts.

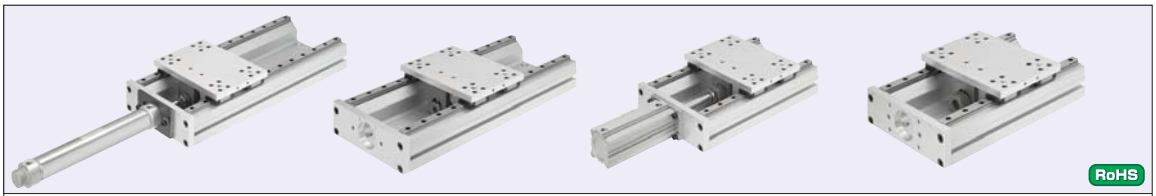


■Return Conveyor Lift

-Used for lifts in vertical installation



Pneumatic Module Units (Linear Guides)



RoHS

Components

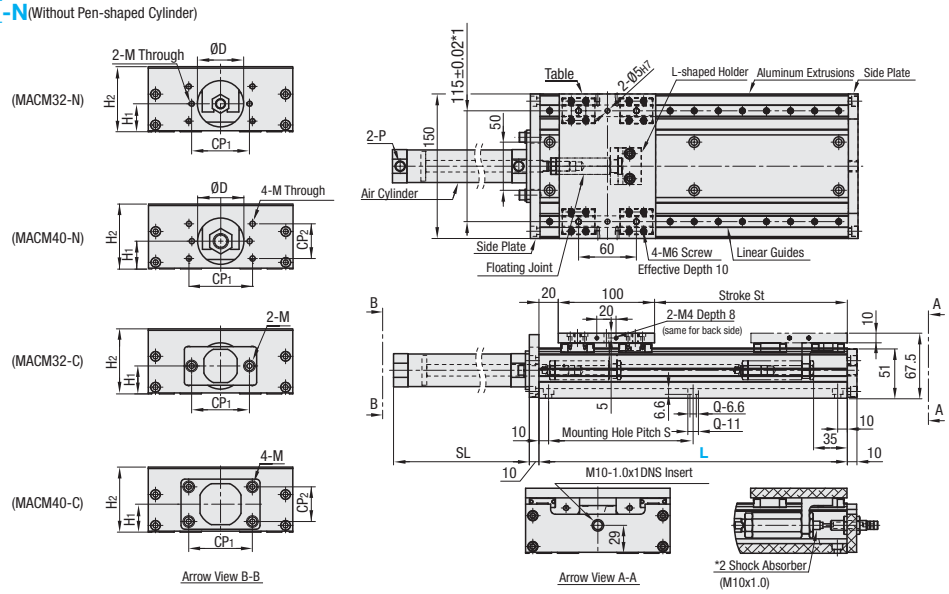
Parts	Frame	Table	Floating Joints	L-shaped Holder	Side Plate
M Material	EN AW-6063-T5	EN AW-6063/ AlMg0,7Si	1.1191/C45E	1.0038/S235JR	EN AW-6063/ AlMg0,7Si
S Surface Treatment	Clear Anodize	Clear Anodize	Tufftride	Tufftride	Clear Anodize

Floating joint and L-shaped holder are included for the units without cylinder.

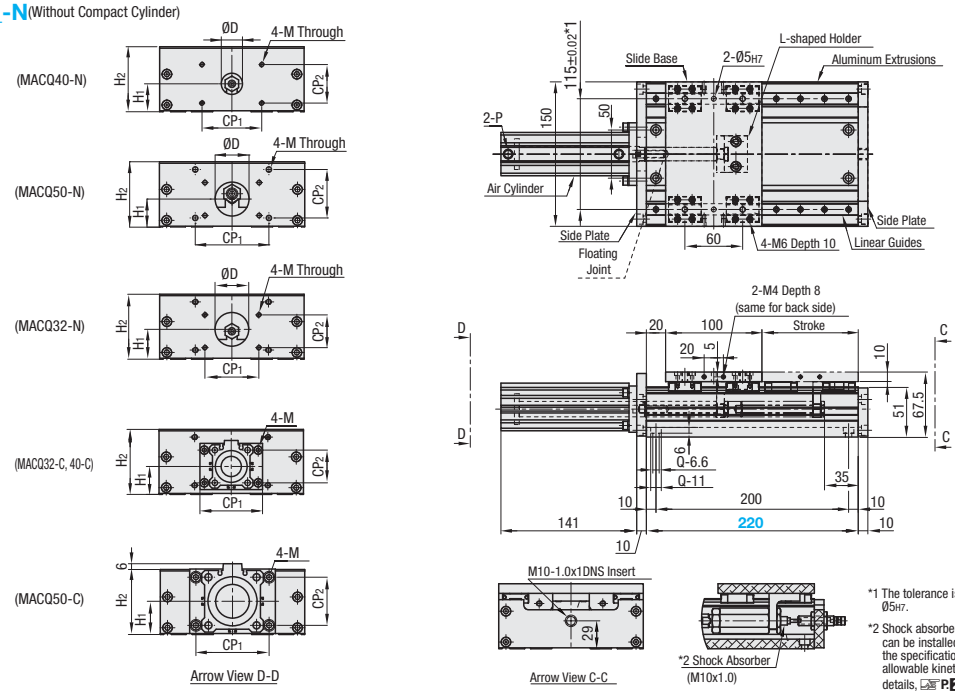
Stroke

Part Number / Type	Stroke St (mm) L=220	L=320	L=370	L=420	L=470
MACM (Pen-shaped)	100	200	250	300	350
MACQ (Flat Type)	100	-	-	-	-

MACM__-C (With Pen-shaped Cylinder)
MACM__-N (Without Pen-shaped Cylinder)



MACQ__-C (With Compact Cylinder)
MACQ__-N (Without Compact Cylinder)



*1 The tolerance is only applied to Ø5H7.

*2 Shock absorber (not included) can be installed when using the specifications that exceeds allowable kinetic energy. For details, P.2-344

Part Number		Cylinder w/ or w/o	Selection	Linear Guide	Air Cylinders							H1	H2
Type	Cylinder Bore Diameter		Frame Length L	Part Number	P	CP1	CP2	M	D	SL			
MACM (Pen-shaped)	32	C	220 320 370 420 470	SE2B13	Rc1/8	60	-	M6	-			29	66
		N			-				48				
	40	C			Rc1/4	66	36	M6	-				
		N			-				48				
MACQ (Flat Type)	32	C	220		Rc1/8	56	34	M5	-				
		N			-				35				
	40	C			Rc1/8	62	40	M5	-				
		N			-				22				
	50	C			Rc1/4	76	50	M6	-			34.5	
		N			-				35				

Type	Bore Diameter	L=220	L=320	L=370	L=420	L=470
MACM (Pen-shaped)	32	168	268	318	368	418
	40	193	293	343	393	443
MACQ (Flat Type)	32	141	-	-	-	-
	40	147.5	-	-	-	-
	50	149.5	-	-	-	-

For details of Linear Guides, P.513 For details of Flat Type Air Cylinders, P.2-1369
For details of Pen-shaped Air Cylinders, P.2-1393

Part Number		Frame Mounting Holes
Type	Cylinder Bore Diameter	S · Q (Hole Qty.)
MACM (Pen-shaped)	32 40	L / S / Q: 220/200/4; 320/150/6; 370/175/6; 420/200/6; 470/150/8
MACQ (Flat Type)	32 40 50	L / S / Q: 220/200/4

Order Example

Part Number	-	w/ or w/o Cylinder	-	L
MACM32	-	C	-	220

Days to Ship: 13 Days

For ordering 3 or more identical models, Days to Ship estimate is provided.

Price

Part Number		w/ or w/o Cylinder	€ Unit Price 1 ~ 2 unit(s)				
Type	Cylinder Bore Diameter		L=220	L=320	L=370	L=420	L=470
MACM (Pen-shaped)	32	C					
		N					
	40	C					
		N					
MACQ (Flat Type)	32	C					
		N					
	40	C					
		N					
	50	C					
		N					

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number		Cylinder w/ or w/ o	Mass (kg)				
Type	Cylinder Bore Diameter		L=220	L=320	L=370	L=420	L=470
MACM (Pen-shaped)	32	C	3.6	4.7	5.1	5.6	6.1
		N	3.1	4.0	4.4	4.8	5.2
	40	C	4.1	4.2	5.6	6.1	6.7
		N	3.2	4.0	4.4	4.8	5.3
MACQ (Flat Type)	32	C	3.8	-	-	-	-
		N	3.1	-	-	-	-
	40	C	4.1	-	-	-	-
		N	3.2	-	-	-	-
	50	C	4.6	-	-	-	-
		N	3.2	-	-	-	-

Speed · Load Capacity · Force · Allowable Moment

Part Number		Used Piston Velocity (mm/s)	Allowable Kinetic Energy (J)	Allowable Moment (N·m)			Cylinder Thrust Force Reference Value (kN)							
Type	Cylinder Bore Diameter			Ma	Mb	Mc	at 0.4MPa		at 0.5MPa		at 0.6MPa		at 0.7MPa	
							Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke
MACM (Pen-shaped)	32	50~500	0.65	16.1	8.8	9.5	0.28	0.32	0.34	0.42	0.41	0.48	0.48	0.56
	40		1.20				0.44	0.50	0.55	0.63	0.66	0.75	0.77	0.88
MACQ (Flat Type)	32		0.29				0.24	0.32	0.30	0.40	0.36	0.48	0.42	0.56
	40		0.52				0.42	0.50	0.52	0.62	0.63	0.75	0.73	0.88
	50		0.91				0.66	0.78	0.82	0.98	0.99	1.17	1.15	1.37

Accuracy

Type	Parallelism (mm)	Stroke Tolerance (mm)
MACM (Pen-shaped)	0.15	-0.4~+1.9
MACQ (Flat Type)		-0.4~+1.4

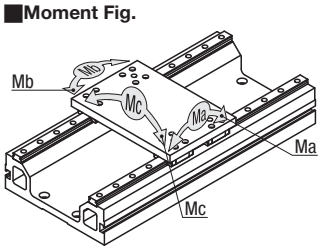
Kinetic Energy Calculation Formula: $E=\frac{1}{2}(m+1)xV^2$

m: Load Capacity (kg)
V: Velocity (m/sec)

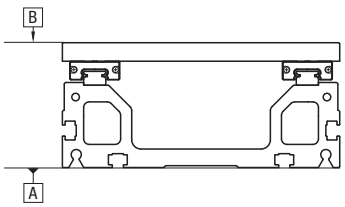
(Note 1)1 kg is the mass of table and joint. Use within the allowable max energy value.

* Parallelism is surface B running parallelism with respect to surface A. (See the figure below)

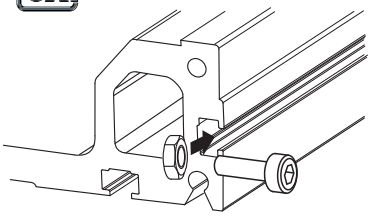
Moment Fig.



Parallelism Fig.



Example



Usage of Frame Slots

Side and bottom surfaces are slotted for M6 nuts.

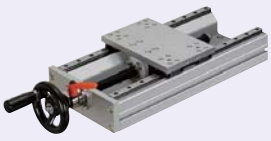
Manually Operated Units
-Standard · High Load Type-

Features: Units best suited for simplified manual positioning. Load capacity of High Load Type is approx. three times that of Standard Type.

Handwheel Type A

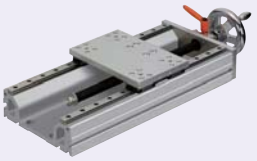


Handwheel Type B



Handwheel Type C

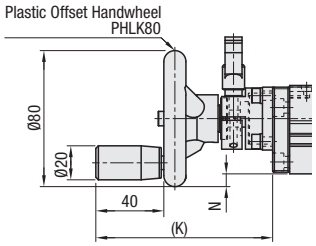




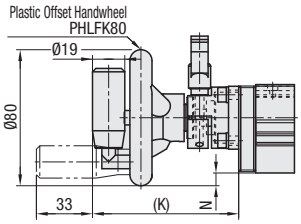
RoHS

KUE (Standard) **KUEH** (High Load)

Handwheel Type **A**



Handwheel Type **B** Folding Type



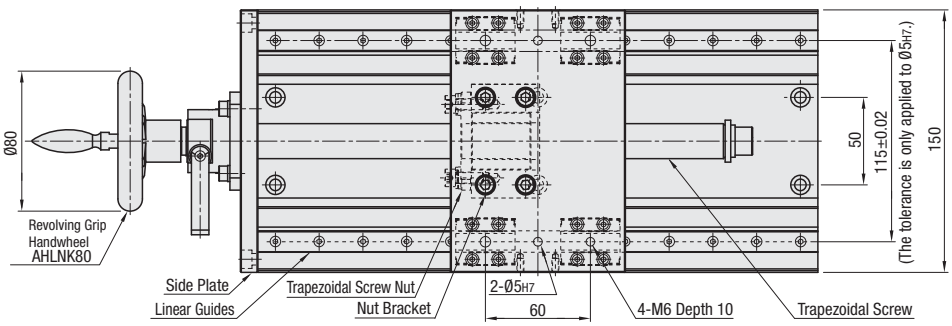
Components

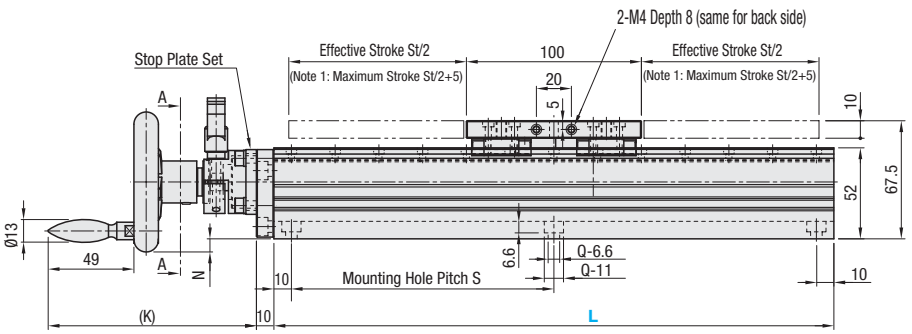
Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
M Material	EN AW-6063-T5	EN AW-6063/ AlMg0,7Si	1.1191/C45E	Brass	EN AW-5052/ AlMg2,5	EN AW-6063/ AlMg0,7Si
S Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	-	Clear Anodize	Clear Anodize

Stroke

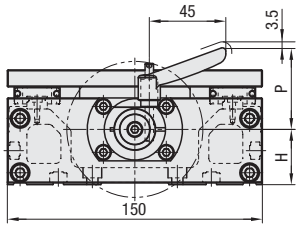
Type	Effective Stroke St (mm)				
	L=220	L=320	L=370	L=420	L=470
KUE KUEH	103	203	253	303	353

Handwheel Type **C**

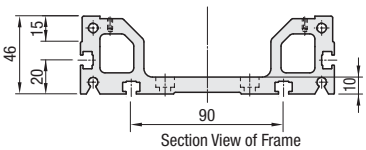




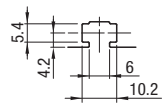
Note 1) Stroke limit is where stroke reaches the mechanical limit.



A-A Arrow View



Section View of Frame



Enlarged View of the Slot for Nut

Use M6 nuts.

Reduced Delivery Time

CAD Data

Part Number Type	No.	Handwheel Type	Selections Frame Length L	Trapezoidal Lead Screws Type	Screw Shaft Dia.	Lead	Trapezoidal Screw Nut Type	Rotation Stopper Set Type	Linear Guide Part Number	(K) Handwheel Type A	B	C	N	H	P
KUE (Standard)	14	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK Folding Type C Bosh Handwheel AHLNK	220 320 370 420 470	MTSBRA	14	3	MTRFR (Brass Type)	MTQDM	SE2B13	100	82	115	5.5	34.5	43
	20			MTSBRC	20	4				103	85	118	7.5	32.5	45.5
KUEH (High Load)	20							- (Original)		106	88	121	7.5	32.5	48

For details of Handwheels, P.2-1014-1017. For details of trapezoidal screws and nuts, P.711-712-718. For details of Rotation Stopper Set, P.729. For details of Linear Guides, P.513

Part Number Type	No.	Frame Mounting Holes S · Q (Hole Qty.)
KUE KUEH	14	L 220: S 200: Q 4; L 320: S 150: Q 6; L 370: S 175: Q 6; L 420: S 200: Q 6; L 470: S 150: Q 8
	20	

Order Example

Part Number	-	Handwheel Type	-	L
KUE14	-	A	-	320

Days to Ship

- Standard Type (KUE): 10 Days
- High Load Type (KUEH): 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number Type	No.	Handwheel Type	€ Unit Price 1 ~ 2 unit(s) L=220	L=320	L=370	L=420	L=470
KUE	14	A					
		B					
		C					
	20	A					
		B					
		C					
KUEH	20	A					
		B					
		C					

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

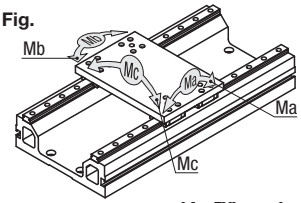
Mass

Part Number Type	No.	Handwheel Type	Mass (kg) L=220	L=320	L=370	L=420	L=470
KUE	14	A	3.4	4.4	4.9	5.4	5.9
		B	3.1	4.1	4.6	5.1	5.6
		C	3.1	4.1	4.6	5.1	5.6
	20	A	4	5	5.5	6	6.5
		B	3.7	4.7	5.2	5.7	6.2
		C	3.7	4.7	5.2	5.7	6.2
KUEH	20	A	4	5	5.5	6	6.5
		B	3.7	4.7	5.2	5.7	6.2
		C	3.7	4.7	5.2	5.7	6.2

Allowable Load · Allowable Moment

Part Number Type	No.	Allowable Load (N) Horizontal	Vertical	Allowable Moment (N·m) Ma	Mb	Mc
KUE	14	245	49	7	7	13
	20	490	98	14	14	27
KUEH	20	1470	294	43	43	81

Moment Fig.

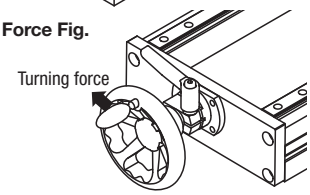


Required Torque · Required Turning Force

Part Number Type	No.	Required Torque (N·m) Horizontal	Vertical	Required Turning Force (N) Horizontal	Vertical
KUE	14	0.039	0.199	1.503	7.637
	20	0.059	0.414	2.261	15.915
KUEH	20	0.074	1.38	2.841	53.09

* Required torque and turning force at max. load capacity.
* Turning force is the force that rotates the handwheel.(See the figure on the right)
* Vertical values are those when elevating the table.

Turning Force Fig.

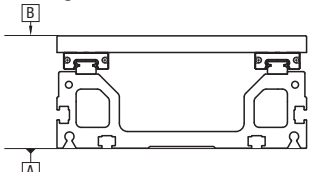


Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUE KUEH	0.15	0.3

* Parallelism is the degree of running parallelism for dimension B against dimension A.(See the figure right)
* Backlash is not a guaranteed value but a reference value.

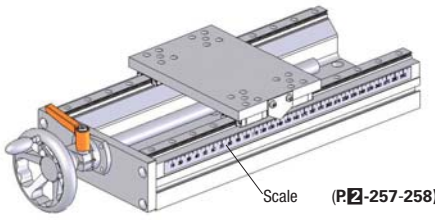
Parallelism Fig.



Example

Horizontal

Scales can be installed on the frame side surfaces.

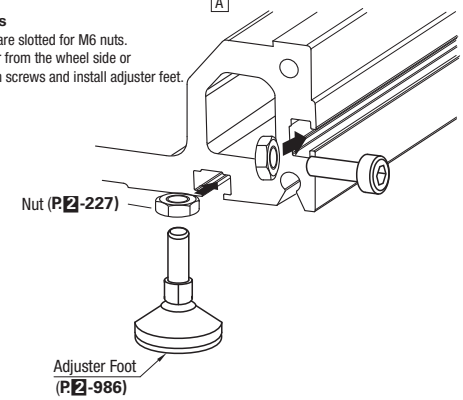


(P.2-257-258)

* Application Example of KUE14-C-320

Usage of Frame Slots

Side and bottom surfaces are slotted for M6 nuts. Nuts can be inserted either from the wheel side or the opposite side to tighten screws and install adjuster feet.



Manually Operated Units
- Symmetrical Action Dual Carriage

Features: Units best suited for simple manual positioning. Right and left tables move simultaneously.

Handwheel Type A

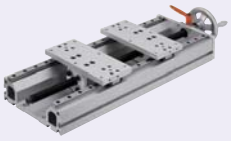


Handwheel Type B



Handwheel Type C





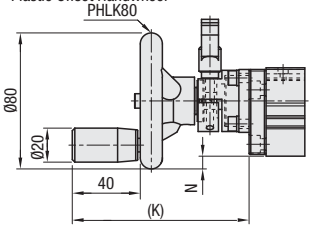
Right and left tables move simultaneously.

RoHS

KUED

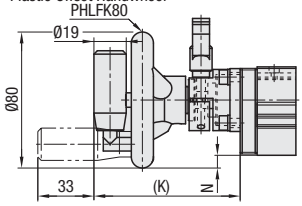
Handwheel Type **A**

Plastic Offset Handwheel PHLK80



Handwheel Type **B** Folding Type

Plastic Offset Handwheel PHLFK80



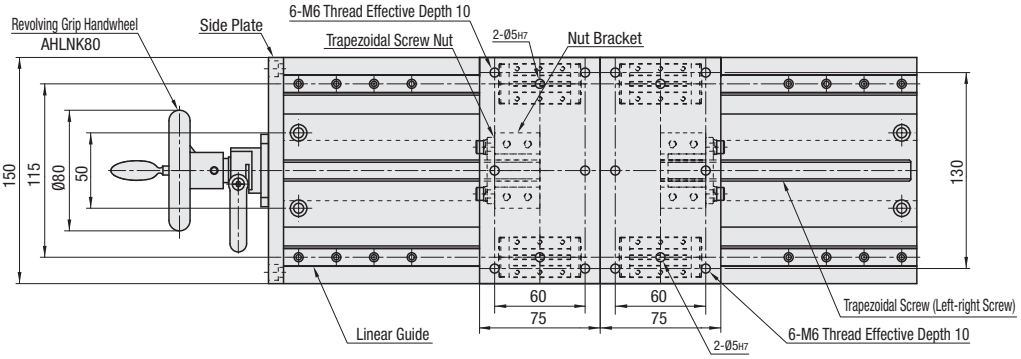
Components

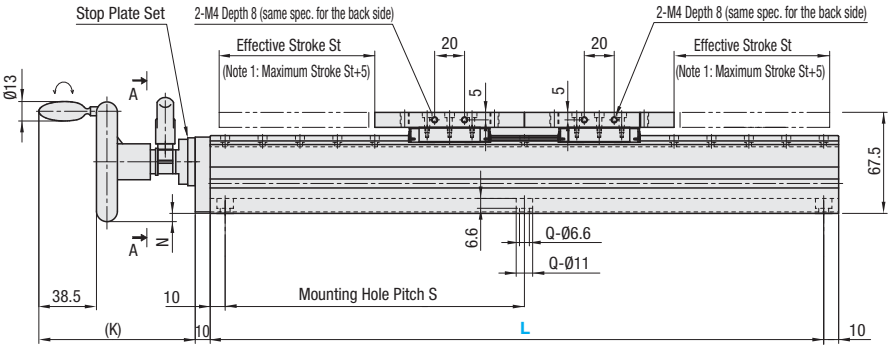
Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
M Material	EN AW-6063-T5	EN AW-6063/AlMg 0,7Si	1.1191/C45E	Brass	EN AW-5052/ AlMg2,5	EN AW-6063/ AlMg0,7Si
S Surface Treatment	Clear Anodize	Clear Anodize	-	-	Clear Anodize	Clear Anodize

Stroke

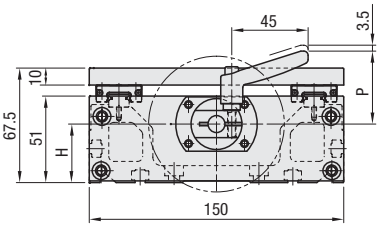
Type	Effective Stroke St (mm)			
	L=320	L=370	L=420	L=470
KUED	65	90	115	145

Handwheel Type **C**

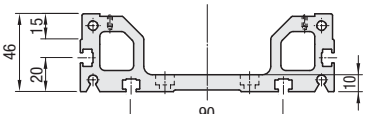




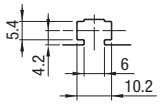
Note 1) Stroke limit is where stroke reaches the mechanical limit.



Arrow View A-A



Section View of Frame



Enlarged View of the Slot for Nut

Use M6 nuts.

Reduced Delivery Time

Price Reduction 20%

CAD Data

Part Number Type	No.	Handwheel Type	Selection Frame Length L	Trapezoidal Lead Screws Type	Screw Shaft Dia.	Lead	Rotation Stopper Set Type	Linear Guide Part Number	K	N	H	P
KUED	14	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK Folding Type C Five Spoked Handwheel AHLNK	320 370 420 470	MTSBWA	14	3	MTQDM	SE2B13	See table below	5.5	34.5	43
	20			MTSBWCA	20	4				7.5	32.5	45.5

No.	Handwheel Type A	B	C
14	100	82	115
20	103	85	118

For details of Handwheels, ☞P.2-1014-1017 For details of trapezoidal lead screws, nuts, and Linear Guides, ☞P.711, 712, 718, 513 For Rotation Stopper Set, ☞P.729

Part Number Type	No.	Frame Mounting Holes
KUED	14	See table below
	20	

L	S	Q (Hole Qty.)
320	150	6
370	175	6
420	200	6
470	150	8

Order Example

Part Number	-	Handwheel Type	-	L
KUED14	-	A	-	320

Days to Ship: 10 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number Type	No.	Handwheel Type	€ Unit Price 1 ~ 2 unit(s) L=320	L=370	L=420	L=470
KUED	14	A				
		B				
		C				
	20	A				
		B				
		C				

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number Type	No.	Handwheel Type	Mass (kg) L=320	L=370	L=420	L=470
KUED	14	A	4.9	5.4	5.9	6.4
		B	4.6	5.1	5.6	6.1
		C	4.6	5.1	5.6	6.1
	20	A	5.5	6	6.5	7
		B	5.2	5.7	6.2	6.7
		C	5.2	5.7	6.2	6.7

Allowable Load · Allowable Moment

Part Number Type	No.	Allowable Load (N) Horizontal	Vertical	Allowable Moment (N·m) Ma	Mb	Mc
KUED	14	122.5	24.5	0.5	0.5	6
	20	245	49	1	1	13

* Allowable load and moment are values per table.

Required Torque · Required Turning Force

Part Number Type	No.	Required Torque (N·m) Horizontal	Vertical	Required Turning Force (N) Horizontal	Vertical
KUED	14	0.039	0.223	1.503	8.586
	20	0.059	0.433	2.261	17.022

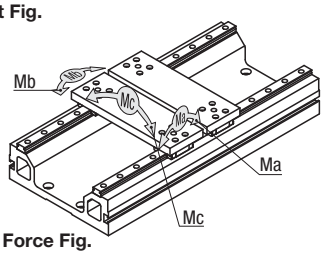
* Torque and turning force required when allowable load is applied on two tables.
* Turning force is the force that rotates the handwheel.(See the figure on the right)
* Vertical values are those when elevating the table.

Accuracy

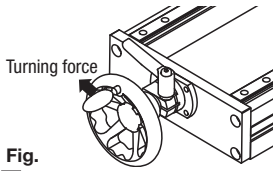
Type	Parallelism (mm)	Backlash (mm)
KUED	0.15	0.3

* Parallelism is the degree of running parallelism for dimension B against dimension A.(See the figure right)
* Backlash is not a guaranteed value but a reference value.

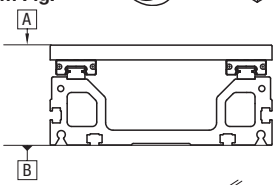
Moment Fig.



Turning Force Fig.

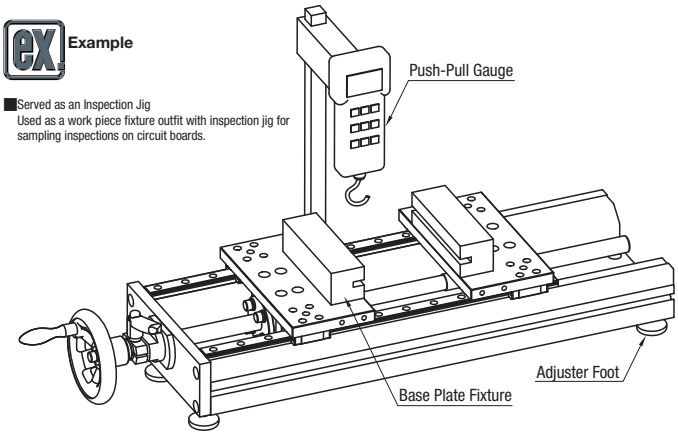


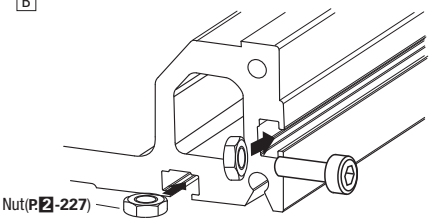
Parallelism Fig.

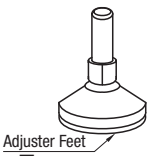


Example

Served as an Inspection Jig
Used as a work piece fixture outfit with inspection jig for sampling inspections on circuit boards.







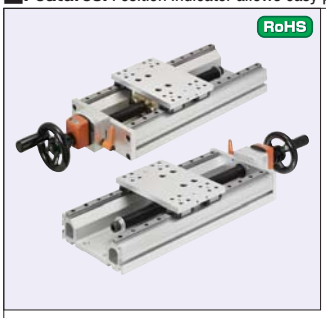
Usage of Frame Slots

Side and bottom surfaces are slotted for M6 nuts.
Nuts can be inserted either from the wheel side or the opposite side to tighten screws and install adjuster feet.

Manually Operated Units
-with Position Indicator-

CAD Data

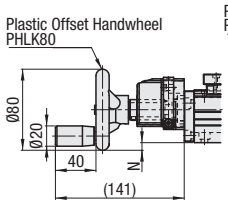
Features: Position Indicator allows easy position adjustments.



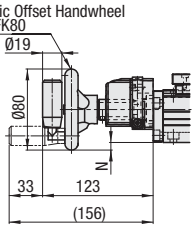
RoHS

KUDP

Handwheel Type **A**



Handwheel Type **B**

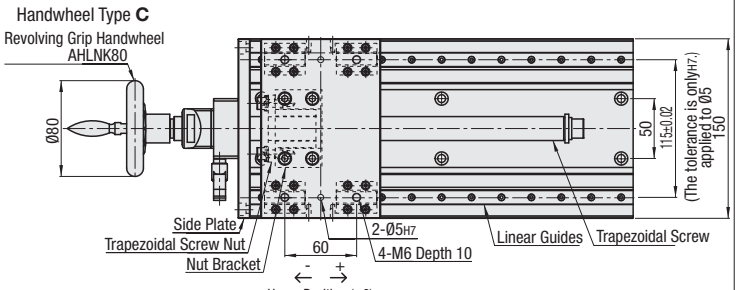


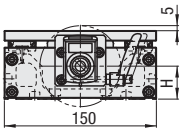
Components

Parts	Frame	Table	Trapezoidal Lead Screws
M Material	EN AW-6063-T5	EN AW-6063/ AlMg0,7Si	1.1191/C45E
S Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide

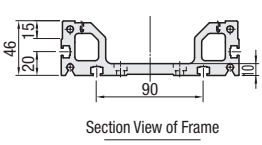
Parts	Trapezoidal Screw Nut	Nut Bracket	Side Plate
M Material	Brass	EN AW-5052/ AlMg2,5	EN AW-6063/ AlMg0,7Si
S Surface Treatment	-	Clear Anodize	Clear Anodize

Handwheel Type **C**



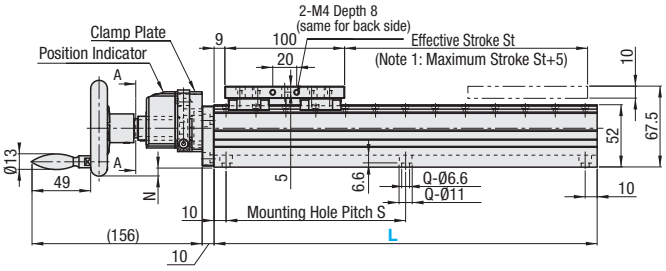


Arrow View A-A



Section View of Frame

Enlarged View of the Slot for Nut



Use M6 nuts.

Note 1) Stroke limit is where stroke reaches the mechanical limit.

Part Number Type	Part Number No.	Handwheel Type	Selection Frame Length L	Trapezoidal Lead Screws Type	Trapezoidal Lead Screws Screw Shaft Dia.	Trapezoidal Lead Screws Lead	Trapezoidal Screw Nut Type	Linear Guide Part Number	Position Indicator Part Number	N	H	Frame Mounting Holes S · Q (Hole Qty.)
KUDP	20	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK Folding Type C Bosh Handwheel AHLNK	220 320 370 420 470	MTSBRC	20	4	MTRFR	SE2B13	DPNL4	7.5	32.5	

L	S	Q (Hole Qty.)
220	200	4
320	150	6
370	175	6
420	200	6
470	150	8

Order Example

Part Number	-	Handwheel Type	-	L
KUDP20	-	A	-	320

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number Type	Part Number No.	Handwheel Type	€ Unit Price 1 ~ 2 unit(s) L=220	L=320	L=370	L=420	L=470
KUDP	20	A					
		B					
		C					

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number Type	Part Number No.	Handwheel Type	Mass (kg) L=220	L=320	L=370	L=420	L=470
KUDP	20	A	4.3	5.3	5.8	6.3	6.8
		B	4.0	5.0	5.5	6.0	6.5
		C	4.0	5.0	5.5	6.0	6.5

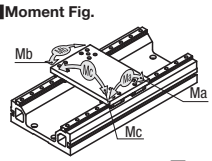
Effective Stroke

Type	Effective Stroke St (mm) L=220	L=320	L=370	L=420	L=470
KUDP	103	203	253	303	353

Allowable Load · Allowable Moment

Part Number Type	Part Number No.	Allowable Load (N) Horizontal	Vertical	Allowable Moment (Nm) Ma	Mb	Mc
KUDP	20	490	98	14	14	27

Moment Fig.



Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUDP	0.15	0.3

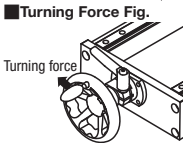
*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.

Required Torque · Required Turning Force

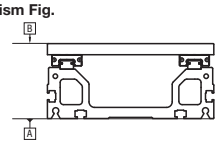
Part Number Type	Part Number No.	Required Torque (Nm) Horizontal	Vertical	Required Turning Force (N) Horizontal	Vertical
KUDP	20	0.059	0.414	2.261	15.915

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel. (See the figure on the right)
* Vertical values are those when elevating the table.

Turning Force Fig.



Parallelism Fig.



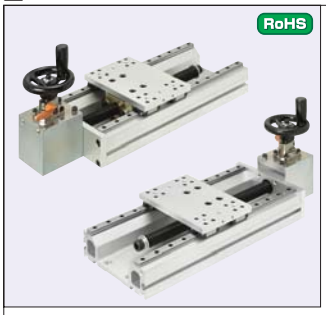
NEW

Manually Operated Units

-Handwheel Direction Configurable Type-

CAD Data

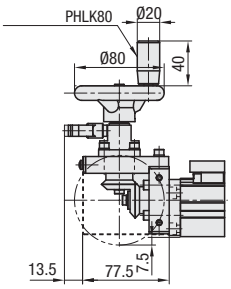
Features: Handwheel orientation is selectable. Best suited for usage in space-savings.



KUEF

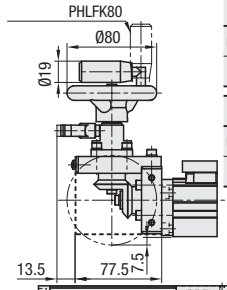
Handwheel Type A

Plastic Offset Handwheel



Handwheel Type B

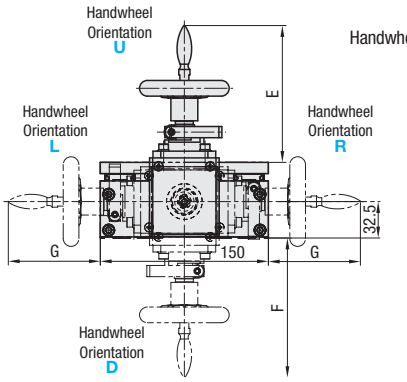
Plastic Offset Handwheel



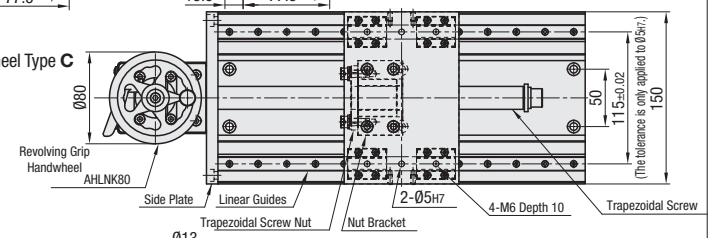
Components

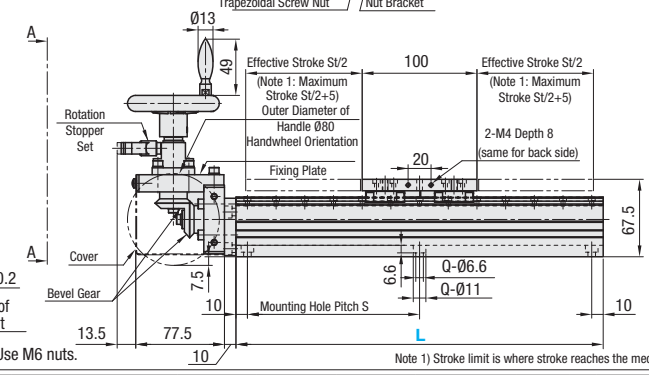
Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut
M Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	1.1191/C45E	Brass
S Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	-

Parts	Nut Bracket	Side Plate	Bevel Gear	Cover
M Material	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	1.1191/C45E	1.4301/X5CrNi18-10-HL
S Surface Treatment	Clear Anodize	Clear Anodize	-	-



Handwheel Type C





Use M6 nuts.

Note 1) Stroke limit is where stroke reaches the mechanical limit.

Part Number Type	Part Number No.	Handwheel Type	Handwheel Orientation Configurable	Selection Frame Length L	Trapezoidal Lead Screws Type	Screw Shaft Dia.	Lead	Trapezoidal Screw Nut Type	Linear Guide Part Number	E Handwheel Type A	E B	E C	F A	F B	F C	G A	G B	G C	Frame Mounting Holes S · Q (Hole Qty.)
KUEF	20	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK Folding Type C Bosh Handwheel AHLNK	U D L R	220 320 370 420 470	MTSBRB	20	4	MTRFR	SE2B13	107	122	122	109.5	124.5	124.5	67	82	82	L S Q (Hole Qty.) 220 200 4 320 150 6 370 175 6 420 200 6 470 150 8

Order Example

Part Number	-	Handwheel Type	-	Handwheel Orientation	-	L
KUEF20	-	A	-	L	-	320

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number Type	Part Number No.	Handwheel Type	€ Unit Price 1 ~ 2 unit(s) L=220	L=320	L=370	L=420	L=470
KUEF	20	A					
		B					
		C					

For orders larger than indicated quantity, days-to-ship estimate is provided.

Mass

Part Number Type	Part Number No.	Handwheel Type	Mass (kg) L=220	L=320	L=370	L=420	L=470
KUEF	20	A	5.5	6.5	7.0	7.5	8.0
		B	5.2	6.2	6.7	7.2	7.7
		C	5.2	6.2	6.7	7.2	7.7

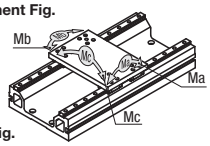
Effective Stroke

Type	Effective Stroke St (mm) L=220	L=320	L=370	L=420	L=470
KUEF	103	203	253	303	353

Allowable Load · Allowable Moment

Part Number Type	Part Number No.	Allowable Load (N) Horizontal	Vertical	Allowable Moment (N·m) Ma	Mb	Mc
KUEF	20	490	98	14	14	27

Moment Fig.



Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUEF	0.15	0.5

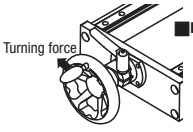
*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.

Required Torque · Required Turning Force

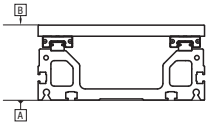
Part Number Type	Part Number No.	Required Torque (N·m) Horizontal	Vertical	Required Turning Force (N) Horizontal	Vertical
KUEF	20	0.059	0.414	2.261	15.915

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel. (See the figure on the right)
* Vertical values are those when elevating the table.

Turning Force Fig.



Parallelism Fig.

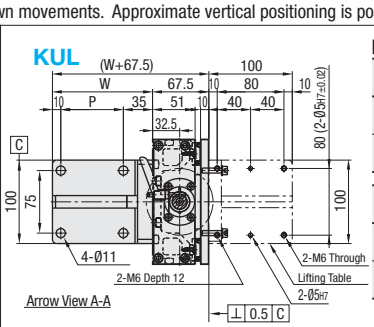


Manually Operated Units
-Elevator Types-

CAD Data

Features: Units suited for up-and-down movements. Approximate vertical positioning is possible.



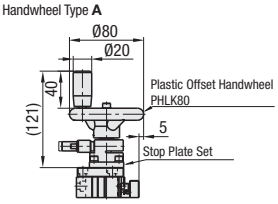


Components

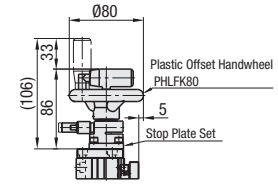
Parts	Frame	Table	Elevator Table	Angle Plate
M Material	EN AW-6063-T5	EN AW-6063/ AlMg0,7Si	EN AC-51300/ G-AlMg5	EN AC-51300/ G-AlMg5
S Surface Treatment	Clear Anodize	Clear Anodize	Clear Anodize	Clear Anodize

Parts	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
M Material	1.1191/C45E	Brass	EN AW-5052/ AlMg2,5	EN AW-6063/ AlMg0,7Si
S Surface Treatment	Black Oxide	-	Clear Anodize	Clear Anodize

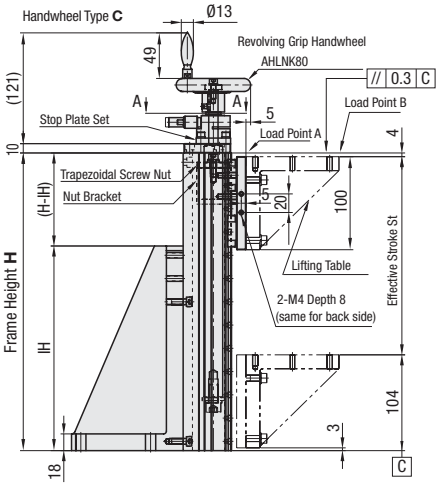
Handwheel Type **A**

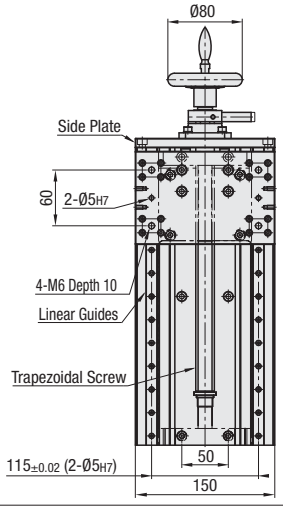


Handwheel Type **B**



Handwheel Type **C**





Part Number Type	Part Number No.	Handwheel Type	Elevator Table Selection	Selection Frame Height H	Trapezoidal Lead Screws Type	Trapezoidal Lead Screws Screw Shaft Dia.	Trapezoidal Lead Screws Lead	Trapezoidal Screw Nut Type	Rotation Stopper Set Type	Linear Guide Part Number	W H	W W	P H	P P	IH H	IH IH
KUL	20	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK Folding Type C Bosh Handwheel AHLNK	(w/ elevator table) **Not specified** (w/o elevator table) N	220 320 370 420 470	MTSBRC	20	4	MTRFR	MTQDM	SE2B13	220 320 370 420 470	120 150	220 320 370 420 470	75 105	220 320 370 420 470	220 350

Order Example

Part Number	-	Handwheel Type	-	Elevator Table	-	H	
KUL20	-	A			-	320	(with Elevator Table)
KUL20	-	A	-	N	-	320	(without Elevator Table)

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number Type	Part Number No.	Handwheel Type	€ Unit Price 1 ~ 2 unit(s) For no table (N), 30,00 EUR is subtracted from the prices below. H=220	H=320	H=370	H=420	H=470
KUL	20	A					
		B					
		C					

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number Type	Part Number No.	Handwheel Type	Mass (kg) H=220	H=320	H=370	H=420	H=470
KUL	20	A	6.6	7.6	8.1	9.8	10.3
		B	6.3	7.3	7.8	9.5	10.0
		C	6.3	7.3	7.8	9.5	10.0

Allowable Load · Allowable Moment

Part Number Type	Part Number No.	Allowable Load (N) When load applied to Point A	When load applied to Point B	Allowable Moment (N·m) Ma	Mb	Mc
KUL	20	294	270	43	43	81

*Allowable load and moment are for those with no elevator table.
*Load capacity is when load is applied to load points A and B. (Reference values)

Required Torque · Required Turning Force

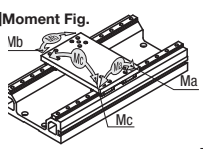
Part Number Type	Part Number No.	Required Torque (N·m)	Required Turning Force (N)
KUL	20	1.46	56.142

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel. (See the figure on the right)

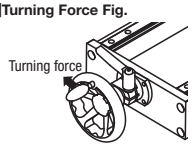
Effective Stroke

Type	Effective Stroke St (mm) H=220	H=320	H=370	H=420	H=470
KUL	112	212	262	312	362

Moment Fig.



Turning Force Fig.

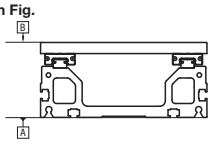


Accuracy

Type	Parallelism (mm)	Backlash (mm)
KUL	0.15	0.3

*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.

Parallelism Fig.



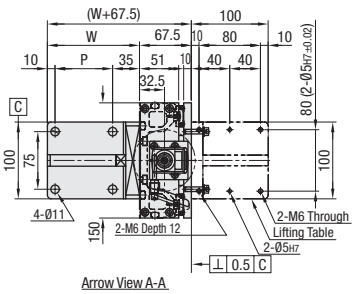
Manually Operated Units
-Elevator Type with Position Indicator-

CAD Data

Features: Units suited for up-and-down movements. Approximate vertical positioning is possible.



KULDP



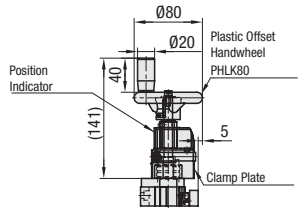
Arrow View A-A

Components

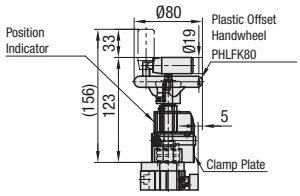
Parts	Frame	Table	Elevator Table	Angle Plate
M Material	EN AW-6063-T5	EN AW-6063/ AlMg0,7Si	EN AC-51300/ G-AlMg5	EN AC-51300/ G-AlMg5
S Surface Treatment	Clear Anodize	Clear Anodize	Clear Anodize	Clear Anodize

Parts	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate
M Material	1.1191/C45E	Brass	EN AW-5052/ AlMg2,5	EN AW-6063/ AlMg0,7Si
S Surface Treatment	Black Oxide	-	Clear Anodize	Clear Anodize

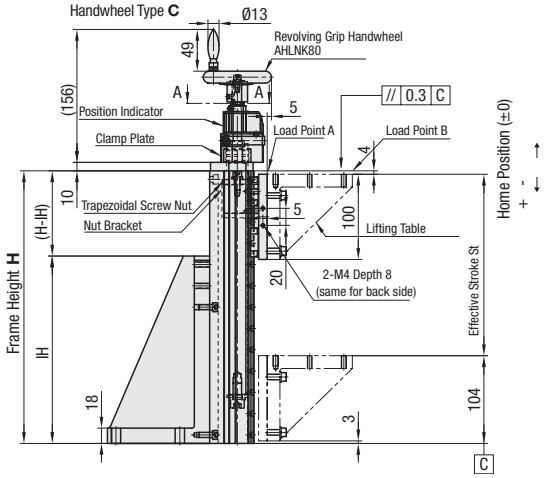
Handwheel Type **A**

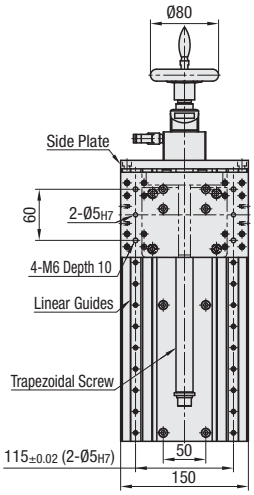


Handwheel Type **B**



Handwheel Type **C**





Part Number Type	Part Number No.	Handwheel Type	Elevator Table Selection	Selection Frame Height H	Trapezoidal Lead Screws Type	Trapezoidal Lead Screws Screw Shaft Dia.	Trapezoidal Lead Screws Lead	Trapezoidal Screw Nut Type	Rotation Stopper Set Type	Linear Guide Part Number	Position Indicator Part Number	W	P	IH
KULDP	20	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK Folding Type C Bosh Handwheel AHLNK	(w/ elevator table) **Not specified** (w/o elevator table) N	220 320 370 420 470	MTSBRC	20	4	MTRFR	MTQDM	SE2B13	DPNL4	H: 220, 320, 370, 420, 470 / W: 120, 150	H: 220, 320, 370, 420, 470 / P: 75, 105	H: 220, 320, 370, 420, 470 / IH: 220, 350

Order Example

Part Number		Handwheel Type		Elevator Table		H	
KULDP20	-	A			-	320	(with Elevator Table)
KULDP20	-	A	-	N	-	320	(without Elevator Table)

Days to Ship **13 Days**

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number Type	Part Number No.	Handwheel Type	€ Unit Price 1 ~ 2 unit(s) For no table (N), 30,00 EUR is subtracted from the prices below. H=220	H=320	H=370	H=420	H=470
KULDP	20	A					
		B					
		C					

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number Type	Part Number No.	Handwheel Type	Mass (kg) H=220	H=320	H=370	H=420	H=470
KULDP	20	A	7.2	8.2	8.7	10.6	11.2
		B	6.9	7.9	8.4	10.3	10.9
		C	6.9	7.9	8.4	10.3	10.9

Effective Stroke

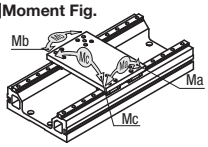
Type	Effective Stroke St (mm) H=220	H=320	H=370	H=420	H=470
KULDP	112	212	262	312	362

Allowable Load · Allowable Moment

Part Number Type	Part Number No.	Allowable Load (N) When load applied to Point A	When load applied to Point B	Allowable Moment (N·m) Ma	Mb	Mc
KULDP	20	294	270	43	43	81

*Allowable load and moment are for those with no elevator table.
*Load capacity is when load is applied to load points A and B. (Reference values)

Moment Fig.

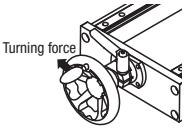


Accuracy

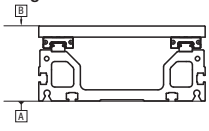
Type	Parallelism (mm)	Backlash (mm)
KULDP	0.15	0.3

*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.

Turning Force Fig.



Parallelism Fig.



Required Torque · Required Turning Force

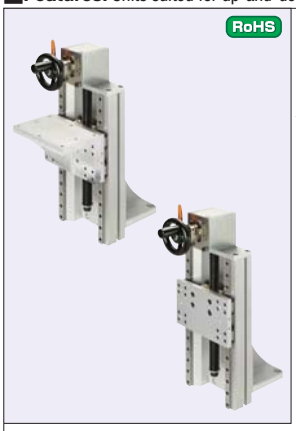
Part Number Type	Part Number No.	Required Torque (N·m)	Required Turning Force (N)
KULDP	20	1.46	56.142

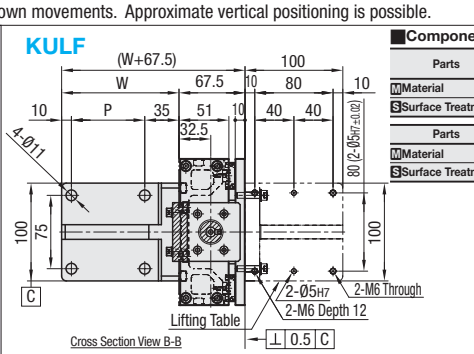
*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel. (See the figure on the right)

Manually Operated Units
-Elevator Type Handwheel Orientation Configurable-

CAD Data

Features: Units suited for up-and-down movements. Approximate vertical positioning is possible.



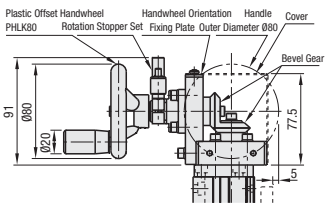


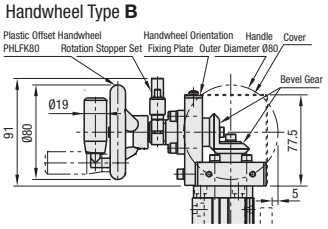
Components

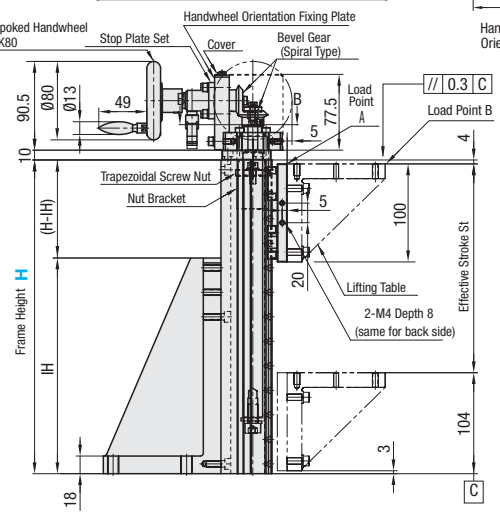
Parts	Frame	Table	Elevator Table	Angle Plate	Trapezoidal Lead Screws
M Material	EN AW-6063-T5	EN AW-6063	EN AC-51300	EN AC-51300	1.1191/C45E
S Surface Treatment	Clear Anodize				Black Oxide

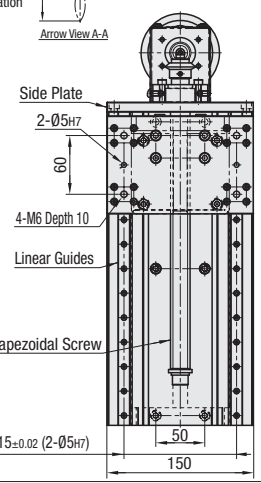
Parts	Trapezoidal Screw Nut	Nut Bracket	Side Plate	Bevel Gear	Cover
M Material	Brass	EN AW-5052	EN AW-6063	1.1191/C45E	1.4301-HL
S Surface Treatment	-	Clear Anodize	Clear Anodize	-	-

Handwheel Type C









Part Number Type	Part Number No.	Handwheel Type	Handwheel Orientation Specifications	Elevator Table Selections	Selections Frame Height H	Trapezoidal Lead Screws Type	Trapezoidal Lead Screws Screw Shaft Dia.	Trapezoidal Lead Screws Lead	Trapezoidal Screw Nut Type	Linear Guide Part Number	E Handwheel Type A	E Handwheel Type B	E Handwheel Type C	F Handwheel Type A	F Handwheel Type B	F Handwheel Type C	G Handwheel Type A	G Handwheel Type B	G Handwheel Type C	W	P	IH
KULF	20	A Plastic Offset Handwheel PHLK B Plastic Offset Handwheel PHLFK Folding Type C Bosh Handwheel AHLNK	U D L R	(w/ elevator table) Not specified (w/o elevator table) N	220 320 370 420 470	MTSBRB	20	4	MTRFR	SE2B13	107	122	122	109.5	124.5	124.5	67	82	82	H: 220, 320, 370, 420, 470 / W: 120, 150	H: 220, 320, 370, 420, 470 / P: 75, 105	H: 220, 320, 370, 420, 470 / IH: 220, 320, 350

Order Example

Part Number	Handwheel Type	Handwheel Orientation	Elevator Table	L	
KULF20	A	L		320	(with Elevator Table)
KULF20	A	U	N	320	(without Elevator Table)

Days to Ship 13 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number Type	Part Number No.	Handwheel Type	€ Unit Price 1 ~ 2 unit(s) When with no table (N), 30,00 EUR is subtracted from the prices below. H=220	H=320	H=370	H=420	H=470
KULF	20	A					
		B					
		C					

For orders larger than indicated quantity, Days to Ship is to be estimated in each case.

Mass

Part Number Type	Part Number No.	Handwheel Type	Mass (kg) H=220	H=320	H=370	H=420	H=470
KULF	20	A	8.4	9.4	9.9	11.8	12.3
		B	8.1	9.1	9.6	11.5	12.0
		C	8.1	9.1	9.6	11.5	12.0

Effective Stroke

Type	Effective Stroke St (mm) H=220	H=320	H=370	H=420	H=470
KULF	112	212	262	312	362

Allowable Load · Allowable Moment

Part Number Type	Part Number No.	Allowable Load (N) When load applied to Point A	When load applied to Point B	Allowable Moment (N·m) Ma	Mb	Mc
KULF	20	98	98	14	14	27

*Load capacity and allowable moments are with no elevator table.
*Load capacity is when load is applied to load points A and B. (Reference values)

Accuracy

Type	Parallelism (mm)	Backlash (mm)
KULF	0.15	0.5

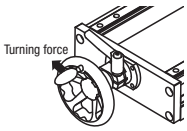
*Parallelism is surface B running parallelism in respect to surface A. (See the figure below)
*Backlash is not a guaranteed value but reference value.

Required Torque · Required Turning Force

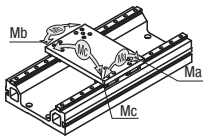
Part Number Type	Part Number No.	Required Torque (N·m) Vertical	Required Turning Force (N) Vertical
KULF	20	1.46	56.142

*Torque and turning force required at max. load capacity.
*Turning force is the force that rotates the handwheel. (See the figure on the right)

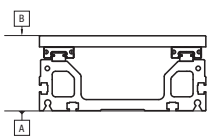
Turning Force Fig.



Moment Fig.



Parallelism Fig.

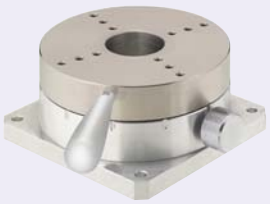


Manually Operated Units
-Rotating Tables-

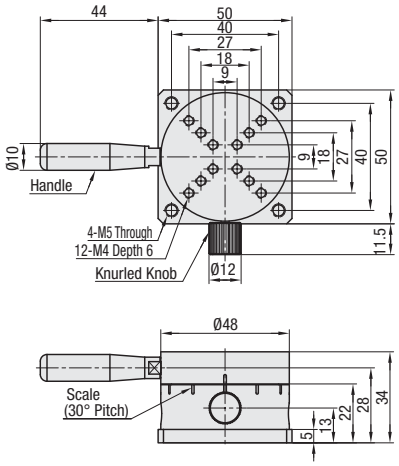
CAD Data

Features: Units best suited for simplified positioning. With a built-in plunger, positions are indexed by 30°.

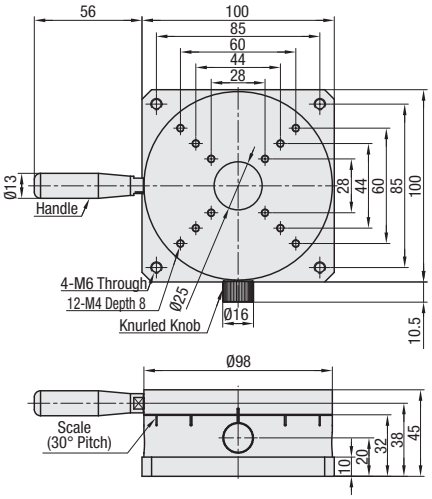
RoHS



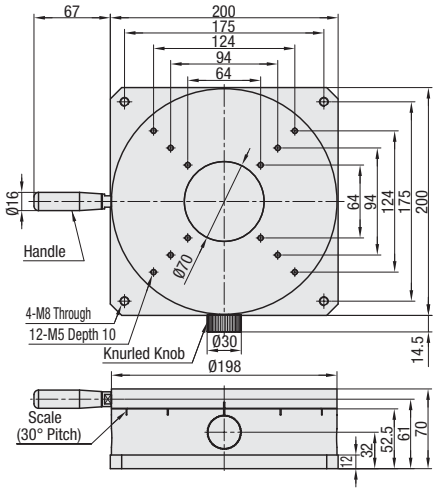
KUS50



KUS100



KUS200



M Material: 1.1191/C45E
S Surface Treatment: Electroless Nickel Plating
Handwheel : **GRMSN (P.2-1010)**
Knurled Knob: **NOBA (P.2-1020)**

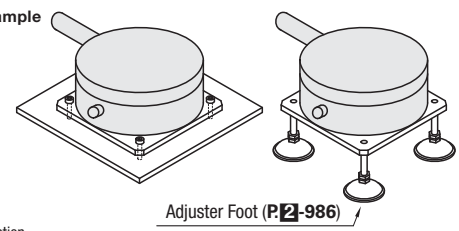
Part Number		Stage Diameter (mm)	No. of Indexed Positions	Indexing Angle	Load Capacity N{kgf}	Indexable Loads (reference values) N{kgf}	Motion Accuracies			Weight (kg)	€ Unit Price 1 ~ 2 unit(s)
Type	No.						Eccentricity (mm)	Parallelism (mm)	Surface Run-out (mm)		
KUS	50	Ø48	12	30°±1°	980{100}	98{10}	0.1	0.2	0.1	0.34	
	100	Ø98			1470{150}	196{20}				1.64	
	200	Ø198			1960{200}	392{40}				8.70	

(P) Still usable when exceeding the indexable loads but plunger indexing will not work.

Order Example Part Number: KUS100

Days to Ship 13 Days
(P) For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Example



Adjuster Foot (P.2-986)

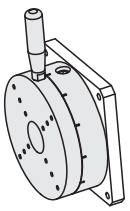
Rotating Table Mounting Orientation

Cautions are needed for the mounting styles as shown on right.

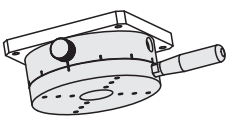
No.	Inverted Application	Vertical Application by Wall Mount Installation
50	○	○
100	△	○
200	△	△

○: Limitations exist on loads and moments, but useable.
△: Performance may be seriously affected depending on application.
(P) Cautions required for falls depending on applied loads.

- Vertical Application by Side Face Installation



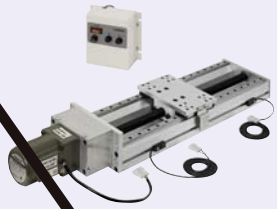
- Inverted Application



Motor Driven Units

Features: No need for any control settings. Simplified positioning units with quick and easy motorized operations.

with Control Box and Right-side Mounted Sensor
Top motor position



without Control Box / Sensor
Top motor position



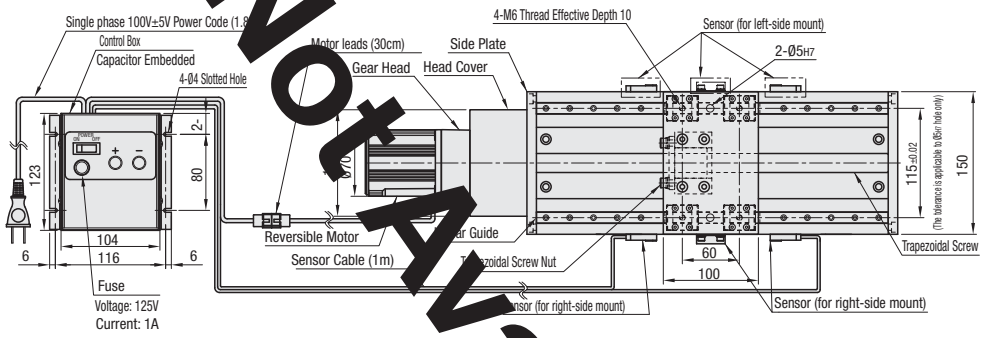
CE non-compliant

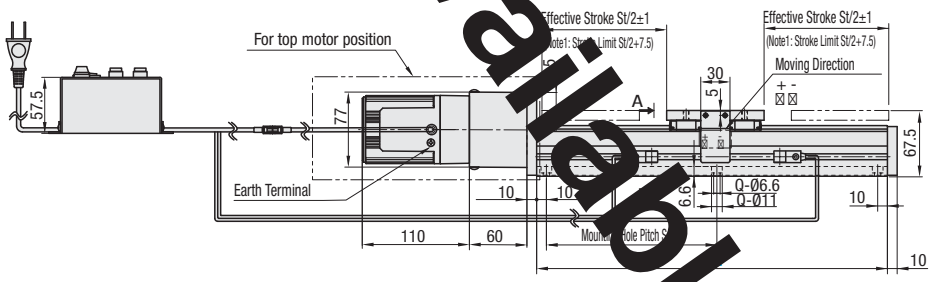
RoHS

Components

Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate	Head Cover	Control Box
M Material	EN AW-6063/AlMg0,7Si	EN AW-6063/AlMg0,7Si	1.1191/C45E	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	1.4301/X5CrNi18-10	1.0330/DC01
S Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	-	Clear Anodize	Clear Anodize	-	Baked Finish (beige)

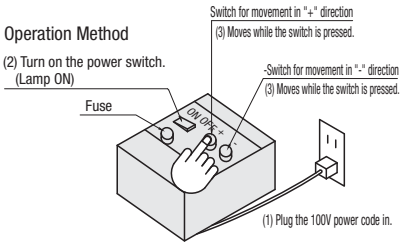
(with Control Box)

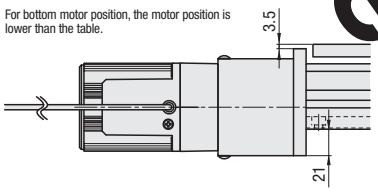


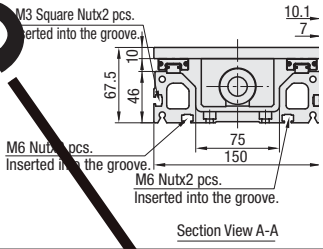


Note 1) Stroke limit is where stroke reaches the mechanical limit

Operation Method



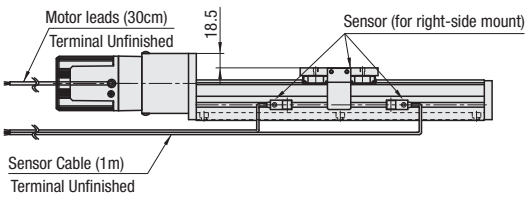




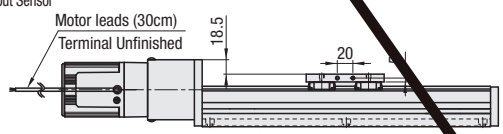
Section View A-A

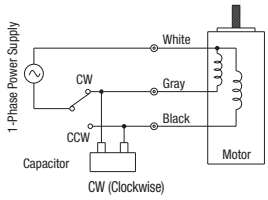
(without Control Box)

Top motor position
With Sensor



Top motor position
Without Sensor





Rotates counterclockwise when switch is connected with the CCW position.

- Ensure that ground terminals are connected to a ground.
- Reversible Motor stop frequency per minute must be 6 times or less.
- For Reversible Motors, please read the included Instruction Manual.
- For the units with no control box, a capacitor is included in the package.
- For details of Reversible Motors and Gear Heads, P.999
- For details of trapezoidal screws and nuts, and Linear Guides, P.709, 718, 513

Not Available

Reduced Delivery Time

Price Reduction 16%

CAD Data

Part Number	Motor Mounting Position	Sensor	L Frame Length	Trapezoidal Lead Screws Type	Trapezoidal Screw Nut Type	Linear Guides Part Number	Sensor Part Number	Reversible Motor Part Number	Gear Head Part Number
with Control Box	M1(Top) M2(Bottom)	S1(Right Side Mount) S2(Left Side Mount)	220 320 370 420 470	MTSBRK (Screw Shaft Dia.: 20) (Lead: 4)	MTRFR (Brass Type)	SE2B13	Sunx-made	PACMR70 (Voltage: 100V 50/60HZ) (Output: 15W) Rated Speed 50Hz:1275min^{-1} 60Hz:1575min^{-1}	PACMGX70 (Reduction Ratio: 5)
without Control Box		S1(Right Side Mount) S2(Left Side Mount) S3(without Sensor)							

Part Number	Stroke		Frame Mounting Holes		
	L	St	L	S	Q (Hole Qty.)
	220	100	220	200	4
	320	200	320	150	6
	370	250	370	175	6
	420	300	420	200	6
	470	350	470	150	8

Order Example: Part Number - Motor Mount Position - Sensor - L
- - - 320

Days to Ship: •KUK 15 Days •KUG 18 Days

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number	Sensor	€ Unit Price (2 units)				
		L=220	L=320	L=370	L=420	L=470

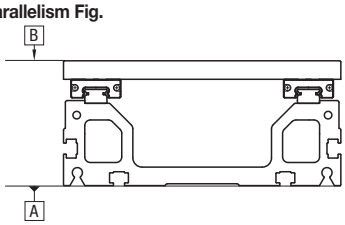
For orders larger than indicated quantity, Days to Ship is to be estimated.

Mass / Accuracy

Part Number	Mass (kg)					Parallelism (mm)	Stop Precision (mm)	Backlash (mm)
	L=220	L=320	L=370	L=420	L=470			
	6	7	7.5	8	8.5	0.15	±1	0.3

* The mass values do not include control box. (Control box mass is 0.8kg.)
* Parallelism is the degree of running parallelism for dimension B against dimension A.(See Figure at the right)
* Stop precision is indicated in travel distance to stop from where is detected by sensor or the stop is released.
* Backlash is not a guaranteed value but a reference value.

Parallelism Fig.

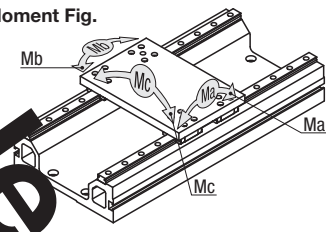


Load Capacity / Allowable Moment / Operation Speed

Part Number	Allowable Load (N)		Allowable Moment (N·m)			Operation Speed (m/s)	
	Horizontal	Vertical	Ma	Mb	Mc	50Hz	60Hz
	490	98	14	14	27	17	21

*Operation speeds are calculated based on motor rated speed but not guaranteed values. The values vary according to loads.

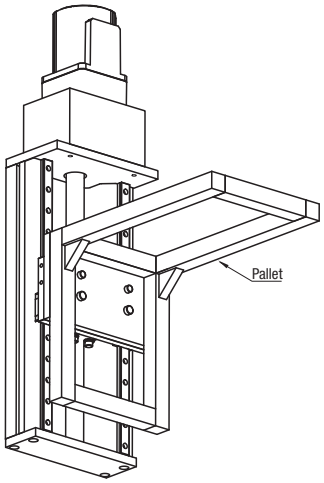
Moment Fig.

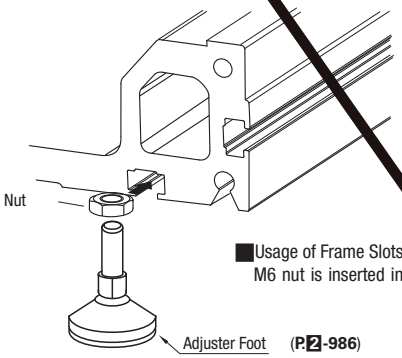


Example

■ Transfer

Used to move work pieces vertically.





■ Usage of Frame Slots

M6 nut is inserted in the bottom surface.

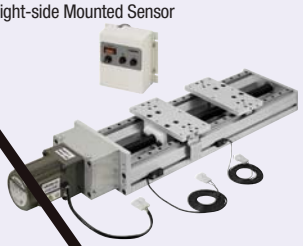
(P.2-986)

Not Available

Motor Driven Units Symmetrical Action Dual Carriages

Features: No need for any control settings. The right and left tables move simultaneously by quick and easy motor operations.

with Control Box and Right-side Mounted Sensor
Top motor position



without Control Box and Sensor
Top motor position



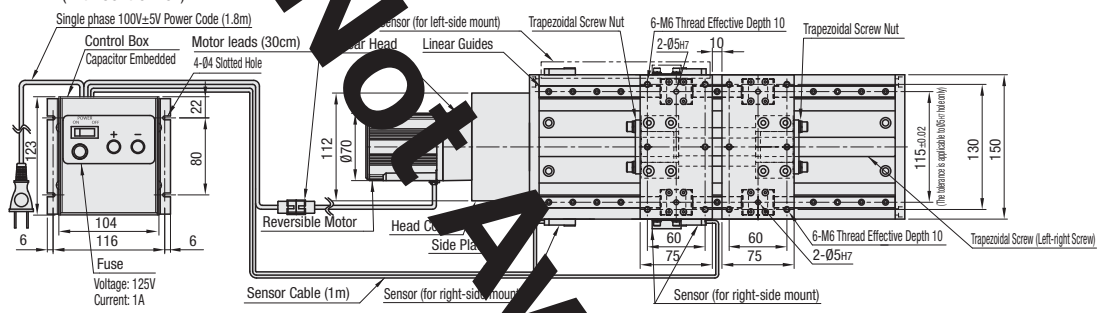
CE non-compliant

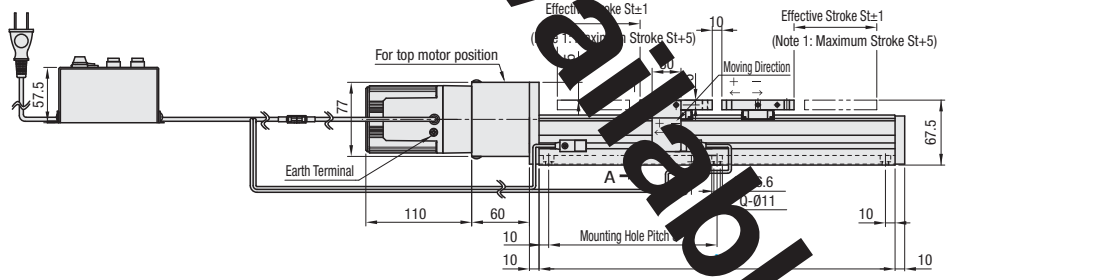
RoHS

Components

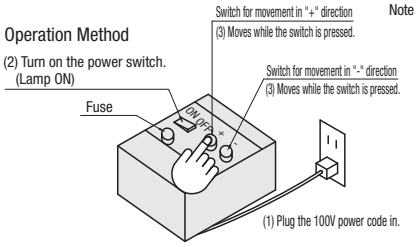
Parts	Frame	Table	Trapezoidal Lead Screws	Trapezoidal Screw Nut	Nut Bracket	Side Plate	Head Cover	Control Box
M Material	EN AW-6063-T5	EN AW-6063/AlMg0,7Si	1.1191/C45E	Brass	EN AW-5052/AlMg2,5	EN AW-6063/AlMg0,7Si	1.4301/X5CrNi18-10	1.0330/DC01
S Surface Treatment	Clear Anodize	Clear Anodize	Black Oxide	-	Clear Anodize	Clear Anodize	-	Baked Finish (beige)

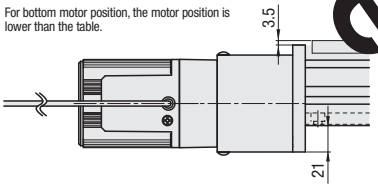
(with Control Box)

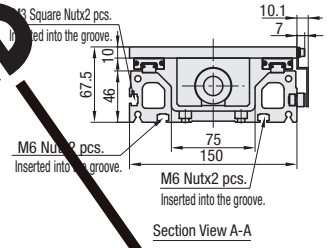




Operation Method

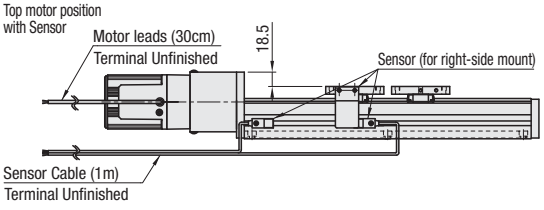


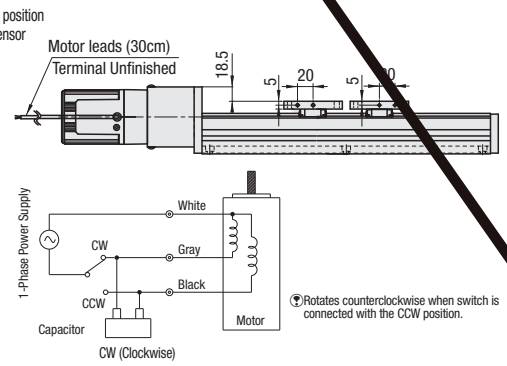




Section View A-A

(without Control Box)





Rotates counterclockwise when switch is connected with the CCW position.

- Right and left tables move simultaneously.
- Ensure that ground terminals are connected to a ground.
- Reversible Motor stop frequency per minute must be 6 times or less.
- For Reversible Motors, please read the included Instruction Manual.
- For the units with no control box, a capacitor is included in the package.
- For details of Reversible Motors and Gear Heads, P.999
- For details of trapezoidal lead screws and nuts, and Linear Guides, P.709, 513

Not Available

Reduced Delivery Time

Price Reduction 19%

CAD Data

Part Number	Motor Mounting Position	Sensor	L Frame Length	Trapezoidal Lead Screws Type	Linear Guide Part Number	Sensor Part Number	Reversible Motor Part Number	Gear Head Part Number
with Control Box	M1(Top) M2(Bottom)	S1(Right Side Mount) S2(Left Side Mount)	320 370 420 470	MTSBWKA (Screw Shaft Dia.: 20) (Lead: 4)	SE2B13	Sunx-made	PACMR70 (Voltage: 100V 50/60HZ) (Output: 15W) Rated Speed 50Hz:1275min^{-1} 60Hz:1575min^{-1}	PACMGX70 (Reduction Ratio: 5)
without Control Box		S1(Right Side Mount) S2(Left Side Mount) S3(without Sensor)						

Part Number	Stroke		Frame Mounting Holes		
	L	St	L	S	Q
	320	61	320	150	6
	370	86	370	175	6
	420	111	420	200	6
	470	136	470	150	8

Order Example

Part Number	-	Motor Mount Position	-	Sensor	-	L
	-		-		-	320

Days to Ship

•KUKD **10 Days**

•KUGD **13 Days**

For ordering 3 or more identical models, Days to Ship is to be quoted in each case.

Price

Part Number	Sensor	€ Unit Price ~ 2 (pcs)			
		L=320	L=370	L=420	L=470

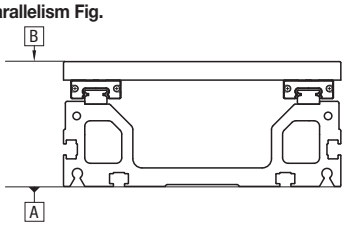
For orders larger than indicated quantity, Days to Ship is to be estimated for each case.

Mass · Accuracy

Part Number	Mass (kg)				Parallelism (mm)	Stop Precision (mm)	Backlash (mm)
	L=320	L=370	L=420	L=470			
	7.5	8	8.5	9	0.15	±	0.3

* The mass values do not include control box. (Control box mass is 0.8kg.)
* Parallelism is the degree of running parallelism for dimension A.(S on the right)
* Stop precision is indicated in travel distance to stop from where is detected by sensor or th witch is released.
* Backlash is not a guaranteed value but a reference value.

Parallelism Fig.

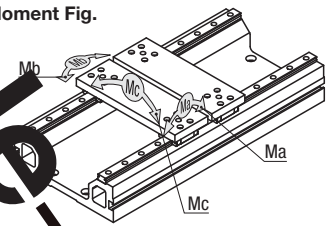


Load Capacity · Allowable Moment · Operation Speed

Part Number	Allowable Load (N)		Allowable Moment (N·m)			Operation Speed (mm/s)	
	Horizontal	Vertical	Ma	Mb	Mc	50Hz	60Hz
	245	49	1	1	13	17	21

*Load capacity and allowable moment are values per table.
*Operation speeds are calculated based on motor rated speed but not guaranteed values. The values vary according to loads.

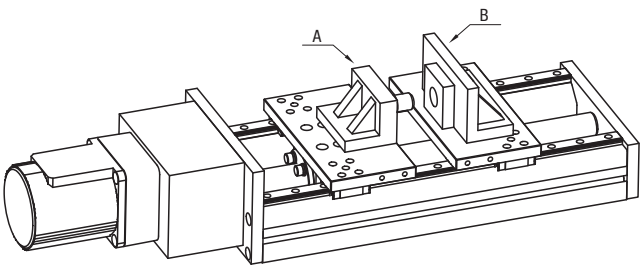
Moment Fig.

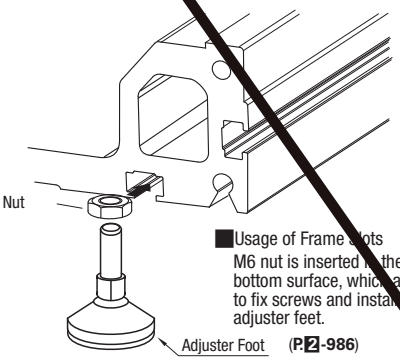


Example

Press-fit Fixture

Can be used for a light press fitting fixture.
Can be made to handle various work pieces by replacing the A and B blocks.
It can be used in both compression and tensioning processes as a tension adjuster for sheets, textile and wire materials and in tensioning process.





Usage of Frame Slots

M6 nut is inserted in the bottom surface, which allows to fix screws and install adjuster feet.

(P.2-986)

Not Available

Linear Guides

Linear Guides Raydent



Product Name	Raydent
Page	508

Miniature Linear Guides





Product Name	Miniature Linear Guides -Short Blocks-	Short Blocks with Dowel Holes
Page	509	511







Miniature Linear Guides -Standard Blocks-	Standard Blocks with Dowel Holes	Wide Standard Blocks
513~516	517	519









Miniature Linear Guides -Long Blocks-	Long Blocks with Dowel Hole	Wide Long Blocks	Extra Long Blocks
521~524	525	527	529







Miniature Linear Guides -Wide Rail Standard Blocks-	Wide Rail with Dowel Holes, Standard Blocks	Wide Rail, Wide Standard Blocks
531~534	535	537







Miniature Linear Guides -Wide Rail Long Blocks-	Wide Rail with Dowel Holes, Long Blocks	Wide Rail, Wide Long Blocks
539~542	543	545



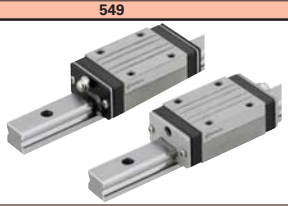




Miniature Linear Guides -Heat Resistant-	With Lubrication Unit	Miniature Dust Resistant
547	549	551

Medium / Heavy Load Linear Guides







Product Name	Medium / Heavy Load Self-Lubrication Type	Medium and Heavy Load, Dust Resistant	Medium / Heavy Load Wide Blocks, Dust Resistant
Page	553~566	553~556	553~556



Price Reduction
up to 12%

Medium and Heavy Load
557~562



Price Reduction
10%

Medium / Heavy Load Wide Blocks
557~562



Price Reduction
10%

Medium and Heavy Load with Dowel Holes
563~566



Medium and Heavy Load with Plastic Retainers
567~570•573~576



Medium / Heavy Load Wide Block Resin Retainers
573~576



Extra Heavy Load, Extra Super Heavy Load, With Plastic Retainers
571•577~580



Extra Heavy Load / Extra Super Heavy Load Wide Block Resin Retainers
577~580

Linear Guide Peripheral Parts

Product Name
Page

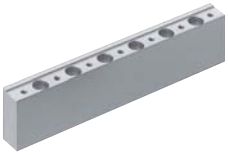


Stopper Clamps for Miniature Linear Guides
581



Stopper Clamps for Medium / Heavy Load Linear Guides
582

Addition



Height Adjusting Blocks for Linear Guides
583~585



Stopper Bolts
586



Linear Guide Block Stopper Plates
586

NEW



Linear Guide Mounting Hole Caps (Package)
586



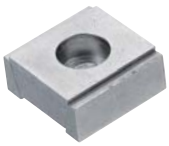
Rail Push Plates
586



Linear Locks
587



Linear Lock Plates
588



Linear Guide Lock Units
588

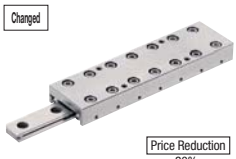


Linear Guide Lock Plates
588

Cross Rollers Table

Product Name
Page

Changed



Price Reduction
20%

Cross Roller Tables
591•592

Changed



Price Reduction
20%

Cross Roller Guides
593

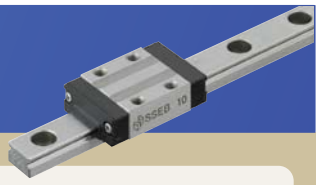


Ball Slide Guides
594



Pneumatically Driven Linear Guides
597~600

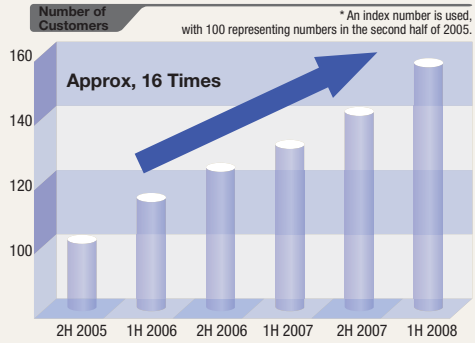
We have absolute confidence in quality of MISUMI Linear Guides!

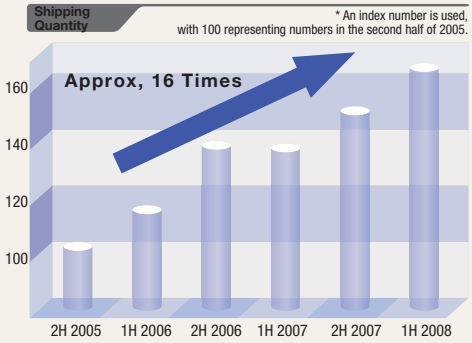


Quality

MISUMI Linear Guides are manufactured by Suruga Seiki Co.,Ltd. (Except products on **P.549** and **P.567~580**)

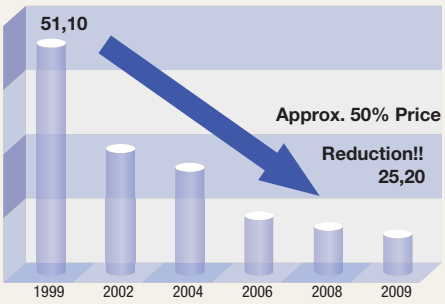
Proof of High Quality **Increased by approx. 1.6 times in both the number of customers and shipping for 3 years!**



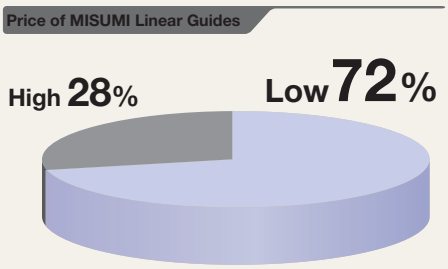


Price

Approx. 50% significant price reduction in the last 10 years!



72% of our customers said that MISUMI products are economical.



*115 customers responded to the questionnaire about the product price comparison between MISUMI and competitors.

Days to Ship

MISUMI's next day shipping service, which is the fastest in the industry, is able to meet the customers' requirements in case of a sudden change of designing.

SURUGA SEIKI CO.,LTD Fast Facts

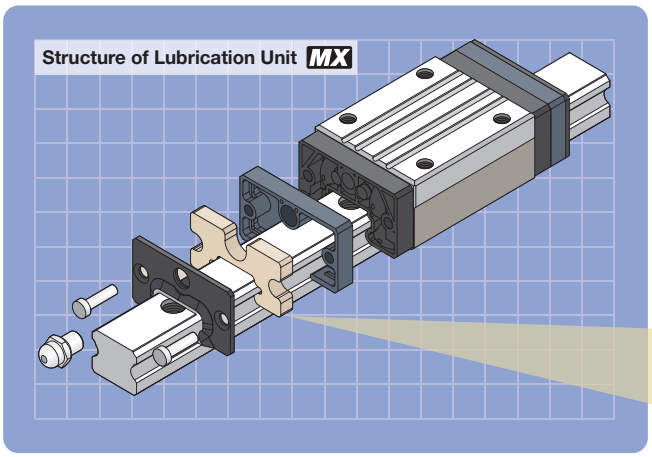
Our goal is to be one of the most creative companies with our prominent precision processing technology.

Corporate Name	SURUGA SEIKI CO., LTD
Head Office	549-1, Nanatsushinya, Shimizu-ku, Shizuoka City, Shizuoka 424-8566
Established	May 8, 1964

Suruga Seiki develops its business by making extensive use of precision processing technologies which require micron-level precision. We have been developing and manufacturing press die components including punch&die-related parts that has the top market share in Japan, optical devices, and FA (factory automation) products. We have been actively expanding our overseas business and have operations in the United States, Vietnam, Korea, China, Thailand and Poland.



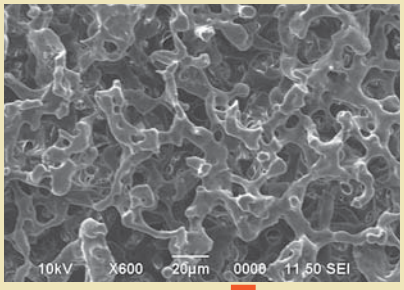
Newly available Lubrication Units MX provides long term maintenance-free condition!



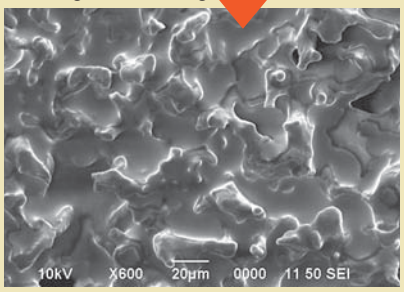
Special polyurethane has interconnected micropores and is excellent in waterholding capacity.
Enables to impregnate much grease.

Enlarged Picture of Special Polyurethane

● Before grease soaking



● After grease soaking



Features

Feature 1 Long Term Maintenance-free Condition

Special polyurethane in Lubrication Unit MX impregnates grease, and its micropore structure supplies optimal amount of grease on the track surface. Oil film is constantly formed between steel balls and the track, which enables long term maintenance-free condition.

Feature 2 Cost Advantage

Extended lubrication intervals result in reduction of maintenance cost.

Feature 3 Short Lead Time

8th day shipping same as that of standard products

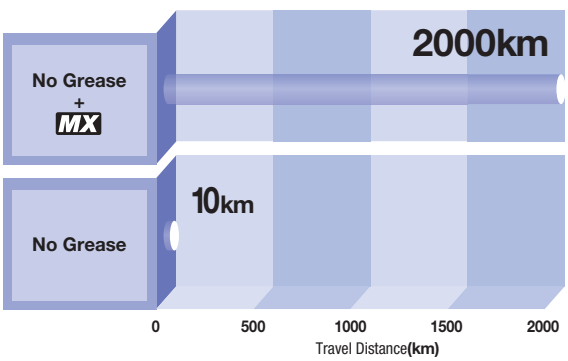
Test Result

Linear guides with Lubrication Unit MX achieved 2,000km travel while linear guides with no grease stopped in a short time.

Test Conditions

Sample	SXR24Type
Load	2.87kN
Travel Speed	750mm/sec

・No grease: degreased linear guide
・No grease+MX: degreased linear guide equipped with MX only
MX is filled with Alvania Grease S2 by Showa Shell Sekiyu K.K.
Test results are for reference only, not guaranteed.



Linear Guide Selection Table

■Miniature Linear Guides

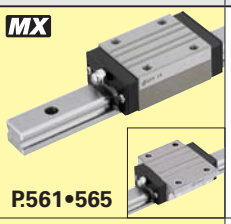
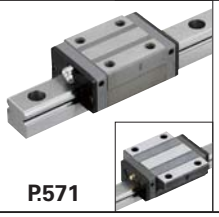
Rails	Blocks	Short	Standard	Long	Extra Long
Standard Rails	Standard	 P.509~P.512	 P.513~P.518	 P.521~P.526	 P.529
	Wide	–	 P.519	 P.527	–
Wide Rails	Standard	–	 P.531~P.536	 P.539~P.543	–
	Wide	–	 P.537	 P.545	–

■Special Configurations

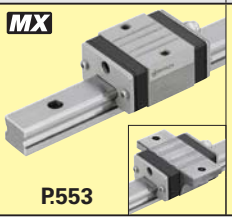
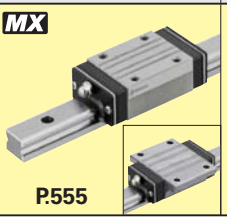
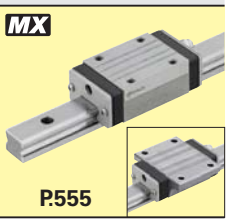
Specifications	Dust Resistant	With Lubrication Unit	Heat Resistant	Raydent
Standard Rails	 P.551	 P.549	 P.547	 P.508

■Linear Guides for Medium and Heavy Load

Lubrication Units MX : Products applicable to Self-lubrication Type

Specifications		Medium Load	Heavy Load	Extra Heavy Load	Extra Super Heavy Load
Standard	Carbon Steel	MX  P.559•563	MX  P.561•565	–	–
	Stainless Steel	MX  P.557•563	MX  P.557•565	–	–
W/Plastic Retainers 	Carbon Steel	 P.573	 P.575	 P.577	 P.579
	Stainless Steel	 P.567	 P.569	 P.571	–

■Special Configurations

Specifications	Medium Load		Heavy Load	
	Double-Sealed	W/Metal Scrapers	Double-Sealed	W/Metal Scrapers
Dust Resistant	MX  P.553	MX  P.553	MX  P.555	MX  P.555

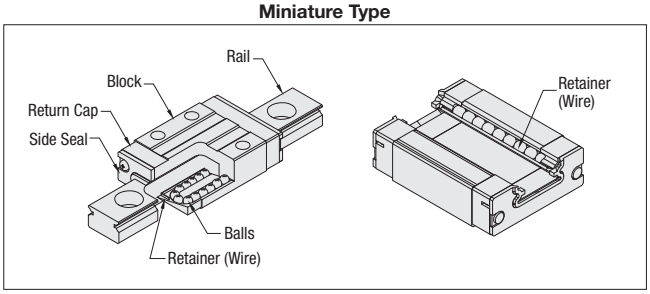
■Linear Guide Related Products

	Position Retaining Parts	Rail Height Adjusting Blocks	Block Fall-off Prevention Parts Dust Prevention Parts	Block · Rail Fixture Parts
For Miniature Guides	 P.581	 P.585	■Stopper Bolts for Linear Guides  P.586 ■Linear Guide Block Stopper Plates  P.586 ■Rail Mounting Hole Caps  P.586	■Linear Guides Adjustment Units  P.586 ■Linear Locks  P.587 ■Linear Guide Lock Units  P.588
Medium and Heavy Load	 P.582	Addition  P.583 · 584		

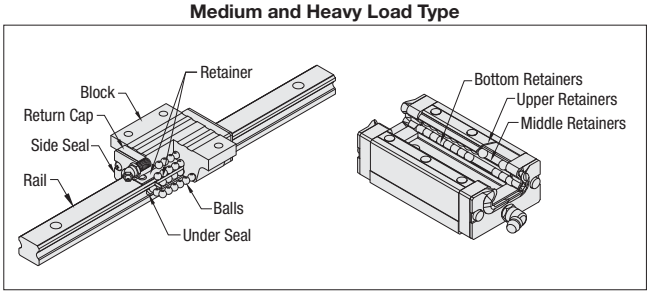
Structure and Precision of Linear Guides

■Linear Guide Structure and Features

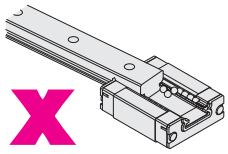
Miniature Type



Medium and Heavy Load Type



-Linear guides utilize steel balls rolling on precisely ground raceways, and the balls are recirculated by plastic return caps.
- End seals prevent foreign objects from intruding into the blocks.
-Miniature Type has two rows of contacting steel balls in a 4-point raceway contact design.
-Medium and Heavy Load Types have four rows of contacting steel balls in a 2-point raceway contact design.
-Load ratings are the same for all four directions (radial, reverse-radial, and lateral directions). Can be used in any orientation.
-Cautions
Balls do not fall out of MISUMI linear guides when removed from rails as the blocks are equipped with ball-retainers. However, the balls may fall out by rapidly removing blocks from the rail or inserting the rail into the block at a slant. Remove and install the blocks with caution.



■Precision

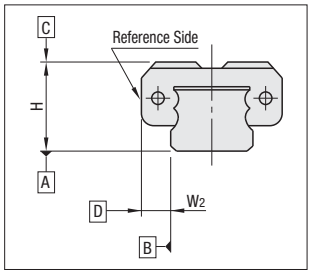
- Dimensional Accuracies

Unit: μm

Type	Accuracy Standards		Precision Grade	High Grade	Standard Grade
Miniature Type	Height H Tolerance		±10	±20	±20
	Height H Pair Variation		7	15	40
	Width W_2 Tolerance		±15	±25	±25(20)
	Width W_2 Pair Variation		10	20	40
Medium and Heavy Load Type	**Accuracy Standards**		**High Grade**	**Inter-changeable**	**Standard Grade**
	Height H Tolerance		±40	±20	±100
	Height H Pair Variation		15	15	20
	Width W_2 Tolerance		±20	±30	±100
	Width W_2 Pair Variation	24, 28	15	25	20
		33, 42	15	25	30
		30, 36, 40, 42	-	25	-

[Pair Variation of Height H]
Difference between the min./max. values of Height (H) Dimension for a number of blocks combined on one rail

[Pair Variation of Width W_2]
Difference between the min./max. values of Width (W) Dimension for a number of blocks combined on one rail
- Pair variation value shown in table ( ) is for the products on **P.549**



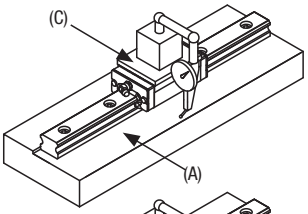
- Running Parallelism

Unit: μm

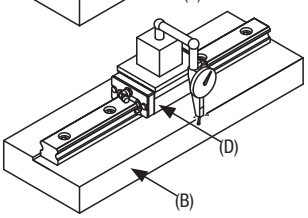
Rail Length (mm)		Miniature			Medium and Heavy Load		
Over	Or Less	Precision Grade	High Grade	Standard Grade	High Grade	Inter-changeable	Standard Grade
	50	2	3	13	7	6	7
50	80	2	3	13	7	6	7
80	125	3	7	15	7	6.5	7
125	200	3	7	15	7	7	7
200	250	3.5	9	17	7	8	7
250	315	4	11	18	8	9	12
315	400	5	11	18	8	11	12
400	500	5	12	19	9	12	14
500	630	6	13.5	21	11	14	18
630	800	6	14	21.5	13	16	21
800	1000	-			14.5	18	23
1000	1250	-			16	20	25
1250	1600	-			19	23	27
1600	2000	-			21	26	28.5

[Running Parallelism]
Measured while the rail is bolted firmly to a standard reference surface base. A relative variation of block's top surface C against the rail's bottom surface A, and a relative variation of block's datum surface D against the rail's datum surface B are measured, as the block is run from end to end on the rail.

-Running parallelism of surf. C against surf. A



-Running parallelism of surf. D against surf. B



Linear Guide Preload and Allowable Load

■Selection of Radial Clearance (Preload)

Type	Preload	Sizes (Height H Dimension)	Radial Clearance (μm)
Miniature	Light Preload	6~20	-3~0
	Interchangeable-Slight Clearance		0~15
Medium and Heavy Load	Normal Clearance	24	-4~+2
		28	-5~+2
		33	-6~+3
	Interchangeable, Light Preload	24, 28	-4~0
		30, 36, 40, 42	-5~0
		*42	-7~0

*marked size is for Extra Heavy Load and Extra Super Heavy Load.

- Clearance and preload of MISUMI Linear Guides are controlled with minute ball size adjustments.
- Increased rigidity and reduced elastic deformation will result by preloading (negative clearance).
- Generally, selecting some preloads would cause favorable effects on accuracy and life of Linear Guides.

■Friction Force (Required Thrust Force)

Linear Guide friction force (required thrust) varies depending on load, speed and lubricant property. Especially when moment load is applied, Preload Type friction force increases.
Although seal resistance varies according to seal lip press-fit allowance and lubrication conditions, it is not proportionate to load and keeps a constant value.
Friction force is obtained by the following formula.

$$F = \mu \cdot W + f$$

F : Friction (N)
μ : Dynamic Friction Coefficient
W: Applied Load
f : Seal Resistance (2N ~ 5N)

Table-1 Dynamic Friction Coefficient

Types	Dynamic Friction Coefficient (μ)
Miniature Linear Guides	0.004~0.006
Medium Load Linear Guides	0.002~0.003

■Allowable Load

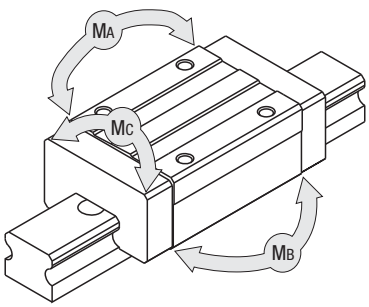
-Basic Dynamic Load Rating (C)
Basic dynamic load rating is defined as: A load applied and ran under equal condition on a group of linear guide specimen where 90% of specimen will reach 50 x 103m without experiencing any damages due to rolling fatigues.

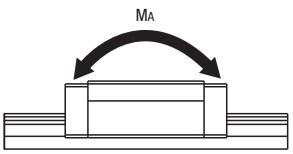
-Basic Static Load Rating (Co)
Basic static load rating is defined as: A load applied on non-moving linear guides where a sum of rolling element plastic deformation amount and rolling surface plastic deformation amount becomes equal to 0.0001 times that of the diameter of the rolling element (balls).

-Allowable Static Moment (M_A / M_B / M_C)
Allowable static moment is a critical static moment load defined by permanent deformation value similar to basic static load rating Co.

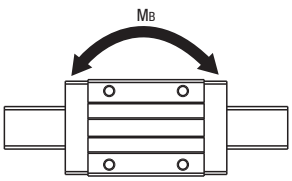
Allowable Load (N) ≤Co/fs
Allowable Moment (N・m) ≤ (MA, MB, MC)/fs

fs: Statistic Safety Factor Co: Basic Static Load Rating (N)
M_A, M_B, M_C: Static Allowable Moment (N・m)





Pitch Direction



Yaw Direction



Roll Direction

-Static Safety Factor (fs)
Basic Static Load Rating Co, in the static state or in low speed, is divided by Static Safety Factor fS in Table-2 depending on operating conditions.

Table-2 Static Safety Factor (fs lower limit)

Condition of Use	Lower Limits of fs
For normal operating condition	1~2
When smooth running performance is required	2~4
When vibrations and impacts exist	3~5

Operating Life Calculation for Linear Guides

Operating Life

When Linear Guide is loaded in linear reciprocating motion, scaly damages called flaking appear due to material fatigue as the stress works on the rolling elements and rolling contact surfaces constantly. Total travel distance until the first flaking occurs is called Life of Linear Guides.

Rated Life

Rated Life is the total travel distance that 90% of linear guides of the same type can reach, under the same conditions, with no occurrence of flaking damage. Rated Life can be obtained from the Basic Dynamic Load Rating and the actual load applied on the linear guide, as shown below.

$$L = \left(\frac{C}{P}\right)^3 \cdot 50$$

Load must be calculated before actually using Linear Guides. To obtain load during linear reciprocating motion, it is necessary to fully consider vibration and impact during motion, and also distribution status in relation to Linear Guides. So, it is not easy to obtain load by calculation. Operating temperature also critically affects life. All these conditions considered, the above-mentioned calculation formula is as follows.

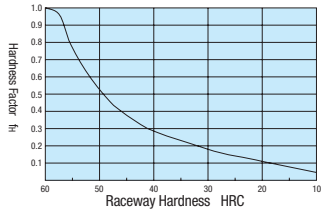
$$L = \left(\frac{f_H \cdot f_T \cdot f_C}{f_W} \cdot \frac{C}{P}\right)^3 \cdot 50$$

L : Rated Life (km)
C : Basic Dynamic Load Rating (N)
P : Applied Load (N)
f_H : Hardness Factors (See Fig. 1)
f_T : Temperature Factors (See Fig. 2)
f_C : Contact Factors (See Table 1)
f_W : Load Factors (See Table 2)

•Hardness Factor (f_H)

For Linear Guide applications, sufficient hardness is required for ball contact shafts. Inappropriate hardness causes less allowable load, resulting in shorter life. Please correct the rated life according to the temperature factors.

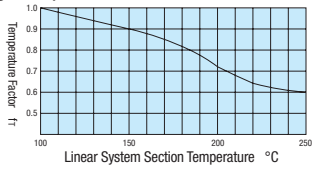
Fig. 1 Hardness Factor



•Temperature Factor (f_T)

If the Linear Guide temperature exceeds 100°C, the Linear Guide and shaft hardness decreases, resulting in less allowable load and shorter life than used at a room temperature.
Please correct the rated life according to the temperature factors.
* Please use Linear Guides under the allowable temperature shown on each product page.

Fig. 2 Temperature Factor



•Contact Factor (fc)

For actual applications, more than 2 blocks are generally used per shaft. In this case, load applied to each block varies depending on machining precision but is not uniformly distributed. As a result, per-block allowable load varies depending on per-shaft Linear Guide quantity.
Please correct the rated life according to Table 1. Temperature Factor.

Table 1. Contact Factor

Number of bearings installable on one shaft.	Contact Factor fc
1	1.00
2	0.81
3	0.72
4	0.66
5	0.61

•Load Factor (fw)

To calculate load applied to the Linear Guides, other than object weight, it requires inertia force attributed to motion velocity or moment loads. It, however, is difficult to attain accurate calculations due to potential vibration and impacts caused during reciprocating motion, other than repeated start-stop motions. Table 2. Load factor helps simplify life calculation.

Table 2. Load Factor

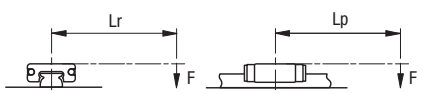
Condition of Use	fw
No shocks/vibrations, low speed: 15m/min. or less	1.0~1.5
No significant shocks/vibrations, medium speed: 60m/min. or less	1.5~2.0
With shocks/vibrations, high speed: 60m/min. or more	2.0~3.5

•Applied Load P Calculation Method

When load is applied to a block, convert moment load into applied load by the following formula.

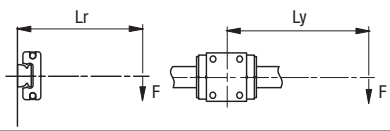
- Horizontal Installation

$$P = F + \frac{Co}{Mc} \times (F \times Lr) + \frac{Co}{MA} \times (F \times Lp)$$



- Lateral Installation

$$P = F + \frac{Co}{Mc} \times (F \times Lr) + \frac{Co}{MB} \times (F \times Ly)$$

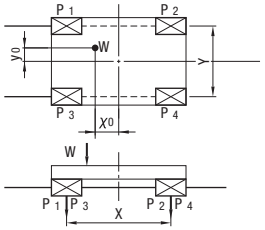
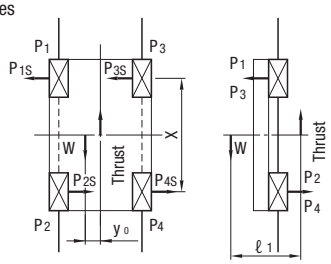
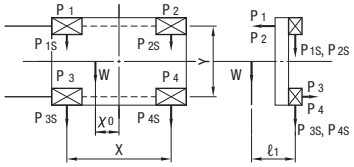
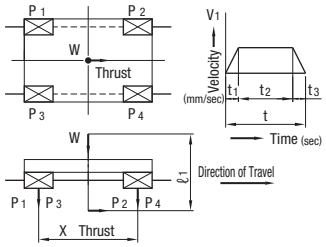


P: Applied Load (N)
F: Downward Load (N)
Co: Static Load Rating (N)
MA: Allowable Static Moment - Pitch Direction (N • m)
MB: Allowable Static Moment - Yaw Direction (N • m)
Mc: Allowable Static Moment - Roll Direction (N • m)
Lp: Distance from block center to load center in Pitch direction (m)
Ly: Distance from block center to load center in Yaw direction (m)
Lr: Distance from block center to load center in Roll direct ion (m)

■Load Calculation

Linear Guides perform linear reciprocating motion while supporting object weight. Therefore, load applied to Linear Guides varies depending on the center of gravity of the object, thrust force applied position or changes in speed at start, stop, acceleration and deceleration. For Linear Guide selections, these conditions must be fully considered.

Table 3. Condition of Use and Load Calculation Formula.

Classification	Condition of Use and Loads
1	Horizontal Axes  $P_1=\frac{1}{4}W+\frac{X_0}{2X}W+\frac{y_0}{2Y}W$ $P_2=\frac{1}{4}W-\frac{X_0}{2X}W+\frac{y_0}{2Y}W$ $P_3=\frac{1}{4}W+\frac{X_0}{2X}W-\frac{y_0}{2Y}W$ $P_4=\frac{1}{4}W+\frac{X_0}{2X}W-\frac{y_0}{2Y}W$
2	Vertical Axes  $P_1=P_2=P_3=P_4=\frac{\ell_1}{2X}W$ $P_{1S}=P_{2S}=P_{3S}=P_{4S}=\frac{y_0}{2X}W$
3	Wall Mounted Horizontal Axes  $P_1=P_2=P_3=P_4=\frac{\ell_1}{2X}W$ $P_{1S}=P_{3S}=\frac{1}{4}W+\frac{X_0}{2X}W$ $P_{2S}=P_{4S}=\frac{1}{4}W-\frac{X_0}{2X}W$
4	At Acceleration/Deceleration  - When accelerating from a start $P_1=P_3=\frac{1}{4}W\left(1+\frac{2V_1\cdot\ell_1}{g\cdot t_1\cdot X}\right)$ $P_2=P_4=\frac{1}{4}W\left(1-\frac{2V_1\cdot\ell_1}{g\cdot t_1\cdot X}\right)$ - When decelerating to a stop $P_1=P_3=\frac{1}{4}W\left(1-\frac{2V_1\cdot\ell_1}{g\cdot t_3\cdot X}\right)$ $P_2=P_4=\frac{1}{4}W\left(1+\frac{2V_1\cdot\ell_1}{g\cdot t_3\cdot X}\right)$ - At uniform speed $P_1=P_2=P_3=P_4=\frac{1}{4}W$ g: Gravitational Acceleration $=9.8\times10^3$mm/sec^2

W : Applied Load (N) P_1, P_2, P_3 and P_4: Load applied to Linear Guides (N)
X, Y: Linear Guide Span (mm) V: Travel Speed (mm/sec) t_1: Acceleration Time (sec) t_3 : Deceleration Time (sec)

■Average of Fluctuating Loads

In general, load applied to Linear Guides varies depending on their applications. For example, there are cases at the start and stop of reciprocating motion, during constant motion or transfer with/without a work-piece. Considering these fluctuating loads, it requires average load under which the life equals to the one under the conditions.

(1) When load changes in stages according to the distance (Fig. 3)
Travel distance ℓ_1 under load P_1
Travel distance ℓ_2 under load P_2
⋮ ⋮
Travel distance ℓn under load Pn
Average load Pm is obtained by the following formula.

$$Pm=\sqrt[3]{\frac{1}{\ell}(P_1^3\ell_1+P_2^3\ell_2\cdots+P_n^3\ell_n)}$$

Pm: Fluctuating Load Average (N) ℓ : Total Travel Distance (m)

(2) When load changes almost linearly (Fig. 4)
Average load Pm is approximately obtained by the following formula.

$$Pm\approx\frac{1}{3}(Pmin+2\cdot Pmax)$$

Pmin: Minimum Fluctuating Load (N)
Pmax: Maximum Fluctuating Load (N)

(3) When load changes in a sine curve as shown on Fig. 5 (a) and (b), average load Pm is approximately obtained by the following formula.

Fig. 5 (a) Pm≈0.65Pmax
Fig. 5 (b) Pm≈0.75Pmax

Fig. 3 Staged Fluctuating Loads

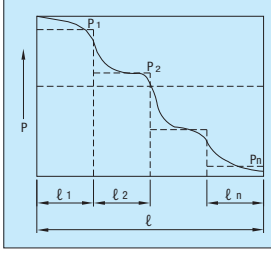


Fig. 4 Constant Fluctuating Loads

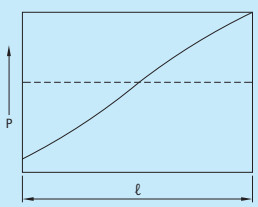
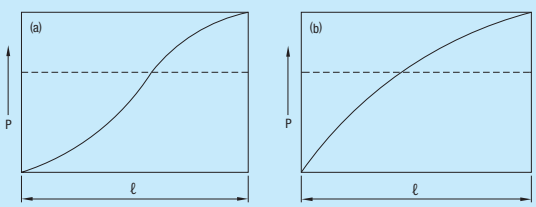


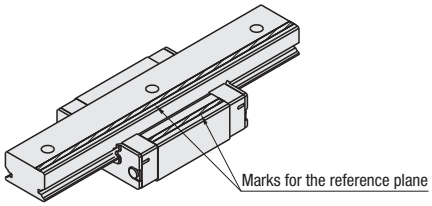
Fig. 5 Sine Curve-formed Fluctuating Loads



Installation and Maintenance of Linear Guides

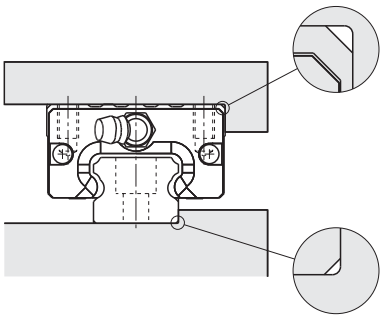
Installation Method of Linear Guides

MISUMI Linear Guides have a datum surface (a surface with a straight groove) on both the rail and block. (Refer to the right figure)
When installing Linear Guides, correctly match the datum of the guides and installation bases.



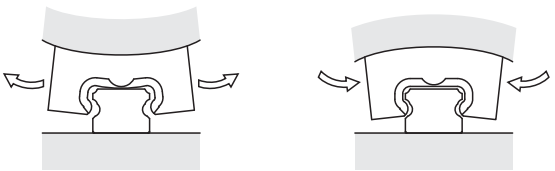
Mounting Surface Shape

Linear Guides are designed to obtain accuracies when mounted on base plates. Generally, the datum plane is placed against the shoulder on the mounting surface. In that case, corners should have reliefs or corner radius should be machined smaller than chamfering of rails and blocks. See each product page for chamfering dimensions of products.



Block Mounting Surface Flatness

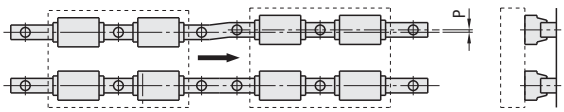
Blocks may be deformed depending on the mounting surface flatness. Block deformation may cause clearance, which might give less/more preload and cause sliding defects. Securing 5μ mounting surface flatness is recommended.



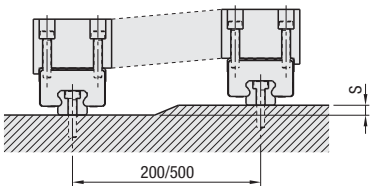
Installation Error Tolerance

•Installation Error Tolerance is the value which does not influence operating life under common usage.

Running Parallelism Error Tolerance



Height Error Tolerance



Installation Error Tolerance

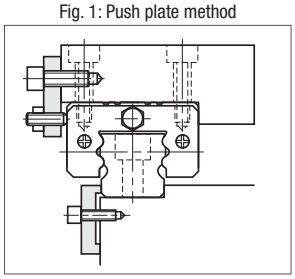
Type	Radial Clearance	Parallelism Error Tolerance of 2 Shafts (P)	Height Error Tolerance of 2 Shafts
Miniature Type	Light Preload	6μm or less	15μm or less / 200mm
	Interchangeable-Slight Clearance	10μm or less	30μm or less / 200mm
Medium and Heavy Load Type	Light Preload / Normal Clearance	20μm or less	330μm or less / 500mm

■Rail Installation

-When datum provided on installation bases

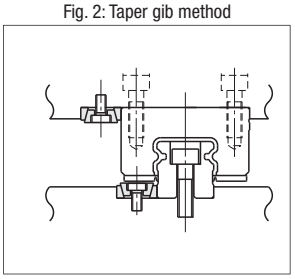
(1) Remove burrs and dusts on the mating surfaces before installation.
(2) Place a rail on the installation side of the base gently, and tighten the screws temporarily while pushing the rail against the datum shoulder.
(3) Installation methods Figure 1-3 are recommended when using linear guides where shocks, vibrations and heavy loads may exist, and high precision is required.
(4) Fully tighten the rail mounting screws to specified torque with a torque wrench. (See Table 1 for torque standards)

Fig. 1: Push plate method



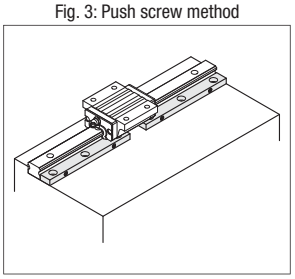
Refer to **P.588**

Fig. 2: Taper gib method



Refer to **P.588**

Fig. 3: Push screw method



Refer to **P.586**

-When datum not provided on installation bases

Straight Gauge
(1) Place a rail on the installation side of the base gently, and tighten the screws temporarily.
(2) Place a straightedge parallel to the temporarily tightened rail.
(3) Use the straightedge as a reference, snug down the screws while measuring the parallelism of the rail with a dial indicator as shown in Fig.4.
(4) Fully tighten the rail mounting screws to specified torque with a torque wrench.
(5)The secondary rail can be installed in the same straightedge method as the primary master rail, or by using the primary rail as a datum reference.
In either method, use a dial indicator to measure the parallelism while the rail is being fastened down.

Fig. 4: Straightedge method

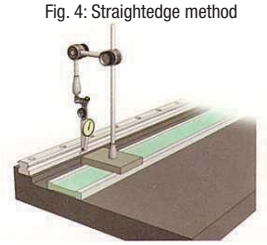


Fig. 5: Secondary rail mounting method

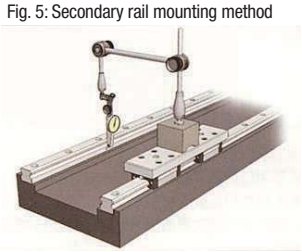
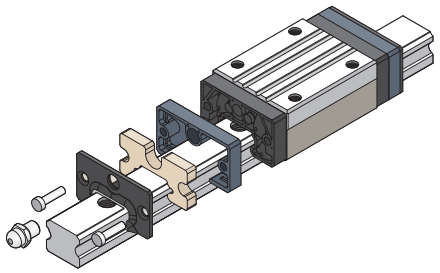


Table 1: Screw Tightening Torque (For SCM Material)

Type	Screw	Recommended Torque (N・m)
Miniature Type	M2	0.4
	M2.5	0.6
	M3	1.0
	M4	2.5
Medium and Heavy Load Type	M3	2.0
	M5	8.8
	M6	12.7
	M8	29.4

■Maintenance (Grease Application)

-Grease forms lubricating film between steel balls and rolling surface of linear guides. This reduces friction and prevents burns.
Grease loss and deterioration will cause shorter life of linear guides. Apply grease appropriately depending on your condition of use.
Grease listed below is applied to MISUMI Linear Guides before shipping, and the products can be used out of box.
- Miniature Type: Filled with Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.).
- Medium / Heavy Load type: Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K.)
- Recommended Lubrication Intervals:Every 6 months
Every 3 months when travel distance is extensive, or every 1000km.
※Recommended above is the grease application interval based on travel distance. If grease deterioration and contamination is severe in your operating condition, grease application intervals should be shortened.
- Lubrication Unit **MX** significantly extends lubrication intervals.
For details, refer to **P.498**



Special Greases / Details of Rail Length (L dimension) Configurable Type

About Special Greases

The standard grease used in the linear guides can be changed to the following types.

Part Number	Product Name	Main Features
L Type	ET-100K (Made by Kyodo Yushi)	Excels in heat resistance, oxidation stability, adhesion and adhesive power. In addition, splash / leakage is little.
G Type	LG2 (Made by NSK Ltd.)	Special grease for linear guides, ball screws and etc. for clean-room use.

Product Name	Page	Grease Selectable	€ Unit Price Added to price of standard type	
Miniature Linear Guides (Not applicable to Heat Resisting Type or lubrication unit type.)	P.509~P.546	L G	(1 Block)	(2 Blocks)
Medium and Heavy Load Linear Guides (Not applicable to Plastic Retainer Type.)	P.553~P.566	L G	(1 Block)	(2 Blocks)

Add the unit price in the above table to the unit price of applicable standard product.

<Price Calculation Example> SEBL10L~270 (Standard Preload Type)

(Standard Type € Unit Price) +	(Additional € Unit Price from above)	=	(Total)
60,30 EUR +	15,00 EUR	=	75,30 EUR

Order Example

Part Number - L

SEBL10L - 270 (L Type Greased)

SEBL10G - 270 (G Type Greased)

Please add L, or G after part number of regular type when placing an order.

Days to Ship

10 Days

Express B 5,00 EUR / piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

•LTBC Plated Products

13 Days

Price

[Please refer to each product page for Volume Discount.]

Alterations

Part Number - L

SEBL10L - 270

Confirm the details of alterations on the page #s shown in the table on the left.

M (Number of Mounting Holes) and G Dimensions on L Dim. Configurable Type.

For Rail Length Configurable Type, rail length is cut (1mm increment) and shipped.
In that case, number of rail mounting holes and F dimensions are as below.

Miniature Linear Guide -Standard Rail-

H	6 · 8	10	13	16	20	No. of Mounting Holes M
L	-	36~47	46~57	71~87	101~139	2
	41~50	48~67	58~82	88~127	140~199	3
	51~65	68~87	83~107	128~167	200~259	4
	66~80	88~107	108~132	168~207	260~319	5
	81~95	108~127	133~157	208~247	320~379	6
	96~110	128~147	158~182	248~287	380~439	7
	111~125	148~167	183~207	288~327	440~499	8
	126~129	168~187	208~232	328~367	500~559	9
	-	188~207	233~257	368~407	560~619	10
	-	208~227	258~282	408~447	620~679	11
	-	228~247	283~307	448~487	680~699	12
	-	248~267	308~332	488~527	-	13
	-	268~274	333~357	528~567	-	14
	-	-	358~382	568~607	-	15
	-	-	383~407	608~647	-	16
	-	-	408~432	648~669	-	17
	-	-	433~457	-	-	18
	-	-	458~469	-	-	19
F	F=15	F=20	F=25	F=40	F=60	

Miniature Linear Guide -Wide Rail-

H	6.5	9	12	14	16	No. of Mounting Holes M
L	-	51~67	51~67	71~89	71~89	2
	51~67	68~97	68~97	90~129	90~129	3
	68~87	98~127	98~127	130~169	130~169	4
	88~107	128~157	128~157	170~209	170~209	5
	108~127	158~187	158~187	210~249	210~249	6
	128~129	188~217	188~217	250~289	250~289	7
	-	218~247	218~247	290~329	290~329	8
	-	248~277	248~277	330~369	330~369	9
	-	278~289	278~289	370~409	370~409	10
	-	-	-	410~449	410~449	11
	-	-	-	450~469	450~489	12
	-	-	-	-	490~529	13
	-	-	-	-	530~569	14
	-	-	-	-	570~609	15
	-	-	-	-	610~649	16
	-	-	-	-	650~669	17
F	F=20	F=30		F=40		

M (# of mounting holes) for H16 type will be M x 2 since there are two rows of mounting holes.

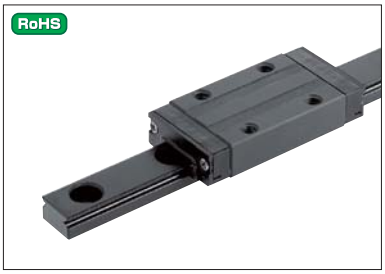
Medium and Heavy Load Type

H	24	28 · 30	33 · 36 · 40	42	No. of Mounting Holes M
L	101~131	-	-	-	2
	132~191	161~199	161~201	201~279	3
	192~251	200~259	202~261	281~343	4
	252~311	260~319	262~321	344~423	5
	312~371	320~379	322~381	424~503	6
	372~431	380~439	382~441	504~583	7
	432~491	440~499	442~501	584~663	8
	492~551	500~559	502~561	664~743	9
	552~611	560~619	562~621	744~823	10
	612~671	620~679	622~681	824~903	11
	672~731	680~739	682~741	904~983	12
	732~791	740~799	742~801	984~1063	13
	792~851	800~859	802~861	1064~1143	14
	852~911	860~919	862~921	1144~1223	15
	912~971	920~979	922~981	1224~1303	16
	972~1031	980~1039	982~1041	1304~1383	17
	1032~1091	1040~1099	1042~1101	1384~1463	18
	1092~1151	1100~1159	1102~1161	1464~1543	19
	1152~1211	1160~1219	1162~1221	1544~1623	20
	1212~1271	1220~1279	1222~1281	1624~1703	21
	1272~1331	1280~1339	1282~1341	1704~1783	22
	1332~1391	1340~1399	1342~1401	1784~1863	23
	1392~1451	1400~1459	1402~1461	1864~1943	24
	1452~1479	1460~1519	1462~1521	1944~1959	25
	-	1520~1579	1522~1581	-	26
	-	1580~1639	1582~1641	-	27
	-	1640~1699	1642~1701	-	28
	-	1700~1759	1702~1761	-	29
	-	1760~1819	1762~1821	-	30
	-	1820~1879	1822~1881	-	31
	-	1880~1939	1882~1941	-	32
	-	1940~1959	1942~1959	-	33
F	F=60			F=80	

About G Dimensions

		G
Miniature Type	Standard Rails	$G=\frac{L-(M-1)\times F}{2}$
	Wide Rails	
Medium and Heavy Load Type		

Linear Guides with LTBC



LTBC plating on linear guides:

Type: LTBC plating with fluoropolymer layer on top
Tchickness: 5μm thick.
Corrosion protection: Excelent rust prevention for long term period
Material benefits: Chemically deposited at low temperature without any change in material structure.
Peeling: The coating is resistant to cracking from extreme and repeated bending. Even hairpin-shaped bending won't cause cracks. Plating won't be exfoliated by repeat bending (Any superficial coating particles that may come off the rolling contact surfaces are mixed in with the grease and remain its lubricity).
Optical benefits: Less reflections (suitable for places where light reflections are undesirable).
(Note) Surface treatment will not be applied to mounting holes of rails and blocks of LTBC plated linear guide.

Explanation of LTBC Plated Model Types

For LTBC plated products, change the first letter of part numbers "S" to "R".

	[Standard]		[LTBC Plated Products]
(Ex.)	SSEB10-115	→	RSEB10-115
	SSEB16-270	→	RSEB16-270
	SSXR24-520	→	RXR24-520
	SSVR33-700	→	RSVR33-700

Table: LTBC Plated Miniature Linear Guides

Rails	Block Length	Block Type	Catalog Page	STKM				Stainless Steel			
				1 Block		2 Blocks		1 Block		2 Blocks	
				Selectable	Specified	Selectable	Specified	Selectable	Specified	Selectable	Specified
Standard	Standard	Standard	P.513	REB	REBL	RE2B	RE2BL	RSEB	RSEBL	RSE2B	RSE2BL
	Long	Standard	P.521	RELB	RELBL	REL2B	REL2BL	RSELB	RSELBL	RSEL2B	RSEL2BL
Wide	Standard	Standard	P.531	REBW	REBWL	RE2BW	RE2BWL	RSEBW	RSEBWL	RSE2BW	RSE2BWL
	Long	Standard	P.539	RELBW	RELBWL	REL2BW	REL2BWL	RSELBW	RSELBWL	RSEL2BW	RSEL2BWL

Table: LTBC Plated Medium and Heavy Load Linear Guides

Rails	Block Length	Block Type	Catalog Page	STKM				Stainless Steel			
				1 Block		2 Blocks		1 Block		2 Blocks	
				Selectable	Specified	Selectable	Specified	Selectable	Specified	Selectable	Specified
Standard	Medium Load	Standard	P.557•559	RVR	RVRL	RV2R	RV2RL	RSVR	RSVRL	RSV2R	RSV2RL
		With Dowel Holes	P.563	RVRN	RVRNL	RV2RN	RV2RNL	-			
		Wide (Through Holes)	P.559	RVW	RVWL	RV2W	RV2WL	-			
		Wide (Female Thread Holes)	P.559	RVWT	RVWTL	RV2WT	RV2WTL	-			
	Heavy Load	Standard	P.557•561	RXR	RXRL	RX2R	RX2RL	RSXR	RSXRL	RSX2R	RSX2RL
		With Dowel Holes	P.565	RXRN	RXRNL	RX2RN	RX2RNL	-			
		Wide (Through Holes)	P.561	RXW	RXWL	RX2W	RX2WL	-			
		Wide (Female Thread Holes)	P.561	RXWT	RXWTL	RX2WT	RX2WTL	-			

Price of LTBC (For LTBC plated products, add the price below to the unit price of Linear Guides.)

Part Number Type	H	L	€ Unit Price Blocks 1 pc.	Blocks 2 pcs.
Miniature Type Standard Rails (Page P.513•P.521)	8	40~55		
		56~70		
		71~85		
		86~100		
		101~115		
		116~130		
	10	35~75		
		76~95		
		96~115		
		116~135		
		136~155		
		156~175		
		176~195		
		196~215		
		216~235		
		236~255		
		256~275		
	13	45~95		
		96~120		
		121~145		
		146~170		
		171~195		
		196~220		
		221~245		
		246~270		
		271~295		
		296~320		
		321~345		
		346~370		
		371~395		
		396~420		
		421~445		
		446~470		
	16	70~150		
		151~190		
		191~230		
		231~270		
		271~310		
		311~350		
		351~390		
		391~430		
		431~470		
		471~510		
		511~550		
		551~590		
		591~630		
		631~670		
	20	100~200		
		201~220		
		221~280		
		281~340		
		341~400		
		401~460		
		461~520		
		521~580		
		581~640		
		641~700		

Not applicable to H6.

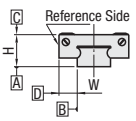
Part Number Type	H	L	€ Unit Price Blocks 1 pc.	Blocks 2 pcs.
Miniature Type Wide Rails (Page P.531)	9	50~110		
		111~140		
		141~170		
		171~200		
		201~230		
		231~260		
		261~290		
	12	50~110		
		111~140		
		141~170		
		171~200		
		201~230		
		231~260		
		261~290		
	14	70~150		
		151~190		
		191~230		
		231~270		
		271~310		
		311~350		
		351~390		
		391~430		
		431~470		
	16	70~150		
		151~190		
		191~230		
		231~270		
		271~310		
		311~350		
		351~390		
		391~430		
		431~470		
		471~510		
		511~550		
		551~590		
		591~630		
		631~670		

Not applicable to H6.5.

Part Number Type	H	L	€ Unit Price Blocks 1 pc.	Blocks 2 pcs.
Medium and Heavy Load Type (Page P.557•P.566)	24	100~220		
		221~280		
		281~340		
		341~400		
		401~460		
		461~520		
		521~580		
		581~640		
		641~700		
		701~760		
		761~820		
		821~880		
		881~940		
		941~1000		
	28	160~280		
		281~340		
		341~400		
		401~460		
		461~520		
		521~580		
		581~640		
		641~700		
		701~760		
		761~820		
		821~880		
		881~940		
		941~1000		
		1001~1120		
		1121~1240		
	33	160~280		
		281~340		
		341~400		
		401~460		
		461~520		
		521~580		
		581~640		
		641~700		
		701~760		
		761~820		
		821~880		
		881~940		
		941~1000		
		1001~1120		
		1121~1240		

H dimension 24 is available up to 1,000mm of L dimension.
For H28, L is available up to 1240mm.
For H33, L is available up to 1240mm.

Precision



Miniature Type

(μm)

- Standard Preload Type	High Grade
Height H Tolerance	+30 -20
Height H Pair Variation	15
Dimension Tolerance of Width W	±25
Pair Variation of Width W	20

Precisions of LTBC plated miniature linear guides have been revised as above. Precision of Medium and Heavy Load Type is the same as that of Standard Type.
The sliding resistance is higher than that of regular type. Approx. 1.2N or less.

Order Example

Part Number	-	L
REB13	-	270
REB8L	-	70 (L Type Greased)
REB8G	-	70 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Price

For LTBC plated products, add the price in the above table to the unit price of Linear Guides. Please refer to each product page for quantity discount rates.

(Ex.) For REB13-295,

Standard	SEB13-295	51,10 EUR
Price of LTBC		48,00 EUR
	Total	99,10 EUR

Days to Ship

13 Days

Alterations

Confirm the details of alteration on each page.

Miniature Linear Guides

-Short Blocks · Light Preload, Interchangeable-Slight Clearance-

■Features: Short block type of industry-standard spec. 20% more compact than standard blocks.

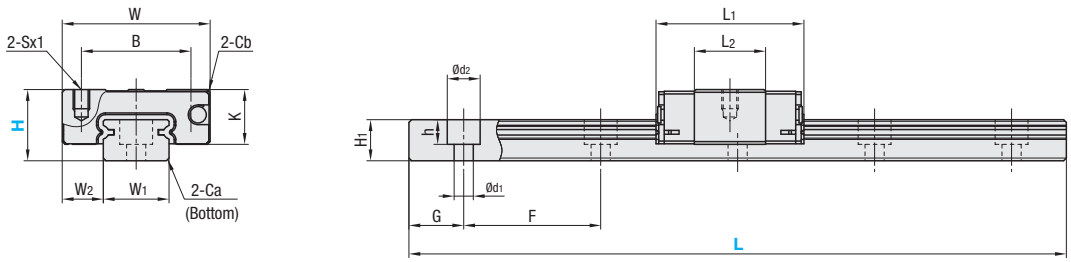
RoHS



Ⓨ Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Ⓜ Material Ⓗ Hardness	Type: Light Preload / High Grade / Sets	Type: Interchangeable-Slight Clearance / Standard Grade / Sets	Type: Interchangeable-Slight Clearance / Standard Grade / Blocks	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBS	SEBSZ	SZSB	Selectable	1
	SE2BS	SE2BSZ			2
	SEBSL	SEBSLZ		Specified	1
	SE2BSL	SE2BSLZ			2
Stainless Steel (1.4125/ X105CrMo17 Material) 56HRC~	SSEBS	SSEBSZ	SSZSB	Selectable	1
	SSE2BS	SSE2BSZ			2
	SSEBSL	SSEBSLZ		Specified	1
	SSE2BSL	SSE2BSLZ			2

Heat Resistant Temperature: -20~80°C



■Precautions for Use

Ⓨ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501
Ⓨ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
Ⓨ Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.
Ⓨ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
Ⓨ Rails cannot be connected to be extended.
Ⓨ Running parallelism is the value measured after the rail is mounted.

■Accessories

- H8 comes with cap screws (M2x6).

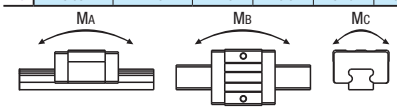
■Others

- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

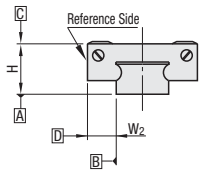
Part Number: Type				H	Block Dimensions: W ±0.05	L1	B	Sxℓ	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block)	(2 Blocks)	Stainless Steel (1 Block)	(2 Blocks)															
SEBS	SE2BS	SSEBS	SSE2BS	8	17	19.6	12	M2x2.5	9.6	6.5	0.3	7	5	4.7	0.3	2.4x4.2x2.3	15	5
SEBSZ	SE2BSZ	SSEBSZ	SSE2BSZ	10	20	22.9	15	M3x3	11.9	7.8	0.3	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
SEBSL	SE2BSL	SSEBSL	SSE2BSL	13	27	27	20	M3x3.5	13	10	0.5	12	7.5	7.5	0.5	3.5x6x4.5	25	10
SEBSLZ	SE2BSLZ	SSEBSLZ	SSE2BSLZ	16	32	32.7	25	M3x4	17.7	12	0.5	15	8.5	9.5	0.5	3.5x6x4.5	40	15
Blocks																		
SZSB	SSZSB																	

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N・m	MB N・m	MC N・m	Mass: Blocks kg	Guide Rails kg/m
8	0.79	1.27	1.9	1.6	4.6	0.008	0.19
10	1.16	1.68	3.1	2.6	7.9	0.015	0.31
13	1.63	2.38	5.2	4.4	14.8	0.025	0.61
16	3.08	4.23	12.3	10.3	32.6	0.05	1.02



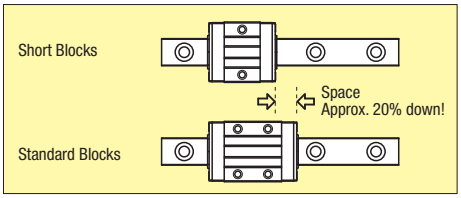
■Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W2 Tolerance	±25	±25
Width W2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to P.501	
Running Parallelism of surf. D against surf. B		

ex



CAD Data

Order Example

Part Number	-	L
SSE2BS10	-	275
SSE2BS10L	-	175 (L Type Greased)
SSE2BS10G	-	175 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days
6 Days

Express A | 8,00 EUR / piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

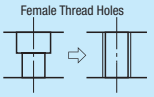
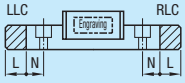
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (MC · RLC · LLC)
SSE2BSL16 - 450 - MC
MC only | 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. ⊗Express Serviceis not available. H: 8 / 10 / 13 / 16 — MC / M3 / M4 / M5	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H: 10 / 13 / 16 — L Cut: 2.5 / 5 / 10 — N: 5. ⊗Applicable to Selectable Type only. ⊗Overall length will be shorter by cutting. ⊗Not applicable to H8. ⊗Not applicable to H10, H35 and H13, L45.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBS	SSEBS	SEBSZ	SSEBSZ	SE2BS	SSE2BS	SE2BSZ	SSE2BSZ
8	40								
	55								
	70								
	85								
	100								
	115								
	130								
10	35								
	55								
	75								
	95								
	115								
	135								
	155								
	175								
	195								
	215								
	235								
	255								
	275								
13	45								
	70								
	95								
	120								
	145								
	170								
	195								
	220								
	245								
	270								
	295								
	320								
	345								
	370								
	395								
	420								
	445								
	470								
16	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
	510								
	550								
	590								
	630								
	670								

H	L Specified (1mm Increment)	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBSL	SSEBSL	SEBSLZ	SSEBSLZ	SE2BSL	SSE2BSL	SE2BSLZ	SSE2BSLZ
8	41~54								
	56~69								
	71~84								
	86~99								
	101~114								
	116~129								
10	36~54								
	56~74								
	76~94								
	96~114								
	116~134								
	136~154								
	156~174								
	176~194								
	196~214								
	216~234								
	236~254								
	256~274								
13	46~69								
	71~94								
	96~119								
	121~144								
	146~169								
	171~194								
	196~219								
	221~244								
	246~269								
	271~294								
	296~319								
	321~344								
	346~369								
	371~394								
	396~419								
	421~444								
	446~469								
16	71~109								
	111~149								
	151~189								
	191~229								
	231~269								
	271~309								
	311~349								
	351~389								
	391~429								
	431~469								
	471~509								
	511~549								
	551~589								
	591~629								
	631~669								

Block Price (1pc)		
H	€ Unit Price	
	SZSB	SSZSB
8		
10		
13		
16		

For rail unit price for Interchangeable-Slight Clearance Type, see P.516

Miniature Linear Guides

- Short Blocks with Dowel Holes · Light Preload-

■Features: MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability.

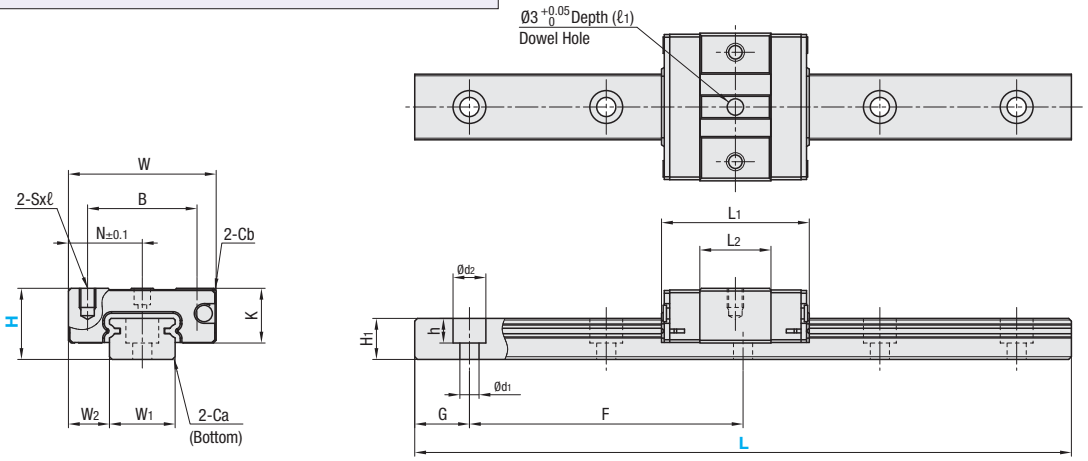
RoHS



※Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

M Material H Hardness	Type High Grade	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBSN	Selectable	1
	SE2BSN		2
	SEBSNL	Specified	1
	SE2BSNL		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSEBSN	Selectable	1
	SSE2BSN		2
	SSEBSNL	Specified	1
	SSE2BSNL		2

Heat Resistant Temperature: -20~80°C



■Precautions for Use

※Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501
※Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
※Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
※Rails cannot be connected to be extended.
※Running parallelism is the value measured after the rail is mounted.

■Accessories

- H8 comes with cap screws (M2x6).

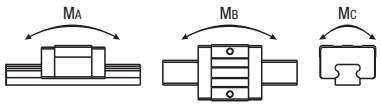
■Others

- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

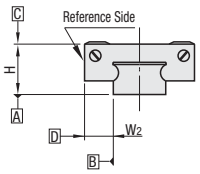
Part Number					Block Dimensions							Dowel Hole Dim.		Guide Rail Dimensions						
Type					H	W ±0.05	L1	B	Sxℓ	L2	K	Cb	N	(ℓ1)	W1 ± 0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
					8	17	19.6	12	M2x2.5	9.6	6.5	0.3	8.5	2	7	5	4.7	0.3	2.4x4.2x2.3	15	5
					10	20	22.9	15	M3x3	11.9	7.8	0.3	10	2.5	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
JIS STKM (1 Block) SEBSN SEBSNL	(2 Blocks) SE2BSN	SE2BSNL	Stainless Steel (1 Block) SSEBSN SSEBSNL	(2 Blocks) SSE2BSN SSE2BSNL	13	27	27	20	M3x3.5	13	10	0.5	13.5	3	12	7.5	7.5	0.5	3.5x6x4.5	25	10
					16	32	32.7	25	M3x4	17.7	12	0.5	16	4	15	8.5	9.5	0.5	3.5x6x4.5	40	15

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment MA N·m	Allowable Static Moment MB N·m	Allowable Static Moment MC N·m	Mass Blocks kg	Mass Guide Rails kg/m
8	0.79	1.27	1.9	1.6	4.6	0.008	0.19
10	1.16	1.68	3.1	2.6	7.9	0.015	0.31
13	1.63	2.38	5.2	4.4	14.8	0.025	0.61
16	3.08	4.23	12.3	10.3	32.6	0.05	1.02



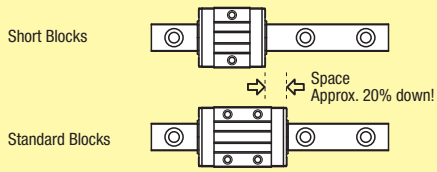
■Preload and Accuracy Standards



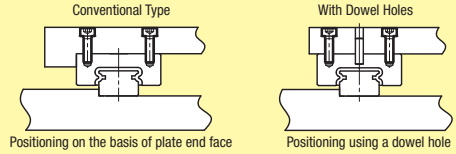
Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±25
Width W2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

EX



-Installation Example-



CAD Data

Order Example

Part Number	-	L
SSE2BSN10	-	275
SSE2BSN10L	-	175 (L Type Greased)
SSE2BSN10G	-	175 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days — Express A — 8,00 EUR / piece — P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

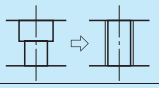
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number	-	L	-	(MC · RLC · LLC)
SSE2BSN16	-	430	-	MC

MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes rail mounting holes from counterbored holes to tapped holes. ⊗Express Serviceis not available. H: MC; 8: M3; 10, 13: M4; 16: M5	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H: 10, 13, 16; L Cut: 2.5, 5, 10; N: 5. ⓥApplicable to Selectable Type only. ⓥOverall length will be shorter by cutting. ⊗Not applicable to H8. ⊗Not applicable to H10, H35 and H13, L45.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price			
		1 Block		2 Blocks	
		SEBSN	SSEBSN	SE2BSN	SSE2BSN
8	40			⊗	⊗
	55				
	70				
	85				
	100				
	115				
	130				
10	35			⊗	⊗
	55			⊗	⊗
	75			⊗	⊗
	95				
	115				
	135				
	155				
	175				
	195				
	215				
	235				
	255				
	275				
13	45			⊗	⊗
	70			⊗	⊗
	95			⊗	⊗
	120				
	145				
	170				
	195				
	220				
	245				
	270				
	295				
	320				
	345				
	370				
	395				
	420				
	445				
	470				
16	70			⊗	⊗
	110			⊗	⊗
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				

H	L Specified (1mm Increment)	€ Unit Price			
		1 Block		2 Blocks	
		SEBSNL	SSEBSNL	SE2BSNL	SSE2BSNL
8	41~54			⊗	⊗
	56~69				
	71~84				
	86~99				
	101~114				
	116~129				
10	36~54			⊗	⊗
	56~74			⊗	⊗
	76~94				
	96~114				
	116~134				
	136~154				
	156~174				
	176~194				
	196~214				
	216~234				
	236~254				
	256~274				
13	46~69			⊗	⊗
	71~94			⊗	⊗
	96~119			⊗	⊗
	121~144				
	146~169				
	171~194				
	196~219				
	221~244				
	246~269				
	271~294				
	296~319				
	321~344				
	346~369				
	371~394				
	396~419				
	421~444				
	446~469				
16	71~109			⊗	⊗
	111~149			⊗	⊗
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				

Miniature Linear Guides
-Standard Block · Light Preload-

■Features: The most basic type among all industry standard specifications. Select the block from standard types.



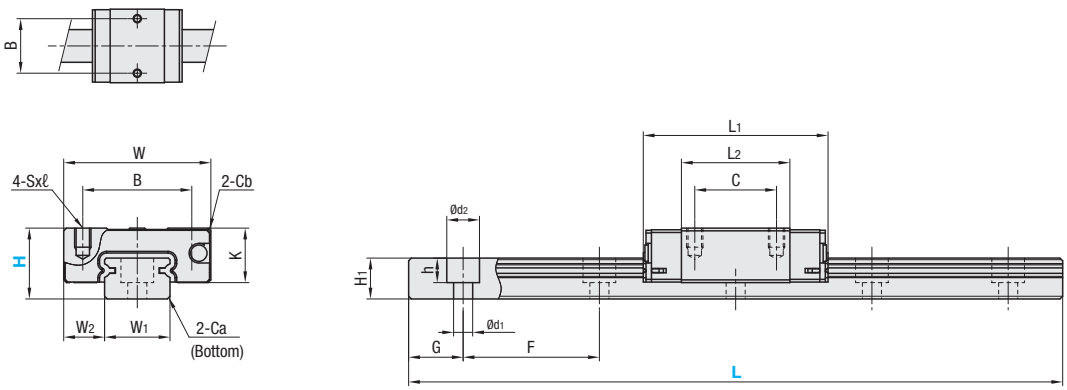
(No Side Seal Type)

Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Material / Hardness	Type: Precision Grade – Side Seals	Type: High Grade – Side Seals	Type: High Grade – No Side Seal	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBV	SEB	SEB-N	Selectable	1
	SE2BV	SE2B	SE2B-N		2
	SEBLV	SEBL	SEBL-N	Specified	1
	SE2BLV	SE2BL	SE2BL-N		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSEBV	SSEB	SSEB-N	Selectable	1
	SSE2BV	SSE2B	SSE2B-N		2
	SSEBLV	SSEBL	SSEBL-N	Specified	1
	SSE2BLV	SSE2BL	SSE2BL-N		2

Heat Resistant Temperature: -20~80°C

H6 Type



■Precautions for Use
- Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- No Side Seal Type is not equipped with side seals to prevent foreign object intrusions, thus the product cannot be used in airborne particle contaminated environments.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

■Accessories
- H6 comes with No. 0, Class 1 Phillips button head screws (M2x6).
- H8 comes with cap screws (M2x6).

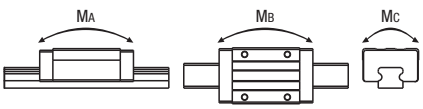
■Others
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

Part Number: Type	H	Block Dimensions: W ±0.05	L_1	B	C	Sxℓ	L_2	K	Cb	Guide Rail Dimensions: W_1 ±0.005	W_2	H_1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SEB / SEBV / SEBL / SEBLV; (2 Blocks) SE2B / SE2BV / SE2BL / SE2BLV; Stainless Steel (1 Block) SSEB / SSEBV / SSEBL / SSEBLV; (2 Blocks) SSE2B / SSE2BV / SSE2BL / SSE2BLV; No Side Seal SEB-N / SE2B-N / SEBL-N / SE2BL-N / SSEB-N / SSE2B-N / SSEBL-N / SSE2BL-N	6	12	17.4 (17)	8	-	M2x1.5	9.7	4.5	0.3	5	3.5	4	0.3	2.4x3.5x1	15	5
	8	17	23.6 (22.8)	12	8	M2x2.5	13.6	6.5	0.3	7	5	4.7	0.3	2.4x4.2x2.3	15	5
	10	20	30 (29.2)	15	10	M3x3	19	7.8	0.3	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
	13	27	33.9	20	15	M3x3.5	19.9	10	0.5	12	7.5	7.5	0.5	3.5x6x4.5	25	10
	16	32	42.4	25	20	M3x4	27.4	12	0.5	15	8.5	9.5	0.5	3.5x6x4.5	40	15
	20	40	50	30	25	M4x6	34.6	15	0.5	20	10	11	0.5	6x9.5x5.5	60	20

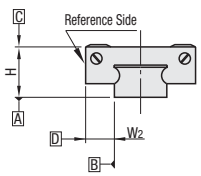
Stainless steel only for H6. H6 has no precision grade. No-side seal option is available for H6, H8 and H10 only.
Values in ( ) are for No Seal Type.

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N·m	MB N·m	MC N·m	Mass: Blocks kg	Guide Rails kg/m
6	0.3	0.6	0.8	0.8	1.5	0.004	0.13
8	0.9	1.5	4.1	4.1	5.2	0.01	0.19
10	1.5	2.5	5.1	5.1	10.2	0.02	0.31
13	2.2	3.3	8.8	9.5	16.1	0.04	0.61
16	3.6	5.4	21.6	23.4	39.6	0.06	1.02
20	5.2	8.5	48.4	48.4	86.4	0.12	1.65



■Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	Precision Grade	High Grade
Height H Tolerance	±10	±20
Height H Pair Variation	7	15
Width W_2 Tolerance	±15	±25
Width W_2 Pair Variation	10	20
Running Parallelism of surf. C against surf. A	Refer to P.501	
Running Parallelism of surf. D against surf. B		

■Sliding Resistance (N)

Height (H)	Standard	No Side Seal
6	0.3	0.2
8	0.3	0.2
10	0.5	0.4

Data above are reference values.

Sliding resistance for No Side Seal Type is smaller than that for Standard Type.

CAD Data

Order Example

Part Number	-	L
SEB10	-	275
RSEBL10	-	70 (LTBC)
SEBL10L	-	70 (L Type Greased)
SEBL10G	-	70 (G Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days
6 Days

Express A 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Express Serviceis not available for No Side Seal Type.

LTBC Plated Products (Applicable to High Grade Type only.)

13 Days

Change the first letter "S" of High Grade Type to "R".

For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to High Grade Type price.

Price

Volume Discount (Round down to one Cent.) P.87

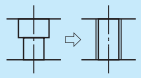
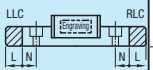
Quantity	1~6	7 or 8	9 or 10	11~29
Discount Rate	€ Unit Price	5%	10%	18%

For Alteration WC of more than 12 pcs., please request a quotation. For Days to Ship of No Side Seal Typeof more than 11 pcs., please request a quotation.

Alterations

Part Number	-	L	-	(MC · RLC · LLC · WC)
SEB16	-	430	-	RLC

MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes rail mounting holes from counterbored holes to tapped holes. H: 6 MC; 8 M2.6; 10 M3; 13 M4; 16 M5; 20 M6. Express Serviceis not a vailable.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H / L Cut / N: 10 / 2.5; 13 / 5; 16 / 10; 20 / 15; N = 5. Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H6 and H8. Not applicable to H10, L35 and H13, L45.	5,00
	Right End Cut RLC		5,00
Parallel Use of 2 Rails	WC	Make pair variation of Height H between 2 rails within 15µm. Rails are shipped in pairs. Specify the actual rail (even) number to order, not "pairs". Applicable to High Grade Type only. 3,00 EUR will be added as an alteration fee for a rail. Express Serviceis not available. Not applicable to low temperature chrome plated products.	3,00

H	Selectable L	€ Unit Price 1 Block SEB SEB-N	1 Block SSEB SSEB-N	2 Blocks SE2B SE2B-N	2 Blocks SSE2B SSE2B-N
6	25				
	40				
	55				
	70				
	85				
	100				
8	40				
	55				
	70				
	85				
	100				
	115				
	130				
10	35				
	55				
	75				
	95				
	115				
	135				
	155				
	175				
	195				
	215				
	235				
	255				
	275				
13	45				
	70				
	95				
	120				
	145				
	170				
	195				
	220				
	245				
	270				
	295				
	320				
	345				
	370				
	395				
	420				
	445				
	470				
16	70				
	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				
20	100				
	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				

H	L Specified (1mm Increment)	€ Unit Price 1 Block SEBL SEBL-N	1 Block SSEBL SSEBL-N	2 Blocks SE2BL SE2BL-N	2 Blocks SSE2BL SSE2BL-N
6	26~39				
	41~54				
	56~69				
	71~84				
	86~99				
8	41~54				
	56~69				
	71~84				
	86~99				
	101~114				
	116~129				
10	36~54				
	56~74				
	76~94				
	96~114				
	116~134				
	136~154				
	156~174				
	176~194				
	196~214				
	216~234				
	236~254				
	256~274				
13	46~69				
	71~94				
	96~119				
	121~144				
	146~169				
	171~194				
	196~219				
	221~244				
	246~269				
	271~294				
	296~319				
	321~344				
	346~369				
	371~394				
	396~419				
	421~444				
	446~469				
16	71~109				
	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				
20	101~159				
	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				

Unit price for Precision Type is the price in Table x1.2 (round off to one Cent).
(Ex.) For SEBV10-135, 35,80x1.2=43,00 EUR

H6 has no precision grade.

No-side seal option is available for H6, 8 and 10. H6 is for stainless steel only.

NEW

Miniature Linear Guides

-Standard Block · Interchangeable, Slight Clearance-

■Features: The most basic type among all industry standard specifications. Select the block from standard types.

RoHS

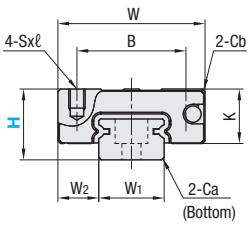


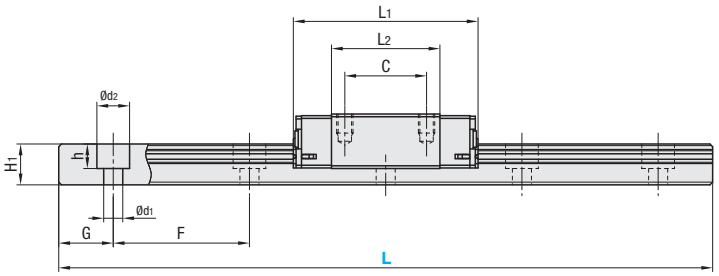
(No Side Seal Type)

Ⓣ Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.

Material / Hardness	Type: Standard Grade: Sets: Side Seals	Type: Standard Grade: Sets: No Side Seal	Type: Standard Grade: Blocks	Type: Standard Grade: Rails	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBZ	SEBZ-N	SEZB SEZB-N	STZL	Selectable	1
	SE2BZ	SE2BZ-N				2
	SEBLZ	SEBLZ-N		STZLF	Specified	1
	SE2BLZ	SE2BLZ-N				2
Stainless Steel (1.4125/ X105CrMo17 Material) 56HRC~	SSEBZ	SSEBZ-N	SZB SZB-N	SZL	Selectable	1
	SSE2BZ	SSE2BZ-N				2
	SSEBLZ	SSEBLZ-N		SZLF	Specified	1
	SSE2BLZ	SSE2BLZ-N				2

Heat Resistant Temperature: -20~80°C





■Precautions for Use

Ⓣ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501
Ⓣ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
Ⓣ No Side Seal Type is not equipped with side seals to prevent foreign object intrusions, thus the product cannot be used in airborne particle contaminated environments.
Ⓣ Rails cannot be connected to be extended.
Ⓣ Running parallelism is the value measured after the rail is mounted.

■Accessories

- H8 comes with cap screws (M2x6).

■Others

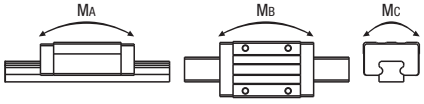
- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SEBZ SEBLZ / (2 Blocks) SE2BZ SE2BLZ / Stainless Steel (1 Block) SSEBZ SSEBLZ / (2 Blocks) SSE2BZ SSE2BLZ	8	17	23.6 (22.8)	12	8	M2x2.5	13.6	6.5	0.3	7	5	4.7	0.3	2.4x4.2x2.3	15	5
	10	20	30 (29.2)	15	10	M3x3	19	7.8	0.3	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
No Side Seal SEBZ-N SEBLZ-N / SE2BZ-N SE2BLZ-N / SSEBZ-N SSEBLZ-N / SSE2BZ-N SSE2BLZ-N	13	27	33.9	20	15	M3x3.5	19.9	10	0.5	12	7.5	7.5	0.5	3.5x6x4.5	25	10
Rails STZL STZLF / SZL SZLF	16	32	42.4	25	20	M3x4	27.4	12	0.5	15	8.5	9.5	0.5	3.5x6x4.5	40	15
Blocks SEZB SZB / SEZB-N SZB-N	20	40	50	30	25	M4x6	34.6	15	0.5	20	10	11	0.5	6x9.5x5.5	60	20

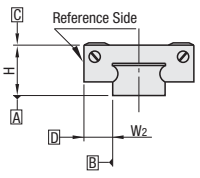
Ⓣ No side seal option is available for H8 and 10 only. Ⓣ Values in ( ) are for No Seal Type.

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N·m	MB N·m	MC N·m	Mass: Blocks kg	Guide Rails kg/m
8	0.9	1.5	4.1	4.1	5.2	0.01	0.19
10	1.5	2.5	5.1	5.1	10.2	0.02	0.31
13	2.2	3.3	8.8	9.5	16.1	0.04	0.61
16	3.6	5.4	21.6	23.4	39.6	0.06	1.02
20	5.2	8.5	48.4	48.4	86.4	0.12	1.65



■Preload and Accuracy Standards



Radial Clearance (μm)	
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	Standard Grade
Height H Tolerance	±20
Height H Pair Variation	40
Width W2 Tolerance	±25
Width W2 Pair Variation	40
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

■Sliding Resistance (N)

Height (H)	Standard	No Side Seal
8	0.3	0.2
10	0.5	0.4

Ⓣ Data above are reference values.

Sliding resistance for No Side Seal Type is smaller than that for Standard Type.

CAD Data

Order Example

Part Number	-	L
SSEBZ10	-	75
SZL10	-	75
SZB10		
SSEBZ10L	-	75 (L Type Greased)
SSEBZ10G	-	75 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days	Express A	8,00 EUR / piece	P. 88
6 Days			

A Express Charge of 21,60 EUR for 3 or more identical pieces.
Express Serviceis not available for No Side Seal Type.

Price

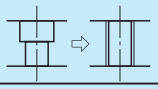
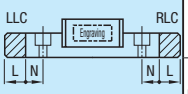
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10	11~29
Discount Rate	€ Unit Price	5%	10%	18%

For Days to Ship of No Side Seal Typeof more than 11 pcs., please request a quotation.

Alterations

Part Number - L - (MC · RLC · LLC)
SEBZ13 - 95 - RLC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes rail mounting holes from counterbored holes to tapped holes. Express Serviceis not available. H: 8, 10, 13, 16, 20 / MC: M3, M4, M4, M5, M6	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC H: 10, 13, 16, 20 / L Cut: 2.5, 5, 10, 15 / N: 5 Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H8. Not applicable to H10, H35 and H13, L45.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price							
		Sets				Rails		Blocks	
		1 Block		2 Blocks					
		SEBZ SEBZ-N	SSEBZ SSEBZ-N	SE2BZ SE2BZ-N	SSE2BZ SSE2BZ-N	STZL	SZL	SEZB SEZB-N	SZB SZB-N
8	40								
	55								
	70								
	85								
	100								
	115								
	130								
10	35								
	55								
	75								
	95								
	115								
	135								
	155								
	175								
	195								
	215								
	235								
	255								
	275								
13	45								
	70								
	95								
	120								
	145								
	170								
	195								
	220								
	245								
	270								
	295								
	320								
	345								
	370								
	395								
	420								
	445								
	470								
16	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
	510								
	550								
	590								
	630								
	670								
20	100								
	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								

H	L Specified (1mm Increment)	€ Unit Price					
		Sets				Rails	
		1 Block		2 Blocks			
		SEBLZ SEBLZ-N	SSEBLZ SSEBLZ-N	SE2BLZ SE2BLZ-N	SSE2BLZ SSE2BLZ-N	STZLF	SZLF
8	41~54						
	56~69						
	71~84						
	86~99						
	101~114						
	116~129						
10	36~54						
	56~74						
	76~94						
	96~114						
	116~134						
	136~154						
	156~174						
	176~194						
	196~214						
	216~234						
	236~254						
	256~274						
13	46~69						
	71~94						
	96~119						
	121~144						
	146~169						
	171~194						
	196~219						
	221~244						
	246~269						
	271~294						
	296~319						
	321~344						
	346~369						
	371~394						
	396~419						
	421~444						
	446~469						
16	71~109						
	111~149						
	151~189						
	191~229						
	231~269						
	271~309						
	311~349						
	351~389						
	391~429						
	431~469						
	471~509						
	511~549						
	551~589						
	591~629						
	631~669						
20	101~159						
	161~219						
	221~279						
	281~339						
	341~399						
	401~459						
	461~519						
	521~579						
	581~639						
	641~699						

No side seal option is available for H8 and 10 only.

Miniature Linear Guides

-Standard Blocks with Dowel Holes · Light Preload, Interchangeable-Slight Clearance-

Features: MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability.

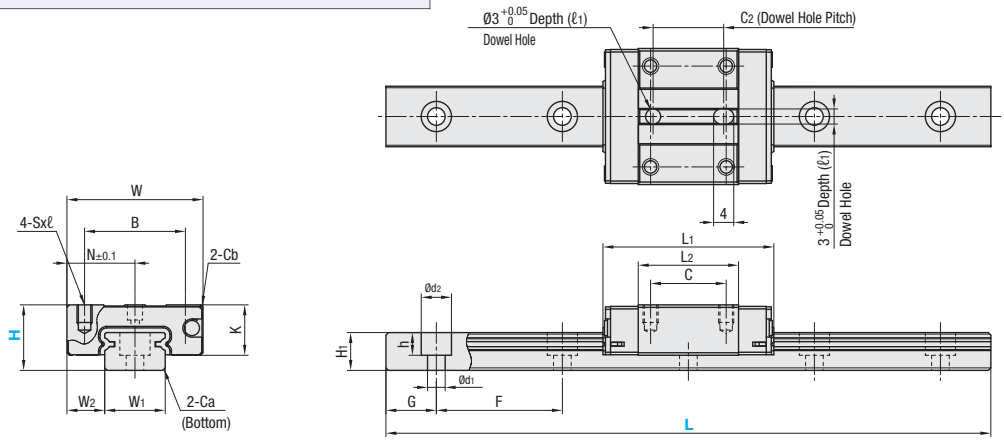
RoHS



Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Material / Hardness	Type: Light Preload – High Grade – Sets	Type: Interchangeable-Slight Clearance – Standard Grade – Sets	Type: Interchangeable-Slight Clearance – Standard Grade – Blocks	L Dim.	Blocks Qty.
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBN	SEBNZ	SZNB	Selectable	1
	SE2BN	SE2BNZ			2
	SEBNL	SEBNLZ		Specified	1
	SE2BNL	SE2BNLZ			2
Stainless Steel (1.4125/ X105CrMo17 Material) 56HRC~	SSEBN	SSEBNZ	SSZNB	Selectable	1
	SSE2BN	SSE2BNZ			2
	SSEBNL	SSEBNLZ		Specified	1
	SSE2BNL	SSE2BNLZ			2

Heat Resistant Temperature: -20~80°C



Precautions for Use

- Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P. 501
- Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Accessories

- H8 comes with cap screws (M2x6).

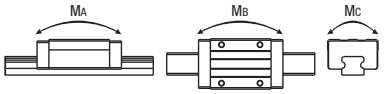
Others

- For G dimensions of L Dimension Configurable Type, refer to P. 507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

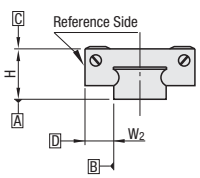
Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Dowel Hole Dim.: N	C2	(ℓ1)	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SEBN, SEBNL, SEBNZ, SEBNLZ / (2 Blocks) SE2BN, SE2BNL, SE2BNZ, SE2BNLZ / Stainl. Steel (1 Block) SSEBN, SSEBNL, SSEBNZ, SSEBNLZ / (2 Blocks) SSE2BN, SSE2BNL, SSE2BNZ, SSE2BNLZ / Blocks SZNB, SSZNB	8	17	23.6	12	8	M2x2.5	13.6	6.5	0.3	8.5	8	2	7	5	4.7	0.3	2.4x4.2x2.3	15	5
	10	20	30	15	10	M3x3	19	7.8	0.3	10	10	2.5	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
	13	27	33.9	20	15	M3x3.5	19.9	10	0.5	13.5	14	3	12	7.5	7.5	0.5	3.5x6x4.5	25	10
	16	32	42.4	25	20	M3x4	27.4	12	0.5	16	20	4	15	8.5	9.5	0.5	3.5x6x4.5	40	15
	20	40	50	30	25	M4x6	34.6	15	0.5	20	25	4	20	10	11	0.5	6x9.5x5.5	60	20

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N・m	MB N・m	MC N・m	Mass: Blocks kg	Guide Rails kg/m
8	0.9	1.5	4.1	4.1	5.2	0.01	0.19
10	1.5	2.5	5.1	5.1	10.2	0.02	0.31
13	2.2	3.3	8.8	9.5	16.1	0.04	0.61
16	3.6	5.4	21.6	23.4	39.6	0.06	1.02
20	5.2	8.5	48.4	48.4	86.4	0.12	1.65



Preload and Accuracy Standards



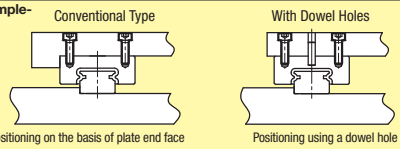
Radial Clearance (μm)	
Light Preload	-3~0
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W2 Tolerance	±25	±25
Width W2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to P. 501	
Running Parallelism of surf. D against surf. B		

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

ex

-Installation Example-



CAD Data

Order Example

Part Number	-	L
SEBN10	-	275
SSE2BNL10L	-	100 (L Type Greased)
SSE2BNL10G	-	100 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P. 507

Days to Ship

8 Days | 6 Days

Express A | 8,00 EUR / piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

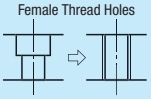
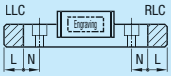
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number - L - (MC · RLC · LLC)
SEBN16 - 430 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. ⊗Express Service is not available. H: 8 10 13 16 20 / MC: M3 M4 M4 M5 M6	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (date on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC. H: 10 13 16 20 / L Cut: 2.5 5 10 15 / N: 5. ⓘApplicable to Selectable Type only. ⓘOverall length will be shorter by cutting. ⊗Not applicable to H8. ⊗Not applicable to H10, H35 and H13, L45.	5,00
	Right End Cut RLC		5,00

H	Select-able L	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBN	SSEBN	SEBNZ	SSEBNZ	SE2BN	SSE2BN	SE2BNZ	SSE2BNZ
8	40								
	55								
	70								
	85								
	100								
	115								
	130								
10	35								
	55								
	75								
	95								
	115								
	135								
	155								
	175								
	195								
	215								
	235								
	255								
	275								
13	45								
	70								
	95								
	120								
	145								
	170								
	195								
	220								
	245								
	270								
	295								
	320								
	345								
	370								
	395								
	420								
	445								
	470								
16	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
	510								
	550								
	590								
	630								
	670								
20	100								
	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								

H	L Specif. (1mm Increm.)	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBNL	SSEBNL	SEBNLZ	SSEBNLZ	SE2BNL	SSE2BNL	SE2BNLZ	SSE2BNLZ
8	41~54								
	56~69								
	71~84								
	86~99								
	101~114								
	116~129								
10	36~54								
	56~74								
	76~94								
	96~114								
	116~134								
	136~154								
	156~174								
	176~194								
	196~214								
	216~234								
	236~254								
	256~274								
13	46~69								
	71~94								
	96~119								
	121~144								
	146~169								
	171~194								
	196~219								
	221~244								
	246~269								
	271~294								
	296~319								
	321~344								
	346~369								
	371~394								
	396~419								
	421~444								
	446~469								
16	71~109								
	111~149								
	151~189								
	191~229								
	231~269								
	271~309								
	311~349								
	351~389								
	391~429								
	431~469								
	471~509								
	511~549								
	551~589								
	591~629								
	631~669								
20	101~159								
	161~219								
	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								

Block Price (1pc)		
H	€ Unit Price	
	SZNB	SSZNB
8		
10		
13		
16		
20		

For rail unit price for Interchangeable-Slight Clearance Type, see P.516

Miniature Linear Guides

-Wide Standard Blocks · Light Preload, Interchangeable-Slight Clearance-

■Features: Wide Block Type of MISUMI original specifications. Larger screw size has enhanced fastening strength compared to standard products.

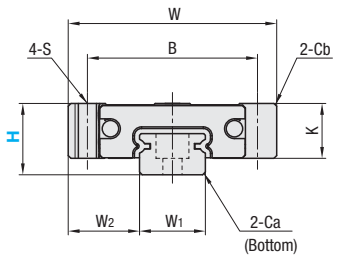
RoHS

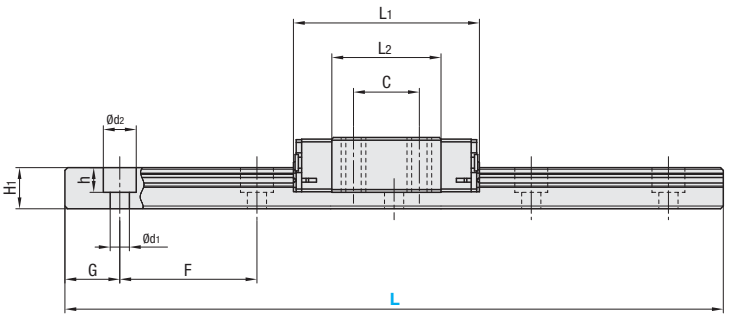


※Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Material / Hardness	Type: Light Preload, High Grade, Sets	Type: Interchangeable-Slight Clearance, Standard Grade, Sets	Type: Interchangeable-Slight Clearance, Standard Grade, Blocks	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBM	SEBMZ	SZMB	Selectable	1
	SE2BM	SE2BMZ			2
	SEBML	SEBMLZ		Specified	1
	SE2BML	SE2BMLZ			2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSEBM	SSEBMZ	SSZMB	Selectable	1
	SSE2BM	SSE2BMZ			2
	SSEBML	SSEBMLZ		Specified	1
	SSE2BML	SSE2BMLZ			2

Heat Resistant Temperature: -20~80°C





■Precautions for Use

- ※Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P501
- ※Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- ※Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.
- ※Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- ※Rails cannot be connected to be extended.
- ※Running parallelism is the value measured after the rail is mounted.

■Accessories

- H8 comes with cap screws (M2x6).

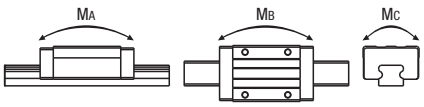
■Others

- For G dimensions of L Dimension Configurable Type, refer to P507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

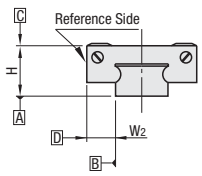
Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	S	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SEBM, SEBML, SEBMZ, SEBMLZ / (2 Blocks) SE2BM, SE2BML, SE2BMZ, SE2BMLZ / Stainless Steel (1 Block) SSEBM, SSEBML, SSEBMZ, SSEBMLZ / (2 Blocks) SSE2BM, SSE2BML, SSE2BMZ, SSE2BMLZ / Blocks SZMB, SSZMB	8	24	23.6	19	8	M3	13.6	6.5	0.3	7	8.5	4.7	0.3	2.4x4.2x2.3	15	5
	10	31	30	24	10	M4	19	7.8	0.3	9	11	5.5	0.3	3.5x6x3.5	20	7.5
	13	38	33.9	31	12	M4	19.9	10	0.5	12	13	7.5	0.5	3.5x6x4.5	25	10
	16	44	42.4	36	16	M4	27.4	12	0.5	15	14.5	9.5	0.5	3.5x6x4.5	40	15
	20	54	50	46	25	M5	34.6	15	0.5	20	17	11	0.5	6x9.5x5.5	60	20

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N・m	MB N・m	MC N・m	Mass: Blocks kg	Guide Rails kg/m
8	0.9	1.5	4.1	4.1	5.2	0.015	0.19
10	1.5	2.5	5.1	5.1	10.2	0.03	0.31
13	2.2	3.3	8.8	9.5	16.1	0.05	0.61
16	3.6	5.4	21.6	23.4	39.6	0.09	1.02
20	5.2	8.5	48.4	48.4	86.4	0.17	1.65



■Preload and Accuracy Standard

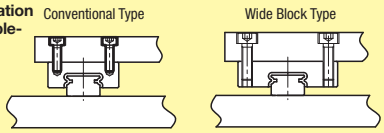


Radial Clearance (μm)	
Light Preload	-3~0
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W2 Tolerance	±25	±25
Width W2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to P501	
Running Parallelism of surf. D against surf. B		

ex

-Installation Example-



※One size larger screws have enhanced assembly and fastening strength.

CAD Data

Order Example

Part Number	-	L
SEBM10	-	275
SEBM10L	-	75 (L Type Greased)
SEBM10G	-	75 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days	6 Days
Express A	8,00 EUR / piece

P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

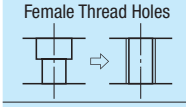
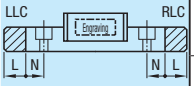
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (MC · RLC · LLC)
SE2BM16 - 430 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. ⊗Express Service is not available. H: 8 / 10 / 13 / 16 / 20 — MC: M3 / M4 / M4 / M5 / M6	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H / L Cut / N: 10 / 2.5 / 5; 13 / 5 / 5; 16 / 10 / 5; 20 / 15 / 5. ⓟApplicable to Selectable Type only. ⓟOverall length will be shorter by cutting. ⊗Not applicable to H8. ⊗Not applicable to H10, H35 and H13, L45.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBM	SSEBM	SEBMZ	SSEBMZ	SE2BM	SSE2BM	SE2BMZ	SSE2BMZ
8	40								
	55								
	70								
	85								
	100								
	115								
	130								
10	35								
	55								
	75								
	95								
	115								
	135								
	155								
	175								
	195								
	215								
	235								
	255								
	275								
13	45								
	70								
	95								
	120								
	145								
	170								
	195								
	220								
	245								
	270								
	295								
	320								
	345								
	370								
	395								
	420								
	445								
	470								
16	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
	510								
	550								
	590								
	630								
	670								
20	100								
	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								

H	L Specified (1mm Increment)	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBML	SSEBML	SEBMLZ	SSEBMLZ	SE2BML	SSE2BML	SE2BMLZ	SSE2BMLZ
8	41~54								
	56~69								
	71~84								
	86~99								
	101~114								
	116~129								
10	36~54								
	56~74								
	76~94								
	96~114								
	116~134								
	136~154								
	156~174								
	176~194								
	196~214								
	216~234								
	236~254								
	256~274								
13	46~69								
	71~94								
	96~119								
	121~144								
	146~169								
	171~194								
	196~219								
	221~244								
	246~269								
	271~294								
	296~319								
	321~344								
	346~369								
	371~394								
	396~419								
	421~444								
	446~469								
16	71~109								
	111~149								
	151~189								
	191~229								
	231~269								
	271~309								
	311~349								
	351~389								
	391~429								
	431~469								
	471~509								
	511~549								
	551~589								
	591~629								
	631~669								
20	101~159								
	161~219								
	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								

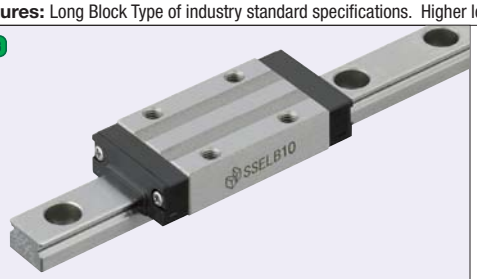
Block Price (1pc)		
H	€ Unit Price	
	SZMB	SSZMB
8		
10		
13		
16		
20		

ⓟFor rail unit price for Interchangeable-Slight Clearance Type, see P.516

Miniature Linear Guides
-Long Blocks, Light Preload-

■Features: Long Block Type of industry standard specifications. Higher load ratings and allowable moments than standard blocks.

RoHS

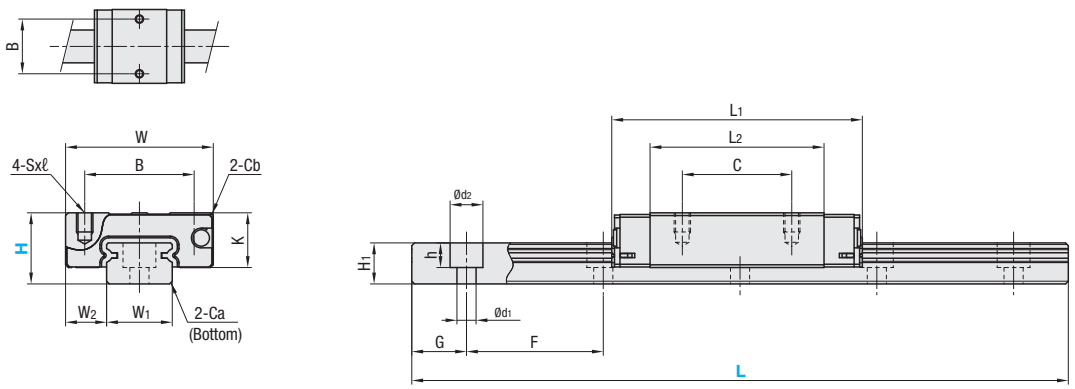


Ⓨ Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Ⓜ Material Ⓗ Hardness	Type		L Dimension	Blocks Quantity
	Precision Grade	High Grade		
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SELBV	SELB	Selectable	1
	SEL2BV	SEL2B		2
	SELBLV	SELBL	Specified	1
	SEL2BLV	SEL2BL		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBV	SSELB	Selectable	1
	SSEL2BV	SSEL2B		2
	SSELBLV	SSELBL	Specified	1
	SSEL2BLV	SSEL2BL		2

Heat Resistant Temperature: -20~80°C

H6 Type



■Precautions for Use

Ⓨ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
Ⓨ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
Ⓨ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
Ⓨ Rails cannot be connected to be extended.
Ⓨ Running parallelism is the value measured after the rail is mounted.

■Accessories

- H6 comes with No. 0, Class 1 Phillips button head screws (M2x6).
- H8 comes with cap screws (M2x6).

■Others

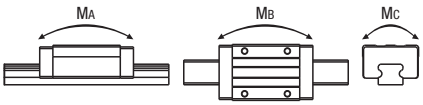
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

Part Number Type					H	Block Dimensions W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block)	(2 Blocks)	Stainless Steel (1 Block)	(2 Blocks)																	
SELB	SEL2B	SSELB	SSEL2B		6	12	21	8	-	M2x1.5	13.3	4.5	0.3	5	3.5	4	0.3	2.4x3.5x1	15	5
SELBL	SEL2BL	SSELBL	SSEL2BL		8	17	32	12	13	M2x2.5	22	6.5	0.3	7	5	4.7	0.3	2.4x4.2x2.3	15	5
SELBV	SEL2BV	SSELBV	SSEL2BV		10	20	40	15	16	M3x3	29	7.8	0.3	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
SELBLV	SEL2BLV	SSELBLV	SSEL2BLV		13	27	45.8	20	20	M3x3.5	31.8	10	0.5	12	7.5	7.5	0.5	3.5x6x4.5	25	10
					16	32	58.3	25	25	M3x4	43.3	12	0.5	15	8.5	9.5	0.5	3.5x6x4.5	40	15
					20	40	67.7	30	30	M4x6	52.3	15	0.5	20	10	11	0.5	6x9.5x5.5	60	20

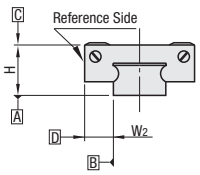
Ⓨ Stainless steel only for H6. Ⓨ H6 has no precision grade.

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA N·m	MB N·m	MC N·m	Mass Blocks kg	Guide Rails kg/m
6	0.6	1.0	1.8	1.8	2.3	0.005	0.13
8	1.6	2.4	7.5	7.5	9.0	0.016	0.19
10	2.2	3.7	12.3	12.3	13.0	0.03	0.31
13	3.5	5.3	24.5	26.4	32.3	0.06	0.61
16	5.8	8.7	57.8	62.6	67.6	0.10	1.02
20	7.2	13.5	80.7	80.7	138.2	0.18	1.65



■Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	Precision Grade	High Grade
Height H Tolerance	±10	±20
Height H Pair Variation	7	15
Width W2 Tolerance	±15	±25
Width W2 Pair Variation	10	20
Running Parallelism of surf. C against surf. A	Refer to P.501	
Running Parallelism of surf. D against surf. B		

CAD Data

Order Example

Part Number	-	L
SELB10	-	275
RELB10	-	75 (LTBC)
SELB10L	-	75 (L Type Greased)
SELB10G	-	75 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days — Express A — 8,00 EUR / piece — P.88
6 Days
A Express Charge of 21,60 EUR for 3 or more identical pieces.

- LTBC Plated Products (Applicable to High Grade Type only.)

13 Days
- Change the first letter "S" of High Grade Type to "R".
- For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to High Grade Type price.

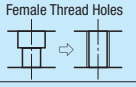
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (MC · RLC · LLC)
SEL2BL16 - 450 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. Express Serviceis not available. H: 6, 8, 10 / MC: M2.6, M3, M4; H: 13, 16, 20 / MC: M4, M5, M6	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC	5,00
	Right End Cut RLC	H: 10, 13, 16, 20 / L Cut: 2.5, 5, 10, 15 / N: 5. Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H6 and H8.	5,00

H	Selectable L	€ Unit Price 1 Block SELB	1 Block SSELB	2 Blocks SEL2B	2 Blocks SSEL2B
6	40	×		×	×
	55	×		×	×
	70	×		×	
	85	×		×	
	100	×		×	
8	40			×	×
	55			×	×
	70			×	×
	85				
	100				
	115				
	130				
10	55			×	×
	75			×	×
	95				
	115				
	135				
	155				
	175				
	195				
	215				
	235				
	255				
	275				
13	70			×	×
	95			×	×
	120				
	145				
	170				
	195				
	220				
	245				
	270				
	295				
	320				
	345				
	370				
	395				
	420				
	445				
	470				
16	110			×	×
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				
20	160			×	×
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				

H	L Specified (1mm Increment)	€ Unit Price 1 Block SELBL	1 Block SSELBL	2 Blocks SEL2BL	2 Blocks SSEL2BL
6	41~54	×		×	×
	56~69	×		×	×
	71~84	×		×	
	86~99	×		×	
8	41~54			×	×
	56~69			×	×
	71~84			×	×
	86~99				
	101~114				
	116~129				
10	56~74			×	×
	76~94			×	×
	96~114				
	116~134				
	136~154				
	156~174				
	176~194				
	196~214				
	216~234				
	236~254				
	256~274				
13	71~94			×	×
	96~119			×	×
	121~144				
	146~169				
	171~194				
	196~219				
	221~244				
	246~269				
	271~294				
	296~319				
	321~344				
	346~369				
	371~394				
	396~419				
	421~444				
	446~469				
16	111~149			×	×
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				
20	161~219			×	×
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				

Unit price for Precision Grade is High Grade Type price x 1.2 (round of to one Cent).
(Ex.) SEL2BV13-120: 65,20 EURx1.2=78,20
H6 has no precision grade.

Miniature Linear Guides
–Long Blocks / Interchangeable, Slight Clearance–

■Features: Long Block Type of industry standard specifications. Higher load ratings and allowable moments than standard blocks.

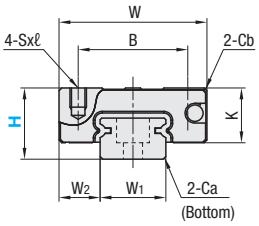
RoHS

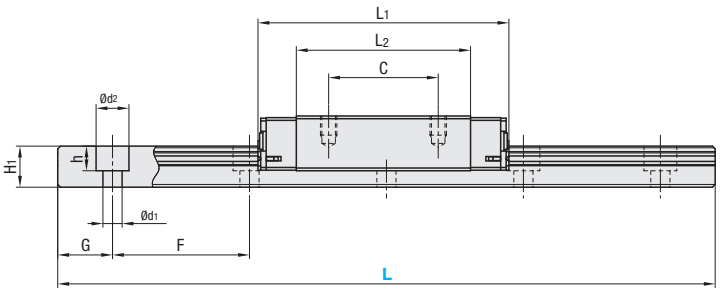


Ⓥ Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.

M Material H Hardness	Type: Standard Grade: Sets	Type: Standard Grade: Blocks	L Dimensions	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SELBZ	SZLB	Selectable	1
	SEL2BZ			2
	SELBLZ		Specified	1
	SEL2BLZ			2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBZ	SSZLB	Selectable	1
	SSEL2BZ			2
	SSELBLZ		Specified	1
	SSEL2BLZ			2

Heat Resistant Temperature: -20~80°C





■Precautions for Use
- Ⓥ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501
- Ⓥ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Ⓥ Rails cannot be connected to be extended.
- Ⓥ Running parallelism is the value measured after the rail is mounted.

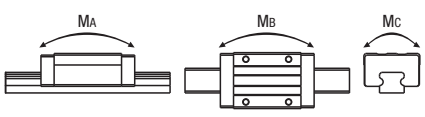
■Accessories
- H8 comes with cap screws (M2x6).

■Others
- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

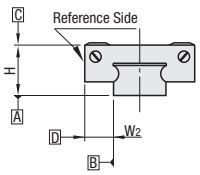
Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SELBZ SELBLZ; (2 Blocks) SEL2BZ SEL2BLZ; Stainless Steel (1 Block) SSELBZ SSELBLZ; (2 Blocks) SSEL2BZ SSEL2BLZ; Blocks SZLB SSZLB	8	17	32	12	13	M2x2.5	22	6.5	0.3	7	5	4.7	0.3	2.4x4.2x2.3	15	5
	10	20	40	15	16	M3x3	29	7.8	0.3	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
	13	27	45.8	20	20	M3x3.5	31.8	10	0.5	12	7.5	7.5	0.5	3.5x6x4.5	25	10
	16	32	58.3	25	25	M3x4	43.3	12	0.5	15	8.5	9.5	0.5	3.5x6x4.5	40	15
	20	40	67.7	30	30	M4x6	52.3	15	0.5	20	10	11	0.5	6x9.5x5.5	60	20

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N・m	MB N・m	MC N・m	Mass: Blocks kg	Guide Rails kg/m
8	1.6	2.4	7.5	7.5	9.0	0.016	0.19
10	2.2	3.7	12.3	12.3	13.0	0.03	0.31
13	3.5	5.3	24.5	26.4	32.3	0.06	0.61
16	5.8	8.7	57.8	62.6	67.6	0.10	1.02
20	7.2	13.5	80.7	80.7	138.2	0.18	1.65



■Preload and Accuracy Standards



Radial Clearance (μm)	
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	Standard Grade
Height H Tolerance	±20
Height H Pair Variation	40
Width W2 Tolerance	±25
Width W2 Pair Variation	40
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

CAD Data

Order Example

Part Number	-	L
SELBZ10	-	275
SELBZ10L	-	75 (L Type Greased)
SELBZ10G	-	75 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

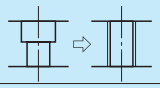
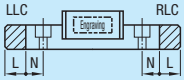
8 Days

Express A 8,00 EUR / piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number - L - (MC · RLC · LLC)
SEL2BZ16 - 430 - MC - RLC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. Express Service is not available. H: 8, 10, 13, 16, 20 / MC, M3, M4, M5, M6	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC	5,00
	Righ End Cut RLC	H: 10, 13, 16, 20 / L Cut: 2.5, 5, 10, 15 / N: 5 Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H8.	5,00

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

H	Selectable L	€ Unit Price: Sets: 1 Block SELBZ	1 Block SSELBZ	2 Blocks SEL2BZ	2 Blocks SSEL2BZ	Blocks SZLB	Blocks SSZLB
8	40						
	55						
	70						
	85						
	100						
	115						
	130						
10	55						
	75						
	95						
	115						
	135						
	155						
	175						
	195						
	215						
	235						
	255						
	275						
13	70						
	95						
	120						
	145						
	170						
	195						
	220						
	245						
	270						
	295						
	320						
	345						
	370						
	395						
	420						
	445						
	470						
16	110						
	150						
	190						
	230						
	270						
	310						
	350						
	390						
	430						
	470						
	510						
	550						
	590						
	630						
	670						
20	160						
	220						
	280						
	340						
	400						
	460						
	520						
	580						
	640						
	700						

H	L Specified (1mm Increment)	€ Unit Price: 1 Block SELBLZ	1 Block SSELBLZ	2 Blocks SEL2BLZ	2 Blocks SSEL2BLZ
8	41~54				
	56~69				
	71~84				
	86~99				
	101~114				
	116~129				
10	56~74				
	76~94				
	96~114				
	116~134				
	136~154				
	156~174				
	176~194				
	196~214				
	216~234				
	236~254				
	256~274				
13	71~94				
	96~119				
	121~144				
	146~169				
	171~194				
	196~219				
	221~244				
	246~269				
	271~294				
	296~319				
	321~344				
	346~369				
	371~394				
	396~419				
	421~444				
	446~469				
16	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				
20	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				

For rail unit price for Interchangeable-Slight Clearance Type, see P.516

Miniature Linear Guides

-Long Blocks with Dowel Holes · Light Preload-

Features: MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability.

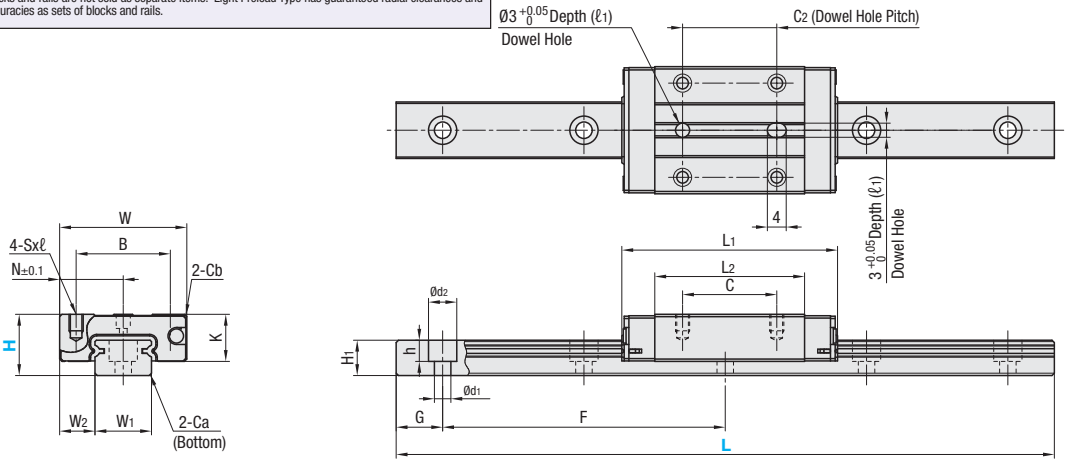
RoHS



Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Material / Hardness	Type: Light Preload / High Grade / Sets	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SELBN	Selectable	1
	SEL2BN		2
	SELBNL	Specified	1
	SEL2BNL		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBN	Selectable	1
	SSEL2BN		2
	SSELBNL	Specified	1
	SSEL2BNL		2

Heat Resistant Temperature: -20~80°C



Precautions for Use

- Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P501
- Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Accessories

- H8 comes with cap screws (M2x6).

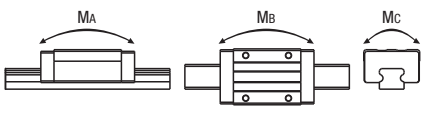
Others

- For G dimensions of L Dimension Configurable Type, refer to P507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

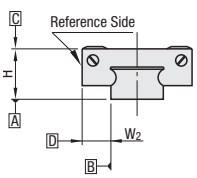
Part Number Type	H	Block Dimensions W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Dowel Hole Dimensions N	C2	(ℓ1)	Guide Rail Dimensions W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SELBN SELBNL (2 Blocks) SEL2BN SEL2BNL	8	17	32	12	13	M2x2.5	22	6.5	0.3	8.5	13	2	7	5	4.7	0.3	2.4x4.2x2.3	15	5
	10	20	40	15	16	M3x3	29	7.8	0.3	10	16	2.5	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
Stainless Steel (1 Block) SSELBN SSELBNL (2 Blocks) SSEL2BN SSEL2BNL	13	27	45.8	20	20	M3x3.5	31.8	10	0.5	13.5	20	3	12	7.5	7.5	0.5	3.5x6x4.5	25	10
	16	32	58.3	25	25	M3x4	43.3	12	0.5	16	25	4	15	8.5	9.5	0.5	3.5x6x4.5	40	15
	20	40	67.7	30	30	M4x6	52.3	15	0.5	20	30	4	20	10	11	0.5	6x9.5x5.5	60	20

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA N・m	MB N・m	MC N・m	Mass Blocks kg	Guide Rails kg/m
8	1.6	2.4	7.5	7.5	9.0	0.016	0.19
10	2.2	3.7	12.3	12.3	13.0	0.03	0.31
13	3.5	5.3	24.5	26.4	32.3	0.06	0.61
16	5.8	8.7	57.8	62.6	67.6	0.10	1.02
20	7.2	13.5	80.7	80.7	138.2	0.18	1.65

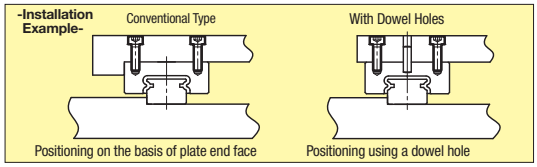


Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±25
Width W2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P501
Running Parallelism of surf. D against surf. B	



CAD Data

Order Example

Part Number	-	L
SELBN10	-	275
SELBN10L	-	75 (L Type Greased)
SELBN10G	-	75 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR / piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

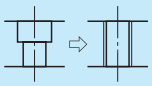
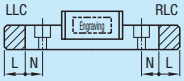
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number - L - (MC · RLC · LLC)
SEL2BN16 - 430 - MC - RLC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. Express Services is not available. H: MC; 8: M3; 10, 13: M4; 16: M5; 20: M6	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H: 10, 13, 16, 20; L Cut: 2.5, 5, 10, 15; N: 5. Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H8.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price 1 Block SELBN	1 Block SSELBN	2 Blocks SEL2BN	2 Blocks SSEL2BN
8	40				
	55				
	70				
	85				
	100				
	115				
	130				
10	55				
	75				
	95				
	115				
	135				
	155				
	175				
	195				
	215				
	235				
	255				
	275				
13	70				
	95				
	120				
	145				
	170				
	195				
	220				
	245				
	270				
	295				
	320				
	345				
	370				
	395				
	420				
	445				
	470				
16	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				
20	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				

H	L Specified (1mm Increment)	€ Unit Price 1 Block SELBNL	1 Block SSELBNL	2 Blocks SEL2BNL	2 Blocks SSEL2BNL
8	41~54				
	56~69				
	71~84				
	86~99				
	101~114				
	116~129				
10	56~74				
	76~94				
	96~114				
	116~134				
	136~154				
	156~174				
	176~194				
	196~214				
	216~234				
	236~254				
	256~274				
13	71~94				
	96~119				
	121~144				
	146~169				
	171~194				
	196~219				
	221~244				
	246~269				
	271~294				
	296~319				
	321~344				
	346~369				
	371~394				
	396~419				
	421~444				
	446~469				
16	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				
20	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				

Miniature Linear Guides
-Wide Long Blocks · Light Preload-

■**Features:** Wide Block Type of MISUMI original specifications. Larger screw size has enhanced fastening strength compared to standard products.

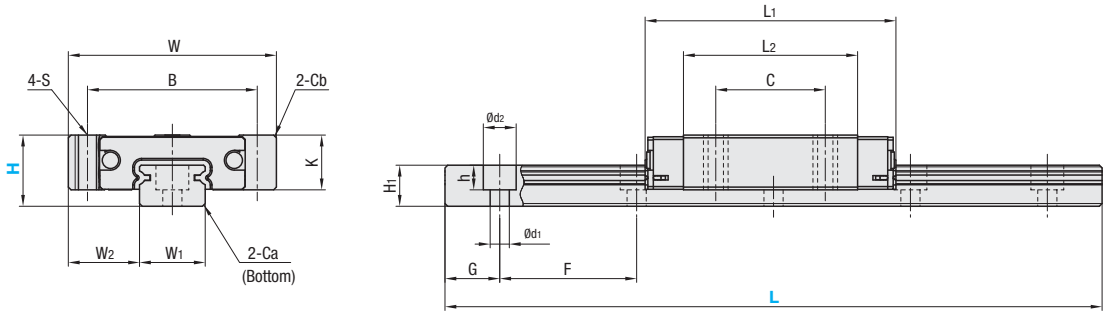
RoHS



Ⓨ Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Ⓜ Material Ⓗ Hardness	Type: Light Preload / High Grade / Sets	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SELBM	Selectable	1
	SEL2BM		2
	SELBML	Specified	1
	SEL2BML		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBM	Selectable	1
	SSEL2BM		2
	SSELBML	Specified	1
	SSEL2BML		2

Heat Resistant Temperature: -20~80°C



■**Precautions for Use**
Ⓨ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501
Ⓨ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
Ⓨ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
Ⓨ Rails cannot be connected to be extended.
Ⓨ Running parallelism is the value measured after the rail is mounted.

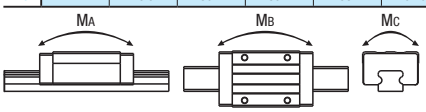
■**Accessories**
- H8 comes with cap screws (M2x6).

■**Others**
- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

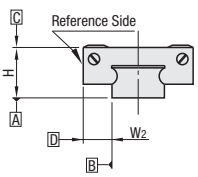
Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	S	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SELBM SELBML / (2 Blocks) SEL2BM SEL2BML / Stainless Steel (1 Block) SSELBM SSELBML / (2 Blocks) SSEL2BM SSEL2BML	8	24	32	19	13	M3	22	6.5	0.3	7	8.5	4.7	0.3	2.4x4.2x2.3	15	5
	10	31	40	24	16	M4	29	7.8	0.3	9	11	5.5	0.3	3.5x6x3.5	20	7.5
	13	38	45.8	31	20	M4	31.8	10	0.5	12	13	7.5	0.5	3.5x6x4.5	25	10
	16	44	58.3	36	25	M4	43.3	12	0.5	15	14.5	9.5	0.5	3.5x6x4.5	40	15
	20	54	67.7	46	30	M5	52.3	15	0.5	20	17	11	0.5	6x9.5x5.5	60	20

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N・m	MB N・m	MC N・m	Mass: Blocks kg	Guide Rails kg/m
8	1.6	2.4	7.5	7.5	9.0	0.025	0.19
10	2.2	3.7	12.3	12.3	13.0	0.05	0.31
13	3.5	5.3	24.5	26.4	32.3	0.09	0.61
16	5.8	8.7	57.8	62.6	67.6	0.14	1.02
20	7.2	13.5	80.7	80.7	138.2	0.26	1.65



■**Preload and Accuracy Standards**

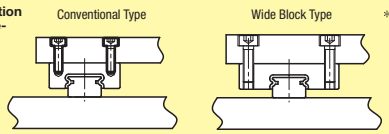


Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±25
Width W2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

ex

-Installation Example-



※One size larger screws have enhanced assembly and fastening strength.

CAD Data

Order Example

Part Number - L

SELBM10 - 275
SELBM10L - 75 (L Type Greased)
SELBM10G - 75 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR / piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

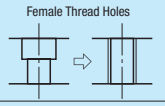
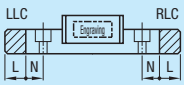
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number - L - (MC · RLC · LLC)
SEL2BM16 - 430 - MC - RLC
MC only | 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. ⊗Express Serviceis not available. H: 8 / 10 / 13 / 16 / 20 — MC: M3 / M4 / M5 / M6	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC H / L Cut / N: 10 / 2.5 / 5; 13 / 5 / 5; 16 / 10 / 5; 20 / 15 / 5 Applicable to Selectable Type only. Overall length will be shorter by cutting. ⊗Not applicable to H8.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price 1 Block High Grade SELBM	1 Block High Grade SSELBM	2 Blocks High Grade SEL2BM	2 Blocks High Grade SSEL2BM
8	40				
	55				
	70				
	85				
	100				
	115				
	130				
10	55				
	75				
	95				
	115				
	135				
	155				
	175				
	195				
	215				
	235				
	255				
	275				
13	70				
	95				
	120				
	145				
	170				
	195				
	220				
	245				
	270				
	295				
	320				
	345				
	370				
	395				
	420				
	445				
	470				
16	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				
20	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				

H	L Specified (1mm Increment)	€ Unit Price 1 Block High Grade SELBML	1 Block High Grade SSELBML	2 Blocks High Grade SEL2BML	2 Blocks High Grade SSEL2BML
8	41~54				
	56~69				
	71~84				
	86~99				
	101~114				
	116~129				
10	56~74				
	76~94				
	96~114				
	116~134				
	136~154				
	156~174				
	176~194				
	196~214				
	216~234				
	236~254				
	256~274				
13	71~94				
	96~119				
	121~144				
	146~169				
	171~194				
	196~219				
	221~244				
	246~269				
	271~294				
	296~319				
	321~344				
	346~369				
	371~394				
	396~419				
	421~444				
	446~469				
16	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				
20	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				

Miniature Linear Guides

-Extra Long Blocks, Light Preload, Interchangeable, Slight Clearance-

■**Features:** MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability. Extra Long Block Type of MISUMI original specifications. Higher load ratings and allowable moments than Long Block Type.

RoHS

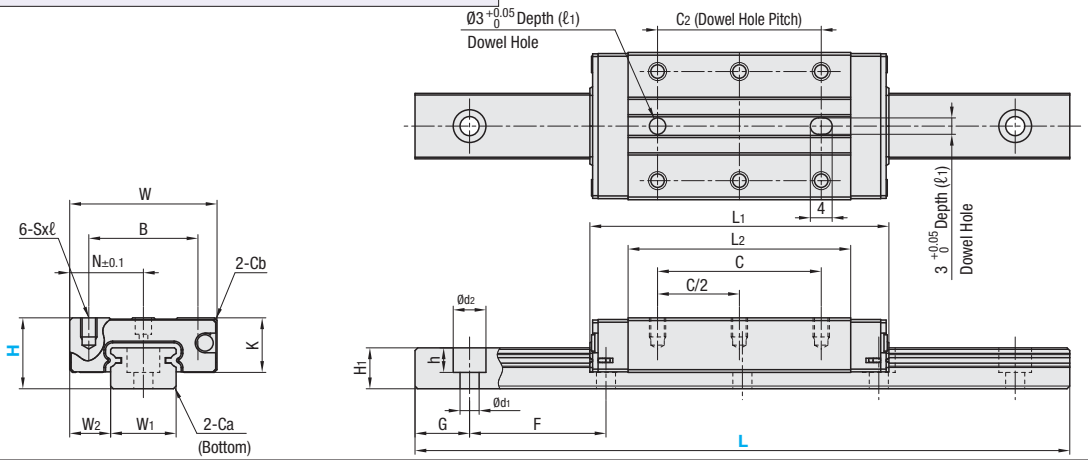


Ⓨ Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Ⓜ Material Ⓗ Hardness	Type				L Dimension	Blocks Quantity
	Light Preload		Interchangeable-Slight Clearance			
	High Grade		Standard Grade			
	Sets		Sets	Blocks		
	No Dowel Hole	With Dowel Holes	No Dowel Hole			
JIS STKM 58HRC~	SECB	SECBN	SECBZ	SZCB	Selectable	1
	SECBL	SECBNL	SECBLZ		Specified	
Stainless Steel 56HRC~	SSECB	SSECBN	SSECBZ	SSZCB	Selectable	
	SSECBL	SSECBNL	SSECBLZ		Specified	

Heat Resistant Temperature: -20~80°C

With Dowel Holes



■**Precautions for Use**

Ⓨ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501

Ⓨ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.

Ⓨ Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.

Ⓨ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.

Ⓨ Rails cannot be connected to be extended.

Ⓨ Running parallelism is the value measured after the rail is mounted.

■**Accessories**

- H8 comes with cap screws (M2x6).

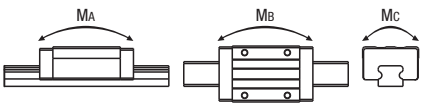
■**Others**

- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

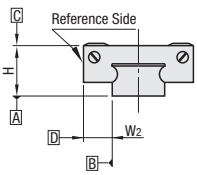
Part Number Type	H	Block Dimensions W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Dowel Hole Dimensions N	C2	(ℓ1)	Guide Rail Dimensions W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM SECB SECBZ SECBN SECBL SECBLZ SECBNL Stainless Steel SSECB SSECBZ SSECBN SSECBL SSECBLZ SSECBNL Blocks SZCB SSZCB	8	17	37.5	12	20	M2x2.5	27.5	6.5	0.3	8.5	20	2	7	5	4.7	0.3	2.4x4.2x2.3	15	5
	10	20	49.6	15	26	M3x3	38.6	7.8	0.3	10	26	2.5	9	5.5	5.5	0.3	3.5x6x3.5	20	7.5
	13	27	54.8	20	30	M3x3.5	40.8	10	0.5	13.5	30	3	12	7.5	7.5	0.5	3.5x6x4.5	25	10
	16	32	70.3	25	40	M3x4	55.3	12	0.5	16	40	4	15	8.5	9.5	0.5	3.5x6x4.5	40	15

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA N・m	MB N・m	MC N・m	Mass Blocks kg	Guide Rails kg/m
8	1.5	3.3	10.1	10.1	12.4	0.02	0.19
10	2.5	5.0	18.8	18.8	23.7	0.04	0.31
13	3.6	7.6	34.0	34.0	47.3	0.07	0.61
16	6.9	13.5	80.7	80.7	104.3	0.12	1.02



■**Preload and Accuracy Standards**



Radial Clearance (μm)	
Light Preload	-3~0
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W2 Tolerance	±25	±25
Width W2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to P.501	
Running Parallelism of surf. D against surf. B		

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

CAD Data

Order Example

Part Number - L

SSECB10 - 275

SSECB10L - 75 (L Type Greased)

SSECB10G - 75 (G Type Greased)

Alternative grease types available.

For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR / Piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

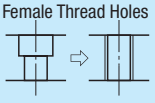
Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number - L - (MC · RLC · LLC)

SSECB16 - 430 - MC - RLC

MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. ⊗Express Service is not available. H: 8 10 13 16 / MC: M3 M4 M4 M5	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H: 10 13 16 / L Cut: 2.5 5 10 / N: 5. Applicable to Selectable Type only. Overall length will be shorter by cutting. ⊗Not applicable to H8.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price 1 Block					
		High Grade		High Grade · With Dowel Holes		Standard Grade	
		SECB	SSECB	SECBN	SSECBN	SECBZ	SSECBZ
8	40						
	55						
	70						
	85						
	100						
	115						
	130						
10	55						
	75						
	95						
	115						
	135						
	155						
	175						
	195						
	215						
	235						
	255						
	275						
13	70						
	95						
	120						
	145						
	170						
	195						
	220						
	245						
	270						
	295						
	320						
	345						
	370						
	395						
	420						
	445						
	470						
16	110						
	150						
	190						
	230						
	270						
	310						
	350						
	390						
	430						
	470						
	510						
	550						
	590						
	630						
	670						

H	L Specified (1mm Increment)	€ Unit Price 1 Block					
		High Grade		High Grade · With Dowel Holes		Standard Grade	
		SECBL	SSECBL	SECBNL	SSECBNL	SECBLZ	SSECBLZ
8	41~54						
	56~69						
	71~84						
	86~99						
	101~114						
	116~129						
10	56~74						
	76~94						
	96~114						
	116~134						
	136~154						
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	256~274						
13	71~94						
	96~119						
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	296~319						
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	346~369						
	371~394						
	396~419						
	421~444						
	446~469						
16	111~149						
	151~189						
	191~229						
	231~269						
	271~309						
	311~349						
	351~389						
	391~429						
	431~469						
	471~509						
	511~549						
	551~589						
	591~629						
	631~669						

Block Price (1pc)		
H	€ Unit Price	
	SZCB	SSZCB
8		
10		
13		
16		

For rail unit price for Interchangeable-Slight Clearance Type, see P.516

Miniature Linear Guides -Wide Rails-

-Standard Block · Light Preload-

Features: Wide Rail Standard Block Type of industry standard specifications.

RoHS

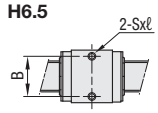


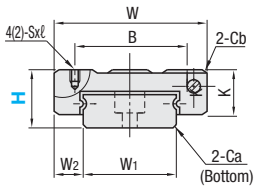
Blocks and rails are not sold as separate items. Light Preload Type have guaranteed radial clearances and accuracies as sets of blocks and rails.

Material / Hardness	Type: Precision Grade	Type: High Grade	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBWV	SEBW	Selectable	1
	SE2BWV	SE2BW		2
	SEBWLV	SEBWL	Specified	1
	SE2BWLV	SE2BWL		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSEBWV	SSEBW	Selectable	1
	SSE2BWV	SSE2BW		2
	SSEBWLV	SSEBWL	Specified	1
	SSE2BWLV	SSE2BWL		2

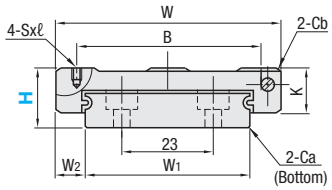
Heat Resistant Temperature: -20~80°C

H6.5

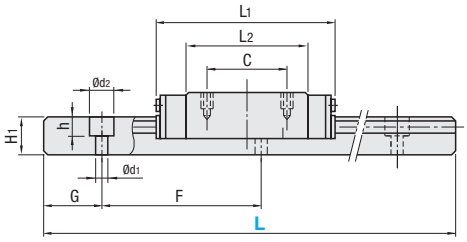




H6.5 · 9 · 12 · 14



H16



The number in parenthesis is the No. of tapped holes for H6.5.

Precautions for Use

- Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Accessories

- H6.5 comes with No. 0, Class 1 Phillips button head screws (M2.5x7).

Others

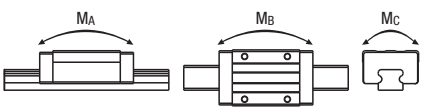
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

Part Number: Type	H	Block Dimensions: W ±0.05	L_1	B	C	Sxℓ	L_2	K	Cb	Guide Rail Dimensions: W_1 ±0.005	W_2	H_1	Ca	Counterbored Holes d_1x$d_2$xh	F	G
JIS STKM (1 Block) SEBW, SEBWV, SEBWL, SEBWLV / (2 Blocks) SE2BW, SE2BWV, SE2BWL, SE2BWLV / Stainless Steel (1 Block) SSEBW, SSEBWV, SSEBWL, SSEBWLV / (2 Blocks) SSE2BW, SSE2BWV, SSE2BWL, SSE2BWLV	6.5	17	21	13	-	M2.5x1.5	13.3	5	0.3	10	3.5	4	0.3	3x5x1.6	20	5
	9	25	31.1	18	12	M2.6x2.5	20.1	7	0.3	14	5.5	5.2	0.5	3.5x6x3.2	30	10
	12	30	38	21	12	M2.6x3	27	9	0.3	18	6	7.5	0.5	3.5x6x4.5	30	10
	14	40	44.3	28	15	M3x3.5	30.1	11	0.5	24	8	8	0.5	4.5x8x4.5	40	15
	16	60	55	45	20	M4x4.5	40	13	0.5	42	9	9.5	0.5	4.5x8x4.5	40	15

H6.5 is for stainless steel only. H6.5 has no precision grade.

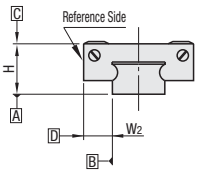
kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: M_A N·m	M_B N·m	M_C N·m	Mass: Blocks kg	Guide Rails kg/m
6.5	0.5	0.9	2.0	2.0	4.0	0.006	0.28
9	1.4	2.2	7.8	7.8	15.5	0.02	0.50
12	2.3	3.7	13.7	16.3	30.4	0.04	0.96
14	3.5	5.3	20.6	22.3	52.1	0.08	1.40
16	5.8	8.5	40.2	43.6	148	0.15	2.95



Preload and Accuracy Standards

Radial Clearance (μm)	
Light Preload	-3~0



Dimension Precision (μm)	Precision Grade	High Grade
Height H Tolerance	±10	±20
Height H Pair Variation	7	15
Width W_2 Tolerance	±15	±25
Width W_2 Pair Variation	10	20
Running Parallelism of surf. C against surf. A	Refer to P.501	
Running Parallelism of surf. D against surf. B		

CAD Data

Order Example

Part Number	-	L
SEBW12	-	200
REBW12	-	200 (LTBC)
SEBW12L	-	200 (L Type Greased)
SEBW12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days / 6 Days

Express A 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

•LTBC Plated Products (Applicable to High Grade Type only.)

13 Days - Part No.: Change the first letter "S" of High Grade Type to "R".
•For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to High Grade Type price.

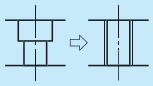
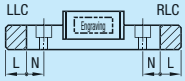
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (MC · RLC · LLC)
SE2BWL16 - 450 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 6.5 → M3; 9, 12 → M4; 14, 16 → M5 ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC H: 9, 12, 14, 16 / L Cut: 5 / N: 5, 10 Applicable to Selectable Type only. Overall length will be shorter by cutting. ⊗Not applicable to H6.5. ⊗Not applicable to L dimension 70 or less.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price			
		1 Block		2 Blocks	
		SEBW	SSEBW	SE2BW	SSE2BW
6.5	50	⊗		⊗	⊗
	70	⊗		⊗	
	90	⊗		⊗	
	110	⊗		⊗	
	130	⊗		⊗	
9	50			⊗	⊗
	80			⊗	⊗
	110				
	140				
	170				
	200				
	230				
	260				
	290				
12	50			⊗	⊗
	80			⊗	⊗
	110				
	140				
	170				
	200				
	230				
	260				
	290				
14	70			⊗	⊗
	110			⊗	⊗
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
16	70			⊗	⊗
	110			⊗	⊗
	150			⊗	⊗
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				

H6.5 is for stainless steel only.

H	L Specified (1mm Increment)	€ Unit Price			
		1 Block		2 Blocks	
		SEBWL	SSEBWL	SE2BWL	SSE2BWL
6.5	51~69	⊗		⊗	⊗
	71~89	⊗		⊗	
	91~109	⊗		⊗	
	111~129	⊗		⊗	
9	51~79			⊗	⊗
	81(98)~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
12	51~79			⊗	⊗
	81(98)~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
14	71~109			⊗	⊗
	111(130)~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
16	71~109			⊗	⊗
	111~149			⊗	⊗
	151(170)~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				

Unit price for Precision Grade is High Grade Type price x 1.2 (round of to one Cent).
(Ex.) SEBWV16-350: 91,40x1.2=109,70 EUR
H6.5 has no precision grade.
Dimensions of L Configurable in ( ) are applicable to 2 Block Type.

Miniature Linear Guides -Wide Rails-

-Standard Block · Interchangeable, Slight Clearance-

■Features: Wide Rail Standard Block Type of industry standard specifications.

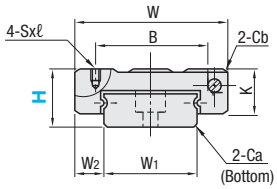
RoHS



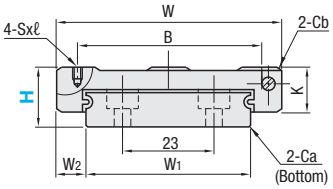
Ⓣ Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.

Material / Hardness	Type: Sets	Type: Blocks	Type: Rails	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBWZ	SEWZB	SEWZL	Selectable	1
	SE2BWZ				2
	SEBWLZ		SEWZLF	Specified	1
	SE2BWLZ				2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSEBWZ	SWZB	SWZL	Selectable	1
	SSE2BWZ				2
	SSEBWLZ		SWZLF	Specified	1
	SSE2BWLZ				2

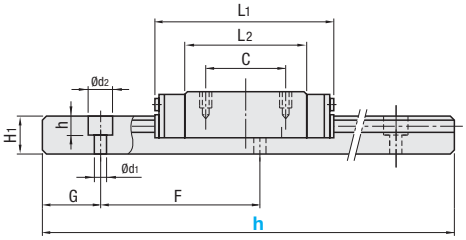
Heat Resistant Temperature: -20~80°C



H9 · 12 · 14



H16



■Precautions for Use

Ⓣ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501
Ⓣ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
Ⓣ Rails cannot be connected to be extended.
Ⓣ Running parallelism is the value measured after the rail is mounted.

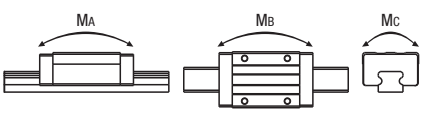
■Others

- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

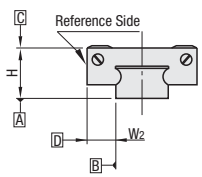
Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SEBWZ SEBWLZ / (2 Blocks) SE2BWZ SE2BWLZ / Stainless Steel (1 Block) SSEBWZ SSEBWLZ / (2 Blocks) SSE2BWZ SSE2BWLZ / Blocks SEWZB / Rails SEWZL SEWZLF / Blocks SWZB / Rails SWZL SWZLF	9	25	31.1	18	12	M2.6x2.5	20.1	7	0.3	14	5.5	5.2	0.5	3.5x6x3.2	30	10
	12	30	38	21	12	M2.6x3	27	9	0.3	18	6	7.5	0.5	3.5x6x4.5	30	10
	14	40	44.3	28	15	M3x3.5	30.1	11	0.5	24	8	8	0.5	4.5x8x4.5	40	15
	16	60	55	45	20	M4x4.5	40	13	0.5	42	9	9.5	0.5	4.5x8x4.5	40	15

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N·m	MB N·m	MC N·m	Mass: Blocks kg	Guide Rails kg/m
9	1.4	2.2	7.8	7.8	15.5	0.02	0.50
12	2.3	3.7	13.7	16.3	30.4	0.04	0.96
14	3.5	5.3	20.6	22.3	52.1	0.08	1.40
16	5.8	8.5	40.2	43.6	148	0.15	2.95



■Preload and Accuracy Standards



Radial Clearance (μm)	
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	Standard Grade
Height H Tolerance	±20
Height H Pair Variation	40
Width W2 Tolerance	±25
Width W2 Pair Variation	40
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

CAD Data

Order Example

Part Number	-	L
SSEBWZ12	-	200
SWZL12	-	200
SWZB12		
SSEBWZ12L	-	200 (L Type Greased)
SSEBWZ12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days	6 Days
Express A	8,00 EUR / piece

P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

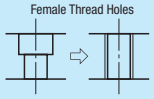
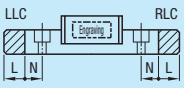
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (MC · RLC · LLC)
SSE2BWLZ16 - 450 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 9, 12, 14, 16 — MC: M4, M5 ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC H: 9, 12, 14, 16 — L Cut: 5 — N: 5, 10 Applicable to Selectable Type only. Overall length will be shorter by cutting. ⊗Not applicable to L dimension 70 or less.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price							
		Sets				Rails		Blocks	
		1 Block		2 Blocks					
		SEBWZ	SSEBWZ	SE2BWZ	SSE2BWZ	SEWZL	SWZL	SEWZB	SWZB
9	50								
	80								
	110								
	140								
	170								
	200								
	230								
	260								
	290								
12	50								
	80								
	110								
	140								
	170								
	200								
	230								
	260								
	290								
14	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
16	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
	510								
	550								
	590								
	630								
	670								

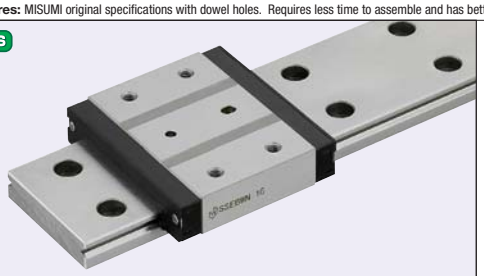
H	L Specified (1mm Increment)	€ Unit Price					
		Sets				Rails	
		1 Block		2 Blocks			
		SEBWLZ	SSEBWLZ	SE2BWLZ	SSE2BWLZ	SEWZLF	SWZLF
9	51~79						
	81(98)~109						
	111~139						
	141~169						
	171~199						
	191~229						
	231~259						
	261~289						
12	51~79						
	81(98)~109						
	111~139						
	141~169						
	171~199						
	191~229						
	231~259						
	261~289						
14	71~109						
	111(130)~149						
	151~189						
	191~229						
	231~269						
	271~309						
	311~349						
	351~389						
	391~429						
	431~469						
16	71~109						
	111~149						
	151(170)~189						
	191~229						
	231~269						
	271~309						
	311~349						
	351~389						
	391~429						
	431~469						
	471~509						
	511~549						
	551~589						
	591~629						
	631~669						

Dimensions of L Configurable in ( ) are applicable to 2 Block Type.

Miniature Linear Guides -Wide Rails-

-Standard Blocks with Dowel Holes · Light Preload-

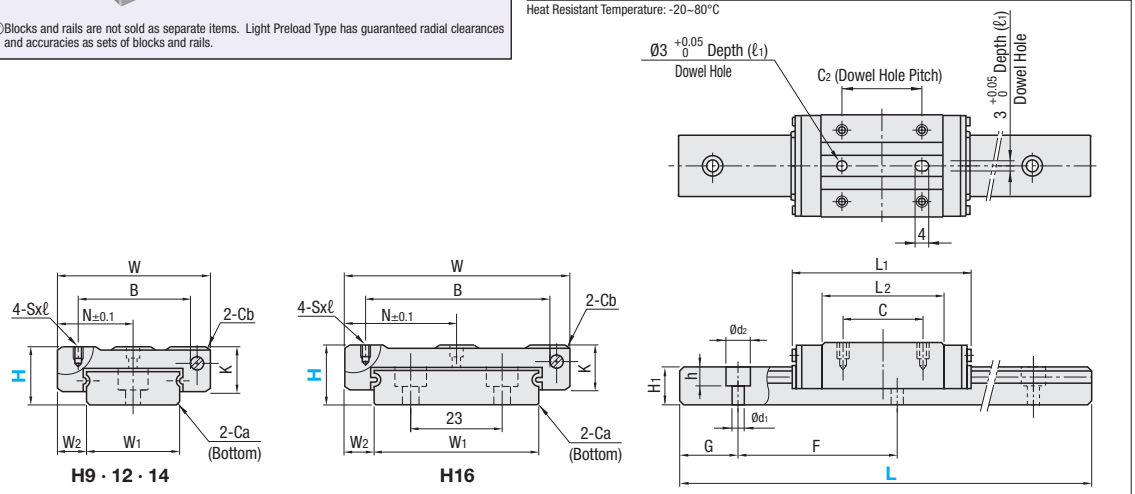
■**Features:** MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability.



Ⓨ Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Ⓜ Material Ⓗ Hardness	Type Light Preload High Grade Sets	L Dimensions	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBWN	Selectable	1
	SE2BWN		2
	SEBWNL	Specified	1
	SE2BWNL		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSEBWN	Selectable	1
	SSE2BWN		2
	SSEBWNL	Specified	1
	SSE2BWNL		2

Heat Resistant Temperature: -20~80°C



■**Precautions for Use**

Ⓨ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501

Ⓨ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.

Ⓨ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.

Ⓨ Rails cannot be connected to be extended.

Ⓨ Running parallelism is the value measured after the rail is mounted.

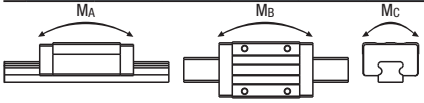
■**Others**

- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.
- For life calculations, use our free calculation software from http://download.misumi.jp/mol/fa_soft.html. Refer to P.503.

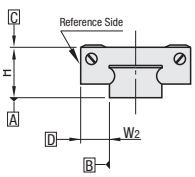
Part Number				H	Block Dimensions								Dowel Hole Dimensions			Guide Rail Dimensions							
Type					W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	N	C2	(ℓ1)	W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh		F	G
JIS STKM (1 Block) SEBWN SEBWNL	(2 Blocks) SE2BWN SE2BWNL	Stainless Steel (1 Block) SSEBWN SSEBWNL	(2 Blocks) SSE2BWN SSE2BWNL	9	25	31.1	18	12	M2.6x2.5	20.1	7	0.3	12.5	12	2.5	14	5.5	5.2	0.5	3.5x6x3.2		30	10
				12	30	38	21	12	M2.6x3	27	9	0.3	15	12	2.5	18	6	7.5	0.5	3.5x6x4.5		30	10
				14	40	44.3	28	15	M3x3.5	30.1	11	0.5	20	15	3.5	24	8	8	0.5	4.5x8x4.5		40	15
				16	60	55	45	20	M4x4.5	40	13	0.5	30	20	4	42	9	9.5	0.5	4.5x8x4.5		40	15

kgf=Nx0.101972

H	Basic Load Rating		Allowable Static Moment			Mass	
	C (Dynamic) kN	Co (Static) kN	MA N • m	MB N • m	MC N • m	Blocks kg	Guide Rails kg/m
9	1.4	2.2	7.8	7.8	15.5	0.02	0.50
12	2.3	3.7	13.7	16.3	30.4	0.04	0.96
14	3.5	5.3	20.6	22.3	52.1	0.08	1.40
16	5.8	8.5	40.2	43.6	148	0.15	2.95

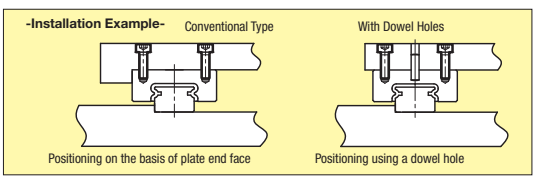


■Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±25
Width W2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	



CAD Data

Order Example

Part Number	-	L
SEBWN12	-	200
SEBWN12L	-	200 (L Type Greased)
SEBWN12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR / piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

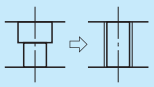
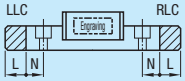
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number - L - (MC · RLC · LLC)
SE2BWNL16 - 450 - MC
MC only | 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 9, 12, 14, 16 — MC: M4, M4, M5, M5 ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut LLC RLC  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC H: 9, 12, 14, 16 — L Cut: 5 — N: 5 H: 9, 12, 14, 16 — L Cut: 5 — N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting. ⊗Not applicable to L dimension 70 or less.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price			
		1 Block		2 Blocks	
		SEBWN	SSEBWN	SE2BWN	SSE2BWN
9	50				
	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
12	50				
	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
14	70				
	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
16	70				
	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				

H	L Specified (1mm Increment)	€ Unit Price			
		1 Block		2 Blocks	
		SEBWNL	SSEBWNL	SE2BWNL	SSE2BWNL
9	51~79				
	81(98)~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
12	51~79				
	81(98)~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
14	71~109				
	111(130)~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
16	71~109				
	111~149				
	151(170)~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				

Dimensions of L Configurable in ( ) are applicable to 2 Block Type.

Miniature Linear Guides -Wide Rails-

-Wide Standard Blocks · Light Preload, Interchangeable-Slight Clearance-

■Features: Wide Block Type of MISUMI original specifications. Larger screw size has enhanced fastening strength compared to standard products.

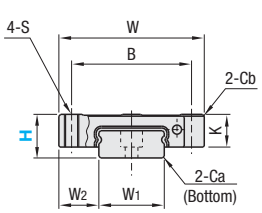
RoHS



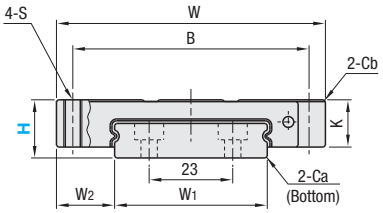
Ⓨ Blocks and rails are not sold as separate items. Light Preload Type have guaranteed radial clearances and accuracies as sets of blocks and rails.

Ⓜ Material Ⓗ Hardness	Type Light Preload High Grade Sets	Interchangeable-Slight Clearance Standard Grade Sets	Blocks	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBWM	SEBWMZ	SWZMB	Selectable	1
	SE2BWM	SE2BWMZ			2
	SEBWML	SEBWMLZ		Specified	1
	SE2BWML	SE2BWMLZ			2
Stainless Steel (1.4125/ X105CrMo17 Material) 56HRC~	SSEBWM	SSEBWMZ	SSWZMB	Selectable	1
	SSE2BWM	SSE2BWMZ			2
	SSEBWML	SSEBWMLZ		Specified	1
	SSE2BWML	SSE2BWMLZ			2

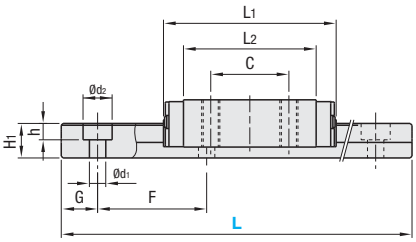
Heat Resistant Temperature: -20~80°C



H9 · 12 · 14



H16



■Precautions for Use

Ⓨ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
Ⓨ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
Ⓨ Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.
Ⓨ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
Ⓨ Rails cannot be connected to be extended.
Ⓨ Running parallelism is the value measured after the rail is mounted.

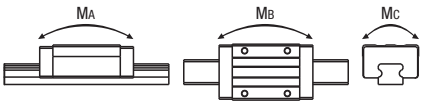
■Others

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

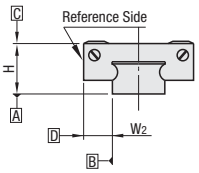
Part Number Type				H	Block Dimensions W ±0.05	L1	B	C	S	L2	K	Cb	Guide Rail Dimensions W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SEBWM / SEBWML / SEBWMZ / SEBWMLZ	(2 Blocks) SE2BWM / SE2BWML / SE2BWMZ / SE2BWMLZ	Stainless Steel (1 Block) SSEBWM / SSEBWML / SSEBWMZ / SSEBWMLZ	(2 Blocks) SSE2BWM / SSE2BWML / SSE2BWMZ / SSE2BWMLZ	9	36	31.1	29	12	M4	20.1	7	0.3	14	11	5.2	0.5	3.5x6x3.2	30	10
				12	40	38	33	12	M4	27	9	0.3	18	11	7.5	0.5	3.5x6x4.5	30	10
				14	51	44.3	44	15	M4	30.1	11	0.5	24	13.5	8	0.5	4.5x8x4.5	40	15
Blocks SWZMB		SSWWZMB		16	74	55	65	20	M5	40	13	0.5	42	16	9.5	0.5	4.5x8x4.5	40	15

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA N • m	MB N • m	MC N • m	Mass Blocks kg	Guide Rails kg/m
9	1.4	2.2	7.8	7.8	15.5	0.035	0.50
12	2.3	3.7	13.7	16.3	30.4	0.06	0.96
14	3.5	5.3	20.6	22.3	52.1	0.11	1.40
16	5.8	8.5	40.2	43.6	148	0.2	2.95



■Preload and Accuracy Standards



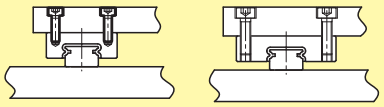
Radial Clearance (μm)	
Light Preload	-3~0
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	High Grade	Standard Grade
Height H Tolerance	±20	±20
Height H Pair Variation	15	40
Width W2 Tolerance	±25	±25
Width W2 Pair Variation	20	40
Running Parallelism of surf. C against surf. A	Refer to P.501	
Running Parallelism of surf. D against surf. B		

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

ex

-Installation Example- Conventional Type / Wide Block Type



*1size larger screws
Enhanced assembly and fastening strength.

CAD Data

Order Example

Part Number	-	L
SEBWM12	-	200
SEBWM12L	-	200 (L Type Greased)
SEBWM12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

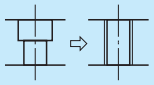
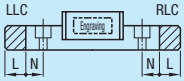
Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number	-	L	-	(MC · RLC · LLC)
SE2BWML16	-	450	-	MC

MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 9, 12 → MC M4; 14, 16 → MC M5. ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC. H: 9, 12, 14, 16; L Cut: 5; N: 5	5,00
	Right End Cut RLC	Ordering Code RLC. H: 9, 12, 14, 16; L Cut: 5; N: 10. ⓘApplicable to Selectable Type only. ⓘOverall length will be shorter by cutting. ⊗Not applicable to L dimension 70 or less.	5,00

H	Selectable L	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBWM	SSEBWM	SEBWMZ	SSEBWMZ	SE2BWM	SSE2BWM	SE2BWMZ	SSE2BWMZ
9	50								
	80								
	110								
	140								
	170								
	200								
	230								
	260								
	290								
12	50								
	80								
	110								
	140								
	170								
	200								
	230								
	260								
	290								
14	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
16	70								
	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
	510								
	550								
	590								
	630								
	670								

H	L Specified (1mm Increment)	€ Unit Price							
		1 Block				2 Blocks			
		High Grade		Standard Grade		High Grade		Standard Grade	
		SEBWML	SSEBWML	SEBWMLZ	SSEBWMLZ	SE2BWML	SSE2BWML	SE2BWMLZ	SSE2BWMLZ
9	51~79								
	81(98)~109								
	111~139								
	141~169								
	171~199								
	191~229								
	231~259								
	261~289								
12	51~79								
	81(98)~109								
	111~139								
	141~169								
	171~199								
	191~229								
	231~259								
	261~289								
14	71~109								
	111(129)~149								
	151~189								
	191~229								
	231~269								
	271~309								
	311~349								
	351~389								
	391~429								
	431~469								
16	71~109								
	111~149								
	151(169)~189								
	191~229								
	231~269								
	271~309								
	311~349								
	351~389								
	391~429								
	431~469								
	471~509								
	511~549								
	551~589								
	591~629								
	631~669								

ⓘDimensions of L Configurable in ( ) are applicable to 2 Block Type.

H	Block Price (1pc) € Unit Price	
	SWZMB	SSWZMB
9		
12		
14		
16		

ⓘFor rail unit price for Interchangeable-Slight Clearance Type, see P.534

Miniature Linear Guides - Rails-

-Long Blocks · Light Preload-

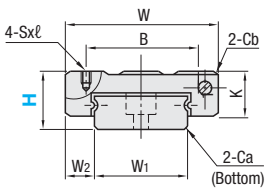
Features: Wide Rail Long Block Type of industry standard specifications. Higher load ratings and allowable moments than standard blocks.



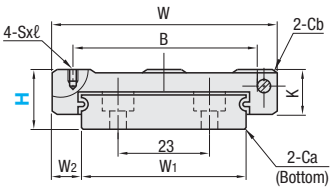
Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

Material / Hardness	Type: Precision Grade	Type: High Grade	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SELBWV	SELBW	Selectable	1
	SEL2BWV	SEL2BW		2
	SELBWLV	SELBWL	Specified	1
	SEL2BWLV	SEL2BWL		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBWV	SSELBW	Selectable	1
	SSEL2BWV	SSEL2BW		2
	SSELBWLV	SSELBWL	Specified	1
	SSEL2BWLV	SSEL2BWL		2

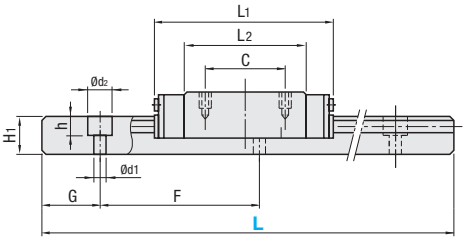
Heat Resistant Temperature: -20~80°C



H9 · 12 · 14



H16



Precautions for Use

- Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

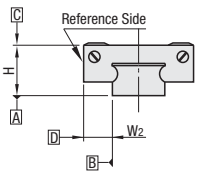
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

Part Number: Type (1 Block)	(2 Blocks)	(1 Block)	(2 Blocks)	H	Block Dimensions: W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
SELBW	SEL2BW	SSELBW	SSEL2BW	9	25	43.5	19	19	M3x3	32.5	7	0.3	14	5.5	5.2	0.5	3.5x6x3.2	30	10
SELBWV	SEL2BWV	SSELBWV	SSEL2BWV	12	30	51.6	23	24	M3x3	40.6	9	0.3	18	6	7.5	0.5	3.5x6x4.5	30	10
SELBWL	SEL2BWL	SSELBWL	SSEL2BWL	14	40	61.6	28	28	M3x3.5	47.4	11	0.5	24	8	8	0.5	4.5x8x4.5	40	15
SELBWLV	SEL2BWLV	SSELBWLV	SSEL2BWLV	16	60	74.9	45	35	M4x4.5	59.9	13	0.5	42	9	9.5	0.5	4.5x8x4.5	40	15

kgf=Nx0.101972

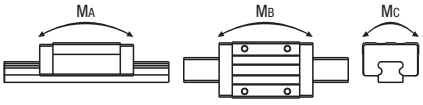
H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N·m	MB N·m	MC N·m	Mass: Blocks kg	Guide Rails kg/m
9	1.7	4.0	12.1	12.1	28.8	0.035	0.50
12	2.6	5.3	20.2	20.2	49.5	0.06	0.96
14	3.9	8.5	38.6	38.6	104.6	0.12	1.40
16	7.2	14.3	86.0	86.0	305.2	0.23	2.95

Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	Precision Grade	High Grade
Height H Tolerance	±10	±20
Height H Pair Variation	7	15
Width W2 Tolerance	±15	±25
Width W2 Pair Variation	10	20
Running Parallelism of surf. C against surf. A	Refer to P.501	
Running Parallelism of surf. D against surf. B		



CAD Data

Order Example

Part Number	-	L
SELBW12	-	200
RELBW12	-	200 (Raydent)
SELBW12L	-	200 (L Type Greased)
SELBW12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR / piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• LTBC Plated Products (Applicable to High Grade Type only.)

13 Days

- Change the first letter "S" of High Grade Type to "R".
- For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to High Grade Type price.

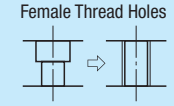
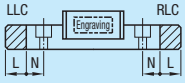
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (MC · RLC · LLC)
SEL2BWL16 - 450 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 9, 12 → MC: M4; H: 14, 16 → MC: M5. Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H: 9, 12, 14, 16 → L Cut: 5 → N: 5	5,00
	Right End Cut RLC	H: 9, 12, 14, 16 → L Cut: 5 → N: 10. Applicable to Selectable Type only. Overall length will be shorter by cutting.	5,00

H	Selectable L	€ Unit Price 1 Block SELBW	1 Block SSELBW	2 Blocks SEL2BW	2 Blocks SSEL2BW
9	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
12	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
14	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
16	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				

H	L Specified (1mm Increment)	€ Unit Price 1 Block SELBWL	1 Block SSELBWL	2 Blocks SEL2BWL	2 Blocks SSEL2BWL
9	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
12	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
14	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
16	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				

Unit price for Precision Grade is High Grade Type price x 1.2 (round off to one Cent).
(Ex.) For SSELBWV12-110, 65,90x1.2=79,10 EUR

Miniature Linear Guides -Wide Rails-

-Long Blocks · Interchangeable, Slight Clearance-

■Features: Wide Rail Long Block Type of industry standard specifications. Higher load ratings and allowable moments than standard blocks.

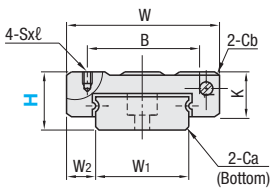
RoHS



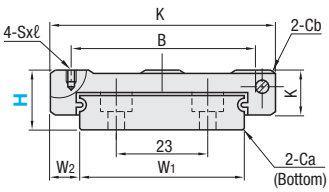
Ⓣ Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.

Material / Hardness	Type: Sets	Type: Blocks	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SELBWZ	SWZLB	Selectable	1
	SEL2BWZ			2
	SELBWLZ		Specified	1
	SEL2BWLZ			2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBWZ	SSWZLB	Selectable	1
	SSEL2BWZ			2
	SSELBWLZ		Specified	1
	SSEL2BWLZ			2

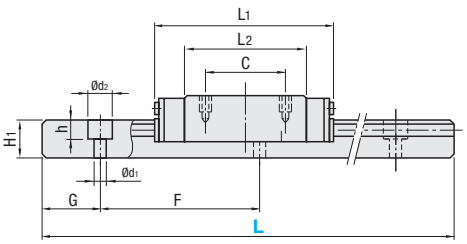
Heat Resistant Temperature: -20~80°C



H9 / 12 / 14



H16



■Precautions for Use

Ⓣ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501

Ⓣ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.

Ⓣ Rails cannot be connected to be extended.

Ⓣ Running parallelism is the value measured after the rail is mounted.

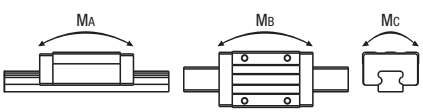
■Others

- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

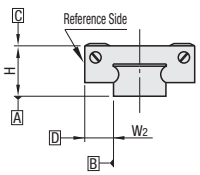
Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SELBWZ SELBWLZ; (2 Blocks) SEL2BWZ SEL2BWLZ; Stainless Steel (1 Block) SSELBWZ SSELBWLZ; (2 Blocks) SSEL2BWZ SSEL2BWLZ; Blocks SWZLB SSWZLB	9	25	43.5	19	19	M3x3	32.5	7	0.3	14	5.5	5.2	0.5	3.5x6x3.2	30	10
	12	30	51.6	23	24	M3x3	40.6	9	0.3	18	6	7.5	0.5	3.5x6x4.5	30	10
	14	40	61.6	28	28	M3x3.5	47.4	11	0.5	24	8	8	0.5	4.5x8x4.5	40	15
	16	60	74.9	45	35	M4x4.5	59.9	13	0.5	42	9	9.5	0.5	4.5x8x4.5	40	15

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N•m	MB N•m	MC N•m	Mass: Blocks kg	Guide Rails kg/m
9	1.7	4.0	12.1	12.1	28.8	0.035	0.50
12	2.6	5.3	20.2	20.2	49.5	0.06	0.96
14	3.9	8.5	38.6	38.6	104.6	0.12	1.40
16	7.2	14.3	86.0	86.0	305.2	0.23	2.95



■Preload and Accuracy Standards



Radial Clearance (μm)	
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	Standard Grade
Height H Tolerance	±20
Height H Pair Variation	40
Width W2 Tolerance	±25
Width W2 Pair Variation	40
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

CAD Data

Order Example

Part Number	-	L
SELBWZ12	-	200
SELBWZ12L	-	200 (L Type Greased)
SELBWZ12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

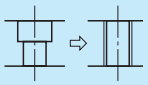
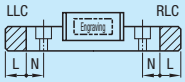
8 Days

Express A | 8,00 EUR / piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number - L - (MC · RLC · LLC)
SEL2BWLZ16 - 450 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 9, 12, 14, 16 → MC: M4, M4, M5, M5 ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC H: 9, 12, 14, 16 → L Cut: 5 → N: 5 H: 9, 12, 14, 16 → L Cut: 5 → N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	5,00
	Right End Cut RLC		5,00

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~6	7 or 8	9 or 10	11~15
Discount Rate	€ Unit Price	5%	10%	18%

H	Selectable L	€ Unit Price					
		Sets				Blocks	
		1 Block		2 Blocks			
		SELBWZ	SSELBWZ	SEL2BWZ	SSEL2BWZ	SWZLB	SSWZLB
9	80						
	110						
	140						
	170						
	200						
	230						
	260						
	290						
12	80						
	110						
	140						
	170						
	200						
	230						
	260						
	290						
14	110						
	150						
	190						
	230						
	270						
	310						
	350						
	390						
	430						
	470						
16	110						
	150						
	190						
	230						
	270						
	310						
	350						
	390						
	430						
	470						
	510						
	550						
	590						
	630						
	670						

H	L Specified (1mm Increment)	€ Unit Price			
		1 Block		2 Blocks	
		SELBWLZ	SSELBWLZ	SEL2BWLZ	SSEL2BWLZ
9	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
12	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
14	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
16	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				

For rail unit price, see P.534

Miniature Linear Guides -Wide Rails-

-Long Blocks with Dowel Holes · Light Preload-

Features: MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability.

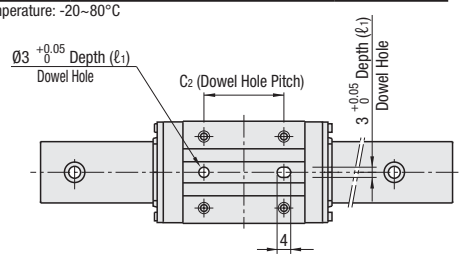
RoHS

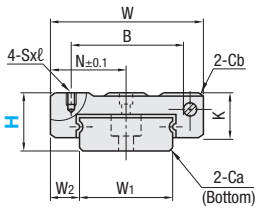


Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

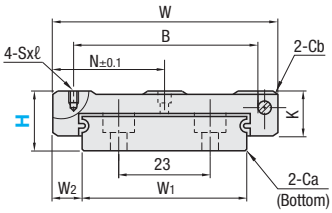
Material / Hardness	Type: Light Preload, High Grade Sets	L Dimensions	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SELBWN	Selectable	1
	SEL2BWN		2
	SELBWNL	Specified	1
	SEL2BWNL		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBWN	Selectable	1
	SSEL2BWN		2
	SSELBWNL	Specified	1
	SSEL2BWNL		2

Heat Resistant Temperature: -20~80°C

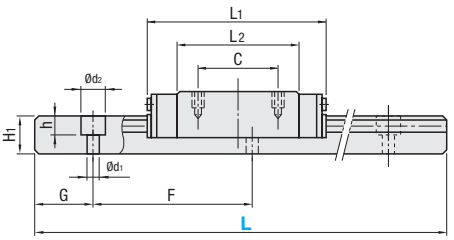




H9 · 12 · 14



H16



Precautions for Use

- Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

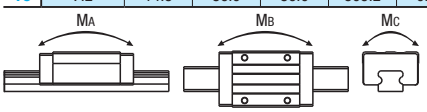
Others

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

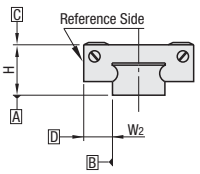
Part Number Type	H	Block Dimensions W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Dowel Hole Dimensions N	C2	(ℓ1)	Guide Rail Dimensions W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SELBWN / SELBWNL (2 Blocks) SEL2BWN / SEL2BWNL	9	25	43.5	19	19	M3x3	32.5	7	0.3	12.5	19	2.5	14	5.5	5.2	0.5	3.5x6x3.2	30	10
	12	30	51.6	23	24	M3x3	40.6	9	0.3	15	24	2.5	18	6	7.5	0.5	3.5x6x4.5	30	10
Stainless Steel (1 Block) SSELBWN / SSELBWNL (2 Blocks) SSEL2BWN / SSEL2BWNL	14	40	61.6	28	28	M3x3.5	47.4	11	0.5	20	28	3.5	24	8	8	0.5	4.5x8x4.5	40	15
	16	60	74.9	45	35	M4x4.5	59.9	13	0.5	30	35	4	42	9	9.5	0.5	4.5x8x4.5	40	15

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA N • m	MB N • m	MC N • m	Mass Blocks kg	Guide Rails kg/m
9	1.7	4.0	12.1	12.1	28.8	0.035	0.50
12	2.6	5.3	20.2	20.2	49.5	0.06	0.96
14	3.9	8.5	38.6	38.6	104.6	0.12	1.40
16	7.2	14.3	86.0	86.0	305.2	0.23	2.95



Preload and Accuracy Standards

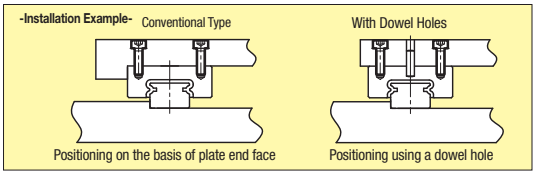


Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±25
Width W2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

ex

-Installation Example-



CAD Data

Order Example

Part Number	-	L
SELBWN12	-	200
SELBWN12L	-	200 (L Type Greased)
SELBWN12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR / piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

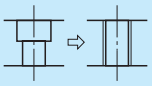
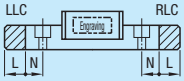
Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number	-	L	-	(MC · RLC · LLC)
SEL2BWNL16	-	450	-	MC

MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 9, 12 → M4; 14, 16 → M5. ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC. H: 9, 12, 14, 16 → L Cut: 5 → N: 5; 10. ⊗Applicable to Selectable Type only. ⊗Overall length will be shorter by cutting.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price 1 Block SELBWN	1 Block SSELBWN	2 Blocks SEL2BWN	2 Blocks SSEL2BWN
9	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
12	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
14	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
16	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				

H	L Specified (1mm Increment)	€ Unit Price 1 Block SELBWNL	1 Block SSELBWNL	2 Blocks SEL2BWNL	2 Blocks SSEL2BWNL
9	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
12	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
14	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
16	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				

Miniature Linear Guides -Wide Rails-

-Wide Long Blocks · Light Preload-

Features: Wide Block Type of MISUMI original specifications. Larger screw size has enhanced fastening strength compared to standard products.

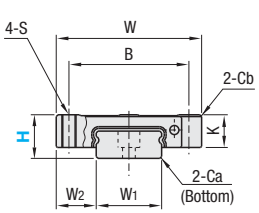
RoHS



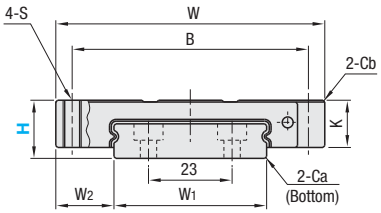
Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

M Material H Hardness	Type: Light Preload / High Grade Sets	L Dimensions	Blocks Quantity
JIS STKM (JIS SCM Steel Alloy) 58HRC~	SELBWM	Selectable	1
	SEL2BWM		2
	SELBWML	Specified	1
	SEL2BWML		2
Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~	SSELBWM	Selectable	1
	SSEL2BWM		2
	SSELBWML	Specified	1
	SSEL2BWML		2

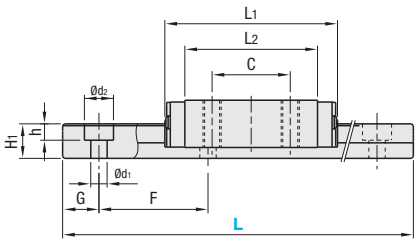
Heat Resistant Temperature: -20~80°C



H9 · 12 · 14



H16



Precautions for Use

- Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

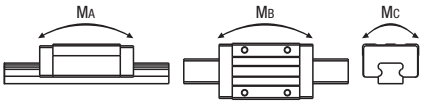
Others

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

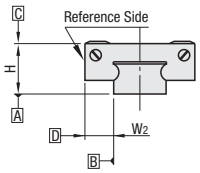
Part Number: Type	H	Block Dimensions: W ±0.05	L1	B	C	S	L2	K	Cb	Guide Rail Dimensions: W1 ±0.005	W2	H1	Ca	Counterbored Holes d1xd2xh	F	G
JIS STKM (1 Block) SELBWM SELBWML / (2 Blocks) SEL2BWM SEL2BWML / Stainless Steel (1 Block) SSELBWM SSELBWML / (2 Blocks) SSEL2BWM SSEL2BWML	9	36	43.5	29	19	M4	32.5	7	0.3	14	11	5.2	0.5	3.5x6x3.2	30	10
	12	40	51.6	33	24	M4	40.6	9	0.3	18	11	7.5	0.5	3.5x6x4.5	30	10
	14	51	61.6	44	28	M4	47.4	11	0.5	24	13.5	8	0.5	4.5x8x4.5	40	15
	16	74	74.9	65	35	M5	59.9	13	0.5	42	16	9.5	0.5	4.5x8x4.5	40	15

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N • m	MB N • m	MC N • m	Mass: Blocks kg	Guide Rails kg/m
9	1.7	4.0	12.1	12.1	28.8	0.05	0.50
12	2.6	5.3	20.2	20.2	49.5	0.09	0.96
14	3.9	8.5	38.6	38.6	104.6	0.16	1.40
16	7.2	14.3	86.0	86.0	305.2	0.3	2.95



Preload and Accuracy Standards

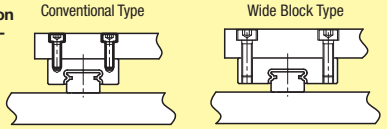


Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±25
Width W2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

ex

-Installation Example-



*1size larger screws
Enhanced assembly and fastening strength.

CAD Data

Order Example

Part Number	-	L
SELBWM12		200
SELBWM12L	-	200 (L Type Greased)
SELBWM12G	-	200 (G Type Greased)

Alternative grease types available.
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

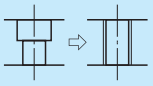
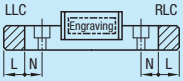
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number - L - (MC · RLC · LLC)
SEL2BWML16 - 450 - MC
MC only 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 9, 12 → M4; 14, 16 → M5. ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC. H: 9, 12, 14, 16 / L Cut: 5 / N: 5	5,00
	Right End Cut RLC	N: 10. Applicable to Selectable Type only. Overall length will be shorter by cutting.	5,00

H	Selectable L	€ Unit Price 1 Block SELBWM	1 Block SSELBWM	2 Blocks SEL2BWM	2 Blocks SSEL2BWM
9	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
12	80				
	110				
	140				
	170				
	200				
	230				
	260				
	290				
14	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
16	110				
	150				
	190				
	230				
	270				
	310				
	350				
	390				
	430				
	470				
	510				
	550				
	590				
	630				
	670				

H	L Specified (1mm Increment)	€ Unit Price 1 Block SELBWML	1 Block SSELBWML	2 Blocks SEL2BWML	2 Blocks SSEL2BWML
9	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
12	81~109				
	111~139				
	141~169				
	171~199				
	191~229				
	231~259				
	261~289				
14	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
16	111~149				
	151~189				
	191~229				
	231~269				
	271~309				
	311~349				
	351~389				
	391~429				
	431~469				
	471~509				
	511~549				
	551~589				
	591~629				
	631~669				

Miniature Linear Guides-Heat Resistant-

-Short, Standard, Long Blocks · Light Preload-

■**Features:** Usable at up to 150°C of operating temperature since heat-resisting parts and grease are employed.



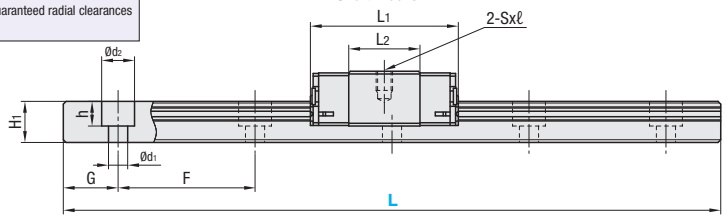
RoHS

Ⓨ Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

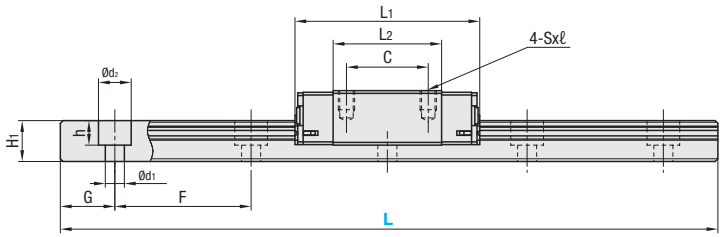
Ⓜ Material Ⓗ Hardness	Type			L Dimension	Blocks Quantity
	Short Blocks	Standard Block	Long Blocks		
Stainless Steel (1.4125/ X105CrMo17 Material) 56HRC~	SSEBST	SSEBT	SSELBT	Selectable	1
	SSE2BST	SSE2BT	SSEL2BT		2
	SSEBSLT	SSEBLT	SSELBLT	Specified	1
	SSE2BSLT	SSE2BLT	SSEL2BLT		2

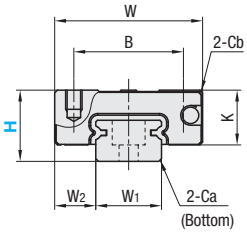
Heat Resistant Temperature: -20~150°C

Short Blocks



Standard, Long Blocks





■Precautions for Use
Ⓨ Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P.501
Ⓨ Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
Ⓨ Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
Ⓨ Rails cannot be connected to be extended.
Ⓨ Running parallelism is the value measured after the rail is mounted.

■Accessories
- H8 comes with cap screws (M2x6).

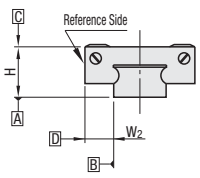
■Others
- For G dimensions of L Dimension Configurable Type, refer to ☞P.507
- Filled with heat resistant grease (Du Pont KRYTOX GPL225).
- Stainless Steel and Fluoro-Rubber are used for Return Caps and Seals respectively.

Part Number Type	H	Blocks Shape	Block Dimensions W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions H1	W1 ±0.005	W2	Ca	Counterbored Holes d1xd2xh	F	G
Short Blocks (1 Block) SSEBST SSEBSLT / (2 Blocks) SSE2BST SSE2BSLT Standard Block (1 Block) SSEBT SSEBLT / (2 Blocks) SSE2BT SSE2BLT Long Blocks (1 Block) SSELBT SSELBLT / (2 Blocks) SSEL2BT SSEL2BLT	8	Short	17	19.6	12	-	M2x2.5	9.6	6.5	0.3	4.7	7	5	0.3	2.4x4.2x2.3	15	5
		Standard		23.6		8		13.6									
		Long		32		13		22									
	10	Short	20	22.9	15	-	M3x3	11.9	7.8	0.3	5.5	9	5.5	0.3	3.5x6x3.5	20	7.5
		Standard		30		10		19									
		Long		40		16		29									
	13	Short	27	27	20	-	M3x3.5	13	10	0.5	7.5	12	7.5	0.5	3.5x6x4.5	25	10
		Standard		33.9		15		19.9									
		Long		45.8		20		31.8									
	16	Short	32	32.7	25	-	M3x4	17.7	12	0.5	9.5	15	8.5	0.5	3.5x6x4.5	40	15
		Standard		42.4		20		27.4									
		Long		58.3		25		43.3									

Kgf=Nx0.101972

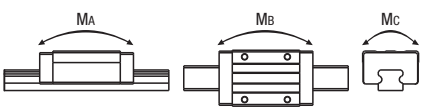
H	Blocks Shape	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA N • m	MB N • m	MC N • m	Mass Blocks kg	Guide Rails kg/m
8	Short	0.79	1.27	1.9	1.6	4.6	0.008	0.19
	Standard	0.9	1.5	4.1	4.1	5.2	0.01	
	Long	1.6	2.4	7.5	7.5	9	0.02	
10	Short	1.16	1.68	3.1	2.6	7.9	0.015	0.31
	Standard	1.5	2.5	5.1	5.1	10.2	0.02	
	Long	2.2	3.7	12.3	12.3	13	0.03	
13	Short	1.63	2.38	5.2	4.4	14.8	0.025	0.61
	Standard	2.2	3.3	8.8	9.5	16.1	0.04	
	Long	3.5	5.3	24.5	26.4	32.3	0.06	
16	Short	3.08	4.23	12.3	10.3	32.6	0.05	1.02
	Standard	3.6	5.4	21.6	23.4	39.6	0.06	
	Long	5.8	8.7	57.8	62.6	67.6	0.1	

■Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W_2 Tolerance	±25
Width W_2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	



CAD Data

Order Example

Part Number	-	L
SSEBT10	-	195

Days to Ship

8 Days

Express A | 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

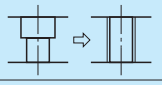
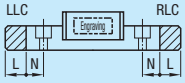
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%

Alterations

Part Number	-	L	-	(MC · RLC · LLC)
SSEBLT16	-	450	-	MC

MC only | 10 Days

Alterations	Code	Spec.	Price Adder
Female Thread Holes 	MC	Changes the rail mounting hole from counterbored holes to tapped holes. H: 8 / 10 / 13 / 16 — MC: M3 / M4 / M4 / M5 ⊗Express Serviceis not available.	Free of charge
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC H: 10 / 13 / 16 — L Cut: 2.5 / 5 / 10 — N: 5 Applicable to Selectable Type only. Overall length will be shorter by cutting. ⊗Not applicable to H8. ⊗Not applicable to H10, H35 and H13, L45.	5,00
	Right End Cut RLC		5,00

H	Selectable L	€ Unit Price					
		Short		Standard		Long	
		SSEBST	SSE2BST	SSEBT	SSE2BT	SSELBT	SSEL2BT
8	40		⊗		⊗		⊗
	55		⊗		⊗		⊗
	70						
	85						
	100						
	115						
	130						
10	35		⊗		⊗	⊗	⊗
	55		⊗		⊗		⊗
	75		⊗		⊗		⊗
	95						
	115						
	135						
	155						
	175						
	195						
	215						
	235						
	255						
	275						
13	45		⊗		⊗	⊗	⊗
	70		⊗		⊗		⊗
	95		⊗		⊗		⊗
	120						
	145						
	170						
	195						
	220						
	245						
	270						
	295						
	320						
	345						
	370						
	395						
	420						
	445						
	470						
16	70		⊗		⊗	⊗	⊗
	110		⊗		⊗		⊗
	150						
	190						
	230						
	270						
	310						
	350						
	390						
	430						
	470						
	510						
	550						
	590						
	630						
	670						

H	L Specified (1mm Increment)	€ Unit Price					
		Short		Standard		Long	
		SSEBSLT	SSE2BSLT	SSEBLT	SSE2BLT	SSELBLT	SSEL2BLT
8	41~54		⊗		⊗		⊗
	56~69						⊗
	71~84						
	86~99						
	101~114						
	116~129						
10	36~54		⊗		⊗	⊗	⊗
	56~74		⊗		⊗		⊗
	76~94						⊗
	96~114						⊗
	116~134						
	136~154						
	156~174						
	176~194						
	196~214						
	216~234						
	236~254						
	256~274						
13	46~69		⊗		⊗	⊗	⊗
	71~94		⊗		⊗		⊗
	96~119		⊗		⊗		⊗
	121~144						
	146~169						
	171~194						
	196~219						
	221~244						
	246~269						
	271~294						
	296~319						
	321~344						
	346~369						
	371~394						
	396~419						
	421~444						
	446~469						
16	71~109		⊗		⊗	⊗	⊗
	111~149		⊗		⊗		⊗
	151~189						
	191~229						
	231~269						
	271~309						
	311~349						
	351~389						
	391~429						
	431~469						
	471~509						
	511~549						
	551~589						
	591~629						
	631~669						

Miniature Linear Guides-Lubrication Units-

-Standard Block · Interchangeable, Slight Clearance-

■Features: Blocks with Lubrication Units provide long term maintenance-free condition.

RoHS

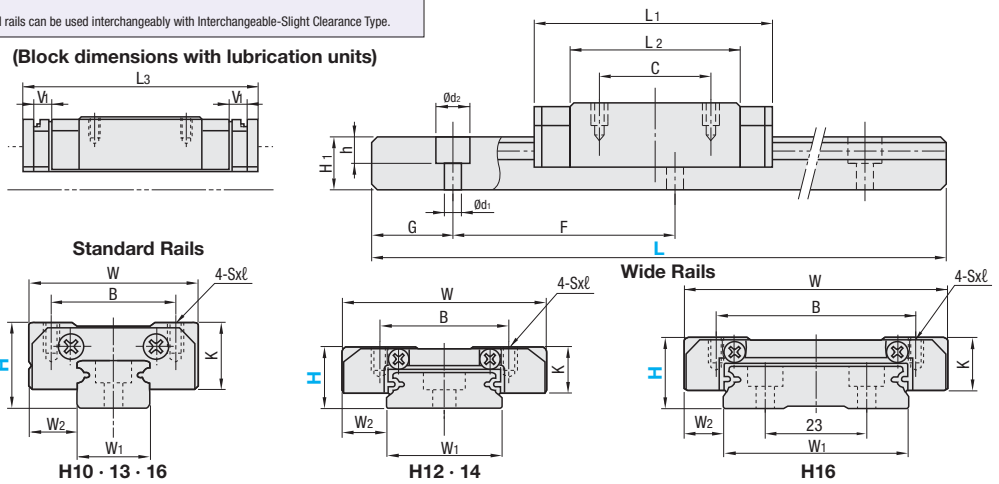


※Blocks and rails can be used interchangeably with Interchangeable-Slight Clearance Type.

M Material H Hardness	Rail Width	Type Sets	Type Blocks	Type Rails	L Dimension	Block Specifications
Stainless Steel (1.4125/ X105CrMo17) 56~60HRC	Standard Rails	SAUS	SAU	SAUL	Selectable	-
		SAUPS	SAUP			With Lubrication Unit
		SAUSL	SAU	SAULF	Specified	-
		SAUPSL	SAUP			With Lubrication Unit
	Wide Rails	SAWS	SAW	SAWL	Selectable	-
		SAWPS	SAWP			With Lubrication Unit
		SAWSL	SAW	SAWLF	Specified	-
		SAWPSL	SAWP			With Lubrication Unit

Heat Resistant Temperature: -20~80°C

(Block dimensions with lubrication units)



■Precautions for Use

※Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to ☞P501

※Straight grooves are provided on datum planes. Be sure to match the datum lines when using.

※Rails cannot be connected to be extended.

※Running parallelism is the value measured after the rail is mounted.

■Others

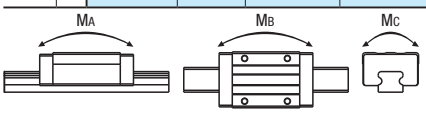
The lubrication unit supplies fresh lubrication oil to the track surfaces continuously from porous plastic material containing a high proportion of lubricant, providing long term maintenance-free condition.

- For G dimensions of L Dimension Configurable Type, refer to ☞P507

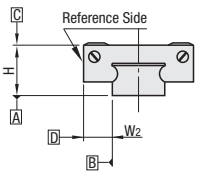
Part Number Type	H	W	L1	B	C	Sxℓ	L2	L3	V1	K	H1	W1	W2	Counterbored Holes d1xd2xh	F	G
(Standard Rail) Sets SAUS SAUPS SAUSL SAUPSL / Blocks SAU SAUP / Rails SAUL SAULF	10	20	30	15	10	M3x3	20	36.4	3.2	7.8	5.5	9	5.5	3.5x6x4.5	20	7.5
	13	27	35.2	20	15	M3x3.5	21.8	42.2	3.5	10	7.5	12	7.5	3.5x6x4.5	25	10
	16	32	43.6	25	20	M3x4	27	51.8	4.1	12	9.5	15	8.5	3.5x6x4.5	40	15
(Wide Rail) Sets SAWS SAWPS SAWSL SAWPSL / Blocks SAW SAWP / Rails SAWL SAWLF	12	30	39.8	21	12	M3x3	27.6	46.8	3.5	8	7.5	18	6	3.5x6x4.5	30	10
	14	40	45	28	15	M3x4	31	53	4	10	8.5	24	8	4.5x8x4.5	40	15
	16	60	56.6	45	20	M4x4.5	38.4	66.2	4.8	12	9.5	42	9	4.5x8x4.5	40	15

kgf=Nx0.101972

H		Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment MA / MB N • m	Allowable Static Moment Mc N • m	Mass Blocks kg	Mass Guide Rails kg/m
Standard Rails	10	1.49	2.15	6.1	9.9	0.02	0.35
	13	2.83	3.50	11.0	21.0	0.04	0.65
	16	5.55	6.60	26.0	49.0	0.07	1.05
Wide Rails	12	3.00	4.50	17.0	36.0	0.04	0.95
	14	4.35	6.35	29.0	71.0	0.08	1.40
	16	7.60	10.40	59.0	207.0	0.15	2.75



■Preload and Accuracy Standards



Radial Clearance (μm)	
Interchangeable-Slight Clearance	0~15

Dimension Precision (μm)	Standard Grade
Height H Tolerance	±20
Height H Pair Variation	40
Width W2 Tolerance	±20
Width W2 Pair Variation	40
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Standard Class (Interchangeable-Slight Clearance) meets the above values even after the block is replaced.

CAD Data

Order Example

Part Number	-	L
SAUS10	-	155
SAUL10	-	155
SAU10		

Days to Ship

- Selectable Type · Blocks only
SA_S, SA_, SA_PS, SA_P, SAUL, SAWL

8 Days (Selectable Type / Blocks only)

Express A | 5,00 EUR / piece | P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

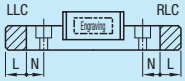
- L Dimension Configurable Type
SAUSL, SAUPSL, SAWSL, SAWPSL, SAULF, SAWLF

10 Days

Alterations

Part Number	-	L	-	(LLC · RLC)
SAUS10	-	155	-	LLC

10 Days

Alterations	Code	Spec.	Price Adder
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC	5,00
	Right End Cut RLC	Applicable to Selectable Type only. Overall length will be shorter by cutting.	5,00

	H	L Cut	N
Standard Rails	10	2.5	5
	13	5	
	16	10	
Wide Rails	12	5	5
	14		10
	16		

Price

Sets
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~5	6 or 7	8 or 9	10~20
Discount Rate	€ Unit Price	5%	10%	18%

Rails, Blocks
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~5	6 or 7	8 or 9	10~20
Discount Rate	€ Unit Price	5%	10%	23%

Standard Rails

Part Number Type	H	Selectable L	€ Unit Price Sets SAUS	Sets SAUPS	Rails SAUL	Blocks SAU	Blocks SAUP
SAUS	10	55					
		75					
SAUPS (With Lubrication Units)		95					
		115					
SAUL (Rails)		155					
		195					
SAU (Blocks)		275					
	13	120					
SAUP (With Lubrication Unit Blocks)		170					
		220					
		270					
		320					
		370					
		470					
	16	150					
		230					
		310					
		430					
		550					
		670					

Part Number Type	H	L Specified (1mm Increment)	€ Unit Price Sets SAUSL	Sets SAUPSL	Rails SAULF
SAUSL	10	56~74			
		76~94			
SAUPSL (With Lubrication Units)		96~114			
		116~154			
SAULF (Rails)		156~194			
		196~274			
	13	121~169			
		171~219			
		221~269			
		271~319			
		321~369			
		371~469			
	16	151~229			
		231~309			
		311~429			
		431~549			
		551~669			

Wide Rails

Part Number Type	H	Selectable L	€ Unit Price Sets SAWS	Sets SAWPS	Rails SAWL	Blocks SAW	Blocks SAWP
SAWS	12	80					
		110					
SAWPS (With Lubrication Units)		140					
		170					
SAWL (Rails)		200					
		260					
SAW (Blocks)		290					
		380					
	14	110					
SAWP (With Lubrication Unit Blocks)		150					
		190					
		230					
		310					
		390					
		470					
		790					
	16	150					
		230					
		310					
		430					
		550					
		670					
		990					

Part Number Type	H	L Specified (1mm Increment)	€ Unit Price Sets SAWSL	Sets SAWPSL	Rails SAWLF
SAWSL	12	81~109			
		111~139			
SAWPSL (With Lubrication Units)		141~169			
		171~199			
SAWLF (Rails)		201~259			
		261~289			
		291~379			
	14	111~149			
		151~189			
		191~229			
		231~309			
		311~389			
		391~469			
		471~789			
	16	151~229			
		231~309			
		311~429			
		431~549			
		551~669			
		671~989			

Miniature Linear Guides-Dust Resistant-

-Standard Block · Light Preload-

Features: Dust Resistant Miniature Linear Guide usable where dust and machining chips exist.

RoHS

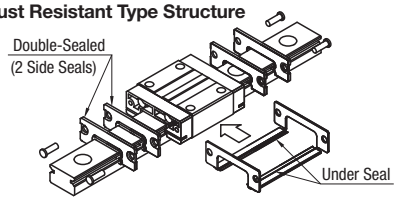


※Blocks and rails are not sold as separate items. Light Preload Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

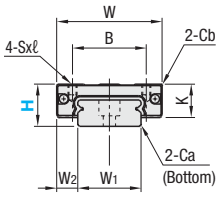
Material / Hardness	Type: Standard Rails	Type: Wide Rails	L Dimension	Blocks Quantity
JIS STKM (Alloy Steel including JIS SCM) 58HRC~	SEBD	SEBWD	Selectable	1
	SE2BD	SE2BWD		2
	SEBDL	SEBWDL	Specified	1
	SE2BDL	SE2BWDL		2

Heat Resistant Temperature: -20~80°C

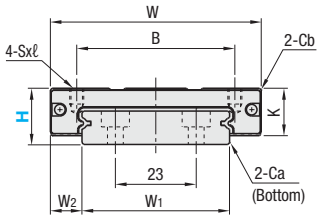
Dust Resistant Type Structure



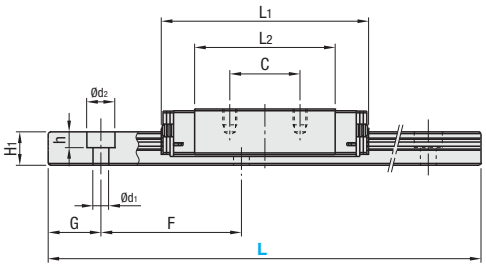
- Intrusion of foreign substances into the blocks can be prevented by enhanced sealing effects with two-ply side seal and under seals.
- Can be used where dust and machining chips exist.
- Do not use in areas with high temperature dusts such as weld spatter.



Standard Rail H13 · 16 · 20
Wide Rail H14



Wide Rail H16



Precautions for Use

※Blocks are equipped with retainers (wire) to prevent balls from falling out. Refer to P.501
※Radial clearances and accuracies are not guaranteed if the blocks and rails in the Light Preload Type are interchanged from the original set combinations.
※Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
※Rails cannot be connected to be extended.
※Running parallelism is the value measured after the rail is mounted.

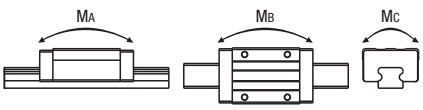
Others

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.) is filled.

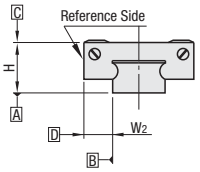
	Part Number: Type		H	Block Dimensions: W ±0.05	L1	B	C	Sxℓ	L2	K	Cb	Guide Rail Dimensions: H1	W1 ±0.005	W2	Ca	Counterbored Holes d1xd2xh	F	G
Standard Rails	(1 Block) SEBD SEBDL	(2 Blocks) SE2BD SE2BDL	13	27	36.9	20	15	M3x3.5	19.9	11	0.5	7.5	12	7.5	0.5	3.5x6x4.5	25	10
			16	32	45.4	25	20	M3x4	27.4	13	0.5	9.5	15	8.5	0.5	3.5x6x4.5	40	15
			20	40	53	30	25	M4x6	34.6	16	0.5	11	20	10	0.5	6x9.5x5.5	60	20
Wide Rails	(1 Block) SEBWD SEBWDL	(2 Blocks) SE2BWD SE2BWDL	14	40	47.3	28	15	M3x3.5	30.1	12	0.5	8	24	8	0.5	4.5x8x4.5	40	15
			16	60	58	45	20	M4x4.5	40	14	0.5	9.5	42	9	0.5	4.5x8x4.5	40	15

kgf=Nx0.101972

H		Basic Load Rating: C (Dynamic) kN	Co (Static) kN	Allowable Static Moment: MA N·m	MB N·m	MC N·m	Mass: Blocks kg	Guide Rails kg/m
Standard Rails	13	2.2	3.3	8.8	9.5	16.1	0.045	0.61
	16	3.6	5.4	21.6	23.4	39.6	0.065	1.02
	20	5.2	8.5	48.4	48.4	86.4	0.13	1.65
Wide Rails	14	3.5	5.3	20.6	22.3	52.1	0.085	1.40
	16	5.8	8.5	40.2	43.6	148	0.16	2.95



Preload and Accuracy Standards



Radial Clearance (μm)	
Light Preload	-3~0

Dimension Precision (μm)	High Grade
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±25
Width W2 Pair Variation	20
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Seal Resistance (N)

Rail Width	Height (H)	Standard	Dust Resistant
Standard	13	0.7	1.0
	16	0.8	1.1
	20	1.2	1.5
Wide	14	1.0	1.3
	16	1.2	1.5

※Data above are reference values.

CAD Data

Order Example

Part Number	-	L
SEBD13	-	220

Days to Ship

8 Days

Price

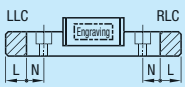
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~3	4~7	8~10
Discount Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - L - (RLC · LLC)
SEBWD14 - 350 - RLC

Alterations	Code	Spec.	Price Adder
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code: LLC Standard Rails: H 13, L Cut 5, N 5 / H 16, L Cut 10, N 5 / H 20, L Cut 15, N 5 Wide Rails: H 14, L Cut 5, N 10 / H 16, L Cut 5, N 10 Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H dimension 13 and L dimension 45.	5,00
	Right End Cut RLC		5,00

Standard Rail

H	Selectable L	€ Unit Price 1 Block SEBD	€ Unit Price 2 Blocks SE2BD
13	45		
	70		
	95		
	120		
	145		
	170		
	195		
	220		
	245		
	270		
	295		
	320		
	345		
	370		
	395		
	420		
	445		
	470		
16	70		
	110		
	150		
	190		
	230		
	270		
	310		
	350		
	390		
	430		
	470		
	510		
	550		
	590		
	630		
	670		
20	100		
	160		
	220		
	280		
	340		
	400		
	460		
	520		
	580		
	640		
	700		

H	L Specified (1mm Increment)	€ Unit Price 1 Block SEBDL	€ Unit Price 2 Blocks SE2BDL
13	46~69		
	71~94		
	96~119		
	121~144		
	146~169		
	171~194		
	196~219		
	221~244		
	246~269		
	271~294		
	296~319		
	321~344		
	346~369		
	371~394		
	396~419		
	421~444		
	446~469		
16	71~109		
	111~149		
	151~189		
	191~229		
	231~269		
	271~309		
	311~349		
	351~389		
	391~429		
	431~469		
	471~509		
	511~549		
	551~589		
	591~629		
	631~669		
20	101~159		
	161~219		
	221~279		
	281~339		
	341~399		
	401~459		
	461~519		
	521~579		
	581~639		
	641~699		

Wide Rail

H	Selectable L	€ Unit Price 1 Block SEBWD	€ Unit Price 2 Blocks SE2BWD
14	70		
	110		
	150		
	190		
	230		
	270		
	310		
	350		
	390		
	430		
	470		
16	70		
	110		
	150		
	190		
	230		
	270		
	310		
	350		
	390		
	430		
	470		
	510		
	550		
	590		
	630		
	670		

H	L Specified (1mm Increment)	€ Unit Price 1 Block SEBWDL	€ Unit Price 2 Blocks SE2BWDL
14	71~109		
	111(130)~149		
	151~189		
	191~229		
	231~269		
	271~309		
	311~349		
	351~389		
	391~429		
	431~469		
16	71~109		
	111~149		
	151(170)~189		
	191~229		
	231~269		
	271~309		
	311~349		
	351~389		
	391~429		
	431~469		
	471~509		
	511~549		
	551~589		
	591~629		
	631~669		

Dimensions of L Configurable in ( ) are applicable to 2 Block Type.

Linear Guides for Medium Load-Dust Resistant-

–With Double Seals and Metal Scrapers · Normal Clearance-

Lubrication Units MX New
Provides long term maintenance-free condition.

Features: Dust Resistant Miniature Linear Guide usable where dust and machining chips exist.

RoHS

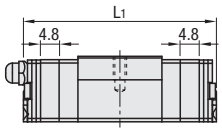


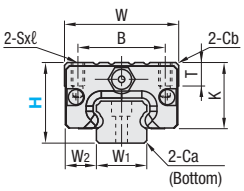
Blocks and rails are not sold as separate items. Normal Clearance Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

	Type		MX (Lubrication Units)	L Dimension	Blocks Quantity	Material / Hardness
	Double-Sealed	W/Metal Scrapers				
Standard Block	SVRD	SVRK	Blank: None -MX: Provided	Selectable	1	JIS STKM (Alloy Steel including SCM) 58HRC~
	SV2RD	SV2RK			2	
	SVRDL	SVRKL		Specified	1	
	SV2RDL	SV2RKL			2	
Wide Block	SVWD	SVWK		Selectable	1	
	SV2WD	SV2WK			2	
	SVWDL	SVWKL		Specified	1	
	SV2WDL	SV2WKL			2	

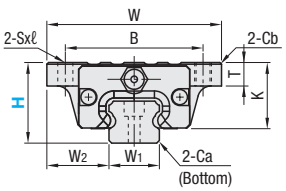
Heat Resistant Temperature: -20~80°C

Dimension Diagram of Blocks with MX (Lubrication Nnits)

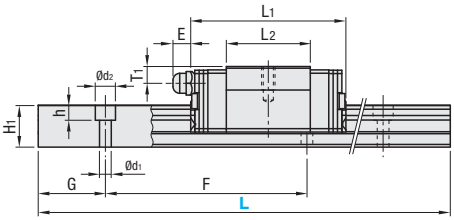




Standard Block



Wide Block



Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

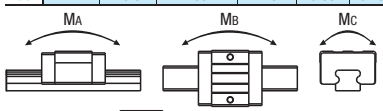
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K). Grease Fittings: Straight type for H24 and angled type for H28 and H33.

	Part Number Type		MX	H	Block Dimensions W ±0.05	L1 Standard	L1 MX	B	Sxℓ	L2	K	T	Cb	Grease Fittings Mounting Holes	Grease Fittings E	Grease Fittings T1	Guide Rail Dimensions H1	W1 ±0.05	W2	Ca	Counterbored Holes d1xd2xh	F	G
Standard Block	(1 Block) SVRD	(2 Blocks) SV2RD	Blank: None -MX: Provided	24	34	46 (42.6)	55.6 (52.2)	26	M4x7	25	20	7	0.85	M5xP0.8	6	5	12.5	15	9.5	0.5	3.5x6x4.5	60	20
	SVRK	SV2RK		28	42	53.4 (49)	63 (58.6)	32	M5x8	27.6	22.5	7.5	1	M6xP0.75	13	6	15.5	20	11	0.6	6x9.5x8.5	60	20
	SVRDL	SV2RDL		33	48	66 (61.4)	75.6 (71)	35	M6x9	37	26.5	8	1	M6xP0.75	13	6.8	18	23	12.5	0.8	7x11x9	60	20
	SVRKL	SV2RKL																					
Wide Block	(1 Block) SVWD	(2 Blocks) SV2WD		24	52	46 (42.6)	55.6 (52.2)	41	4.5	25	20	7	0.5	M5xP0.8	6	5	12.5	15	18.5	0.5	3.5x6x4.5	60	20
	SVWK	SV2WK		28	59	53.4 (49)	63 (58.6)	49	5.5	27.6	22.5	9	1	M6xP0.75	13	6	15.5	20	19.5	0.6	6x9.5x8.5	60	20
	SVWDL	SV2WDL		33	73	66 (61.4)	75.6 (71)	60	7	37	26.5	10	1	M6xP0.75	13	6.8	18	23	25	0.8	7x11x9	60	20
	SVWKL	SV2WKL																					

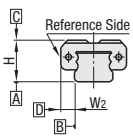
Dimensions in ( ) are for Metal Scraper Type.

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA / MB N • m	Mc N • m	Mass Block kg Double-Sealed Standard	Double-Sealed Wide	W/Metal Scrapers Standard	W/Metal Scrapers Wide	Guide Rails kg/m
24	5.0	8.23	33	57	0.16	0.21	0.16	0.21	1.5
28	7.2	12.1	58	135	0.22	0.27	0.22	0.27	2.4
33	11.7	19.6	109	225	0.33	0.43	0.34	0.44	3.4



Preload and Accuracy Standards

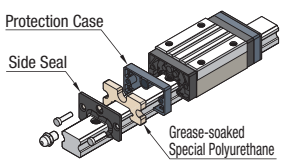


Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

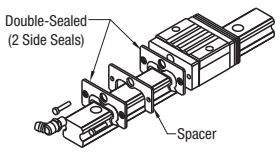
Dimension Precision (μm)		Standard Grade
Height H Tolerance		±100
Height H Pair Variation		20
Width W2 Tolerance		±100
Width W2 Pair Variation	H24, 28	20
	H33	30
Running Parallelism of surf. C against surf. A		Refer to P.501
Running Parallelism of surf. D against surf. B		

Lubrication Units MX



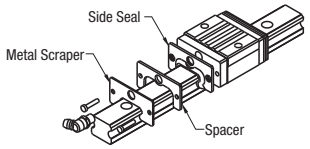
-Advantages of Lubrication Unit MX
Provides long term maintenance-free condition.
Reduces maintenance fee.
Most suitable where the design does not allow lubrication.
For details, refer to P.498

Double-Sealed



-The double seal scheme with two layers of side seals enhances the sealing effect and prevents intrusion of foreign substances into the block.
-Can be used where dust and machining chips exist.
Sliding resistance is higher than the standard type.

W/Metal Scrapers



-Larger foreign substances adhered to the rail can be removed by attaching metal scrapers on the external side of the side seals.
-Can be used in areas with high temperature dusts such as weld spatter.

CAD Data

Order Example

Part Number	-	L
SVRD28	-	880
SVRD-MX28	-	880 (With Lubrication Units)
SVRD28L	-	880 (L Type Greased)
SVRD28G	-	880 (G Type Greased)

Alternative grease types available (Except Blocks with Lubrication Units).
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

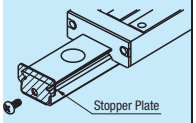
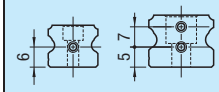
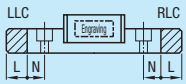
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5 or 6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (TMS · TMC · RLC · LLC)
SVRD28 - 880 - TMC

Alterations	Code	Spec.	Price Adder
TMS:Female Thread Hole Machining + 2 Stopper Plates TMC: Female Thread Hole Machining only 	TMS TMC	Adds tapped holes on both rail ends to avoid block fall-off. H24 H28, 33  M3xP0.5 Depth 5 Female Thread Hole Stopper Plates Details P.586	- TMS H / @ 24 10,00 28 14,00 33 14,00 - TMC H / @ 24 5,00 28 9,20 33 9,20
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC Right End Cut RLC	Cuts rail ends. Ordering Code LLC H / L Cut / N 24 / 28 / 33 / 10 / 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00 8,00

H	Selectable L	€ Unit Price							
		1 Block				2 Blocks			
		SVRD	SVRK	SVWD	SVWK	SV2RD	SV2RK	SV2WD	SV2WK
24	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
	760								
	820								
	880								
	940								
	1000								
	1120								
	1240								
	1360								
	1480								
28	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
	760								
	820								
	880								
	940								
	1000								
	1120								
	1240								
	1360								
	1480								
	1600								
	1720								
	1840								
	1960								
33	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
	760								
	820								
	880								
	940								
	1000								
	1120								
	1240								
	1360								
	1480								
	1600								
	1720								
	1840								
	1960								

H	L Specified (1mm Increment)	€ Unit Price							
		1 Block				2 Blocks			
		SVRDL	SVRKL	SVWDL	SVWKL	SV2RDL	SV2RKL	SV2WDL	SV2WKL
24	161~219								
	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								
	701~759								
	761~819								
	821~879								
	881~939								
	941~999								
	1001~1119								
	1121~1239								
	1241~1359								
	1361~1479								
28	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								
	701~759								
	761~819								
	821~879								
	881~939								
	941~999								
	1001~1119								
	1121~1239								
	1241~1359								
	1361~1479								
	1481~1599								
	1601~1719								
	1721~1839								
	1841~1959								
33	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								
	701~759								
	761~819								
	821~879								
	881~939								
	941~999								
	1001~1119								
	1121~1239								
	1241~1359								
	1361~1479								
	1481~1599								
	1601~1719								
	1721~1839								
	1841~1959								

MX (Lubrication Unit) € Unit Price

H	€ Unit Price	
	1 Block	2 Blocks
24		
28		
33		

Price of Guide Rails with MX (lubrication unit) = Linear Guide € Unit Price + MX € Unit Price
(Ex.) For SVRD-MX28-880, 151,20 + 19,00 = 170,20 EUR

Linear Guides -Heavy Load--Dust Resistant-

-With Double Seals and Metal Scrapers · Normal Clearance-

Lubrication Units MX New
Provides long term maintenance-free condition.

Features: Dust Resistant Miniature Linear Guide usable where dust and machining chips exist.

RoHS

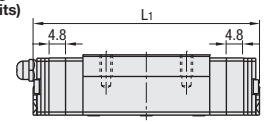


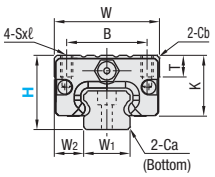
Blocks and rails are not sold as separate items. Normal Clearance Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

	Type: Double-Sealed	Type: W/Metal Scrapers	MX (Lubrication Units)	L Dim.	Blocks Qty.	M Material H Hardness
Standard Block	SXRD	SXRK	Blank: None -MX: Provided	Select-able	1	JIS STKM (Alloy Steel including SCM) 58HRC~
	SX2RD	SX2RK			2	
	SXRDL	SXRKL		Specified	1	
	SX2RDL	SX2RKL			2	
Wide Block	SXWD	SXWK		Select-able	1	
	SX2WD	SX2WK			2	
	SXWDL	SXWKL		Specified	1	
	SX2WDL	SX2WKL			2	

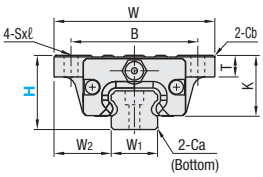
Heat Resistant Temperature: -20~80°C

Dimension diagram of blocks with MX (lubrication units)

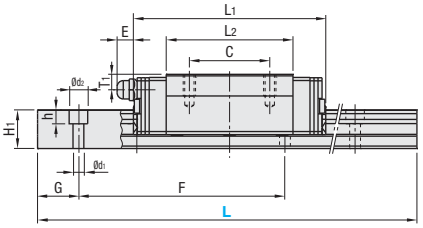




Standard Block



Wide Block



Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P. 501
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

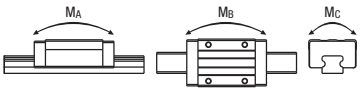
- For G dimensions of L Dimension Configurable Type, refer to P. 507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K). Grease Fittings: Straight type for H24 and angled type for H28 and H33.

	Part Number: Type (1 Block)	Part Number: Type (2 Blocks)	MX	H	Block Dimensions: W ±0.05	L1: Standard	L1: MX	B	C	Sxℓ	L2	K	T	Cb	Grease Fittings: Mounting Holes	Grease Fittings: E	Grease Fittings: T1	H1	W1 ±0.005	W2	Ca	Guide Rail Dimensions: Counterbored Holes d1xd2xh	F	G
Standard Block	SXRD	SX2RD	Blank: None -MX: Provided	24	34	62 (58.6)	71.6 (68.2)	26	26	M4x7	41	20	7	0.85	M5xP0.8	6	5	12.5	15	9.5	0.5	3.5x6x4.5	60	20
	SXRK	SX2RK		28	42	73.4 (69)	83 (78.6)	32	32	M5x8	47.6	22.5	7.5	1	M6xP0.75	13	6	15.5	20	11	0.6	6x9.5x8.5	60	20
	SXRDL	SX2RDL		33	48	90 (85.4)	99.6 (95)	35	35	M6x9	61	26.5	8	1	M6xP0.75	13	6.8	18	23	12.5	0.8	7x11x9	60	20
	SXRKL	SX2RKL																						
Wide Block	SXWD	SX2WD		24	52	62 (58.6)	71.6 (68.2)	41	26	4.5	41	20	7	0.5	M5xP0.8	6	5	12.5	15	18.5	0.5	3.5x6x4.5	60	20
	SXWK	SX2WK		28	59	73.4 (69)	83 (78.6)	49	32	5.5	47.6	22.5	9	1	M6xP0.75	13	6	15.5	20	19.5	0.6	6x9.5x8.5	60	20
	SXWDL	SX2WDL																						
	SXWKL	SX2WKL		33	73	90 (85.4)	99.6 (95)	60	35	7	61	26.5	10	1	M6xP0.75	13	6.8	18	23	25	0.8	7x11x9	60	20

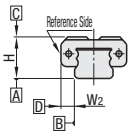
Dimensions in ( ) are for Metal Scraper Type.

kgf=Nx0.101972

H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: MA · MB N · m	Allowable Static Moment: Mc N · m	Mass: Block kg: Double-Sealed: Standard	Double-Sealed: Wide	W/Metal Scrapers: Standard	W/Metal Scrapers: Wide	Mass: Guide Rails kg/m
24	8.6	14.2	69	98	0.21	0.26	0.21	0.26	1.5
28	12.5	21.3	155	232	0.32	0.37	0.32	0.37	2.4
33	20.2	34.5	275	393	0.48	0.63	0.49	0.64	3.4



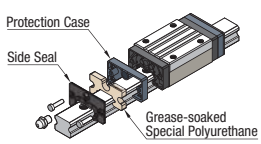
Preload and Accuracy Standards



Normal Clearance Type: Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

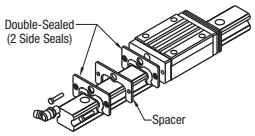
Dimension Precision (μm)		Standard Grade
Height H Tolerance		±100
Height H Pair Variation		20
Width W2 Tolerance		±100
Width W2 Pair Variation	H24, 28	20
	H33	30
Running Parallelism of surf. C against surf. A		Refer to P.501
Running Parallelism of surf. D against surf. B		

Lubrication Units MX



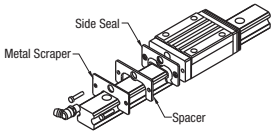
- Advantages of Lubrication Unit MX Provides long term maintenance-free condition. Reduces maintenance fee. Most suitable where the design does not allow lubrication. For details, refer to P.498

Double-Sealed



- The double seal scheme with two layers of side seals enhances the sealing effect + prevents intrusion of foreign substances into the block.
- Can be used where dust and machining chips exist.
- Sliding resistance is higher than the standard type.

W/Metal Scrapers



- Larger foreign substances adhered to the rail can be removed by attaching metal scrapers on the external side of the side seals.
- Can be used in areas with high temperature dusts such as weld spatter.

CAD Data

Order Example

Part Number	-	L
SXRD28	-	880
SXRD-MX28	-	880 (With Lubrication Units)
SXRD28L	-	880 (L Type Greased)
SXRD28G	-	880 (G Type Greased)

Alternative grease types available (Except Blocks with Lubrication Units).
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

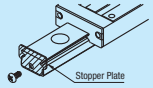
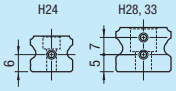
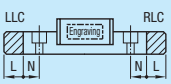
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5 · 6	7 · 8	9 · 10
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (TMS · TMC · RLC · LLC)
SXRD33 - 880 - TMC

Alterations	Code	Spec.	Price Adder
TMS: Female Thread Hole Machining + 2 Stopper Plates TMC: Female Thread Hole Machining only 	TMS TMC	Adds tapped holes on both rail ends to avoid block fall-off.  M3xP0.5 Depth 5 Female Thread Hole Stopper Plates Details P.586	- TMS H / @ 24 / 10,00 28 / 14,00 33 / 14,00 - TMC H / @ 24 / 5,00 28 / 9,20 33 / 9,20
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC H / L Cut / N 24 / 28 / 33 — 10 / 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00
	Right End Cut RLC		8,00

H	Selectable L	€ Unit Price							
		1 Block				2 Blocks			
		SXRD	SXRK	SXWD	SXWK	SX2RD	SX2RK	SX2WD	SX2WK
24	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
	760								
	820								
	880								
	940								
	1000								
	1120								
	1240								
	1360								
	1480								
28	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
	760								
	820								
	880								
	940								
	1000								
	1120								
	1240								
	1360								
	1480								
	1600								
	1720								
	1840								
	1960								
33	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
	760								
	820								
	880								
	940								
	1000								
	1120								
	1240								
	1360								
	1480								
	1600								
	1720								
	1840								
	1960								

H	L Specified (1mm Increment)	€ Unit Price							
		1 Block				2 Blocks			
		SXRDL	SXRKL	SXWDL	SXWKL	SX2RDL	SX2RKL	SX2WDL	SX2WKL
24	161(192)~219								
	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								
	701~759								
	761~819								
	821~879								
	881~939								
	941~999								
	1001~1119								
	1121~1239								
	1241~1359								
	1361~1479								
28	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~.639								
	641~699								
	701~759								
	761~819								
	821~879								
	881~939								
	941~999								
	1001~1119								
	1121~1239								
	1241~1359								
	1361~1479								
	1481~1599								
	1601~1719								
	1721~1839								
	1841~1959								
33	221(262)~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								
	701~759								
	761~819								
	821~879								
	881~939								
	941~999								
	1001~1119								
	1121~1239								
	1241~1359								
	1361~1479								
	1481~1599								
	1601~1719								
	1721~1839								
	1841~1959								

Dimensions of L Configurable in ( ) are applicable to 2 Block Type.

MX (Lubrication Unit) € Unit Price

H	€ Unit Price	
	1 Block	2 Blocks
24		
28		
33		

Price of Guide Rails with MX (lubrication unit) = Linear Guide € Unit Price + MX € Unit Price
(Ex.) For SXRD-MX28-880: 160,90 + 19,00 = 179,90 EUR

Linear Guides for Medium and Heavy Load -Stainless Steel-
-Normal Clearance-

Lubrication Units MX New
Provides long term maintenance-free condition.

Features: Linear Guides for Medium and Heavy Load excellent in corrosion resistance.

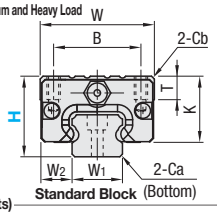


Blocks and rails are not sold as separate items. Normal Clearance Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

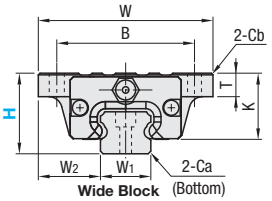
	Type: Medium Load	Type: Heavy Load	MX (Lubrication Units)	L Dimension	Blocks Quantity	M Material H Hardness
Standard Block	SSVR	SSXR	Blank: None -MX: Provided	Selectable	1	Stainless Steel (1.4125/ X105CrMo17 Material) 56HRC~
	SSV2R	SSX2R			2	
	SSVRL	SSXRL		Specified	1	
	SSV2RL	SSX2RL			2	
Wide Block	SSVW	SSXW		Selectable	1	
	SSV2W	SSX2W			2	
	SSVWL	SSXWL		Specified	1	
	SSV2WL	SSX2WL			2	

Heat Resistant Temperature: -20~80°C

- Medium and Heavy Load



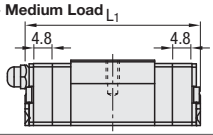
Standard Block (Bottom)



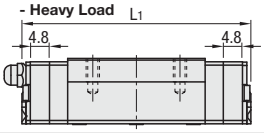
Wide Block (Bottom)

Dimension diagram of blocks with MX (lubrication units)

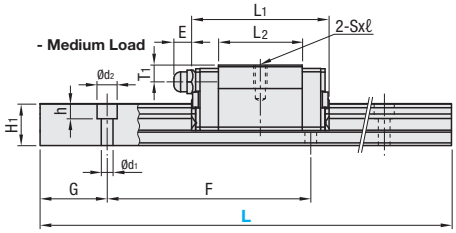
- Medium Load



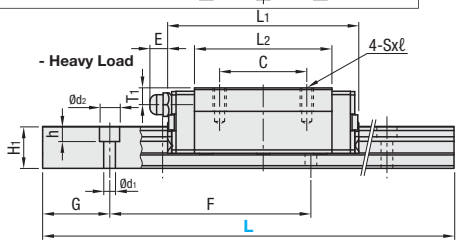
- Heavy Load



- Medium Load



- Heavy Load



Precautions for Use
- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K). Grease Fittings: Straight type for H24 and angled type for H28 and H33.

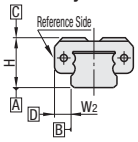
	Part Number: Type (1 Block)	Part Number: Type (2 Blocks)	MX	H	Block Dimensions: W ±0.05	L1: Standard	L1: MX	B	C	Sxℓ	L2	K	T	Cb	Grease Fittings: Mounting Holes	Grease Fittings: E	Grease Fittings: T1	Guide Rail Dimensions: H1	W1 ±0.005	W2	Ca	Counterbored Holes: d1xd2xh	F	G
Medium Load	SSVR	SSV2R	Blank: None -MX: Provided	24	34 (52)	41	50.6	26 (41)	-	M4x7 (4.5)	25	20	7 (7)	0.85	M5xP0.8	6	5	12.5	15	9.5 (18.5)	0.5	3.5x6x4.5	60	20
	SSVRL	SSV2RL		28	42 (59)	47	56.6	32 (49)	-	M5x8 (5.5)	27.6	22.5	7.5 (9)	1	M6xP0.75	13	6	15.5	20	11 (19.5)	0.6	6x9.5x8.5	60	20
	SSVW	SSV2W		33	48 (73)	59	68.6	35 (60)	-	M6x9 (7)	37	26.5	8 (10)	1	M6xP0.75	13	6.8	18	23	12.5 (25)	0.8	7x11x9	60	20
	SSVWL	SSV2WL																						
Heavy Load	SSXR	SSX2R		24	34 (52)	57	66.6	26 (41)	26	M4x7 (4.5)	41	20	7 (7)	0.5	M5xP0.8	6	5	12.5	15	9.5 (18.5)	0.5	3.5x6x4.5	60	20
	SSXRL	SSX2RL		28	42 (59)	67	76.6	32 (49)	32	M5x8 (5.5)	47.6	22.5	7.5 (9)	1	M6xP0.75	13	6	15.5	20	11 (19.5)	0.6	6x9.5x8.5	60	20
	SSXW	SSX2W		33	48 (73)	83	92.6	35 (60)	35	M6x9 (7)	61	26.5	8 (10)	1	M6xP0.75	13	6.8	18	23	12.5 (25)	0.8	7x11x9	60	20
	SSXWL	SSX2WL																						

Dimensions in ( ) are for Wide Block Type.

kgf=Nx0.101972

Blocks	H	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Static Moment: MA / MB N • m	Allowable Static Moment: MC N • m	Mass: Block kg Standard	Mass: Block kg Wide	Mass: Guide Rails kg/m
Medium Load	24	5.0	8.23	33	57	0.15	0.20	1.5
	28	7.2	12.1	58	135	0.20	0.25	2.4
	33	11.7	19.6	109	225	0.30	0.40	3.4
Heavy Load	24	8.6	14.2	69	98	0.20	0.25	1.5
	28	12.5	21.3	155	232	0.30	0.35	2.4
	33	20.2	34.5	275	393	0.45	0.60	3.4

Preload and Accuracy Standards

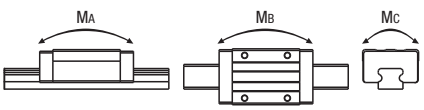


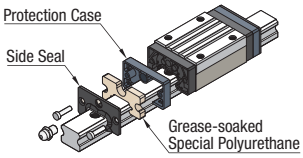
Lubrication Units MX

Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

Dimension Precision (μm)		Standard Grade
Height H Tolerance		±100
Height H Pair Variation		20
Width W2 Tolerance		±100
Width W2 Pair Variation	H24, 28	20
	H33	30
Running Parallelism of surf. C against surf. A		Refer to P.501
Running Parallelism of surf. D against surf. B		





-Advantages of Lubrication Unit MX
Provides long term maintenance-free condition.
Reduces maintenance fee.
Most suitable where the design does not allow lubrication.
For details, refer to P.498

CAD Data

Order Example

Part Number	-	L
SSXRL28	-	575
SSXRL-MX28	-	575 (With Lubrication Units)
RSXRL28	-	575 (Raydent)
SSXRL28L	-	575 (L Type Greased)
SSXRL28G	-	575 (G Type Greased)

Alternative grease types available (Except Blocks with Lubrication Units).
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• LTBC Plated Products (Applicable to Standard Grade Type only.)

13 Days - Part No.: Change the first letter "S" of Standard Grade Type to "R".
•For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to standard grade price.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5 · 6	7 · 8	9 · 10
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	L	-	(RLC · LLC)
SSXR33	-	520	-	RLC

Alterations	Code	Spec.	Price Adder
Rail Ends Cut LLC RLC Engraving L N N L Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC H: 24, 28, 33 / L Cut: 10 / N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to Heavy Load Type with H Dimension 24 and L dimension 100.	8,00
	Right End Cut RLC		8,00

H	Select-able L	€ Unit Price							
		Medium Load				Heavy Load			
		1 Block		2 Blocks		1 Block		2 Blocks	
		SSVR	SSVW	SSV2R	SSV2W	SSXR	SSXW	SSX2R	SSX2W
24	100								
	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
28	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								
33	160								
	220								
	280								
	340								
	400								
	460								
	520								
	580								
	640								
	700								

H	L Specified (1mm Increment)	€ Unit Price							
		Medium Load				Heavy Load			
		1 Block		2 Blocks		1 Block		2 Blocks	
		SSVRL	SSVWL	SSV2RL	SSV2WL	SSXRL	SSXWL	SSX2RL	SSX2WL
24	101~159								
	161(192)~219								
	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								
28	161~219								
	221~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								
33	161~219								
	221(262)~279								
	281~339								
	341~399								
	401~459								
	461~519								
	521~579								
	581~639								
	641~699								

Dimensions of L Configurable in ( ) are applicable to Heavy Load 2 Block Type.

MX (Lubrication Unit) € Unit Price

H	€ Unit Price	
	1 Block	2 Blocks
24		
28		
33		

Price of Guide Rails with MX (lubrication unit) = Linear Guide € Unit Price + MX € Unit Price
(Ex.) For SSVR-MX28-640, 153,00 + 19,00 = 172,00 EUR

Linear Guides for Medium Load
-Normal Clearance-

Lubrication Units MX New
Provides long term maintenance-free condition.

■**Features:** The most basic type among all industry standard specifications.

RoHS

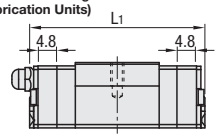


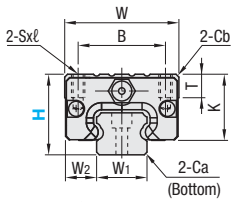
※Blocks and rails are not sold as separate items. Normal Clearance Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

		Type				MX (Lubrication Units)	L Dimensions	M Material H Hardness
		1 Block		2 Blocks				
		Standard Grade	High Grade	Standard Grade	High Grade			
Standard Blocks		SVR	SVRJ	SV2R	SV2RJ	Blank: None -MX: Provided	Selectable	JIS STKM (Alloy Steel including JIS SCM) 58HRC~
		SVRL	SVRLJ	SV2RL	SV2RLJ		Specified	
Wide Block	Through Holes	SVW	-	SV2W	-		Selectable	
		SVWL	-	SV2WL	-		Specified	
	Female Thread Holes	SVWT	-	SV2WT	-		Selectable	
		SVWTL	-	SV2WTL	-		Specified	

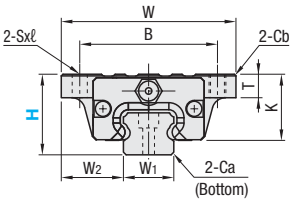
Heat Resistant Temperature: -20~80°C

■**Dimension Diagram of Blocks with MX (Lubrication Units)**

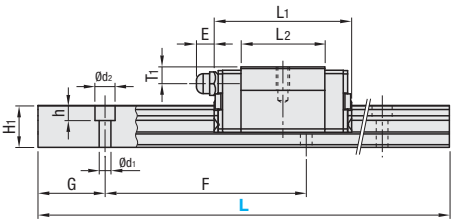




Standard Block



Wide Block



■**Precautions for Use**
- ※Blocks are equipped with retainers to prevent balls from derailing. Refer to ☞P501
- ※Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- ※Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- ※Rails cannot be connected to be extended.
- ※Running parallelism is the value measured after the rail is mounted.

■**Others**
- For G dimensions of L Dimension Configurable Type, refer to ☞P507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K). Grease Fittings: Straight type for H24 and angled type for H28 and H33.

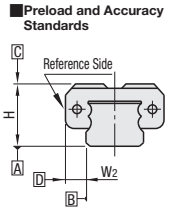
	Part Number			Block Dimensions												Guide Rail Dimensions						
	Type	MX	H	W ±0.05	L1 Standard	L1 MX	B	Sxℓ	L2	K	T	Cb	Grease Fittings Mounting Holes	Grease Fittings E	Grease Fittings T1	H1	W1 ±0.005	W2	Ca	Counterbored Holes d1xd2xh	F	G
Standard Block	(1 Block) (2 Blocks) SVR SV2R	Blank: None -MX: Provided	24	34	41	50.6	26	M4x7	25	20	7	0.85	M5xP0.8	6	5	12.5	15	9.5	0.5	3.5x6x4.5	60	20
	SVRL SV2RL		28	42	47	56.6	32	M5x8	27.6	22.5	7.5	1	M6xP0.75	13	6	15.5	20	11	0.6	6x9.5x8.5	60	20
	SVRJ SV2RJ		33	48	59	68.6	35	M6x9	37	26.5	8	1	M6xP0.75	13	6.8	18	23	12.5	0.8	7x11x9	60	20
	SVRLJ SV2RLJ																					
Wide Block	(1 Block) (2 Blocks) SVW SV2W		24	52	41	50.6	41	4.5 (M5)	25	20	7	0.5	M5xP0.8	6	5	12.5	15	18.5	0.5	3.5x6x4.5	60	20
	SVWL SV2WL		28	59	47	56.6	49	5.5 (M6)	27.6	22.5	9	1	M6xP0.75	13	6	15.5	20	19.5	0.6	6x9.5x8.5	60	20
	SVWT SV2WT		33	73	59	68.6	60	7 (M8)	37	26.5	10	1	M6xP0.75	13	6.8	18	23	25	0.8	7x11x9	60	20
	SVWTL SV2WTL																					

※Dimensions in ( ) are for Wide Block Type Female Thread Hole.

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment MA / MB N • m	Allowable Static Moment Mc N • m	Mass Block kg Standard	Mass Block kg Wide	Mass Guide Rails kg/m
24	5.0	8.23	33	57	0.15	0.20	1.5
28	7.2	12.1	58	135	0.20	0.25	2.4
33	11.7	19.6	109	225	0.30	0.40	3.4

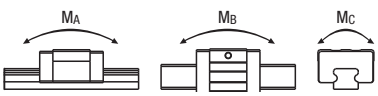
■**Preload and Accuracy Standards**



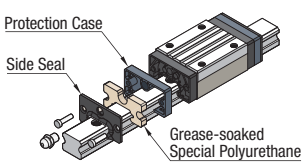
Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

Dimension Precision (μm)		Standard Grade	High Grade
Height H Tolerance		±100	±40
Height H Pair Variation		20	15
Width W2 Tolerance		±100	±20
Width W2 Pair Variation	H24, 28	20	15
	H33	30	
Running Parallelism of surf. C against surf. A		Refer to P.501	
Running Parallelism of surf. D against surf. B			



■**Lubrication Units MX**



-Advantages of Lubrication Unit MX
Provides long term maintenance-free condition.
Reduces maintenance fee.
Most suitable where the design does not allow lubrication.
For details, refer to ☞P.498

Order Example

Part Number	-	L
SVR28	-	880
SVR-MX28	-	880 (With Lubrication Units)
RVR28	-	880 (LTBC)
SVR28L	-	880 (L Type Greased)
SVR28G	-	880 (G Type Greased)

Alternative grease types available (Except Blocks with Lubrication Units).
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days / 6 Days — Express A 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• LTBC Plated Products (Applicable to Standard Grade Type only.)

13 Days
- Part No.: Change the first letter "S" of Standard Grade Type to "R".
• For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to standard grade price.

Price

Volume Discount (Round down to one Cent.) P.87

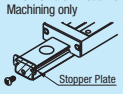
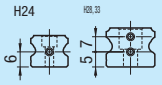
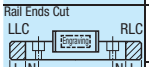
Quantity	1~4	5 or 6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%	18%

For Alteration WC of more than 10 pcs., request a quotation.

Alterations

Part Number - L - (TMS, TMC...etc.)
SVR28 - 880 - TMC

Express Serviceis not available for TMS, TMC and WC.

Alterations	Code	Spec.	Price Adder
TMS:Female Thread Hole Machining + 2 Stopper Plates TMC: Female Thread Hole Machining only 	TMS TMC	Adds tapped holes on both rail ends to avoid block fall-off.  M3xP0.5 Depth 5 Female Thread Hole Stopper Plates Details P.586	- TMS H / @ 24 / 10,00 28 / 14,00 33 / 14,00 - TMC H / @ 24 / 5,00 28 / 9,20 33 / 9,20
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC Right End Cut RLC	Cuts rail ends. Ordering Code LLC Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H dimension 24 and L dimension 100 H: 24, 28, 33 / L Cut: 10 / N: 10	8,00 8,00
Parallel Use of 2 Rails	WC	Pair Variation of Height H between 2 rails is set within 20µm. Two rails are shipped as a pair. When ordering, specify the actual number of rails (even) desired, not in number of "pairs". Not applicable to High Grade Type. Not applicable to low temperature chrome plated products.	4,00 / pc.

Unit price for High Grade Type is the price in table x1.2.(Round off to ten Cent.)(Ex.) For SVRJ24-580, 99,80x1.2=119,80 EUR
*marked sizes are not available for High Grade Type and LTBC Plated Type.

H	Selectable L	€ Unit Price					
		1 Block			2 Blocks		
		SVR	SVW	SVWT	SV2R	SV2W	SV2WT
24	100						
	160						
	220						
	280						
	340						
	400						
	460						
	520						
	580						
	640						
	700						
	760						
	820						
	880						
	940						
	1000						
	*1120						
	*1240						
	*1360						
	*1480						
28	160						
	220						
	280						
	340						
	400						
	460						
	520						
	580						
	640						
	700						
	760						
	820						
	880						
	940						
	1000						
	1120						
	1240						
	*1360						
	*1480						
	*1600						
	*1720						
	*1840						
	*1960						
33	160						
	220						
	280						
	340						
	400						
	460						
	520						
	580						
	640						
	700						
	760						
	820						
	880						
	940						
	1000						
	1120						
	1240						
	*1360						
	*1480						
	*1600						
	*1720						
	*1840						
	*1960						

H	L Specified (1mm Increment)	€ Unit Price					
		1 Block			2 Blocks		
		SVRL	SVWL	SVWTL	SV2RL	SV2WL	SV2WTL
24	101~159						
	161~219						
	221~279						
	281~339						
	341~399						
	401~459						
	461~519						
	521~579						
	581~639						
	641~699						
	701~759						
	761~819						
	821~879						
	881~939						
	941~999						
	*1001~1119						
	*1121~1239						
	*1241~1359						
	*1361~1479						
28	161~219						
	221~279						
	281~339						
	341~399						
	401~459						
	461~519						
	521~579						
	581~639						
	641~699						
	701~759						
	761~819						
	821~879						
	881~939						
	941~999						
	*1001~1119						
	*1121~1239						
	*1241~1359						
	*1361~1479						
	*1481~1599						
	*1601~1719						
	*1721~1839						
	*1841~1959						
33	161~219						
	221~279						
	281~339						
	341~399						
	401~459						
	461~519						
	521~579						
	581~639						
	641~699						
	701~759						
	761~819						
	821~879						
	881~939						
	941~999						
	*1001~1119						
	*1121~1239						
	*1241~1359						
	*1361~1479						
	*1481~1599						
	*1601~1719						
	*1721~1839						
	*1841~1959						

MX (Lubrication Unit) € Unit Price

H	€ Unit Price	
	1 Block	2 Blocks
24		
28		
33		

Price of Guide Rails with MX (lubrication unit) = Linear Guide € Unit Price + MX € Unit Price
(Ex.) For SVR-MX28-880, 122,30+17,10=139,40 EUR

Linear Guides -Heavy Load-

-Normal Clearance-

Lubrication Units MX New
Provides long term maintenance-free condition.

Features: The most basic type among all industry standard specifications.



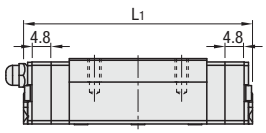
RoHS

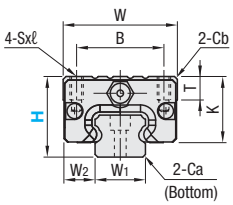
Blocks and rails are not sold as separate items. Normal Clearance Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

		Type				MX (Lubrication Units)	L Dimensions	M Material H Hardness
		1 Block		2 Blocks				
		Standard Grade	High Grade	Standard Grade	High Grade			
Standard Blocks		SXR	SXRJ	SX2R	SX2RJ	Blank: None -MX: Provided	Selectable	JIS STKM (Alloy Steel including JIS SCM) 58HRC~
		SXRL	SXRLJ	SX2RL	SX2RLJ		Specified	
Wide Block	Through Holes	SXW	-	SX2W	-		Selectable	
		SXWL		SX2WL			Specified	
	Female Thread Holes	SXWT		SX2WT			Selectable	
		SXWTL		SX2WTL			Specified	

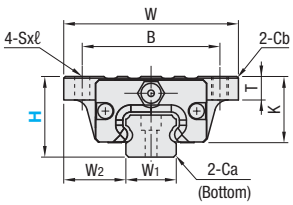
Heat Resistant Temperature: -20~80°C

Dimension Diagram of Blocks with MX (Lubrication Units)

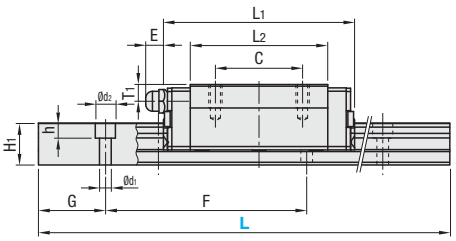




Standard Block



Wide Block



Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

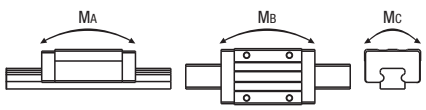
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K.). Grease Fittings: Straight type for H24 and angled type for H28 and H33.

	Part Number			Block Dimensions													Guide Rail Dimensions						
	Type		MX	H	W ±0.05	L1		B	C	Sxℓ	L2	K	T	Cb	Grease Fittings			H1	W1 ±0.005	W2	Ca	Counterbored Holes	F	G
						Standard	MX								Mounting Holes	E	T1					d1xd2xh		
Standard Block	(1 Block) SXR	(2 Blocks) SX2R	Blank: None -MX: Provided	24	34	57	66.6	26	26	M4x7	41	20	7	0.85	M5xP0.8	6	5	12.5	15	9.5	0.5	3.5x6x4.5	60	20
	SXRL	SX2RL		28	42	67	76.6	32	32	M5x8	47.6	22.5	7.5	1	M6xP0.75	13	6	15.5	20	11	0.6	6x9.5x8.5	60	20
	SXRJ	SX2RJ		33	48	83	92.6	35	35	M6x9	61	26.5	8	1	M6xP0.75	13	6.8	18	23	12.5	0.8	7x11x9	60	20
	SXRLJ	SX2RLJ																					
Wide Block	(1 Block) SXW	(2 Blocks) SX2W		24	52	57	66.6	41	26	4.5 (M5)	41	20	7	0.5	M5xP0.8	6	5	12.5	15	18.5	0.5	3.5x6x4.5	60	20
	SXWL	SX2WL		28	59	67	76.6	49	32	5.5 (M6)	47.6	22.5	9	1	M6xP0.75	13	6	15.5	20	19.5	0.6	6x9.5x8.5	60	20
	SXWT	SX2WT																					
	SXWTL	SX2WTL		33	73	83	92.6	60	35	7 (M8)	61	26.5	10	1	M6xP0.75	13	6.8	18	23	25	0.8	7x11x9	60	20

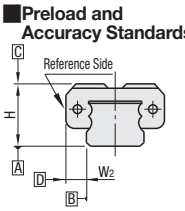
Dimensions in ( ) are for Wide Block Type Female Thread Hole.

kgf=Nx0.101972

H	Basic Load Rating		Allowable Static Moment		Mass		
	C (Dynamic) kN	Co (Static) kN	MA / MB N • m	MC N • m	Block kg Standard	Block kg Wide	Guide Rails kg/m
24	8.6	14.2	69	98	0.20	0.25	1.5
28	12.5	21.3	155	232	0.30	0.35	2.4
33	20.2	34.5	275	393	0.45	0.60	3.4



Preload and Accuracy Standards

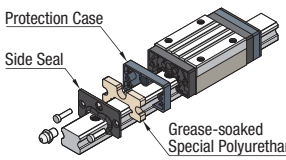


Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

Dimension Precision (μm)		Standard Grade	High Grade
Height H Tolerance		±100	±40
Height H Pair Variation		20	15
Width W2 Tolerance		±100	±20
Width W2 Pair Variation	H24, 28	20	15
	H33	30	
Running Parallelism of surf. C against surf. A		Refer to P.501	
Running Parallelism of surf. D against surf. B			

Lubrication Units MX



-Advantages of Lubrication Unit MX
Provides long term maintenance-free condition.
Reduces maintenance fee.
Most suitable where the design does not allow lubrication.
For details, refer to P.498

Order Example

Part Number	-	L
SXR28	-	880
SXR-MX28	-	880 (With Lubrication Units)
RXR28	-	880 (LTBC)
SXRL28L	-	880 (L Type Greased)
SXRL28G	-	880 (G Type Greased)

Alternative grease types available (Except Blocks with Lubrication Units).
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days — Express A: 8,00 EUR/ piece — P.88

Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.

6 Days

- LTBC Plated Products (Applicable to Standard Grade Type only.)

13 Days — - Part No.: Change the first letter "S" of Standard Grade Type to "R".
•For features and precisions, see P.508

Ⓨ For LTBC plated products, add the price of surface treatment on P.508 to standard grade price.

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

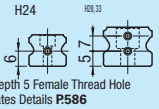
Quantity	1~4	5 or 6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%	18%

Ⓨ For Alteration WC of more than 10 pcs., request a quotation.

Alterations

Part Number - L - (TMS, TMC...etc.)
SXR33 - 880 - TMC

⊗ Express Serviceis not available for TMS, TMC and WC.

Alterations	Code	Spec.	Price Adder
TMS:Female Thread Hole Machining + 2 Stopper Plates TMC: Female Thread Hole Machining only	TMS TMC	Adds tapped holes on both rail ends to avoid block fall-off.  M3xP0.5 Depth 5 Female Thread Hole Stopper Plates Details P.586	- TMS H / @ 24 / 10,00 28 / 14,00 33 / 14,00 - TMC H / @ 24 / 5,00 28 / 9,20 33 / 9,20
Rail Ends Cut LLC RLC L N N L Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC Right End Cut RLC	Cuts rail ends. Ordering Code LLC H: 24, 28, 33 / L Cut: 10 / N: 10 Ⓨ Applicable to Selectable Type only. Ⓨ Overall length will be shorter by cutting. ⊗ Not applicable to H dimension 24 and L dimension 100	8,00 8,00
Parallel Use of 2 Rails	WC	Pair Variation of Height H between 2 rails is set within 20µm. Two rails are shipped as a pair. Ⓨ When ordering, specify the actual number of rails (even) desired, not in number of "pairs". ⊗ Not applicable to High Grade Type. ⊗ Not applicable to low temperature chrome plated products.	4,00 / pc.

Ⓨ Unit price for High Grade Type is the price in table x1.2.(Round off to ten Cent.)(Ex.) For SXRJ28-1000, 157,60x1.2=189,10 EUR
Ⓨ *marked sizes are not available for High Grade Type and LTBC Plated Type.

H	Selectable L	€ Unit Price					
		1 Block			2 Blocks		
		SXR	SXW	SXWT	SX2R	SX2W	SX2WT
24	100						
	160						
	220						
	280						
	340						
	400						
	460						
	520						
	580						
	640						
	700						
	760						
	820						
	880						
	940						
	1000						
	*1120						
	*1240						
	*1360						
	*1480						
28	160						
	220						
	280						
	340						
	400						
	460						
	520						
	580						
	640						
	700						
	760						
	820						
	880						
	940						
	1000						
	1120						
	1240						
	*1360						
	*1480						
	*1600						
	*1720						
	*1840						
	*1960						
33	160						
	220						
	280						
	340						
	400						
	460						
	520						
	580						
	640						
	700						
	760						
	820						
	880						
	940						
	1000						
	1120						
	1240						
	*1360						
	*1480						
	*1600						
	*1720						
	*1840						
	*1960						

H	L Specified (1mm Increment)	€ Unit Price					
		1 Block			2 Blocks		
		SXRL	SXWL	SXWTL	SX2RL	SX2WL	SX2WTL
24	101~159						
	161~219						
	221~279						
	281~339						
	341~399						
	401~459						
	461~519						
	521~579						
	581~639						
	641~699						
	701~759						
	761~819						
	821~879						
	881~939						
	941~999						
	*1001~1119						
	*1121~1239						
	*1241~1359						
	*1361~1479						
28	161~219						
	221~279						
	281~339						
	341~399						
	401~459						
	461~519						
	521~579						
	581~639						
	641~699						
	701~759						
	761~819						
	821~879						
	881~939						
	941~999						
	1001~1119						
	1121~1239						
	*1241~1359						
	*1361~1479						
	*1481~1599						
	*1601~1719						
	*1721~1839						
	*1841~1959						
33	161~219						
	221~279						
	281~339						
	341~399						
	401~459						
	461~519						
	521~579						
	581~639						
	641~699						
	701~759						
	761~819						
	821~879						
	881~939						
	941~999						
	1001~1119						
	1121~1239						
	*1241~1359						
	*1361~1479						
	*1481~1599						
	*1601~1719						
	*1721~1839						
	*1841~1959						

■MX (Lubrication Unit) € Unit Price

H	€ Unit Price	
	1 Block	2 Blocks
24		
28		
33		

Ⓨ Price of Guide Rails with MX (lubrication unit) = Linear Guide € Unit Price + MX € Unit Price
(Ex.) For SXR-MX28-880, 130,80+17,10=147,90 EUR

Linear Guides for Medium Load
-With Dowel Hole / Normal Clearance-

Lubrication Units MX New
Provides long term maintenance-free condition.

Features: MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability.

RoHS

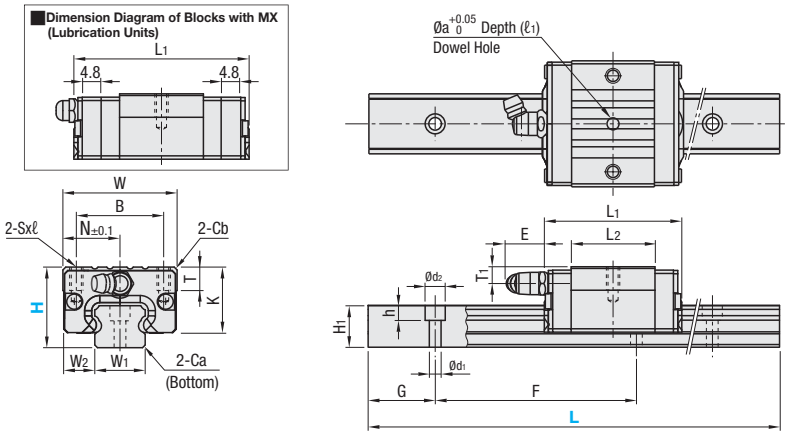


Blocks and rails are not sold as separate items. Normal Clearance Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

	Type / Standard Grade	MX (Lubrication Units)	L Dimension	Blocks Quantity	M Material H Hardness
Standard Block	SVRN	Blank: None -MX: Provided	Selectable	1	JIS STKM (Alloy Steel including JIS SCM) 58HRC~
	SV2RN			2	
	SVRNL		Specified	1	
	SV2RNL			2	
	SSVRN		Selectable	1	Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~
	SSV2RN			2	
	SSVRNL		Specified	1	
	SSV2RNL			2	

Heat Resistant Temperature: -20~80°C

Dimension Diagram of Blocks with MX (Lubrication Units)



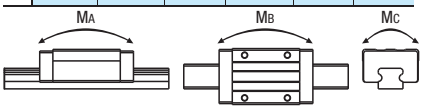
Precautions for Use
- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K.). Grease Fittings: Straight type for H24 and angled type for H28 and H33.

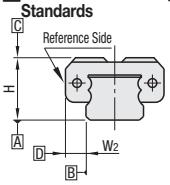
Part Number Type (1 Block)	(2 Blocks)	MX	H	Block Dimensions W ±0.005	L1 Standard	L1 MX	B	Sxℓ	L2	K	T	Cb	Grease Fittings Mounting Holes	Dowel Hole Dimensions E	T1	N	Øa	ℓ1	Guide Rail Dimensions H1	W1 ±0.005	W2	Ca	Counterbored Holes d×D×h	F	G
SVRN	SV2RN	Blank: None -MX: Provided	24	34	41	50.6	26	M4x7	25	20	7	0.85	M5xP0.8	6	5	17	3	4	12.5	15	9.5	0.5	3.5x6x4.5	60	20
SVRNL	SV2RNL		28	42	47	56.6	32	M5x8	27.6	22.5	7.5	1	M6xP0.75	13	6	21	4	5	15.5	20	11	0.6	6x9.5x8.5	60	20
SSVRN	SSV2RN		33	48	59	68.6	35	M6x9	37	26.5	8	1	M6xP0.75	13	6.8	24	4	5	18	23	12.5	0.8	7x11x9	60	20
SSVRNL	SSV2RNL																								

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA / MB N·m	Mc N·m	Mass Block kg	Guide Rails Standard kg/m
24	5.0	8.23	33	57	0.15	1.5
28	7.2	12.1	58	135	0.20	2.4
33	11.7	19.6	109	225	0.30	3.4



Preload and Accuracy Standards

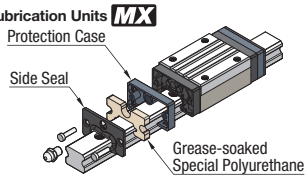


Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

Dimension Precision (μm)		Standard Grade
Height H Tolerance		±100
Height H Pair Variation		20
Width W2 Tolerance		±100
Width W2 Pair Variation	H24, 28	20
	H33	30
Running Parallelism of surf. C against surf. A		Refer to P.501
Running Parallelism of surf. D against surf. B		

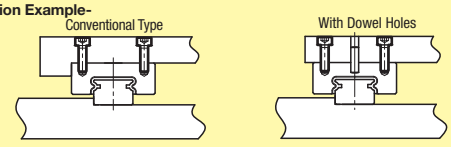
Lubrication Units MX



-Advantages of Lubrication Unit MX
Provides long term maintenance-free condition.
Reduces maintenance fee.
Most suitable where the design does not allow lubrication.
For details, refer to P.498

ex

-Installation Example-



CAD Data

Order Example

Part Number	-	L
SVRN28	-	880
SVRN-MX28	-	880 (With Lubrication Units)
RVRN28	-	880 (Raydent)
SVRN28L	-	880 (L Type Greased)
SVRN28G	-	880 (G Type Greased)

Alternative grease types available (Except Blocks with Lubrication Units).
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days — Express A — 8,00 EUR/ piece — P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• LTBC Plated Products (Applicable to Standard Grade Type only.)

13 Days •Part No.: Change the first letter "S" of Standard Grade Type to "R".
•For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to standard grade price.

Price

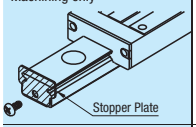
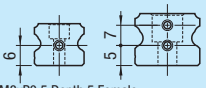
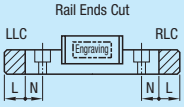
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5 or 6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (TMS · TMC · RLC · LLC)
SVRN28 - 880 - TMC

Expressive Serviceis not available for TMS and TMC.

Alterations	Code	Spec.	Price Adder
TMS:Female Thread Hole Machining + 2 Stopper Plates TMC: Female Thread Hole Machining only  	TMS TMC	Adds tapped holes on both rail ends to avoid block fall-off.  M3xP0.5 Depth 5 Female Thread Hole Stopper Plates Details P.586 Applicable to JIS STKM Type only.	- TMS H / @ 24 / 10,00 28 / 14,00 33 / 14,00 - TMC H / @ 24 / 5,00 28 / 9,20 33 / 9,20
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC Right End Cut RLC	Cuts rail ends. Ordering Code: LLC H: 24, 28, 33 / L Cut: 10 / N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H dimension 24 and L dimension 100	8,00 8,00

•marked sizes are not available for LTBC Plated Type.

H	Selec-table L	€ Unit Price JIS STKM 1 Block SVRN	JIS STKM 2 Blocks SV2RN	Stainless Steel 1 Block SSVRN	Stainless Steel 2 Blocks SSV2RN
24	100				
	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	•1120				
	•1240				
	•1360				
	•1480				
28	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1120				
	1240				
	•1360				
	•1480				
	•1600				
	•1720				
	•1840				
	•1960				
33	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1120				
	1240				
	•1360				
	•1480				
	•1600				
	•1720				
	•1840				
	•1960				

H	L Specified (1mm Increment)	€ Unit Price JIS STKM 1 Block SVRNL	JIS STKM 2 Blocks SV2RNL	Stainless Steel 1 Block SSVRNL	Stainless Steel 2 Blocks SSV2RNL
24	101~159				
	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				
	701~759				
	761~819				
	821~879				
	881~939				
	941~999				
	•1001~1119				
	•1121~1239				
	•1241~1359				
	•1361~1479				
28	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				
	701~759				
	761~819				
	821~879				
	881~939				
	941~999				
	•1001~1119				
	•1121~1239				
	•1241~1359				
	•1361~1479				
	•1481~1599				
	•1601~1719				
	•1721~1839				
	•1841~1959				
33	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				
	701~759				
	761~819				
	821~879				
	881~939				
	941~999				
	•1001~1119				
	•1121~1239				
	•1241~1359				
	•1361~1479				
	•1481~1599				
	•1601~1719				
	•1721~1839				
	•1841~1959				

L dimension of Stainless Steel Type is 700mm or less.

MX (Lubrication Unit) € Unit Price

H	€ Unit Price 1 Block	2 Blocks
24		
28		
33		

Price of Guide Rails with MX (lubrication unit) = Linear Guide € Unit Price + MX € Unit Price
(Ex.) For SVRN-MX28-880, 144,20+17,10=161,30 EUR

Linear Guides -Heavy Load-

-With Dowel Hole / Normal Clearance-

Lubrication Units MX New
Provides long term maintenance-free condition.

■**Features:** MISUMI original specifications with dowel holes. Requires less time to assemble and has better repeatability.



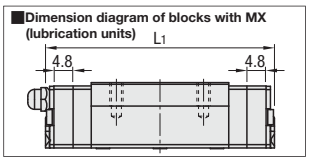
RoHS

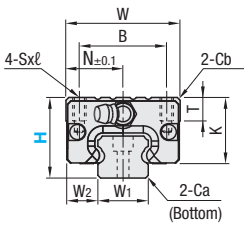
※Blocks and rails are not sold as separate items. Normal Clearance Type has guaranteed radial clearances and accuracies as sets of blocks and rails.

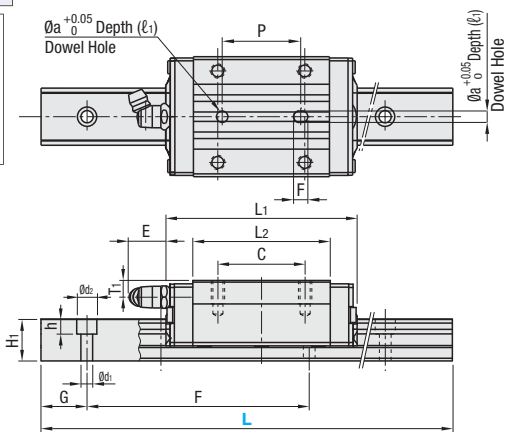
	Type / Standard Grade	MX (Lubrication Units)	L Dimension	Blocks Quantity	M Material H Hardness
Standard Block	SXRN	**Blank**: None **-MX**: Provided	Selectable	1	JIS STKM (Alloy Steel including JIS SCM) 58HRC~
	SX2RN			2	
	SXRNL		Specified	1	
	SX2RNL			2	
	SSXRN		Selectable	1	Stainless Steel (1.4125/X105CrMo17 Material) 56HRC~
	SSX2RN			2	
	SSXRNL		Specified	1	
	SSX2RNL			2	

Heat Resistant Temperature: -20~80°C

■**Dimension diagram of blocks with MX (lubrication units)**







■**Precautions for Use**

※Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
※Radial clearances and accuracies are not guaranteed if the blocks and rails are interchanged from the original set combinations.
※Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
※Rails cannot be connected to be extended.
※Running parallelism is the value measured after the rail is mounted.

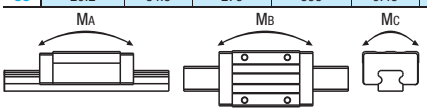
■**Others**

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K). Grease Fittings: Straight type for H24 and angled type for H28 and H33.

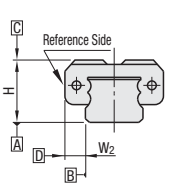
Part Number				Block Dimensions																				Guide Rail Dimensions						
Type		MX	H	W	L1		B	C	Sxℓ	L2	K	T	Cb	Grease Fittings			Dowel Hole Dimensions						H1	W1	W2	Ca	Counterbored Holes		F	G
				±0.05	Standard	MX								Mounting Holes	E	T1	N	Øa	F	P	ℓ1		±0.005			d1xd2xh			
(1 Block)	(2 Blocks)																												
SXRN	SX2RN	**Blank**: None **-MX**: Provided	24	34	57	66.6	26	26	M4x7	41	20	7	0.85	M5xP0.8	6	5	17	3	4	24	4	12.5	15	9.5	0.5	3.5x6x4.5	60	20
SXRNL	SX2RNL		28	42	67	76.6	32	32	M5x8	47.6	22.5	7.5	1	M6xP0.75	13	6	21	4	5	28	5	15.5	20	11	0.6	6x9.5x8.5	60	20
SSXRN	SSX2RN		33	48	83	92.6	35	35	M6x9	61	26.5	8	1	M6xP0.75	13	6.8	24	4	5	35	5	18	23	12.5	0.8	7x11x9	60	20
SSXRNL	SSX2RNL																												

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment MA / MB N • m	Allowable Static Moment Mc N • m	Mass Block kg Standard	Mass Guide Rails kg/m
24	8.6	14.2	69	98	0.20	1.5
28	12.5	21.3	155	232	0.30	2.4
33	20.2	34.5	275	393	0.45	3.4



■**Preload and Accuracy Standards**

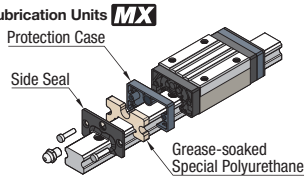


Normal Clearance Type

Radial Clearance (μm)	
H24	-4~+2
H28	-5~+2
H33	-6~+3

Dimension Precision (μm)		Standard Grade
Height H Tolerance		±100
Height H Pair Variation		20
Width W2 Tolerance		±100
Width W2 Pair Variation	H24, 28	20
	H33	30
Running Parallelism of surf. C against surf. A		Refer to P.501
Running Parallelism of surf. D against surf. B		

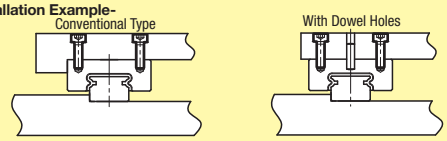
■**Lubrication Units MX**



-Advantages of Lubrication Unit MX
Provides long term maintenance-free condition.
Reduces maintenance fee.
Most suitable where the design does not allow lubrication.
For details, refer to P.498

ex

-Installation Example-



Order Example

Part Number	-	L	
SXRNL28	-	885	
SXRNL-MX28	-	885	(With Lubrication Units)
RXRNL28	-	885	(Raydent)
SXRNL28L	-	885	(L Type Greased)
SXRNL28G	-	885	(G Type Greased)

Alternative grease types available (Except Blocks with Lubrication Units).
For Days to Ship, Price and Performance, refer to P.507

Days to Ship

8 Days — Express A: 8,00 EUR/piece — P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

○ LTBC Plated Products (Applicable to Standard Grade Type only.)

13 Days - Part No.: Change the first letter "S" of Standard Grade Type to "R".
○ For features and precisions, see P.508

For LTBC plated products, add the price of surface treatment on P.508 to standard grade price.

Price

Volume Discount (Round down to one Cent.) P. 87

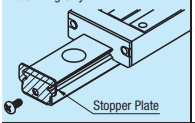
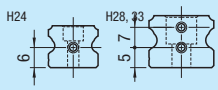
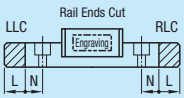
Quantity	1~4	5 or 6	7 or 8	9 or 10
Discount Rate	€ Unit Price	5%	10%	18%

*marked sizes are not available for LTBC Plated Type.

Alterations

Part Number: SXRN33 - L - (TMS · TMC · RLC · LLC) — 880 — TMC

Express Serviceis not available for TMS and TMC.

Alterations	Code	Spec.	Price Adder
TMS:Female Thread Hole Machining + 2 Stopper Plates TMC: Female Thread Hole Machining only 	TMS TMC	Adds tapped holes on both rail ends to avoid block fall-off.  M3xP0.5 Depth 5 Female Thread Hole Stopper Plates Details P.586 Applicable to JIS STKM Type only.	- TMS H / @ 24 / 10,00 28 / 14,00 33 / 14,00 - TMC H / @ 24 / 5,00 28 / 9,20 33 / 9,20
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC Right End Cut RLC	Cuts rail ends. Ordering Code: LLC H / L Cut / N 24 / 28 / 33 / 10 / 10 Applicable to Selectable Type only. Overall length will be shorter by cutting. Not applicable to H dim. 24 and L dim. 100	8,00 8,00

H	Selectable L	€ Unit Price JIS STKM 1 Block SXRN	JIS STKM 2 Blocks SX2RN	Stainless Steel 1 Block SSXRN	Stainless Steel 2 Blocks SSX2RN
24	100				
	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	*1120				
	*1240				
	*1360				
	*1480				
28	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1120				
	1240				
	*1360				
	*1480				
	*1600				
	*1720				
	*1840				
	*1960				
33	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1120				
	1240				
	*1360				
	*1480				
	*1600				
	*1720				
	*1840				
	*1960				

H	L Specified (1mm Increment)	€ Unit Price JIS STKM 1 Block SXRNL	JIS STKM 2 Blocks SX2RNL	Stainless Steel 1 Block SSXRNL	Stainless Steel 2 Blocks SSX2RNL
24	101~159				
	161(192)~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				
	701~759				
	761~819				
	821~879				
	881~939				
	941~999				
	*1001~1119				
	*1121~1239				
	*1241~1359				
	*1361~1479				
28	161~219				
	221~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				
	701~759				
	761~819				
	821~879				
	881~939				
	941~999				
	*1001~1119				
	*1121~1239				
	*1241~1359				
	*1361~1479				
	*1481~1599				
	*1601~1719				
	*1721~1839				
	*1841~1959				
33	161~219				
	221(262)~279				
	281~339				
	341~399				
	401~459				
	461~519				
	521~579				
	581~639				
	641~699				
	701~759				
	761~819				
	821~879				
	881~939				
	941~999				
	*1001~1119				
	*1121~1239				
	*1241~1359				
	*1361~1479				
	*1481~1599				
	*1601~1719				
	*1721~1839				
	*1841~1959				

L dimension of Stainless Steel Type is 700mm or less.
Dimensions of L Configurable in ( ) are applicable to 2 Block Type.

MX (Lubrication Unit) € Unit Price

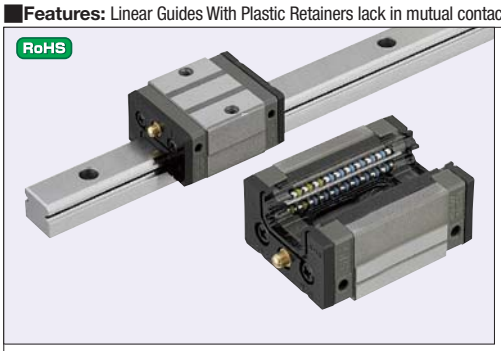
H	€ Unit Price 1 Block	2 Blocks
24		
28		
33		

Price of Guide Rails with MX (lubrication unit) = Linear Guide € Unit Price + MX € Unit Price
(Ex.) For SXRN-MX28-880, 152,50+17,10=169,60 EUR

Linear Guides for Medium Load -Stainless Steel-

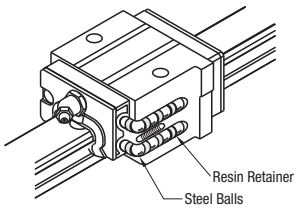
-With Plastic Retainers / Interchangeable, Light Preload-

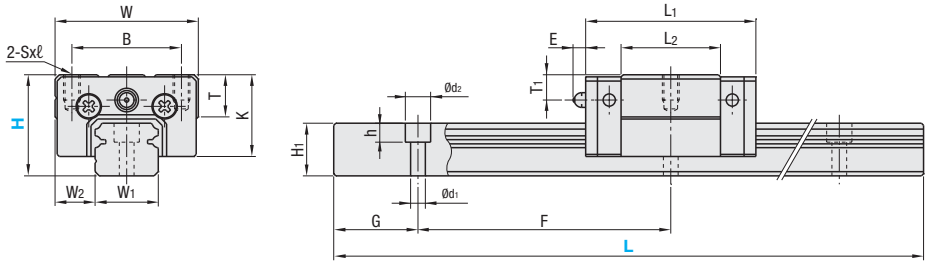
■Features: Linear Guides With Plastic Retainers lack in mutual contact between balls and result in low noise levels under high-speed operation.



Material / Hardness	Type		Blocks	Rails	L Dimensions
	1 Block	2 Blocks			
Stainless Steel (1.4125/X105CrMo17) 57HRC~	SSVRZ	SSV2RZ	SSVRB	SSRZL	Selectable
	SSVRLZ	SSV2RLZ		SSRZLF	Specified

Heat Resistant Temperature: 0~50°C





■Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- For Interchangeable, Minute Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

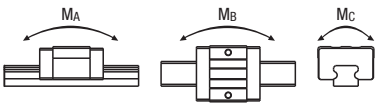
■Others

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
- Grease Fittings: Straight type for H24 and angled type for H28, H33 and H42.

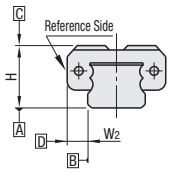
Part Number			Block Dimensions										Guide Rail Dimensions					
Type		H	W	L1	B	Sxℓ	L2	K	T	Grease Fittings			H1	W1	W2	Counterbored Holes	F	G
1 Block	2 Blocks									Mounting Holes	E	T1				d1xd2xh		
SSVRZ SSVRLZ	SSV2RZ SSV2RLZ	24	34	40.4	26	M4x6	23.6	19.4	10	Ø3	3	6	12.5	15	9.5	3.5x6x4.5	60	20
(Blocks)	(Rails)	28	42	47.2	32	M5x7	30	22	12	M6xP0.75	11	5.5	15.5	20	11	6x9.5x8.5	60	20
SSVRB	SSRZL SSRZLF	33	48	59.6	35	M6x9	38	26	12	M6xP0.75	11	7	18	23	12.5	7x11x9	60	20

kgf=Nx0.101972

H	Basic Load Rating		Allowable Static Moment			Mass	
	C (Dynamic) kN	Co (Static) kN	MA N•m	MB N•m	Mc N•m	Blocks kg	Guide Rails kg/m
24	4.9	7.8	21	18	39	0.14	1.4
28	7.25	11.8	40	34	80	0.19	2.3
33	12.7	20.8	96	81	164	0.34	3.1



■Preload and Accuracy Standards

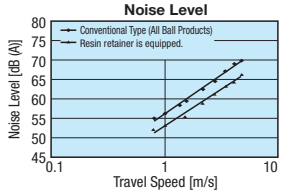


Interchangeable, Light Preload Type

Radial Clearance (μm)	
H24 · 28	-4~0
H33	-5~0

Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±30
Width W2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

■Features of Plastic Retainers: Low noise levels and improved sound quality



- Lack of mutual contact between balls results in low noise levels and improved sound quality.
- Since there is no mutual contact abrasion between the balls, particle generation is less than those of conventional products.

CAD Data

Order Example

Part Number	-	L
SSVRZ28	-	640

Days to Ship

8 Days

Price

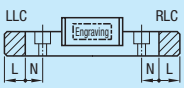
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Discount Rate	€ Unit Price	5%

Alterations

Part Number	-	L	-	(RLC · LLC)
SSVRZ28	-	640	-	RLC

10 Days

Alterations	Code	Spec.	Price Adder
Rail Ends Cut  Rail is cut with the product ID facing out (datum on other side).	Left End Cut **LLC**	Cuts rail ends. Ordering Code: LLC H: 24, 28, 33 / L Cut: 10 / N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00
	Right End Cut **RLC**		8,00

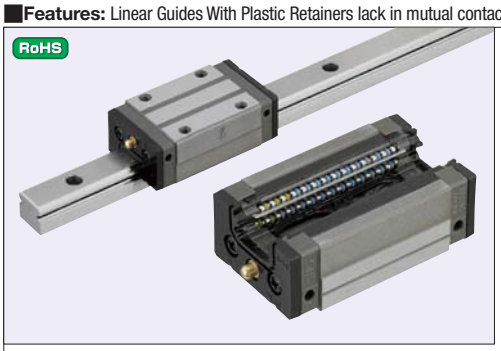
H	Selectable L	€ Unit Price			
		Sets		Rails	Blocks
		SSVRZ	SSV2RZ	SSRZL	SSVRB
24	100				
	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				
28	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				
33	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				

H	L Specified (1mm Increment)	€ Unit Price		
		Sets		Rails
		SSVRLZ	SSV2RLZ	SSRZLF
24	101~159			
	161~219			
	221~279			
	281~339			
	341~399			
	401~459			
	461~519			
	521~579			
	581~639			
	641~699			
	701~759			
	761~819			
	821~879			
	881~939			
	941~999			
	1001~1059			
	1061~1119			
	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			
28	161~219			
	221~279			
	281~339			
	341~399			
	401~459			
	461~519			
	521~579			
	581~639			
	641~699			
	701~759			
	761~819			
	821~879			
	881~939			
	941~999			
	1001~1059			
	1061~1119			
	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			
33	161~219			
	221~279			
	281~339			
	341~399			
	401~459			
	461~519			
	521~579			
	581~639			
	641~699			
	701~759			
	761~819			
	821~879			
	881~939			
	941~999			
	1001~1059			
	1061~1119			
	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			

Linear Guides -Heavy Load- -Stainless Steel-

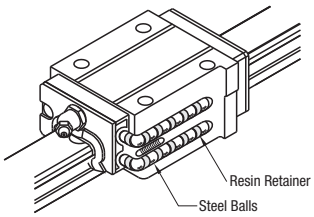
-With Plastic Retainers / Interchangeable, Light Preload-

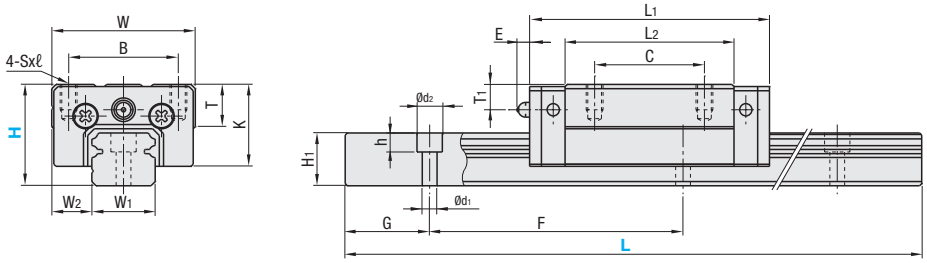
Features: Linear Guides With Plastic Retainers lack in mutual contact between balls and result in low noise levels under high-speed operation.



Material / Hardness	Type		Blocks	L Dimensions
	1 Block	2 Blocks		
Stainless Steel (1.4125/ X105CrMo17) 57HRC~	SSXRZ	SSX2RZ	SSXRB	Selectable
	SSXRLZ	SSX2RLZ		Specified

Heat Resistant Temperature: 0~50°C





Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- For Interchangeable, Minute Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

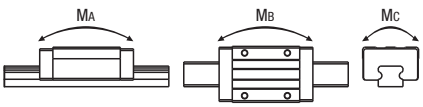
Others

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
- Grease Fittings: Straight type for H24 and angled type for H28, H33 and H42.

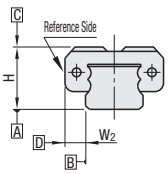
Part Number			Block Dimensions										Guide Rail Dimensions					
Type		H	W	L1	B	C	Sxℓ	L2	K	T	Grease Fittings			H1	W1	W2	Counterbored Holes	F	G
1 Block	2 Blocks										Mounting Holes	E	T1				d1xd2xh		
SSXRZ SSXRLZ	SSX2RZ SSX2RLZ	24	34	56.8	26	26	M4x6	40	19.4	10	Ø3	3	6	12.5	15	9.5	3.5x6x4.5	60	20
(Blocks)	(Rails)	28	42	65.2	32	32	M5x7	48	22	12	M6xP0.75	11	5.5	15.5	20	11	6x9.5x8.5	60	20
SSXRB	SSRZL SSRZLF	33	48	81.6	35	35	M6x9	60	26	12	M6xP0.75	11	7	18	23	12.5	7x11x9	60	20

kgf=Nx0.101972

H	Basic Load Rating		Allowable Static Moment			Mass	
	C (Dynamic) kN	Co (Static) kN	MA N • m	MB N • m	MC N • m	Block kg	Guide Rails kg/m
24	7.9	15.6	74	62	78	0.20	1.4
28	11.1	21.8	124	104	149	0.28	2.3
33	17.9	33.5	242	203	266	0.51	3.1



Preload and Accuracy Standards

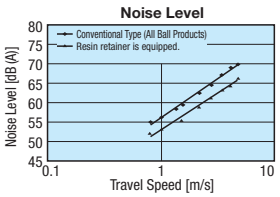


Interchangeable, Light Preload Type

Radial Clearance (µm)	
H24, 28	-4~0
H33	-5~0

Dimension Precision (µm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±30
Width W2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Features of Plastic Retainers: Low noise levels and improved sound quality



- Lack of mutual contact between balls results in low noise levels and improved sound quality.
- Since there is no mutual contact abrasion between the balls, particle generation is less than those of conventional products.

CAD Data

Order Example

Part Number	-	L
SSXRZ28	-	640

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Discount Rate	€ Unit Price	5%

Alterations

Part Number	-	L	-	(RLC · LLC)
SSXRZ28	-	640	-	RLC

10 Days

Alterations	Code	Spec.	Price Adder
Rail Ends Cut LLC — Engraving — RLC L N N L Rail is cut with the product ID facing out (datum on other side).	Left End Cut **LLC**	Cuts rail ends. Ordering Code: LLC H: 24, 28, 33 — L Cut: 10 — N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00
	Right End Cut **RLC**		8,00

H	Selectable L	€ Unit Price			
		Sets		Rails	Blocks
		SSXRZ	SSX2RZ	SSRZL	SSXRB
24	100				
	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				
28	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				
33	160				
	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				

H	L Specified (1mm Increment)	€ Unit Price		
		Sets		Rails
		SSXRLZ	SSX2RLZ	SSRZLF
24	101~159			
	161~219			
	221~279			
	281~339			
	341~399			
	401~459			
	461~519			
	521~579			
	581~639			
	641~699			
	701~759			
	761~819			
	821~879			
	881~939			
	941~999			
	1001~1059			
	1061~1119			
	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			
28	161~219			
	221~279			
	281~339			
	341~399			
	401~459			
	461~519			
	521~579			
	581~639			
	641~699			
	701~759			
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	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			
33	161~219			
	221~279			
	281~339			
	341~399			
	401~459			
	461~519			
	521~579			
	581~639			
	641~699			
	701~759			
	761~819			
	821~879			
	881~939			
	941~999			
	1001~1059			
	1061~1119			
	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			

Linear Guides -Ultra Heavy Load- -Stainless Steel-
-With Plastic Retainers / Interchangeable, Light Preload-

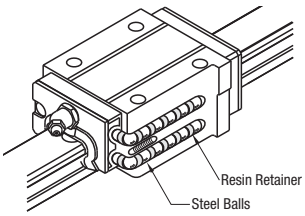
■Features: Linear Guides With Plastic Retainers lack in mutual contact between balls and result in low noise levels under high-speed operation.

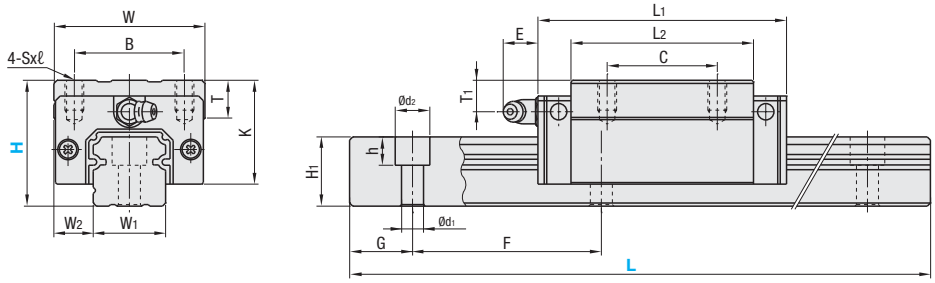
RoHS



Material / Hardness	Type		Blocks	Rails	L Dimensions
	1 Block	2 Blocks			
Stainless Steel (1.4125/X105CrMo17) 57HRC~	SSHRZ	SSH2RZ	SSHRB	SSHZL	Selectable
	SSHRLZ	SSH2RLZ		SSHZLF	Specified

Heat Resistant Temperature: 0~50°C





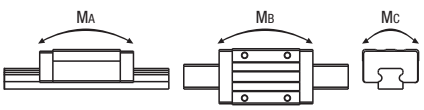
■Precautions for Use
- Blocks are equipped with retainers to prevent balls from derailing. Refer to ☞P501
- For Interchangeable, Minute Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

■Others
- For G dimensions of L Dimension Configurable Type, refer to ☞P507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
- Angled Grease Fitting Type

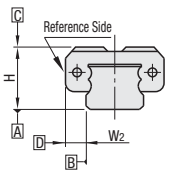
Part Number		Block Dimensions										Guide Rail Dimensions					
Type		H	W	L1	B	C	Sxℓ	L2	K	T	Grease Fittings	H1	W1	W2	Counterbored Holes	F	G
1 Block	2 Blocks										Mounting Holes / E / T1				d1xd2xh		
SSHRZ SSHRLZ (Blocks) SSHRB	SSH2RZ SSH2RLZ (Rails) SSHZL SSHZLF	30	44	69.8	32	36	M5x6	50	25	12	M6xP0.75 / 11 / 5	18	20	12	6x9.5x8.5	60	20
		40	48	79	35	35	M6x9	58	33	12	M6xP0.75 / 11 / 10	22	23	12.5	7x11x9	60	20

kgf=Nx0.101972

H	Basic Load Rating		Allowable Static Moment			Mass	
	C (Dynamic) kN	Co (Static) kN	MA N • m	MB N • m	MC N • m	Block kg	Guide Rails kg/m
30	16.3	29.6	167	141	199	0.33	2.6
40	22.4	37.5	246	207	295	0,55	3.6



■Preload and Accuracy Standards

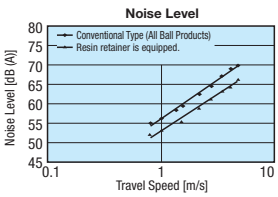


Interchangeable, Light Preload Type

Radial Clearance (μm)	
H30, 40	-5~0

Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±30
Width W2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to P501
Running Parallelism of surf. D against surf. B	

■Features of Plastic Retainers: Low noise levels and improved sound quality



- Lack of mutual contact between balls results in low noise levels and improved sound quality.
- Since there is no mutual contact abrasion between the balls, particle generation is less than those of conventional products.

CAD Data

Order Example

Part Number	-	L
SSHRZ30	-	640

Days to Ship: 8 Days

Price

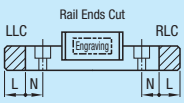
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Discount Rate	€ Unit Price	5%

Alterations

Part Number	-	L	-	(RLC · LLC)
SSHRZ30	-	640	-	RLC

10 Days

Alterations	Code	Spec.	Price Adder
 Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC H: 30, 40 — L Cut: 10 — N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00
	Right End Cut RLC		8,00

H	Selectable L	€ Unit Price			
		Sets		Rails	Blocks
		SSHRZ	SSH2RZ	SSHZL	SSHRB
30	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				
40	220				
	280				
	340				
	400				
	460				
	520				
	580				
	640				
	700				
	760				
	820				
	880				
	940				
	1000				
	1060				
	1120				
	1180				
	1240				
	1300				
	1360				
	1420				
	1480				

H	L Specified (1mm Increment)	€ Unit Price		
		Sets		Rails
		SSHRLZ	SSH2RLZ	SSHZLF
30	221~279			
	281~339			
	341~399			
	401~459			
	461~519			
	521~579			
	581~639			
	641~699			
	701~759			
	761~819			
	821~879			
	881~939			
	941~999			
	1001~1059			
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	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			
40	221~279			
	281~339			
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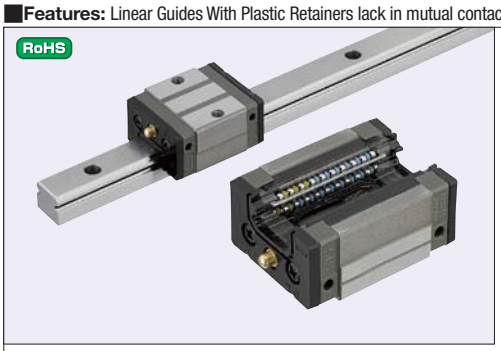
	941~999			
	1001~1059			
	1061~1119			
	1121~1179			
	1181~1239			
	1241~1299			
	1301~1359			
	1361~1419			
	1421~1479			

Linear Guides for Medium Load

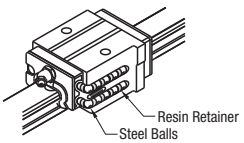
-With Plastic Retainers / Interchangeable, Light Preload-

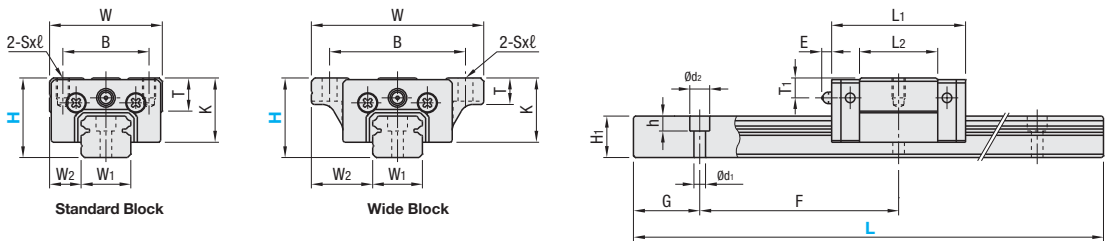
Features: Linear Guides With Plastic Retainers lack in mutual contact between balls and result in low noise levels under high-speed operation.



	Type		Blocks	Rails	L Dimensions	Material / Hardness
	1 Block	2 Blocks				
Standard Block	SVRZ	SV2RZ	SVRB	SRZL	Selectable	JIS STKM 58HRC~
	SVRLZ	SV2RLZ		SRZLF	Specified	
Wide Block Through Holes	SVWZ	SV2WZ	SVWB	SRZL	Selectable	
	SVWLZ	SV2WLZ		SRZLF	Specified	
Wide Block Female Thread Holes	SVWTZ	SV2WTZ	SVWTB	SRZL	Selectable	
	SVWTLZ	SV2WTLZ		SRZLF	Specified	

Heat Resistant Temperature: 0~50°C





Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- For Interchangeable, Minute Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

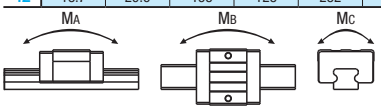
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
- Grease Fittings: Straight type for H24 and angled type for H28, H33 and H42.

	Part Number Type 1 Block	Part Number Type 2 Blocks	H	W	L_1	B	Sxℓ	L_2	K	T	Grease Fittings Mounting Holes	Grease Fittings E	Grease Fittings T_1	H_1	W_1	W_2	Counterbored Holes d1xd2xh	F	G
Standard Block	SVRZ SVRLZ (Blocks) SVRB	SV2RZ SV2RLZ (Rails) SRZL SRZLF	24	34	40.4	26	M4x6	23.6	19	10	Ø3	3	6	12.5	15	9.5	3.5x6x4.5	60	20
			28	42	47.2	32	M5x7	30	22	12	M6xP0.75	11	5.5	15.5	20	11	6x9.5x8.5	60	20
			33	48	59.6	35	M6x9	38	26	12	M6xP0.75	11	7	18	23	12.5	7x11x9	60	20
			42	60	67.4	40	M8x12	42	33	13	M6xP0.75	11	8	23	28	16	7x11x9	80	20
Wide Block	SVWZ SVWLZ SVWTZ SVWTLZ (Blocks) SVWB SVWTB	SV2WZ SV2WLZ SV2WTZ SV2WTLZ (Rails) SRZL SRZLF	24	52	40.4	41	4.5 (M5)	23.6	19	8	Ø3	3	6	12.5	15	18.5	3.5x6x4.5	60	20
			28	59	47.2	49	5.5 (M6)	30	22	10	M6xP0.75	11	5.5	15.5	20	19.5	6x9.5x8.5	60	20
			33	73	59.6	60	7 (M8)	38	26	11	M6xP0.75	11	7	18	23	25	7x11x9	60	20
			42	90	67.4	72	9 (M10)	42	33	11	M6xP0.75	11	8	23	28	31	7x11x9	80	20

Dimensions in ( ) are for Wide Block Type Female Thread Hole.

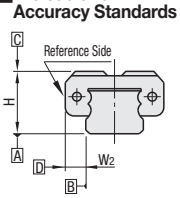
kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment MA N•m	Allowable Static Moment MB N•m	Allowable Static Moment MC N•m	Mass Block kg Standard	Mass Block kg Wide	Mass Guide Rails kg/m
24	4.9	7.8	21	18	39	0.14	0.17	1.4
28	7.25	11.8	40	34	80	0.19	0.24	2.3
33	12.7	20.8	96	81	164	0.34	0.44	3.1
42	18.7	29.6	153	128	282	0.58	0.76	4.8



Preload and Accuracy Standards

Interchangeable, Light Preload Type



Radial Clearance (μm)	
H24 · 28	-4~0
H33 · 42	-5~0

Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±30
Width W2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Part Number - L
SVRZ28 - 820

8 Days | Express A 8,00 EUR/ piece | 6 Days

A Express Charge of 21,60 EUR for 3 or more identical pieces. P.88

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Discount Rate	€ Unit Price	5%

Part Number - L - (RLC / LLC) | 10 Days
SVRZ28 - 640 - RLC

Alterations	Code	Spec.	Price Adder
Rail Ends Cut LLC RLC Engraving L N N L Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC Right End Cut RLC	Cuts rail ends. Ordering Code LLC H: 24, 28, 33, 42 — L Cut: 10 — N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00 8,00

CAD Data

H	Selectable L	€ Unit Price									
		1 Block			2 Blocks			Rails	Blocks		
		SVRZ	SVWZ	SVWTZ	SV2RZ	SV2WZ	SV2WTZ	SRZL	SVRB	SVWB	SVWTB
24	100										
	160										
	220										
	280										
	340										
	400										
	460										
	520										
	580										
	640										
	700										
	760										
	820										
	880										
	940										
	1000										
	1060										
	1120										
	1180										
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	1300										
	1360										
	1420										
	1480										
28	160										
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	280										
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	400										
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	700										
	760										
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	940										
	1000										
	1060										
	1120										
	1180										
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	1480										
	1540										
	1600										
	1660										
	1720										
	1780										
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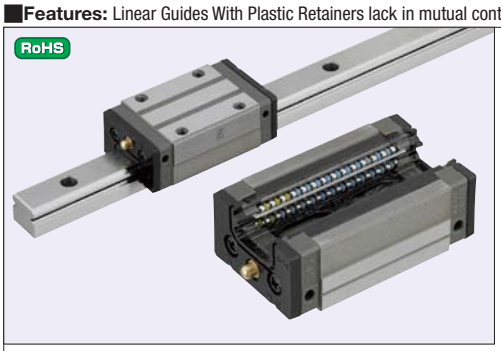
42	200										
	280										
	360										
	440										
	520										
	600										
	680										
	760										
	840										
	920										
	1000										
	1080										
	1160										
	1240										
	1320										
	1400										
	1480										
	1560										
	1640										
	1720										
	1800										
	1880										
	1960										

H	L Specified (1mm Increment)	€ Unit Price						
		1 Block			2 Blocks			Rails
		SVRLZ	SVWLZ	SVWTLZ	SV2RLZ	SV2WLZ	SV2WTLZ	SRZLF
24	101~159							
	161~219							
	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
	761~819							
	821~879							
	881~939							
	941~999							
	1001~1059							
	1061~1119							
	1121~1179							
	1181~1239							
	1241~1299							
	1301~1359							
	1361~1419							
	1421~1479							
28	161~219							
	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
	761~819							
	821~879							
	881~939							
	941~999							
	1001~1059							
	1061~1119							
	1121~1179							
	1181~1239							
	1241~1299							
	1301~1359							
	1361~1419							
	1421~1479							
	1481~1539							
	1541~1599							
	1601~1659							
	1661~1719							
	1721~1779							
	1781~1839							
	1841~1899							
	1901~1959							
33	161~219							
	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
	761~819							
	821~879							
	881~939							
	941~999							
	1001~1059							
	1061~1119							
	1121~1179							
	1181~1239							
	1241~1299							
	1301~1359							
	1361~1419							
	1421~1479							
	1481~1539							
	1541~1599							
	1601~1659							
	1661~1719							
	1721~1779							
	1781~1839							
	1841~1899							
	1901~1959							
42	201~279							
	281~359							
	361~439							
	441~519							
	521~599							
	601~679							
	681~759							
	761~839							
	841~919							
	921~999							
	1001~1079							
	1081~1159							
	1161~1239							
	1241~1319							
	1321~1399							
	1401~1479							
	1481~1559							
	1561~1639							
	1641~1719							
	1721~1799							
	1801~1879							
	1881~1959							

Linear Guides -Heavy Load-

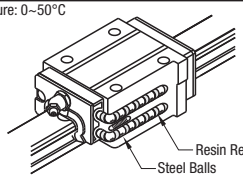
-With Plastic Retainers / Interchangeable, Light Preload-

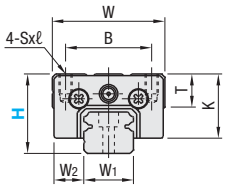
Features: Linear Guides With Plastic Retainers lack in mutual contact between balls and result in low noise levels under high-speed operation.



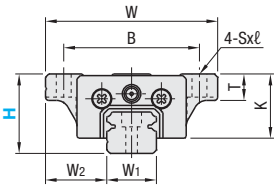
	Type		Blocks	L Dimensions	M Material H Hardness
	1 Block	2 Blocks			
Standard Block	SXRZ	SX2RZ	SXRB	Selectable	JIS STKM 58HRC~
	SXRLZ	SX2RLZ		Specified	
Wide Block Through Holes	SXWZ	SX2WZ	SXWB	Selectable	
	SXWLZ	SX2WLZ		Specified	
Wide Block Female Thread Holes	SXWTZ	SX2WTZ	SXWTB	Selectable	
	SXWTLZ	SX2WTLZ		Specified	

Heat Resistant Temperature: 0~50°C

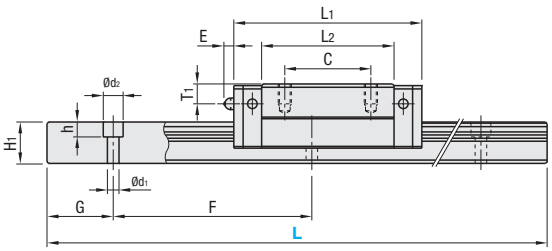




Standard Block



Wide Block



Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P501
- For Interchangeable, Minute Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

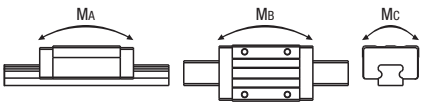
- For G dimensions of L Dimension Configurable Type, refer to P507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
- Grease Fittings: Straight type for H24 and angled type for H28, H33 and H42.

	Part Number Type 1 Block	Part Number Type 2 Blocks	H	W	L1	B	C	Sxℓ	L2	K	T	Block Dimensions Grease Fittings Mounting Holes	E	T1	Guide Rail Dimensions H1	W1	W2	Counterbored Holes d1xd2xh	F	G
Standard Block	SXRZ	SX2RZ	24	34	56.8	26	26	M4x6	40	19.4	10	Ø3	3	6	12.5	15	9.5	3.5x6x4.5	60	20
	SXRLZ	SX2RLZ	28	42	65.2	32	32	M5x7	48	22	12	M6xP0.75	11	5.5	15.5	20	11	6x9.5x8.5	60	20
	(Blocks) SXRB	(Rails) SRZL SRZLF	33	48	81.6	35	35	M6x9	60	26	12	M6xP0.75	11	7	18	23	12.5	7x11x9	60	20
			42	60	96.4	40	40	M8x12	71	33	13	M6xP0.75	11	8	23	28	16	7x11x9	80	20
Wide Block	SXWZ	SX2WZ	24	52	56.8	41	26	4.5 (M5)	40	19.4	8	Ø3	3	6	12.5	15	18.5	3.5x6x4.5	60	20
	SXWLZ	SX2WLZ	28	59	65.2	49	32	5.5 (M6)	48	22	10	M6xP0.75	11	5.5	15.5	20	19.5	6x9.5x8.5	60	20
	SXWTZ	SX2WTZ	33	73	81.6	60	35	7 (M8)	60	26	11	M6xP0.75	11	7	18	23	25	7x11x9	60	20
	SXWTLZ	SX2WTLZ	42	90	96.4	72	40	9 (M10)	71	33	11	M6xP0.75	11	8	23	28	31	7x11x9	80	20
	(Blocks) SXWB SXWTB	(Rails) SRZL SRZLF																		

Dimensions in ( ) are for Wide Block Type Female Thread Hole.

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment MA N·m	Allowable Static Moment MB N·m	Allowable Static Moment MC N·m	Mass Block kg Standard	Mass Block kg Wide	Mass Guide Rails kg/m
24	7.9	15.6	74	62	78	0.2	0.26	1.4
28	11.1	21.8	124	104	149	0.28	0.35	2.3
33	17.9	33.5	242	203	266	0.51	0.66	3.1
42	27.3	50.5	415	350	480	0.85	1.20	4.8



Part Number - L
SXRZ28 - 1840

8 Days | 6 Days | Express A 8,00 EUR / piece

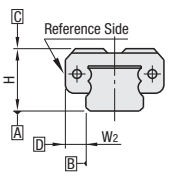
A Express Charge of 21,60 EUR for 3 or more identical pieces. P. 88

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19
Discount Rate	€ Unit Price	5%

Part Number - L - (RLC / LLC) | 10 Days
SXRZ28 - 640 - RLC

Preload and Accuracy Standards



Interchangeable, Light Preload Type

Radial Clearance (µm)	
H24, 28	-4~0
H33, 42	-5~0

Dimension Precision (µm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±30
Width W2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to P501
Running Parallelism of surf. D against surf. B	

Alterations	Code	Spec.	Price Adder
Rail Ends Cut: LLC / RLC (Engraving); L N / N L. Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC	8,00
	Right End Cut RLC	H: 24, 28, 33, 42 — L Cut: 10 — N: 10. Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00

CAD Data

H	Selectable L	€ Unit Price									
		1 Block			2 Blocks			Rails	Blocks		
		SXRZ	SXWZ	SXWTZ	SX2RZ	SX2WZ	SX2WTZ	SRZL	SXRB	SXWB	SXWTB
24	100										
	160										
	220										
	280										
	340										
	400										
	460										
	520										
	580										
	640										
	700										
	760										
	820										
	880										
	940										
	1000										
	1060										
	1120										
	1180										
	1240										
	1300										
	1360										
	1420										
	1480										
28	160										
	220										
	280										
	340										
	400										
	460										
	520										
	580										
	640										
	700										
	760										
	820										
	880										
	940										
	1000										
	1060										
	1120										
	1180										
	1240										
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	1660										
	1720										
	1780										
	1840										
	1900										
	1960										
33	160										
	220										
	280										
	340										
	400										
	460										
	520										
	580										
	640										
	700										
	760										
	820										
	880										
	940										
	1000										
	1060										
	1120										
	1180										
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	1540										
	1600										
	1660										
	1720										
	1780										
	1840										
	1900										
	1960										
42	200										
	280										
	360										
	440										
	520										
	600										
	680										
	760										
	840										
	920										
	1000										
	1080										
	1160										
	1240										
	1320										
	1400										
	1480										
	1560										
	1640										
	1720										
	1800										
	1880										
	1960										

H	L Specified (1mm Increment)	€ Unit Price						
		1 Block			2 Blocks			Rails
		SXRLZ	SXWLZ	SXWTLZ	SX2RLZ	SX2WLZ	SX2WTLZ	SRZLF
24	101~159							
	161~219							
	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
	761~819							
	821~879							
	881~939							
	941~999							
	1001~1059							
	1061~1119							
	1121~1179							
	1181~1239							
	1241~1299							
	1301~1359							
	1361~1419							
	1421~1479							
28	161~219							
	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
	761~819							
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	1661~1719							
	1721~1779							
	1781~1839							
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	1901~1959							
33	161~219							
	221~279							
	281~339							
	341~399							
	401~459							
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	1901~1959							
42	201~279							
	281~359							
	361~439							
	441~519							
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	601~679							
	681~759							
	761~839							
	841~919							
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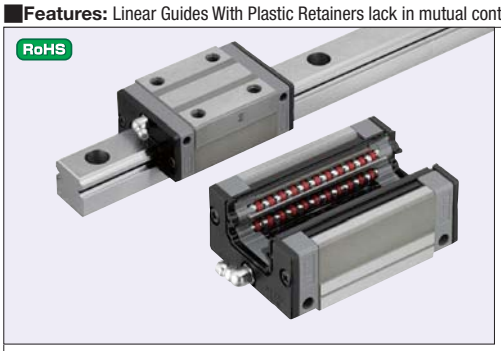
	1401~1479							
	1481~1559							
	1561~1639							
	1641~1719							
	1721~1799							
	1801~1879							
	1881~1959							

Linear Guides -Ultra Heavy Load-

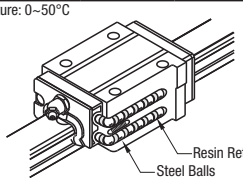
-With Plastic Retainers / Interchangeable, Light Preload-

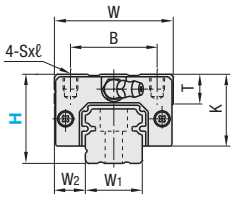
Features: Linear Guides With Plastic Retainers lack in mutual contact between balls and result in low noise levels under high-speed operation.



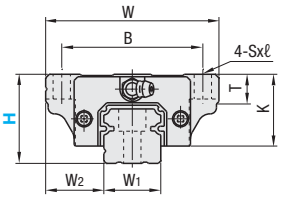
	Type		Blocks	Rails	L Dimensions	M Material H Hardness
	1 Block	2 Blocks				
Standard Block	SHRZ	SH2RZ	SHRB	SHZL	Selectable	JIS STKM 58HRC~
	SHRLZ	SH2RLZ		SHZLF	Specified	
Wide Block Through Holes	SHWZ	SH2WZ	SHWB	SHZL	Selectable	
	SHWLZ	SH2WLZ		SHZLF	Specified	
Wide Block Female Thread Holes	SHWTZ	SH2WTZ	SHWPB	SHZL	Selectable	
	SHWTLZ	SH2WTLZ		SHZLF	Specified	

Heat Resistant Temperature: 0~50°C

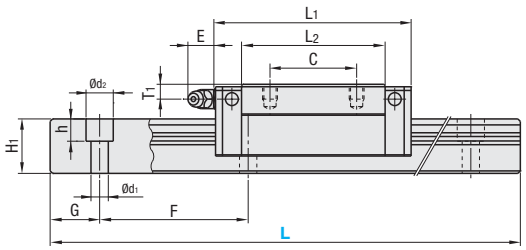




Standard Block



Wide Block



Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- For Interchangeable, Minute Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K).
- Angled Grease Fitting Type

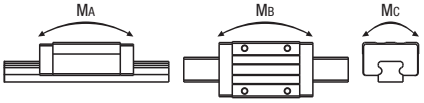
	Part Number Type 1 Block	Type 2 Blocks	H	Block Dimensions W	L_1	B	C	Sxℓ	L_2	K	T	Grease Fittings Mounting Holes	E	T_1	Guide Rail Dimensions H_1	W_1	W_2	Counterbored Holes d1xd2xh	F	G
Standard Block	SHRZ SHRLZ	SH2RZ SH2RLZ	30	44	69.8	32	36	M5x6	50	25	12	M6xP0.75	11	5	18	20	12	6x9.5x8.5	60	20
	(Blocks) SHRB	(Rails) SHZL SHZLF	36	48	79	35	35	M6x6	58	29	12	M6xP0.75	11	6	22	23	12.5	7x11x9	60	20
			42	60	85.6	40	40	M8x8	59	33	14	M6xP0.75	11	7	26	28	16	9x14x12	80	20
Wide Block	SHWZ SHWLZ SHWTZ SHWTLZ	SH2WZ SH2WLZ SH2WTZ SH2WTLZ	30	63	69.8	53	40	6 (M6)	50	25	10	M6xP0.75	11	5	18	20	21.5	6x9.5x8.5	60	20
	(Blocks) SHWB SHWPB	(Rails) SHZL SHZLF	36	70	79	57	45	7 (M8)	58	29	11	M6xP0.75	11	6	22	23	23.5	7x11x9	60	20
			42	90	98.6	72	52	9 (M10)	72	33	11	M6xP0.75	11	7	26	28	31	9x14x12	80	20

Dimensions in ( ) are for Wide Block Type Female Thread Hole.

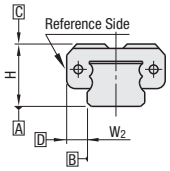
kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Co (Static) kN	Allowable Static Moment MA N·m	MB N·m	MC N·m	Mass Block kg Standard	Block kg Wide	Guide Rails kg/m
30	16.3	29.6	167	141	199	0.33	0.45	2.6
36	22.4	37.5	246	207	295	0.46	0.63	3.6
42	31.0 (35.5)	51.5 (63.0)	356 (540)	305 (450)	490 (600)	0.69 (1.2)	1.20	5.2

Values in ( ) are for Wide Block (Through Holes and Female Thread Holes) Type.



Preload and Accuracy Standards



Interchangeable, Light Preload Type

Radial Clearance (μm)	
H30 · 36	-5~0
H42	-7~0

Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±30
Width W2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Part Number - L
SHRZ30 - 820

8 Days | Express A | 8,00 EUR / piece

A Express Charge of 21,60 EUR for 3 or more identical pieces. P. 88

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19
Discount Rate	€ Unit Price	5%

Part Number - L - (RLC / LLC) | 10 Days
SHRZ30 - 820 - RLC

Alterations	Code	Spec.	Price Adder
Rail Ends Cut LLC RLC Engraving L N N L Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC	8,00
	Right End Cut RLC	H: 30, 36, 42 — L Cut: 10 — N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00

CAD Data

H	Selec-table L	€ Unit Price									
		1 Block			2 Blocks			Rails	Blocks		
		SHRZ	SHWZ	SHWTZ	SH2RZ	SH2WZ	SH2WTZ	SHZL	SHRB	SHWB	SHWPB
30	220										
	280										
	340										
	400										
	460										
	520										
	580										
	640										
	700										
	760										
	820										
	880										
	940										
	1000										
	1060										
	1120										
	1180										
	1240										
	1300										
	1360										
	1420										
	1480										
	1540										
	1600										
	1660										
	1720										
	1780										
	1840										
	1900										
	1960										
36	220										
	280										
	340										
	400										
	460										
	520										
	580										
	640										
	700										
	760										
	820										
	880										
	940										
	1000										
	1060										
	1120										
	1180										
	1240										
	1300										
	1360										
	1420										
	1480										
	1540										
	1600										
	1660										
	1720										
	1780										
	1840										
	1900										
	1960										
42	280										
	360										
	440										
	520										
	600										
	680										
	760										
	840										
	920										
	1000										
	1080										
	1160										
	1240										
	1320										
	1400										
	1480										
	1560										
	1640										
	1720										
	1800										
	1880										
	1960										

H	L Specified (1mm Increment)	€ Unit Price						
		1 Block			2 Blocks			Rails
		SHRLZ	SHWLZ	SHWTLZ	SH2RLZ	SH2WLZ	SH2WTLZ	SHZLF
30	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
	761~819							
	821~879							
	881~939							
	941~999							
	1001~1059							
	1061~1119							
	1121~1179							
	1181~1239							
	1241~1299							
	1301~1359							
	1361~1419							
	1421~1479							
	1481~1539							
	1541~1599							
	1601~1659							
	1661~1719							
	1721~1779							
	1781~1839							
	1841~1899							
	1901~1959							
36	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
	761~819							
	821~879							
	881~939							
	941~999							
	1001~1059							
	1061~1119							
	1121~1179							
	1181~1239							
	1241~1299							
	1301~1359							
	1361~1419							
	1421~1479							
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	1541~1599							
	1601~1659							
	1661~1719							
	1721~1779							
	1781~1839							
	1841~1899							
	1901~1959							
42	281~359							
	361~439							
	441~519							
	521~599							
	601~679							
	681~759							
	761~839							
	841~919							
	921~999							
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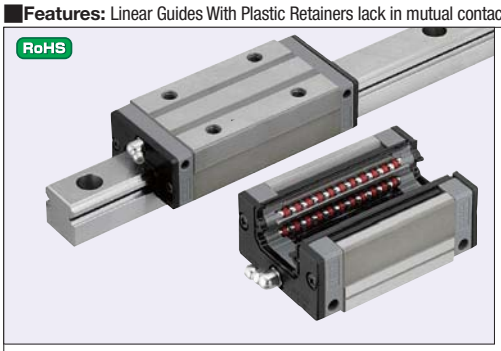
	1561~1639							
	1641~1719							
	1721~1799							
	1801~1879							
	1881~1959							

Linear Guides for Extra Super Heavy Load

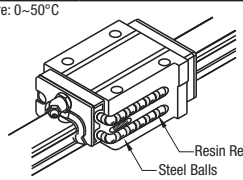
-With Plastic Retainers / Interchangeable, Light Preload-

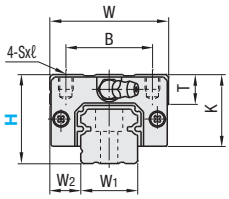
Features: Linear Guides With Plastic Retainers lack in mutual contact between balls and result in low noise levels under high-speed operation.



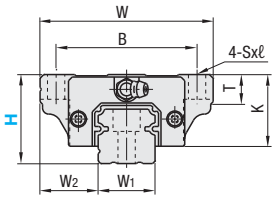
	Type		Blocks	L Dimensions	Material / Hardness
	1 Block	2 Blocks			
Standard Blocks	SERZ	SE2RZ	SERB	Selectable	JIS STKM 58HRC~
	SERLZ	SE2RLZ		Specified	
Wide Block Through Holes	SEWZ	SE2WZ	SEWB	Selectable	
	SEWLZ	SE2WLZ		Specified	
Wide Block Female Thread Holes	SEWTZ	SE2WTZ	SEWTB	Selectable	
	SEWTLZ	SE2WTLZ		Specified	

Heat Resistant Temperature: 0~50°C

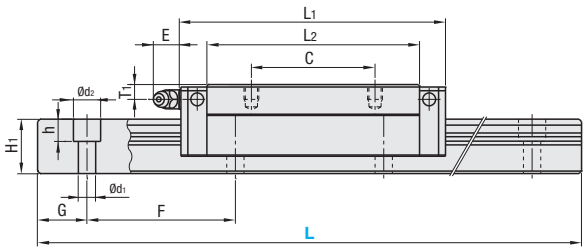




Standard Block



Wide Block



Precautions for Use

- Blocks are equipped with retainers to prevent balls from derailing. Refer to P.501
- For Interchangeable, Minute Preload Type, rails and blocks can be interchanged.
- Straight grooves are provided on datum planes. Be sure to match the datum lines when using.
- Rails cannot be connected to be extended.
- Running parallelism is the value measured after the rail is mounted.

Others

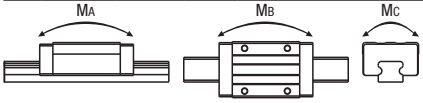
- For G dimensions of L Dimension Configurable Type, refer to P.507
- Filled with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K.).
- Angled Grease Fitting Type

	Part Number Type 1 Block	Part Number Type 2 Blocks	H	Block Dimensions W	L1	B	C	Sxℓ	L2	K	T	Grease Fittings Mounting Holes	E	T1	Guide Rail Dimensions H1	W1	W2	Counterbored Holes d1xd2xh	F	G
Standard Block	SERZ SERLZ	SE2RZ SE2RLZ	30	44	91.8	32	50	M5x6	72	25	12	M6xP0.75	11	5	18	20	12	6x9.5x8.5	60	20
	(Blocks) SERB	(Rails) SHZL SHZLF	36	48	107	35	50	M6x6	86	29	12	M6xP0.75	11	6	22	23	12.5	7x11x9	60	20
			42	60	124.6	40	60	M8x8	98	33	14	M6xP0.75	11	7	26	28	16	9x14x12	80	20
Wide Block	SEWZ SEWLZ SEWTZ SEWTLZ	SE2WZ SE2WLZ SE2WTZ SE2WTLZ	30	63	91.8	53	40	6 (M6)	72	25	10	M6xP0.75	11	5	18	20	21.5	6x9.5x8.5	60	20
	(Blocks) SEWB SEWTB	(Rails) SHZL SHZLF	36	70	107	57	45	7 (M8)	86	29	11	M6xP0.75	11	6	22	23	23.5	7x11x9	60	20
			42	90	124.6	72	52	9 (M10)	98	33	11	M6xP0.75	11	7	26	28	31	9x14x12	80	20

Dimensions in ( ) are for Wide Block Type Female Thread Hole.

kgf=Nx0.101972

H	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Static Moment MA N·m	MB N·m	MC N·m	Mass Block kg Standard	Mass Block kg Wide	Mass Guide Rails kg/m
30	21.6	44.5	360	305	298	0.48	0.65	2.6
36	32	62.5	615	515	490	0.69	0.93	3.6
42	46	91.5	1060	885	870	1.16	1.60	5.2



Part Number - L
SERZ30 - 1840

8 Days | Express A | 8,00 EUR / piece

A Express Charge of 21,60 EUR for 3 or more identical pieces. P.88

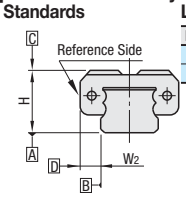
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Discount Rate	€ Unit Price	5%

Part Number - L - (RLC - LLC)
SERZ30 - 1840 - RLC

10 Days

Preload and Accuracy Standards Interchangeable, Light Preload Type



Radial Clearance (μm)	
H30 · 36	-5~0
H42	-7~0

Dimension Precision (μm)	Interchangeable
Height H Tolerance	±20
Height H Pair Variation	15
Width W2 Tolerance	±30
Width W2 Pair Variation	25
Running Parallelism of surf. C against surf. A	Refer to P.501
Running Parallelism of surf. D against surf. B	

Alterations	Code	Spec.	Price Adder
Rail Ends Cut LLC — Engraving — RLC L N N L Rail is cut with the product ID facing out (datum on other side).	Left End Cut LLC	Cuts rail ends. Ordering Code LLC H: 30, 36, 42 — L Cut: 10 — N: 10 Applicable to Selectable Type only. Overall length will be shorter by cutting.	8,00
	Right End Cut RLC		8,00

CAD Data

H	Selectable L	€ Unit Price									
		1 Block			2 Blocks			Rails	Blocks		
		SERZ	SEWZ	SEWTZ	SE2RZ	SE2WZ	SE2WTZ	SHZL	SERB	SEWB	SEWTB
30	220										
	280										
	340										
	400										
	460										
	520										
	580										
	640										
	700										
	760										
	820										
	880										
	940										
	1000										
	1060										
	1120										
	1180										
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	1780										
	1840										
	1900										
	1960										
36	220										
	280										
	340										
	400										
	460										
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	580										
	640										
	700										
	760										
	820										
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	1660										
	1720										
	1780										
	1840										
	1900										
	1960										
42	280										
	360										
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	1320										
	1400										
	1480										
	1560										
	1640										
	1720										
	1800										
	1880										
	1960										

H	L Specified (1mm Increment)	€ Unit Price						
		1 Block			2 Blocks			Rails
		SERLZ	SEWLZ	SEWTLZ	SE2RLZ	SE2WLZ	SE2WTLZ	SHZLF
30	221~279							
	281~339							
	341~399							
	401~459							
	461~519							
	521~579							
	581~639							
	641~699							
	701~759							
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	1901~1959							
36	221~279							
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	1841~1899							
	1901~1959							
42	281~359							
	361~439							
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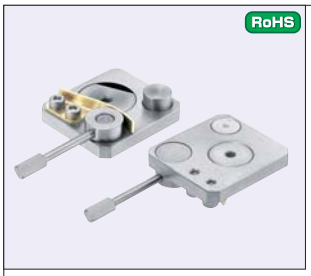
	1401~1479							
	1481~1559							
	1561~1639							
	1641~1719							
	1721~1799							
	1801~1879							
	1881~1959							

Linear Guide Clamps
-Miniature Linear Guides-

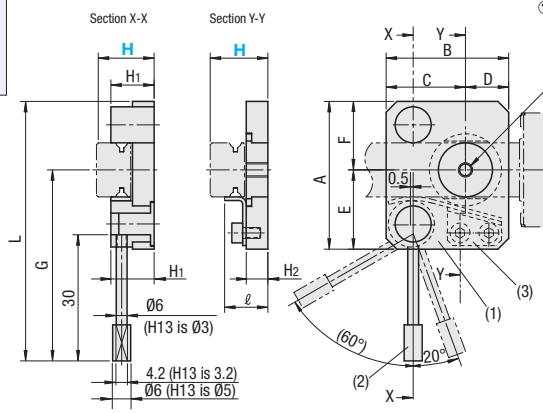
Retaining Force (Reference): 70N~105N

CAD Data



Type		Part	Material
SECK SECWK	(1)	Main Body	1.4301/X5CrNi18-10
	(2)	Lever	1.4301/X5CrNi18-10
	(3)	Contacts	CW505L/CuZn30

■Lever Tightening Force (Reference)
40N or more (Lever End)



- Release at 20° to the right. Clamp within 60° range to the left.
- Linear guide clamp must be mounted to a connecting plate with miniature linear guide first, then attach to the rail.
- Connecting plate is to be supplied by user.
- Mounting point rotates. Tighten the screw by holding the back side.
- SECK Type should match with H dimension of Miniature Linear Guides.
- SECWK Type should match with H dimension of Miniature Linear Guides Wide Type.
- The lever (2) can be screwed off.

Part Number Type	H	A	B	C	D	E	F	M	H1	H2	ℓ	L	G	Retaining Force (Reference)	€ Unit Price
SECK	13	38	34	22	12	20.5	17.5	M4	10	5	10	64	46.5	70N	
	16	41	34	22	12	22	19		12	6	12	67	48	95N	
SECWK	14	50	34	22	12	26.5	23.5		11	5	11	76	52.5	75N	
	16	68	34	20.5	13.5	35.5	32.5	M5	13	6	13	94	61.5	105N	

Order Example

Part Number
SECK13

Days to Ship

6 Days
2 Days

P.87

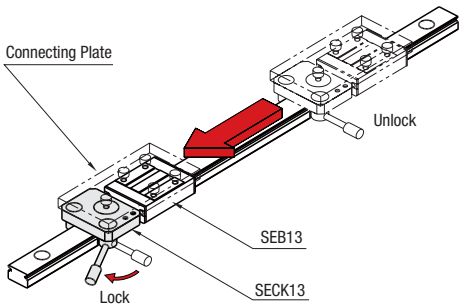
Price

■Volume Discount (Round down to one Cent.) P.

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



■Characteristics of Linear Guide Clampers

Linear guide blocks can be locked at arbitrary positions by rotating a lever. Convenient when simple position retaining utility is needed.

*When using the Linear Guide Clampers in inclined or vertical applications, provide external means to prevent the slider from falling.

Linear Guide Clamps

-Medium · Heavy Load Linear Guides-

Retaining Force (Reference): 1200N

CAD Data

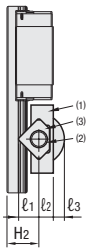


Type		Part		M Material	S Surface Treatment
Knob Type	Clamp Type				
SVCN SVCNL (Long Type)	SVCK SVCKL (Long Type)	(1)	Main Body	1.1191/C45E	Electroless Nickel Plating
		(2)	Right and Left Hand Thread	1.7220/34CrMo4	Iron Oxide Black Film
		(3)	Contacts	1.1191/C45E	-

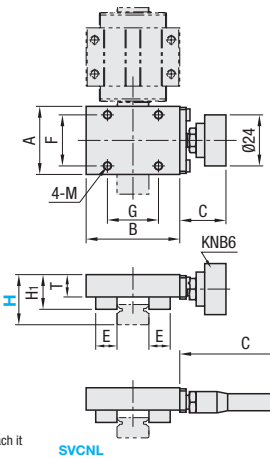
■Tightening Torque (Reference)
7N • m or more (Retaining Force 1200N)
Opening Ranges of Contacts

H24...10~22mm	H36...17~36mm
H28...14~28mm	H42...21~56mm
H30...15~30mm	H42G...21~56mm
H33...16~40mm	

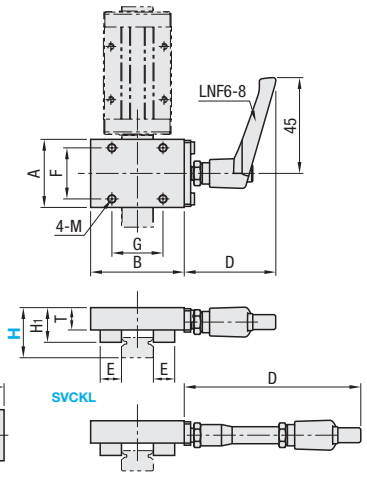
■Fitting Dimensions



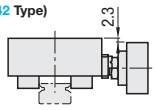
SVCN Knob Type



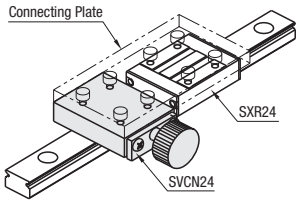
SVCK Assembled Dimensions



SVCNL (SVCN42 Type)



* Do not use for vertical position retaining.



- Linear guide clamp must be fixed to the joint plate for miniature side guide first, then attach it to the rail.
- Connecting plate is to be supplied by user.
- Match with the H dimension of Medium / Heavy Load Linear Guides.
- H42G should be used with matching H dimension 42 of Extra Heavy/Extra Super Heavy Load Linear Guides.
- For KNB6, refer to P. 2 -1025
- For LNF6-8, refer to P. 2 -1004

Part Number Type	H	A	B	F	G	C SVCN	C SVCNL	D SVCK	D SVCKL	E	T	H1	H2	ℓ1	ℓ2	ℓ3	M (Coarse Thread)	€ Unit Price SVCN	SVCNL	SVCK	SVCKL
SVCN SVCNL SVCK SVCKL	24	32	44	24	24	21.7	61.7	43	83	10	10.5	16.3	17.2	9.5	6.8	5.2	M4				
	28	35	50	25	25	21.7	61.7	43	83	10	11.5	17.3	20.2	9.5	7.8	4.2	M5				
	30	38	54	28	28	21.7	61.7	43	83	11	11.0	18.3	22.7	11.0	7.3	4.7	M5				
	33	38	62	26	26	21.7	61.7	43	83	10	14.0	19.8	22.7	9.5	10.3	1.7	M6				
	36	42	60	30	30	21.7	61.7	43	83	11	13.0	20.3	26.7	11.0	9.3	2.7	M6				
	42	46	80	32	32	21.7	61.7	43	83	11	18.0	25.3	27.7	11.0	14.3	-	M8				
	42G	46	80	32	32	21.7	61.7	43	83	11	15.0	22.3	30.7	11.0	11.3	0.7	M8				

Order Example Part Number: SVCN24

Days to Ship 6 Days P.87

Example

Price

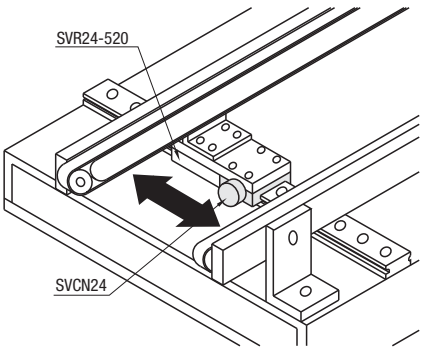
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%

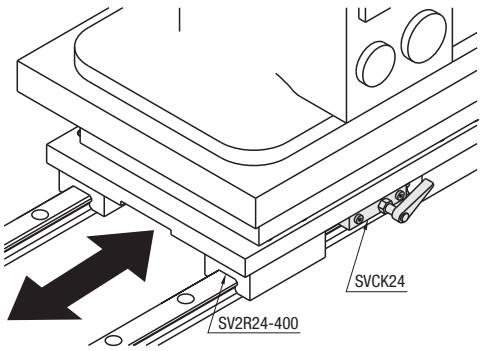
Please request a quotation for orders of 15 or more pieces of SVCNL and SVCKL.

For orders larger than indicated quantity, please request a quotation.

■Conveyer Pitch Change



■Positioning of Robots etc.



Height Adjusting Blocks for Linear Guides
-Economy Type-

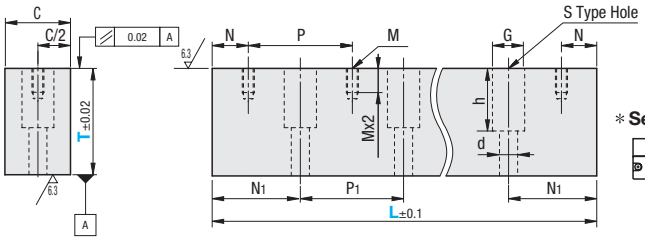
CAD Data

■ Up to 50% economical without width tolerance than High Precision Type. Height accuracy and parallelism after installation are the same as those of High Precision Type. P.584

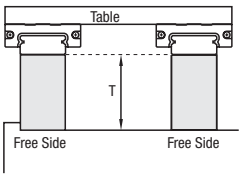
RoHS



Type		M	S
1 pc.	Set of 2 pcs. Ganged Machining Charge※	Material	Surface Treatment
LGBE	LG2BE	1.0038/S235JR	Electroless Nickel Plating
ALGBE	ALG2BE	EN AW-5052/AlMg2,5	Clear Anodize

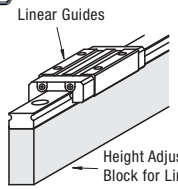


※ Set of Gang Machined 2 pcs.



Set of gang machined 2 pcs are simultaneously milled with less than 0.01mm or less differences of T dimension. Height accuracy after screw connecting the base plate is guaranteed.

EX



Bending might occur due to the product characteristics. Fix the block by using all the mounting holes.

Part Number		L Dimension Selection	T 1mm Increment	C	N	P	N1	P1	Female Thread Holes M	S Through + Counterbored Hole			
Type	(Linear Guide H Dimension) No.									d	G	h	
(1 pc.) LGBE ALGBE	24	160 220 280 340 400 460 520	10~60	16	20	60	50	60	M3	5.5	9.5	6 (T≤20)	T-14 (T>20)
(Set of Gang Machined 2 pcs.) LG2BE ALG2BE	28	220 280 340 400 460 520	15~60	22					M5	6.5	11	7 (T≤25)	T-18 (T>25)
	33	220 280 340 400 460 520	20~60	25					M6	9	14	9 (T≤30)	T-21 (T>30)

When T=15 or less, the pilot holes M3 and M5 for tapping goes through.
When T=20, the pilot holes M6 for tapping goes through.

Order Example

Part Number		L		T
LGBE24	-	400	-	30
ALG2BE28	-	520	-	32

Days to Ship 10 Days

Price Price for the set of Gang Machined 2 pcs.: Unit price x 2

■ Volume Discount (Round down to one Cent.) P87

Quantity	1 pc.	1~6	7, 8	9, 10
	Set of 2 pcs.	1~3	4	5
Discount Rate		€ Unit Price	5%	10%

■ Price List

Type	No.	L	€ Unit Price LGBE T30 Or Less	LGBE T31 ~ 60	ALGBE T30 Or Less	ALGBE T31 ~ 60
(1 pc.) LGBE ALGBE	24	160				
		220				
		280				
		340				
		400				
		460				
		520				
(Set of Gang Machined 2 pcs.) LG2BE (LGBE + LGBE)	28	220				
		280				
		340				
		400				
		460				
		520				
ALG2BE (ALGBE + ALGBE)	33	220				
		280				
		340				
		400				
		460				
		520				

■ Number of Holes

No.	L	M Number of Holes	S Number of Holes
24	160	3	2
	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
28	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
33	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8

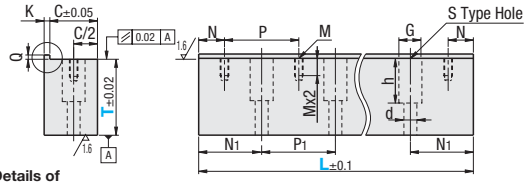
Height Adjusting Blocks for Linear Guides
-High Precision Type-

CAD Data

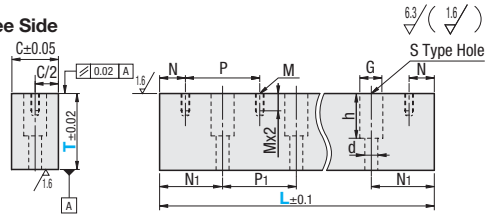


Type / Shape					Material	Surface Treatment
1 pc.		∗ Set of Gang Machined 2 pcs.				
Datum Side	Free Side	Datum Side + Datum Side	Datum Side + Free Side	Free Side + Free Side		
BETA	BETE	BE2KK (BETA + BETA)	BE2KF (BETA + BETE)	BE2FF (BETE + BETE)	1.1191/C45E	Electroless Nickel Plating
ABETA	ABETE	ABE2KK (ABETA + ABETA)	ABE2KF (ABETA + ABETE)	ABE2FF (ABETE + ABETE)	EN AW-5052/ AlMg2,5	Clear Anodize
		+	+	+	-	-

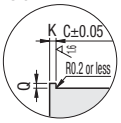
Datum Side



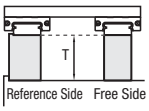
Free Side



○ Details of Part



∗Set of 2 pcs.



Ⓨ Set of gang machined 2 pcs are simultaneously milled with less than 0.01mm or less differences of T dimension. Height accuracy after screw connecting the base plate is guaranteed.

Part Number Type	(Linear Guide H Dimension) No.	L Dimension Selection	T 1mm Increment	C	K	Q	N	P	N1	P1	Female Thread Holes M	S Through + Counterbored Hole d	G	h
(1 pc.) BETA BETE ABETA ABETE (Set of Gang Machined 2 pcs.) (Datum Side + Datum Side) (Datum Side + Free Side) (Free Side + Free Side) BE2KK BE2KF BE2FF ABE2KK ABE2KF ABE2FF	24	160 220 280 340 400 460 520 580 640 700 760 820 880 940	10~60	15	3	3	20	60	50	60	M3	5.5	9.5	6 (T≤20) T-14 (T>20)
	28	220 280 340 400 460 520 580 640 700 760 820 880 940	15~60	20							M5	6.5	11	7 (T≤25) T-18 (T>25)
	33	220 280 340 400 460 520 580 640 700 760 820 880 940	20~60	23							M6	9	14	9 (T≤30) T-21 (T>30)
	42	280 360 440 520 600 680 760 840 920		28				80	60	80	M6	11	17.5	11 (T≤35) T-24 (T>35)

Ⓨ When T=15 or less, the pilot holes M3 and M5 for tapping goes through.
Ⓨ When T=20, the pilot holes M6 for tapping goes through.

Order Example

Part Number	-	L	-	T
BETA24	-	400	-	32
BE2KF24	-	700	-	30

Days to Ship 10 Days

Price

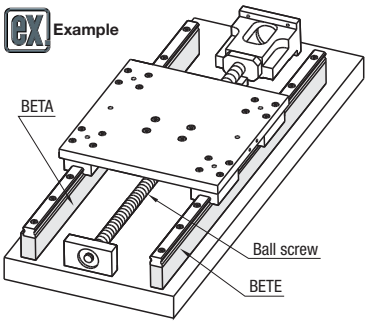
Volume Discount (Ⓨ Round down to one Cent.) P87

Quantity	1 pc.	1~6	7, 8	9, 10
	Set of 2 pcs.	1~3	4	5
Discount Rate		€ Unit Price	5%	10%

Price Calculation Example for set of gang machined 2 pcs.
For BE2KF24-700-30,

(BETA24-700-30) + (BETA24-700-30) + (Ganged Machining Charge)
309,30 EUR + 258,80 EUR + 34,00 EUR
=602,10 EUR

Example



- For raising the linear guide height to mount ball screws etc.

Price List

Type	No.	L	€ Unit Price BETA T30 Or Less	BETA T31 ~ 60	ABETA T30 Or Less	ABETA T31 ~ 60	BETE T30 Or Less	BETE T31 ~ 60	ABETE T30 Or Less	ABETE T31 ~ 60	Ganged Machining Charge
(1 pc.) BETA ABETA BETE ABETE (Set of Gang Machined 2 pcs.)	24	160 220 280 340 400 460 520 580 640 700 760 820 880 940									
BE2KK (BETA + BETA + Ganged Machining Charge) ABE2KK (ABETA + ABETA + Ganged Machining Charge) BE2KF (BETA + BETE + Ganged Machining Charge) ABE2KF (ABETA + ABETE + Ganged Machining Charge) BE2FF (BETE + BETE + Ganged Machining Charge) ABE2FF (ABETE + ABETE + Ganged Machining Charge)	28	220 280 340 400 460 520 580 640 700 760 820 880 940									
	33	220 280 340 400 460 520 580 640 700 760 820 880 940									
	42	280 360 440 520 600 680 760 840 920									

Number of Holes

No.	L	M Number of Holes	S Number of Holes
24	160	3	2
	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
	580	10	9
	640	11	10
	700	12	11
	760	13	12
	820	14	13
	880	15	14
	940	16	15
28	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
	580	10	9
	640	11	10
	700	12	11
	760	13	12
	820	14	13
	880	15	14
	940	16	15
33	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7
	520	9	8
	580	10	9
	640	11	10
	700	12	11
	760	13	12
	820	14	13
	880	15	14
	940	16	15
42	280	4	3
	360	5	4
	440	6	5
	520	7	6
	600	8	7
	680	9	8
	760	10	9
	840	11	10
	920	12	11

Height Adjusting Blocks for Miniature Linear Guides
-Standard Rail Type-

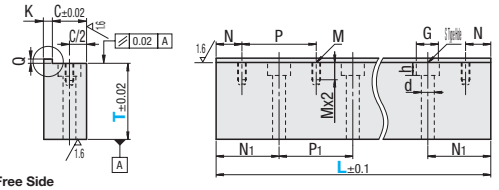
CAD Data



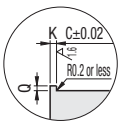
Type		Material	Surface Treatment
Datum Side	Free Side	M	S
GETA	GETE	1.1191/C45E	Electroless Nickel Plating
AGETA	AGETE	EN AW-5052/AlMg2,5	Clear Anodize

6.3 (1.6)

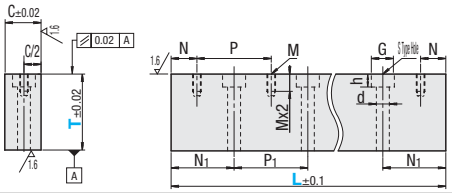
Datum Side



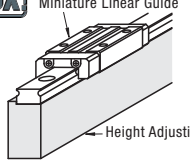
Details of Part



Free Side



Example



Part Number		L	T	C	K	Q	N	P	N1	P1	Female Thread Holes	S		
Type	(Slide Guide H Dimension) No.	Selectable	1mm Increment								M	Through + Counterbore Holes		
												d	G	h
GETA AGETA GETE AGETE	8	40 55 70 85 100 115 130	10~60	7	2	1	5	15	12.5	15	M2	3.5	6	3.5
	10	55 75 95 115 135 155 175 195 215 235 255 275		9	3	1.5	7.5	20	17.5	20	M3	4.5	8	4.5
	13	70 95 120 145 170 195 220 245 270 295 320 345 370 395		12	3	2	10	25	22.5	25	M3	4.5	8	4.5
	16	110 150 190 230 270 310 350 390 430 470		15	3	3	15	40	35	40	M3	5.5	9.5	5.5
	20	160 220 280 340 400 460		20	3	4	20	60	50	60	M5	6.5	11	6.5

When T≤Mx4, the pilot holes for tapping go through.

Order Example

Part Number	-	L	-	T
GETA10	-	115	-	20

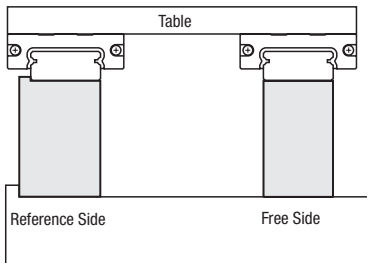
Days to Ship: 10 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~6	7, 8	9, 10
Discount Rate	€ Unit Price	5%	10%

Example



■Applicable Linear Guides

P.509~P.529 Compatible with Miniature Linear Guides L Selectable Types

Not applicable to (- L420 or more for H13.
- H16 is not applicable to L=510 or more.
- L520 or more for H20.)

■Price List

No.	L	€ Unit Price							
		GETA		AGETA		GETE		AGETE	
		T10~30	T31~60	T10~30	T31~60	T10~30	T31~60	T10~30	T31~60
8	40								
	55								
	70								
	85								
	100								
	115								
	130								
10	55								
	75								
	95								
	115								
	135								
	155								
	175								
	195								
	215								
	235								
	255								
	275								
13	70								
	95								
	120								
	145								
	170								
	195								
	220								
	245								
	270								
	295								
	320								
	345								
	370								
	395								
16	110								
	150								
	190								
	230								
	270								
	310								
	350								
	390								
	430								
	470								
20	160								
	220								
	280								
	340								
	400								
	460								

■Number of Holes

No.	L	M Number of Holes	S Number of Holes
8	40	3	2
	55	4	3
	70	5	4
	85	6	5
	100	7	6
	115	8	7
	130	9	8
10	55	3	2
	75	4	3
	95	5	4
	115	6	5
	135	7	6
	155	8	7
	175	9	8
	195	10	9
	215	11	10
	235	12	11
	255	13	12
	275	14	13
13	70	3	2
	95	4	3
	120	5	4
	145	6	5
	170	7	6
	195	8	7
	220	9	8
	245	10	9
	270	11	10
	295	12	11
	320	13	12
	345	14	13
	370	15	14
	395	16	15
16	110	3	2
	150	4	3
	190	5	4
	230	6	5
	270	7	6
	310	8	7
	350	9	8
	390	10	9
	430	11	10
	470	12	11
20	160	3	2
	220	4	3
	280	5	4
	340	6	5
	400	7	6
	460	8	7

Linear Guide Stopper Bolts / Linear Guide Block Stopper Plates / Rail Mounting Hole Caps / Rail Push Plates

CAD Data

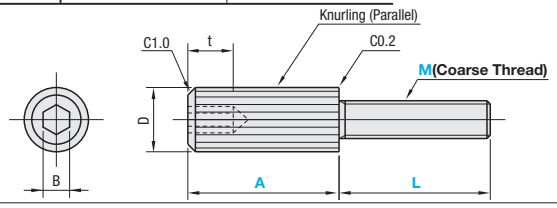
For Linear Guides Stopper Bolts

RoHS

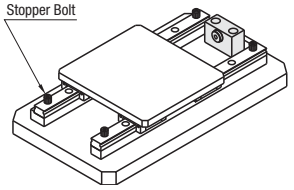


Type	Material
SBLT	1.4305/X10CrNiS18-9
SBLTJ	Knurled Head: Urethane (Shore A90); Male Thread Section: 1.4301/X5CrNi18-10

* SBLTJ is a hexagon socket set screw with a heat bonded urethane head.



Example



Part Number Type	M (Coarse Thread)	L	A	D	B SBLT	B SBLTJ	t SBLT	t SBLTJ	SBLT € Unit Price Qty. 1~9	SBLT Volume Discount Qty. 10~30	SBLTJ € Unit Price Qty. 1~9	SBLTJ Volume Discount Qty. 10~30
SBLTSBLTJ	3	8 10 12	6 8 10	5.5	2.5	1.5	3	2				
	4	10	8	7	3	2	3.5	2.5				
	5	16	18	8.5	4	2.5	4	3				
	6	18	20	10	5	3	5	3.5				

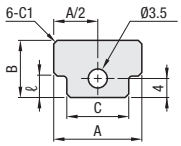
For orders larger than indicated quantity, please request a quotation.

For Linear Guides Linear Guide Block Stopper Plates

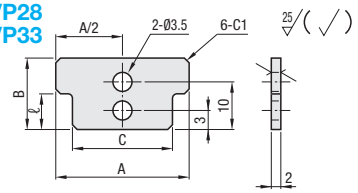


RoHS

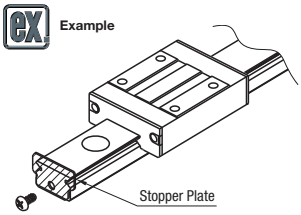
SVP24



SVP28 SVP33



Example



Rail ends require tapping alterations.
Applicable to Medium, Heavy Load and JIS STKM Type only.

M Material: 1.4301/X5CrNi18-10-D

Part Number Type	No.	A	B	C	ℓ	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~100
SVP	24	19	12	14	4.5		
	28	26	15	19	6		
	33	29	19	22	7		

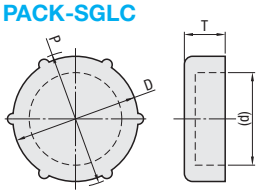
For orders larger than indicated quantity, please request a quotation.

Rail Mounting Hole Caps (Package)



RoHS

PACK-SGLC

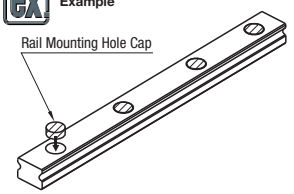


M Material: Polyacetal (Black)

Part Number Type	M (Applicable Bolt Hole)	D	P	T	(d)	Qty per Pkg.	€ Unit Price 1~5 Pkgs.
PACK-SGLC	3	5.8	6.2	1.5	4.2	100 pcs. / Pkg.	
	5	9.3	9.7	3	7.3		
	6	10.8	11.2	3	8.8		

PACK-SGLC3 has 4 protrusions.
Prevents foreign objects such as cutting chips from intruding into mounting holes.
For orders larger than indicated quantity, please request a quotation.

Example

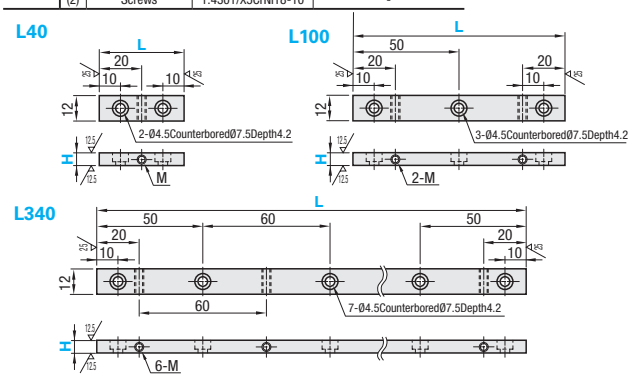


Linear Guides Adjustment Units

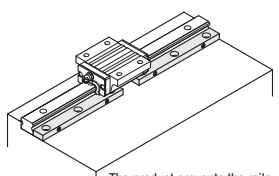


RoHS

Type		Part	Material	Surface Treatment
SGU	(1)	Main Body	1.1191/C45E	Electroless Nickel Plating
	(2)	Screws	1.4301/X5CrNi18-10	-



Example



The product prevents the rails from being agitated by shocks and vibrations.

- Installed in parallel with linear guide rails and can be used to press the rails against datum shoulders or pins with included set screws.
- Applicable to H28, H33, H36 and H42 Linear Guides.

Part Number Type	H	L Selectable	Female Thread Holes M	Included Screws Sizes	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~15
SGU	5	40	3	M3-12		
		100		M3-12		
		340		M3-12		
	6	40	4	M4-12		
		100		M4-12		
		340		M4-12		

Order Example

Part Number	-	L	-	A
SBLT3	-	10	-	8
SVP24				
PACK-SGLC3				
SGU5	-	100		

Days to Ship: 6 Days / 2 Days P.87

For orders larger than indicated quantity, please request a quotation.

Linear Lock / Simplified Linear Lock

CAD Data

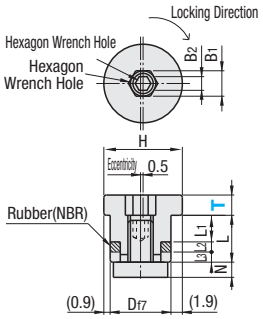
■This linear rock presses the rail strongly onto the datum plane to correct bending and avoid misalignment by external force.
See below for installation examples and diagrams. Press the rail onto the datum plane.

■Linear Locks RoHS



Type	Material	Surface Treatment
LLT	1.1191/C45E	Electroless Nickel Plating
LLTR	(Thermal Refined)	Raydent
LLTS	1.4031/X38Cr13	-

<How to Mount>
After turning B1 clockwise, turn B2 (inner screw) clockwise.



Applicable Linear Guides (Recommendation)

Type	H	T1.4	T1.8	T3.5	T5
Miniature Standard Rails	6		-	-	-
	8		-	-	-
	10	-		-	-
	13	-		-	-
	16	-	-		-
	20	-	-		-
Miniature Wide Rails	6.5		-	-	-
	9	-		-	-
	12	-		-	-
	14	-		-	-
	16	-		-	-
Medium and Heavy Load	24	-	-		-
	28	-	-	-	
	30	-	-		-
	33	-	-	-	
	36	-	-	-	
	42	-	-	-	

Part No. Type	T	H	Dr7		L	N	L1	L2	L3	B1	B2	Mounting Hole Dimensions D1	F (min)	W	(Recommendation) Tightening Torque Ncm	(Recommendation) Clamp Power KN	Mass (g)	LLT € Unit Price Qty. 1~9	LLT Vol. Disc. Qty. 10~200	LLTR € Unit Price Qty. 1~9	LLTR Vol. Disc. Qty. 10~50	LLTS € Unit Price Qty. 1~9	LLTS Vol. Disc. Qty. 10~50
LLT LLTR LLTS	1.4	12.8	10	-0.013 -0.028	8	2.5	5	1.4	1.6	5	2.5	10	11	6.5	90	1.8	7						
	1.8														120	2.5	7						
	3.5														190	3.9	8						
	5	14.8	12	-0.016 -0.034	9		6					12	12	7.5	270	5.5	14						

For orders larger than indicated quantity, please request a quotation.

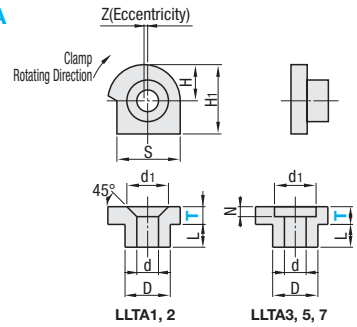
■This linear lock comes with mounting screws to be inserted. See below for installation examples and diagrams.

■Simplified Linear Locks



M Material: 1.1191/C45E (Thermal Refined)
S Surface Treatment: CZ Coating (p.279)
A Accessory: Mounting Screw

LLTA



Applicable Linear Guides (Recommendation)

Type	H	T1	T2	T3	T5	T7
Miniature Standard Rails	6		-	-	-	-
	8		-	-	-	-
	10	-		-	-	-
	13	-		-	-	-
	16	-	-		-	-
	20	-	-	-	-	-
Miniature Wide Rails	6.5		-	-	-	-
	9		-	-	-	-
	12	-		-	-	-
	14	-		-	-	-
	16	-		-	-	-
Medium and Heavy Load	24	-	-		-	-
	28	-	-	-		-
	30	-	-		-	-
	33	-	-	-		-
	36	-	-	-		-
	42	-	-	-	-	

Part No. Type	T	L	D -0.01 -0.06	H	H1	S	Z	d	d1	N	Mounting Hole Dim. D1	W	F	M	G(min)	Mass (g)	Mounting Screws	(Recommendation) Clamp Power kN	€ Unit Price Qty. 1~9	Vol. Discount Qty. 10~150
LLTA	1	2.8	5	4	8	7	0.4	2.4	4.6	-	5	4	3	M2	5	0.6	Phillips head countersunk screws M2x8	1		
	2															1		1.2		
	3	3.8	7	6	12	11	0.5	3.4	6.2	2	7	6	4	M3	6	3	Hex. Socket Low Head Cap Screws M3x10	2.4		
	5	4.8	9	7	14	13	0.5	4.5	8	3	9	7	5	M4	6	6	Hex. Socket Low Head Cap Screws M4x12	3.8		
	7	5.8	11	8	18	14	0.5	5.5	9.5	4	11	8	6	M5	8	13	Hex. Socket Low Head Cap Screws M5x16	5.8		

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
LLT5
LLTA7

Days to Ship

6 Days
2 Days

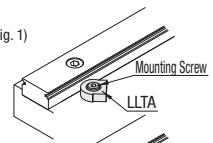
P. 87

Example

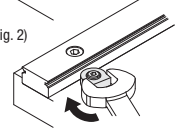
■LLTA (Simplified Linear Locks) Mounting Procedures

(1)Drill holes for mounting linear locks on the base.
(Refer to Mounting Hole Dimensions.)
(2)Temporarily tighten the rail screws.
(3)Insert the mounting screws in LLTA and temporarily tighten. (Fig. 1)
(4)Turn the LLTA shoulder clockwise with a wrench and press the rail onto the datum plane. (Fig. 2)
(5) Fully tighten the rail screws.
(6) Fully tighten the LLTA mounting screws.

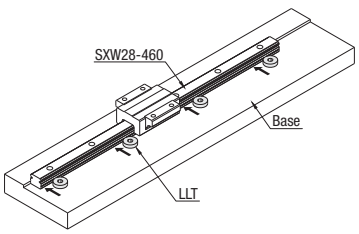
(Fig. 1)



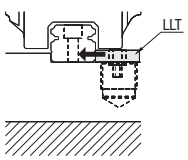
(Fig. 2)



■Linear Locks Example

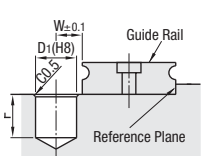


■Enlarged View

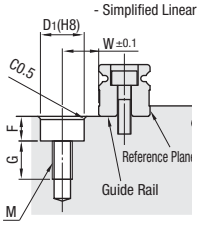


■Mounting Hole Dimensions (Reference)

- Linear Lock



- Simplified Linear Lock



- Press the rail onto the datum plane by turning the linear locks.

Linear Guide Locking Plate / Linear Guide Lock Unit / Linear Guide Taper Lock

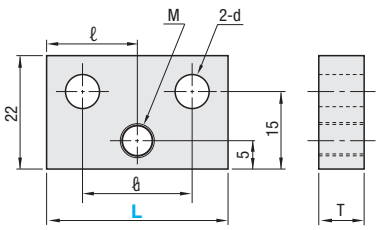
CAD Data

Linear Lock Plates

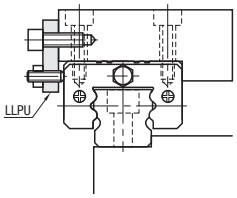


RoHS

Type	Material	Surface Treatment
LLPU	1.1191/C45E	Electroless Nickel Plating



Example



Part Number Type	L	T	ℓ	ℓ1	d	M	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~50
LLPU	23	6	11.5	11	5.5	5		
	28		14.0	15	6.5			
	33		16.5	20				
	43	9	21.5	30				

For orders larger than indicated quantity, please request a quotation.

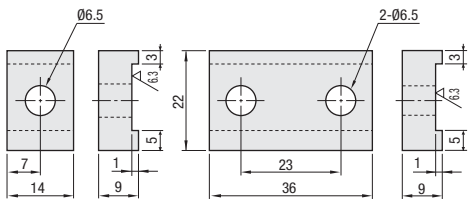
Linear Lock Plates



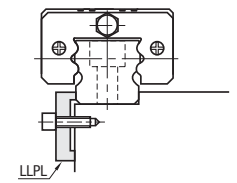
RoHS

Type	Material	Surface Treatment
LLPL	1.1191/C45E	Electroless Nickel Plating

LLPL14 LLPL36



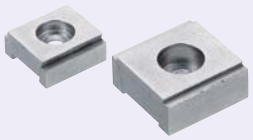
Example



Part Number Type	Nominal	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~150
LLPL	14		
	36		

For orders larger than indicated quantity, please request a quotation.

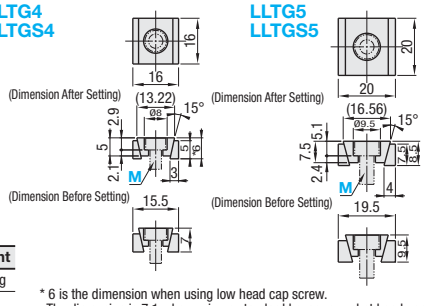
Linear Guides Lock Unit



RoHS

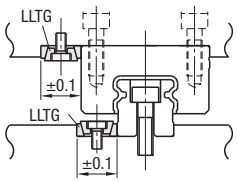
Type	Material	Surface Treatment
LLTG	1.1191/C45E	Electroless Nickel Plating
LLTGS	1.4301/X5CrNi18-10	-

LLTG4 LLTGS4 LLTG5 LLTGS5



* 6 is the dimension when using low head cap screw.
The dimension is 7.1 when using a standard hexagon socket head cap screw.

Example



Part Number Type	M	(Recommendation) Tightening Torque (N · m)	Rail Clamp Force (kN)	LLTG € Unit Price Qty. 1~9	LLTG Volume Discount Qty. 10~100	LLTGS € Unit Price Qty. 1~9	LLTGS Volume Discount Qty. 10~50
LLTG LLTGS	4	2	3.2				
	5	8	9				

For orders larger than indicated quantity, please request a quotation.

LLTG components are held together by elastic adhesive. Install as shipped.

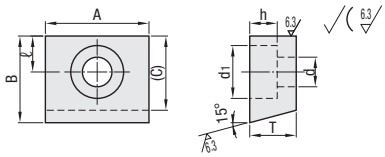
Linear Guide Taper Locks



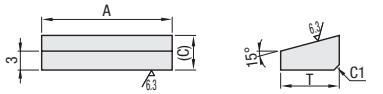
RoHS

Type	Material	Surface Treatment
LLKA	1.1191/C45E	Electroless Nickel Plating
LLKB	1.1191/C45E	

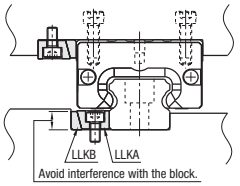
LLKA



LLKB



Example



Part Number Type	No.	A	B	T	(C)	ℓ	d	d1	h	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~100
LLKA	5	20	16	9	13.6	7	5.5	9.5	5.5		
	6	22	18	11	15.1	7.5	6.5	11	6.5		
LLKB	5	20	-	9	5.41	-	-	-	-		
	6	22	-	11	5.95	-	-	-	-		

Part Number
LLPU23
LLTG4
LLKA6

6 Days P. 87

2 Days

For orders larger than indicated quantity, please request a quotation.

Cross Roller Tables -Overview-

About Part Numbers

Part numbers of MISUMI Cross Roller Tables and Cross Roller Guides are changed since the 2010 catalog. See the information below.

Price Reduction 20%

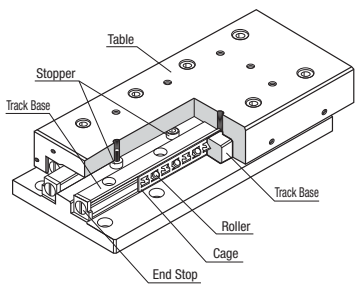
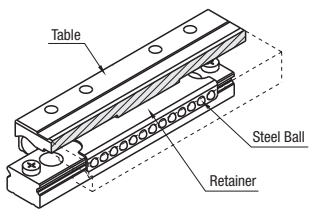
Product Name	Shape	Old Part Number	New Part Number	Page
Cross Roller Tables		SYT	CRT	P.591 P.592
		SYTD	CRTD	
		SYTS	CRTS	
		SYTSD	CRTSD	
		SVT	CRU	
Cross Roller Guides		SV	CRV	P.593
		SVS	CRVS	

New Part Number Features

- **20% Significant Price Reduction** (Compared to conventional products.)
- Short Lead Time 8th Day Shipping
- Specifications such as installation dimensions and accuracies are the same as those of products with old part numbers.

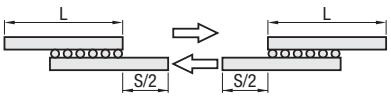
* Products with old part numbers are still available online.

Structure and Features

Product Name	Features	Structure
Cross Rollers Table	Highly accurate and rigid cross roller tables with cross roller guides CRV integrated with accurately ground tables and bases.	
Cross Rollers Guides	The linear motion bearing structure comprised of two 90-deg. V grooved rails and cylindrical rollers. The rollers are arranged alternately orthogonal to each other, and the structure is able to support moment loads in all directions.	
Balls Slide Guides	With no circulation of rolling elements, the Ball Slide Guides slide smoothly, accurately and quietly with little friction.	

Stroke

The travel will be symmetrically 1/2 of the total stoke.



Cage Creep

When the table stops, inertia force applied to the cage may cause cage creep under the following conditions.

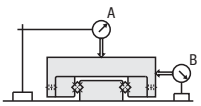
To avoid cage creep, perform full stroke travel several times during use to align the cage in the center.

- Use in half stroke
- Use at high speed

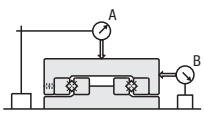
Precision

- Cross Roller Table

Accuracies of Cross Roller Tables are shown by the dial indicator as the table is moved (no load).



A: Parallelism at the center of table (μm)
B: Parallelism at side surface (μm)



A: Parallelism at the center of table (μm)
B: Parallelism at side surface (μm)

No.	CRT CRTS CRTSD Deflection A	CRT CRTS CRTSD Deflection B	CRU Deflection A	CRU Deflection B
1025	2	4	2	4
1035				
1045		5		5
1055				
1065				
2035		4		4
2050				
2065		5		5
3055				
3080				

- Ball Slide Guides

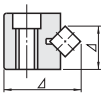
Accuracies of Cross Roller Guides are shown by the dial indicator deflection at table move as the Cross Roller Table CRT Series.

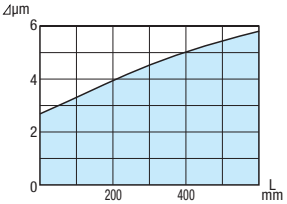
	Deflection A	Deflection B
L≤45	4	6
L≥55	5	8
Height H Tolerance	±20μm	
Width W Tolerance	±25μm	

- Cross Roller Guides

Accuracies of Cross Roller Guides are shown by the parallelism of datum plane and track surface.

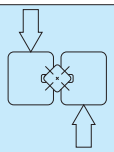
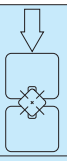
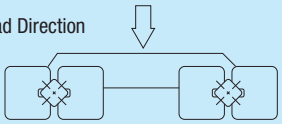
Parallelism of datum plane and track surface.





■Load Rating

Calculate the cross roller guide load ratings as below.

1 Rail	Vertical Use of 1 Rail	Parallel Use of 2 Rails
Load Direction 	Load Direction 	Load Direction 
Dynamic Load Rating (N) $C=\left(\frac{Z}{2}\right)^{3/4}\cdot C_1$	Dynamic Load Rating (N) $C=\left(\frac{Z}{2}\right)^{3/4}\cdot C_1\cdot 2^{7/9}$	Dynamic Load Rating (N) $C=\left(\frac{Z}{2}\right)^{3/4}\cdot C_1\cdot 2^{7/9}$
Static Load Rating (N) $C_0=\left(\frac{Z}{2}\right)\cdot C_{01}$	Static Load Rating (N) $C_0=\left(\frac{Z}{2}\right)\cdot C_{01}\cdot 2$	Static Load Rating (N) $C_0=\left(\frac{Z}{2}\right)\cdot C_{01}\cdot 2$

C_1: Basic Dynamic Load Rating per Roller (N) C_{01}: Basic Static Load Rating per Roller (N) Z: No. of Rolling Elements

■Rated Life

Calculate the rated life of cross roller guide with the following formula.

$$L=\left(\frac{f_T\cdot C}{f_w\cdot P}\right)^{10/3}\cdot 50$$

L : Operating Life (km)
f_T : Temperature Factor (See Fig. 2)
fw: Load Factors (See Table 4)
C : Dynamic Load Rating (N)
P : Applied Load (N)

Life Hours

$$L_h=\frac{L\cdot 10^3}{2\cdot \ell s\cdot n_1\cdot 60}$$

L_h: Life Hours (hr)
L : Operating Life (km)
ℓs: Stroke Length (m)
n_1: Reciprocating cycles per Minute (cpm)

- Load Factor (fw)

To calculate load applied to the Cross Roller Tables, other than object weight, it requires inertia force attributed to motion velocity or moment loads. It, however, is difficult to attain accurate calculations due to potential vibration and impacts caused during reciprocating motion, other than repeated start-stop motions.
Therefore, Load Factor Table helps simplify life calculations.

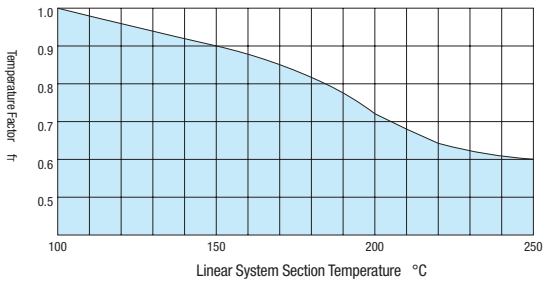
Load Factor Table

Condition of Use	fw
No shocks/vibrations, low speed: 15m/min. or less	1.0~1.5
No significant shocks/vibrations, medium speed: 60m/min. or less	1.5~2.0
With shocks/vibrations, high speed: 60m/min. or more	2.0~3.5

- Temperature Coefficient (f_T)

If the Cross Roller Table temperature exceeds 100°C, the Cross Roller Table and shaft hardness decreases, resulting in less allowable load and shorter life than used at a room temperature.
Please correct the rated life according to the temperature factors. Please use Cross Roller Guides under the allowable temperature shown on each product page.

Temperature Coefficient



■Cross Roller Guides Mounting Procedures

(1) Secure rails A, B, C and D on the table and base with screws and temporarily tighten screws on rail D. (Fig. 1)
(2) Remove end stops and insert the cage from the end. (Fig. 2)
(3) Adjust the table position to place the cage in the center of the rail.
(4) Mount the dial indicator to the predetermined position. (Fig. 3)
(5) Stroke the table and tighten the adjustment screws within the cage (a~e) with a torque wrench. (Fig. 4~6)
(6) Repeat (5) until the dial indicator value becomes and remains minimum.
(7) Fully tighten the adjustment screws while the dial indicator value remains minimum.
(8) Fully tighten the screws on rail D.

Fig. 1

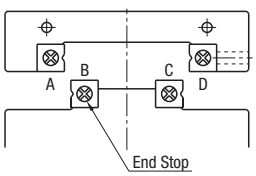


Fig. 2

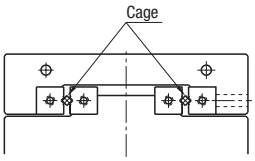


Fig. 3

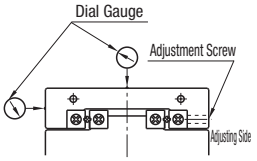


Fig. 4

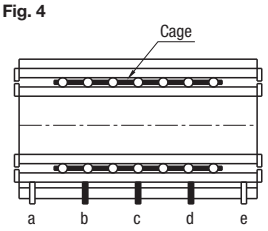


Fig. 5

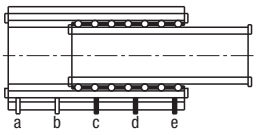
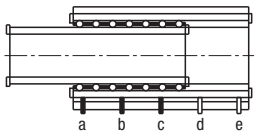


Fig. 6



Cross Roller Tables

Part Number Change
Printed in Purple

Price Reduction
20%

CAD Data

Part numbers are changed since the 2010 catalog. 20% significant price reduction (compared to conventional products). * Products with old part numbers are still available online.

Counterbored Hole Type RoHS



Female Thread Hole Type RoHS

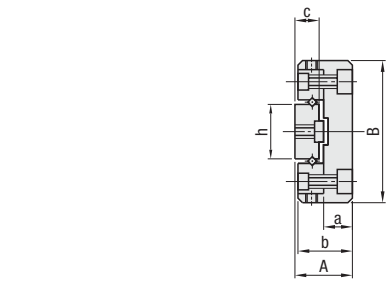


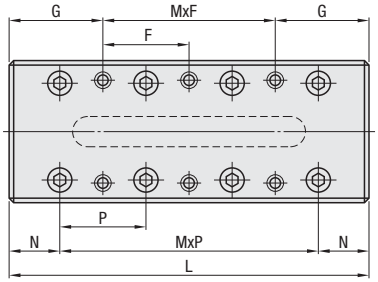
Specifications such as installation dimensions and accuracies are the same as those of products with old part numbers.

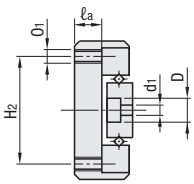
Specifications	Type	Table		Heat Resistant Temperature	Rails
		M Material	S Surface Treatment		
Counterbored Holes Type	CRTD	1.1191/C45E	Iron Oxide Black Film	-20~110°C	CRV (P.593)
	CRTSD	Material	-	-20~140°C	CRVS (P.593)
Female Thread Holes Type	CRT	1.1191/C45E	Iron Oxide Black Film	-20~110°C	CRV (P.593)
	CRTS	Material	-	-20~140°C	CRVS (P.593)

Part Number Conversion

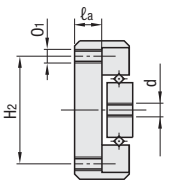
Old Part Number	New Part Number
SYTD	CRTD
SYTSD	CRTSD
SYT	CRT
SYTS	CRTS



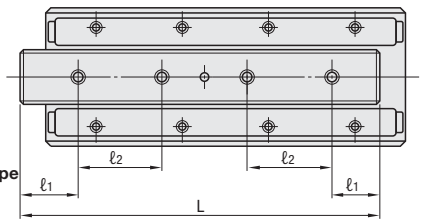




Counterbored Hole Type (Rail)



Female Thread Hole Type (Rail)



Part Number		Outline Dimensions				Table Mounting Hole Dimensions						Table Top Dimensions			Side Dimensions				Rail Mounting Hole Dimensions									
																			CRTD CRTSD					CRT CRTS			
Type	No.	Stroke (Reciprocating Motion)	A	B	L	G	F	MxF	H2	O1	ℓa	N	P	MxP	a	b	c	h	d1	D	ℓ1	ℓ2	No. of Mounting Holes	d	ℓ1	ℓ2	No. of Mounting Holes
Counterbored Hole Type	1025	12	8±0.1	20±0.1	25	3.5	18	1x18	14	M2.6	3	7.5	10	1x10	3.5	7.5	4	6.6	2.5	4.1	3.5	-	2	M2.6	5	7.5	3
CRTD	1035	18			35		28	1x28						2x10							5	-	2		7.5	10	3
CRTSD	1045	25			45	12.5	20	1x20						3x10							3.5	6.5	4				4
	2035	18	12±0.1	30±0.1	35	3.5	28	1x28	22	M3	5	10	15	1x15	5.5	11.5	6	12	3.5	6	5	-	2	M3	7.5	20	2
Female Thread Hole Type	2050	30			50		43	1x43						2x15							7.5	-	2		10	15	3
	2065	40			65	17.5	30	1x30						3x15							5	11	4				4
CRT CRTS	*3055	30	16±0.1	40±0.1	55	7.5	40	1x40	30	M4	7	15	25	1x25	7.5	15.5	8	16	4.5	7.5	7.5	-	2	M4	10	35	2
	*3080	45			80		65	1x65						2x25							6	12.5	4		15	25	3

Order Example — Part Number: CRT3055

Days to Ship: 6 Days P. 87

Price

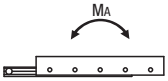
* No.3055 and 3080 are not available for CRTS.

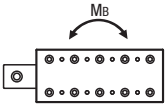
No.	CRT / CRTD		CRTS / CRTSD	
	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
	1~9 sets	10~19 sets	1~9 sets	10~19 sets
1025				
1035				
1045				
2035				
2050				
2065				
3055				
3080				

For orders larger than indicated quantity please request a quotation.

No.	Allowable Static Moment			Basic Load Rating	
	MA N·m	MB N·m	MC N·m	C (Dynamic) N	Co (Static) N
1025	1.79	1.79	1.79	465	478
1035	4.18	4.18	3.59	807	956
1045	5.38	5.38	4.48	962	1195
2035	7.04	7.04	7.63	1101	1174
2050	11.7	11.74	11.4	1521	1761
2065	16.4	16.4	15.3	1908	2348
3055	33.8	33.8	35.3	3617	4062
3080	60.9	60.9	58.9	5409	6770

kgf=Nx0.101972







Cross Roller Tables

Part Number Change Printed in Purple

Price Reduction 20%

CAD Data

Part numbers are changed since the 2010 catalog. 20% significant price reduction (compared to conventional products). * Products with old part numbers are still available online.

RoHS

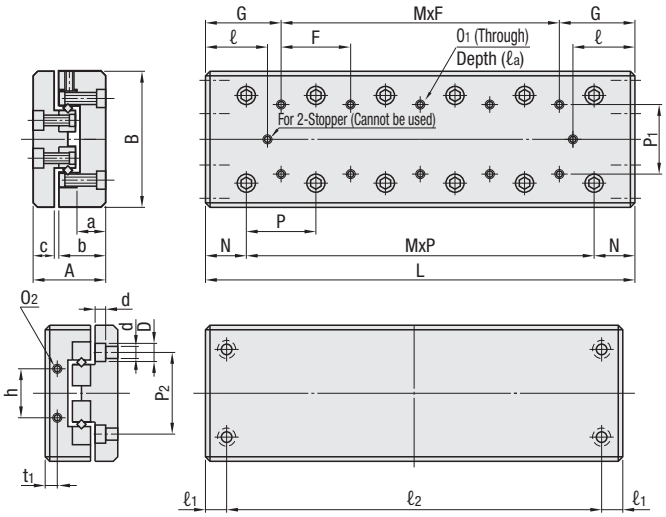


Specifications such as installation dimensions and accuracies are the same as those of products with old part numbers.

Type	Table		Heat Resistant Temperature	Rails
	M Material	S Surface Treatment		
CRU	1.1191/C45E	Iron Oxide Black Film	-20~110°C	CRV (P.593)

Part Number Conversion

Old Part Number	New Part Number
SVT	CRU



Part Number		Outline Dimensions				Table Mounting Hole Dimensions					Table Top Dimensions				Side Dimensions						Rail Mounting Hole Dimensions				
Type	No.	Stroke (Reciprocating Motion)	A	B	L	G	MxF	P1	O1	ℓa	N	P	MxP	ℓ	a	b	c	h	t1	O2	P2	d	D	ℓ1	ℓ2
CRU	1025	12	17±0.1	30 -0.2 -0.4	25	12.5	-	10	M2	4	7.5	10	1x10	2.5	7	11	5.5	12	2.5	M2	22	2.5	4.5	3.5	18
	1035	18			35		1x10						2x10	4.5											28
	1045	25			45		2x10						3x10	6											38
	2035	18	21±0.1	40 -0.2 -0.4	35	17.5	-	15	M3	6	10	15	1x15	3	8	14	6.5	16	3.4	M2	30	3.5	6.5	5	25
	2050	30			50		1x15						2x15	4.5											40
	2065	40			65		2x15						3x15	7											55
	3055	30	28±0.1	60±0.1	55	27.5	-	25	M4	8	15	25	1x25	5.5	10.5	18.5	9	40	5.5	M3	40	4.5	8	10	35
	3080	45			80		1x25						2x25	10.5											60

Order Example — Part Number: CRU3055

Days to Ship: 6 Days P. 87

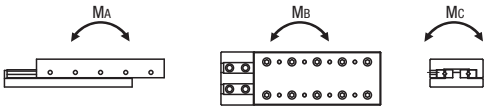
Price

No.	CRU	
	€ Unit Price	Volume Discount
	1~9 sets	10~19 sets
1025		
1035		
1045		
2035		
2050		
2065		
3055		
3080		

For orders larger than indicated quantity please request a quotation.

No.	Allowable Static Moment			Basic Load Rating	
	MA N・m	MB N・m	MC N・m	C (Dynamic) N	Co (Static) N
1025	1.79	1.79	3.23	465	478
1035	4.18	4.18	6.46	807	956
1045	5.38	5.38	8.07	962	1195
2035	7.04	7.04	10.6	1101	1174
2050	11.7	11.74	15.8	1521	1761
2065	16.4	16.4	21.1	1908	2348
3055	33.8	33.8	56.9	3617	4062
3080	60.9	60.9	94.8	5409	6770

kgf=Nx0.101972



Cross Roller Guides
-1000, 2000, 3000 Series-

Part Number Change
Printed in Purple

Price Reduction
20%

CAD Data

Part numbers are changed since the 2010 catalog. 20% significant price reduction (compared to conventional products).

* Products with old part numbers are still available online.



Specifications such as installation dimensions and accuracies are the same as those of products with old part numbers.

RoHS

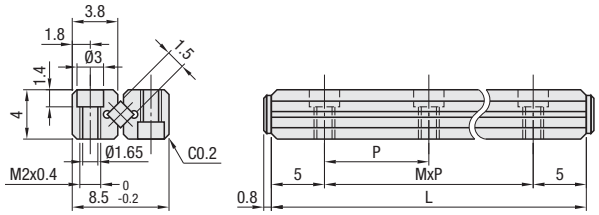
Type	Material	Hardness	Heat Resistant Temperature
CRV	1.3505/100Cr6	60HRC~	-20~110°C
CRVS	1.4125/X105CrMo17	58HRC~	-20~140°C

1 Set: Track Rails 4 pcs.
Cages 2 pcs.
End Stops 8 pcs.

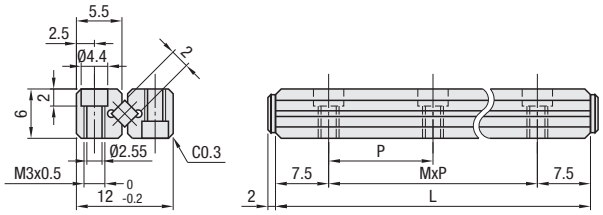
Part Number Conversion

Old Part Number	New Part Number
SV	CRV
SVS	CRVS

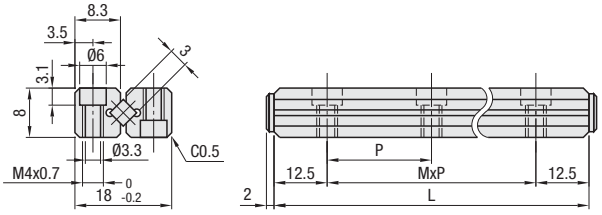
1000 Series



2000 Series



3000 Series



For orders larger than indicated quantity, please request a quotation.

Series	Part Number Type	Part Number No.	Stroke (Reciprocating Motion)	L	MxP	No. of Rollers per Roller Cage	Basic Load Rating C (Dynamic)N	Basic Load Rating Co (Static)N	CRV € Unit Price 1~9 sets	CRV Volume Discount 10~19 sets	CRVS € Unit Price 1~9 sets	CRVS Volume Discount 10~19 sets
1000	CRV	1020	12	20	1x10	5	465	478				
		1030	20	30	2x10	7	643	717				
		1040	27	40	3x10	10	962	1195				
2000	CRVS (Stainless Steel)	2030	18	30	1x15	5	1101	1174				
		2045	24	45	2x15	8	1908	2348				
		2060	30	60	3x15	11	2274	2935				
3000		3050	28	50	1x25	7	3617	4062				
		3075	48	75	2x25	10	5409	6770				

kgf=Nx0.101972

Order Example — Part Number: CRV3050

Days to Ship: 6 Days P.87

Ball Slide Guides

-With Counterbored Holes / Female Thread Holes-

CAD Data

■Counterbored Hole Type RoHS



■Female Thread Hole Type RoHS

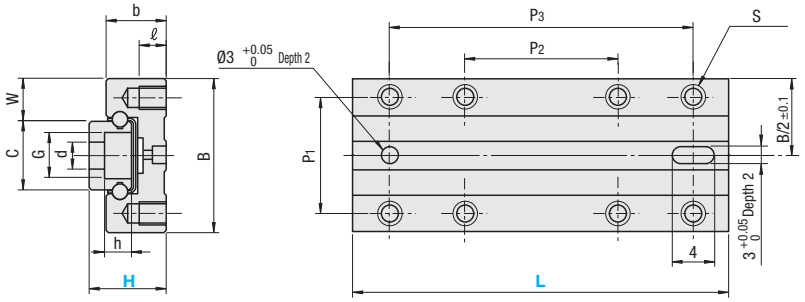


Type				Material		Hardness
Counterbored Holes	Female Thread Holes	With Dowel Holes		Main Body Rails	Retainers	Main Body Rails
		Counterbored Holes	Female Thread Holes			
BSG	BSGM	BSGP	BSGMP	Stainless Steel	1.4301/X5CrNi18-10	56HRC~

Heat Resistant Temperature: -20~80°C

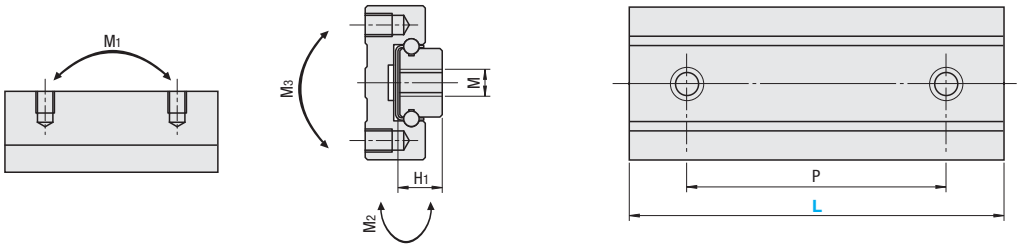
Included rail mounting screws.
: H6 comes with Class 1 Phillips button head screws (M2×6).
: H8 Counterbored Type comes with cap screws (M2x6).
Filled with Lithium soap based grease (Multemp Grease PS2 by Kyodo Yushi Co., Ltd.).

■ Counterbored Hole Type (Rail)



■ Female Thread Hole Type (Rail)

(This figure shows dowel hole type.)



Part Number		Selectable L	Max. Stroke (Reciprocating Motion)	W	Block Dimensions							Guide Rail Dimensions					Basic Load Rating		Allowable Static Moment			Mass (g)
Type	H				B	P1	P2	P3	S	ℓ	b	C	H1	dxGxh	M	P	C (Dynamic) N	Co (Static) N	M1 N•m	M2 N•m	M3 N•m	
Counterbored Hole Type BSG BSGP	6	25	14	3.55	12	8	15	-	M2	1.5	4.5	4.9	4	2.4x3.5x1	M2.6	15	390	847	1.5	1.5	2.2	10
		40	19				15	30								30	603	1573	2.9	2.9	4.2	16
	8	25	14	5.1	17	12	15	-	M2.5	3	6.5	6.8	4.7	2.4x4.2x2.3	M3	15	628	1270	2.5	2.5	4.6	20
		40	20				15	30								30	962	2329	5.1	5.1	8.5	33
Female Thread Hole Type BSGM BSGMP	10	*35	22	5.55	20	15	20	-	M3	3.5	7.8	8.9	5.5	3.5x6x3.5	M4	20	1038	2016	5.4	5.4	9.5	40
		*55	28				20	40								40	1886	4032	11.1	11.1	19.0	65
	13	*45	26	7.6	27	20	25	-	M4	5	10	11.8	7.5	3.5x6x4.5	M4	25	1627	3334	10.6	10.6	20.7	93
		*70	36				25	50								50	2519	6192	20.0	20.0	38.4	146

Only * marked sizes are available for with Dowel Hole Type.

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Order Example

Part Number	-	L
BSG8	-	40

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	10~14	15~19	20~49
Discount Rate	€ Unit Price	5%	10%	12%

For orders larger than indicated quantity, please request a quotation.

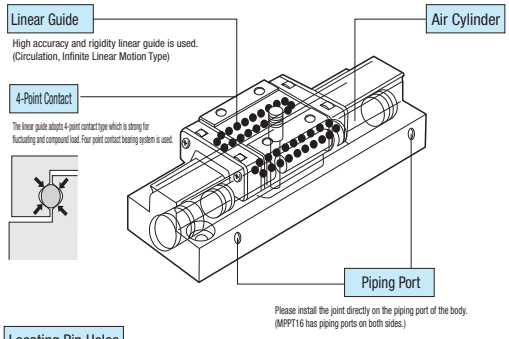
Days to Ship: 6 Days P.87

H	Selectable L	€ Unit Price Stainless Steel			
		BSG	BSGM	BSGP	BSGMP
6	25				
	40				
8	25				
	40				
10	35				
	55				
13	45				
	70				

Pneumatically Driven Linear Guides -Overview-

Table Type

Miniature linear guides with built-in air cylinders!

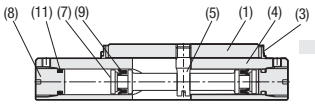


Locating Pin Holes

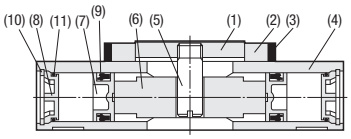
- There are pin holes for work installation and detachment reproductivity on upper surface of the table.
- There are pin holes for body installation and detachment reproductivity on the bottom.

Structure and Construction

MPPT6Y

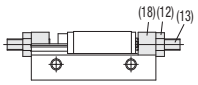


MPPT8, 10, 12, 16



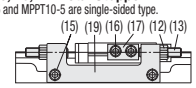
With Stroke Adjustment Mechanism

MPPT6Y Metal Stopper



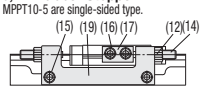
MPPT8, 10, 12 Metal Stopper

MPPT8-5 and MPPT10-5 are single-sided type.

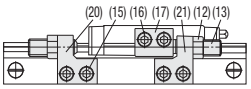


MPPT8, 10, 12 Rubber Stopper

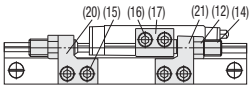
MPPT8-5 and MPPT10-5 are single-sided type.



MPPT16 Metal Stopper



MPPT16 Rubber Stopper



Parts

No.	Product Name	Material	Note	No.	Product Name	Material	Note
1	Table	Stainless Steel (Heat Treatment)		12	Nuts	Steel	Nickel Plating
2	Side Plates	Plastic	MPPT8, 10, 12, 16 only	13	Adjust Screws	Steel	Nickel Plating
3	Dust Seals	Nitrile Rubber		14	Adjust Screws with Rubber Grommets	Stainless Steel + Urethane Rubber	
4	Body	Stainless Steel (Heat Treatment)		15	Screws	Steel	Nickel Plating
5	Center Pin	Stainless Steel		16	Screws	Steel	Nickel Plating
6	Center Piston	Plastic	MPPT8, 10, 12, 16 only	17	Stopper Receiver	Steel (Heat Treatment)	Electroless Nickel Plating
7	Piston	Plastic		18	Stopper Blocks	Steel	2 pcs. Electroless Nickel Plating
8	End Covers	Plastic	Stainless Steel for MPPT6Y.	19	Adjusting Blocks	Steel	Electroless Nickel Plating
9	Piston Seals	Nitrile Rubber		20	Left Adjusting Block	Steel	Electroless Nickel Plating
10	Retaining Rings for Piston Caps	Steel	Nickel Plating	21	Right Adjusting Block	Steel	Electroless Nickel Plating
11	O-Rings	Nitrile Rubber					

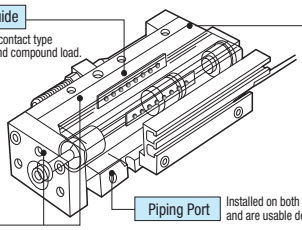
L-Shaped Table Type

Long Stroke Type

4-point Contact Slide Guide

The linear guide adopts 4-point contact type which is strong for fluctuating and compound load.



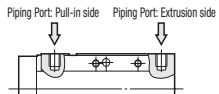


Installation of Load

Installable directly on upper and front surfaces of the table.

Locating Pin Holes

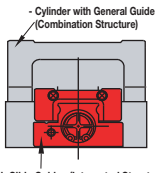
There are pin holes for work installation and detachment reproductivity on upper surface of the table.
There are pin holes for body installation and detachment reproductivity on the bottom.



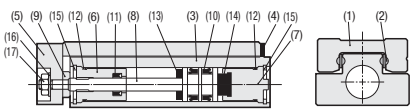
Features of Table Type

Compact Design

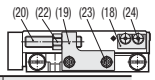
Compared to other cylinders with guides, the cylinder built-in linear guide integrated design is more compact.
(* The sectional area is approx. 1/2 comparing with that of the same inner diameter of cylinder.)



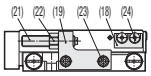
Structure and Construction



Metal Stopper Extrusion Side Adjusting Stroke 1



Rubber Stopper Extrusion Side Adjusting Stroke



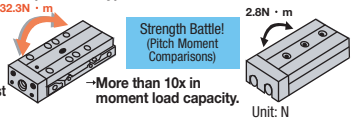
No.	Product Name	Material	Note	No.	Product Name	Material	Note
1	Guide Table	Stainless Steel (Heat Treatment)		13	Cushion Rubber	Urethane Rubber	
2	Balls	Stainless Steel (Heat Treatment)	With Retainer	14	Cushion Rubber	Urethane Rubber	
3	Body	Stainless Steel (Heat Treatment)		15	Retaining Rings for Piston Caps	Steel	Nickel Plating
4	Dust Seals	Nitrile Rubber, Steel		16	Washers	Steel	Nickel Plating
5	Tip Plate	Steel	Electroless Nickel Plating	17	Nuts	Steel	Nickel Plating
6	Rod Cover	Aluminum Alloy		18	Stopper Receiver	Steel (Heat Treatment)	Electroless Nickel Plating
7	End Covers	Aluminum Alloy		19	Push Side Adjust Block	Steel	Electroless Nickel Plating
8	Piston Rod	Stainless Steel		20	Adjust Screws	Steel	Nickel Plating
9	Plate Washer	Stainless Steel		21	Adjust Screws with Rubber Grommets	Stainless Steel + Urethane Rubber	
10	Piston Seals	Nitrile Rubber		22	Nuts	Steel	Electroless Nickel Plating
11	Rod Seal	Nitrile Rubber		23	Screws	Steel	Nickel Plating
12	O-Rings	Nitrile Rubber		24	Screws	Steel	Nickel Plating

Features of L-Shaped Table Type

The L Type is a long stroke version of the Table Type.
Also with an integrated cylinder / linear guide design, precision and compactness are equivalent of the Table Type.

Compared in thrust equivalents...

- L-Shaped Table Type: 32.3N・m
- General Cylinder with Guides: 2.8N・m



→More than 10x in moment load capacity.

Specifications

Type		Table Type					L-Shaped Table Type	
		MPPT6Y	MPPT8	MPPT10	MPPT12	MPPT16	MPPU10	MPPU12
Inner Diameter of Cylinder		Ø6mm	Ø8mm	Ø10mm	Ø12mm	Ø16mm	Ø10mm	Ø12mm
Max. Load Mass (* 1)	No Stopper	0.2kg	0.3kg	0.8kg	1.2kg	2.0kg	0.8kg	1.2kg
	With Metal Stopper	0.1kg	0.25kg	0.4kg	0.6kg	1.0kg	0.3kg	0.5kg
	With Rubber Stopper	-	0.5kg	0.8kg	1.2kg	2.0kg	0.8kg	1.2kg
Pneumatic Fitting Diameter		M3	M5				M5	
Guide Mechanism		Linear Guide						
Operation Method		Bi-directional						
Actuation Medium		Air						
Max. Operating Pressure		0.70MPa						
Min. Operating Pressure		0.15MPa						
Withstanding Pressure		1.05MPa						
Operating Temp. Range		5~60°C						
Min. Operating Speed		50mm/sec	30mm/sec				50mm/sec	
Max. Operating Frequency / Max. Operating Speed		120c.p.m (* 2)					400mm/sec	
Lubrication		Not Required						

(* 1) Allowable mass is shown when the table is operated at the Max. operating speed. (* 2) c.p.m=cycle per minute

Theoretical Thrust

- Table Type — Unit: N

Inner Diameter of Cylinder (mm)	Operating Pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
Ø 6	5.7	8.8	11	14	17	20
Ø 8	9.9	15	20	25	30	35
Ø10	16	24	31	39	47	55
Ø12	23	34	45	57	68	79
Ø16	40	60	80	100	120	140

- L-Shaped Table Type — Unit: N

Inner Diameter of Cylinder (mm)	Operating Direction	Rod Diameter	Operating Pressure MPa					
			0.2	0.3	0.4	0.5	0.6	0.7
Ø10	Push	Ø4mm	16	24	31	39	47	55
	Pull		13	20	26	33	40	46
Ø12	Push	Ø5mm	23	34	45	57	68	79
	Pull		19	28	37	47	56	65

1MPa=10.2kgf/cm21N=0.102kgf

■Switches

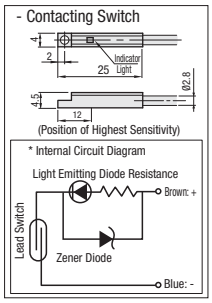
- How to Mount (Diagram in Lower Right)

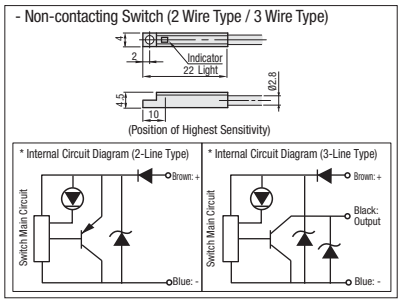
Attach switch installation bracket to the switch (1) and insert it to the switch groove (2).
Set the installing position and tighten the screw with a small screwdriver.
Tightening torque should be 0.1Nm (1kgfcm).

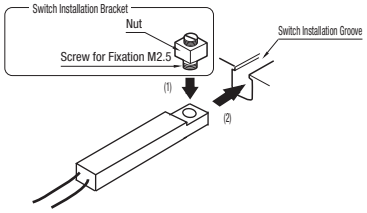
- Switch Specifications

Type	Contact Point 2 wire Type	No Contact 2 wire Type	No Contact 3 wire Type
Indicator Light	Red LED (ON when activated)		
Operating Voltage	DC12~24V		DC5~24V
Load Current	3~24mA	5~40mA	50mA or less
Consumption Current	-	-	10mmA or less
Output Method	-	-	NPN Open Collector
Average response Time	1ms or less		
Operating Temp. Range	5~60°C		
Impact Resistance	30G	50G	
Lead Wire	Ø2.80.18mm², 2 Conductors (+Brown, -Blue)	Ø2.80.15mm², 2 Conductors (+Brown, -Blue)	Ø2.80.15mm², 3 Conductors (+Brown, Black, -Blue)
	Oil-proof, bend-resistant vinyl flexible cable		
Lead Wire Length	1m		
Minimum Bending Radius	R10		
Control Category	(*1) Relay, Programmable Logic Controller		
Internal Voltage Drop	Less than 2.6V	Less than 3.5V	Less than 0.5V
Leakage Current	0	Less than 1mA	Less than 50μA
Insulation Resistance	50MΩ or more at DC250V (between terminal and case)		
Withstanding Voltage	1 minute with AC500V (between terminal and case)		
Degree of Protection	IP67		

(* 1) Please install a load serge protection circuit when an inductive load, such as relay, etc. is used.
- Please be careful of over current when using. (Please consult the load current.)
  It may cause switch damages.
- Switch Mounting Brackets are included with the switches.
  (Note) Two mounting brackets are included for application specific requirements.







■Load and Moment Ratings

Refer to: Allowable Load Moments table for dynamic conditions, Basic Static Load Ratings / Allowable Static Moments table for static conditions to check and confirm that the applications are within the allowable ranges.

Allowable Load Moments — Unit: Nm

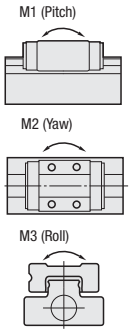
Type		Stroke (mm)	Allowable Load Moments Nm M1	M2	M3
Table Type	MPPT6Y	5	0.41	0.41	0.42
		10	0.71	0.71	0.53
	MPPT8	5	0.42	0.42	0.87
		10			
		20	1.7	1.7	1.8
	MPPT10	5	1.2	1.4	2.3
		10			
		20	2.8	3.1	3.3
	MPPT12	15	2.4	2.9	4.7
		25	6.5	7.7	7.3
	MPPT16	20	4.3	3.8	7.5
		30	7.5	6.6	9.6
L-Shaped Table Type	MPPU10	15/30/45	1.8	2.0	1.9
	MPPU12	20/30/45/60	3.0	3.4	3.8

1Nm=0.102kgfm

Basic Static Load Ratings / Allowable Static Moments — Unit: Nm

Type		Stroke (mm)	Basic Static Load Rating Co kN	Allowable Static Moment Nm M1	M2	M3
Table Type	MPPT6Y	5	1.6	5.23	5.23	5.28
		10	2.2	9.72	9.72	7.31
	MPPT8	5	2.3	5.1	5.1	10.4
		10				
		20	4.8	19.7	19.7	20.9
	MPPT10	5	3.6	12.7	14.7	24.5
		10				
		20	6.4	35.3	42.2	42.2
	MPPT12	15	5.9	25.5	30.4	49.0
		25	11.1	83.3	99.0	92.9
	MPPT16	20	9.4	55.0	46.0	96.0
		30	13.3	106.0	89.0	136.0
L-Shaped Table Type	MPPU10	15/30/45	3.4	20.5	24.5	22.5
	MPPU12	20/30/45/60	4.9	32.3	38.2	41.1

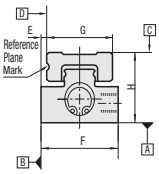
1Nm=0.102kgfm



■Bearing Accuracies

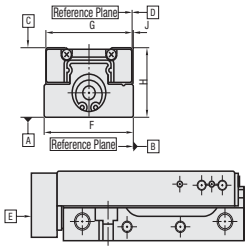
- Table Type — Unit: mm

Type		MPPT6Y	MPPT8	MPPT10	MPPT12	MPPT16
Parallelism	Plane C to Plane A	0.04	0.03	0.02		
	Plane D to Plane B	0.04	0.03	0.02		
Running Parallelism Parallelism	Plane C to Plane A	0.007	0.005	0.004		0.003
	Plane D to Plane B	0.007	0.005	0.004		0.003
E Dimension Tolerance		±0.1	±0.1	±0.025		
F Dimension Tolerance		0~-0.1	0~-0.2	±0.2		
G Dimension Tolerance		0~-0.1	0~-0.05	±0.2		
H Dimension Tolerance		±0.05	±0.05	±0.02		



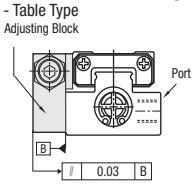
- L-Shaped Table Type — Unit: mm

Type		MPPU10	MPPU12	
Stroke		15/30/45	20/30/45	60
Parallelism	Plane C to Plane A	0.02	0.02	
	Plane D to Plane B	0.02	0.02	
Running Parallelism Parallelism	Plane C to Plane A	0.004	0.004	0.006
	Plane D to Plane B	0.004	0.004	0.006
Perpendicularity	Plane E to Plane A	0.15	0.15	
	Plane E to Plane B	0.15	0.15	
J Dimension Tolerance		±0.025	±0.025	
F Dimension Tolerance		±0.2	±0.2	
G Dimension Tolerance		±0.2	±0.2	
H Dimension Tolerance		±0.05	±0.05	

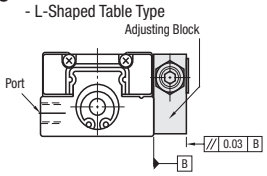


■Parallelism of Adjusting Block

- Table Type



- L-Shaped Table Type

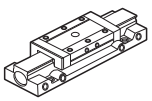


Datum surface on the body side becomes narrower when the stoppers are attached.
In that case, the adjusting block side surface can be used as the datum. "Parallelism 0.03mm"

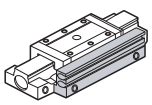
(* The adjusting block of MPPT16 is divided into two. Considering the thickness tolerance of the adjusting blocks, please designate only one of the two as the datum when using as the datum.)

■Variation

Main Body Only
-N

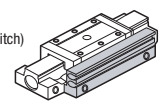


With Main Body and Switch Rail
-J



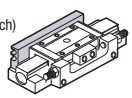
With Switch Rail

With Switches
- S (Contacting Switch)
- MS (Non-contacting Switch)
- MT (3 Wire Non-contacting Switch)



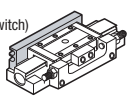
Miniature Switches 2 pcs.
With Magnet and Switch Rail

With Metal Stopper and Switches
- RS / SS (Contacting Switch)
- RMS / SMS (Non-contacting Switch)
- RMT / SMT (3 Wire Non-contact Switch)



Metal stopper with stroke adjustment mechanism
Miniature Switches 2 pcs.
With Magnet and Switch Rail

With Rubber Stopper and Switches
- TS / SN (Contacting Switch)
- TMS / SMN (Non-contacting Switch)
- TMT / SMR (3 Wire Non-contacting Switch)



Rubber stopper with stroke adjustment mechanism
Miniature Switches 2 pcs.
With Magnet and Switch Rail

Pneumatically Driven Linear Guides
-MPPT6Y / MPPT8 Series-

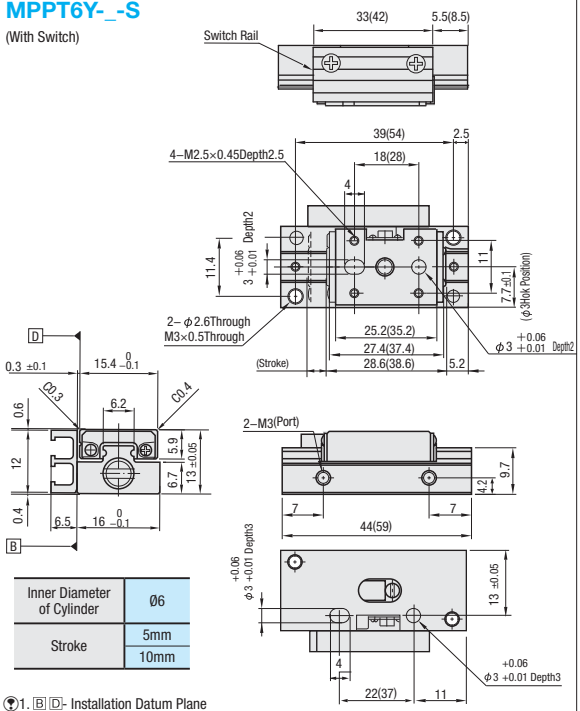
CAD Data





RoHS

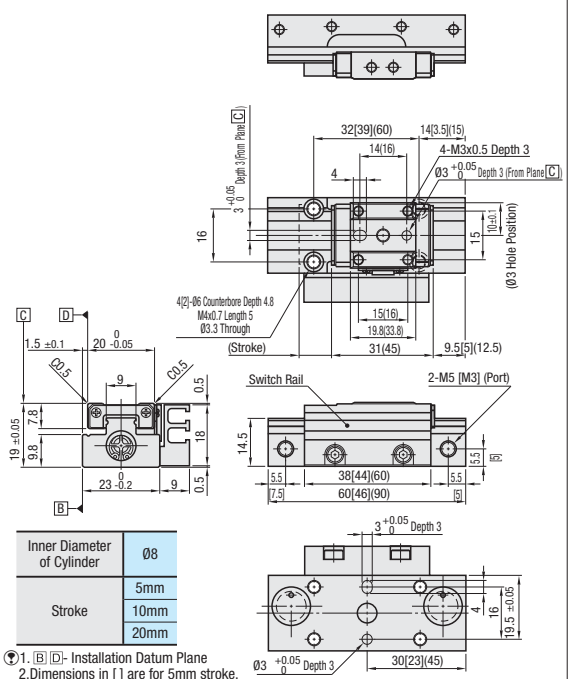
MPPT6Y-_-S
(With Switch)



Inner Diameter of Cylinder	Ø6
Stroke	5mm
	10mm

1. B D- Installation Datum Plane
2. Dimensions in ( ) are for 10mm stroke.
3. 2 switches are included with "With Switch" type.
4. MPPT6Y has different directions for air ports and switch rail because of its compact design.

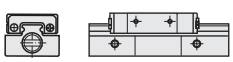
MPPT8-_-S
(With Switch)



Inner Diameter of Cylinder	Ø8
Stroke	5mm
	10mm
	20mm

1. B D- Installation Datum Plane
2. Dimensions in [ ] are for 5mm stroke.
3. Dimensions in ( ) are for 20mm stroke.
4. 2 switches are included with "With Switch" type.

MPPT6Y-_-N (Main Body Only)

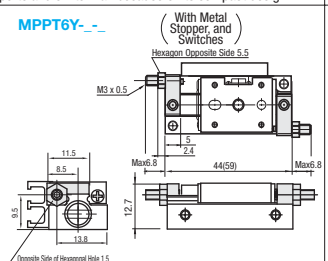


MPPT8-_-N (Main Body Only)



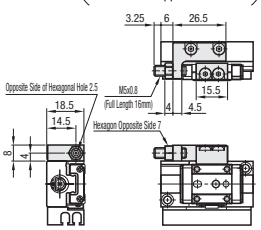
See the CAD data for dimensions of MPPT8 stroke 5.
Dimensions of other sizes are equal to that of "With Switches" type.

MPPT6Y-_-_ (With Metal Stopper, and Switches)

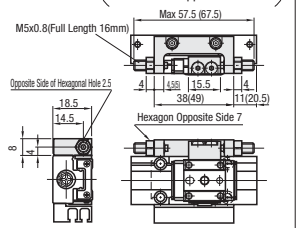


Dimensions in ( ) are for 10mm stroke.

MPPT8-5-_ (With Metal Stopper and Switches / With Rubber Stopper and Switches)



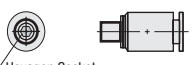
MPPT8-_-_ (With Metal Stopper and Switches / With Rubber Stopper and Switches)



Dimensions in ( ) are for 20mm stroke.

Dimension lines of tapped holes and etc. for switches and stoppers are omitted above. For details of the dimensions, please refer to CAD data.
MPPT6Y: Usable Quick Fittings are round O.D. Ø8 or less with a hexagonal hole in the tube inlets. (Refer to the information below and in P.2-1270).
The sizes differ according to the manufacturer. Please confirm the size before using.

Part Number	Stroke	Specification Selection	Stroke Adjustable Amount	Max. Load Mass	Main Body Mass	€ Unit Price (Per each spec.) Qty. 1~3 N · J · S · RS · TS	MS · RMS · TMS	MT · RMT · TMT
MPPT6Y	5	N(Main Body Only)	-	0.2kg	43g			
	10	J(With Main Body and Switch Rail)			58g			
	5	S(Contacting Switch) MS(Non-contact Switch)			78g			
	10	MT(3 Wire Non-contact Switch)			94g			
	5	RS(Metal Stopper, Contacting Switch)	Both Sides 4mm each	0.1kg	84g			
	10	RMS(Metal Stopper, Non-contact Switch) RMT(Metal Stopper, 3 Wire Non-contact Switch)			100g			
MPPT8	5	N(Main Body Only) J(With Main Body and Switch Rail)	-	0.3kg	85g			
	10				100g			
	20				160g			
	5	S(Contacting Switch) MS(Non-contact Switch) MT(3 Wire Non-contact Switch)			125g			
	10				140g			
	20				250g			
	5	RS(Metal Stopper, Contacting Switch)	5mm One Side	0.25kg	160g			
	10	RMS(Metal Stopper, Non-contact Switch)	Both Sides 5mm each		175g			
	20	RMT(Metal Stopper, 3 Wire Non-contact Switch)			250g			
	5	TS(Rubber Stopper, Contacting Switch)	5mm One Side	0.5kg	160g			
	10	TMS(Rubber Stopper, Non-contact Switch)	Both Sides 5mm each		175g			
	20	TMT(Rubber Stopper, 3 Wire Non-contact Switch)			250g			



Hexagon Socket

Order Example

Part Number	-	Stroke	-	Spec. Code
MPPT6Y	-	5	-	N

Days to Ship 8 Days

About Specifications and Switches
P.595

For orders larger than indicated quantity, please request a quotation.

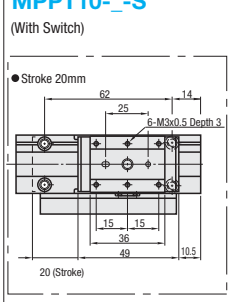
Pneumatically Driven Linear Guides
-MPPT 10 · MPPT 12 Series-

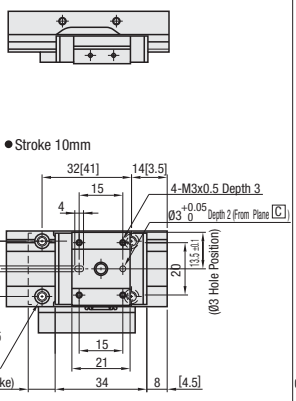
CAD Data

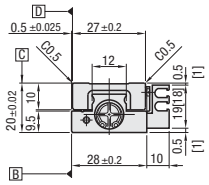


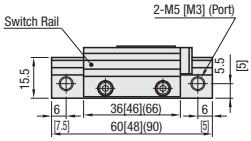

RoHS

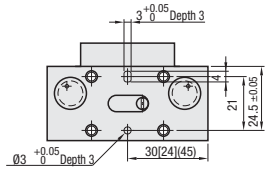
MPPT10-_-S
(With Switch)







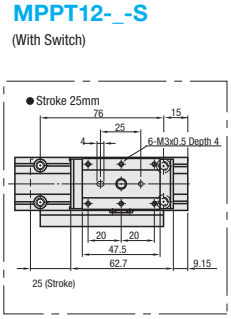


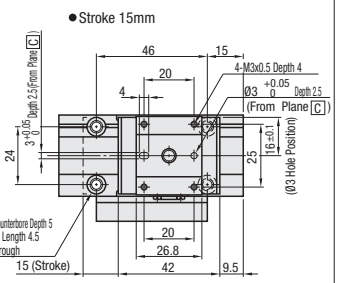


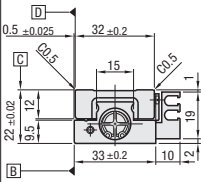
Inner Diameter of Cylinder	Ø10
Stroke	5mm
	10mm
	20mm

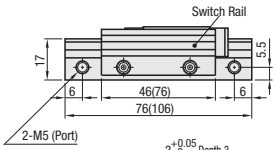
(?)1. B D- Installation Datum Plane
2.Dimensions in [ ] are for 5mm stroke.
3. Dimensions in ( ) are for 20mm stroke.
4. 2 switches are included with "With Switch" type.

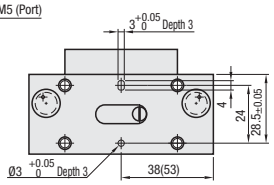
MPPT12-_-S
(With Switch)











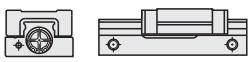
Inner Diameter of Cylinder	Ø12
Stroke	15mm
	25mm

(?)1. B D- Installation Datum Plane
2. Dimensions in ( ) are for 25mm stroke.
3. 2 switches are included with "With Switch" type.

MPPT10-_-N
(Main Body Only)

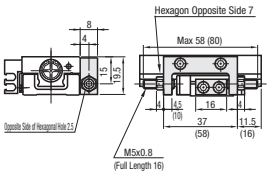


MPPT12-_-N
(Main Body Only)



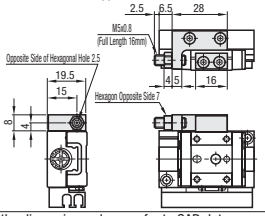
(?)See the CAD data for dimensions of MPPT10 stroke 5. Dimensions of other sizes are equal to that of "With Switches" type.

MPPT10-_-_
(With Metal Stopper and Switches / With Rubber Stopper and Switches)

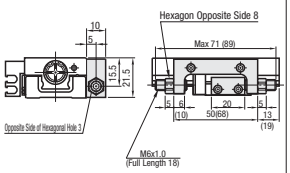


(?)Dimensions in ( ) are for 20mm stroke.

MPPT10-5-_
(With Metal Stopper and Switches / With Rubber Stopper and Switches)



MPPT12-_-_
(With Metal Stopper and Switches / With Rubber Stopper and Switches)



(?)Dimensions in ( ) are for 25mm stroke.

(?)Dimension lines of tapped holes and etc. for switches and stoppers are omitted above. For details of the dimensions, please refer to CAD data.

Part Number	Stroke	Specification Selection	Stroke Adjustable Amount	Max. Load Mass	Main Body Mass	€ Unit Price (Per each spec.) Qty. 1~3 N · J · S · RS · TS	MS · RMS · TMS	MT · RMT · TMT
MPPT10	5	N(Main Body Only)	-	0.8kg	120g			
	10	J(With Main Body and Switch Rail)			135g			
	20				210g			
	5	S(Contacting Switch)			165g			
	10	MS(Non-contact Switch)			180g			
	20	MT(3 Wire Non-contact Switch)			260g			
	5	RS(Metal Stopper, Contacting Switch)	5mm One Side	0.4kg	195g			
	10	RMS(Metal Stopper, Non-contact Switch)	6mm for Both Sides		220g			
	20	RMT(Metal Stopper, 3 Wire Non-contact Switch)	7mm for Both Sides		320g			
	5	TS(Rubber Stopper, Contacting Switch)	5mm One Side	0.8kg	195g			
	10	TMS(Rubber Stopper, Non-contact Switch)	6mm for Both Sides		220g			
	20	TMT(Rubber Stopper, 3 Wire Non-contact Switch)	7mm for Both Sides		320g			
MPPT12	15	N(Main Body Only)	-	1.2kg	215g			
	25	J(With Main Body and Switch Rail)			320g			
	15	S(Contacting Switch)			260g			
	25	MS(Non-contact Switch) MT(3 Wire Non-contact Switch)			375g			
	15	RS(Metal Stopper, Contacting Switch)	Both Sides 5mm each	0.6kg	330g			
	25	RMS(Metal Stopper, Non-contact Switch) RMT(Metal Stopper, 3 Wire Non-contact Switch)			465g			
	15	TS(Rubber Stopper, Contacting Switch)	Both Sides 5mm each	1.2kg	330g			
	25	TMS(Rubber Stopper, Non-contact Switch) TMT(Rubber Stopper, 3 Wire Non-contact Switch)			465g			

Order Example

Part Number	-	Stroke	-	Spec. Code
MPPT12	-	25	-	RMS

Days to Ship 8 Days

About Specifications and Switches
P.595

(?)For orders larger than indicated quantity, please request a quotation.

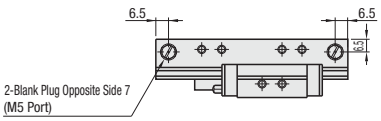
Pneumatically Driven Linear Guides
-MPPT16 Series-

CAD Data

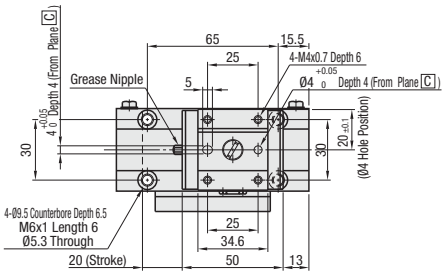


Inner Diameter of Cylinder	Ø16
Stroke	20mm
	30mm

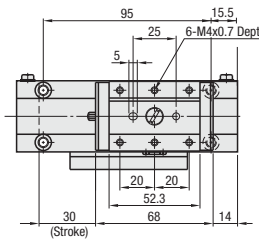
MPPT16-_-S
(With Switch)

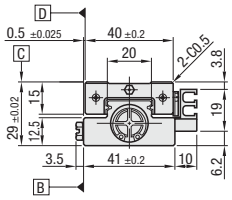


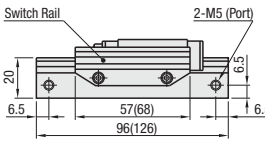
● Stroke 20mm

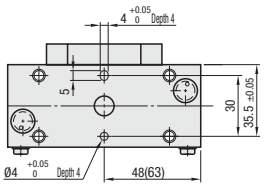


● Stroke 30mm









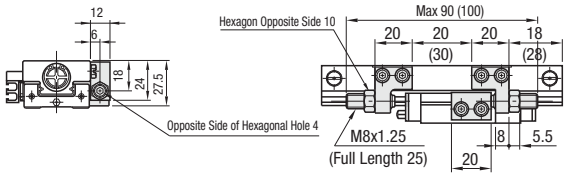
1. B D- Installation Datum Plane
2. Dimensions in ( ) are for 30mm stroke.
3. 2 switches are included with "With Switch" type.

MPPT16-_-N (Main Body Only)



The dimension is the same as "With Switches" type.

MPPT16-_-_ (With Metal Stopper and Switches / With Rubber Stopper and Switches)



Dimensions in ( ) are for 30mm stroke.

Dimension lines for tapped holes and etc. for switches and stoppers are omitted above. For details of the dimensions, please refer to CAD data.

Part Number	Stroke	Specification Selection	Stroke Adjustable Amount	Max. Load Mass	Main Body Mass	€ Unit Price(Per each spec.) Qty. 1~3 N · J · S · RS · TS	MS · RMS · TMS	MT · RMT · TMT
MPPT16	20	N(Main Body Only)	-	2.0kg	445g			
	30	J(With Main Body and Switch Rail)			610g			
	20	S(Contacting Switch) MS(Non-contact Switch) MT(3 Wire Non-contact Switch)			490g			
	30				660g			
	20	RS(Metal Stopper, Contacting Switch) RMS(Metal Stopper, Non-contact Switch) RMT(Metal Stopper, 3 Wire Non-contact Switch)	Both Sides 10mm each	1.0kg	590g			
	30				760g			
	20	TS(Rubber Stopper, Contacting Switch) TMS(Rubber Stopper, Non-contact Switch) TMT(Rubber Stopper, 3 Wire Non-contact Switch)		2.0kg	590g			
	30				760g			

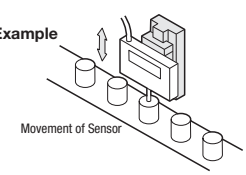
For orders larger than indicated quantity, please request a quotation.

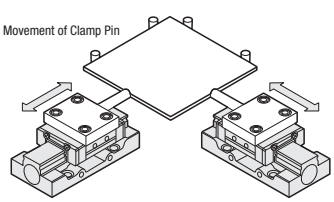
Order Example: Part Number MPPT16 - Stroke 30 - Spec. Code RMS

Days to Ship: 8 Days

About Specifications and Switches P.595

Example





Pneumatically Driven Linear Guides L-Shaped Type

-MPPU10 · MPPU12 Series-

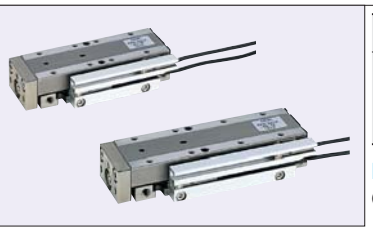
CAD Data



Inner Diameter of Cylinder	Ø10
Stroke	15mm
	30mm
	45mm

MPPU10-_-S

(With Switch)

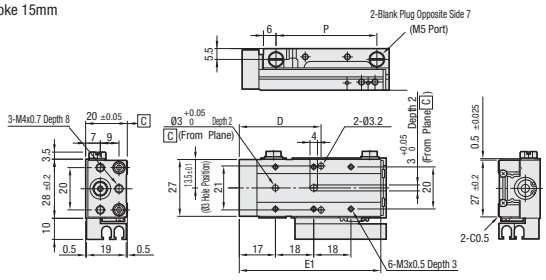


Inner Diameter of Cylinder	Ø12
Stroke	20mm
	30mm
	45mm
	60mm

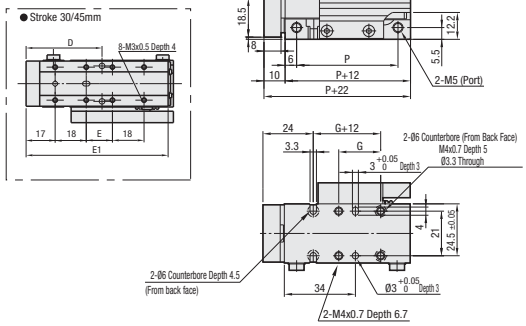
MPPU12-_-S

(With Switch)

- Stroke 15mm



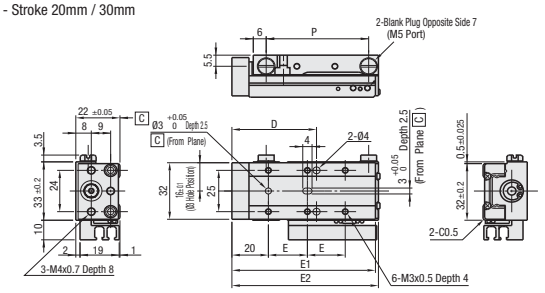
- Stroke 30/45mm



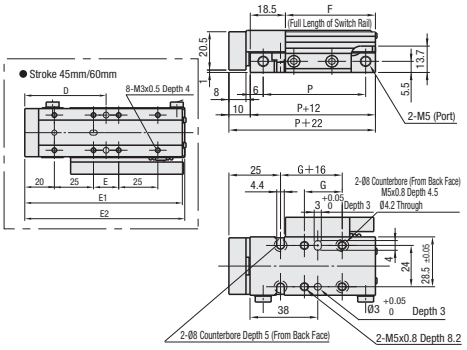
Stroke	P	D	E	E1	F	G
15	48	39	-	67	43.5	20
30	63	44	15	82	58.5	35
45	78	49	30	97	73.5	50

※2 switches are included with "With Switch" type.

- Stroke 20mm / 30mm



- Stroke 45mm/60mm



Stroke	P	D	E	E1	E2	F	G
20	54	45	20	75	76.5	47.5	20
30	64	53	25	85	86.6	57.5	30
45	79	53	15	100	101.6	72.5	45
60	94	53	30	115	116.6	87.5	60

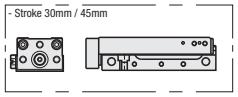
※2 switches are included with "With Switch" type.

MPPU10-_-N (Main Body Only)

- Stroke 15mm

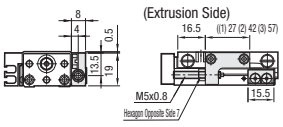


- Stroke 30mm / 45mm



※The dimensions are the same as "With Switch" type.

MPPU10-_-_ (With Metal Stopper and Switches / With Rubber Stopper and Switches)



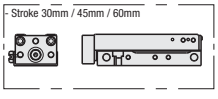
※Dimensions in ( ) are: (1) 15mm stroke (2) 30mm stroke (3) 45mm stroke

MPPU12-_-N (Main Body Only)

- Stroke 20mm

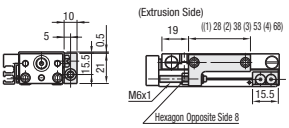


- Stroke 30mm / 45mm / 60mm



※The dimensions are the same as "With Switch" type.

MPPU12-_-_ (With Metal Stopper and Switches / With Rubber Stopper and Switches)



※Dimensions in ( ) are:
(1) 20mm stroke (2) 30mm stroke (3) 60mm stroke

※Dimension lines for tapped holes and etc. for switches and stoppers are omitted above. For details of the dimensions, please refer to CAD data.

■MPPU10-_-_

Part Number	Stroke	Specification Selection	Stroke Adjustable Amount	Max. Load Mass	Main Body Mass	€ Unit Price(Per each spec.) Qty. 1~3 N · J · S · SN	MS · SMS · SMN	MT · SMT · SMR
MPPU10	15	N(Main Body Only) J(With Main Body and Switch Rail)	-	0.8kg	230g			
	30				270g			
	45				320g			
	15	S(Contacting Switch) MS(Non-contact Switch) MT(3 Wire Non-contact Switch)			275g			
	30				320g			
	45				375g			
	15	SS(Metal Stopper, Contacting Switch) SMS(Metal Stopper, Non-contact Switch) SMT(Metal Stopper, 3 Wire Non-contact Switch)	Push Side 15mm	0.3kg	310g			
	30				365g			
	45				430g			
	15	SN(Rubber Stopper, Contacting Switch) SMN(Rubber Stopper, Non-contact Switch) SMR(Rubber Stopper, 3 Wire Non-contact Switch)		0.8kg	310g			
	30				365g			
	45				430g			

Order Example: Part Number MPPU12 - Stroke 60 - Spec. Code MS

Days to Ship: 8 Days

■MPPU12-_-_

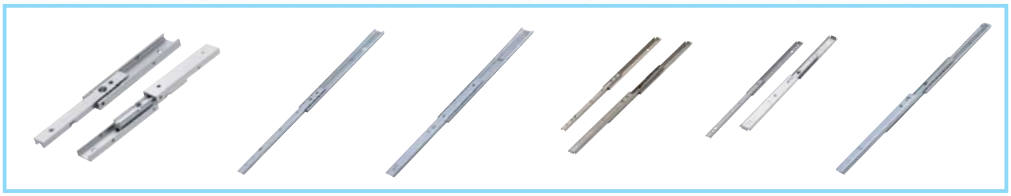
Part Number	Stroke	Specification Selection	Stroke Adjustable Amount	Max. Load Mass	Main Body Mass	€ Unit Price(Per each spec.) Qty. 1~3 N · J · S · SN	MS · SMS · SMN	MT · SMT · SMR
MPPU12	20	N(Main Body Only) J(With Main Body and Switch Rail)	-	1.2kg	320g			
	30				370g			
	45				425g			
	60				495g			
	20	S(Contacting Switch) MS(Non-contact Switch) MT(3 Wire Non-contact Switch)			367g			
	30				420g			
	45				480g			
	60				555g			
	20	SS(Metal Stopper, Contacting Switch) SMS(Metal Stopper, Non-contact Switch) SMT(Metal Stopper, 3 Wire Non-contact Switch)	Push Side 15mm	0.5kg	412g			
	30				475g			
	45				550g			
	60				640g			
	20	SN(Rubber Stopper, Contacting Switch) SMN(Rubber Stopper, Non-contact Switch) SMR(Rubber Stopper, 3 Wire Non-contact Switch)		1.2kg	412g			
	30				475g			
	45				550g			
	60				640g			

※For orders larger than indicated quantity, please request a quotation.

About Specifications and Switches P.595

Telescopic Slide Rails / Cable Carriers

Slide Rails / Cable Carriers

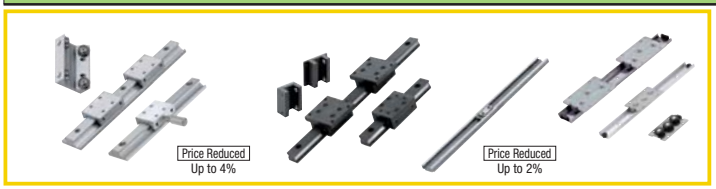


Product Name	Telescopic Slide Rails -Aluminum, Light Load-	-Steel, Light Load, Two-Step-	-Steel, Medium Load, Two-Step-	-Stainless Steel, Light Load-	-Stainless Steel, Medium Load-	-Steel, Light Load, Three-Step-
Page	605	606	606	607	608	609



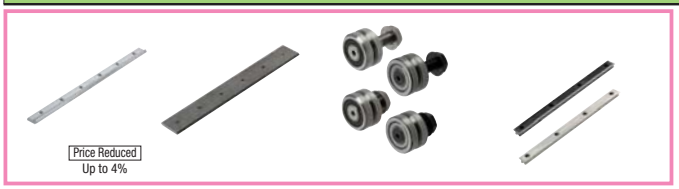


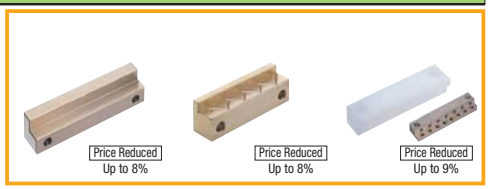
-Steel, Medium Load, Three-Step-	-Steel, Heavy Load, Three-Step-	-Stainless Steel, Heavy Load-	-Stainless Steel, Retainer-	-Preloaded Slide Rail Type-	-Aluminum Bearing Type-	-Stainless Steel, With Ball Bearing-
609	610	611	612	614	615	616



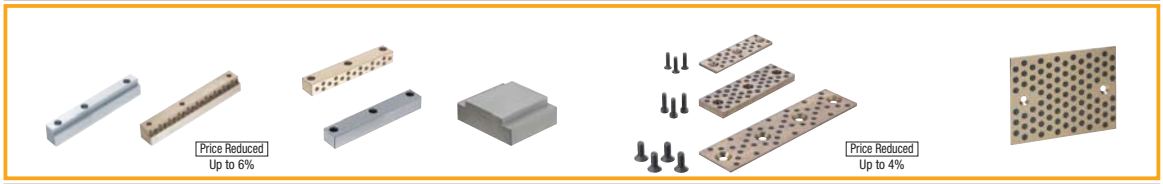


-Aluminum, With Ball Bearing / Quick Retention Type-	-Steel, With Ball Rollers-	-Aluminum, Oil Free-	Roller Slide Rails	V Guides System Units	V Guides System -90°Type Wheels-	-90°Type Bushings-
617	618	619	620	623	623	624

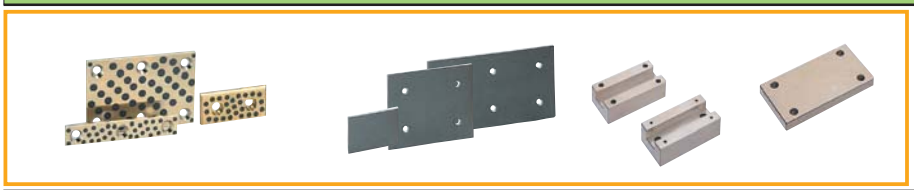




-90° Type 1-Blade Trucks-	-90° Type 2-Blade Trucks-	-Metric Size 70°Type Wheels/Bushings-	-Millimeter Size 70° Type / 2-Blade Trucks / 1 - Blade Tracks	L-Gibs -Steel-	-With Oil Groove-	-Oil Free Copper Alloy, Resin-
624	624	626	626	628	628	628



Gibs -Length, Screw Hole Pitch Configurable-	Gibs	Slide Blocks	Oil Free Slide Plates -Copper Alloy (Upper-Lower Surface Ground)-	-Copper Alloy Configurable Type-
629	630	631	632	633



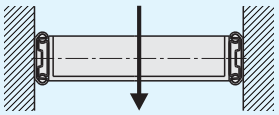
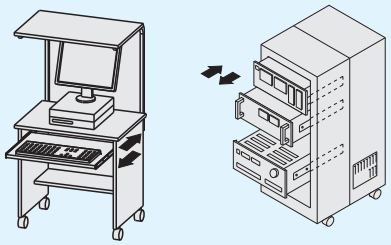
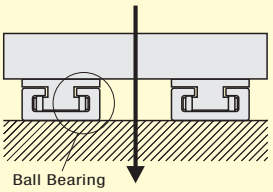
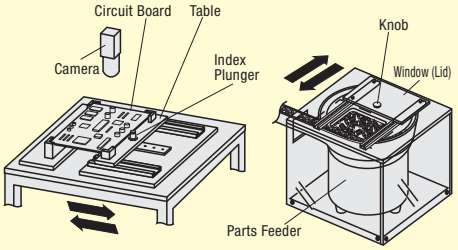
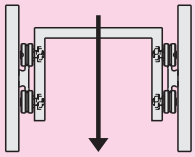
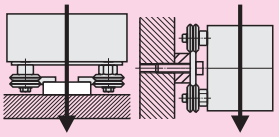
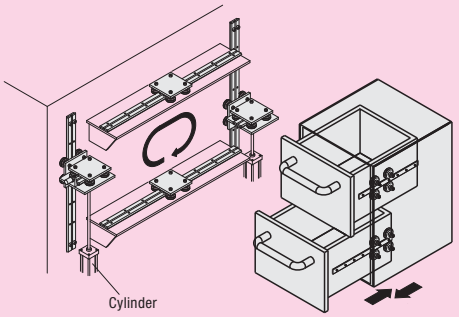
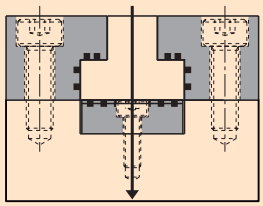
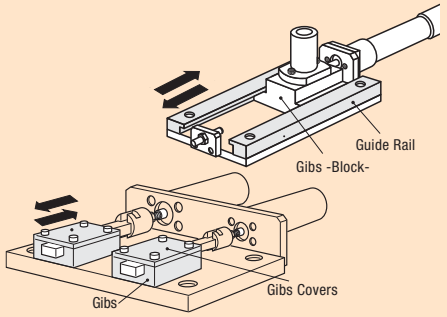
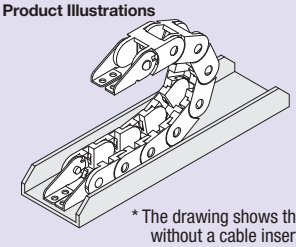
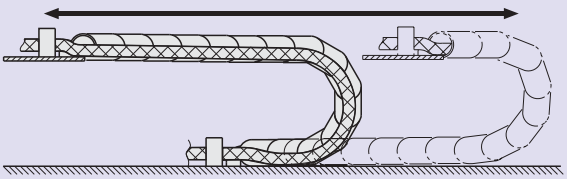


Oil Free Slide Plates -Copper Alloy-	-Multi-Layer Resin, Configurable-	Gibs	Gibs Covers	Cable Carriers -Slit Type-
634	635	636	636	639



Cable Carriers -Compact Type-	-Flap Open / Close-	-Flap Open/Close Full Cover Type-	Low Particulate, Low Noise Type	Low Friction, Low Noise Type	Cable Carrier Supporter Channels
641	642	643	644	645	646

Usage Examples of the Parts

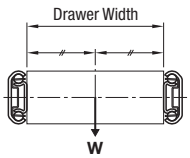
Products	Load Rating	Recommended Loading Direction Examples	Example
Slide Rails Overview Page **P.603** 	51 ~ 1120 (N/2 pcs)	2 Rails Vertical Use 	 <Drawer Sliding Mechanism>
Simplified Slide Rails Overview Page **P.613** 	28 ~ 460 (N)	Double-rail Floor Installation  Ball Bearing * The recommended loading direction for Roller Slide in **P.620** is vertical in 2 rails used in parallel.	 Circuit Board Table Camera Index Plunger Knob Window (Lid) Parts Feeder <Platform Inspection Device> <Parts Feeding Slot>
V Guide Overview Page (90°Type)**P.621** (70°Type)**P.625** 	Reference Value 200 ~ 1200 (N) Load ratings will vary depending on loading directions and wheel installed locations. Please refer to overview pages for details.	2 Rails Vertical Use  Horizontal Installation Single Rail Vertical Installation 	 Cylinder <Simple Drawer Sliding Mechanism>
L-Gibs Overview Page **P.627** 	36 ~ 50 (N/mm²) **P.632~634** Oil Free Slide Plates	Horizontal Installation 	 Guide Rail Gibs -Block- Gibs Gibs Covers
Cable Carriers Overview Page **P.637** 	**Product Illustrations**  * The drawing shows the condition without a cable inserted.	 <Horizontal Motion>	

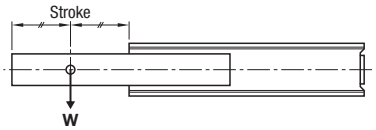
Telescopic Slide Rails Overview

■Product List

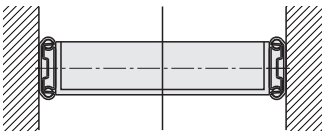
Type	Rail Qty.	Material	Load Rating (N/2 pcs)	Load Rating Examples / Rail Length / Stroke (100 200 300 400 500 600 700)	Additional Function	A	B
SARC2 (P.605)	Two-stage Drawer	Aluminum	51		-	15	5.8
SAR2 (P.605)	Two-stage Drawer		147		-	20	8
SAR3 (P.605)	Three-stage Drawer		147		-	20	16
SRY27 (P.606)	Two-stage Drawer	Steel	177~255		-	27	9.5
SR36 (P.606)	Two-stage Drawer		196~382		Rails can be pulled out.	35.3	9.5
SRXY27 (P.609)	Three-stage Drawer		275~373		-	27	19.1
SRX36 (P.609)	Three-stage Drawer		294~461		-	35.3	19.5
SRR36 (P.610)	Three-stage Drawer		355~623		With Lock Mechanism	35.3	19.1
SRH150 (P.610)	Three-stage Drawer		608~843		-	51.5	12.7
SRRH150 (P.610)	Three-stage Drawer		608~843		Rails can be pulled out.	51.5	12.7
SSRY27 (P.607)	Two-stage Drawer	Stainless Steel	176~255		-	27	9.55
SSRP27 (P.607)	Two-stage Drawer		176~255		With Hold-Open Latch Mechanism	27	9.55
SSRXY27 (P.607)	Three-stage Drawer		275~373		-	27	19.1
SSRXC27 (P.607)	Three-stage Drawer		275~373		With Hold-Open Latch Mechanism	27	19.1
SSRN36 (P.608)	Two-stage Drawer		245~481		-	35.3	9.55
SSRXN36 (P.608)	Three-stage Drawer		441~588		-	35.3	19.1
SSRR36 (P.611)	Three-stage Drawer		355~623		With Lock Mechanism	35.3	19.1
SSRRH36 (P.611)	Two-stage Drawer		784~1120		-	71.4	12.55

■**Load Rating**
Rated load is a static load at the center of extended rail on drawer side.





■**Installation**
Install a slide rail parallel in right and left in a perpendicular state.



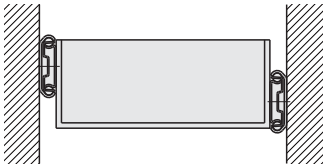
Slide rails are installed vertically and parallel.

O



Slide rails are not vertically installed.

X



Slide rails are not horizontally aligned.

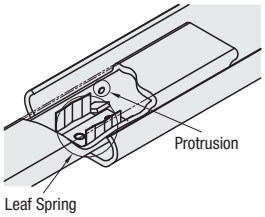
X

※Use in applications where guides are subjected to moment load is not recommended.

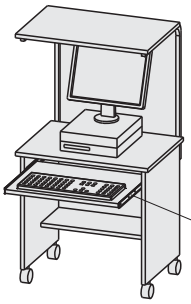
■**Operation**
Strong shocks while opening / closing slide rails will cause damage.
Installation of stopper or buffer on the housing is recommended to protect slide rails from strong shocks.

■About Hold-Open · Closed Latch Mechanisms

<Hold-Open Latch Mechanism>
When the rail is fully pulled out, the tab snap fits into the plate spring and locks against retract direction tentatively. This is suitable for operations with drawers opened.



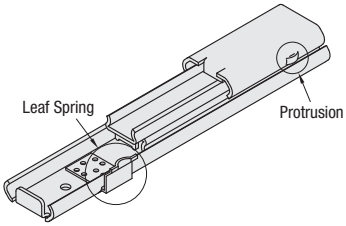
ex



SSRP27 **P.607**

Suitable for Light Load
Convenient when operating with the drawer open

<Hold-Closed Latch Mechanism>
When the rails are retracted to be stored, the tab snap fit into the plate spring and locks against pull-open direction tentatively. This prevents drawers from opening by vibration.



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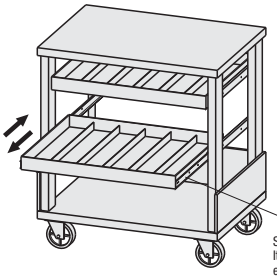
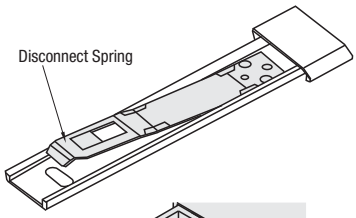
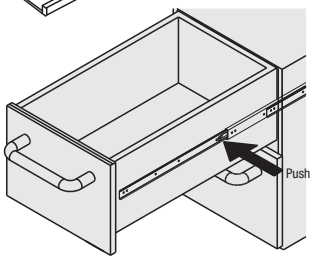


SSRXC27 **P.607**

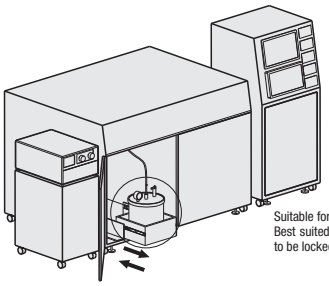
Suitable for Light Load
It prevents drawers from opening by vibration etc.

<Lock Mechanism>
The lock mechanism engages the rail in locked position against retract direction when fully pulled out. It unlocks when the disconnect spring is pushed to allow retraction or rail removal.



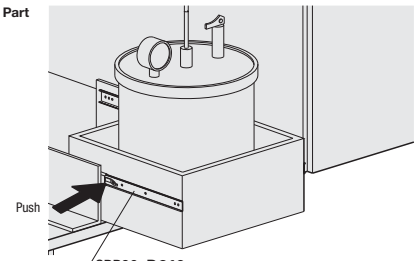


ex



Suitable for Heavy Load
Best suited for usages where the drawers are to be locked open or removed completely.

Enlarged Part

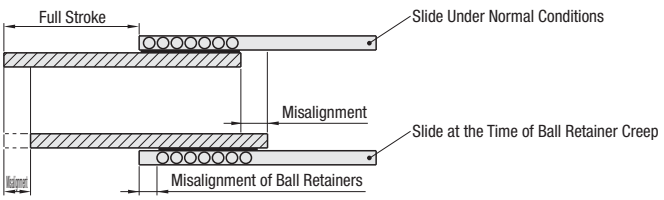


SRR36 **P.610**

■About Ball Retainer Creep (Ball Misalignment)

Due to one of the characteristics of the Slide Rails, the balls may be misaligned and stop before slide rails fully open or close.
This phenomenon is called Ball Retainer Creep.
In the event of a ball retainer creep, travel distances between right and left sliding rails become uneven as shown in the illustration below.

If this occurs, softly pull the rails back to the fully open position.
Quick movements and strong impacts may cause damages when correcting.



Slide Rails Load Rating: 51N ~ 147N/2 pcs.

-Aluminum · Light Load-

CAD Data

Features: The rails are made of aluminum alloy. Lightweight, compactness and economical pricing are achieved.

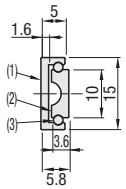
Light Load, Two-Step Telescopic Slide Rails

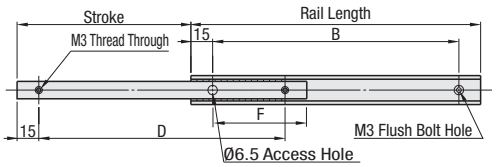


RoHS

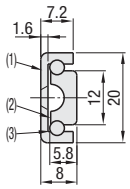
SARC2(Compact Type)

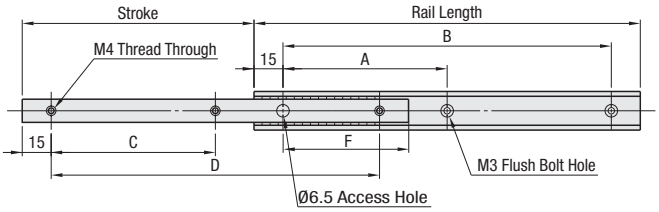
Load Rating: **51~147N/2 pcs** Pull-out: **Impossible**



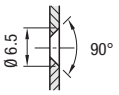


SAR2





Mounting Hole of Outer Rail



	Material	Surface Treatment
(1)	Aluminum Alloy	Clear Anodizing
(2)		
(3)	Steel	-

A and B indicate outer rail installation dimensions.

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	F	Load Rating (N/2 pcs) SARC2	Load Rating (N/2 pcs) SAR2	SARC2 € Unit Price 1 ~ 5 pcs	SARC2 Volume Discount 6 ~ 19 pcs	SAR2 € Unit Price 1 ~ 5 pcs	SAR2 Volume Discount 6 ~ 19 pcs
SARC2 SAR2	06	60	30	-	30	-	30	25	51	147				
	07	70	40	-	40	-	40	25						
	09	90	50	-	60	-	60	25						
	10	100	60	-	70	-	70	25						
	20	200	120	85	170	85	170	65	-					
	30	300	180	135	270	135	270	105						
	40	400	240	185	370	185	370	145						
	50	500	300	235	470	235	470	185						

Inner rails cannot be pulled out of outer rails. Use M3 Flat Head Screws for mounting rails. For orders larger than indicated quantity, please request a quotation.

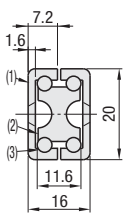
Light Load, Three Stage Slide Rails

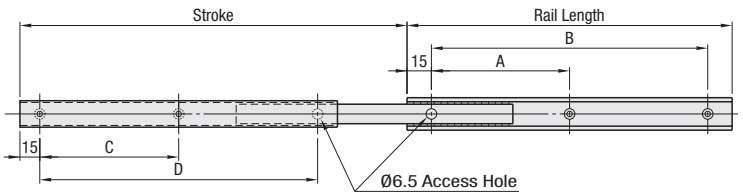


RoHS

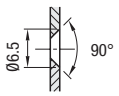
SAR3

Load Rating:**147N/2 pcs** Pull-out: **Impossible**





Mounting Hole of Outer Rail



	Material	Surface Treatment
(1)	Aluminum Alloy	Clear Anodizing
(2)		
(3)	Steel	-

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SAR3	10	100	100	-	70	-	70	147		
	20	200	223	85	170	85	170			
	30	300	345	135	270	135	270			
	40	400	460	185	370	185	370			
	50	500	576	235	470	235	470			

Inner rails cannot be pulled out of outer rails. Use M3 Flat Head Screws for mounting rails. For orders larger than indicated quantity, please request a quotation.

Order Example Part Number SAR350

Days to Ship 6 Days 2 Days P.87

Slide Rails Load Rating: 177N ~ 382N/2 pcs.

-Steel · Light Load · Medium Load · Two-Step-

CAD Data

Features: The rails are trivalent chrome coated steel. The Slide Rails are economical and environmentally friendly.

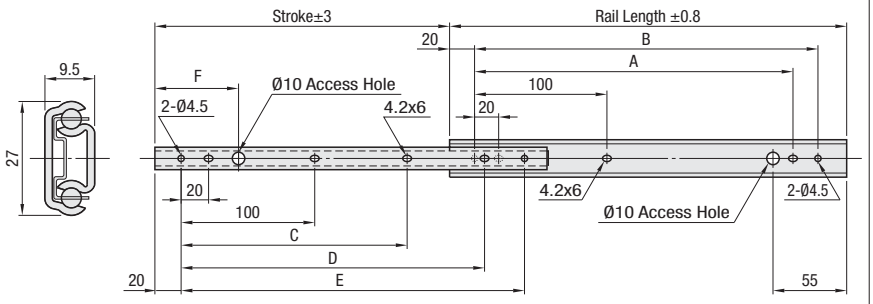
Light Load, Two-Step Telescopic Slide Rails



RoHS

SRY27

Load Rating:**177~255N/2 pcs** Pull-out: **Impossible**



M Material: Steel
S Surface Treatment: JIS STKM Bright Chromate (Trivalent Chromium)

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	E	F	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 9 pcs	10 ~ 19 pcs
SRY27	20	200	135	140	160	-	140	160	62.5	255			
	25	250	185	190	210	150	190	210	62.5	235			
	30	300	222	240	260	190	240	260	62.5	235			
	35	350	260	290	310	225	290	310	62.5	226			
	40	400	297	340	360	265	340	360	62.5	206			
	45	450	334	390	410	300	390	410	142.5	196			
	50	500	371	440	460	337	440	460	142.5	177			

Please use M4 Hex Socket Button Screw (P.2-183) or Cross Recessed Pan Head Screws (P.2-217) for mounting rails.

For orders larger than indicated quantity, please request a quotation.

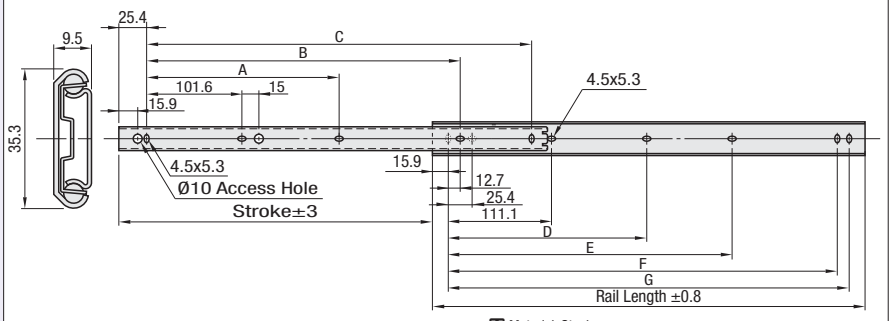
Medium Load, Two-Step Telescopic Slide Rails



RoHS

SR36

Load Rating:**196~382N/2 pcs** Pull-out: **Possible**



Inner and outer rails are not exchangeable.

M Material: Steel
S Surface Treatment: JIS STKM Bright Chromate (Trivalent Chromium)

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	E	F	G	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SR36	12	305	229	-	152.4	254	-	149.2	260.3	273	382		
	14	356	279	-	203.2	304.8	-	200	311.1	323.8	373		
	16	406	305	-	254	355.6	-	250.8	361.9	374.6	333		
	18	457	330	203.2	304.8	406.4	212.7	301.6	412.7	425.4	324		
	20	508	381	228.6	355.6	457.2	238.1	352.4	463.5	476.2	294		
	22	559	406	254	406.4	508	263.5	403.2	514.3	527	265		
	24	610	432	279.4	457.2	558.8	288.9	454	565.1	577.8	235		
	26	660	483	304.8	508	609.6	314.3	504.8	615.9	628.6	216		
	28	711	508	330.2	558.8	660.4	339.7	555.6	666.7	679.4	196		

The rails stop once in the full stroke position. The inner and outer rails can be separated by pulling further.
Please use M4 Cross Recessed Pan Head Screws (P.2-217) for mounting rails

For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number: SRY2720, SR3624

Days to Ship

	SRY27		SR36		
Standard	8 Days	2 Days	6 Days	2 Days	P.87
Express A	5,00 EUR/piece				P.88

A Express Charge of 13,50 EUR is applied for 3 or more identical pieces.

Slide Rails Load Rating: 176N ~ 373N/2 pcs.

-Stainless Steel · Light Load / Simplified Open-Retention / Simplified Close-Retention-

CAD Data

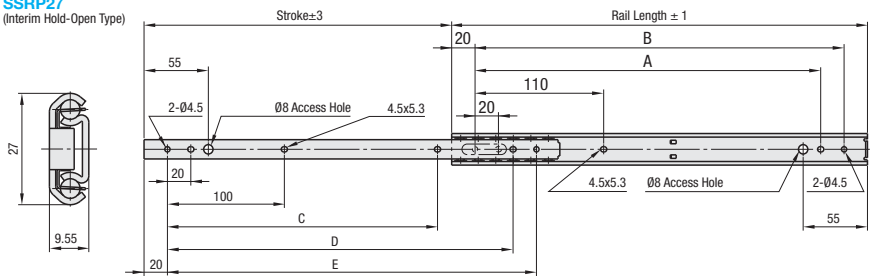
■**Features**: Interim retention is possible at full open/close. For usage examples, please see **P.604**

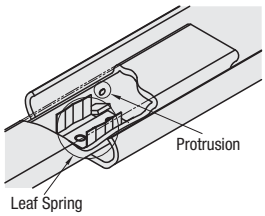
■**Light Load, Two-Step Telescopic Slide Rails**



SSRY27
SSRP27
(Interim Hold-Open Type)

Load Rating:**176 ~ 255N/2 pcs** Pull-out: **Impossible**





■**Hold-Open Type**
- **Lock is released by applying force of 0.5kg or more (reference value) in store direction.**
- When the rail is fully pulled out, the plate spring is snap fit in the tab and locked against the retract direction tentatively. This is suitable for operations with drawers opened.
- To use slide rails in vertical or inclined arrangements, use additional external structures to prevent rails from falling.

M Material: Rail 1.4301/X5CrNi18-10
Ball 1.4125/X105CrMo17

RoHS

Part Number		Rail Length	Stroke	A	B	C	D	E	Load Rating (N/2 pcs)	SSRY27		SSRP27	
Type	No.									€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
										1 ~ 5 pcs	6 ~ 19 pcs	1 ~ 5 pcs	6 ~ 19 pcs
SSRY27 SSRP27	08	203.2	136.1	143.2	163.2	-	143.2	163.2	255				
	10	254	186.9	194	214.0	154	194	214	235				
	12	304.8	225.0	244.8	264.8	194.8	244.8	264.8	235				
	14	355.6	263.1	295.6	315.6	230.6	295.6	315.6	225				
	16	406.4	301.2	346.4	366.4	271.4	346.4	366.4	206				
	18	457.2	339.3	397.2	417.2	307.2	397.2	417.2	196				
	20	508	377.4	448	468.0	345	448	468	176				

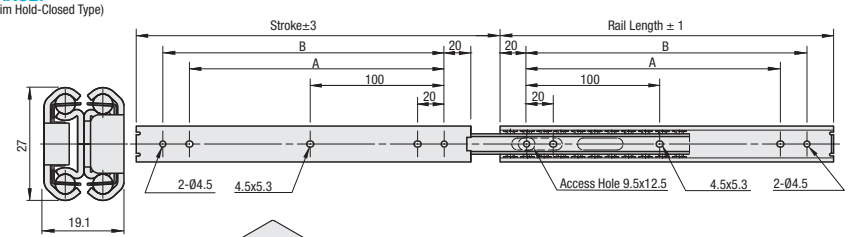
Inner rails cannot be pulled out of outer rails. When use M4 Hex Socket Button Screw (P.**2**-183) or Cross Recessed Oan Head Screws (P.**2**-217) for mounting rails.
For orders larger than indicated quantity, please request a quotation.

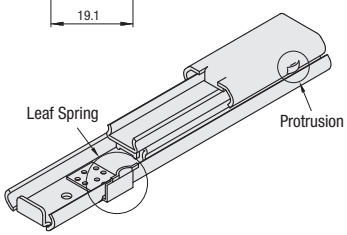
■**Light Load, Three-Step Telescopic Slide Rails**



SSRXY27
SSRXC27
(Interim Hold-Closed Type)

Load Rating:**275 ~ 373N/2 pcs** Pull-out: **Impossible**





■**Hold-Closed Type**
- **Lock is released by applying force of 2kg or more (reference value) in pull direction.**
- When the rails are retracted to be stored, the tab snap fit into the plate spring and locks against pull-open direction tentatively. This prevents drawers from opening by vibration.
- To use slide rails in vertical or inclined arrangements, use additional external structures to prevent rails from falling.

M Material: Rail 1.4301/X5CrNi18-10
Ball 1.4125/X105CrMo17

RoHS

Part Number		Rail Length	Stroke	A	B	Load Rating (N/2 pcs)	SSRXY27		SSRXC27	
Type	No.						€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
							1 ~ 5 pcs	6 ~ 19 pcs	1 ~ 5 pcs	6 ~ 19 pcs
SSRXY27 SSRXC27	08	203.2	225.2	143.2	163.2	373				
	10	254	276.0	194	214.0	363				
	12	304.8	326.8	244.8	264.8	353				
	14	355.6	377.6	295.6	315.6	333				
	16	406.4	428.4	346.4	366.4	313				
	18	457.2	479.2	397.2	417.2	294				
	20	508	530.0	448	468.0	275				

Inner rails cannot be pulled out of outer rails. When use M4 Hex Socket Button Screw (P.**2**-183) or Cross Recessed Oan Head Screws (P.**2**-217) for mounting rails.
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
SSRY2718
SSRXC2708

Days to Ship **6 Days**

P.87

Slide Rails Load Rating: 245N ~ 588N/2 pcs.

-Stainless Steel · Medium Load-

CAD Data

■**Features**: The rails use 1.4301/X5CrNi18-10 with excellent corrosion-resistance.

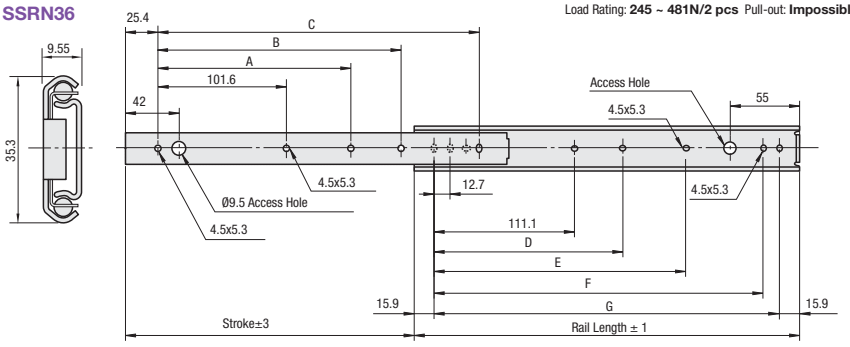
■**Medium Load, Two-Step Telescopic Slide Rails**



RoHS

SSRN36

Load Rating: **245 ~ 481N/2 pcs** Pull-out: **Impossible**



M Material:Rail 1.4301/X5CrNi18-10
Ball 1.4125/X105CrMo17

Ⓟ Inner and outer rails are not exchangeable.

Part Number Type	Part Number No.	Rail Length	Stroke	A	B	C	D	E	F	G	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 3 pcs	Volume Discount 4 ~ 19 pcs
SSRN36	12	304.8	228.6	-	152.4	254	-	149.2	260.3	273	481		
	14	355.6	279.4	-	203.2	304.8	-	200	311.1	323.8	461		
	16	406.4	304.8	-	254	355.6	-	250.8	361.9	374.6	422		
	18	457.2	330.2	203.2	-	406.4	212.7	301.6	412.7	425.4	402		
	20	508.0	381	228.6	-	457.2	238.1	352.4	463.5	476.2	363		
	22	558.8	406.4	254	-	508	263.5	403.2	514.3	527	333		
	24	609.6	431.8	279.4	-	558.8	288.9	454	565.1	577.8	294		
	26	660.4	482.6	304.8	-	609.6	314.3	504.8	615.9	628.6	265		
	28	711.2	508	330.2	-	660.4	339.7	555.6	666.7	679.4	245		

Ⓟ Inner rails cannot be pulled out of outer rails. Ⓟ Please use M4 Cross Recessed Pan Head Screws (P.**2**-217) for mounting rails. Ⓟ For orders larger than indicated quantity, please request a quotation.

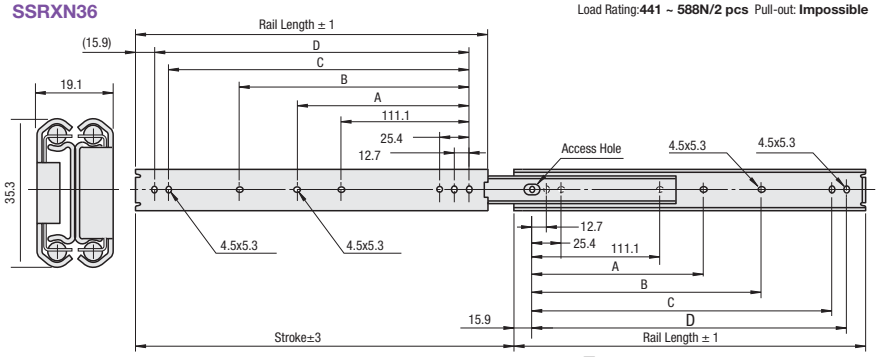
■**Medium Load, Three-Step Telescopic Slide Rails**



RoHS

SSRXN36

Load Rating:**441 ~ 588N/2 pcs** Pull-out: **Impossible**



M Material:Rail 1.4301/X5CrNi18-10
Ball 1.4125/X105CrMo17

Part Number Type	Part Number No.	Rail Length	Stroke	A	B	C	D	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SSRXN36	12	304.8	327.2	-	149.2	260.3	273	588		
	14	355.6	378	-	200	311.1	323.8	578		
	16	406.4	428.4	-	250.8	361.9	374.6	559		
	18	457.2	479.2	212.7	301.6	412.7	425.4	549		
	20	508.0	530	238.1	352.4	463.5	476.2	529		
	22	558.8	580.8	263.5	403.2	514.3	527	500		
	24	609.6	631.6	288.9	454	565.1	577.8	480		
	26	660.4	682.4	314.3	504.8	615.9	628.6	461		
	28	711.2	733.2	339.7	555.6	666.7	679.4	441		

Ⓟ Three-stage drawers can be pulled out to the end. The rails can not be pulled apart.
Ⓟ Please use M4 Cross Recessed Pan Head Screws (P.**2**-217) for mounting rails

Ⓟ For orders larger than indicated quantity, please request a quotation.

Order Example **Part Number**
SSRN3628
SSRXN3620

Days to Ship **6 Days** **2 Days** P87

Slide Rails Load Rating: 275N ~ 461N/2 pcs.

-Steel, Light Load, Medium Load, Three-Step-

CAD Data

Features: The rails are trivalent chrome coated steel. The Slide Rails are economical and environmentally friendly.

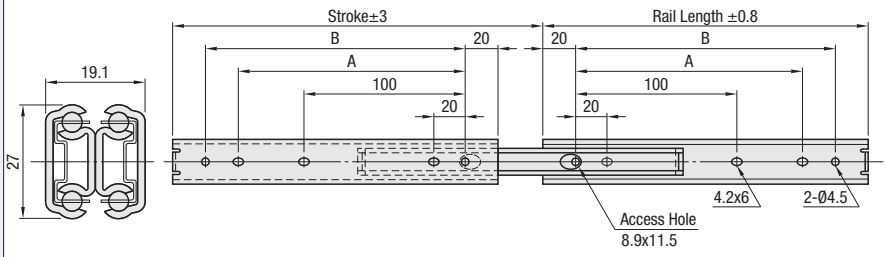
Light Load, Three-Step Telescopic Slide Rails



RoHS

SRXY27

Load Rating: **275 ~ 373N/2 pcs** Pull-out: **Impossible**



M Material: Steel
S Surface Treatment: JIS STKM Bright Chromate (Trivalent Chromium)

Part Number Type	No.	Rail Length	Stroke	A	B	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SRXY27	20	200	228.8	140	160	373		
	25	250	276.2	190	210	363		
	30	300	327.2	240	260	353		
	35	350	376.4	290	310	333		
	40	400	425.6	340	360	314		
	45	450	474.8	390	410	294		
	50	500	524.0	440	460	275		

Three-stage Drawer Type. The rails can not be pulled apart.
For orders larger than indicated quantity please request a quotation.
When use M4 Hex Socket Button Screw (P.2-183) or Cross Recessed Oan Head Screws (P.2-217) for mounting rails.

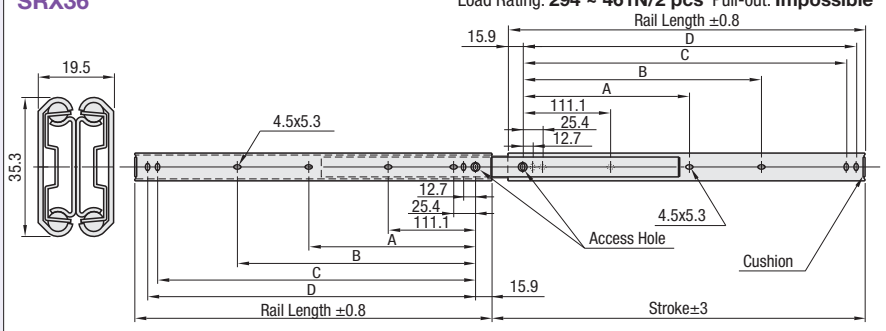
Medium Load, Three-Step Telescopic Slide Rails



RoHS

SRX36

Load Rating: **294 ~ 461N/2 pcs** Pull-out: **Impossible**

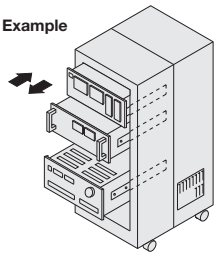


M Material: Steel
S Surface Treatment: JIS STKM Bright Chromate (Trivalent Chromium)

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SRX36	12	305	324.2	-	149.2	260.3	273	461		
	14	356	375.4	-	200	311.1	323.8	431		
	16	406	424.6	-	250.8	361.9	374.6	412		
	18	457	475.8	212.7	301.6	412.7	425.4	392		
	20	508	527	238.1	352.4	463.5	476.2	373		
	22	559	578.2	263.5	403.2	514.3	527	353		
	24	610	629.4	288.9	454	565.1	577.8	333		
	26	660	678.6	314.3	504.8	615.9	628.6	304		
	28	711	729.8	339.7	555.6	666.7	679.4	294		

Three-stage drawers can be pulled out to the end. The rails can not be pulled apart.
For orders larger than indicated quantity please request a quotation.
When use M4 Hex Socket Button Screw (P.2-183) or Cross Recessed Oan Head Screws (P.2-217) for mounting rails.

Example



Order Example — Part Number: SRXY2735, SRX3624

Days to Ship

SRXY27		SRX36	
8 Days	2 Days	6 Days	2 Days

P. 87

Express A — 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR is applied for 3 or more identical pieces.

Slide Rails Load Rating: 355N ~ 843N/2 pcs.

-Steel, Heavy Load, Three-Step · Lock Mechanism · Detachable-

CAD Data

Features: Lockable Slide Rails in Full Open state. For usage examples, please see **P.604**

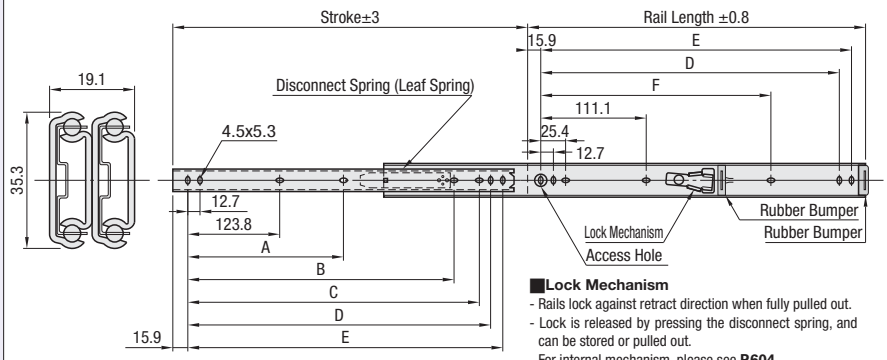
Heavy Load, Three-Step Telescopic Slide Rails



RoHS

SRR36 (Lock Mechanism Type)

Load Rating: **355 ~ 623N/2 pcs** Pull-out: **Possible**



Lock Mechanism
- Rails lock against retract direction when fully pulled out.
- Lock is released by pressing the disconnect spring, and can be stored or pulled out.
- For internal mechanism, please see **P.604**

M Material: Steel S Surface Treatment: JIS STKM Bright Chromate (Trivalent Chromium)

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	E	F	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SRR36	12	305	327.2	-	-	-	260.3	273	-	623		
	14	356	377.9	-	-	298.4	311.1	323.8	-	586		
	16	406	428.7	-	-	349.2	361.9	374.6	250.8	555		
	18	457	479.5	212.7	-	400	412.7	425.4	301.6	516		
	20	508	530.3	238.1	365.1	450.8	463.5	476.2	352.4	476		
	22	559	581.2	263.5	415.9	501.6	514.3	527	403.2	444		
	24	610	631.9	288.9	466.7	552.4	565.1	577.8	454	413		
	26	660	682.7	314.3	517.5	603.2	615.9	628.6	504.8	382		
	28	711	733.5	339.7	568.3	654	666.7	679.4	555.6	355		

When use M4 Hex Socket Button Screw (P.Z-183) or Cross Recessed Oan Head Screws (P.Z-217) for mounting rails. For orders larger than indicated quantity please request a quotation.

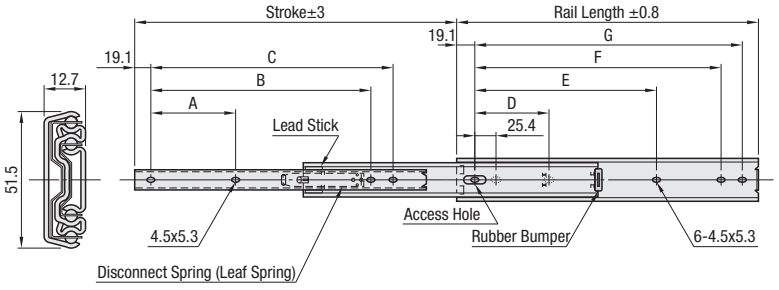
Heavy Load, Three-Step Telescopic Slide Rails



RoHS

SRH150 / SRRH150 (Detachable)

Load Rating: **608 ~ 843N/2 pcs** Pull-out: **Impossible**



Drawing is for SRRH150 Type.

M Material: Steel
S Surface Treatment: JIS STKM Bright Chromate (Trivalent Chromium)

Part Number Type	No.	Rail Length	Stroke	SRH150 A	SRH150 B	SRRH150 A	SRRH150 B	C	D	E	F	G	Load Rating (N/2 pcs)	SRH € Unit Price 1 ~ 5 pcs	SRH Vol. Discount 6 ~ 19 pcs	SRRH € Unit Price 1 ~ 5 pcs	SRRH Vol. Discount 6 ~ 19 pcs
SRH150 / SRRH150 (Detachable)	12	305	330.2	76.2	177.8	76.2	-	254	76.2	190.5	241.3	266.7	843				
	14	356	381	101.6	203.2	127	-	304.8	88.9	215.9	292.1	317.5	814				
	16	406	431.8	127	228.6	152.4	317.5	355.6	127	241.3	342.9	368.3	765				
	18	457	482.6	127	279.4	177.8	368.3	406.4	127	292.1	393.7	419.1	726				
	20	508	533.4	152.4	304.8	152.4	419.1	457.2	152.4	317.5	444.5	469.9	706				
	22	559	584.2	177.8	330.2	177.8	469.9	508	177.8	342.9	495.3	520.7	686				
	24	610	635	177.8	381	177.8	520.7	558.8	177.8	393.7	546.1	571.5	657				
	26	660	685.8	203.2	406.4	203.2	571.5	609.6	203.2	419.1	596.9	622.3	628				
	28	711	736.6	228.6	431.8	228.6	622.3	660.4	228.6	444.5	647.7	673.1	608				

SRH150 Rails can not be pulled apart. SRRH150 can be pulled apart by pushing the disconnect spring.
When use M4 Hex Socket Button Screw (P.Z-183) or Cross Recessed Oan Head Screws (P.Z-217) for mounting rails.
For orders larger than indicated quantity please request a quotation.

Order Example — Part Number: SRR3620, SRH15012, SRRH15028

Days to Ship: 8 Days / 2 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR is applied for 3 or more identical pieces.

Slide Rails Load Rating: 355N ~ 1120N/2 pcs.

-Stainless Steel · Heavy Load / Lock Mechanism-

CAD Data

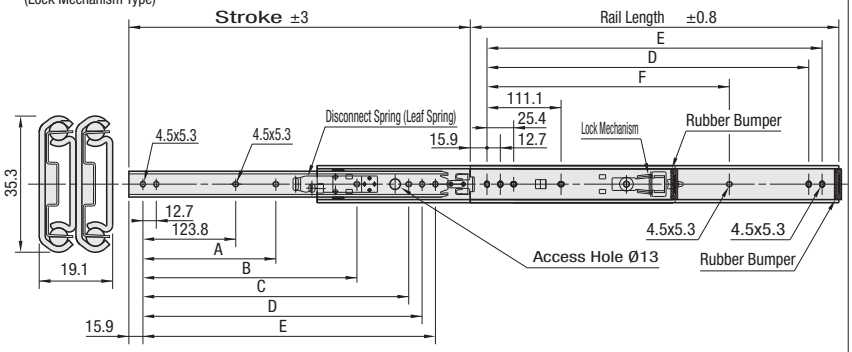
Features: Lockable Slide Rails in Full Open state. For usage examples, please see **P.604**

Heavy Load, Three-Step Telescopic Slide Rails



SSRR36
(Lock Mechanism Type)

Load Rating: **355 ~ 623N/2 pcs** Pull-out: **Possible**



Lock Mechanism
- Rails lock against retract direction when fully pulled out.
- Lock is released by pressing the disconnect spring, and can be stored or pulled out.
- For internal mechanism, please see **P.604**

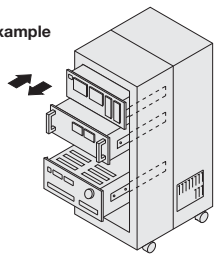
Material: Rail 1.4301/X5CrNi18-10
Ball 1.4125/X105CrMo17

RoHS

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	E	F	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SSRR36	30	300	322.3	-	-	-	255.5	268.2	-	623		
	35	350	372.3	-	-	292.8	305.5	318.2	-	586		
	40	400	422.3	-	-	342.8	355.5	368.2	244.4	555		
	45	450	472.3	205.5	-	392.8	405.5	418.2	294.4	516		
	50	500	522.3	230.5	357.1	442.8	455.5	468.2	344.4	475		
	55	550	572.3	255.5	407.1	492.8	505.5	518.2	394.4	444		
	60	600	622.3	280.5	457.1	542.8	555.5	568.2	444.4	413		
	65	650	672.3	305.5	507.1	592.8	605.5	618.2	494.4	382		
	70	700	722.3	330.5	557.1	642.8	655.5	668.2	544.4	355		

When use M4 Hex Socket Button Screw (P.2 -183) or Cross Recessed Oan Head Screws (P.2 -218) for mounting rails.
For orders larger than indicated quantity, please request a quotation.

Example



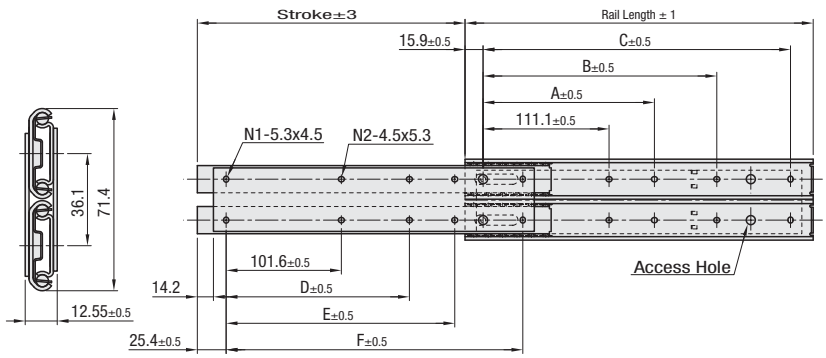
First, pull out the rails, install each rail to joining unit and fit the separated rails together before installation.

Heavy Load, Two-Step Telescopic Slide Rails



SSRRH36

Load Rating:**784 ~ 1120N/2 pcs** Pull-out: **Impossible**



Material: Rail 1.4301/X5CrNi18-10
Ball 1.4125/X105CrMo17

RoHS

Part Number Type	No.	Rail Length	Stroke	A	B	C	D	E	F	Load Rating (N/2 pcs)	€ Unit Price 1 ~ 5 pcs	Volume Discount 6 ~ 19 pcs
SSRRH36	30	304.8	227	-	149.2	273	-	152.8	254.4	1120		
	35	355.6	278	-	200	323.8	-	203.6	305.2	1070		
	40	406.4	303	-	250.8	374.6	-	254.4	356.0	1020		
	45	457.2	354	212.7	301.6	425.4	203.2	305.2	406.8	1000		
	50	508	367	238.1	352.4	476.2	228.6	356.0	457.6	971		
	55	558.8	430	263.5	403.2	527.0	254	406.8	508.4	922		
	60	609.6	456	288.9	454.0	577.8	279.4	457.6	559.2	873		
	65	660.4	468	314.3	504.8	628.6	304.8	508.4	610.0	843		
	70	711.2	506	339.7	555.6	679.5	330.2	559.2	660.8	784		

When use M4 Hex Socket Button Screw (P.2 -183) or Cross Recessed Oan Head Screws (P.2 -218) for mounting rails. For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number: SSRR3630, SSRRH3665 | Days to Ship: 6 Days | P.87

Slide Rails Load Rating: 255N ~ 686N/2 pcs.

-Stainless Steel · Retainer-

CAD Data

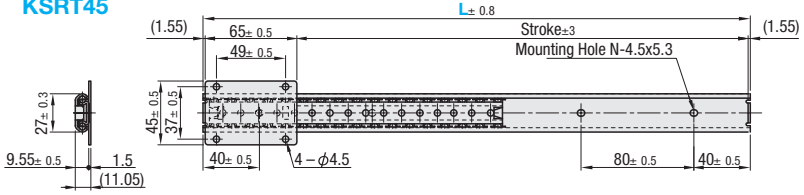
Features: Accurate reciprocating motion is possible with the sliders always kept by the retainers.

RoHS

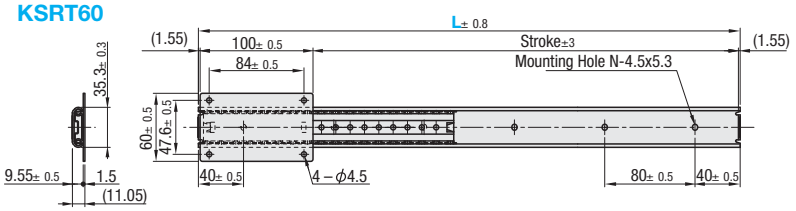


Load Rating: **255 ~ 686N/2 pcs**

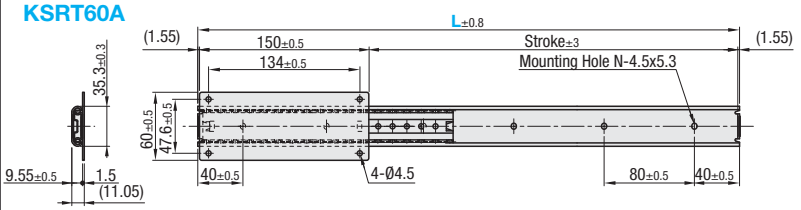
KSRT45



KSRT60

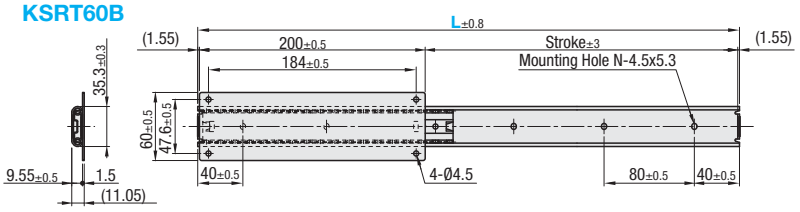


KSRT60A



Part	Material
Slider	1.4301/X5CrNi18-10
Ball	1.4125/X105CrMo17
Rail	1.4301/X5CrNi18-10

KSRT60B



Part Number Type	No.	Selectable L	Stroke KSRT45	Stroke KSRT60	Stroke KSRT60A	Stroke KSRT60B	No. of Mounting Holes KSRT45	No. of Mounting Holes KSRT60	No. of Mounting Holes KSRT60A	No. of Mounting Holes KSRT60B	€ Unit Price KSRT45	€ Unit Price KSRT60	€ Unit Price KSRT60A	€ Unit Price KSRT60B
KSRT	45	160	91.9	56.9	-	-	2	2	-	-				
		240	171.9	136.9	86.9	-	3	3	3	-				
		320	251.9	216.9	166.9	116.9	4	4	4	4				
		400	331.9	296.9	246.9	196.9	5	5	5	5				
	60	480	411.9	376.9	326.9	276.9	6	6	6	6				
		560	491.9	456.9	406.9	356.9	7	7	7	7				
	60A	640	571.9	536.9	486.9	436.9	8	8	8	8				
		720	651.9	616.9	566.9	516.9	9	9	9	9				
	60B	800	-	696.9	646.9	596.9	-	10	10	10				
		880	-	776.9	726.9	676.9	-	11	11	11				
		960	-	856.9	806.9	756.9	-	12	12	12				
		1040	-	936.9	886.9	836.9	-	13	13	13				
		1200	-	1096.9	1046.9	996.9	-	15	15	15				

When use M4 Hex Socket Button Screw (P.2 -183) or Cross Recessed Oan Head Screws (P.2 -219) for mounting rails. For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
KSRT45	-	400

Days to Ship: 6 Days P.87

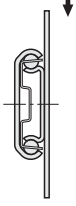
Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~5	6~9	10~20
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Load Rating

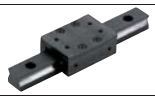


<Cautions>When using in wall mounting arrangements, please properly place work piece so that no moment load is applied on the slides that may cause damages.

No.	Load Rating (N/2 pcs) W
45	255
60	480
60A	588
60B	686

Linear Components Overview

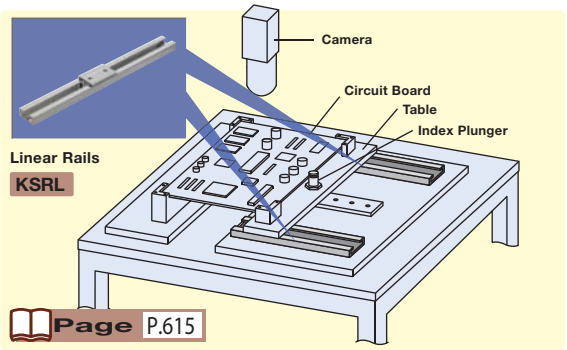
Features - Lightweight and compact design.
- Clearance is made between the slider and the rail.
- Suitable for manual operation and non-precise positioning.

Page	Type	Picture	Load Rating	Dimension (mm)			Material			Options	
			(N)	Rail Length	Width	Height	Slider	Bearing	Rail	Clamper / Quick Retention	Stoppers
P.614	PLRH		80	160~1200	42	12	Steel	Stainless Steel	Stainless Steel	○	○
P.615	KSRL		79	70~1030	30 (37)*	16	Aluminum Alloy / Polyacetal	Steel	Aluminum Alloy	○	○
P.616	KSR		380/460	70~1030	32/33 (38/39)*	13/16	Stainless Steel	Stainless Steel	Stainless Steel	○	○
P.617	JKSG		49~99	55~760	20~40	10~24	Aluminum Alloy	Steel	Aluminum Alloy	○	-
P.618	BJKSG		68/147	70~790	30~60	16~28	Steel	Stainless Steel (Balls)	Steel	-	-
P.619	SROM		28/110	90~1040	15/25	8/10	Steel	Polyacetal (Face Contact)	Aluminum Alloy	-	○
P.620	RSR		80/150	160~1800	42/64	12/16.2	Stainless Steel / Steel	Polyacetal / JIS SMF5040 ~C43 (Rollers)	Aluminum Alloy / Steel	-	○

* Values in ( ) are dimensions of clamper-equipped type. (excluding protruding screw)

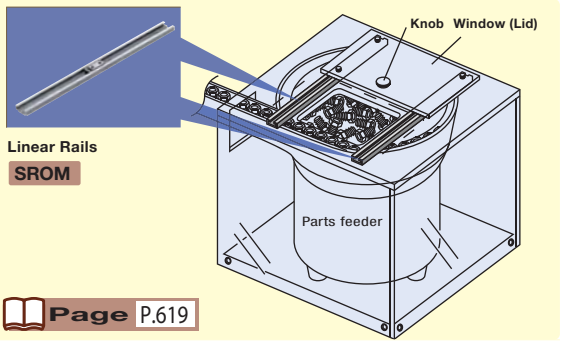
Example

Guide for Circuit Board Inspection Unit — Inexpensive, Lightweight



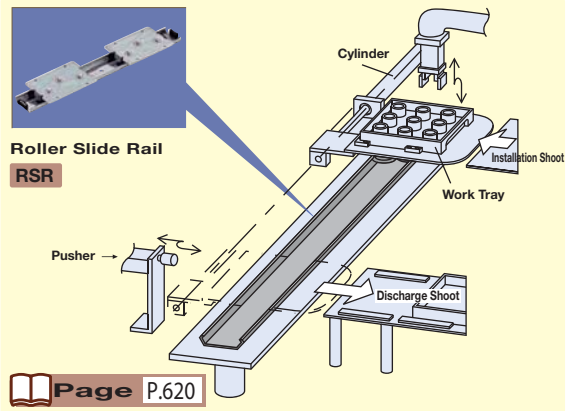
Page P.615

Work Supplying Window of Part Feeder — Inexpensive, Lightweight



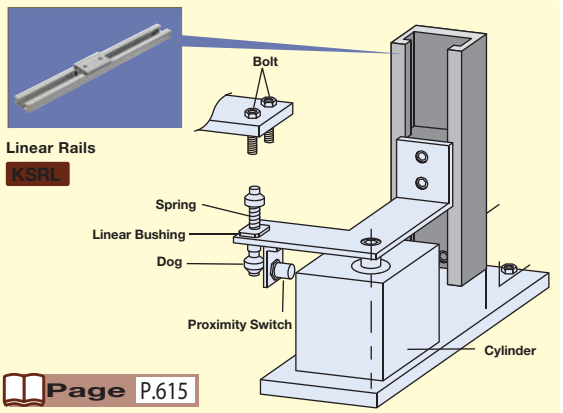
Page P.619

Guide between Processes — Inexpensive, Lightweight



Page P.620

Detection Unit — Inexpensive, Lightweight



Page P.615

Preloaded Slide Rail Type
-Stainless Steel, With Ball Bearing, With Clamp-

Load Rating: 80N

CAD Data

■**Features**: Adopted stainless material offers excellent corrosion-resistance, and applied preload enables smooth driving without vibration.



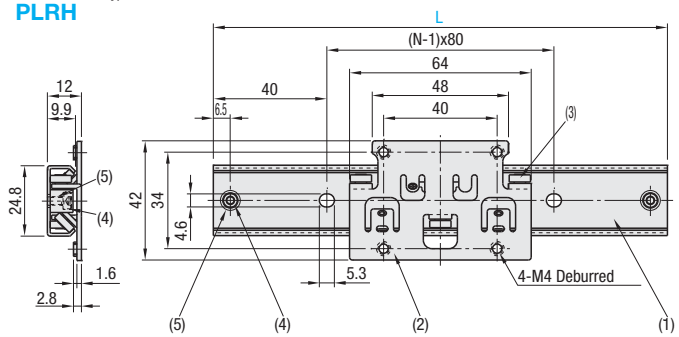
Type Set: Standard Slider Type	Type Set: Slider with a Clamper	Type Set: Standard Type 1pc. + Type with a Clamper 1pc.
PLRH (Slider 1 pc.) PLR2H (Sliders 2 pcs.)	PLRC (Slider 1 pc.) PLR2C (Sliders 2 pcs.)	PLR2HC (Sliders 2 pcs.)

	Part	Material	Surface Treatment
(1)	Rail	1.4016/X6(8)Cr17	-
(2)	Slider Plate	JIS SECC	Electroless Nickel Plating
(3)	Bearing	1.4125/X105CrMo17	-
(4)	M3x6 Screw with a Hex Socket	1.4567/X3CrNiCu18-9-4	-
(5)	Fall-off Prevention Stopper	Polyacetal	-
(6)	Clamper (Tip : Polyacetal)	1.4301/X5CrNi18-10	-

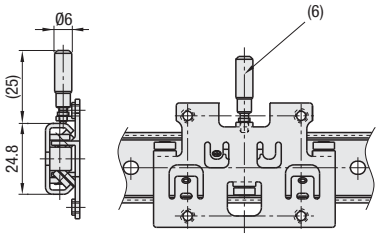
Pre-load is adjusted with a rail and slider in a set.
Rails and sliders are non-interchangeable. Slider rail is not provided separately, as a single unit.

Allowable Temperature: 10 ~ 60°C

Standard Slider Type
PLRH



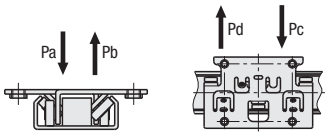
Slider with a Clamper
PLRC



* When a clamper screw tip comes in contact with rail side surfaces

Part Number Type	No.	L Selectable	Installation Hole Qty. N	€ Unit Price PLRH25	PLRC25	PLR2H25	PLR2C25	PLR2HC25
Slider Standard PLRH (Slider 1 pc.) PLR2H (Sliders 2 pcs.) Slider With Clamper PLRC (Slider 1 pc.) PLR2C (Sliders 2 pcs.) Standard Slider 1pc. + Clamper 1pc. PLR2HC (Sliders 2 pcs.)	25	160	2					
		240	3					
		320	4					
		400	5					
		480	6					
		560	7					
		640	8					
		720	9					
		800	10					
		880	11					
		960	12					
		1040	13					
		1200	15					

■**Load Rating**



No.	25			
Load Direction	Pa	Pb	Pc	Pd
Static Load Rating	200N	100N	100N	50N
Dynamic Load Rating	80N	30N	20N	10N
Clearance (mm)	0		0	

* Values above are for one slider.
* Allowable Moment Load (N·cm)=Load Ratingx30% (Reference Value)
* Clearance values are at the time of shipping.
*Load-induced ball bearing elastic deformation may increase preload more than 0. For load and displacement information, please access our web site.

Order Example

Part Number	-	L
PLRH25	-	640
PLRC25	-	640

Days to Ship

-☐ Cells: **6 Days** P.87

-Other than listed on the left: **8 Days**

Price

■**Volume Discount** (Round down to one Cent) P.87

Quantity	1~5	6~9	10~20
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

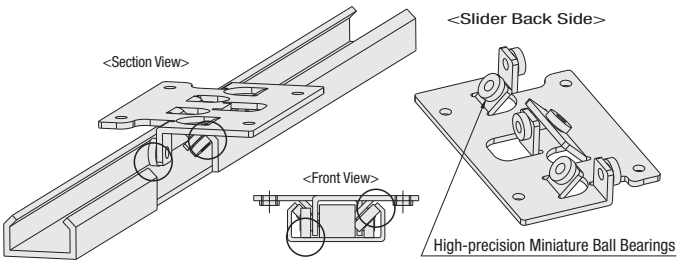
<PLRC · PLR2C · PLR2HC with a Clamper>
Slider position can be easily kept manually by just pushing rail side surfaces with clamper screws. With securing torque of 0.2Nm, position-keeping force of 1.8kg (reference value) is attained.
(In the event that securing torque exceeds 0.2N·m, resin screw tip can deform.)
*When external force more than retaining force is applied, retaining position will change.

<Features>
Low-cost preload is realized with original preload structure and high-precision press technology, although it was difficult for conventional products.
Compared with conventional products, this enables lighter load and smoother transfer and positioning guide performance.

<Structure>
This adopts a slider equipped with original triangular supporting structure, using 6 high-precision ball bearings.
All products are shipped with its rail and slider clearances adjusted, and preload applied.

<Cautions>
When using in wall mounting arrangements, please properly place work piece so that no moment load is applied on the slides that may cause damages.
To use linear rails in vertical or inclined states, provide them with external structures to prevent blocks from falling off.

■**Structure**



■**Maintenance (Grease Application)**
Grease forms oil film on the outer ring of bearings and internal rail surfaces to prevent rail wear.
Please lubricate rail interior surfaces (bearing running surface) with urea-based grease meeting usage conditions, as needed.
Preloaded linear rail type is shipped with rails lubricated.
When at a low speed and for low precision applications, this can be used with no grease applied.

Simplified Slide Rails
-Aluminum · With Ball Bearing-

Load Rating: 79N/pc.

Price Reduction

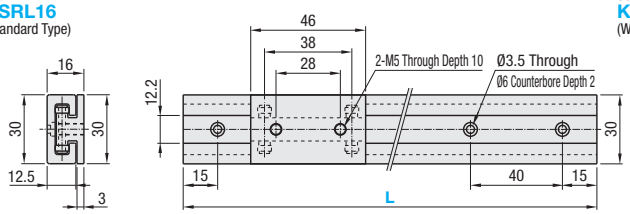
CAD DATA

Features: Made of aluminum and helps in weight savings.

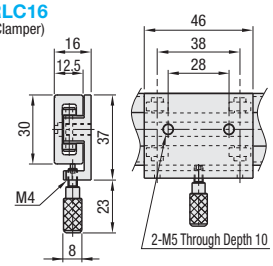


	Type			Part	Material		Surface Treatment
	Set (Slider 1 pc. + Rail 1 pc.)		Rail				
	Standard	With Clamper					
(No Stopper)	KSRL	KSRLC	KSRLR	Slider	(1) Aluminum Alloy		Hard Alumite Treatment (p.283)
					(2) Polyacetal		-
				Rail	Aluminum Alloy		Hard Alumite Treatment (p.283)
(With Stopper)	KSRLST	KSRLCST	-	Stoppers	MC Nylon		-
				Clamper	Thread	1.4301/X5CrNi18-10	-
					Tip	Polyacetal	-

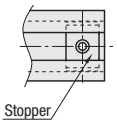
Set
KSRL16
(Standard Type)



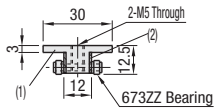
Set
KSRLC16
(With Clamper)



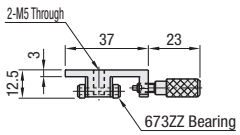
Set with Stopper
KSRLST16
(Standard Type)
KSRLCST16
(With Clamper)



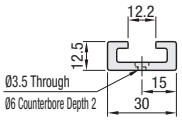
Slider (Standard Type)



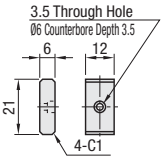
Slider (With Clamper)



Rail
KSRLR16



Stopper Parts

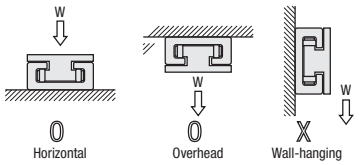


Use in applications where guides are subjected to moment load is not recommended.
For rail installation, please use hexagon low-head socket screws P.2 -189

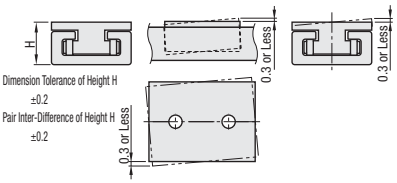
KSRLST and KSRLCST (with stoppers) includes 2 stoppers each.
Fasten the stopper together with the rail.

Part Number Type	No.	Selectable L	Installation Holes	Load Rating N (kgf) Slider 1 pc	€ Unit Price KSRL	KSRLST	KSRLC	KSRLCST	KSRLR	Additional Sliders Addable Qty. (No Stopper)	(With Stopper)
Set Standard KSRL (With Stopper) KSRLST	16	70	2	79 (8)						-	-
		110	3							1	
		150	4							1~2	1~2
		190	5							1~3	
		230	6								1~3
		270	7								
		310	8							1~5	1~4
		350	9							1~6	1~5
		390	10							1~7	1~6
		430	11							1~8	1~7
		470	12							1~9	1~8
With Clamper KSRLC (With Stopper) KSRLCST		510	13							1~10	1~9
		550	14								
		590	15								1~10
		630	16								
		670	17								
		710	18								
		750	19								
Rail Only KSRLR		790	20								
		830	21								
		870	22								
		910	23								
		950	24								
		990	25								
		1030	26								

Load Direction
Please install the rail in horizontal or overhead position as shown below.
Wall-hanging is not applicable.



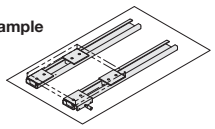
Accuracy Standards



Order Example

Part Number	-	L
KSRL16	-	310 (Set)
KSRLC16	-	910 (Set with Clamper)
KSRLST16	-	390 (Set with Stoppers)
KSRLR16	-	630 (Rail Only)

Example



<KSRLC with Clamper>
Easy manual positioning can be done by pressing the side of the rail with a screw for clamp. Retaining force is 1.8kg (reference value). (Tightening torque is 0.2N·m. In the event that tightening torque exceeds 0.2N·m, screw tip can be broken.)

*When external force more than retaining force is applied, retaining position will change.
*To use linear rails in vertical or inclined states, provide them with external structures to prevent blocks from falling off.

Days to Ship
8 Days
Express A | 8,00 EUR/ piece P. 88
A Express Charge of 0,22 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~14	15~19	20~29
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - L - (S / C)
KSRL16 - 550 - S1

Alterations		Code	Spec.	Price Adder
Additional Sliders	Standard Sliders are added. Slider	S	Please specify the no. of additional sliders after S and C. Please refer to the price list for maximum quantity of additional sliders that can be added.	Added Qty. x 25,50
	With Clamp Slider	C	Added sliders are the same model size as that of the original model number. When purchasing 50 or more identical sliders at a time, please request for quotation. Not applicable for ordering rails by a single unit.	Added Qty. x 30,50

Selection Example

Added Slider Quantity		Order Code	Slider Total No.
Standard Sliders are added	With Clamp		
5	0	KSRL16-550-S5	6
1	2	KSRL16-550-S1-C2	4

Add. Spec. Simplified Slide Rails Load Rating: 380, 460N/pc

-Stainless Steel · With Ball Bearing, With Clamp-

Price Reduction Up to 4%

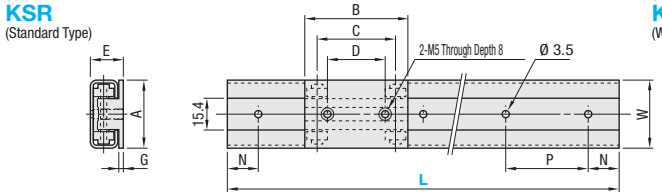
CAD Data

Features: The products are made of stainless and excellent in corrosion-resistance.

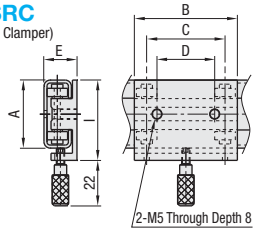


	Type			Part	Material
	Set (Slider 1 pc. + Rail 1 pc.)		Rail		
	Standard	With Clamper			
(No Stopper)	KSR	KSRC	KSRR	Slider	1.4301/X5CrNi18-10
				Rail	1.4301/X5CrNi18-10
(With Stopper)	KSRST	KSRCST	-	Stoppers	MC Nylon
				Clamper Screw	1.4301/X5CrNi18-10

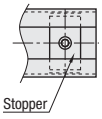
Set
KSR
(Standard Type)



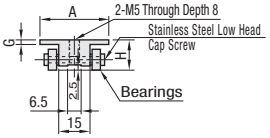
Set
KSRC
(With Clamper)



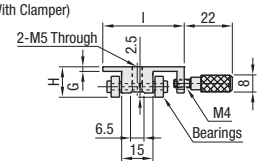
Set with Stopper
KSRST (Standard Type)
KSRCST (With Clamper)



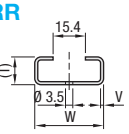
Slider (Standard Type)



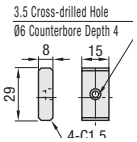
Slider (With Clamper)



Rail
KSRR



Stopper Parts



Use in applications where guides are subjected to moment load is not recommended.
For rail installation, please use hexagon low-head socket screws P.2 -189

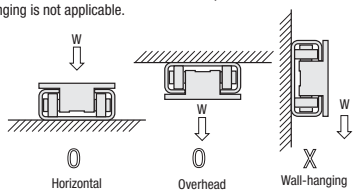
KSRST and KSRCST (with stoppers) include 2 stoppers each.
Fasten the stopper together with the rail.

No.	Slider								Rail					
	A	B	C	D	E	G	H	I	W	P	N	(T)	V	Bearing
13	32	40	30	20	13	1.8	11.8	38	32	50	10	10.7	1.2	SUS693ZZ Bearing
16	33	50	38	28	16	2.2	14.55	39	33	40	15	13.3	1.5	SUS623ZZ Bearing

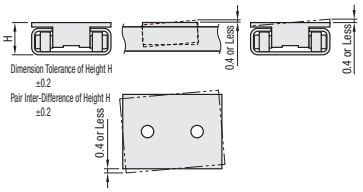
Part Number Type	No.	Selectable L	Installation Holes	Load Rating N(kgf) Slider 1 pc	€ Unit Price KSR	KSRST	KSRC	KSRCST	KSRR	Additional Sliders Addable Qty. (No Stopper)	(With Stopper)
Set Standard KSR (With Stopper) KSRST / With Clamp Type KSRC (With Stopper) KSRCST / Rail Only KSRR	13	70	2	380 (39)						-	-
		120	3							1	
		170	4							1~3	1~2
		220	5							1~4	1~3
		270	6							1~5	1~4
		320	7							1~6	1~5
		370	8							1~8	1~7
		420	9							1~9	1~8
		470	10							1~10	1~9
		520	11								1~10
		570	12								
		620	13								
		670	14								
		720	15								
		770	16								
	16	70	2	460 (47)						-	-
		110	3							1	
		150	4								
		190	5							1~2	
		230	6							1~3	1~2
		270	7							1~4	1~3
		310	8							1~5	1~4
		350	9								
		390	10							1~6	1~5
		430	11							1~7	1~6
		470	12							1~8	1~7
		510	13							1~9	1~8
		550	14								
		590	15							1~10	1~9
		630	16								1~10
		670	17								
		710	18								
		750	19								
		790	20								
		830	21								
		870	22								
		910	23								
		950	24								
		990	25								
		1030	26								

Load Direction

Please install the rail in horizontal or overhead position as shown below.
Wall-hanging is not applicable.



Accuracy Standards



<With Clamper>
Easy manual positioning can be done by pressing the side of the rail with a screw for clamp.

Retaining Force (Reference Value)	
13	3.9kg
16	5.2kg

The value of retaining force is that obtained when Tightening Torque is 0.3Nm.

* When external force more than retaining force is applied, retaining position will change.
* When installing a simplified linear rails on vertical position or slanted position, use a device to avoided a fall of a slider.

Order Example

Part Number	-	L
KSR13	-	520 (Set)
KSRST16	-	510 (With Stopper)
KSRR16	-	630 (Rail Only)

Days to Ship

8 Days — Express A 8,00 EUR/piece P. 88

A Express Charge of 0,22 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - L - (S / C)
KSR16 - 550 - S1

Alterations		Code	Spec.	Price Adder	
Additional Sliders	Standard Sliders are added. Slider	S	Please specify the no. of additional sliders after S and C. Please refer to the price list for max. quantity of additional sliders that can be added.	No. 13	Added Qty. x 30,50
			Selection Example	No. 16	Added Qty. x 32,00
	With Clamp Slider	C	Added sliders are the same model size as that of the original model number. When purchasing 50 or more identical sliders at a time, please request for quotation. Not applicable for ordering rails by a single unit.	No. 13	Added Qty. x 42,50
				No. 16	Added Qty. x 45,00

Added Slider Qty.		Order Code	Slider Total No.
Standard Sliders are added.	With Clamp		
5	0	KSR16-550-S5	6
1	2	KSR16-550-S1-C2	4

Simplified Slide Rails

Load Rating: 49 ~ 99N/pc.

-Aluminum · With Ball Bearing / Quick Retention Type-

Price Reduction
Up to 4%

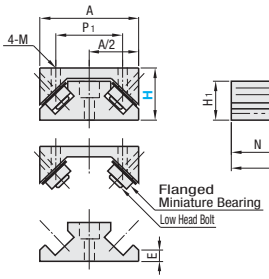
CAD Data

Features: Aluminum is used to enable weight reduction measures. Sliders are Four Mounting Screw Type.



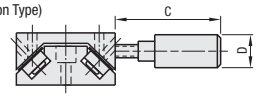
Type	
Set (Block 1pc. + Rail)	Rail
JKSG (Standard Type)	JKSGR
JKSC (Quick Retention Type)	

Set
JKSG
(Standard Type)



Rail Only
JKSGR

Set
JKSC
(Quick Retention Type)



Part		Material	Surface Treatment
Block		Aluminum	Hard Alumite Treatment (p.283)
Rail		Aluminum	Hard Alumite Treatment (p.283)
Screw for Tentative Lock	Thread	Stainless Steel	-
	Tip	Polyacetal	-

※Use in applications where guides are subjected to moment load is not recommended.

Part Number Type		H	Block Dimensions A	B	P1	P2	M	C	D	Guide Rail Dimensions H1	E	dxGxh	N	P	Load Rating N(kgf) Per Block
Set Standard Quick Retention Type	JKSG JKSC	10	20	30	13	13	3	24	6	7.5	1.8	3.5x6x4	7.5	40	49 (5)
		13	23	30	15	11	3	23.5	6	9	2.7	3.5x6x4	10	50	59 (6)
		16	30	40	19	16	3	32	10	12	3.5	3.5x6x7	15	40	79 (8)
		16A	30	40	20	14	5	32	10	12	3.5	3.5x6x7	15	40	79 (8)
Rail Only	JKSGR	24	40	60	28	22	5	29	10	16	4.5	6x9.5x10	20	60	99 (10)

Order Example

Part Number	-	L	
JKSG13	-	170	(Set)
JKSGR24	-	580	(Rail Only)
JKSC13	-	370	(Quick Retention Type)

Days to Ship: **8 Days**

Express A: 8,00 EUR/piece — P. 88

※A Express Charge of 0,22 EUR for 3 or more identical pieces.

Price

Volume Discount (※Round down to one Cent) P.88

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

H	Select-table L	€ Unit Price JKSG	JKSC	JKSGR	Slider Possible Added Qty.
10	55				-
	95				1~2
	135				1~3
	175				1~4
	215				1~6
	255				1~7
	295				1~8
	335				1~10
	375				
	415				
	455				
	495				
	535				
	575				
	615				
13	70				1
	120				1~3
	170				1~4
	220				1~6
	270				1~8
	320				1~9
	370				1~10
	420				
	470				
	520				
	570				
	620				
	670				

H	Select-table L	€ Unit Price JKSG	JKSC	JKSGR	Slider Possible Added Qty.
16 16A	70				-
	110				1
	150				1~2
	190				1~3
	230				1~4
	270				1~5
	310				1~6
	350				1~7
	390				1~8
	430				1~9
	470				1~10
	510				
	550				
	590				
	630				
	670				
	710				
24	100				-
	160				1
	220				1~2
	280				1~3
	340				1~4
	400				1~5
	460				1~6
	520				1~7
	580				1~8
	640				1~9
	700				1~10
	760				

Alterations

Type	-	L	- (S / C)
JKSG16	-	550	- S1

Alterations		Code	Spec.	Price Adder	
Additional Sliders	Standard Sliders are added. Type	S	Please specify the no. of additional sliders after S and C. Please refer to the price list for maximum quantity of additional sliders that can be added.	H10	Added Qty. x 19,50
				H13	Added Qty. x 20,00
				H16 · 16A	Added Qty. x 21,00
				H24	Added Qty. x 23,00
	Quick Retention Type	C		H10	Added Qty. x 23,50
				H13	Added Qty. x 24,00
				H16 · 16A	Added Qty. x 25,00
				H24	Added Qty. x 27,50

■Selection Example

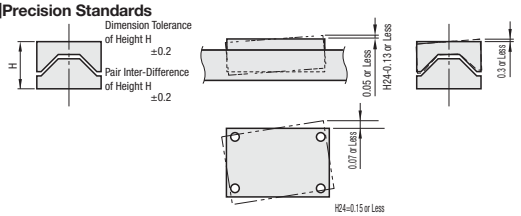
Added Slider Qty.		Order Code	Slider Total No.
Standard Sliders are added.	Quick Retention		
5	0	JKSG16-710-S5	6
1	2	JKSG16-510-S1-C2	4

※Added sliders are of the same H-dimension as specified under the model No.
※When purchasing 50 or more identical sliders at a time please request for quotation.
⊗Not applicable for ordering rails by a single unit

■Features of Simplified Slide Guides for Jigs

1. Linear mechanisms such as simplified jigs can be built at an affordable price.
2. As many blocks and rails can be added as necessary.
3. Common usage is possible as Miniature Linear Guides are in the same height(H), length(L) and installation pitch (N and P).
   However, for H13 Type, P=50 (For Miniature Slide Guides, P=25).
4. Both blocks and rails are made of aluminum (Anodized) to realize weight savings.

■Precision Standards

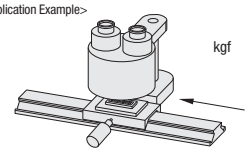


■Quick Retention Type (JKSC)

Please use for retaining horizontally-placed Simple Linear Guide at a specified position (Usage Example: Quick positioning for inspected work piece).

H	Retention Force (kgf)
10	0.5
13	0.5
16	1.0
16A	1.0
24	1.2

<Application Example>



* Refer to the table to the left for retention force (reference values).
  Retaining position alters when external force larger than the retaining force is applied.
* To use Simplified Linear Guides in vertical or inclined arrangements, use additional external structures to prevent rails from falling
* Retaining force (reference value) is the value when quick retention type block fixing screw tightening force is set to 0.1N · m. If tightening force exceeds 0.1N · m, it could cause breakage of screw tip.

Simplified Slide Rails

-Steel · With Ball Rollers-

Load Rating: 68, 147N/pc.

CAD Data

Features: Linear Rails Economical Type with carbon steel utilized



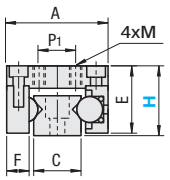
RoHS

Part	Material	Surface Treatment
Block	1.1191/C45E	Iron Oxide Black Film
Rail	1.1191/C45E	Iron Oxide Black Film*
Ball	1.4125/X105CrMo17	-
Mounting Screws	1.7220/34CrMo4	Iron Oxide Black Film

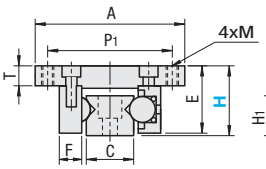
* Except Sliding Contact Surface

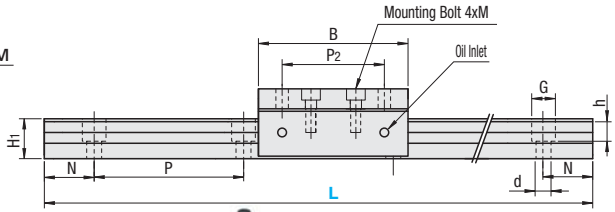
Set
(Block 1pc. + Rail)

BJKSG
(Standard Type)



BJKSW
(Wide Type)



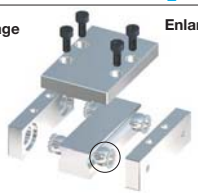


BJKR

Rail Only



- Structure Image



Enlarged View in ○



Use in applications where guides are subjected to moment load is not recommended.

Part Number Type	H	Block Dimensions A Standard Sliders are added.	A Wide	B	T	E	F	P1 Standard Sliders are added.	P1 Wide	P2	M	Guide Rail Dimensions H1	C	dxGxh	N	P	Installation Low Head Screws	Load Rating N(kgf) Block Per pc
Set Standard **BJKSG** Wide Type **BJKSW** Rail Only **BJKR**	16	30	44	44	4	15	6	13	37	34	3	9	16	4.5x8x5.5	15	40	M3x6	68 (7)
	20				8	19											M3x8	68 (7)
	24	41	60	60	4	23	9	15	50	41	4	16	19	6x9.5x9	20	60	M4x6	147 (15)
	28				8	27					5						M4x8	147 (15)

Order Example

Part Number	-	L	
BJKSG28	-	400	(Set)
BJKR24	-	160	(Rail Only)

Days to Ship

8 Days — Express A — 8,00 EUR/ piece — P. 88

A Express Charge of 0,22 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

H	Selectable L	€ Unit Price Standard BJKSG	Wide Type BJKSW	Rail Only BJKR	Slider Addition Addable Qty.
16	70				-
	110				1
	150				1~2
	190				1~3
	230				1~4
	270				1~5
	310				1~6
	350				
	390				1~7
	430				1~8
	470				1~9
	510				1~10
	550				
	590				
	630				
	670				
	710				
	750				
	790				
20	70				-
	110				1
	150				1~2
	190				1~3
	230				1~4
	270				1~5
	310				1~6
	350				
	390				1~7
	430				1~8
	470				1~9
	510				1~10
	550				
	590				
	630				
	670				
	710				
	750				
	790				

H	L	€ Unit Price Standard BJKSG	Wide Type BJKSW	Rail Only BJKR	Slider Addition Addable Qty.
24	100				-
	160				1
	220				1~2
	280				1~3
	340				1~4
	400				1~5
	460				1~6
	520				1~7
	580				1~8
	640				1~9
28	100				-
	160				1
	220				1~2
	280				1~3
	340				1~4
	400				1~5
	460				1~6
	520				1~7
	580				1~8
	640				1~9

Alterations

Part Number	-	L	-	(S / W)
BJKSG16	-	550	-	S1

Alterations		Code	Spec.	Price Adder	
Additional Sliders	Standard Sliders are added. Type	S	Please specify additional slider quantity after S and C. Please refer to the price list for maximum quantity of additional sliders that can be added.	H16	Added Qty. x 27,50
				H20	Added Qty. x 28,00
				H24	Added Qty. x 30,50
				H28	Added Qty. x 31,50
	Wide Type	W		H16	Added Qty. x 28,00
				H20	Added Qty. x 28,50
				H24	Added Qty. x 30,50
				H28	Added Qty. x 31,50

Selection Example

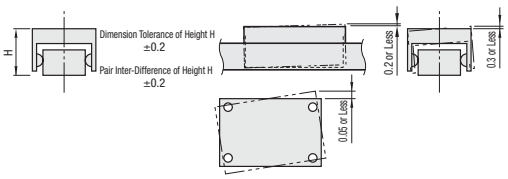
Added Slider Qty.			
Standard Sliders are added.	Wide	Order Code	Slider Total No.
5	0	BJKSG16-510-S5	6
1	2	BJKSG16-510-S1-W2	4

Added sliders are of the same H-dimension as specified under the model No.
When purchasing 50 or more identical sliders at a time please request for quotation.
Not applicable for ordering rails by a single unit

Features of Simplified Slide Guides

1. Linear mechanisms such as simplified jigs can be built at an affordable price. (Best suited for customers who are unsure about aluminum products on page 617 and 619)
2. As many blocks and rails can be added as necessary.
3. Replaceable with Miniature Slide Guides, as they share common height (H), Length (L) and mounting pitches (N,P).

Precision Standards



Simplified Slide Rails
-Aluminum, Oil Free-

Load Rating: 28 · 110N/pc.

Price Reduction
Up to 2%

CAD Data

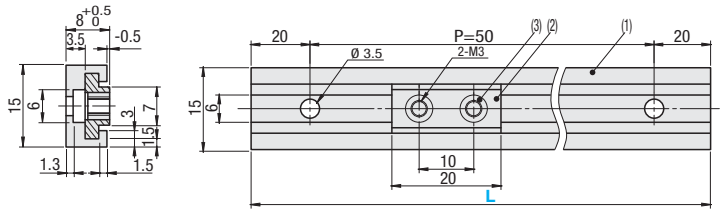
Features: Sliders are made of polyacetal resin excellent in sliding property, and is maintenance-free.

RoHS

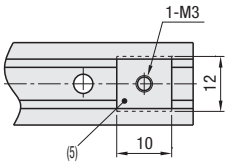


Type Set (Slider 1 pc. + Rail 1 pc.) (No Stopper)	Type Set (Slider 1 pc. + Rail 1 pc.) (With Stopper)	Part		Material	Surface Treatment
SROM (Female Thread Hole Type) SROZ (Counterbored Type)	SROMST (Female Thread Hole Type) SROZST (Counterbored Type)	(1)	Rail	Aluminum Alloy	Clear Anodize
		(2)	Slider	Polyacetal	-
		(3)		CW614N/CuZn39Pb3 equivalent	-
		(4)		Steel	-
		(5)	Stoppers	Aluminum Alloy	Clear Anodize
		(6)	Set Screw	Stainless Steel	-

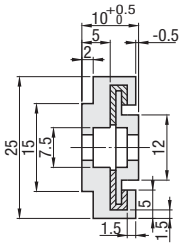
SROM15
(Female Thread Hole Type)



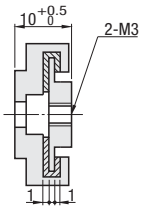
(With Stopper)
SROMST15
(Female Thread Hole Type)



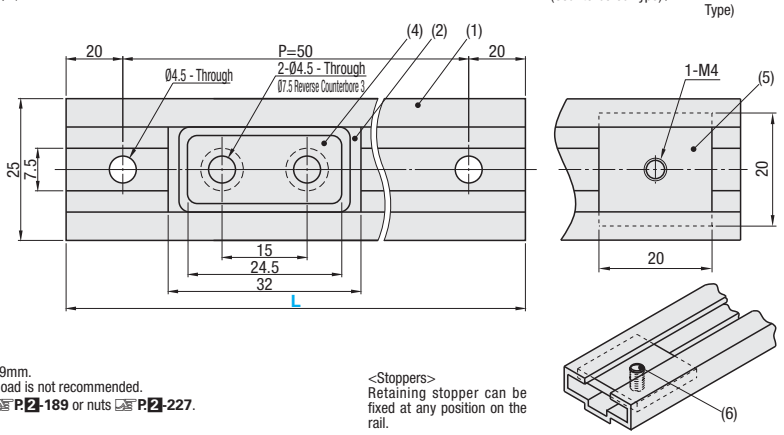
SROZ25
(Counterbored Type)



SROM25
(Female Thread Hole Type)



(With Stopper)
SROZST25 (Counterbored Type) **SROMST25** (Female Thread Hole Type)



Clearance between rail and slider is approximately 0.3 to 0.9mm.
Use in applications where guides are subjected to moment load is not recommended.
For installation, use hexagon socket low head cap screws P.2-189 or nuts P.2-227.

<Stoppers>
Retaining stopper can be fixed at any position on the rail.

Part Number Type	No.	L	Holes	Load Rating	Maximum Allowable Speed	€ Unit Price SROM15	SROM25	SROZ25	SROMST15	SROMST25	SROZST25
Female Thread Hole SROM (No Stopper) SROMST (With Stopper) / Counterbored SROZ (No Stopper) SROZST (With Stopper)	15	90 / 140	Hole Qty.= (L-40)/50 +1	No.15 is 28N No.25 is 110N ** It varies depending on conditions.	0.85m/sec						
		190 / 240									
		290 / 340									
		390 / 440									
		490 / 540									
	25	590 / 640									
		690 / 740									
		790 / 840									
		890 / 940									
SROZ and SROZST are only applicable for No.25.		990 / 1040									

Order Example

Part Number	-	L
SROM15	-	1040
SROZ25	-	540

Days to Ship

8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR is applied for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	L	-	(T / Z)
SROM25	-	540	-	T2

Alterations		Code	Spec.	Price Adder	
Additional Sliders	Female Thread Hole Type	T	Please specify additional slider quantity after T and Z. ■Selection Example	No.15	Added Qty. x 5,20
	Counterbored Hole Type	Z	Added Slider Qty. (Female Thread Hole / Counterbored Hole / Order Code / Slider Total No.): 5 / 0 / SROM25-540-T5 / 6; 1 / 2 / SROM25-540-T1-Z2 / 4. Added sliders are the same model size as that of the original model number. No.15 L≥20 x Total Quantity of Sliders; No.25 L≥32 x Total Quantity of Sliders. Possible to add up to 10 pcs.	No.25	Added Qty. x 8,50
				No.25	Added Qty. x 8,50

Roller Slide Rails

Load Rating: 80 · 150N/pc.

CAD Data

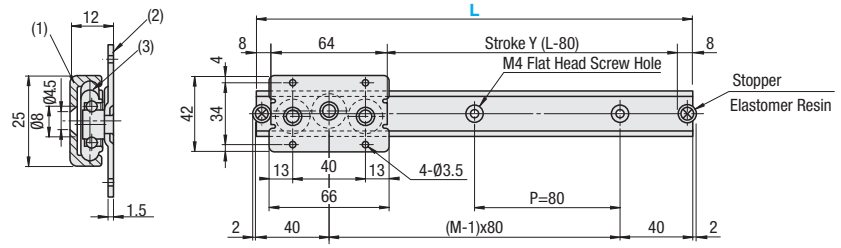
■**Features:** No.25 is maintenance-free and low-noise. No.40 enables relatively smooth sliding with little vibration.



Type			Part		Ⓜ Material	Ⓢ Surface Treatment
Set	Slider	Rail				
RSR25 (Slider 1 pc.) RS2R25 (Sliders 2 pcs.) RS3R25 (Slider 3 pcs) RS4R25 (Slider 4 pcs.)	RSRS25	RSRR25	(1)	Rail	Aluminum Alloy	Clear Anodize
			(2)	Slider Plate	1.4301/X5CrNi18-10	-
			(3)	Roller	Polyacetal	-
RSR40 (Slider 1 pc.) RS2R40 (Sliders 2 pcs.) RS3R40 (Slider 3 pcs) RS4R40 (Slider 4 pcs.)	RSRS40	RSRR40 RSRT40 (Jointed Rail)	(1)	Rail	1.0330/DC01	Trivalent Chromate Plating
			(2)	Slider Plate	1.0330/DC01	Trivalent Chromate Plating
			(3)	Roller	JIS SMF5040 ~C43	-

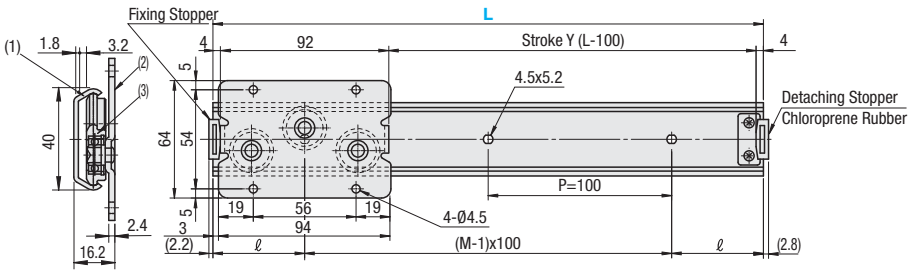
RSR25 Set (Slider 1 pc.)
RS2R25 (Sliders 2 pcs.)
RS3R25 (Slider 3 pcs)
RS4R25 (Slider 4 pcs.)

Slider Only
RSRS25
Rail Only
RSRR25

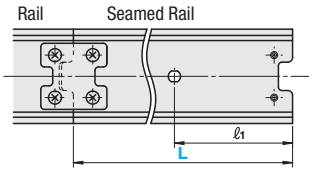


RSR40 Set (Slider 1 pc.)
RS2R40 (Sliders 2 pcs.)
RS3R40 (Slider 3 pcs)
RS4R40 (Slider 4 pcs.)

Slider Only
RSRS40
Rail Only
RSRR40



Connecter Rail
RSRT40



With connecting brackets and screws
The stopper is screw mounted, and can be detached.

Part Number Type	No.	L Selectable	No. of Mounting Holes M	ℓ	Rail Mass (g)	€ Unit Price RSR25	RS2R25	RS3R25	RS4R25	RSRR25
Set RSR RS2R RS3R RS4R Rail RSRR	25	160	2	40	32					
		240	3	40	48					
		320	4	40	64					
		400	5	40	80					
		480	6	40	96					
		560	7	40	112					
		640	8	40	128					
		720	9	40	144					
		800	10	40	160					
		880	11	40	176					
		960	12	40	192					
		1040	13	40	208					
		1200	15	40	240					

Part Number Type	No.	L Selectable	No. of Mounting Holes M	ℓ	Rail Mass (g)	€ Unit Price RSR40	RS2R40	RS3R40	RS4R40	RSRR40
Set RSR RS2R RS3R RS4R Rail RSRR	40	300	3	50	400					
		350	4	25	440					
		400	4	50	480					
		450	5	25	520					
		500	5	50	560					
		550	6	25	590					
		600	6	50	630					
		650	7	25	670					
		700	7	50	700					
		750	8	25	740					
		800	8	50	770					
		900	9	50	850					
		1000	10	50	920					
		1200	12	50	1070					
		1500	15	50	1280					
		1800	18	50	1490					

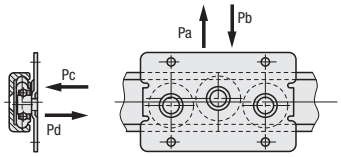
Part Number Type	No.	Slider Mass (g)	€ Unit Price
Slider Only RSRS	25	40	
	40	170	

Part Number	L	No. of Mounting Holes M	ℓ1	Rail Mass (g)	€ Unit Price
Connecter Rail RSRT40	800	8	50	600	

■**Features**

Newly adopted Roller Bearings (grease filled) allow low-noise motion.

Load-induced elastic deformation of Ball Bearings may increase clearance.



■**Load Rating (N/2pcs.)**

Type No.	25				40			
Load Direction	Pa	Pb	Pc	Pd	Pa	Pb	Pc	Pd
Static Load Rating	120N	240N	100N		250N	500N	165N	
Dynamic Load Rating	40N	80N	30N		75N	150N	50N	
Clearance (mm)	0.1 or less		0.15 or less		0		0	

<Cautions>When using in wall mounting arrangements, please properly place work piece so that no moment load is applied on the slides that may cause damages.

* The above values are for one slider.

Order Example

Part Number	-	L
RSR25	-	640
RSRR40	-	800
RSRS25		

Days to Ship

8 Days

Express**A** 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR is applied for 3 or more identical pieces.

Price

■**Volume Discount** (Round down to one Cent) P.88

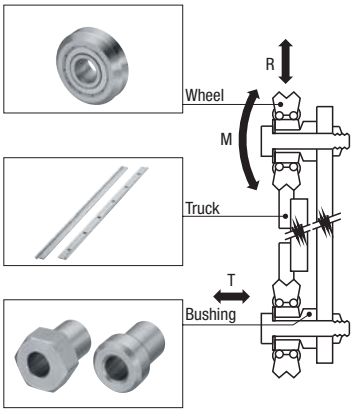
Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

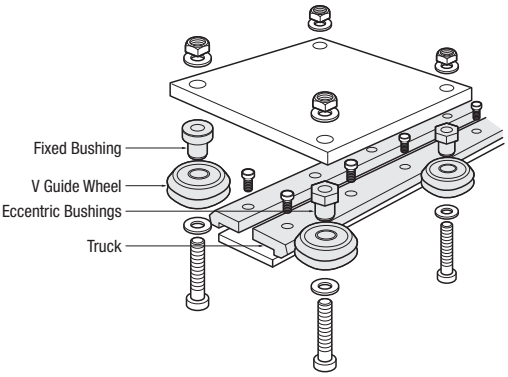
For orders larger than indicated quantity, please request a quotation.

V Guides System Overview

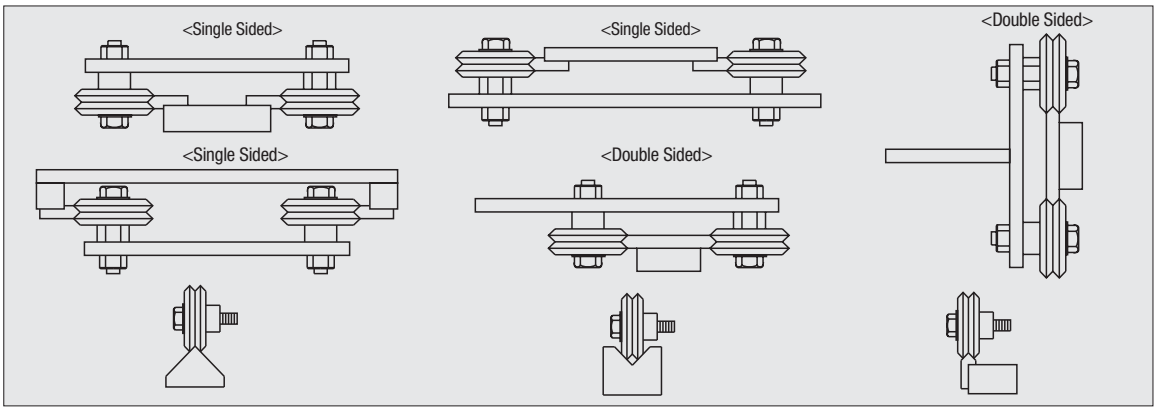
-90° Type-

■V Guide System Structure

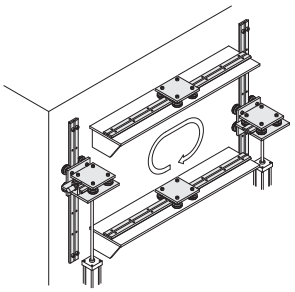


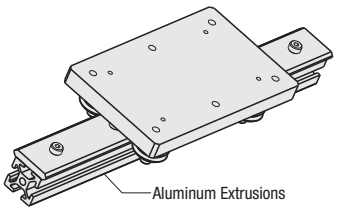


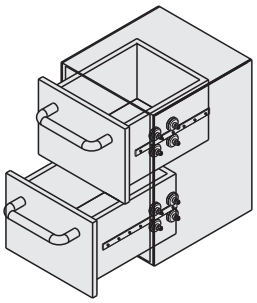
■Wheel-Rail Combination Examples



Example



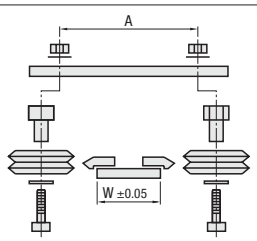




■Functions and Features

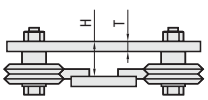
1. Bearing and V groove (90°) are integrated in a single unit.
2. When using 1-Edged Tracks, carriage size can be set freely by adjusting the distance between trucks.
3. When using a Double Edged Track, a system can be structured with only one Track.
4. As the wheel circumference is V shaped, they have wiping effect to clean up automatically while rotating on the track. Lubricating the track sliding surface with grease makes for longer operational life.
5. Inch Sizes

■Mounting Dimensions



Unit: mm

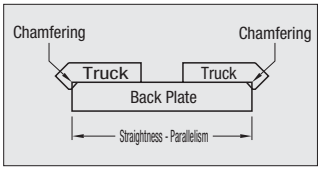
No.	A
1	2x11.104+W
2	2x17.450+W
3	2x25.399+W



Unit: mm

No.	H
1	10.787+T
2	12.790+T
3	18.567+T

Adjustment Method



1. The accuracy of this system depends on the straightness and parallelism of the support (back plate) on which the track rails are mounted.
   The corners of the back plate to which a track rail is mounted must be chamfered 0.5mmx0.5mm.
   Straightness of the track rail: Follow the back plate.
   When mounted on precision back plate, ±0.05
2. When jointing parallel track rails, give a slight offset to the joint locations. This enables the wheels to travel smoothly over the joints.
3. As the circumference of the wheel is V-shaped, the wheel makes wiping effect when it rotates on the track rail. Therefore, it automatically cleans itself.
4. Greasing on the sliding face of the track rails extends their service life.
5. Fixed bushings determine guide system alignment. Main load must be applied on fixed bushings.
6. Adjust the eccentric bushing by rotating so that the wheel travels on the track rail smoothly, then tighten.

Load Calculation

Calculate the load factor (LF) of the wheel to which the biggest load is applied.
Select the wheel whose load factor is less than 1.

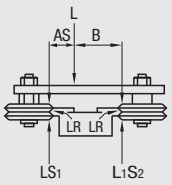
$$LF=\frac{LS}{LSmax}+\frac{LR}{LRmax}$$

LF=Load Factor
LSmax=Maximum Thrust Load
LRmax=Maximum Radial Load
LS=Thrust Load applied to wheel (N)
LR=Radial load applied to wheel (N)

<Calculation Example>

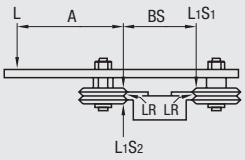
When load applied between the wheels

$LS_1=\frac{LxB}{A+B}$
$LS_2=L-LS_1$
(Ex.) L=500 (N) A=40 (mm)
B=60 (mm)
$LS_1=\frac{500x60}{40+60}=300$ (N)
$LS_2=500-300=200$ (N)



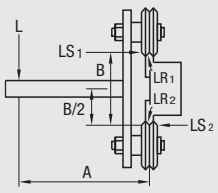
When load applied outside the wheels

$LS_1=\frac{LxA}{B}$
$LS_2=L+LS_1$
(Ex.) L=500 (N) A=60 (mm)
B=40 (mm)
$LS_1=\frac{500x60}{40}=750$ (N)
$LS_2=500+750=1250$ (N)



When radial and thrust load are combined

$LS_1=LS_2=\frac{LxA}{B}$
$LR_1=L+LS_1$
$LR_2=LS_2$
(Ex.) L=500 (N) A=60 (mm)
B=100 (mm)
$LS_1=LS_2=\frac{500x60}{100}=300$ (N)
$LR_1=500+300=800$ (N)



Life Calculation

Calculate life of the system and confirm the validation of size selection.

$$Life\ (km)=\frac{Lc}{(LF)^3}xAf$$

Lc=Life Span Constant
Af= Adjustment Coefficient
LF=Load Factor

<Calculation Example>
When using BVGH3 under the conditions of LS=500, (N) LR=1000 and (N) Af=1

Load Factor $LF=\frac{500}{1701}+\frac{1000}{5900}=0.46$

$Life(km)=\frac{130}{(0.46)^3}x1=1335km$

* For LRmax and LSmax, please refere to **P.623**

Lc = Life Constant

Wheel Size	Lc (km)
1	55
2	87
3	130

Af= Adjustment Coefficient	Application Conditions
1.0-0.7	Clean, Low Speed, Low Shock, Light Load
0.7-0.4	Medium Level Contamination, Medium Level Shock, Medium Load, Vibration
0.4-0.1	Severe Contamination, High Level Acceleration, Heavy Load, Vibration, High Cycle

NEW

V Guide
-90° Type Units / Wheels-

Price Reduction
Up to 3%

CAD Data

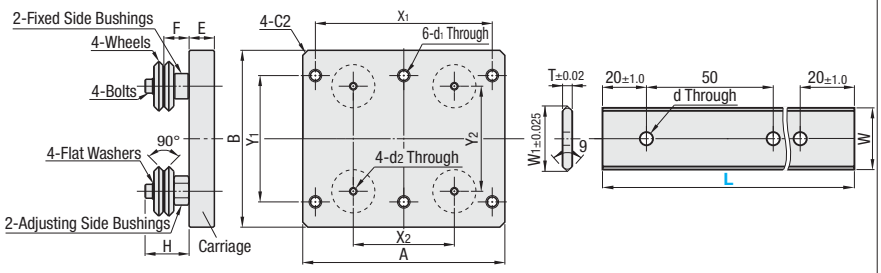
■90°Type V Guide Unit

RoHS



Type				Material	Surface Treatment	Hardness
Set	1 - Carriage	BVGU	Carriage	Plate: EN AW-5052/AlMg2,5	Black Anodize	-
	2 - Carriage	BV2GU	Rail	(P.624)		

(Carriage) (Rail)



A Carriage and Rail are provided as a set.
W1 is the dimension at the intersection of 90°. (Both ends have machined)

Hole Qty.=$\left(\frac{L-40}{50}\right)+1$

Part Number Type	No.	L 50mm Increment	W	W1	d	A	B	X1	X2	Y1	Y2	d1	d2	E	F	H	T	Wheel	Bushing Fixed Side	Bushing Adjusting Side	Screws
BVGU (1-Carriage Set)	25	90~1740 (For L-dimension, please refer to the Price List.)	25	25.74	5.5	80	70	70	40	50	41.59	M5	M3	10	10	17.5	4.5	BVGH1	BVGBS1-C	BVGBS1-E	CB3-22
BV2GU (2-Carriage Set)	25L		25	25.74	5.5	120	70	100	80	50	41.59	M5	M3	10	10	17.5	4.5				
	44		44	44.74	7	120	105	100	80	80	70.14	M6	M6	10	12	24.5	6	BVGH3	BVGBS2-C	BVGBS2-E	CB6-25

Order Example: Part Number BVGU25 - L 840

Days to Ship: 8 Days

A, X1 and X2 of No. 25L are larger than those of No.25.

Price

■Volume Discount (Round down to one Cent) P.88

Quantity	1~9	10~12
Rate	€ Unit Price	5%

L (Selection)	€ Unit Price BVGU25	BV2GU25	BVGU25L	BV2GU25L	BVGU44	BV2GU44
90						
140						
190 / 240						
290 / 340						
390 / 440						
490 / 540						
590 / 640						
690 / 740						
790 / 840						
890 / 940						
990 / 1040						
1090 / 1140						
1190 / 1240						
1290 / 1340						
1390 / 1440						
1490 / 1540						
1590 / 1640						
1690 / 1740						

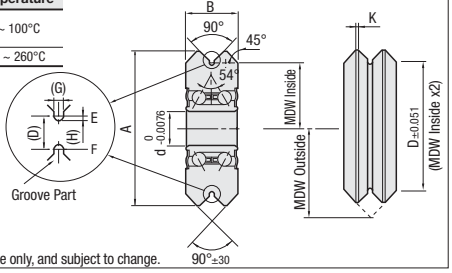
■90°Type Wheel

RoHS



Type	Material	Hardness	Seal	Heat Resistant Temperature
BVGH	1.3505/100Cr6	60~62HRC	Metal Shield	0 ~ 100°C
*BVGHS	1.4125/X105CrMo17	58~60HRC	Nitrile Rubber	
BVGHT	1.4125/X105CrMo17	58~60HRC	Metal Shield	-30 ~ 260°C

* BVGHS will be revised to the metal shield with nitril rubber at anytime.



* G and H dimensions are for reference only, and subject to change.

Part Number Type	No.	A	B	d	D Between E and F	MDW Inside	MDW Outside	(G)*	(H)*	K	Radial Load (LRmax.) (N)	Thrust Load (LSmax.) (N)	€ Unit Price
BVGH	1	19.557	7.874	4.762	15.848	7.924	11.861	1.0	0.5	0.229	1220	252	
	2	30.733	11.099	9.525	25.399	12.700	18.236	1.4	0.7		2650	625	
	3	45.718	15.874	11.999	38.099	19.049	26.974	2.0	1.0		5900	1701	
BVGHS	1	19.557	7.874	4.762	15.848	7.924	11.861	1.0	0.5		1220	252	
	2	30.733	11.099	9.525	25.399	12.700	18.236	1.4	0.7		2650	625	
	3	45.718	15.874	11.999	38.099	19.049	26.974	2.0	1.0		5900	1701	
BVGHT	1	19.557	7.874	4.762	15.848	7.924	11.861	0.508	0.254		1013	209	
	2	30.733	11.099	9.525	25.399	12.700	18.236	0.762	0.381		2200	519	
	3	45.718	15.874	11.999	38.099	19.049	26.974	0.889	0.432		4897	1412	

kgf=Nx0.101972

Order Example: Part Number BVGH3

Days to Ship: 6 Days P.87 / 2 Days

Price

■Volume Discount (Round down to one Cent) P.88

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

V Guides System

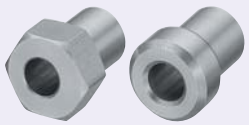
-90° Type Bushings / One Edged Trucks / Double Edged Tracks-

Price Reduction
Up to 4%

CAD Data

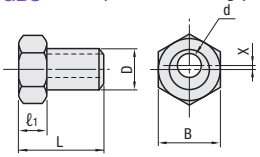
■90°Type Bushing

RoHS

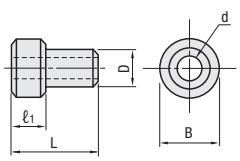


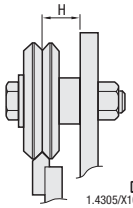
BVGBS

E(Eccentric Bushings)



C(Fixed Bushings)





M Material: 1.4305/X10CrNiS18-9

Part Number Type	No.	Specification	L	D	B	d	Tolerance	Applicable Screws	X	ℓ1	H	€ Unit Price
BVGBS	1	C	13.68	4.75	10	3	+0.014 0	M3	-	6.06	10	
		E							0.3			
	2	C	17.24	9.52	13	6	+0.018 0	M6	-	6.45	12	
		E							0.6			
	3	C	24.68	11.99	19	8	+0.022 0	M8	-	9.06	17	
		E							1.0			

Order Example: Part Number BVGBS1 - E

Days to Ship: 6 Days P.87 2 Days

Price

■Volume Discount (Round down to one Cent) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

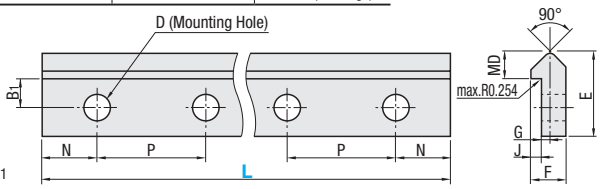
For orders larger than indicated quantity, please request a quotation.

■90° Type 1-Blade Tracks

RoHS



Type	Mounting Hole	M Material	H Hardness
BVGTNL	Available	1.0511/C40	53HRC (90° Edge)
BVGTNSL		1.4125/X105CrMo17	40HRC (90° Edge)



Hole Qty.=(L-40/50)+1

Part Number Type	No.	L 50mm Increment	E ±0.38	F ±0.38	G ±0.05	J	MD ±0.05	D	B1	N	P
BVGTNL	1	90~1790 (For L-dimension, please refer to the Price List.)	11.10	4.75	0.79	1.57	3.18	3.5	4	20	50
BVGTNSL	2		15.88	6.35		2.36	4.75	4.5	5.5		
	3		22.23	8.71		1.57	2.77	6.35	5.5	8	

■90°Type 2-Blade Tracks

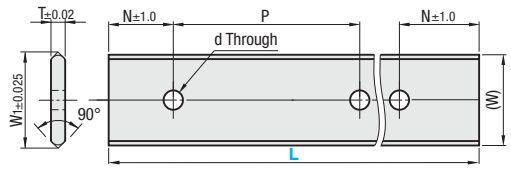
RoHS



Type	M Material	H Hardness
BVGUR	1.1191/C45E	58HRC (90° Edge)
BVGURS	1.4125/X105CrMo17	52HRC (90° Edge)

W1 is the dimension at the intersection of 90°. (Both ends have machined)

Hole Qty.=(L-40/50)+1



Part Number Type	No.	L 50mm Increment	(W)	W1	T	N	P	d
BVGUR	25	90~1740 (Please refer to the price list for L dimension)	(25)	25.74	4.5	20	50	5.5
BVGURS	44		(44)	44.74	6.0			7.0

Order Example: Part Number BVGTNL1 - L 640

Degreasing service only supports One Sided Track Type BVGTNSL with L-dimension 90 to 1190.

Days to Ship: 8 Days

Price

■Volume Discount (Round down to one Cent) P.87

Quantity	1~9	10~14
Rate	€ Unit Price	5%

Alterations

Part Number BVGTNL1 - (MTC) L MTC740

10 Days

Only applied for One Sided Track Type BVGTNL.

Alteration Code	Surface Treatment MTC		
Spec.	Electroless nickel plating is applied. ⊗Not available for Stainless Steel Type.		
Price Adder	L90~390	L440~790	L840~1190
	5,00	10,00	15,00

■1-Blade Track

L	€ Unit Price					
	BVGTNL1	BVGTNL2	BVGTNL3	BVGTNSL1	BVGTNSL2	BVGTNSL3
90 / 140 / 190						
240 / 290						
340 / 390						
440 / 490						
540 / 590						
640 / 690						
740 / 790						
840 / 890						
940 / 990						
1040 / 1090						
1140 / 1190						
1240 / 1290						
1340 / 1390						
1440 / 1490						
1540 / 1590						
1640 / 1690						
1740 / 1790						

■2-Blade Tracks

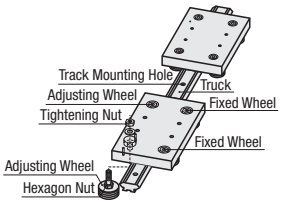
L (Selectable)	€ Unit Price			
	BVGUR25	BVGURS25	BVGUR44	BVGURS44
90 / 140				
190 / 240				
290 / 340				
390 / 440				
490 / 540				
590 / 640				
690 / 740				
790 / 840				
890 / 940				
990 / 1040				
1090 / 1140				
1190 / 1240				
1290 / 1340				
1390 / 1440				
1490 / 1540				
1590 / 1640				
1690 / 1740				

V Guides System Guide
–Millimeter Size 70° Type–

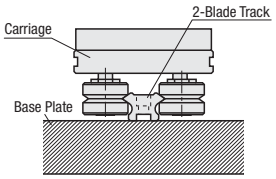
■Functions and Features

1. Bearing and V groove (70°) are integrated in a single unit.
2. When using 1-Blade Tracks, carriage size can be set freely by adjusting the distance between trucks.
3. When using 2-Blade Tracks, system can be structured with only one truck.
4. Both 1-Blade and 2-Blade Tracks have pedestals and can be attached directly to the plate.
5. Metric Sizes.

■Basic Structure



■Usage Examples



■Load Calculation

L=Load (N)
LS=Thrust load applied to wheel (N)
LR=Radial load applied to wheel (N)
A, B=Distance(mm)

When load applied between the wheels

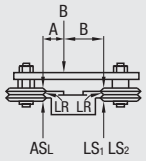
$LS_1 = \frac{LxB}{A+B}$

$LS_2 = L - LS_1$

(Ex.) L=500 (N) A=40 (mm)
B=60 (mm)

$LS_1 = \frac{500x60}{40+60} = 300$ (N)

$LS_2 = 500-300 = 200$ (N)



When load applied outside the wheels

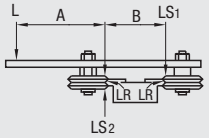
$LS_1 = \frac{LxA}{B}$

$LS_2 = L + LS_1$

(Ex.) L=500 (N) A=60 (mm)
B=40 (mm)

$LS_1 = \frac{500x60}{40} = 750$ (N)

$LS_2 = 500+750 = 1250$ (N)



When radial and thrust load are combined

$LS_1 = LS_2 = \frac{LxA}{B}$

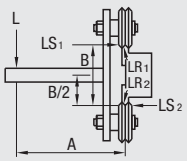
$LR_1 = L + LS_1$

$LR_2 = LS_2$

(Ex.) L=500 (N) A=60 (mm)
B=100 (mm)

$LS_1 = LS_2 = \frac{500x60}{100} = 300$ (N)

$LR_1 = 500+300 = 800$ (N)



■Load Calculation

Calculate the load factor (LF) of the wheel to which the biggest load is applied.
Select the wheel whose load factor is less than 1.

$LF = \frac{LS}{LS\ max} + \frac{LR}{LR\ max}$

LF =Load Factor
LS =Thrust Load applied to wheel
LS max =Maximum Thrust Load applied to wheel
LR =Radial Load applied to wheel
LR max =Maximum Radial Load applied to wheel

Part Number		w/o Lubrication		With Lubrication	
Type	No.	LSmax (N)	LRmax (N)	LSmax (N)	LRmax (N)
MVH MVHS MVHL MVHSL	12	22.5	45	60	120
	25	100	200	320	600
	34	200	400	800	1400

■Life Calculation

Calculate life of the system and confirm the validation of size selection.

$Life\ (km) = \frac{LC}{(LF)^3} XAf$

LF=Load Factor
LC=Basic Life
Af= Adjustment Coefficient

Part Number		LC Basic Life
Type	No.	km
MVH MVHS MVHL MVHSL	12	50
	25	70
	34	100

Af= Adjustment Coefficient	Application Conditions
1.0-0.7	Clean, Low Speed, Low Shock, Light Load
0.7-0.4	Medium Level Contamination, Medium Level Shock, Medium Load, Vibration
0.4-0.1	Severe Contamination, High Level Acceleration, Heavy Load, Vibration, High Cycle

<Calculation Example>
When using MVH-34C under the conditions of LS=100 (N), LR=200 (N) and Af=0.7

$Load\ Factor\ LF = \frac{100}{800} + \frac{200}{1400} = 0.268 \leq 1.0$

$Life(km) = \frac{100}{(0.268)^3} x0.7 = 3637km$

■System Assembly and Adjustments

1. First, assemble the components loosely with a minimum load.
2. Fully tighten the fixed wheels.
3. Next, tighten mounting nuts of adjusting wheel tentatively in order to adjust them.
4. Revolve hexagon nut in the center of adjusting wheel gradually by wrench. Do not leave margin between wheels facing each other in each pair. At the same time, adjust them to apply minimum preload to them.
5. Check if proper preload is applied by turning the wheels with fingers while track is fixed and carriage plate remains still. Although a slight resistance may be felt, the wheels should turn freely under a proper preload. Excessive preload contributes to shortened life.
6. Make adjustments and test all the adjustable wheels in the above manner, and fully tighten the wheel nuts to a prescribed torque value.
7. After adjustment, check again in the same process as 5 to make sure of proper preload.

V Guides System

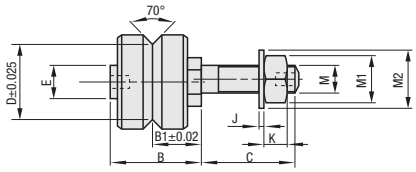
-Millimeter Size 70° Type Wheels and Bushings / 2-Blade Trucks / 1 - Blade Tracks-

■Metric Size 70° Type Wheels • Bushings

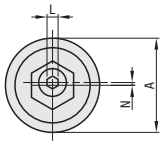
RoHS



Type	Material	Surface Hardness	Seal		Operating Temp.
MVH MVHL	1.3505/ 100Cr6	58~62HRC	No.12	Nitrile Rubber	-20°C ~ 120°C
			No. 25; 34	Metal Shield	
MVHS MVHSL	1.4125/ X105CrMo17		Nitrile Rubber		



E(Adjustment)



C(Fixed)



Part Number Type	No.	C = Fixed E = Adjustable	Applicable Rail No.	A	B	B1	C	D	E	M	M1	M2	J	K	L	N Eccentricity	O	P	Tightening Torque Nm	Thrust Load LSmax. (N)	Radial Load LRmax. (N)	€ Unit Price MVH MVHL	€ Unit Price MVHS MVHSL
MVH MVHS (C Dimension Short)	12	C	12	12.7	10.1	5.47	5.8	9.51	5	M4x0.5	7	9	0.8	2	-	-	4	7	2	22.5	45		
		E														0.5							
	25	C	25	25	16.6	9	9.8	20.27	10	M8x1.0	13	17	1	5	3	-	8	13	18	100	200		
		E														0.75							
	34	C	44	34	21.3	11.5	13.8	27.13	12	M10x1.25	17	21	1.25	6	4	-	10	15	33	200	400		
		E														1.0							
MVHL MVHSL (C Dimension Long)	12	C	12	12.7	10.1	5.47	9.5	9.51	5	M4x0.5	7	9	0.8	2	-	-	4	7	2	22.5	45		
		E														0.5							
	25	C	25	25	16.6	9	19	20.27	10	M8x1.0	13	17	1	5	3	-	8	13	18	100	200		
		E														0.75							
	34	C	44	34	21.3	11.5	22	27.13	12	M10x1.25	17	21	1.25	6	4	-	10	15	33	200	400		
		E														1.0							

(?)No adjusting hexagon groove (L) for adjusting wheel (E) No.12. (?)Thrust load and radial load values are those when lubricated. For values of no lubrication, refer to **P.625**.

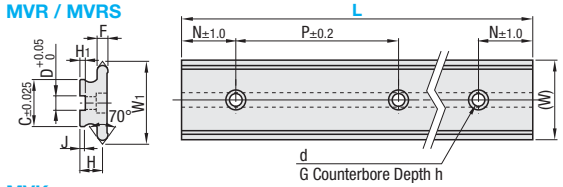
■Millimeter Size 70° Type 2-Blade Tracks / 1 - Blade Tracks

RoHS



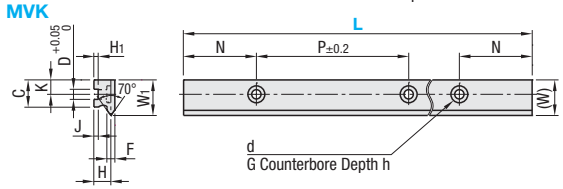
Type		Material	Hardness
2-Blade Tracks	MVR	1.3505/100Cr6	58 ~ 62HRC (70° Edge)
	MVRS	1.4028/X30Cr13J1	52HRC (70° Edge)
1 - Blade Track	MVK	1.3505/100Cr6	58 ~ 62HRC (70° Edge)

MVR / MVRS



(?)W1 is the dimension at the intersection of 70°. (Both ends have machined)
(?)Tolerance C±0.025 is applicable to only.

MVK



Part Number Type	No.	L Selection*	(W)	W1	F	H	H1	C	J	D	K	dxGxh	N	P
MVR	12	120~1020	12	13.25	3.2	6.4	1.8	8.9	1.7	4	-	3.5x6.2x3.1	15	45
	25	240~1140	25	26.58	4.93	10.2	2.5	15.4	2.6	6		5.5x10x5.1	30	90
	44		44	45.58	6.42	12.7	3	26.4	2.3	8		7x11x6.1	30	90
MVRS	12	120~1020	12	12.37	3	6.2	1.8	8.5	1.7	4		3.5x6x3	15	45
	25	240~1140	25	25.74	4.5	10	2.5	15	2.5	6		5.5x10x5	30	90
	44		44	44.74	6	12.5	3	26	2.5	8		7x11x6	30	90
MVK	12	120~1020	11	11.71	3.2	6.4	1.8	9.65	1.7	4	5.3	3.5x6.2x3.1	15	45
	25	240~1140	21	21.89	4.93	10.2	2.5	16.4	2.6	6	8.7	5.5x10x5.1	30	90
	44		29	29.89	6.42	12.7	3	20.4	2.3	8	10.7	7x11x6.1	30	90

(?)* Please refer to the price list for L dimension

Order Example

Part Number	-	Specification	-	L
MVH12	-	C		
MVRS25			-	510
MVK12			-	345

Days to Ship

- Wheels and Bushings: 6 Days P.87
- 2 Days
- Track: 8 Days

Price

- Wheels and Bushings

■Volume Discount (?)Round down to one Cent) **P.88**

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

- Track

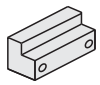
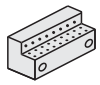
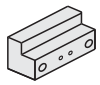
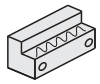
■Volume Discount (?)Round down to one Cent) **P.88**

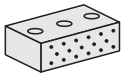
Quantity	1~9	10~14
Rate	€ Unit Price	5%

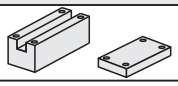
L (Selectable)	€ Unit Price MVR12	MVRS12	MVK12
120 165			
210 255			
300 345			
390 435			
480 525			
570 615			
660 705			
750 795			
840 885			
930 975			
1020			

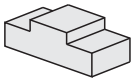
L (Selectable)	€ Unit Price MVR25	MVRS25	MVK25	MVR44	MVRS44	MVK44
240 330						
420 510						
600 690						
780 870						
960 1050						
1140						

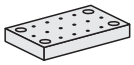
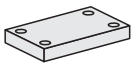
Gibs Overview

L-Gibs	Material	Type			
		Dimension Selectable		Dimension Configurable	
Standard 	1.1191/C45E	GRR	P.628	GRRF	P.629
	1.1191/C45E Hardening Electroless Nickel Plating (HV500 ~)	GRRM	P.628	GRRMF	P.629
	CC762S/CuZn25Al5 Special Solid Lubricant Embedded	GRMZ	P.628	GRMZF	P.629
	Ultra High Molecular Weight Polyethylene	GRRP	P.628	-	
With Dowel Hole 	1.1191/C45E	GRRN	P.628	-	
	1.1191/C45E Hardening Electroless Nickel Plating (HV500 ~)	GRRMN	P.628	-	
With Oil Groove 	1.1191/C45E	GRRG	P.628	-	
	1.1191/C45E Hardening Electroless Nickel Plating (HV500 ~)	GRRMG	P.628	-	

Gibs	Material	Type		
		Dimension Selectable		Dimension Configurable
	CC762S/CuZn25Al5 Special Solid Lubricant Embedded	SGRMZ	P.630	-
	1.1191/C45E	SGRR	P.630	-

Guide Blocks	Material	Type		
		Dimension Selectable		Dimension Configurable
	1.1191/C45E Hardening Electroless Nickel Plating (HV500 ~)	SGRB SGCB	P.636	-

Slide Blocks	Material	Type			
		Dimension Selectable		Dimension Configurable	
	1.1191/C45E	-		SLI	P.631
	1.1191/C45E Hardening Electroless Nickel Plating (HV500 ~)	-		SLD	P.631

Oil Free Slide Plates	Material	Thickness (Hole Shape)	Type					
			Dimension Selectable				Dimension Configurable	
			Upper-Lower Surface Ground		Upper-Lower Surface Unground		Upper-Lower Surface Unground	
	CC762S/CuZn25Al5 Special Solid Lubricant	3mm (Countersink)	STRLT	P.632	-		-	
		5mm (Countersink)	STRLU	P.632	UTW	P.634	GRPZ	P.633
		5mm (Counterbored Hole)	STRLUP	P.632	-			
		10mm (Counterbored Hole)	STRL	P.632	STW STWT	P.634		
	Multi-Layer Plastic	1mm 2.5mm	-		-		GRFZ	P.635

L-Gibs

-Steel / Steel Oil Groove / Oil Free Copper Alloy / Plastic-

Price Reduction
Up to 9%

CAD Data

■Steel



■Steel Oil Groove



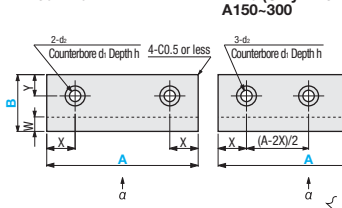
■Oil FreeCopper Alloy Type Resin



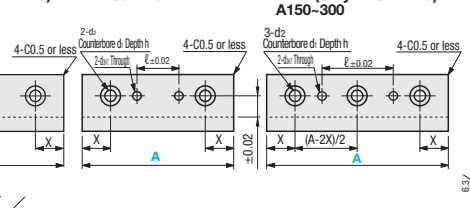
RoHS

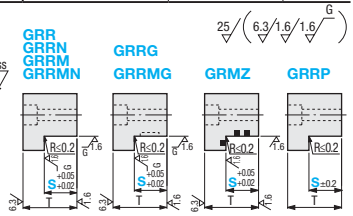
Type		Material	Surface Treatment	Hardness
Steel	GRR GRRN (With Dowel Holes)	1.1191/C45E	-	-
	GRRM GRRMN (With Dowel Holes)		Hardening Treatment Electroless Nickel Plating (Plating After Grinding)	HV500~
Steel With Oil Groove	GRRG		-	-
	GRRMG		Hardening Treatment Electroless Nickel Plating (Plating After Grinding)	HV500~
Oil Free Copper Alloy	GRMZ	CC762S/CuZn25Al5 (JIS, HBsC4 Copper Alloy previously) Special Solid Lubricant Embedded	-	-
Plastic	GRRP	Ultra High-Molecular-Weight Polyethylene	-	-

A30~120
A120 (Only when B≤15)
A150~300

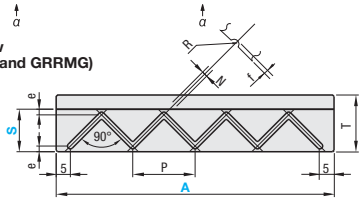


With Dowel Hole
A30~120
A120 (Only when B≤15)
A150~300





α Arrow View
(Only GRRG and GRRMG)



■Oil Groove Dimension

S	e	N	f	R
S=5	1.5	1.5	0.3	1.0
S≥8	2.0	2.0	0.5	1.25

■Oil Groove Pitch

S	5	8	10	12	15	20
P	4	8	12	16	22	32

(?)Hardening electroless nickel plated products may look slightly different in color from the image but the quality is assured.

Part Number Type	B	A Selectable	S Selectable	W	T	X	Y	d1	d2	h	d3	ℓ	€ Unit Price GRR	GRRN	GRRM	GRRMN	GRRG	GRRMG	GRMZ	GRRP
(Steel Type) GRR GRRN (With Dowel Holes) GRRM GRRMN (With Dowel Holes)	12.5	30	5	3.5	10	5	4.5	8	4.5	4.5	3	8								
		40										12								
		60										24								
		80										30								
		100										40								
		120*										60								
	15	40	5	5	10	5	5	8	4.5	4.5	4	12								
		60										24								
		80										30								
		100										40								
		120*										60								
		150										90								
(Steel Type - Oil Groove) GRRG GRRMG	20	60	8 10	5	15	7	7	9.5	5.5	5.5	5	24								
		80										30								
		100										40								
		120										60								
		150										90								
		200										140								
(Oil Free Copper Alloy Type) GRMZ	25	80	10 12 15	5	20	10	10	11	6.5	6.5	6	30								
		100										40								
		120										60								
		150										90								
		200										140								
(Resin Type) GRRP		250										190								
	30	80	12 15 20	8	25	10	10	14	9	9	8	30								
		100										40								
		120										60								
		150										90								
		200										140								
		300										240								

(?)* 3 mounting screw holes for 12.5 - 120 - 5 and 15 - 120 - 5. (?)B dimension 12.5 is for GRR,GRRM,GRRN and GRRMN only.

Order Example

Part Number	-	A	-	S
GRR20	-	100	-	10
GRRMG30	-	150	-	20

Days to Ship

- GRMZ: 6 Days P.87
- GRR / GRRP / GRRN: 8 Days
- GRRM / GRRG / GRRMG / GRRMN: 10 Days
- Express B: 8,00 EUR/piece P.88

(?)A Express Charge of 0,22 EUR for 3 or more identical pieces.

Alterations

Part Number	-	A	-	S	-	(SC)
GRR20	-	100	-	8	-	

(?)Alternation is available only for steel type.

Alteration Code	Dimension S SC
Spec.	SC=1 mm Increment Order Code SC6 (?)1≤SC≤T-2
Price Adder	5,00

Price

■Volume Discount ((?)Round down to one Cent) P.88

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

■For characteristic values of Ultra High-Molecular-Weight Polyethylene, please refer to section "Standard Ultra High-Molecular-Weight Polyethylene" in P.2-859

Gibs Configurable Type

–Steel / Oil Free Copper Alloy / Length & Screw Hole Pitch Configurable–

Price Reduction
Up to 6%

CAD Data

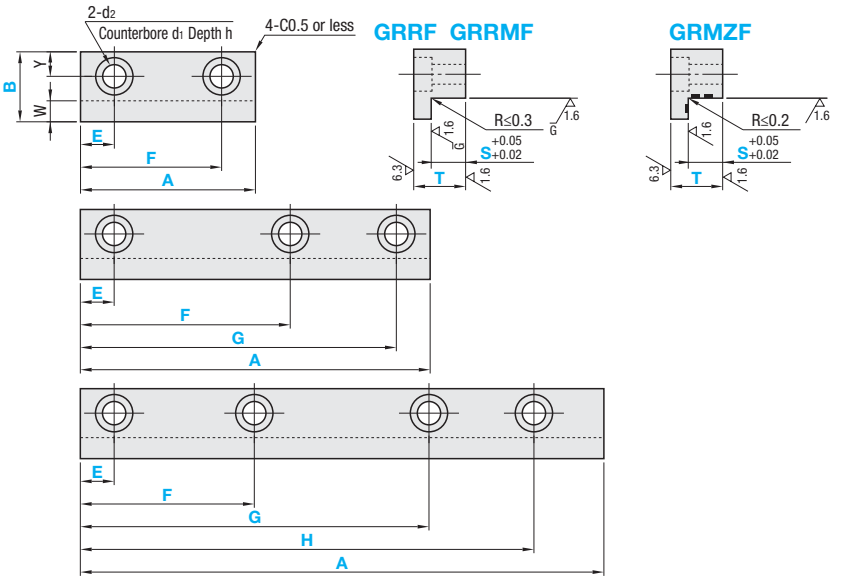
■Steel RoHS



■Oil Free Copper Alloy



Type	Material	Surface Treatment	Hardness
GRRF	1.1191/C45E	-	-
GRRMF		Hardening Electroless Nickel Plating (Plating after grinding)	HV500~
GRMZF	CC762S/CuZn25Al5 (JIS, HBsC4 Copper Alloy previously) Special Solid Lubricant Embedded	-	-



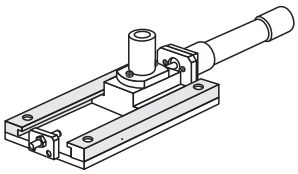
Hardening electroless nickel plated products may look slightly different in color from the image but the quality is assured.

Part Number Type	B	T Selectable	S Selectable	A Specify in 1mm Increment	Specify in 0.5mm Increment (Hole Position) E	F	G	H	W	Y	d1	d2	h
GRRF GRRMF GRMZF	15	10* 15	5 8	40 ~ 99 (95)	6.0~80.0	17.0 ~ 94.0 (89.0)	-	-	5	5	8	4.5	4.5
				100~120	6.0~100.0	26.0~114.0	-	-					
	20	15 20	5 8 10	60 ~ 99 (95)	8.0~80.0	18.0 ~ 91.0 (87.0)	-	-	5	7	9.5	5.5	5.5
				100~200	8.0~170.0	18.0~180.0	28.0~192.0	-					
	25	20 25	8 10 15	80 ~ 129 (125)	10.0~110.0	22.0 ~ 119.0 (115.0)	-	-	5	10	11	6.5	6.5
				130 ~ 179 (175)	10.0~140.0	22.0~155.0	34.0 ~ 169.0 (165.0)	-					
				180~250	10.0~180.0	22.0~200.0	34.0~220.0	46.0~240.0					
	30	25 30	10 15	100 ~ 149 (145)	12.0~120.0	24.0 ~ 137.0 (133.0)	-	-	8	10	14	9	9
				150 ~ 199 (195)	12.0~150.0	24.0~165.0	36.0 ~ 187.0 (183.0)	-					
				200 ~ 250 (300)*	12.0 ~ 180.0 (230.0)	28.0 ~ 200.0 (250.0)	44.0 ~ 220.0 (270.0)	60.0 ~ 238.0 (288.0)					

* When B=15 or T=10, 5 is only option for S. GRMZF values are indicated in ( ). A dimension of GRMZF is 5 mm increment.
*A Dimension of GRRF and GRRMF is up to 250.

Order Example: Part Number GRRF20 - T 20 - S 5 - A 175 - E 8.0 - F 95.0 - G 160.0

Example



Days to Ship - GRRF · GRRMF: 10 Days - GRMZF: 13 Days

Express C 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent) P.88

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Part Number Type	B	T	€ Unit Price A40~99 GRRF		A100~129 GRRF		A130~199 GRRF		A200~250 GRRF	
GRRF GRRMF	15	10								
		15								
	20	15								
		20								
	25	20								
		25								
	30	25								
		30								

A Dimension of GRRF and GRRMF is up to 250.

Part Number Type	B	T	€ Unit Price A40~95	A100~125	A130~165	A170~195	A200~250	A255~300
GRMZF	15	10						
		15						
	20	15						
		20						
	25	20						
		25						
	30	25						
		30						

Gibs

–Oil Free Copper Alloy / Steel–

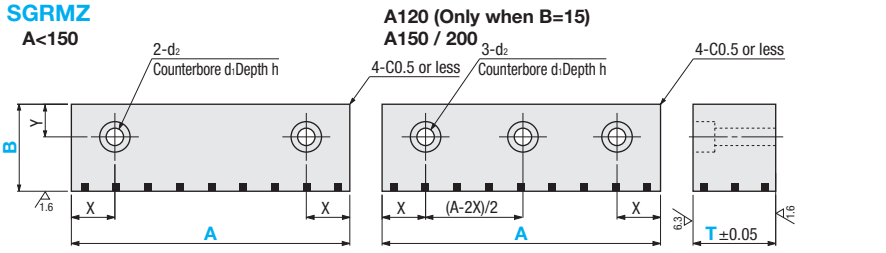
CAD Data

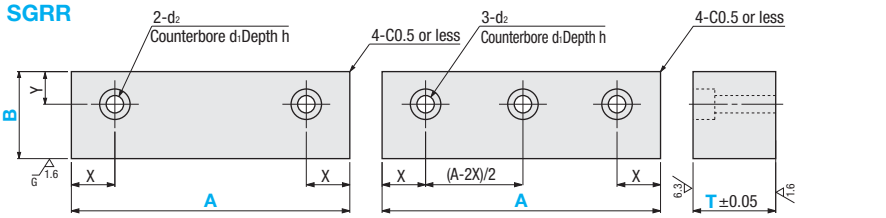
RoHS

Type	Material
SGRMZ	CC762S/CuZn25Al5 (Previous JIS, HBsC4 Copper Alloy) Special Solid Lubricant Embedded
SGRR	1.1191/C45E









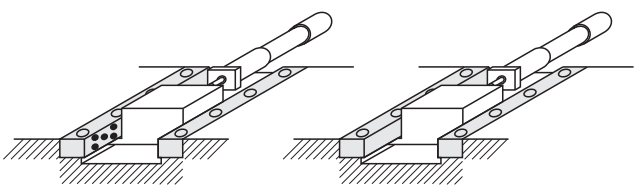
Part Number Type	B	T	A	X	Y	d1	d2	h	€ Unit Price SGRMZ	€ Unit Price SGRR
SGRMZ (Oil Free Copper Alloy)	15	10	40	5	5	8	4.5	4.5		
			60							
			80							
			100							
			120							
	20	15	60	7	7	9.5	5.5	5.5		
			80							
			100							
			120							
			150							
			200							
SGRR (Steel)	25	20	80	10	10	11	6.5	6.5		
			100							
			120							
			150							
			200							
	30	25	80	10	10	14	9	9		
			100							
			120							
			150							
			200							

Order Example

Part Number	-	T	-	A
SGRMZ20	-	15	-	120

Example

Days to Ship: 8 Days



Price

Volume Discount (Round down to one Cent) P.87

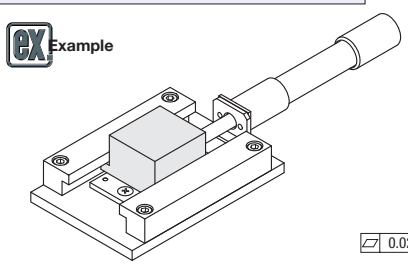
Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

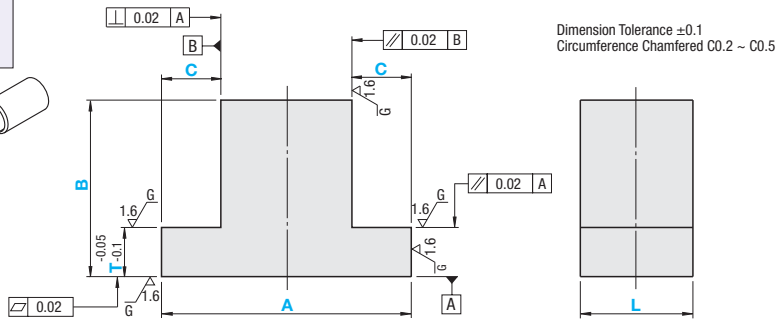
Slide Blocks



Part Number	Material	Surface Treatment
SLI	1.1191/C45E	-
SLD		Electroless Nickel Plating Hardening (Plated after grinding)







Dimension Tolerance ±0.1
Circumference Chamfered C0.2 ~ C0.5

Part Number	Specify in 1mm Increment				
	A	B	C	T	L
SLI SLD	50~150	20~80	5~60	5~15	50~150

<Machining Conditions>
5≤B-T≤60
20≤A-2C
When C>15, L≤100

Order Example

Part Number	-	A	-	B	-	C	-	T	-	L
SLI	-	A120	-	B50	-	C20	-	T10	-	L100

Price

Volume Discount (Round down to one Cent) P. 87

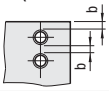
Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Days to Ship 10 Days

Part Number	A	B / L	€ Unit Price											
			20~30		31~40		41~50		51~60		61~70		71~80	
			SLI	SLD	SLI	SLD	SLI	SLD	SLI	SLD	SLI	SLD	SLI	SLD
SLI SLD	50~80	50~80												
	81~100													
	101~130													
	131~150													
	50~80	81~100												
	81~100													
	101~130													
	131~150													
	50~80	101~130												
	81~100													
	101~130													
	131~150													
	50~80	131~150												
	81~100													
	101~130													
	131~150													

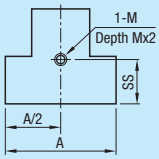
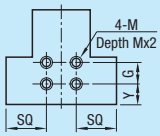
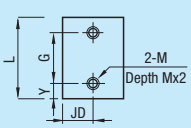
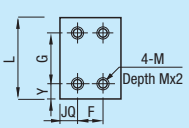
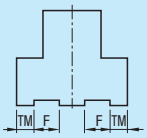
Machining Limits (Distance between Holes, Thickness between Holes and Edges)



Female Thread Hole Dia.	b (Min. Value)
3 · 4 · 5	0.8
6 · 8 · 10	1.0

Alterations

Part Number	-	A	-	B	-	C	-	T	-	L	- (SS / SQ...etc.)
SLI	-	A120	-	B50	-	C20	-	T10	-	L100	- SS15-M5

Alterations	Female Thread Hole Machining				Groove Machining
	1 Female Thread Hole on the side	4 Female Thread Holes on the side	2 Female Thread Holes on the top.	4 Female Thread Holes on the top.	Groove Machining on the bottom
					
Code		SQ	JD	JQ	TM
Spec.	SS=Specify in 1 mm Increment Order Code SS8-M5 ■Female Thread Hole Dia. Selection Dimension: Nominal Dia. 3 4 5 6 8 10	SQ · Y · G= Specify in 1mm Increment Order Code SQ12-Y15-G10-M5 ■Female Thread Hole Dia. Selection Dimension: Nominal Dia. 3 4 5 6 8 10	JD · Y · G= Specify in 1mm Increment Order Code JD40-Y12-G30-M8 ■Female Thread Hole Dia. Selection Dimension: Nominal Dia. 3 4 5 6 8 10	JQ · F · Y · G= Specify in 1mm Incr. Order Code JQ15-F20-Y12-G50-M6 ■Female Thread Hole Dia. Selection Dimension: Nominal Dia. 3 4 5 6 8 10	TM · F= Specify in 1mm Increment Order Code TM-F10 Groove Depth 1.5mm 2≤TM / F TM+F≤(A/2)-2
Price Adder	5,00	13,00	8,00	13,00	16,00

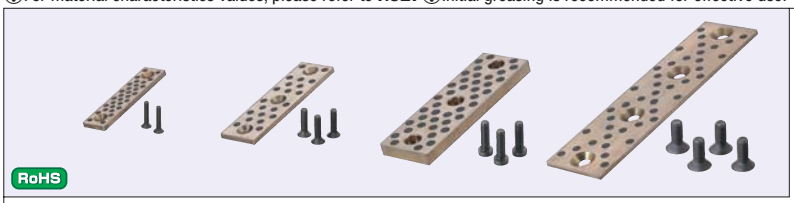
Oil Free Slide Plates

–Copper Alloy (Upper-Lower Surface Ground) Type–

Price Reduction
Up to 4%

CAD Data

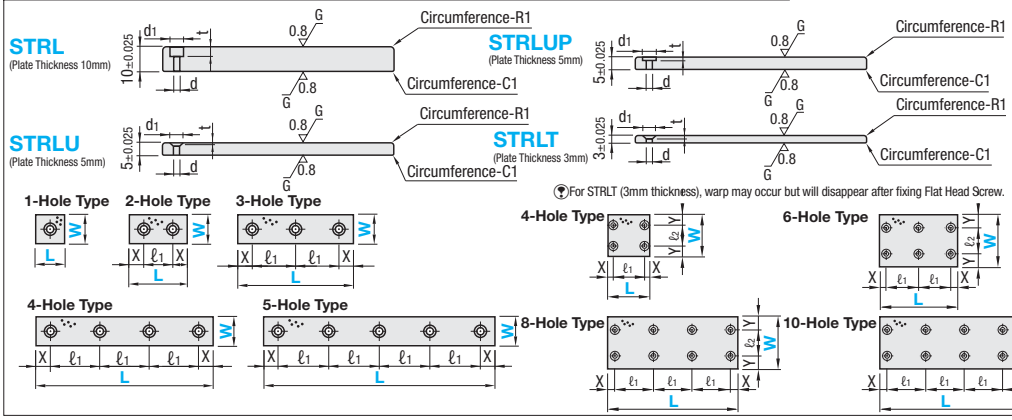
For material characteristics values, please refer to P.327 Initial greasing is recommended for effective use.



RoHS

M Material: CC762S/CuZn25Al5 (JIS, HBsC4 Copper Alloy previously)
Special Solid Lubricant Embedded

A Accessories: STRL Hexagon Socket Extra Low Head Cap Screw
STRLU Hexagon Socket Flat Head Cap Screw
STRLUP Hexagon Socket Extra Low Head Cap Screw
STRLT Hexagon Socket Flat Head Cap Screw



Part Number Type	W	L	Installation Holes	Hole Position	X	ℓ1	Y	ℓ2	€ Unit Price STRL	STRLU	STRLUP	STRLT
STRL (Plate Thickness 10mm)	20	*30	1	Single Row	-	-	-	-				
		*40	2		10	20	-	-				
		*50	2		10	30	-	-				
		*60	2		10	40	-	-				
		80	2		10	60	-	-				
		100	3		10	40	-	-				
		120	3		10	50	-	-				
		150	3		10	65	-	-				
		200	4		10	60	-	-				
		250	5		13	56	-	-				
		300	5		14	68	-	-				
STRLU (Plate Thickness 5mm)	30	*30	1		-	-	-	-				
		*40	2		10	20	-	-				
		*50	2		10	30	-	-				
		*60	2		10	40	-	-				
		80	2		10	60	-	-				
		100	3		10	40	-	-				
		120	3		10	50	-	-				
		150	3		10	65	-	-				
		200	4		10	60	-	-				
		250	5		13	56	-	-				
		300	5		14	68	-	-				
STRLUP (Plate Thickness 5mm) (Counterbored Hole) (W20 Only)	40	*40	1		-	-	-	-				
		*60	2		10	40	-	-				
		80	2		10	60	-	-				
		100	3		12	38	-	-				
		120	3		12	48	-	-				
		150	3		12	63	-	-				
		200	4		13	58	-	-				
		250	5		13	56	-	-				
		300	5		14	68	-	-				
STRLT (Plate Thickness 3mm) (* marked sizes only)	50	50	1		-	-	-	-				
		60	2		10	40	-	-				
		80	2		10	60	-	-				
		100	3		13	37	-	-				
		120	3		13	47	-	-				
		150	3		13	62	-	-				
		200	4		13	58	-	-				
		250	5		13	56	-	-				
		300	5		14	68	-	-				
	60	60	2		10	40	-	-				
		80	2		10	60	-	-				
		100	3		13	37	-	-				
		120	3		13	47	-	-				
		150	3		13	62	-	-				
		200	4		13	58	-	-				
		250	5		13	56	-	-				
		300	5		14	68	-	-				
	80	80	4	Double Row	10	60	20	40				
		100	4		13	74	20	40				
		120	6		13	47	20	40				
		150	6		13	62	20	40				
		200	6		13	87	20	40				
		250	8		14	74	20	40				
		300	10		14	68	20	40				

STRLUP is applicable to W dimension 20mm only.
STRLT is only applicable to L-dimension * marked sizes.

Hole Machining Details

STRL (Hex Socket Extra Low Head Cap Screw)



W	d	d1	t	Included Screw Size
20	4.5	8	4	M4-20
30	5.5	9.5	5	M5-20
40	6.5	11	6	M6-20
50	9	15	6	M8-20
60				
80				

STRLU (Hex Socket Flat Head Cap Screw)



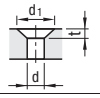
W	d	d1	t	Included Screw Size
20	4.5	9.5	2.5	M4-20
30	5.5	11.1	2.8	M5-20
40	6.5	13.1	3.3	M6-20
50	9	17.6	4.3	M8-20
60				
80				

STRLUP (Hex Socket Extra Low Head Cap Screw)



W	d	d1	t	Included Screw Size
20	4.5	8	3	M4-10

STRLT (Hex Socket Flat Head Cap Screw)



W	d	d1	t	Included Screw Size
20	4.5	9.5	2.5	M4-20
30	5.5	11.1	2.8	M5-20
40				

– Initial greasing is recommended for more effective use.

Order Example

Part Number	-	L
STRLU30	-	150
STRLT20	-	60

Days to Ship: 6 Days P. 87

Price

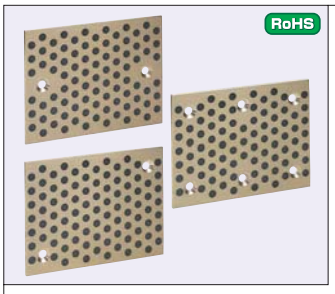
Volume Discount (Round down to one Cent) P. 87

Quantity	1~29	30~34	35~39	40~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

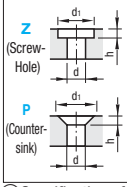
Oil Free Slide Plates
-Copper Alloy Configurable Type-

Please refer to **P.327** for material characteristic values. Initial greasing is recommended for effective use.



Part Number Type	Part Number Nominal	Specify in 1mm Increment A	Specify in 1mm Increment B	Selectable T	Screw Nominal Dia. T=5	Screw Nominal Dia. T=10	X	Y
GRPZ	2H	50~60	28~80	5	P5	P6 Z6	30	-
		61~80					40	
		81~100					60	
		101~120		10			80	
		121~150					100	
	3H	151~180			P6	P6 Z8	65x2	
		181~200					80x2	
	2HA 2HB	50~60	50~100	5	P5	P6 Z6	30	30 (B≤80)
		61~80					40	
		81~100		10			60	60 (B≤81)
		101~120					80	
		121~150					100	
	4H	80~100	50~100	5	P5	P6 Z6	60	30 (B≤80)
		101~120					80	60 (B≤100)
		121~150		10			100	80 (B≤120)
	6H	150~180	100~150		P6	P6 Z8	65x2	100 (B≤121)
		181~200					80x2	

Hole Machining Details



Screws Nominal Dia.	Counter-sunk Hole P5	Counter-sunk Hole P6	Screw Hole Z6	Screw Hole Z8
d	5.5	6.5	6.5	9
d_1	11.5	13.5	11	14
h	3	3.5	4.5	5.5

Specification of Z (screw holes) is the same as that of Hexagon Socket Low Head Cap Screw in **P.2-189**.

Included screw size

Screws Nominal Dia.	Mxℓ P5	Mxℓ P6 / Z6	Mxℓ Z8
T=5	M5x16	M6x16	-
T=10	-	M6x20	M8x20

Order Example

Part Number	-	A	-	B	-	T	-	Screw
GRPZ4H	-	150	-	100	-	10	-	Z6

Days to Ship

13 Days

Express C | 10,00 EUR/piece | P. 88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Part Number Type	Part Number Nominal	T	A	€ Unit Price B 28~40	41~60	61~80	81~100	101~120	121~150
GRPZ	2H 3H 2HA 2HB	5	50~60						
			61~80						
			81~100						
			101~120						
			121~140						
			141~160						
			161~180						
			181~200						
	4H 6H	10	50~60						
			61~80						
			81~100						
			101~120						
			121~140						
			141~160						
			161~180						
			181~200						

Oil Free Slide Plates

–Copper Alloy–

CAD Data

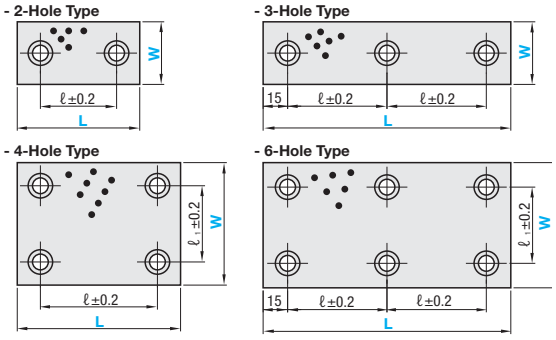
Please refer to **P.327** for material characteristic values. Initial greasing is recommended for effective use.

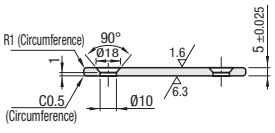
RoHS



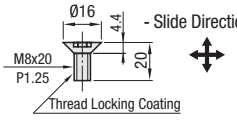
UTW (5mm Thickness)

- 2-Hole Type
- 3-Hole Type
- 4-Hole Type
- 6-Hole Type





- Included Screws
<Hex Socket Flat Head Cap Screw>



- Slide Direction

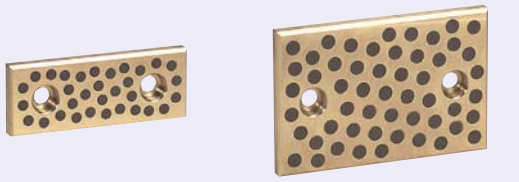
<Thread Locking Coating>
The threads are coated with special resin excellent in elasticity, abrasion and oil resistance.
The initial repeated uses demonstrate the maximum effect, and it is loosing gradually after the fourth use.

M Material: CC762S/CuZn25Al5 (JIS, HBsC4 Copper Alloy previously)
Special Solid Lubricant Embedded
A Accessory Included Flat Head Screw

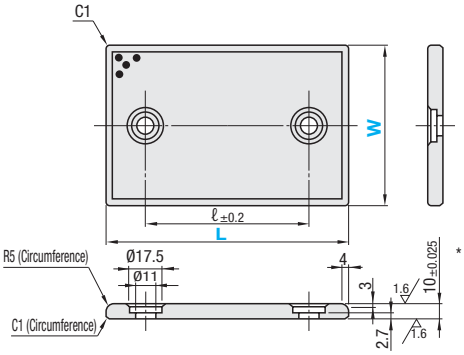
RoHS

STW W= 28~75

STWT W=100~150



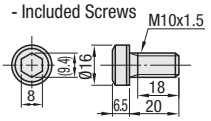
STW · STWT (10mm thickness)



* The long side (R) is R2 when W=28 or 38

- Slide Direction
For W=28 and 38, long side (L) direction only.

- Included Screws



M Material: CC762S/CuZn25Al5 (JIS, HBsC4 Copper Alloy previously)
Special Solid Lubricant Embedded
A Accessory
Special Low Head Screw M10x20

Part Number	W	L	Mounting Hole Type	ℓ	ℓ1	€ Unit Price
UTW	28	50	2 Holes	20	-	
		75		45		
		100		70		
		150	3 Holes	60		
	38	50	2 Holes	20	-	
		75		45		
		100		70		
		150	3 Holes	60		
	48	75	2 Holes	45	-	
		100		70		
		125		95		
		150	3 Holes	60		
	75	75	4 Holes	45	45	
		100		70		
		125		95		
		150	6 Holes	60		
	100	100	4 Holes	70	70	
		125		95		
		150	6 Holes	60		

Part Number	W	L	ℓ	€ Unit Price
STW	28	75	45	
		100	50	
		125	75	
		150	100	
	38	75	45	
		100	50	
		125	75	
		150	100	
	48	75	45	
		100	50	
		125	75	
		150	100	
		200	150	
	75	75	25	
		100	50	
		125	75	
		150	100	
		200	150	
STWT	100	100	50	
		125	75	
		150	100	
		200	150	
		250	200	
	125	150	100	
		200	150	
		250	200	
	150	150	100	
		200	150	

Order Example

Part Number	W	-	L
UTW	75	-	100

Days to Ship

6 Days P. 87

Price

Volume Discount (Round down to one Cent) P. 87

Quantity	1~19	20~49	50~99	100~200
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Oil Free Slide Plates
-Multi-Layer Resin, Configurable-

Please refer to **P.327** for material characteristic values.

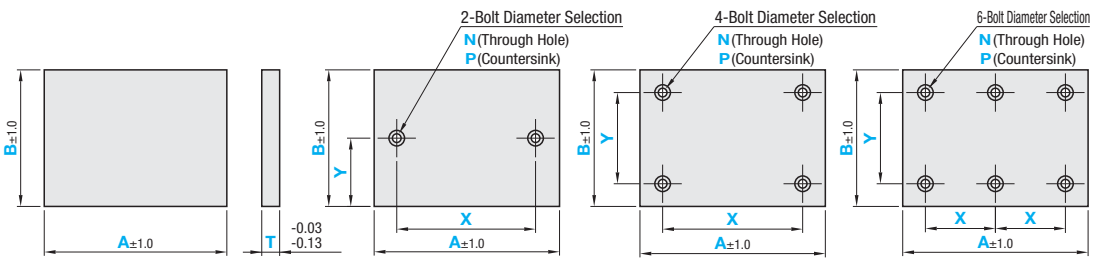
RoHS



Standard
GRFZ

Hole
2H-2 Holes-　**4H**-4 Holes-　**6H**-6 Holes-

25



A≥B

Material: Multi-Layer Plastic Material (Filler Added Polytetrafluoroethylene Layer / Sintered Bronze Layer / Back Metal Layer)

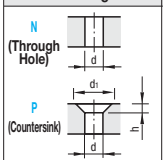
Standard

Part Number	Specify in 1mm Increment		Selectable T
Type	A	B	
GRFZ	40~500	40~80	1
	40~500	40~100	2.5

With Hole Machining

Part Number		Specify in 1mm Increment		Selectable T	Specify in 1mm Increment		Screw Nominal Dia.	
Type	Nominal	A	B		X	Y	N (Through Hole)	P (Countersunk)
GRFZ	2H	40~500	40~80	1	9~491 (2H / 4H Type)	5~95 (2H Type)	3 4 5 6 8	-
	4H							
	6H	40~500	40~100	2.5	9~245 (6H Type)	9~90 (4H / 6H Type)		3

Hole Machining Details



Screws Nominal Dia.	3	4	5	6	8
d	3.5	4.5	5.5	6.5	9
d1	7.5	-	-	-	-
h	2	-	-	-	-

X Dimension Specification Range: For 2H or 4H type, it requires d (d1)+5≤X≤A-d (d1)-5, and for 6H type, it requires d (d1)+5≤X≤A/2-d (d1)/2-2.5.
Dimension Y Specification Range: For 2H type, it requires d (d1)/2+2.5≤Y≤B-d (d1)/2-2.5, and for 4H or 6H type, it requires d (d1)+5≤Y≤B-d (d1)-5.
(d for through hole, d_1 for countersunk)

Order Example

Standard

Part Number	-	A	-	B	-	T
GRFZ	-	150	-	50	-	1

With Hole Machining

Part Number	-	A	-	B	-	T	-	X	-	Y	-	Screw
GRFZ2H	-	100	-	50	-	1	-	X80	-	Y25	-	N5

Days to Ship

Standard
8 Days

With Hole Machining
10 Days

Price

Standard Type € Unit Price

Part Number	T	A	€ Unit Price 1 ~ 4 pcs B	
			40~60	61~80
GRFZ	1	40~100		
		101~200		
		201~300		
		301~400		
		401~500		

For orders larger than indicated quantity, please request a quotation.

Part Number	T	A	€ Unit Price 1 ~ 4 pcs B		
			40~60	61~80	81~100
GRFZ	2.5	40~100			
		101~200			
		201~300			
		301~400			
		401~500			

For orders larger than indicated quantity, please request a quotation.

Hole Machining Charge

With Hole Machining Type	Screw N (Through Hole)	Screw P (Countersink)
2H	2,00	2,50
4H	4,00	5,00
6H	6,00	7,50

Price of Hole Type = Standard Type € Unit Price + Hole Machining Charge

(Ex.) When Part Number - A - B - T - X - Y - Screw
GRFZ2H - 100 - 50 - 1 - X80 - Y25 - N5

(Standard Type € Unit Price)+(Hole Machining Charge)=Hole Machining Type € Unit Price
12,30+2,00=14,30 EUR

Gibs

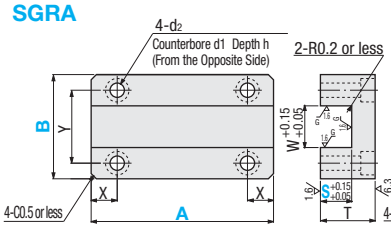
CAD Data

Gibs

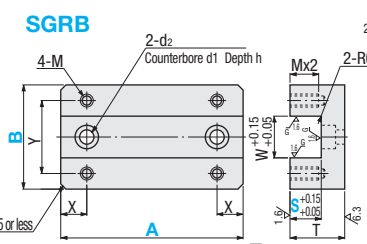
RoHS



SGRA



SGRB



25 / (6.3/1.6/1.6) G

Hardening electroless nickel plated products may look slightly different in color from the image but the quality is assured.

M Material: 1.1191/C45E

H Hardness: HV500 ~

S Surface Treatment: Hardening Treatment
Electroless Nickel Plating
(Plating After Grinding)

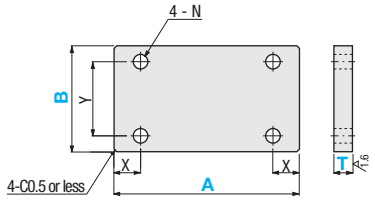
Part Number Type	B	A Selectable	S Selectable	W	T	X	Y	d1	d2	h	M	€ Unit Price SGRA	€ Unit Price SGRB
SGRA SGRB	40	40	12	16	20	7	28	9.5	5.5	5.5	4		
		50											
	50	50	15 20	20	30	10	36	11	6.5	6.5	5		
		60											
	60	60	15 20	30	30	10	46	11	6.5	6.5	5		
		80											
		100											
	80	80	20 25	40	40	15	60	14	9	9	6		
		100											
		120											

Gib Covers

RoHS



SGCB



25 / (1.6)

Hardening electroless nickel plated products may look slightly different in color from the image but the quality is assured.

M Material: 1.1191/C45E

S Surface Treatment:
Hardening Treatment
Electroless Nickel Plating

H Hardness: HV500 ~

Part Number Type	B	A Selectable	T Selectable	X	Y	N	€ Unit Price T5	€ Unit Price T9	€ Unit Price T12
SGCB	40	40		7	28	4.5			
		50							
	50	50		10	36				
		60	5			5.5			
	60	60	9	10	46				
		80							
		100	12						
	80	80		15	60	6.5			
		100							
		120							

Order Example

Part Number	A	S
SGRA40	50	12

Part Number	A	T
SGCB40	50	5

Days to Ship 10 Days

Price

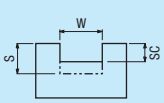
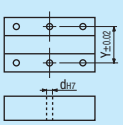
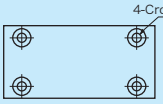
Volume Discount (Round down to one Cent) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

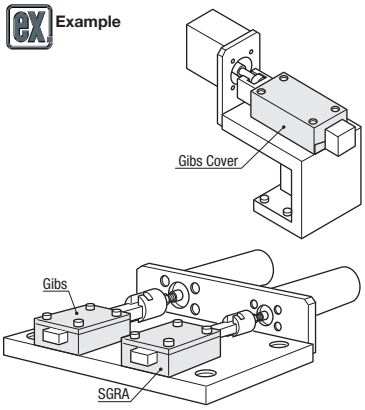
Alterations

Part Number	A	S	(SC / NC)
SGRA80	100	25	SC10

Part Number	A	T	(ZC)
SGCB50	60	9	ZC

Alterations	Dimension S	Dowel Hole	Mounting Hole
Code	SC	NC	ZC
Spec.	 SC=1 mm Increment. Order Code SC 6. B: 50 (1~21), 60 (1~21), 80 (1~28). ⊗SC is not applicable to B=40.	 Machines 2 Dowel Holes. Order Code NC. B: 40 d 5, 50 d 6, 60 d 6, 80 d 8.	 Changes mounting holes to Counterbore holes. Order Code ZC. B: 40 d1 8 d2 4.5 h 4.5; 50 9.5 5.5 5.5; 60 9.5 5.5 5.5; 80 11 6.5 6.5. ⊗Not applicable to T=5
Price Adder	5,00	10,00	4,00

Example



Cable Carrier Overview

■Cable Carrier Selection

Step 1. Tentatively Select Cable Carrier Type

↓

Step 2. Select Cable Carrier Size

↓

Step 3. Calculate Free Span Length

↓

Step 4. Check if the Carried Load is within the Free Span Running Range.

↓

Step 5. Calculate Links

↓

Selection Completed.

If required sizes is not available, select a different type of cable carrier.

If required free span cannot be obtained, select a different size.

Step 1. Tentatively Select Cable Carrier Type

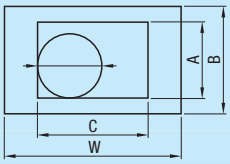
<Selection Examples>
Select MPSCS to use in clean room environment.

Please tentatively select type referring to the following features, open-close methods and sizes.

Type	Features	Open-Close System
Slit Type Type **SE / SZ** **P.639**	Cables·hoses can be easily tucked in from both external and internal circumference sides. - Support clean room - No need for link assembly	Tuck the cable into the opening.
Compact Type **MHPKS** **P.641**	Space-saving design enables protection and guide even for only one cable and hose.	Flaps do not open.
Open-Close Type **MHPUS** **P.642**	Flaps open on either side.	Flaps open from either left or right.
Open-Close Full Cover Type **FHPS** **P.643**	Full Cover Type protects cables · hoses from dust	
Low Wear, Low Noise Type **MPSPS** **P.645**	Less wear and noise on Cables · Hoses	
Low Particulates, Low Noise Type **MPSCS** **P.644**	Low dust contributes to achieving Clean Room Class 1000 level and low noise	

Note

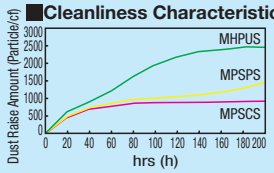
<Dimensions>



	Minimum			Maximum		
	WxB	CxA	Carried Load Max. Diameter	WxB	CxA	Carried Load Max. Diameter
SE / SZ	23x12.5	16x9.4	Ø7	120x64	96x48.5	Ø25
MHPKS	16x12	9x9	Ø7	59x22	44x16	Ø12
MHPUS	27x12	20x9	Ø7	117x40	97x24.5	Ø19
FHPS	26x20	14x13	Ø10	117x40	97x25	Ø20
MPSPS	32x21	20x15	Ø12	101x50	80x35	Ø28
MPSCS	28x25	20x15	Ø12	113x55	100x35	Ø28

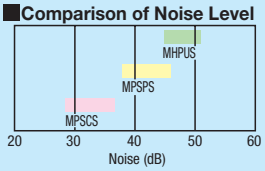
<Cleanliness Characteristics>

■Cleanliness Characteristics



<Noise Characteristics>

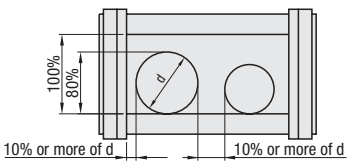
■Comparison of Noise Level



Step 2. Select Cable Carrier Size

Select suitable Cable Carrier size for housing cables/hoses.

<Selection Examples>
One Ø20mm cable needs to be stored.
Select MPSCS2540–60 (Interior Height 25mm) because 20/0.8=25 or more interior height is required for the condition that the cable outer diameter must be within 80% of interior height



** For section dimensions/bending radius by type and size, please refer to product pages.

<Size Selection Tips>

(1) Height
Outer diameter of the cable and hose must be 80% or less than the internal height of the cable carrier.

(2) Space Occupied
Cable and house must be within 60% of Cable Carrier Interior Content=Interior Height x Interior Width.
(MPSPS and MPSCS can be stored up to 70% of interior content)

(3) Bending Radius
When housing different types of cables/hoses together, please select Cable Carrier bending radius meeting the maximum bending radius.

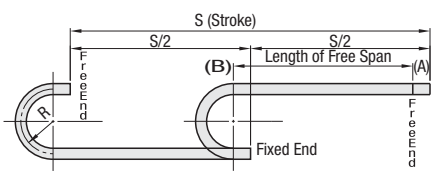
(4) Distance between the running cable/hose and internal wall
The distance between the running cable/hose and Cable Carrier interior wall must be at least 10% of the running cable/hose outer diameter.

(5) Cable / Hose Mutual Distances
The distance between adjacent cables/hoses must be at least 10% of the thicker cable outer diameter.

Step 3. Free Span Length Calculation

Calculate the length of free span by required moving stroke and the position of fixed end.

<Selection Examples>
1500mm is required for strokes. Free span length requires1500/2=750mm as the fixed end can be set at a stroke intermediate point.



<Free Span Length>
Distance between the cable carrier moving end (A) and bending radius arc origin point (B).

When positioning the fixed end in the center of the moving stroke
Free Span Length=Moving Stroke/2

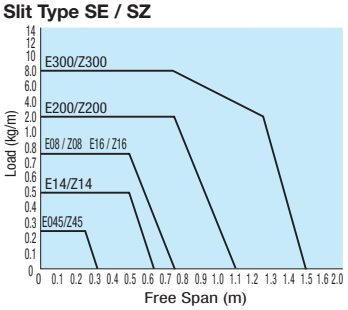
*Possible to minimize the quantity of Plastic Rail Chains by setting the fixed end at the intermediate point of moving stroke.

Step 4. Carried Weight and Free Span Running Range Check

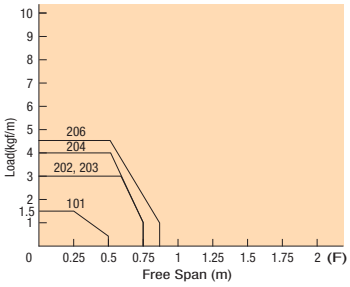
<Selection Examples>
Cable weight is 1.5kg/m. When free span length is 0.75m, it is applicable because 1.5kg falls within the weight capacity line in the graph.

The relationship between the free span length and bearable load (weight of cables/hoses stored) depends on Cable Carrier types. Please check if housed cables/hoses weight falls within the free span travel allowable range (inside the line graph) in the graph below.

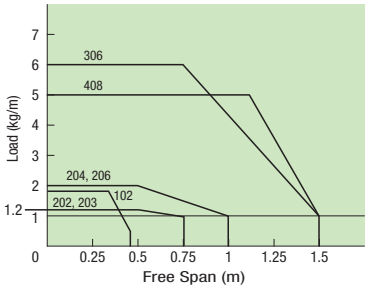
- Slit Type SE / SZ



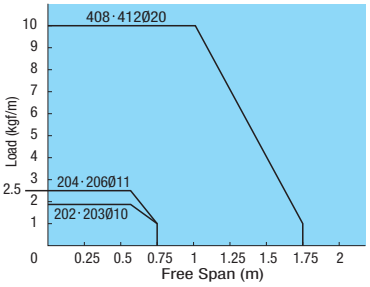
- Compact Type MHPKS



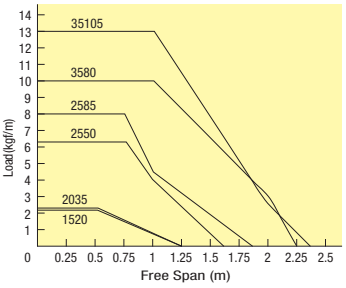
- Flap Open-Close Type MHPUS



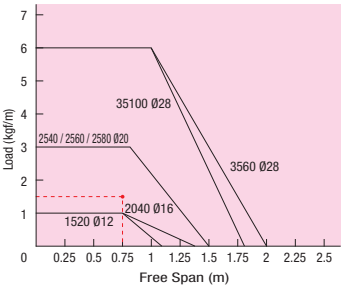
- Flap Open-Close Full Cover Type FHPS



- Low Friction, Low Noise Type MPSPS



- Low Particulate, Low Noise Type MPSCS



Step 5. Link Counting

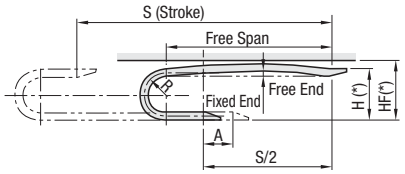
Calculate the number of links by the following formula.

$$n=\frac{\frac{S}{2}+K+A}{P}$$

n: Ling Qty. (Round up the numbers after the decimal point)
S: Travel Stroke
K: Arc+Margin (*)
A: Distance from an intermediate point (mm) when fixed end is not set at a travel stroke intermediate point. (0 when at an intermediate point)
P: Pitch (*)

<Selection Examples>
As 1500mm is required for MPSCS2510-60 and strokes, and the fixed end is set at a stroke intermediate point,

$$\frac{\frac{1500}{2}+251.5\ (\text{Arc+Allowance})+0}{30\ (\text{Pitch})}\approx 34\ (\text{Required Link Qty.})$$

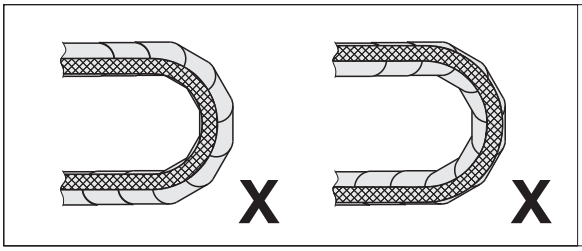


Note
- In the case of new designs, there may be a possibility that carrier links run short.
- It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.
- Links can be easily removed manually.

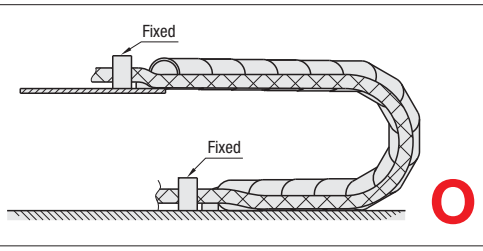
* Drawing mark "HF" indicates a height with a potential bow that may occur when no cable hoses are inserted.

*For K (Arc + Allowance), P (Pitch) and H / HF (Physical Height), see product pages.

Cautions on Cable Installation and Mounting



Please arrange wiring to allow cable free movement.



Please fix cables at both moving and fixed ends so that no undue tension force applies.

For Cable Carrier Slit Type (**P.639**), cables can be tied at the Comb Teeth ends with cable ties.

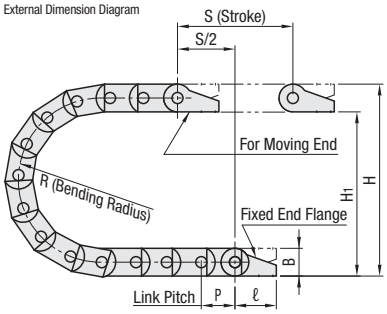
Cable Carriers
- SlitType-



- No need for link assembly

Outer Radius Mount	Inner Radius Mount
Main Body + Flange	Main Body + Flange
SE045F	SZ045F
SE08F	SZ08F
SE14F	SZ14F
SE16F	SZ16F
SE200F	SZ200F
SE300F	SZ300F

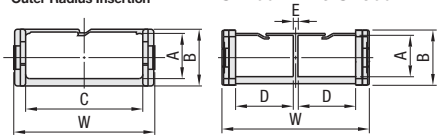
External Dimension Diagram



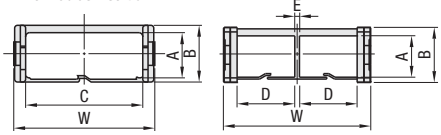
<Cautions>
- A package includes a cable carrier assembled with specified no. of links and two corresponding flanges (1 Moving End + 1 Fixed End).
- Should be mounted as the fixed end of the flange on the lower part and the moving end on the upper part
  (Refer to the Positional Relationship in External Dimension Diagram)
- Insert cables through slits (openings) on the external or internal circumference

Cross-Section

Outer Radius Insertion — **SE200F-2 · 3 SE300F-2**



Inner Radius Insertion — **SZ200F-2 · 3 SZ300F-2**

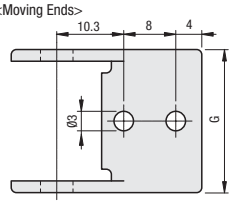


Material: Special Plastic Operating Temp.-30°C ~ 100°C Flammability Standard UL94-V2

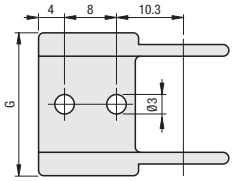
■ Flange Dimension Diagram

SE045F · SZ045F

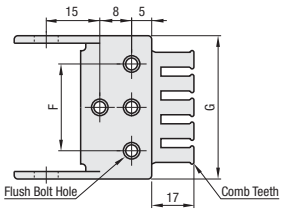
<Moving Ends>

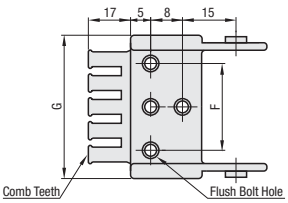


<Fixed Ends>

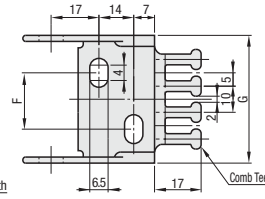


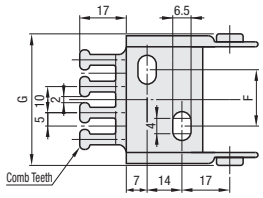
SE08F · SZ08F



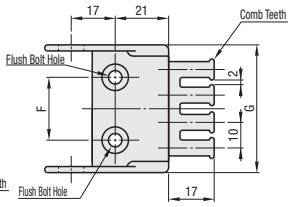


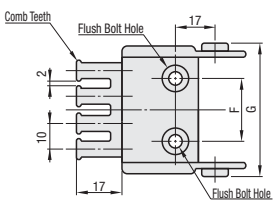
SE14F · SZ14F





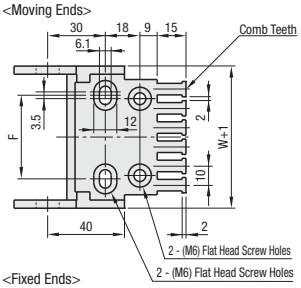
SE16F · SZ16F



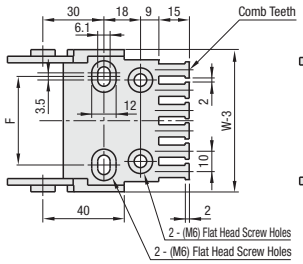


SE200F · SZ200F

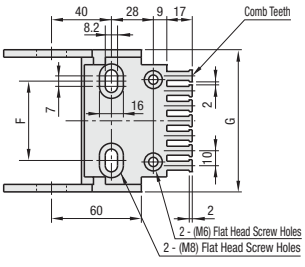
<Moving Ends>

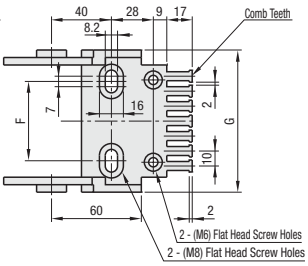


<Fixed Ends>



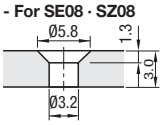
SE300F · SZ300F



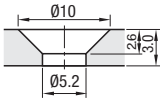


■ Flat Head Countersunk Screws

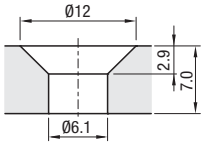
- For SE08 · SZ08



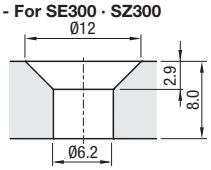
- For SE16 · SZ16

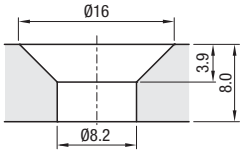


- For SE200 · SZ200



- For SE300 · SZ300





■ Tucking In Cables



■ Removing Cables



The cable can be removed by just pulling out.

Reduced Delivery Time

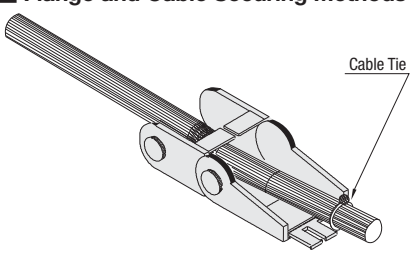
Price Reduction
Up to 2%

CAD Data

Part Number Type	No.	Bending Radius Selectable	No. of Links	H (Mounting Height)	H_1	HF (Required Physical Height)	K (Arc+Allowance)	P	B	ℓ
SE045F SZ045F	16	018	1~27	50	37.5	60	95	13	12.5	22.3
		028	1~29	70	57.5	80	120			
		038	1~31	90	77.5	100	145			
SE08F SZ08F	16 20 30 40 50	028	1~37	76	56.7	91	130	20	19.3	28
		038	1~38	96	76.7	111	160			
		048	1~40	116	96.7	131	190			
SE14F SZ14F	1 2 3 4	028	1~30	82	57	92	150	30.5	25	38
		038	1~30	102	77	112	185			
		048	1~30	122	97	132	215			
		075	1~30	177	152	187	300			
		100	1~33	227	202	237	375			
SE16F SZ16F	2 3 4	060	1~30	159	120	174	270	30.5	39	38
		075	1~30	189	150	204	305			
		100	1~33	239	200	254	395			
SE200F SZ200F	1 2 3	055	1~28	145	110	185	276	46	35	72
		075	1~30	185	150	225	346			
		100	1~31	235	200	275	414			
		150	1~35	335	300	375	578			
		200	1~38	435	400	475	742			
SE300F SZ300F	1 2	075	1~29	215	148	255	400	67	64	94
		100	1~30	265	198	305	500			
		125	1~33	315	248	355	650			
		150	1~33	365	298	405	725			
		200	1~36	465	398	505	875			
		250	1~38	565	498	605	1050			
		300	1~41	665	598	705	1225			

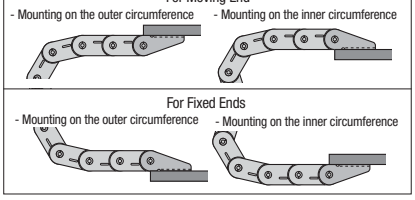
Part Number Type	No.	Bending Radius Selectable	A	B	C	D	E	W	F	G	Number of Comb Teeth	Per Link Weight (g)	€ Unit Price (One Link € Unit Price x Link Qty.) +Flange (2 pcs.) Price
SE045F SZ045F	16	018 028 038	9.4	12.5	16	-	-	23	-	22	-	1.4	
SE08F SZ08F	16	028 038 048	14.6	19.3	16	-	-	24.2	-	24.2	2	3.1	
	20				20	-	-	28.2	-	28.2	2	3.2	
	30				30	-	-	38.2	22	38.2	3	3.6	
	40				40	-	-	48.2	32	48.2	4	4	
	50				50	-	-	58.2	42	58.2	5	4.8	
SE14F SZ14F	1	028 038 048 075 100	19	25	15	-	-	27	-	26.3	2	9.3	
	2				25	-	-	37	10	36.3	3	9.6	
	3				38	-	-	50	23	49.3	4	12	
	4				50	-	-	62	35	61.3	5	13	
SE16F SZ16F	2	060 075 100	32	39	23	-	-	37.5	12	35.5	3	15.5	
	3				36	-	-	50.5	25	48.5	4	17.3	
	4				48	-	-	62.5	37	60.5	5	18.8	
SE200F SZ200F	1	055 075 100 150 200	24.3	35	57	-	-	74.4	44	-	6	32	
	2				-	37	3	94.4	64	-	8	36	
	3				-	50	3	120.4	90	-	10	38	
SE300F SZ300F	1	075 100 125 150 200 250 300	48.5	64	75	-	-	95	53	95	7	107	
	2				-	48	4	120	78	120	10	119	

■ Flange and Cable Securing Methods



Cables are tucked in from the outer and inner circumference, and its end comb teeth are fixed in place with cable ties.

■Mounting Direction ⓨCommonly used for both outer and inner circumferences. Except SE045F and SZ045F moving ends can not be mounted on the outer circumference.



ⓨ In the case of new designs, there may be a possibility that carrier links run short. It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.

Order Example

Part Number	-	Bending Radius	-	No. of Links
SE14F-3	-	048	-	20

Days to Ship: 8 Days P.88

ⓨWorking days for this product do not include Saturday and other holidays.

Price

■Volume Discount (ⓨRound down to one Cent) P87

Quantity	1~29	30~39	40~49
Rate	€ Unit Price	35%	40%

ⓨFor orders larger than indicated quantity, please request a quotation.

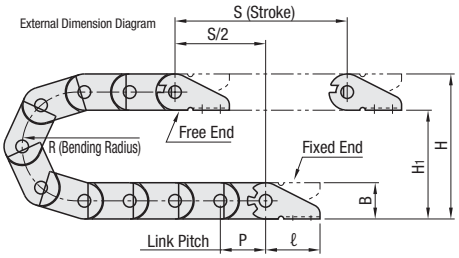
Cable Carriers
-Compact Type-

CAD Data

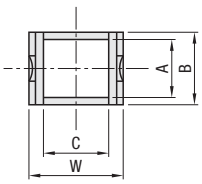


Type		Main Body Material	Mounting Bracket Material	Mounting Bracket Surface Treatment
Main Body + Mounting Bracket	MHPKS	Nylon 6+Glass Fiber 20% (Operation Temperature -10 ~ 80°C) Flammability Standard UL94-HB	1.0330/DC01	Trivalent STKM Bright Chromate Plating

External Dimension Diagram

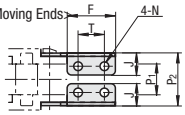


Cross-Section

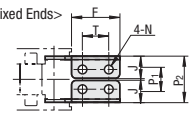


The above is a drawing of Cable Carrier assembled with 10 links and mounting brackets.

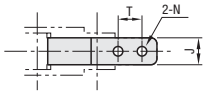
<Moving Ends>



<Fixed Ends>



- Only MHPKS101 is as shown below.

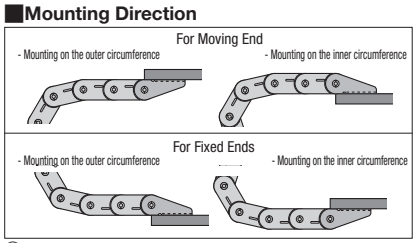


<Cautions>
- Cable Carrier (10 Links and 1 Link) and mounting brackets are not assembled together at the time of delivery. Links must be connected and mounting brackets must be assembled for use.
- Please install the mounting bracket fixed end on the lower side, and moving end on the upper side (Refer to Positional Relationship in External Dimension Diagram).
- Mounting bracket shape varies depending on size.

Part Number Type	No.	Bending Radius Selectable	No. of Links	Mounting Direction *	Cable Carrier Dimensions A	B	C	W	P	ℓ	Mounting Dimensions F	T	J	N	Moving End P1	Moving End P2	Fixed End P1	Fixed End P2	H (Mounting Height)	H1	HF (Required Physical Height)	K (Arc+ Allowance)	(Reference) Per 1m Long Weight (kg)
MHPKS (Cable Carrier+ Mounting Brackets)	101	19	5~25	S (Common to the Outer and Inner Circumference)	9	12	9	16	20	18	-	8	9	3.2	-	-	-	-	50	38	62	109.7	0.105
	202	30	6~34	A	16	20	18	26	25	30	20	10	10	4.5	12.4	24.4	10.4	22.4	80	60	95	144.2	0.222
		45	8~36																110	90	125	191.3	
	203	30	6~34		16	20	24	32	25	30					18.4	30.4	16.4	28.4	80	60	95	144.2	0.24
		45	8~36																110	90	125	191.3	
	204	38	6~31	B	16	22	29	43	32	43	32	18	14	5.8	23.6	39.6	20	36	98	76	118	179.3	0.45
		50	7~32																122	100	142	217	
	206	38	6~31		16	22	44	59	32	43					39.6	55.6	36	52	98	76	118	179.3	0.51
		50	7~32																122	100	142	217	

Part Number Type	No.	Bending Radius Selectable	No. of Links	Mounting Direction *	€ Unit Price Main Body + Mounting Bracket (One Link € Unit Price x Link Qty.)+Mounting Bracket Price
MHPKS (Cable Carrier+Mounting Brackets)	101	19	5~25	S (Common to the Outer and Inner Circumference)	
	202	30	6~34	A	
		45	8~36		
	203	30	6~34		
		45	8~36		
	204	38	6~31	B	
		50	7~32		
	206	38	6~31		
		50	7~32		

■Mounting Direction



In the case of new designs, there may be a possibility that carrier links run short.
It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.

<Cautions on Model Selection>
- A Cable Carrier and suitable Mounting Brackets (Moving Ends x 1 set, Fixed Ends x 1 set) are in a set.
- Please note that part number varies depending on outer/inner circumference mounting.

<Calculation Example>
For MHPKS101-19-25-S (Cable Carrier + Mounting Brackets, 25 Links), 0,60 EUR x 25+6,70 EUR=21,70 EUR

Order Example

Part Number	-	Bending Radius	-	No. of Links	-	Mounting Direction
MHPKS203	-	30	-	18	-	A

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent) P.87

Quantity	1~29	30~39	40~49
Rate	€ Unit Price	5%	10%

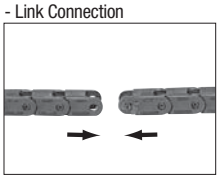
For orders larger than indicated quantity, please request for quotation.

* Mounting Bracket Structural Components

No.	Mounting Direction	Mounting Bracket Structural Components For Moving End	For Fixed Ends
101	S (Common to the Outer and Inner Circumference)	Common to the Outer and Inner Circumference	Common to the Outer and Inner Circumference
202~206	A	Mounting on the Outer Circumference	Common to the Outer and Inner Circumference
	B	Mounting on the Inner Circumference	Common to the Outer and Inner Circumference

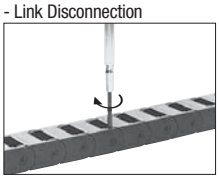
■Link Connection and Disconnection

- Link Connection



- To connect links, mate the links and push the ends together.

- Link Disconnection



- To disconnect links, insert a flat head screwdriver tip between the links and pry..

Cable Carriers
-Flap Open-Close-

CAD Data

RoHS

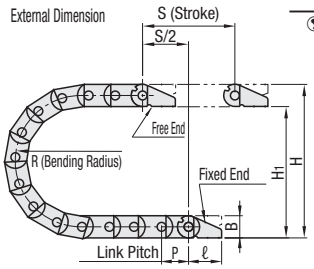




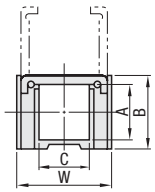
Type		Main Body Material	Mounting Bracket Material	Mounting Bracket Surface Treatment
Main Body + Mounting Bracket	MHPUS	Nylon 6+Glass Fiber 20% (Operation Temperature -10 ~ 80°C) Flammability Standard UL94-HB	1.0330/DC01	Trivalent STKM Bright Chromate Plating

No 1.4301/X5CrNi18-10 surface treatment is applicable to Mounting Bracket for MHPUS102 only.

External Dimension

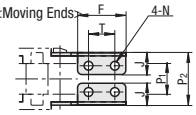


Section View

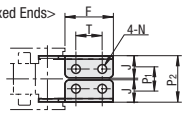


<Cautions>
- Cable Carrier (10 Links and 1 Link) and mounting brackets are not assembled together at the time of delivery. Links must be connected and mounting brackets must be assembled for use.
- Please install the mounting bracket fixed end on the lower side, and moving end on the upper side (Refer to Positional Relationship in External Dimension Diagram).
- Mounting bracket shape varies depending on size.

<Moving Ends>

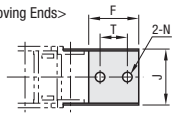


<Fixed Ends>

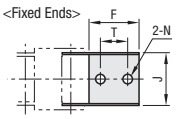


- Only MHPUS102 is as shown below.

<Moving Ends>



<Fixed Ends>



Part Number Type	No.	Bending Radius Selectable	No. of Links	Mounting Direction *	Cable Carrier Dimensions A	B	C	W	P	ℓ	Mounting Dimensions F	T	J	N	Moving End P1	Moving End P2	Fixed End P1	Fixed End P2	H (Mounting Height)	H1	HF (Required Physical Height)	K (Arc+ Allowance)	(Reference) Per 1m Long Weight
MHPUS (Cable Carrier+ Mounting Brackets)	102	19	5~23	S(Common to the Outer and Inner Circumference)	9	12	20	27	20	30	22	12	*25 (23)	4.5	-	-	-	-	50	38	65	99.7	0.12
	202	25	6~34		14	20	14	26	25	30	20	10	10	4.5	9.8	21.8	8	20	70	50	85	128.5	0.25
		30	6~34																80	60	95	144.2	
		45	8~36																110	90	125	191.3	
	203	30	6~34		14	20	20	32	25	30					15.8	27.8	14	26	80	60	95	144.2	0.26
		45	8~36																110	90	125	191.3	
	204	38	6~36		14	22	20	40	32	43	32	18	14	5.8	17.4	33.4	14	30	98	76	118	179.3	0.5
		50	7~37																122	100	142	217	
	206	38	6~36	A	14	22	40	60	32	43					37.4	53.4	34	50	98	76	118	179.3	0.56
		50	7~37																122	100	142	217	
	306	50	6~38		24	34	44	60	45	60	40	24	20	7	35.6	55.6	32	52	134	100	160	257	0.64
		100	10~42	B															234	200	260	414	
	408	50	6~38		24.5	40	58	78	45	60	40	24	22	7	44	72	40	68	140	100	170	257	1.1
		75	8~40																190	150	220	335.5	
		100	10~42																240	200	270	414	
		150	13~45																340	300	370	571	
	412	50	6~38		24.5	40	97	117	45	60	40	24	22	7	83	111	79	107	140	100	170	257	1.3
		75	9~41																190	150	220	335.5	
		100	10~42																240	200	270	414	

* ( ) indicates Fixed End dimensions.

Part Number Type	No.	Bending Radius Selectable	No. of Links	Mounting Direction *	€ Unit Price Main Body + Mounting Bracket (One Link € Unit Price x Link Qty.)+Mounting Bracket Price
MHPUS (Cable Carrier+Mounting Brackets)	102	19	5~23	S(Common to the Outer and Inner Circumference)	
	202	25	6~34		
		30	6~34		
		45	8~36		
	203	30	6~34		
		45	8~36		
	204	38	6~36		
		50	7~37		
	206	38	6~36	A	
		50	7~37		
	306	50	6~38		
		100	10~42	B	
	408	50	6~38		
		75	8~40		
		100	10~42		
		150	13~45		
	412	50	6~38		
		75	9~41		
		100	10~42		

<Cautions on Model Selection>
- A Cable Carrier and suitable Mounting Brackets (Moving Ends x 1 set, Fixed Ends x 1 set) are in a set.
- Please note that part number varies depending on outer/inner circumference mounting.

<Calculation Example>
For MHPUS206-38-21-S (Cable Carrier + Mounting Brackets, 21 Links),
1,60 EURx21+13,40 EUR=47,00 EUR

Order Example

Part Number	-	Bending Radius	-	No. of Links	-	Mounting Direction
MHPUS408	-	50	-	25	-	A

Days to Ship

6 Days P.87

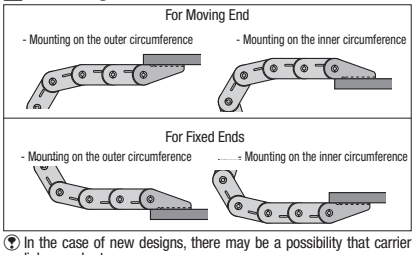
Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~29	30~39	40~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Mounting Direction

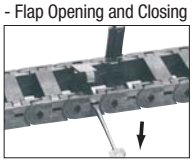


In the case of new designs, there may be a possibility that carrier links run short.
It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.

* Mounting Bracket Structural Components

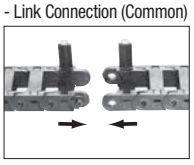
No.	Mounting Direction	Mounting Bracket Structural Components For Moving End	For Fixed Ends
102	S (Common to the Outer and Inner Circumference)	Common to the Outer and Inner Circumference	Common to the Outer and Inner Circumference
202~206	A	Mounting on the Outer Circumference	Common to the Outer and Inner Circumference
	B	Mounting on the Inner Circumference	Common to the Outer and Inner Circumference
306~412	A	Common to the Outer and Inner Circumference	Mounting on the Outer Circumference
	B	Common to the Outer and Inner Circumference	Mounting on the Inner Circumference

- Flap Opening and Closing



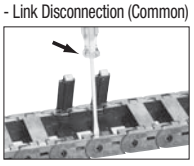
- To open the flap, insert the tip of a flat head screwdriver into the side window and pry. To close the flap, push down.

- Link Connection (Common)



- Open connected link flaps, mate the blocks with each other and push the both ends to joint fit together.

- Link Disconnection (Common)



- Open disconnected link flaps, insert and push down a flat head screwdriver in a gap between the links to disconnect.

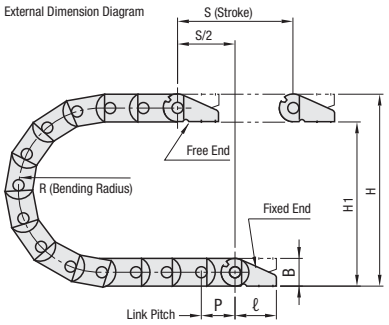
Cable Carriers
-Flap Open/Close Full Cover Type-

CAD Data

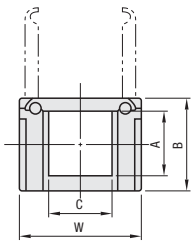


Type		Main Body	Mounting Bracket	
		M Material	M Material	S Surface Treatment
Main Body + Mounting Bracket	FHPS	Nylon 6+Glass Fiber 20% (Operation Temperature -10 ~ 80°C) Flammability Standard UL94-HB	1.0330/DC01	Trivalent STKM Bright Chromate Plating

External Dimension Diagram

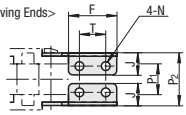


Cross-Section

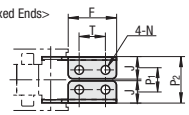


The above is a drawing of Cable Carrier assembled with 10 links and mounting brackets.

<Moving Ends>



<Fixed Ends>



<Cautions>
- Cable Carrier (10 Links and 1 Link) and mounting brackets are not assembled together at the time of delivery. Links must be connected and mounting brackets must be assembled for use.
- Please install the mounting bracket fixed end on the lower side, and moving end on the upper side (Refer to Positional Relationship in External Dimension Diagram). (Refer to the Positional Relationship in External Dimension Diagram)
- Mounting bracket shape varies depending on size.

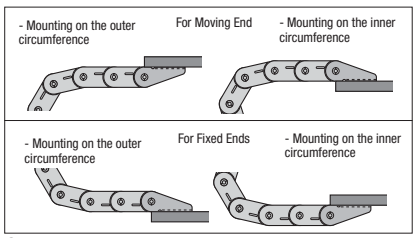
Part Number		Bending Radius Selectable	No. of Links	Mounting Direction *	Cable Carrier Dimensions						Mounting Dimensions								H (Mounting Height)	H1	HF (Required Physical Height)	K (Arc+ Allowance)	(Reference) Per 1m Long Weight (kg)
Type	No.				A	B	C	W	P	ℓ	F	T	J	N	Moving End P1	Moving End P2	Fixed End P1	Fixed End P2					
FHPS (Cable Carrier+Mounting Brackets)	202	30	8~43	A	13	20	14	26	20	30	20	10	10	4.5	9.8	21.8	8	20	80	60	95	144.2	0.28
	203	30	8~43		13	20	20	32	20	30					15.8	27.8	14	26	80	60	95	144.2	0.31
	204	38	7~34		13	22	22	40	26	43	32	18	14	5.8	18.6	34.6	15	31	98	76	118	179.3	0.5
	206	38	7~34												38.6	54.6	35	51	98	76	118	179.3	0.6
		50	9~36																122	100	142	217	
	408	70	8~45	B	25	40	58	78	45	60	40	24	22	7	44	72	40	68	180	140	210	319.8	1.36
		100	10~47																240	200	270	414	
	412	70	8~45		25	40	97	117	45	60	40	24	22	7	83	111	79	107	180	140	210	319.8	1.7
		100	11~49																240	200	270	414	

Part Number		Bending Radius Selectable	No. of Links	Mounting Direction *	€ Unit Price Main Body + Mounting Bracket (One Link € Unit Price x Link Qty.)+Mounting Bracket Price
Type	No.				
FHPS (Cable Carrier+Mounting Brackets)	202	30	8~43	A	
	203	30	8~43		
	204	38	7~34		
	206	38	7~34		
		50	9~36		
	408	70	8~45	B	
		100	10~47		
	412	70	8~45		
		100	11~49		

<Cautions on Model Selection>
- A Cable Carrier and suitable Mounting Brackets (Moving Ends x 1 set, Fixed Ends x 1 set) are in a set.
- Please note that parts number varies depending on mounting on outer/inner circumference mounting.

<Calculation Example>
For FHPS412-70-38-A (Main Body+Mounting Brackets, 38 Links), 5,90 EUR x 38+13,40 EUR=0,23 EUR 760

■Mounting Direction



In the case of new designs, there may be a possibility that carrier links run short. It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.

*** Mounting Bracket Structural Components**

No.	Mounting Direction	Mounting Bracket Structural Components	
		For Moving End	For Fixed Ends
202~206	A	Mounting on the Outer Circumference	Common to the Outer and Inner Circumference
	B	Mounting on the Inner Circumference	Common to the Outer and Inner Circumference
408 / 412	A	Common to the Outer and Inner Circumference	Mounting on the Outer Circumference
	B	Common to the Outer and Inner Circumference	Mounting on the Inner Circumference

Order Example

Part Number	-	Bending Radius	-	No. of Links	-	Mounting Direction
FHPS204	-	38	-	12	-	A

Days to Ship

6 Days P.87

Price

■Volume Discount (Round down to one Cent) P.87

Quantity	1~29	30~39	40~49
Rate	€ Unit Price	5%	10%

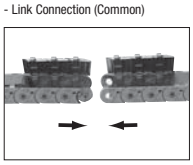
For orders larger than indicated quantity, please request a quotation.

- Flap Opening and Closing



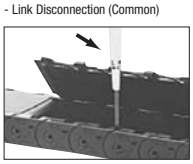
- Flaps are laid on one another. Insert a flat head screwdriver in the side window and pry to open one after another, starting with the top flap.

- Link Connection (Common)



- Open connected link flaps, mate the blocks with each other and push the both ends to joint fit together.

- Link Disconnection (Common)



- Open disconnected link flaps, insert and push down a flat head screwdriver in a gap between the links to disconnect.

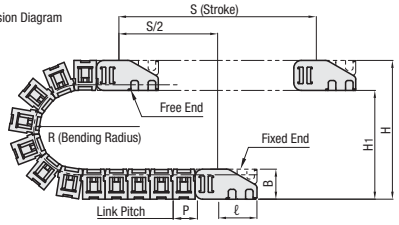
Low Particulate, Low Noise Type

CAD Data

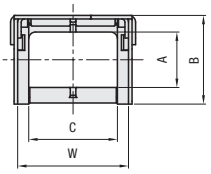


Type		Main Body	Mounting Bracket	
		M Material	M Material	S Surface Treatment
Main Body + Mounting Bracket	MPSCS	Nylon 6+Glass Fiber 30% TPEE (Operation Temperature -8 ~ 80°C) Flammability Standard UL94-HB	1.0330/DC01	Trivalent STKM Bright Chromate Plating

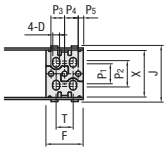
External Dimension Diagram



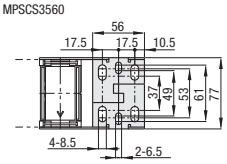
Cross-Section



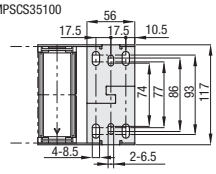
<Common to Moving and Fixed End>



- MPSCS3560



- MPSCS35100

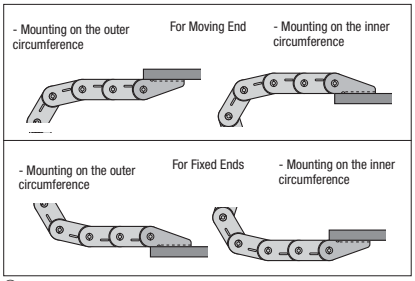


<Cautions>
- Cable Carrier (10 Links and 1 Link) and mounting brackets are not assembled together at the time of delivery. Links must be connected and mounting brackets must be assembled for use.
- Please install the mounting bracket fixed end on the lower side, and moving end on the upper side (Refer to Positional Relationship in External Dimension Diagram).
- Mounting bracket shape varies depending on size.

Part Number		Bending Radius Selectable	No. of Links	Mounting Direction	Cable Carrier Dimensions						Mounting Dimensions									H (Mounting Height)	H1	HF (Required Physical Height)	K (Arc+ Allowance)	(Reference) Per 1m Long Weight (kg)
Type	No.				A	B	C	W	P	ℓ	F	T	J	X	D	Applicable screws (D)	P1	P2	P3	P4	P5				
MPSCS (Cable Carrier+ Mounting Brackets)	1520	28	8~67	S (Common to Mounting on Outer and Inner Circumference)	15	25	20	28	18	29	22	10	32.8	30.4	4.2	M4	12	15	8	8	3	95	70	115	128.6	0.34
		34	9~68																			105	80	125	144.3	
	2040	31	8~77		20	33	40	50	20	35	26	14	54.8	52.4	6.5	M6	21	27				115	82	145	150.4	0.7
		38	9~78																			130	97	160	174	
		58	12~81																			170	137	200	236.8	
	2540	60	9~57		25	40	40	50	30	52.5	40	24	56.4	53.2	7	M6	21	40	-	-	-	185	145	215	251.5	0.77
		85	11~60																			235	195	265	330	
	2560	60	9~57		25	40	60	70	30	52.5			76.4	73.2		M6	35.4	47				185	145	215	251.5	0.94
	2580	60	9~57		25	40	80	90	30	52.5			96.4	93.2		M6	60	75.2				185	145	215	251.5	1.2
	3560	75	8~51		35	55	60	73	45	68.5	-	-	-	-	-	-	-	-				240	185	270	323.9	1.4
		100	10~53																			295	240	325	410.2	
	35100	75	8~47		35	55	100	113	45	68.5												240	185	270	323.9	2
		100	10~49																			295	240	325	410.2	

Part Number		Bending Radius Selectable	No. of Links	Mounting Direction	€ Unit Price Main Body + Mounting Bracket (One Link € Unit Price x Link Qty.)+Mounting Bracket Price
Type	No.				
MPSCS (Cable Carrier+Mounting Brackets)	1520	28	8~67	S (Common to Mounting on Outer and Inner Circumference)	
		34	9~68		
	2040	31	8~77		
		38	9~78		
		58	12~81		
	2540	60	9~57		
		85	11~60		
	2560	60	9~57		
	2580	60	9~57		
	3560	75	8~51		
		100	10~53		
	35100	75	8~47		
		100	10~49		

■Mounting Direction



<Cautions on Model Selection>
- A Cable Carrier and suitable Mounting Brackets (Moving Ends x 1 set, Fixed Ends x 1 set) are in a set.

<Calculation Example>
For MPSCS2540-60-32-S (Main Body+Mounting Brackets, 32 Links), 3,30 EUR x 32+24,30 EUR=129,90 EUR

- In the case of new designs, there may be a possibility that carrier links run short. It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.

Order Example

Part Number		Bending Radius		No. of Links		Mounting Direction
MPSCS2540	-	85	-	20	-	S

Price

■Volume Discount (Round down to one Cent) P.87

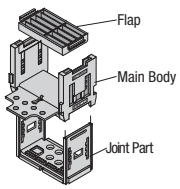
Quantity	1~29	30~39	40~49
Rate	Standard € Unit Price	5%	10%

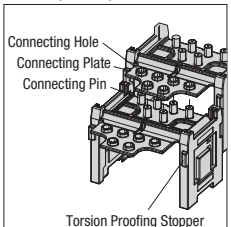
For orders larger than indicated quantity, please request a quotation.

Days to Ship: 6 Days P.87

■Low Particulate / Low Noise Cable Carrier (MPSCS) -Link Connection-

Component Structure Diagram

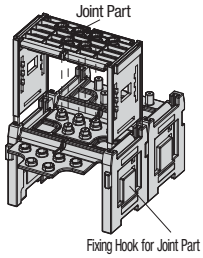




(1) Connecting the links
Align cable carrier connection pins with the connection holes. Be sure to keep clear of the twist prevention stopper when fitting them together.



(2) Fit in the main body
Make sure that the connection plate is fully mated with the cable carrier.



(3) Fit in joint parts
Please fit in the cable carrier so that joint parts connection holes are aligned with the connection pins.



(4) Check for proper connection
Please check if no gap is made between the joint parts and cable carrier, and if the joint parts fixing hooks are not raised.

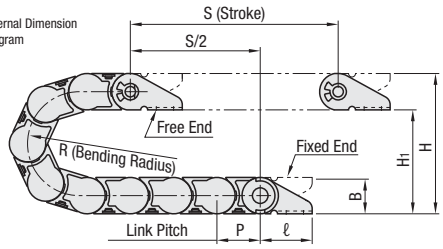
Low Friction · Low Noise Type

CAD Data

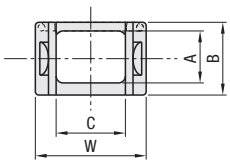


Type		Main Body	Mounting Bracket	
		M Material	M Material	S Surface Treatment
Main Body + Mounting Bracket	MPSPS	Nylon 6+Glass Fiber 30% (Operation Temperature -10 ~ 80°C) Flammability Standard UL94-HB	1.0330/DC01	Trivalent JIS STKM Bright Chromate Plating

External Dimension Diagram

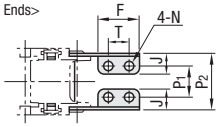


Cross-Section

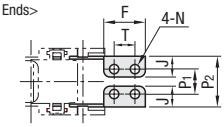


The above is a drawing of Cable Carrier assembled with 10 links and mounting brackets.

<Moving Ends>



<Fixed Ends>



<Cautions>
- Cable Carrier (10 Links and 1 Link) and mounting brackets are not assembled together at the time of delivery. Links must be connected and mounting brackets must be assembled for use.
- Please install the mounting bracket fixed end on the lower side, and moving end on the upper side (Refer to Positional Relationship in External Dimension Diagram). (Refer to the Positional Relationship in External Dimension Diagram)
- Mounting bracket shape varies depending on size.

Part Number Type	No.	Bending Radius Selectable	No. of Links	Mounting Direction	Cable Carrier Dimensions A	B	C	W	P	ℓ	Mounting Dimensions F	T	J	N	P1	P2	H (Mounting Height)	H1	HF (Required Physical Height)	K (Arc+ Allowance)	(Reference) Per 1m Long Weight (kg)
MPSPS (Cable Carrier+ Mounting Brackets)	1520	30	7~55	S (Common to Mounting on Outer and Inner Circumference)	15	21	20	32	25	30	20	10	10	4.5	15 (12)	27.2 (24.4)	81	60	100	154.2	0.36
		50	9~57														121	100	140	217	
	2035	45	7~45		20	26	35	47	32	35	26	14	15	7	27 (26)	44 (43)	116	90	140	211.3	0.5
	2550	50	8~51		25	35	50	65	36	55	40	24	20	7	40 (35.4)	60.6 (56)	135	100	160	257	0.86
		75	10~53														185	150	210	333.5	
		100	12~55														235	200	260	414	
	2585	60	8~49		25	35	85	100	43.5	55					75 (70.4)	95.6 (91)	155	120	180	288.4	1.05
		75	9~50														185	150	210	335.5	
		100	11~52														235	200	260	414	
	3580	100	8~43		35	50	80	101	62.5	65	40	24	20	7	70 (65)	93.6 (88)	250	200	280	440	1.76
		150	10~45														350	300	380	597	

* ( ) indicates Fixed End dimensions.

Part Number Type	No.	Bending Radius Selectable	No. of Links	Mounting Direction	€ Unit Price Main Body + Mounting Bracket (One Link € Unit Price x Link Qty.)+Mounting Bracket Price
MPSPS (Cable Carrier+ Mounting Brackets)	1520	30	7~55	S (Common to Mounting on Outer and Inner Circumference)	
		50	9~57		
	2035	45	7~45		
	2550	50	8~51		
		75	10~53		
		100	12~55		
	2585	60	8~49		
		75	9~50		
		100	11~52		
	3580	100	8~43		
		150	10~45		

Mounting Direction

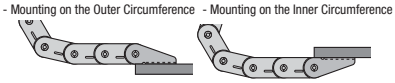
For Moving End

- Mounting on the Outer Circumference - Mounting on the Inner Circumference



For Fixed Ends

- Mounting on the Outer Circumference - Mounting on the Inner Circumference



In the case of new designs, there may be a possibility that carrier links run short.
It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.

<Cautions on Model Selection>
- A Cable Carrier and suitable Mounting Brackets (Moving Ends x 1 set, Fixed Ends x 1 set) are in a set.

<Calculation Example>
For MPSPS2585-75-22-S (Cable Carrier+Mounting Brackets, 22 Links), 4,00 EUR x 22+ 10,90 EUR=98,90 EUR

Order Example

Part Number	-	Bending Radius	-	No. of Links	-	Mounting Direction
MPSPS3580	-	100	-	18	-	S

Price

Volume Discount (Round down to one Cent) P. 87

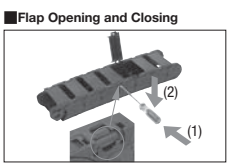
Quantity	1~29	30~39	40~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 6 Days P. 87

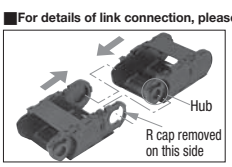
For details of link connection, please refer to attached Instruction Manual.

Flap Opening and Closing

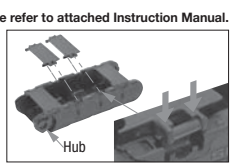


To open the flap, insert a flat head screw driver into the window and pry. To close the flap, push down.

For details of link connection, please refer to attached Instruction Manual.



Remove the connected link flap and R cap, and insert the connected main body cap pilot into the main body equipped with the removed cap, then push the entire body in.



After checking if the pilots and holes are connected, align removed R cap with the cable carrier groove shape, then push it in to install the flap.

Cable Carrier Supporter Channels

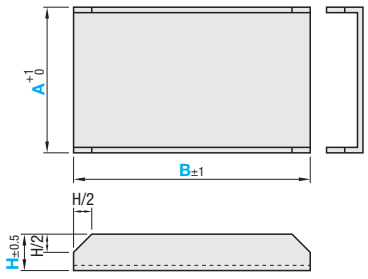
CAD Data



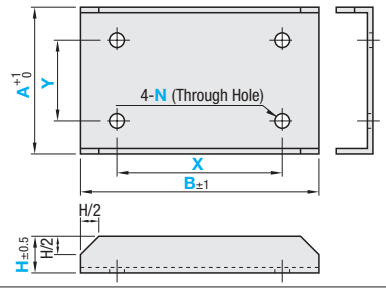
Type	Mounting Hole	Material	Plate Thickness (mm)	Surface Treatment
CBC	Not Provided	JIS SECC	1.6	Electrolytic Zinc Plating
CBCS		1.4016/X6(8)Cr17	1.5	-
CBCH	Provided	JIS SECC	1.6	Electrolytic Zinc Plating
CBCSH		1.4016/X6(8)Cr17	1.5	-

<Machining Conditions>
4+N≤Y≤A-(14+N)
4+N≤X≤B-(10+N)

No Mounting Hole



Mounting Hole



Part Number Type	A Selectable	B 5mm Increment	H	X Specify in 1mm Increment	Y Specify in 1mm Increment	N Selectable (Hole Dia.)
CBC CBCS CBCH CBCSH	40	200~1000	10	10~984	10~20	6 7 9 11
	50				10~30	
	60				10~40	
	70				10~50	
	80		20		10~60	
	90				10~70	
	120				10~100	

Order Example

Part Number	-	A	-	B	-	H	-	X	-	Y	-	N
CBCH	-	A70	-	B800	-	H10	-	X700	-	Y30	-	N11

Days to Ship: 10 Days

Price

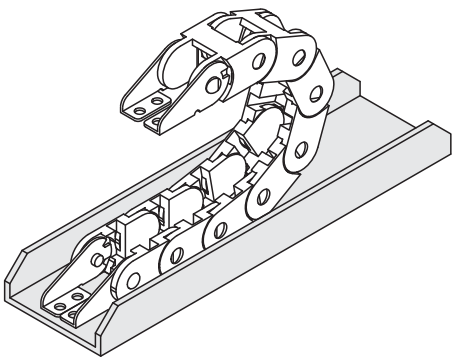
Volume Discount (Round down to one Cent) P. 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example

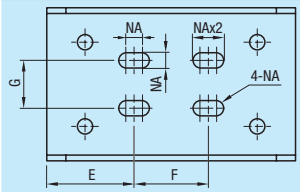
A	B	€ Unit Price CBC	CBCS	CBCH	CBCSH
40	200~395				
	400~695				
	700~1000				
50	200~395				
	400~695				
	700~1000				
60	200~395				
	400~695				
	700~1000				
70	200~395				
	400~695				
	700~1000				
80	200~395				
	400~695				
	700~1000				
90	200~395				
	400~695				
	700~1000				
120	200~395				
	400~695				
	700~1000				



Alterations

Part Number	-	A	-	B	-	H	-	X	-	Y	-	N	-	(TC)
CBCH	-	A70	-	B800	-	H10	-	X700	-	Y30	-	N11	-	TC

- E70 - F30 - G30 - NA5

Alteration	Code	Spec.	Price Adder
	TC	Applicable to Mounting Hole Type. Adds cable carrier mounting holes. E/F/G specified in 1mm increment Select NA from 5•6•7 Order Code TC-E30-F30-G40-NA5 <Machining Conditions> 4+NA≤G≤A-(14+NA) 4+NAx2≤F≤B-(10+NAx2) 4+NA≤E≤B-(F+4+NA)	13,00

Ball Screws and Support Units

Rolled Ball Screws (For transfer)



Price Reduced Up to 26%



Price Reduced Up to 26%

Product Name	Rolled Ball Screws -Shaft Diameter 8, Lead 2 · 4-	-Shaft Diameter 10, Lead 2 · 4 · 10-
Page	655	657



Price Reduced Up to 26%


Price Reduced Up to 26%

Rolled Ball Screws -Shaft Diameter 12, Lead 4 · 10-	-Shaft Diameter 14, Lead 5-
659	659



Price Reduced Up to 25%



Price Reduced Up to 28%

Rolled Ball Screws -Shaft Diameter 15, Lead 5 · 10 · 20-	-Shaft Diameter 20, Lead 5 · 10 · 20-
661	663



Price Reduced Up to 28%


Price Reduced Up to 11%


Price Reduced Up to 28%

Rolled Ball Screws -Shaft Diameter 25, Lead 5 · 10 · 25-	-Shaft Diameter 28, Lead 6-	-Shaft Diameter 32, Lead 10 · 32-
665	667	667


Price Reduced Up to 22%


Price Reduced Up to 22%



Rolled Ball Screws -Block Nut, Lead 5-	-Block Nut, Lead 10-	-Shaft Ends Configurable-
669	669	671

Precision Ball Screws (For positioning)



Price Reduced 20%



Precision Ball Screws -Shaft Diameter 6, Lead 1-	-Shaft Diameter 8, Lead 1 · 2-	-Shaft Diameter 10, Lead 2 · 4 · 10-
673	673	675






Precision Ball Screws -Shaft Diameter 12, Lead 2 · 4 · 5 · 10-	-Shaft Diameter 15, Lead 5 · 10 · 20 · 40-	-Shaft Diameter 20, Lead 5 · 10 · 20 · 40-	-Shaft Diameter 25, Lead 5 · 10 · 20-
677	679	681	683

Support Units


Price Reduced Up to 5%


Price Reduced Up to 5%


Price Reduced Up to 5%


Price Reduced Up to 5%

Support Units - Square -Fixed Side Standard-	-Fixed Side - Economy Type-	-Fixed Side with Dowel Hole-	-Fixed Side - Radial Bearing Type-
687	687	688	688










Support Units - Square -Support Side-	Stoppers for Ball Screws	Support Units - Square -Fixed Side with Damper-	-Support Side Unit with Damper-
689	689	690	690

Addition











Precision Collars for Support Units	Support Units - Square -Fixed Side Compact-	-Fixed Side Low Profile-	–Fixed Side Mounting Hole Narrow Pitch–	-Support Side Compact-
690	691	691	691	692

Addition






Price Reduced Up to 8%




Price Reduced Up to 8%

Support Units - Square -Support Side Low Profile-	-Support Side Mounting Hole Narrow Pitch-	Support Units - Round -Fixed Side Standard Type-	-Support Side-
692	692	693	693


Price Reduced Up to 4%


Price Reduced Up to 4%

Ball screw Peripheral Components

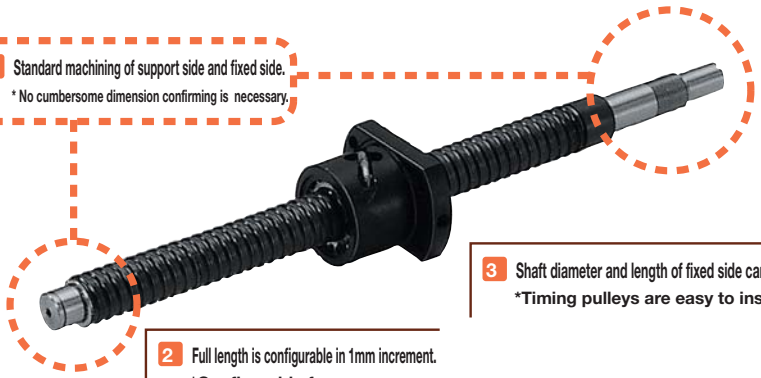
Addition





Support Units - Round -Fixed Side Economy-	-Fixed Side - Radial Bearing Type-	Brackets for Ball Screw Nuts -Block Type-	Joint Units
694	694	695	696

■Features of MISUMI Ball Screws



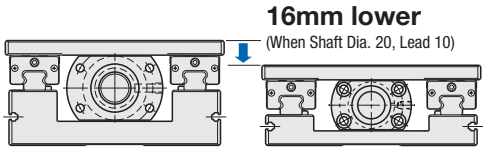
Rolled Ball Screws · Precision Ball Screws
-Features-

■Features of MISUMI Ball Screws
- Rolled Ball Screws with lower Nut capacity up to 40%, as well as Compact Nut Series are now available!

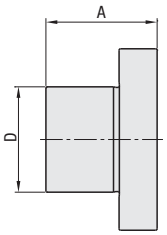
Reduced in volume up to 40%.

Lower profile linear units can be designed.





-Nut Size Comparison-



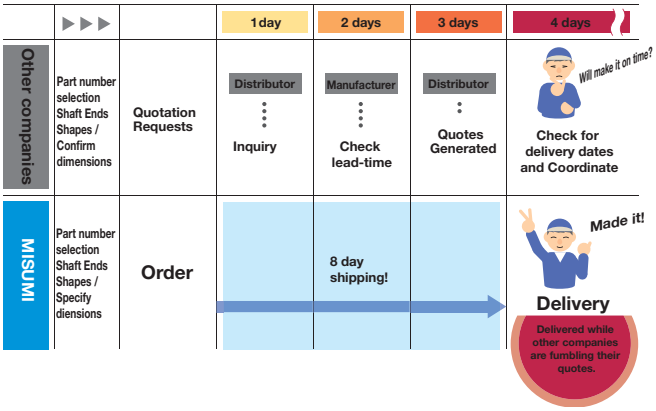
Screw Shaft Outer Diameter	Lead	D Dimensions		A Dimensions	
		Standard Ball Nut	Compact Ball Nut	Standard Ball Nut	Compact Ball Nut
8	2	20	16	28	22.5
10	4	26	22	34	31
12	4	30	24	35	31
15	5	34	31	40	33
	10	34	31	52	48
20	5	40	36	40	38
	10	52	36	57	58.5
25	5	43	42	40	35

Type	Shape	Features
Standard Nut		Most common type.
Compact Nut		Smaller by up to 40% than conventional Nuts
Block Nut		No need for a Nut Bracket for mounting the table directly.

•Up to 28% of price down is achieved. Enjoy smart shopping!
All prices shown in the table are calculated with the shaft. length specified in 1mm increments, and Standard Shaft Ends Machining Alterations.

Type	Nut Types	Precision Grade	Type	Price Reduction Rate	Price Reduction Examples			
Rolled Ball screw	Compact Ball Nut	C10	BSSC	Max. reduction rate for previous types **Δ20%**	BSSC2010-350	-		FY 10 **151,20 EUR**
	Standard Ball Nut	C10	BSSZ	Max. **Δ6%**	BSSZ2010-350	FY 09 189,00 EUR	⇒	FY 10 **178,30 EUR**
		C10	BSSR	Max. **Δ12%**	BSSR2020-600	FY 09 299,10 EUR	⇒	FY 10 **264,70 EUR**
		C7	BSST	Max. **Δ28%**	BSST2020-300	FY 09 442,00 EUR	⇒	FY 10 **319,60 EUR**
	Block Ball Nut	C10	BSBR	Max. **Δ22%**	BSBR2005-300	FY 09 310,50 EUR	⇒	FY 10 **240,70 EUR**

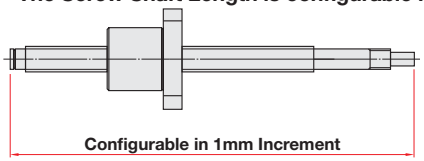
- Machined shaft ends screws require 8 day shipping. Express service is also available for the quickest delivery (Except for some products).



- The Screw Shaft Length is configurable in 1mm increments.
- With shaft ends machining (Partial dimension change is available.)
- Alterations for shaft ends (Flats machined, Keyways, etc.)

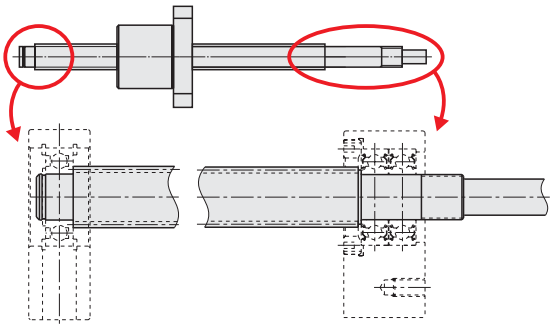
→Including any machining, 8 Day Shipping is available for all products.

- The Screw Shaft Length is configurable in 1mm increments.



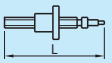
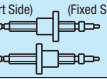
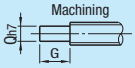
- Machined Shaft Ends

Both support and fixed sides are machined and delivered so that the screw-end dimensions are fit to the suitable Support Units.

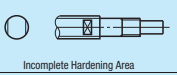
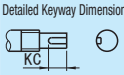
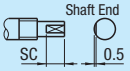
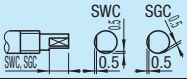


- Alterations for shaft ends are available.

<Alterations on Support Side Shaft End>

Alterations	Code
No Machining on Support Side Shaft End 	NC
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard / Changed 	RLC
No Retaining Ring Groove on Support Side Shaft End 	RNC
Change Support Side Shaft End Machining 	GC
Change Support Side Shaft End Length 	FC

<Alterations on Fixed Side Shaft End>

Alterations	Code
Wrench Flats on Fixed Side 	SZC
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC
Keyway on Fixed Side Shaft End 	KLC
Flat Machined on Fixed Side Shaft End 	SC
2 Flats on Fixed Side Shaft End 	SWC SGC

*For machining details, refer to each product page.

- Various rolled and precision products are available for various purposes.

-Rolled Ball Screws Lineup-

Type	Example	Shaft Diameter	Lead	Axial Clearance (mm)	Shaft Length (mm) MIN	MAX
Standard Nut Accuracy Grade C7	BSST	8	2	0.03 or Less	100	380
		10	4		150	585
		12	4		150	795
		15	5		150	1200
			10		200	1200
			20		200	1200
		20	5		200	1200
			10	0.05 or Less	250	2000
			20	0.03 or Less	250	2000
		25	5		200	2000
			10	0.07 or Less	300	2000
Standard Nut Accuracy Grade C10	BSSZ BSSR	8	2	0.05 or Less	100	400
			4		100	380
		10	2		150	585
			4		150	600
			10		150	585
		12	4		150	800
			10	0.10 or Less	150	800
		14	5		150	800
		15	5		150	1200
			10		200	1200
			20		200	1200
		20	5		200	2000
			10	0.15 or Less	250	2000
			20	0.10 or Less	250	2000
		25	5		200	2000
			10	0.20 or Less	300	2000
			25	0.12 or Less	300	2000
		28	6	0.10 or Less	250	2000
		32	10	0.20 or Less	300	2000
			32	0.15 or Less	300	2000
Compact Nut Accuracy Grade C10	BSSC	8	2	0.05 or Less	100	400
		10	4		150	600
		12	4		150	800
		15	5	0.10 or Less	150	1200
			10		200	1200
		20	5		200	2000
			10	0.15 or Less	250	2000
		25	5	0.10 or Less	200	2000
Block Nut Accuracy Grade C10	BSBR	15	5	0.10 or Less	150	1200
		20			200	1200
		25			200	1500
		15	10		150	1200
		20		0.15 or Less	200	1200
		25		0.20 or Less	200	1500

-Precision Ball Screws Lineup-

Type	Example	Shaft Diameter	Lead	Axial Clearance (mm)	Shaft Length (mm) MIN	MAX
Standard Nut Accuracy Grade C3	BSX	6	1	0 (Preloaded)	80	205
		8	1		80	255
			2		100	240
		10	2		100	310
		12	2		150	390
			5		150	440
		15	5		150	590
Standard Nut Accuracy Grade C5	BSS BSL	8	2	0.005 or Less	100	210
		10	2		100	315
			4		150	380
			10		150	450
		12	2		150	445
			4		150	400
			5		150	450
			10		200	600
		15	5		150	1095
			10		200	1095 (895)
			20		230	1095
			40	0.010 or Less	300	1095
		20	5	0.005 or Less	200	1000
			10		250	1500
			20		250	1500
			40		300	1495
		25	5		300	995
			10		300	1500
			20		300	1500
Standard Nut Accuracy Grade C7	BSSE	8	2	0.030 or Less	100	210
		10	2		100	315
			4		150	380
		12	2		150	445
			5		150	450
			10		200	600
		15	5		150	1095
			10		200	1095
			20		230	1095
		20	5		200	1000
			10		250	1500
			20		250	1500
		25	10		300	1500
			20		300	1500

The value in ( ) is for BSL.

Available Greases

Grease type can be changed from the standard type to the following types.
Selecting L or G type allows great reduction of the grease particle dispersion caused by operation.

Part Number	Product Name	Principal Features
L Type	ET-100 (Made by Kyodo Yushi)	Excels in heat resistance, oxidation stability, adhesion and adhesive power. In addition, splash or leakage is little.
G Type	LG2 (Made by NSK Ltd.)	Special grease for linear guides, ball screws and etc. for clean-room use.

Item		Condition	Unit	Measurement Method	L Type	G Type
Grease Performance	Thickener	-	-	-	Aromatic Diurea	Lithium Type
	Base Oil	-	-	-	Ether Synthetic Oil	Mineral Oil + Synthetic Hydrocarbon Oil
	Base Oil Viscosity	40°C	mm^2/s	JIS K2220 5.19	103	30
		100°C			12.8	-
	Worked Penetration	-	-	JIS K2220 5.3	280	207
	Dropping Point	-	°C	JIS K2220 5.4	<260	200
	Evaporation Amount	99°C x 22h	wt%	-	0.15%	1.40%
	Oil Separation Rate	100°Cx24h	wt%	JIS K2220 514	1.2%	0.8%
	Operating Temp.	In Air	°C	-	-40~200	-10~80

Available Ball Screws and Grease Types

Type	Precision Grade	Type	€ Unit Price (Add to the price of Standard Type) L≤1000	€ Unit Price (Add to the price of Standard Type) L>1000
Precision Ball Screws	C 5	BSS · BSL	L Type 100,00	L Type 120,00
	C 7	BSSE		
	C 7	BSST		
Rolled Ball Screws	C10	BSSR BSSZ	G Type 140,00	G Type 170,00
		BSSRK BSSZK		
		BSBR BSBRK		

⊗Not applicable to Precision Ball Screws Precision Grade C3

Price

Add prices from the table above to corresponding standard prices.

<Price Calculation Example> BSS2010L–700 (Precision Ball Screws, Shaft Diameter 20, Lead 10)

(Regular Type € Unit Price) + € Unit Price = (Total)

551,70 EUR + 100,00 EUR = 651,70 EUR (Price per pc.)

Order Example

Part Number - L

BSS2010L - 700 (L Type Greased)

BSS2010G - 700 (G Type Greased)

Please add L, G after the part number of Standard Type when placing an order.

Days to Ship 10 Days

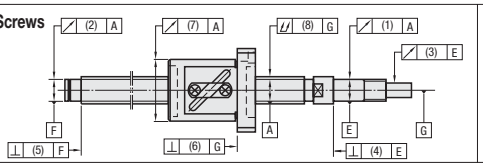
Alterations Part Number - L -(FC, MC...etc.)

BSS2010L - 700 - RNC

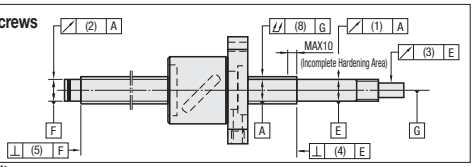
Confirm the details of alterations from each page.

Mounting Interface Accuracies

Precision Ball Screws



Rolled Ball Screws



Unit: mm

Part Number Type	Screw Shaft Diameter	(1)(2) Runout Tolerance (Max.)	(3) Runout Tolerance (Max.)	(4)(5) Perpendicularity Tolerance(Max.)	(6) Perpendicularity Tolerance(Max.)	(7) Runout Tolerance (Max.)
BSX	6	0.008	0.008	0.004	0.008	0.008
	8					
	10					0.010
	12					
	15	0.009	0.009			0.012
BSS BSL	8	0.011	0.011	0.005	0.010	0.012
	10					
	12					
	15	0.012	0.012		0.011	0.015
	20					
	25	0.013	0.013		0.013	0.019
BSSE BSST	8	0.014	0.014	0.007	0.014	0.020
	10					
	12				0.018	0.030
	15					
	20					
	25	0.020	0.020			
BSSR_ BSSZ_ BSSC_ FBS_ _	8	0.040	0.040	0.010	-	-
	10					
	12					
	14					
	15					
	20					
	25	0.060	0.060			
	28	0.060	0.060	0.010	-	-
	32					
BSBR_	15	0.040	0.040	0.010	-	-
	20					
	25	0.060	0.060			

(1), (2) Radial runout of the thread surface against the shaft support axis. These parameters are affected by "(8) Shaft's total radial runouts" and may be subject to compensation.

(3) Radial runout of drive component interface surface in relation to screw shaft support axis.

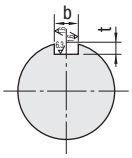
(4), (5) Perpendicularity of shaft's bearing shoulders in relation to screw shaft support axis.

(6) Perpendicularity of ball nut mounting flange surface (datum) in relation to screw shaft axis.

(7) Radial runout of ball nut body outer circumference in relation to screw shaft axis.

(8) Shaft's total radial runouts.

Keyway dimension details located at P on fixed side shaft end



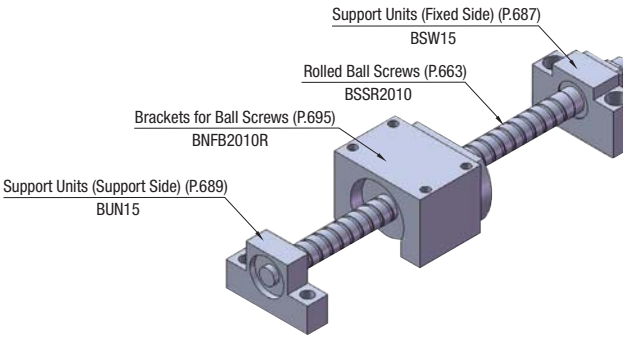
Shaft Diameter	b Reference Dim.	b Tolerance (N9)	t Reference Dim.	t Tolerance
6~7	2	-0.004	1.2	+0.1 0
8~10	3	-0.029	1.8	
11~12	4	0 -0.03	2.5	
13~17	5		3.0	
18~20	6		3.5	

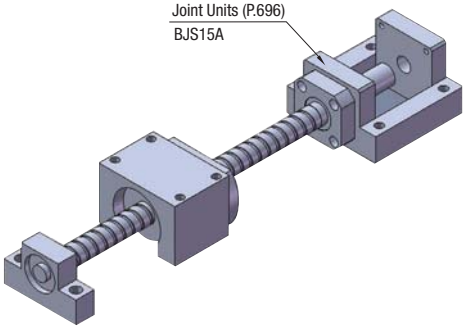
Unit: mm

Part Number Type	Screw Shaft Diameter	(8) Runout Tolerance (Max.) Screw Shaft Length ~125	126~200	201~315	316~400	401~500	501~630	631~800	801~1000	1001~1250	1251~1600	1601~2000
BSX	6	0.025	0.035	0.050	-	-	-	-	-	-	-	-
	8											
	10			0.040	0.050	0.065	-	-	-	-	-	-
	12											
	15	-	0.025	0.030	0.040	0.050	0.055	-	-	-	-	-
BSS BSL	8	0.035	0.040	0.050	0.065	-	-	-	-	-	-	-
	10			0.055	0.065	0.080	0.090	-	-	-	-	-
	12											
	15	-		0.045	0.055	0.060	0.075	0.090	0.120	0.150	0.190	-
	20											
	25	-	-	0.040	0.045	0.050	0.060	0.070	0.085	0.100	0.130	-
BSSE BSST	8	0.060	0.075	0.100	-	-	-	-	-	-	-	-
	10	0.055	0.065	0.080	0.100	0.120	0.150	-	-	-	-	-
	12											
	15	-	0.060	0.070	0.080	0.095	0.110	0.140	0.170	0.210	0.270	-
	20											
	25	-	-	0.060	0.070	0.080	0.090	0.100	0.130	0.150	0.190	-
BSSR_ BSSZ_ BSSC_ FBS_ _ BSBR_	8	0.100	0.140	0.210	(0.270)	-	-	-	-	-	-	-
	10	-	0.120	0.160	0.210	0.270	0.350	-	-	-	-	-
	12											
	14	-	0.110	0.130	0.160	0.200	0.250	-	-	-	-	-
	15	-	0.110	0.130	0.160	0.200	0.250	0.320	0.420	0.550	0.730	-
	20											
	25	-	-	0.110	0.130	0.160	0.190	0.230	0.300	0.380	0.500	0.690
	28	-	-	0.110	0.130	0.160	0.190	0.230	0.300	0.380	0.500	0.690
	32											

■Combination with Peripherals

- Support Units / Nut Brackets / Joint Units are designed for MISUMI Ball Screws.





- Support Units
  - Designed for the shaft ends sizes of MISUMI Ball Screws.
  - Widest variety of items and prices available in the industry.

	Type	Standard Type			Compact Type			Economy Type			Radial Bearing Type		
		Type	Type	Features	Type	Type	Features	Type	Type	Features	Type	Type	Features
Fixed Side	Square Type	Square Standard Type	BSW BSWN BSWR	Standard Type Angular Contact Bearing Class 5 (P.687)	Square Compact Type	BSQ BSQM	Angular Contact Bearing Class 0 (P.691) Most compact of Square Type	Square Economy Type	BSWE BSWEM BSWER	Angular Contact Bearing Class 0 (P.687) 20% more economical than Standard Type	Square Radial Bearing Type	BSWZ BSWZM	Radial Bearing used (P.688) 30% more economical than Standard Type
		Square Standard Type with Dowel Holes	BSWG BSWGN BSWGR	Angular Contact Bearing Class 5 Dowel holes added to Standard Type. (P.688)	Square Low Profile Type	BSV BSVM	Angular Contact Bearing Class 5 (P.691) Lowest height of all Square Types.	-			-		
		Square Standard Type with Damper	BSWD	Angular Contact Bearing Class 5 Urethane damper is glued to Standard Type (P.690)	Square, Narrow Mounting Hole Pitch	BSA BSAM	Angular Contact Bearing Class 5 (P.691) Most compact in width of Square Type	-			-		
	Round Type	Round Standard Type	BRW BRWN BRWR	Standard Type Angular Contact Bearing Class 5 (P.693)	-			Round Economy Type	BRWE BRWEM BRWER	Angular Contact Bearing Class 0 (P.694) 20% more economical than Standard Type	Round Radial Bearing Type	BRWZ BRWZM	Radial Bearing used (P.694) 30% more economical than Standard Type

	Type	Standard Type			Compact Type			Retaining Ring Type		
		Type	Type	Features	Type	Type	Features	Type	Type	Features
Support Side	Square Type	Square Standard Type	BUN BUNM BUNR	Standard Type (P.689)	Square Compact Type	BUQ BUQM	Most compact of Square Type (P.692)	Square Standard Type with Retaining Ring	BTN BTNM	Retaining Ring Type (P.689) Prevents the Ball Screw Bearing from falling out.
		-			Square Low Profile Type	BUV BUVM	Lowest height of all Square Types. (P.692)	-		
		Square Standard Type with Damper	BUND	Urethane damper is glued to Standard Type. (P.690)	Square, Narrow Mounting Hole Pitch	BUA BUAM	Most compact in width of Square Type (P.692)	-		
	Round Type	Round Standard Type	BUR BURM BURR	Standard Type (P.693)	-			Round Standard Type with Retaining Ring	BTR BTRM	Retaining Ring Type (P.693) Prevents the Ball Screw Bearing from falling out.

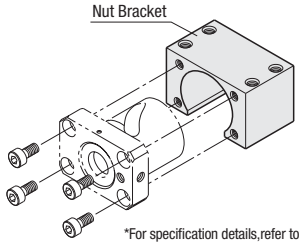
When the Rolled Ball Screw Shaft Diameter 15, Lead 10 is combined with
Support Units Fixed Side (BRW12)
Support Units Support Side (BUR12)

→ **Fixed Side 63,30 EUR**

→ **Support Side 63,30 EUR**

* For details of mounting method of a Ball Screw and a Support Unit,refer to **P.686**. * For details of combination of Ball Screws and Support Units, refer to the Ball Screws Product Page.

- Nut Brackets
  - Various sizes are available for the nut sizes of MISUMI Ball Screws.

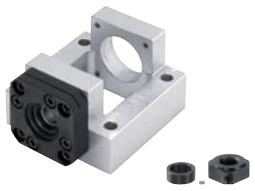


When the Rolled Ball Screw Shaft Diameter 15, Lead 10 is combined with the Nut Bracket (BNFB1510R)

42,00 EUR

*For specification details,refer to **P.695**

- Joint Units
  - The Support Unit and motor locating feature are all-in-one, therefore, the precise shaft centering is possible.
  - Many flanges provided by motor manufactures can be used.



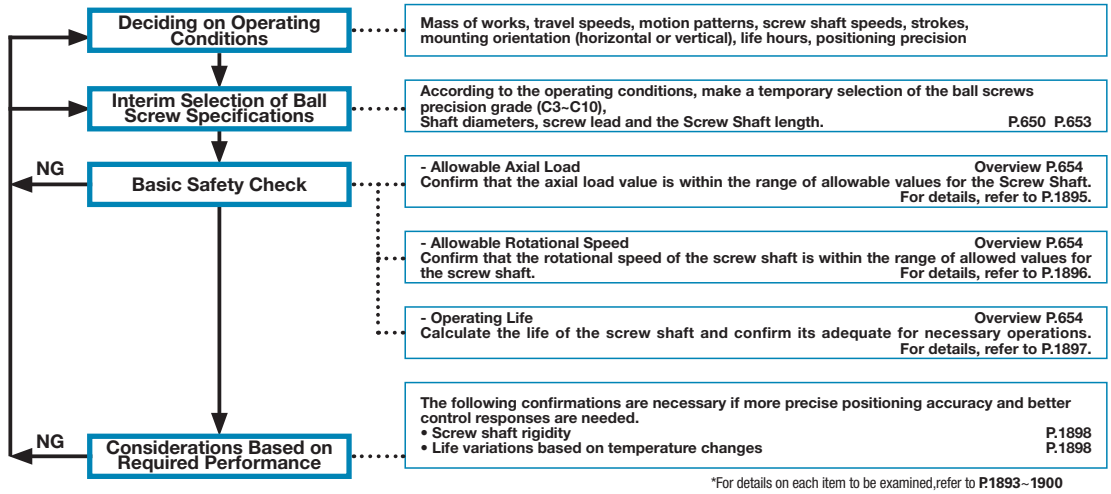
When the Rolled Ball Screw Shaft Diameter 15, Lead 10 is combined with the Joint Unit (BJS12A)

158,00 EUR

*For specification details,refer to **P.696**

- Selection of Ball Screws

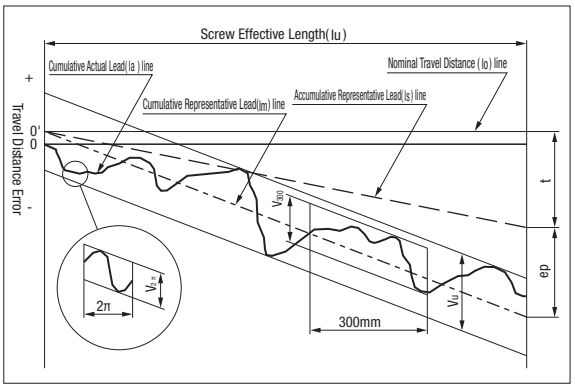
Refer to the following for the standard Ball Screws selection procedures.



*For details on each item to be examined,refer to **P.1893~1900**

- Lead Accuracy of Ball Screws (Details P.1893)

The lead accuracy of the Ball Screws is defined by the JIS Standard Characteristics (ep, Vu, V_{300} and $V_{2\pi}$)
In general, confirm the Actual Mean Travel Error for the Ball Screws is within the range of necessary positioning precision. Then select the precision grade for the Ball Screws to be used. Following are definitions and allowable values for each characteristic.



Term	Symbol	Meaning
Actual Mean Travel Error	ep	Difference between Actual Mean Travel and Specified Travel.
Variation	Vu V_{300} $V_{2\pi}$	Maximum difference of the actual travel contained between two lines drawn parallel to the actual mean travel. Defined by the following three parameters: Vu: Maximum value for the effective thread length. V_{300}: Variation for a 300mm span arbitrarily taken from the effective thread length. $V_{2\pi}$: Variation for an arbitrary 1 revolution (2πrad).
Specified Travel	ls	While the Nominal Travel indicates the nominal travel distance, this is the amount of axial travel distance after compensating possible axis expansion and contraction caused by thermal rise and loads.
Specified Travel Target Value	t	Difference between Specified Travel and Nominal Travel over the effective thread length. This value is predetermined by compensating for possible expansion and contraction caused by thermal conditions and external loads. This is determined by experimental data or experiences.
Actual Travel	la	Actually measured travel distance.
Actual Mean Travel	lm	Straight line representing the trend of actual travel. Straight line obtained by least squares method or other simplified and optimal approximation method from the curve that indicates the actual travel distance.

-Allowable Value-

■Allowable value of Actual Mean Travel Error (±ep) and Variation (Vu) for Positioning Screws (C series) Unit: μm

Effective Screw Length (mm)		Precision Grade			
		C3		C5	
More than	or Less	Actual Mean Travel Lead Error	Variation	Actual Mean Travel Lead Error	Variation
	315	12	8	23	18
315	400	13	10	25	20
400	500	15	10	27	20
500	630	16	12	30	23
630	800	18	13	35	25
800	1000	21	15	40	27
1000	1250	24	16	46	30
1250	1600	29	18	54	35

■Standard values for variations within 300mm of effective thread length (V300) and in one revolution (V2π) for Positioning Screws (JIS B 1192-1997, C accuracy grade series). Unit: μm

Precision Grade	C3		C5	
Item	V_{300}	$V_{2\pi}$	V_{300}	$V_{2\pi}$
Standard Value	8	6	18	8

■Standard values for variations within 300mm of effective thread length (V300) for Transfer Screws (JIS B 1192-1997, Ct accuracy grade series). Unit: μm

Precision Grade	Ct7	Ct10
V_{300}	50	210

Actual Mean Travel Error (ep) for Transfer Screws (JIS B 1192-1997, Ct accuracy grade series) is obtained by ep=2 Lu/300 · V_{300}.

• Allowable axial load of Ball Screws (Details P.1895)

The allowable axial load represents a maximum load, including a safety margin, that causes shaft buckling.
The max. axial load to the Screw Shaft must be equal to or less than the allowable axial load value.

(1) Calculation of the Allowable Axial Load

Use the following 3 factors to find the value from the Allowable Axial Load Curve (Fig.2)
- Screw Shaft Diameter (Ø)
- Method of Mount Support (See Fig. 3)
- Distance between Load Acting Points (Refer to Fig. 3)

* Use a formula to find more accurate Allowable Axial Load.
(Refer to **P.1895**)

(2) Calculation of Maximum Axial Loads

Use the following formulas for calculating each axial load at acceleration, constant speed and deceleration (at horizontal installation).
The largest load is regarded as the Maximum Axial Load.

- Constant speed ··· Axial Load (Pb)=μWg
- Acceleration ··· Axial Load (Pa)=Wα+μWg
- Deceleration ··· Axial Load (Pc)=Wα-μWg

*When vertical mounting, omit "μ" from the calculation.

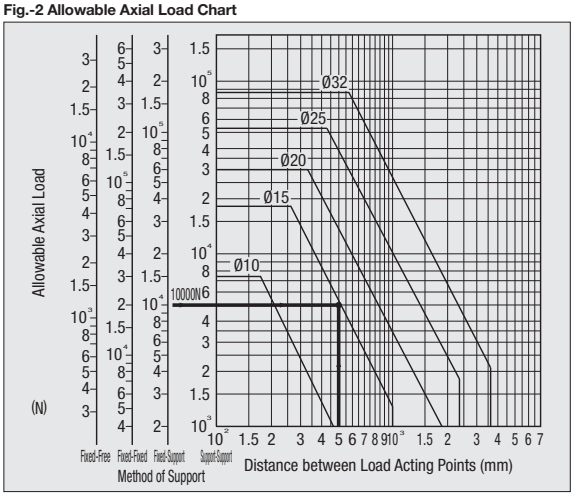
μ: Linear Guide Friction Constant (0.02 for the Linear Guides)
W: Mass of Works
g: Gravitational Acceleration 9.8m/s^2
α: Acceleration (*)

(*) Acceleration (α)=(Vmax/t)X10^{-3}
Vmax:Fast-feed Velocity
t:Acceleration / Deceleration Time

(3) Safety Check

Check the Allowable Axial Load Curve (Fig. 2) to
confirm the maximum axial load value is equal to or less than the allowable axial load values.

Fig.-2 Allowable Axial Load Chart



- Allowable Rotational Speed (Details P.1896)

The rotational speed of Ball Screws is figured out by the necessary travel speed and the Ball Screw lead. The frequency must be equal to or less than the allowable rotational speed.
The allowable rotational speed is examined by using the critical speed on the Rotary Shafts and the DmN value, which is the Rotary Speed limit of the ball circulating in the nuts.

(1) Allowable Rotational Speed

(1) Calculation of Allowable Rotational Speed

Use the following 3 factors to find the value from the Allowable Rotational Speed Curve (Fig.4)
- Screw Shaft Diameter (Ø)
- Method of Mount Support (See Fig. 3)
- Distance between Load Acting Points (Refer to Fig. 3)

*Use a formula to find more accurate Allowable Rotational Speed.
(Refer to **P.1896**)

(2) Safety Check

Use the Allowable Rotational Speed (Fig. 4) to
confirm the Screw shaft rotational speed is equal to or less than the allowable rotational speed values.

(2) DmN value

(1) Calculation of DmN

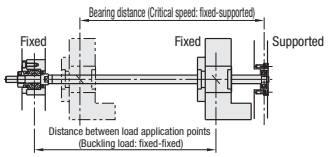
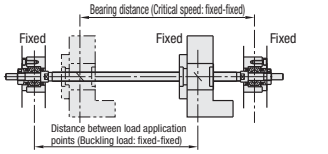
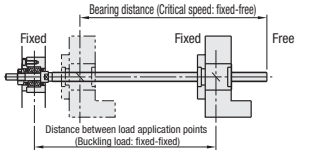
DmN= (Dm+A)XNmax
Dm: Screw Shaft Diameter
A: Factor determined by the Ball Dia. (Refer to Fig. 5)
Nmax: Screw Shaft Max. revolutions

(2) Confirm the DmN value satisfies the following conditions.
Precision Ball Screws ···DmN≤70000
Rolled Ball Screws ··· DmN≤50000

Fig. 5 Value A

Ball Dia.	Value A
1.5875	0.3
2.3812	0.6
3.175	0.8
4.7625	1.0
6.35	1.8

Fig. 3- Mount Support Orientation

Installation Methods	Characteristics
	· Typically selected installation method · Intermediate ~ high speed applications · Medium ~ High accuracy · For the Support Unit, Standard Type BRW and BUR were selected.
	· Intermediate speed applications · High accuracy · For the Support Unit, Standard Type BRW was selected.
	· Low speed applications · For short shaft length · Medium accuracy · For the Support Unit, Economy Type BRWE

- Operating Life Calculation (Details P.1897)

Use the following formula for calculating the operating hours of the Ball Screws.

$$\text{Life Hours} = \frac{10^6}{60Nm}\left(\frac{C}{Pm \cdot fw}\right)^3$$

C : Basic Dynamic Load Rating (N)
Pm: Allowable Axial Average Load (N)
Nm: Average Revolutions (min^{-1})
fw: Operation Factor

Steady operation without impact	fw=1.0~1.2
Normal operation	fw=1.2~1.5
Operation with impact	fw=1.5~2.0

C :Basic Dynamic Load Rating Definition

When a certain group of the same Ball Screws are operated with a certain Axial Load and 90% of the Screws achieve 1 million revolutions (10^6) without flaking in its operating life, the Axial Load is defined as the Basic Dynamic Load Rating.

-Calculation of Allowable Axial Average Load and Average Revolutions-

It is required to calculate according to the operation patterns. Refer to the table below.
Though it seems very difficult to calculate each condition such as the operation pattern and load, however, the Ball Screws' operating life is always inversely proportional by factor of 3 to the load.
Therefore, the more exact calculation, the wider choice of Ball Screws will become available .

-Operating Pattern Examples- ($t_1+t_2+t_3=100\%$)

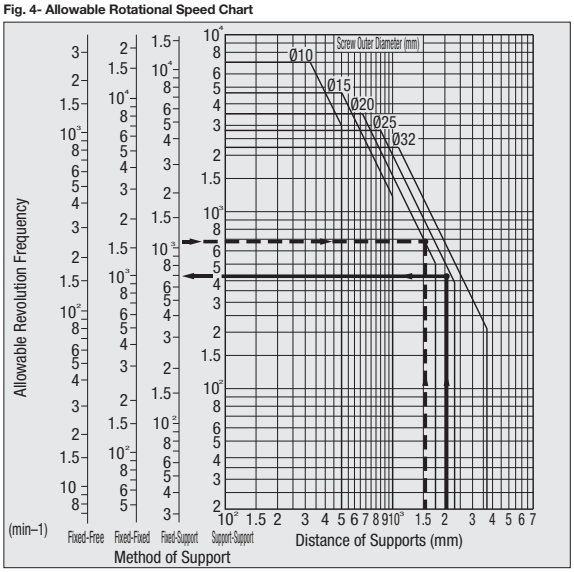
Operating Pattern	Allowable Axial Load	Revolutions	Hrs. Rate
A	P_1N	N1min^{-1}	t_1%
B	P_2N	N2min^{-1}	t_2%
C	P_3N	N3min^{-1}	t_3%

-Formula-

$$Pm=\left(\frac{P1^3N_1t_1+P_2^3N_2t_2+P_3^3N_3t_3}{N_1t_1+N_2t_2+N_3t_3}\right)^{\frac{1}{3}} \quad (N)$$

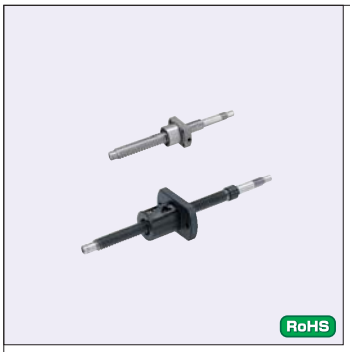
$$Nm=\frac{N_1t_1+N_2t_2+N_3t_3}{t_1+t_2+t_3} \quad (\text{min}^{-1})$$

Fig. 4- Allowable Rotational Speed Chart



Rolled Ball Screws -Shaft Diameter 8, Lead 2 · 4-

-Accuracy Grade C7 · C10-

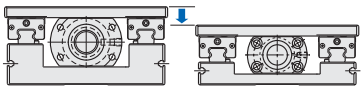


RoHS

Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F · P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	BSST	-	C7	8	2	1.1203/ C55E	Induction Hardening 56~62HRC	-	1.7264/20CrMo5	Carburized 58~62HRC	Ⓟ Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		2 · 4			Phosphate Conversion Coating	1.7264/20CrMo5		Phosphate Conversion Coating
Standard Nut	BSSZ	BSSZK			2			-			
Compact Nut	BSSC	BSSCK			2				1.7258/24CrMo5		-

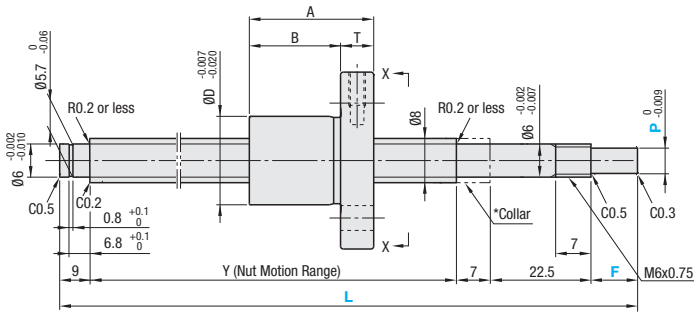
-Compact Nut Features-
- Compact outer diameters
- Lower profile Sliders can be used.
- Longer strokes

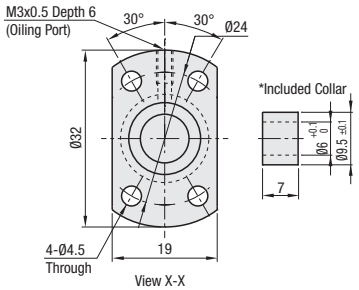




-Compact Nuts-
BSSC (K) 0802

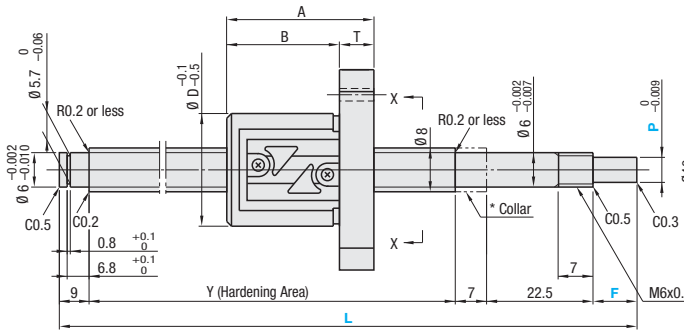
*Included Collar
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide

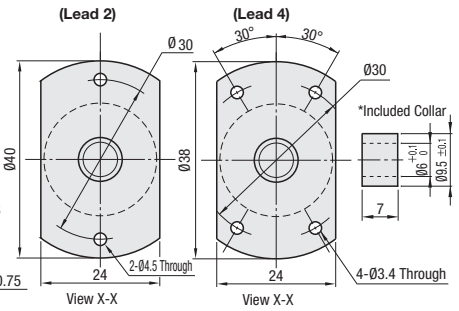




-Standard Nuts-
BSST · BSSR (K) · BSSZ (K) 0802, 0804

*Included Collar
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide





Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Diameter	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	D	A	B	T	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	08	02	100~380	7.5	4.5	L-46	20	28	22	6	1.5875	8.3	(6.6)	3.5 turns, 1 row	1.8	3.2	0.03 or Less	Right
	C10	BSSR BSSZ																	0.05 or Less	
		BSSRK BSSZK			100~400	8~13	4 / 4.5	L-(38.5+F)												
Compact Ball Nut		BSSC				7.5	4.5	L-46	16	22.5	16.5	6	1.2	8.15	(7)	4 turns, 1 row	1.17	2.1		
		BSSCK				8~13	4 / 4.5	L-(38.5+F)												
Standard Ball Nut	C10	BSSR		04	100~380	7.5	4.5	L-46	23	28	23	5	2	8.4	(6.3)	2.5 turns, 1 row	1.9	3.1		
		BSSRK				8~13	4 / 4.5	L-(38.5+F)												

*F and P are configurable for BSSRK, BSSZK and BSSCK only. Ⓟ F≤Px3

kgf=Nx0.101972

Price Reduction
Up to 26%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4 L100~200	€ Unit Price Qty. 1~4 L201~ 400
Standard Nut	C7	BSST0802		
Standard Nut	C10	BSSR0802		
		BSSZ0802		
Compact Nut		BSSC0802		
Standard Nut		BSSR0804		

For orders larger than indicated quantity, please request a quotation.
For the price of BS_ _K (F, P Configurable Type), add 19,50 EUR to the standard type price.
ex).BSSZK0802-200-F8-P4
132,30 EUR+19,50 EUR=151,80 EUR

Order Example

Part Number	-	L	-	F	-	P	
BSSC0802	-	270					
BSSZK0802	-	270	-	F10	-	P4	
BSSZ0802L	-	400					(L Type Greased)
BSSZ0802G	-	400					(G Type Greased)

Days to Ship

- BSST · BSSR (K) · BSSZ (K)

8 Days — Express A 8,00 EUR/piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- BSSC (K)

10 Days

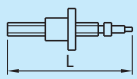
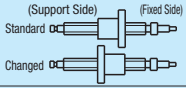
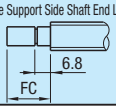
For Days to Ship of this product, Saturday and Sunday are not included.

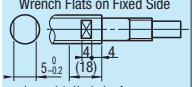
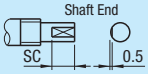
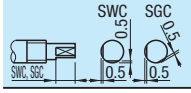
Note

Mounting surface of BSST ball nut flange is not surface-treated.
Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSSC is not applicable.
For accuracy of Ball Screws, refer to P.651·653
For details support units, refer to P.685~P.694

Alterations

Part Number	-	L	-	F	-	P	-	(FC · SC…etc.)
BSSR0802	-	270					-	SC5

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	BSST · BSSR BSSZ -20,00 BSSC -7,00
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard Changed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 10≤FC≤20 Y dimension is shortened.	BSST · BSSR BSSZ 7,00 BSSC 3,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side 	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Flat Machined on Fixed Side Shaft End 		Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC5 5≤SC≤12 SC≤F-1	BSST · BSSR BSSZ 6,00 BSSC 3,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC,SGC≤12 SWC,SGC≤F-1	BSST · BSSR BSSZ 7,00 each BSSC 3,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSC	08	02 04	BSV	6	Square Type Low Profile	○		P.691
			BUV	6			○	P.692
BSST BSSR BSSZ			BRW	6	Round	○		P.693
			BUR	6			○	P.693
			BSW	6	Square Type	○		P.687
			BUN	6			○	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (P.685~P.694)
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSSC	08	02	BNFB BNFM BNFR BNFA	802C	P.695
BSST BSSR BSSZ		02		802R	P.695
		04		804R	P.695

Variety of materials and surface treatments for Nut Brackets are available. (P.695)

Rolled Ball Screws -Shaft Diameter 10, Lead 2 · 4 · 10-

-Accuracy Grade C7 · C10-



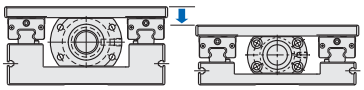


RoHS

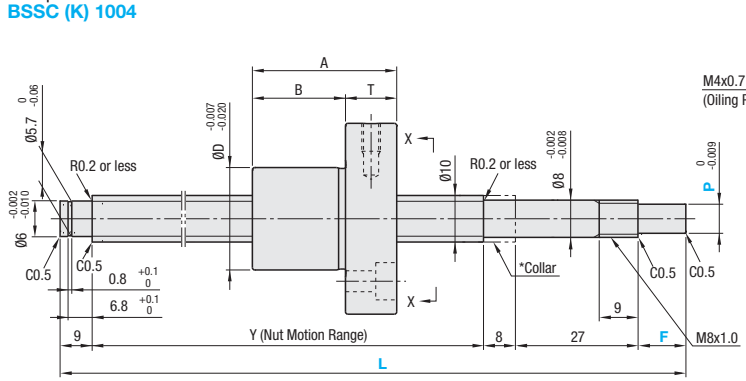
Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F·P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	BSST	-	C7	10	4	1.1203/ C55E	Induction Hardening 56~62HRC	-	1.7264/20CrMo5	Carburized 58~62HRC	(P) Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		2 · 4 · 10			Phosphate Conversion Coating	1.7264/20CrMo5		Phosphate Conversion Coating
Standard Nut	BSSZ	BSSZK			4			-			
Compact Nut	BSSC	BSSCK			4				1.7258/24CrMo5		-

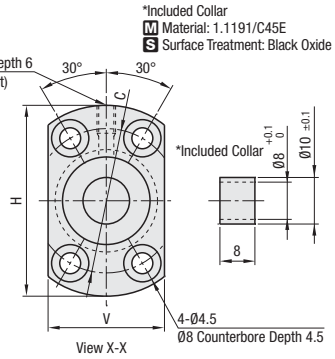
-Compact Nut Features-
- Compact outer diameters
- Lower profile Sliders can be used.
- Longer strokes



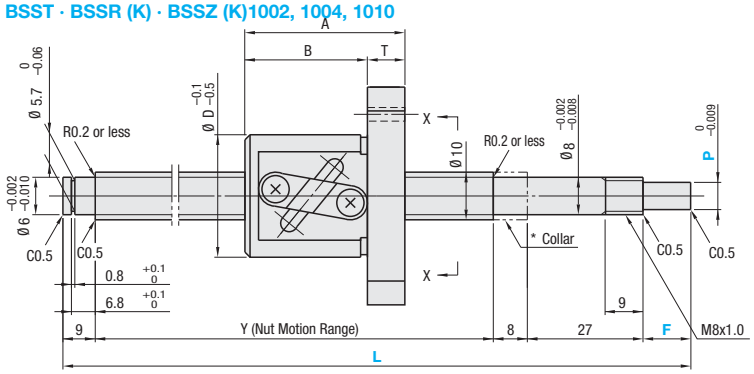


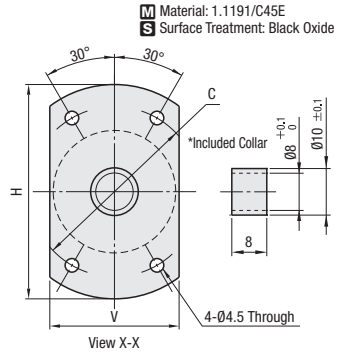
-Compact Nuts-
BSSC (K) 1004





-Standard Nuts-
BSST · BSSR (K) · BSSZ (K)1002, 1004, 1010





Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Diameter	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	D	A	B	T	H	C	V	Ball Dia.	Ball Center Dia.	Screw Root Dia.	#of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C10	BSSR	10	02	150~585	10	6	L-54	23	28	22	6	43	33	27	1.5875	10.3	-8.4	2.5 turns 1 row	1.7	3.0	0.05 or Less	Right
		BSSRK				10~18	5 · 6	L- (44+F)															
	C7	BSST		04		10	6	L-54	26	34	26	8	46	36	28	2.3812	10.6	-7.8		2.3	4.8	0.03 or Less	
	C10	BSSR BSSZ			150~600																	0.05 or Less	
		BSSRK BSSZK				10~18	5 · 6	L- (44+F)															
Compact Ball Nut		BSSC			150~585	10	6	L-54	22	31	20	11	41	31	25	2	10.25	-8.4	3 turns, 1 row	1.87	3.0		
		BSSCK				10~18	5 · 6	L- (44+F)															
Standard Ball Nut		BSSR		10		10	6	L-54	28	34	26	8	47	36	30	2.3812	10.6	-7.8	1.5 turns 1 row	1.85	3.2		
		BSSRK				10~18	5 · 6	L- (44+F)															

*F and P are configurable for BSSRK · BSSZK and BSSCK only. (P) F≤Px3

kgf=Nx0.101972

Price Reduction
Up to 26%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4		
			L150~200	L201~ 400	L401~ 600
Standard Nut	C10	BSSR1002			
	C7	BSST1004			
	C10	BSSR1004			
		BSSZ1004			
Compact Nut		BSSC1004			
Standard Nut		BSSR1010			

For orders larger than indicated quantity, please request a quotation.
For the price of BS_ _K (F · P Configurable Type), add 19,50 EUR to the standard type price.
ex).BSSZK1004-300-F12-P6
144,50 EUR+19,50 EUR=164,00 EUR

Order Example

Part Number	-	L	-	F	-	P	
BSSC1004	-	270					
BSSZK1004	-	300	-	F15	-	P6	
BSSZ1004L	-	550	(L Type Greased)				
BSSZ1004G	-	550	(G Type Greased)				

Days to Ship

- BSST · BSSR (K) · BSSZ (K)

8 Days — Express A — 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- BSSC (K)

10 Days

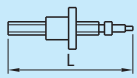
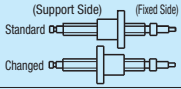
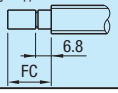
For Days to Ship of this product, Saturday and Sunday are not included.

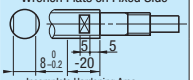
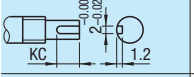
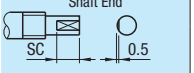
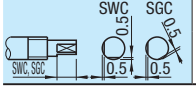
Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun as well as remove the nuts from the screw shafts. Ball bearings will fall out, or ball recirculation parts may be damaged.
- Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSSC is not applicable.
- For accuracy of Ball Screws, refer to **P.651**·**653**
- For details support units, refer to **P.685**~**P.694**

Alterations

Part Number	-	L	-	F	-	P	-	(FC · KC…etc.)
BSSR1004	-	270					-	SC7

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	BSST · BSSR BSSZ -20,00 BSSC -7,00
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard Changed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 11≤FC≤20 Y dimension is shortened.	BSST · BSSR BSSZ 7,00 BSSC 3,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side 	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Keyway on Fixed Side Shaft End 	KC	Adds a keyway on the fixed side shaft end.⊗ P=5 is not applicable. KC=1mm Increment Ordering Code KC5 2≤KC≤Px3 KC≤F-1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) ⊗ P=5 is not applicable. K,S=1mm Increment Ordering Code KLC-K5-S2 3≤K+S≤Px3 K+S≤F-1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤Px3 SC≤F-1	BSST · BSSR BSSZ 6,00 BSSC 3,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC, SGC≤Px3 SWC, SGC≤F-1	BSST · BSSR BSSZ 7,00 each BSSC 3,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSC	10	02 04 10	BSV	8S	Square, Low Profile	0		P.691
			BUV	8			0	P.692
BSST BSSR BSSZ			BRW	8S	Round	0		P.693
			BUR	6			0	P.693
			BSW	8S	Square Type	0		P.687
			BUN	8			0	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (**P.685**~**P.694**)
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSSC	10	04	BNFB BNFM BNFR BNFA	1004C	P.695
BSST BSSR BSSZ		02		1002R	P.695
		04		1004R	P.695
		10		1010R	P.695

Variety of materials and surface treatments for Nut Brackets are available. (**P.695**)

Rolled Ball Screws -Shaft Diameter 12 · 14, Lead 4 · 5 · 10-

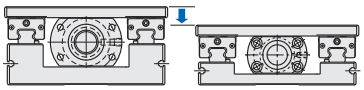
-Accuracy Grade C7 · C10-



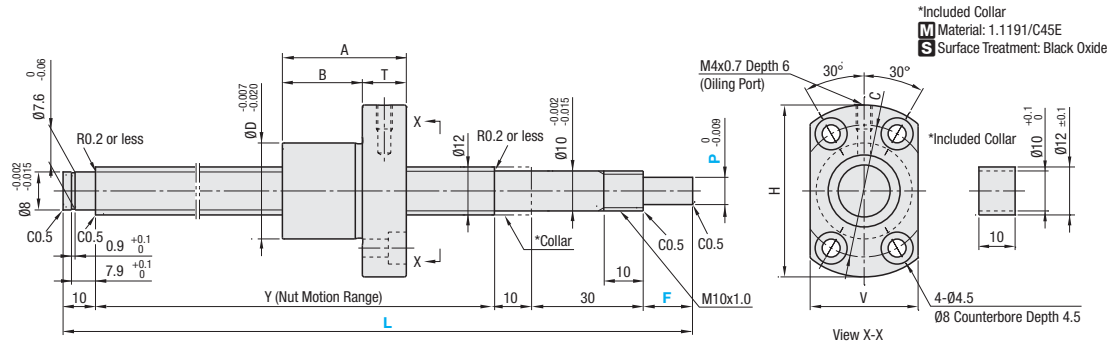
Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F·P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	BSST	-	C7	12	4	1.1203/ C55E	Induction Hardening 56~62HRC	-	1.7264/20CrMo5	Carburized 58~62HRC	Ⓕ Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10	12 · 14	4 · 5 · 10			Phosphate Conversion Coating	1.7264/20CrMo5		Low Temperature Black Chrome Plating
Standard Nut	BSSZ	BSSZK						-			
Compact Nut	BSSC	BSSCK		12	4				1.7258/24CrMo5		-

-Compact Nut Features-
- Compact outer diameters
- Lower profile Sliders can be used.
- Longer strokes

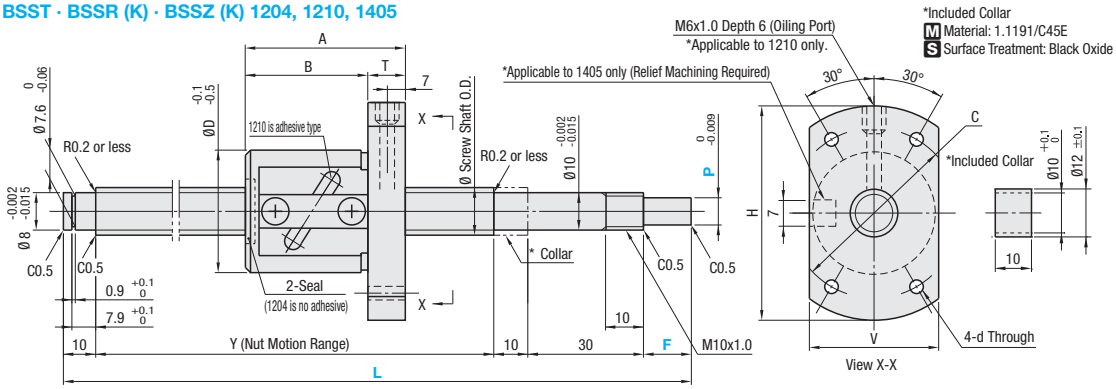




-Compact Nuts-
BSSC (K) 1204



-Standard Nuts-
BSST · BSSR (K) · BSSZ (K) 1204, 1210, 1405



Ball Nut Type	Precision Class	Part Number			1mm Increment			Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating		Allowable Axial Play	Twisting Direction
		Type	Screw Shaft Diameter	Lead	L	*F	*P														C (Dynamic) kN	Co (Static) kN		
Standard Ball Nut	C7	BSST	12	04	150~795	15	8	L-65	30	35	27	8	50	40	30	4.5	2.3812	12.6	(10)	2.5 turns, 1 row	2.6	5.8	0.03 or Less	Right
	C10	BSSR BSSZ																					0.05 or Less	
		BSSRK BSSZK			150~800	15~24	5~8	L-(50+F)																
Compact Ball Nut		BSSC				15	8	L-65	24	31	20	11	43	33	27	-	2	12.25	(10.4)	4 turns, 1 row	2.79	5.27		
		BSSCK				15~24	5~8	L-(50+F)																
Standard Ball Nut		BSSR BSSZ		10	150~800	15	8	L-65	30	44	32	12	54	41	32	5.5	3.175	12.8	(9.6)	1.5 turns, 1 row	2.85	4.95	0.10 or Less	
		BSSRK BSSZK				15~24	5~8	L-(50+F)																
		BSSR BSSZ	14	05	150~800	15	8	L-65		40	30	10	50	40	34	4.5		14.5	(11.2)	2.5 turns, 1 row	4.4	7.3		
		BSSRK BSSZK				15~24	5~8	L-(50+F)																

*F and P are configurable for BSSRK · BSSZK and BSSCK only. Ⓕ F≤Px3

kgf=Nx0.101972

Price Reduction
Up to 26%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4 L150~400	L401~ 600	L601~ 800
Standard Nut	C7	BSST1204			
Standard Nut	C10	BSSR1204			
		BSSZ1204			
Compact Nut		BSSC1204			
Standard Nut		BSSR1210			
		BSSZ1210			
		BSSR1405			
		BSSZ1405			

For orders larger than indicated quantity, please request a quotation.
The price of BS_ _K (F, P Configurable Type)
-BSS_K12_ _-
add 19,50 EUR to the standard type price.
ex).BSSZK1204-500-F18-P7
150,30 EUR+19,50 EUR=169,80 EUR

-BSS_K1405_ _-
Add 19,50 EUR to the standard type price.
ex).BSSZK1405-500-F18-P7
163,20 EUR+29,00 EUR=192,20 EUR

Order Example

Part Number	-	L	-	F	-	P
BSSC1204	-	270				
BSSZK1204	-	270	-	F15	-	P6
BSSR1204L	-	300	(L Type Greased)			
BSSR1204G	-	300	(G Type Greased)			

Days to Ship

- BSST · BSSR (K) · BSSZ (K)

8 Days | Express A | 8,00 EUR/ piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- BSSC (K)

10 Days

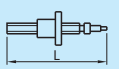
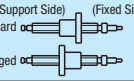
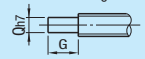
For Days to Ship of this product, Saturday and Sunday are not included.

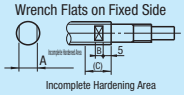
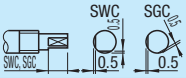
Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSSC is not applicable.
- For accuracy of Ball Screws, refer to P.651, 653
- For details support units, refer to P.685~P.694

Alterations

Part Number - L - F - P - (FC · KC…etc.)
BSSR1204 - 270 - SC7

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	BSST · BSSR BSSZ -25,00; BSSC -7,00
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard / Changed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. For the screw shaft 12, Q is selectable from 6 · 8. For the screw shaft 14, Q is selectable from 6 · 8 · 10. G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Y dimension is shortened.	BSST · BSSR BSSZ 10,00; BSSC 4,00
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 11≤FC≤20 Y dimension is shortened.	BSST · BSSR BSSZ 7,00; BSSC 3,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side  Incomplete Hardening Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC (Shaft Diameter 12: A 8, B 5, (C) 20; 14: A 10, B 7, (C) 22) Ballbearings will fall out if the ball nut crosses the wrench flats.	BSST · BSSR BSSZ 7,00; BSSC 3,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. ⊗ P=5 is not applicable. KC=1mm Increment Ordering Code KC10 3≤KC≤Px3 KC≤F-1	BSST · BSSR BSSZ 14,00; BSSC 6,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) ⊗ P=5 is not applicable. K,S=1mm Increment Ordering Code KLC-K5-S2 4≤K+S≤Px3 K+S≤F-1	BSST · BSSR BSSZ 14,00; BSSC 6,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤Px3 SC≤F-1	BSST · BSSR BSSZ 7,00; BSSC 3,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC, SGC≤Px3SWC, SGC≤F–1	BSST · BSSR BSSZ 7,00 each; BSSC 3,00 each

Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Diameter	Lead	Recommended Support Units Part Number Type	No.	Shape	Fixed Side	Support Side	Page
BSSC	12	04	BSV	10S	Square Type Low Profile	0		P.691
			BUV	10S			0	P.692
BSST BSSR BSSZ		04 10	BRW	10S	Round	0		P.693
			BUR	10S			0	P.693
			BSW	10S	Square Type	0		P.687
			BUN	10S			0	P.689
BSSR BSSZ	14	05	BRW	10	Round	0		P.693
			BUR	10			0	P.693
			BSW	10	Square Type	0		P.687
			BUN	10			0	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (P.685~P.694)

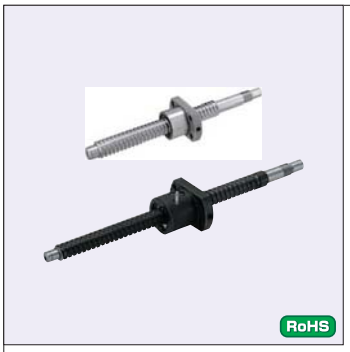
Combination with Nut Brackets

Ball Screw Part Number Type	Screw Shaft Outer Diameter	Lead	Recommended Nut Brackets Part Number Type	No.	Page
BSSC	12	04	BNFB	1204C	P.695
BSST BSSR BSSZ		04	BNFM	1204R	P.695
		10	BNFR	1210S	P.695
	14	05	BNFA	1405R	P.695

Variety of materials and surface treatments for Nut Brackets are available. (P.695)

Rolled Ball Screws -Shaft Diameter 15, Lead 5 · 10 · 20-

-Accuracy Grade C7 · C10-

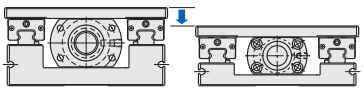


RoHS

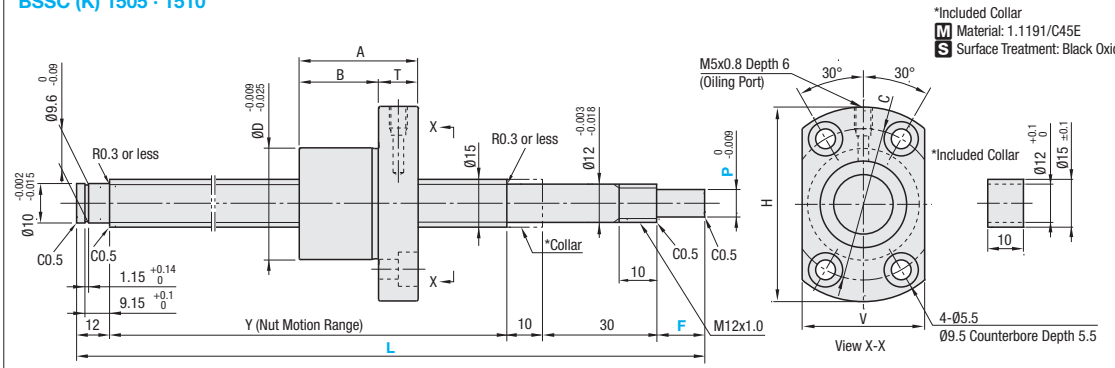
Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F, P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	BSST	-	C7	15	5·10·20	1.1203/ C55E	Induction Hardening 56~62HRC	-	1.7264/20CrMo5	Carburized 58~62HRC	Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		5 · 10 · 20			Phosphate Conversion Coating	1.7264/20CrMo5		Low Temperature Black Chrome Plating
Standard Nut	BSSZ	BSSZK						-			
Compact Nut	BSSC	BSSCK			5 · 10				1.7258/24CrMo5		-

-Compact Nut Features-
- Compact outer diameters
- Lower profile Sliders can be used.
- Longer strokes

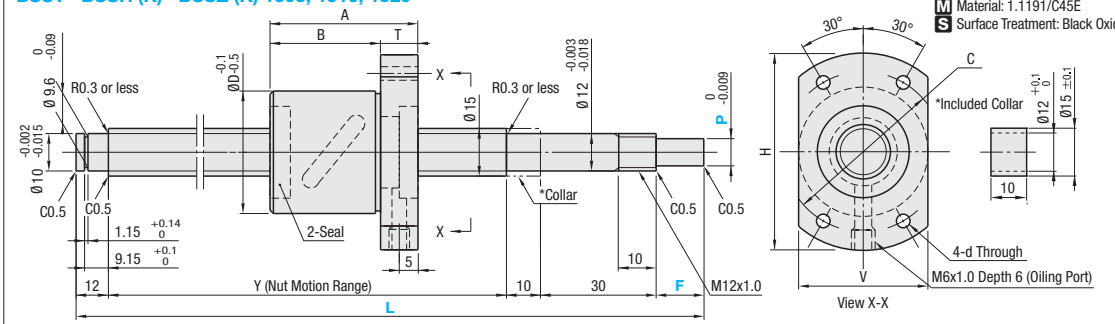




-Compact Nuts-
BSSC (K) 1505 · 1510



-Standard Nuts-
BSST · BSSR (K) · BSSZ (K) 1505, 1510, 1520



Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Diameter	Part Number: Lead	1mm Increment: L	1mm Increment: *F	1mm Increment: *P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Diameter	# of Circuits	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	15	05	150~1200	15	10	L-67	34	40	30	10	54	44		4.5		15.8	(12.5)	2.5 turns, 1 row	5.1	10.5	0.03 or Less	
	C10	BSSR BSSZ																					0.10 or Less	
		BSSRK BSSZK				15~30	6~10	L-(52+F)																
Compact Ball Nut		BSSC				15	10	L-67	31	33	22	11	54	42		-		15.5	(12.25)	3 turns, 1 row	4.14	7.06		
		BSSCK				15~30	6~10	L-(52+F)																
Standard Ball Nut	C7	BSST		10	200~1200	15	10	L-67	34	52	42	10	57	45	34	5.5	3.175	15.8	(12.5)	2.5 turns, 1 row	5.1	10.5	0.03 or Less	Right
	C10	BSSR BSSZ																					0.10 or Less	
		BSSRK BSSZK				15~30	6~10	L-(52+F)																
Compact Ball Nut		BSSC				15	10	L-67	31	48	37	11	54	42		-		15.5	(12.25)	3 turns, 1 row	4.25	7.45		
		BSSCK				15~30	6~10	L-(52+F)																
Standard Ball Nut	C7	BSST		20	200~1200	15	10	L-67	34	59	49	10	57	45		5.5		15.8	(12.5)	1.5 turn, 2 line	5.8	13.3	0.03 or Less	
	C10	BSSR BSSZ																					0.10 or Less	
		BSSRK BSSZK				15~30	6~10	L-(52+F)																

*F and P are configurable for BSSRK · BSSZK and BSSCK only. F≤Px3

kgf=Nx0.101972

Price Reduction
Up to 25%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4					
			L150~200	L201~400	L401~600	L601~800	L801~900	L901~1200
Standard Nut	C7	BSST1505						
	C10	BSSR1505						
		BSSZ1505						
Compact Nut		BSSC1505						
Standard Nut	C7	BSST1510						
	C10	BSSR1510						
		BSSZ1510						
Compact Nut		BSSC1510						
Standard Nut	C7	BSST1520						
	C10	BSSR1520						
		BSSZ1520						

Order Example

Part Number - L - F - P

BSSC1505 - 350
BSSZK1505 - 400 - F20 - P8
BSSR1520L - 1000 (L Type Greased)
BSSR1520G - 400 (G Type Greased)

Days to Ship

- BSST · BSSR (K) · BSSZ (K)

8 Days — Express A 8,00 EUR/piece P.88

(?)A Express Charge of 21,60 EUR for 3 or more identical pieces.

- BSSC (K)

10 Days

(?)For Days to Ship of this product, Saturday and Sunday are not included.

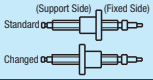
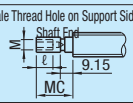
(?)For orders larger than indicated quantity, please request a quotation.
(?)For the price of BS_ _K (F, P Configurable Type), Add 29,00 EUR to the standard type price.
ex).BSSZK1510-200-F18-P7
153,30 EUR+29,00 EUR=182,30 EUR

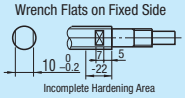
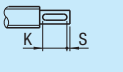
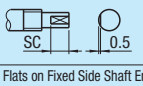
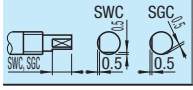
Note

(?)Mounting surface of BSST ball nut flange is not surface-treated.
(?)Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K.).
(?)Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
(?)Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSSC is not applicable.
(?)For accuracy of Ball Screws, refer to **P.651**, **653**
(?)For details support units, refer to **P.685**~**P.694**

Alterations

Part Number - L - F - P - (FC · KC…etc.)
BSSR1505 - 350 - KC10

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	BSST · BSSR BSSZ -25,00 BSSC -8,00
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC (?)Combination with FC is not available.	Free of charge
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 (?)13≤FC≤30 (?)Y dimension is shortened.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q: Selectable from 8 · 10 · 12 G=1mm Increment Ordering Code GC-Q8-G20 (?)5≤G≤Qx3 (?)Y dimension is shortened.	BSST · BSSR BSSZ 10,00 BSSC 4,00
Female Thread Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC20 (?)Y dimension is shortened. (?)18≤MC≤30	BSST · BSSR BSSZ 14,00 BSSC 6,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side  Incomplete Hardening Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC (?)Ball bearings will fall out if the ball nut crosses the wrench flats.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 (?)3≤KC≤Px3 KC≤F-1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S3 (?) 4≤K+S≤Px3 K+S≤F-1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC10 (?)5≤SC≤Px3 SC≤F-1	BSST · BSSR BSSZ 7,00 BSSC 3,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC (?)5≤JIS SWC, SGC≤Px3SWC, SGC≤F–1	BSST · BSSR BSSZ 7,00 each BSSC 3,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSC	15	05 10 20	BSV	12	Square Type Low Profile	0		P.691
			BUV	12			0	P.692
BSST BSSR BSSZ			BRW	12	Round	0		P.693
			BUR	12			0	P.693
			BSW	12	Square Type	0		P.687
			BUN	12			0	P.689

(?)Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (P.685~P.694)

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSSC	15	05	BNFB BNFM BNFR BNFA	1505C	P.695
		10		1510C	P.695
BSST BSSR BSSZ		05		1505R	P.695
		10		1510R	P.695
		20		1520S	P.695

(?)Variety of materials and surface treatments for Nut Brackets are available. (P.695)

Rolled Ball Screws -Shaft Diameter 20, Lead 5 · 10 · 20-

-Accuracy Grade C7 · C10-

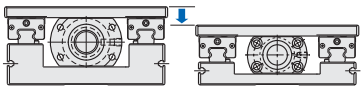


Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F, P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	BSST	-	C7	20	5 · 10 · 20	1.1203/ C55E	Induction Hardening 56~62HRC	-	1.7264/20CrMo5	Carburized 58~62HRC	Ⓟ Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		5 · 10 · 20			Phosphate Conversion Coating	1.7264/20CrMo5		Low Temperature Black Chrome Plating
Standard Nut	BSSZ	BSSZK						-			
Compact Nut	BSSC	BSSCK			5 · 10				1.7258·24CrMo5		-

RoHS

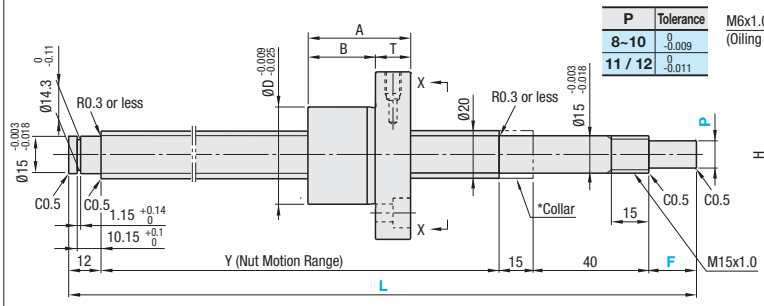
-Compact Nut Features-
- Compact outer diameters
- Lower profile Sliders can be used.
- Longer strokes



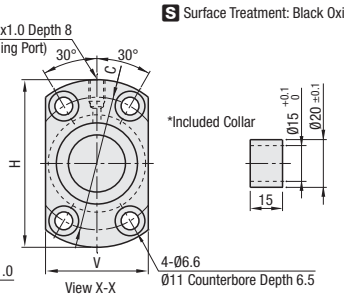


-Compact Nuts-
BSSC (K) 2005 · 2010

*Included Collar
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide

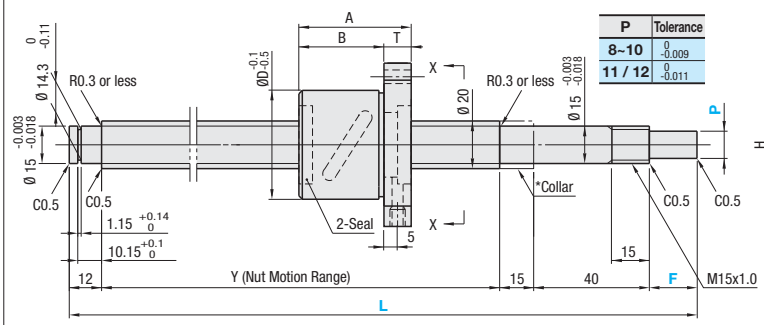


P	Tolerance
8~10	0 -0.009
11 / 12	0 -0.011

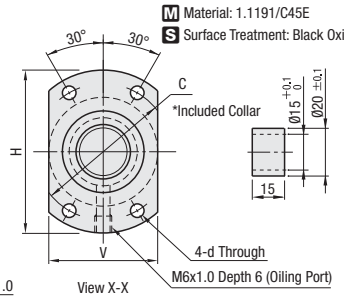


-Standard Nuts-
BSST · BSSR (K) · BSSZ (K) 2005, 2010, 2020

*Included Collar
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide



P	Tolerance
8~10	0 -0.009
11 / 12	0 -0.011



Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Diameter	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	20	05	200~1200	20	12	L-87	40	40	30	10	60	50	40	4.5	3.175	20.8	(17.5)	2.5 turns 1 row	6.2	14.7	0.03 or Less	Right
	C10	BSSR BSSZ BSSRK BSSZK			200~2000	20~36	8~12	L-(67+F)															0.10 or Less	
Compact Ball Nut		BSSC				20	12	L-87	36	38	25	13	62	49	38	-		20.5	(17.25)	4 turns, 1 row	6.6	14.05		
		BSSCK				20~36	8~12	L-(67+F)																
Standard Ball Nut	C7	BSST		10	250~2000	20	12	L-87	52	57	45	12	82	67	52	6.5	4.7625	21	(16.3)	2.5 turns 1 row	10.6	22.7	0.05 or Less	
	C10	BSSR BSSZ BSSRK BSSZK				20~36	8~12	L-(67+F)															0.15 or Less	
Compact Ball Nut		BSSC				20	12	L-87	36	58.5	45.5	13	62	49	38	-		20.5	(17.25)	4 turns, 1 row	6.53	13.93		
		BSSCK				20~36	8~12	L-(67+F)																
Standard Ball Nut	C7	BSST		20	250~2000	20	12	L-87	39	78	68	10	62	50	39	5.5	3.175	20.8	(17.5)	2.5 turns 1 row	6.2	14.7	0.03 or Less	
	C10	BSSR BSSZ BSSRK BSSZK				20~36	8~12	L-(67+F)															0.10 or Less	

*F and P are configurable for BSSRK · BSSZK and BSSCK only. Ⓟ F≤Px3

kgf=Nx0.101972

Price Reduction
Up to 28%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4 L200~400	L401~600	L601~800	L801~1000	L1001~1200	L1201~ 1500	L1501~ 2000
Standard Nut	C7	BSST2005							
	C10	BSSR2005							
		BSSZ2005							
Compact Nut		BSSC2005							
Standard Nut	C7	BSST2010							
	C10	BSSR2010							
		BSSZ2010							
Compact Nut		BSSC2010							
Standard Nut	C7	BSST2020							
	C10	BSSR2020							
		BSSZ2020							

Order Example

Part Number	-	L	-	F	-	P
BSSC2005	-	400				
BSSZK2020	-	320	-	F30	-	P12
BSST2010L	-	500	(L Type Greased)			
BSSR2010G	-	400	(G Type Greased)			

Days to Ship

- BSST · BSSR (K) · BSSZ (K)

8 Days — Express A 8,00 EUR/piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- BSSC (K)

10 Days

For Days to Ship of this product, Saturday and Sunday are not included.

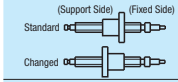
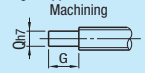
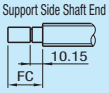
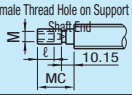
For orders larger than indicated quantity, please request a quotation.
For the price of BS_ _K (F · P Configurable Type), Add 29,00 EUR to the standard type price.
ex).BSSZK2010-300-F22-P8
178,30 EUR+29,00 EUR=207,30 EUR

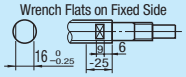
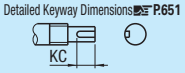
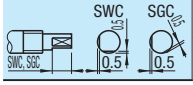
Note

- Mounting surface of BSST ball nut flange is not surface-treated.
- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSSC is not applicable.
- For accuracy of Ball Screws, refer to P.651 · 653
- For details support units, refer to P.685~P.694

Alterations

Part Number	-	L	-	F	-	P	-	(FC · KC...etc.)
BSSR2005	-	350					-	KC10

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	BSST · BSSR BSSZ -30,00 BSSC -8,00
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard Changed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10 · 12 · 15 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened.	BSST · BSSR BSSZ 15,00 BSSC 6,00
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤30 Y dimension is shortened.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Female Thread Hole on Support Side 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC25 (M: M6x1.0, ℓ: 15) Y dimension is shortened. 21≤MC≤30	BSST · BSSR BSSZ 14,00 BSSC 6,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side  Incomplete Hardening Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC15 4≤KC≤Px3 KC≤F−1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K7-S2 5≤K+S≤Px3 K+S≤F−1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤Px3 SC≤F−1	BSST · BSSR BSSZ 7,00 BSSC 3,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code SWC10 5≤JIS SWC, SGC≤Px3 SWC, SGC≤F−1	BSST · BSSR BSSZ 7,00 each BSSC 3,00 each

Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Diameter	Lead	Recommended Support Units Part Number Type	No.	Shape	Fixed Side	Support Side	Page
BSSC	20	05	BSV	15	Square Type Low Profile	0		P.691
		10	BUV	15			0	P.692
BSST BSSR BSSZ		05 10 20	BRW	15	Round	0		P.693
			BUR	15			0	P.693
			BSW	15	Square Type	0		P.687
			BUN	15			0	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (P.685~P.694)

Combination with Nut Brackets

Ball Screw Part Number Type	Screw Shaft Outer Diameter	Lead	Recommended Nut Brackets Part Number Type	No.	Page
BSSC	20	05	BNFB BNFM BNFR BNFA	2005C	P.695
		10		2010C	P.695
BSST BSSR BSSZ		05		2005R	P.695
		10		2010R	P.695
		20		2020R	P.695

Variety of materials and surface treatments for Nut Brackets are available. (P.695)

Rolled Ball Screws -Shaft Diameter 25, Lead 5 · 10 · 25-

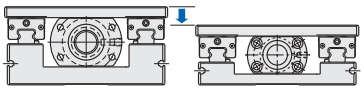
-Accuracy Grade C7 · C10-



Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F·P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	BSST	-	C7	25	5 · 10	1.1203/ C55E	Induction Hardening 56~62HRC	-	1.7264/20CrMo5	Carburized 58~62HRC	Ⓟ Phosphate Conversion Coating
Standard Nut	BSSR	BSSRK	C10		5 · 10 · 25			Phosphate Conversion Coating	1.7264/20CrMo5		Low Temperature Black Chrome Plating
Standard Nut	BSSZ	BSSZK						-			
Compact Nut	BSSC	BSSCK			5				1.7258/24CrMo5		-

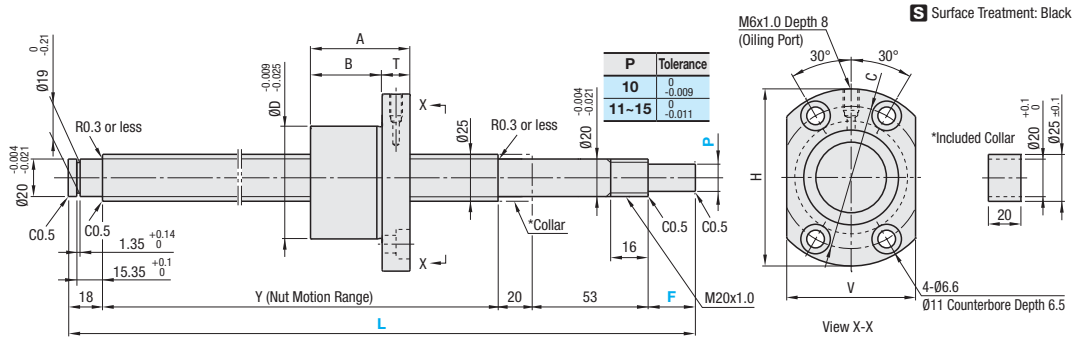
-Compact Nut Features-
- Compact outer diameters
- Lower profile Sliders can be used.
- Longer strokes





-Compact Nuts-
BSSC (K) 2505

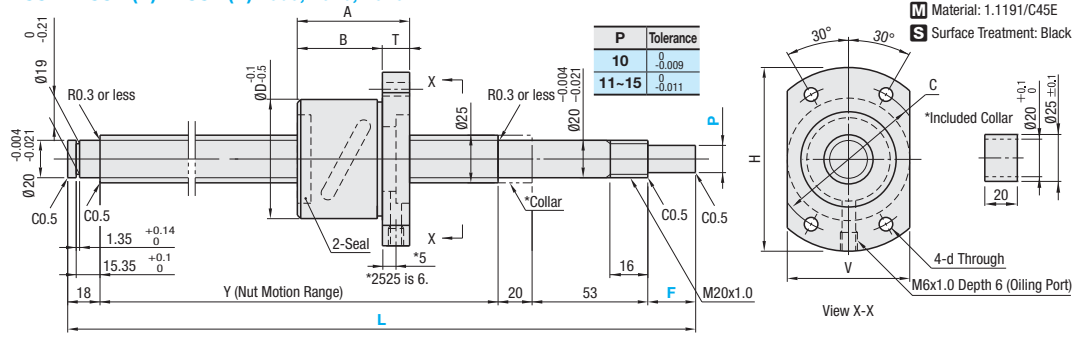
*Included Collar
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide



P	Tolerance
10	0 -0.009
11~15	0 -0.011

-Standard Nuts-
BSST · BSSR (K) · BSSZ (K) 2505, 2510, 2525

*Included Collar
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide



P	Tolerance
10	0 -0.009
11~15	0 -0.011

Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Diameter	Part Number Lead	1mm Increment L	1mm Increment *F	1mm Increment *P	Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Twisting Direction
Standard Ball Nut	C7	BSST	25	05	200~2000	27	15	L-118	43	40	30	10	67	55	43	5.5	3.175	25.8	(21.8)	2.5 turns, 1 row	6.6	18.7	0.03 or Less	Right
	C10	BSSR BSSZ																					0.10 or Less	
		BSSRK BSSZK				27~45	10~15	L-(91+F)																
Compact Ball Nut		BSSC				27	15	L-118	42	35	22	13	66	53	48	-		25.5	(22.25)	3 turns, 1 row	5.47	12.52		
		BSSCK				27~45	10~15	L-(91+F)																
Standard Ball Nut	C7	BSST		10	300~2000	27	15	L-118	60	92	77	15	96	78	60	9	6.35	26.8	(20.3)	2.5 turn, 2 line	27.5	76.3	0.07 or Less	
	C10	BSSR BSSZ																					0.20 or Less	
		BSSRK BSSZK				27~45	10~15	L-(91+F)																
Standard Ball Nut		BSSR BSSZ		25	300~2000	27	15	L-118	47	96	84	12	74	60	47	6.6	3.969	25.8	(21.5)	2.5 turns, 1 row	9.3	22.7	0.12 or Less	
		BSSRK BSSZK				27~45	10~15	L-(91+F)																

*F and P are configurable for BSSRK · BSSZK and BSSCK only. Ⓟ F≤Px3

kgf=Nx0.101972

Price Reduction
Up to 28%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4						
			L200~400	L401~600	L601~800	L801~1000	L1001~1200	L1201~ 1500	L1501~ 2000
Standard Nut	C7	BSST2505							
	C10	BSSR2505							
		BSSZ2505							
Compact Nut		BSSC2505							
Standard Nut	C7	BSST2510							
	C10	BSSR2510							
		BSSZ2510							
		BSSR2525							
		BSSZ2525							

Order Example

Part Number	-	L	-	F	-	P
BSSC2505	-	200	-			
BSSZK2510	-	1200	-	F27	-	P12
BSSZ2525L	-	2000	(L Type Greased)			
BSSR2510G	-	400	(G Type Greased)			

Days to Ship

- BSST · BSSR (K) · BSSZ (K)

8 Days — Express A — 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- BSSC (K)

10 Days

For Days to Ship of this product, Saturday and Sunday are not included.

For orders larger than indicated quantity, please request a quotation.

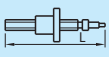
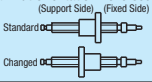
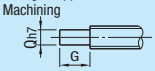
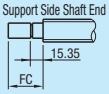
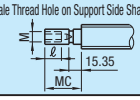
For the price of BS__K (F · P Configurable Type), Add 38,00 EUR to the standard type price.
ex).BSSZK2505-300-F30-P13
···216,50 EUR+38,00 EUR=254,50 EUR

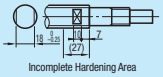
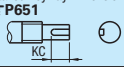
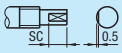
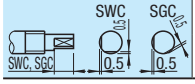
Note

Mounting surface of BSST ball nut flange is not surface-treated.
Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts.
It may cause the balls to fall out or damage the ball recirculation parts.
Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSSC is not applicable.
For accuracy of Ball Screws, refer to **P.651**, **653**
For details support units, refer to **P.685~P.694**

Alterations

Part Number	-	L	-	F	-	P	-	(FC · MC…etc.)
BSSR2505	-	700			-		-	RLC

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	BSST · BSSR BSSZ -40,00 BSSC -9,00
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard Changed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10 · 12 · 15 · 20 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened.	BSST · BSSR BSSZ 15,00 BSSC 6,00
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 19≤FC≤60 Y dimension is shortened.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Female Thread Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 (M, ℓ: M8x1.25 20, 20) Y dimension is shortened. 28≤MC≤60	BSST · BSSR BSSZ 14,00 BSSC 6,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side  Incomplete Hardening Area	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.	BSST · BSSR BSSZ 7,00 BSSC 3,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC20 5≤KC≤Px3 KC≤F−1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K20-S3 6≤K+S≤Px3 K+S≤F−1	BSST · BSSR BSSZ 14,00 BSSC 6,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤Px3 SC≤F−1	BSST · BSSR BSSZ 7,00 BSSC 3,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC, SGC≤Px3 SWC, SGC≤F−1	BSST · BSSR BSSZ 7,00 each BSSC each 3,00

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSC	25	05	BSV	20	Square Type Low Profile	0		P.691
			BUV	20			0	P.692
BSST BSSR BSSZ		05 10 25	BRW	20	Round	0		P.693
			BUR	20			0	P.693
			BSW	20	Square Type	0		P.687
			BUN	20			0	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (**P.685~P.694**)

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSSC	25	05	BNFB	2505C	P.695
BSST BSSR BSSZ		05	BNFM	2505R	P.695
		10	BNFR	2510R	P.695
		25	BNFA	2510R	P.695

Variety of materials and surface treatments for Nut Brackets are available. (**P.695**)

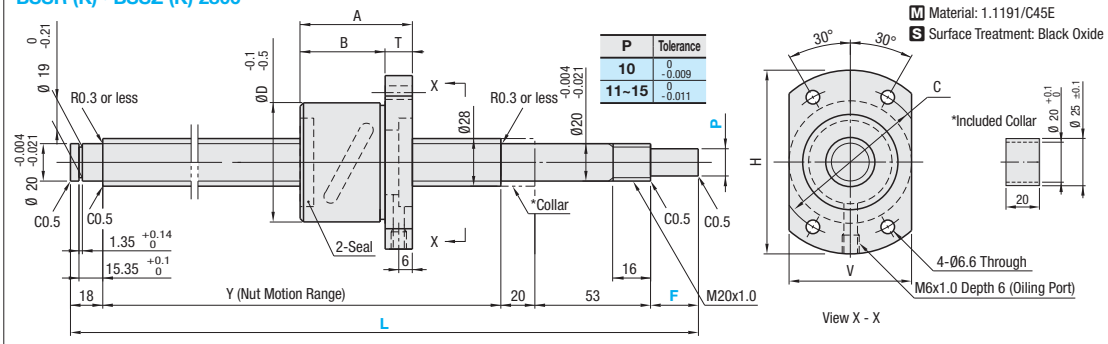
Rolled Ball Screws -Shaft Diameter 28 · 32, Lead 6 · 10 · 32-

-Accuracy Grade C10-

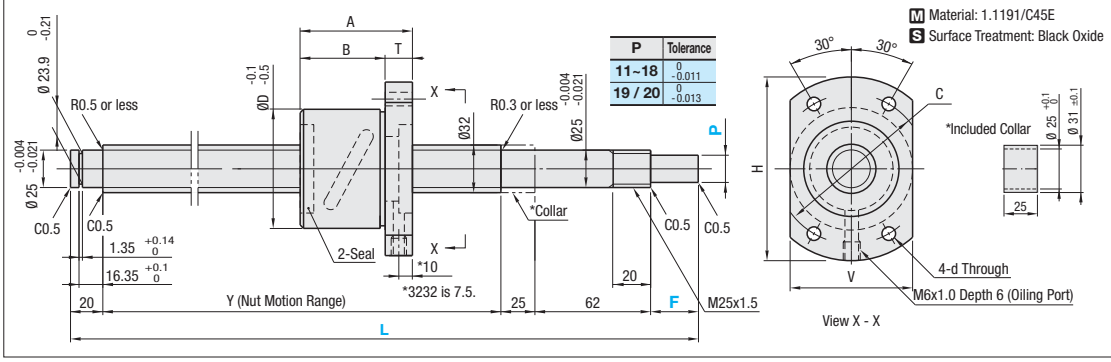


Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F · P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	BSSR	BSSRK	C10	28 · 32	6 · 10 · 32	1.1203/ C55E	Induction Hardening 56~62HRC	Phosphate Conversion Coating	1.7264/ 20CrMo5	Carburized 58~62HRC	Low Temperature Black Chrome Plating
	BSSZ	BSSZK						-			

-Standard Nuts-
BSSR (K) · BSSZ (K) 2806



-Standard Nuts-
BSSR (K) · BSSZ (K) 3210, 3232



Ball Nut Type	Precision Class	Part Number			1mm Increment			Y	D	A	B	T	H	C	V	d	Ball Dia.	Ball Center Dia.	Screw Root Diameter	# of Circuits	Basic Load Rating		Allowable Axial Play	Twisting Direction
		Type	Screw Shaft Diameter	Lead	L	*F	*P														C (Dynamic) kN	Co (Static) kN		
Standard Ball Nut	C10	BSSR BSSZ	28	06	250~2000	27	15	L-118	50	65	53	12	80	65	50	6.6	3.175	28.8	(25.6)	2.5 turn, 2 line	12.1	42.3	0.10 or Less	
		BSSRK BSSZK				27~45	10~15	L-(91+F)																
		BSSR BSSZ	32	10	300~2000	33	20	L-140	67	92	77	15	103	85	67	9	6.35	33.8	(27.2)	2.5 turn, 2 line	32.8	86.7	0.20 or Less	Right
		BSSRK BSSZK				33~60	11~20	L-(107+F)																
		BSSR BSSZ		32		33	20	L-140	58	86	71	15	92	74	58	9	4.7625	33.0	(27.8)	1.5 turn, 2 line	14.6	38.9	0.15 or Less	
		BSSRK BSSZK				33~60	11~20	L-(107+F)																

*F and P are configurable for BSSRK and BSSZK only. ⓟF≤Px3

kgf=Nx0.101972

Price Reduction
Up to 28%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4							
			L250~299	L300~400	L401~600	L601~800	L801~1000	L1001~1200	L1201~ 1500	L1501~ 2000
Standard Nut	C10	BSSR2806								
		BSSZ2806								
		BSSR3210								
		BSSZ3210								
		BSSR3232								
		BSSZ3232								

Order Example

Part Number	-	L	-	F	-	P
BSSR2806	-	270				
BSSZK3232	-	270	-	F40	-	P15
BSSR3210L	-	370	(L Type Greased)			
BSSR3232G	-	370	(G Type Greased)			

Days to Ship 8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

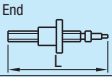
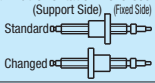
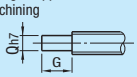
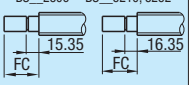
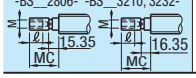
For orders larger than indicated quantity, please request a quotation.
For the price of BS__K (F, P Configurable Type), Add 38,00 EUR to the standard type price.
ex).BSSZK3210-400-F35-P13
···›304,90 EUR+38,00 EUR=342,90 EUR

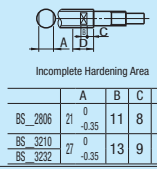
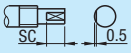
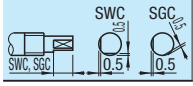
Note

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
Various grease options are available. For lead time, prices and Specifications, refer to P.651
For accuracy of Ball Screws, refer to P.651, 653
For details support units, refer to P.685~P.694

Alterations

Part Number	-	L	-	F	-	P	-	(FC · MC...etc.)
BSSZ2806	-	700					-	RLC

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	-40,00
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard / Changed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10 · 12 · 15 · 20 · 25 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened.	20,00
Change Support Side Shaft End Length -BS__2806- -BS__3210, 3232- 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 19≤FC≤60(BS__2806) 21≤FC≤60(BS__3210, 3232) Y dimension is shortened.	7,00
Female Thread Hole on Support Side Shaft End -BS__2806- -BS__3210, 3232- 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 (M: M8x1.25, ℓ: 20) Y dimension is shortened. 28≤MC≤60	14,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side 	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC Ball bearings will fall out if the ball nut crosses the wrench flats.	7,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC20 5≤KC≤PX3 KC≤F-1 (BS__2806) 6≤KC≤PX3 KC≤F-1 (BS_ _3210, 3232)	14,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K20-S3 6≤K+S≤PX3 K+S≤F-1 (BS__2806) 7≤K+S≤PX3 K+S≤F-1 (BS_ _3210, 3232)	14,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤Px3 SC≤F−1	7,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC, SGC≤Px3 SWC, SGC≤F−1	7,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSSR BSSZ	28	06	BRW	20	Round	○		P.693
			BUR	20			○	P.693
			BSW	20	Square Type	○		P.687
			BUN	20			○	P.689
	32	10 32	BRW	25	Round	○		P.693
			BUR	25			○	P.693
			BSW	25	Square Type	○		P.687
			BUN	25			○	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (P.685~P.694)

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSSR BSSZ	28	06	BNFB BNFM BNFR BNFA	2806R	P.695
	32	10		3210R	P.695
		32		3232R	P.695

Variety of materials and surface treatments for Nut Brackets are available. (P.695)

Rolled Ball Screws -Shaft Diameter 15 · 20 · 25, Lead 5 · 10-

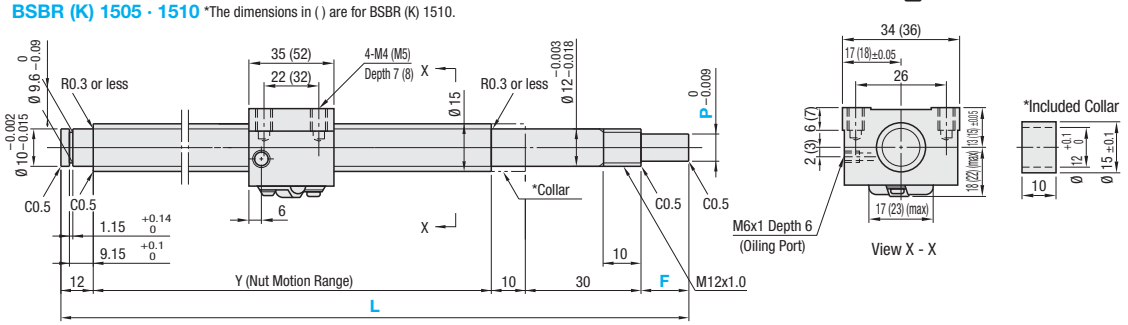
-Block Style Ball Nut -Accuracy Grade C10-



Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft			Ball Nut		
	Standard	F · P Configurable				M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Block Nut	BSBR	BSBRK	C10	15 · 20 · 25	5 · 10	1.1203/ C55E	Induction Hardening 56~62HRC	Phosphate Conversion Coating	1.7264/ 20CrMo5	Carburized 58~62HRC	Phosphate Conversion Coating

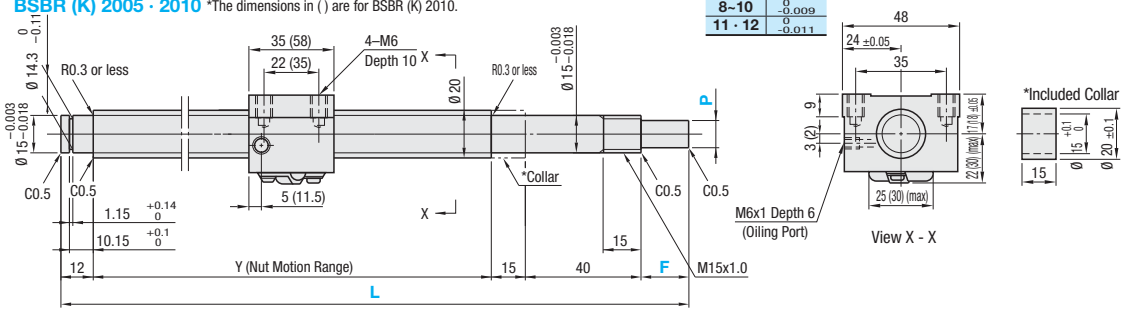
*Included Collar
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide

-Block Nut-
BSBR (K) 1505 · 1510 *The dimensions in ( ) are for BSBR (K) 1510.



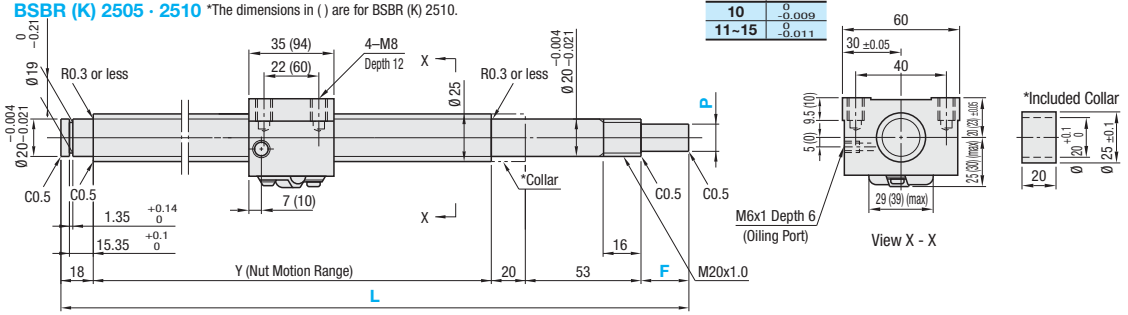
-Block Nut-
BSBR (K) 2005 · 2010 *The dimensions in ( ) are for BSBR (K) 2010.

P	Tolerance
8~10	0 -0.009
11 · 12	0 -0.011



-Block Nut-
BSBR (K) 2505 · 2510 *The dimensions in ( ) are for BSBR (K) 2510.

P	Tolerance
10	0 -0.009
11~15	0 -0.011



Ball Nut Type	Precision Class	Part Number			1mm Increment			Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating		Allowable Axial Play	Twisting Direction
		Type	Screw Shaft Diameter	Lead	L	*F	*P						C (Dynamic) kN	Co (Static) kN		
Block Ball Nut	C10	BSBR	15	05	150~1200	15	10	L-67	3.175	15.8	(12.5)	2.5 turns, 1 row	5.1	10.5	0.10 or Less	Right
		BSBRK				15~30	6~10	L-(52+F)								
		BSBR		10		15	10	L-67								
		BSBRK				15~30	6~10	L-(52+F)								
		BSBR	20	05	200~1200	20	12	L-87		20.8	(17.5)		6.2	14.7		
		BSBRK				20~36	8~12	L-(67+F)								
		BSBR		10		20	12	L-87	4.7625	21	(16.3)		10.6	22.7	0.15 or Less	
		BSBRK				20~36	8~12	L-(67+F)								
		BSBR	25	05	200~1500	27	15	L-118	3.175	25.8	(21.8)		6.6	18.7	0.10 or Less	
		BSBRK				27~45	10~15	L-(91+F)								
		BSBR		10		27	15	L-118	6.35	26.8	(20.3)	2.5 turn, 2 line	27.5	76.3	0.20 or Less	
		BSBRK				27~45	10~15	L-(91+F)								

*F and P are configurable for BSBRK only. ⓕF≤Px3

kgf=Nx0.101972

Price Reduction
Up to 22%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4						
			L150~199	L200~400	L401~600	L601~800	L801~1000	L1001~1200	L1201~ 1500
Block Nut	C10	BSBR1505							
		BSBR1510							
		BSBR2005							
		BSBR2010							
		BSBR2505							
		BSBR2510							

Order Example
Part Number - L - F - P
BSBR1505 - 200
BSBRK2510 - 370 - F40 - P15
BSBR2505L - 370 (L Type Greased)
BSBR2005G - 370 (G Type Greased)

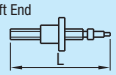
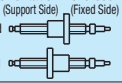
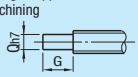
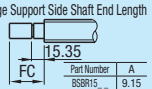
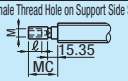
Days to Ship: 8 Days
Express A: 8,00 EUR/piece P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

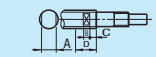
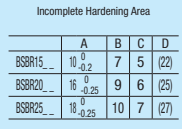
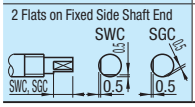
For orders larger than indicated quantity, please request a quotation.
The price of BSBRK (F, P Configurable Type)
-BSBRK15 _ _, 20 _ _-
Add 34,00 EUR to the standard type price.
ex).BSBRK1505-400-F20-P8
⋯›224,60 EUR+34,00 EUR=258,60 EUR
-BSBRK25 _ _-
Add 46,00 EUR to the standard type price.
ex).BSBRK2510~400-F27-P13
⋯›392,80 EUR+46,00 EUR=438,80 EUR

Note

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
Various grease options are available. For lead time, prices and Specifications, refer to P.651
For accuracy of Ball Screws, refer to P.651 · 653
For details support units, refer to P.685~P.694

Alterations
Part Number - L - F - P -(FC · MC…etc.)
BSBR2505 - 700 - RLC

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	-40,00
Ball Nut Orientation Reversed (Support Side) (Fixed Side) Standard / Changed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC ⓨCombination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q: Selectable from 8 · 10 · 12 G=1mm Increment Ordering Code GC-08-G20 ⓨ5≤G≤Qx3 ⓨY dimension is shortened.	20,00
Change Support Side Shaft End Length  Part Number / A: BSBR15_ _ 9.15; BSBR20_ _ 10.15; BSBR25_ _ 15.35	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 ⓨ13≤FC≤30 (BSBR15_ _, 20_ _) ⓨ19≤FC≤60 (BSBR25_ _) ⓨY dimension is shortened.	7,00
Female Thread Hole on Support Side Shaft End  Part Number / A / M / ℓ: BSBR15_ _ 9.15 M5x0.8 12; BSBR20_ _ 10.15 M6x1.0 15; BSBR25_ _ 15.35 M8x1.25 20	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 ⓨ18≤MC≤30 (BSBR15_ _) ⓨ21≤MC≤30 (BSBR20_ _) ⓨ28≤MC≤60 (BSBR25_ _) ⓨY dimension is shortened.	14,00

Alterations	Code	Spec.	Price Adder
Wrench Flats on Fixed Side  Incomplete Hardening Area  A / B / C / D: BSBR15_ _ 10 0 -0.2 / 7 / 5 / (22); BSBR20_ _ 16 0 -0.25 / 9 / 6 / (25); BSBR25_ _ 18 0 -0.25 / 10 / 7 / (27)	SZC	Adds wrench flats on the fixed side shaft end. Ordering Code SZC ⓨBall bearings will fall out if the ball nut crosses the wrench flats.	7,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC20 ⓨ3≤KC≤PX3 KC≤F-1 (BSBR15_ _) ⓨ4≤KC≤PX3 KC≤F-1 (BSBR20_ _) ⓨ5≤KC≤PX3 KC≤F-1 (BSBR25_ _)	14,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K20-S3 ⓨ4≤K+S≤PX3 K+S≤F-1 (BSBR15_ _) ⓨ5≤K+S≤PX3 K+S≤F-1 (BSBR20_ _) ⓨ6≤K+S≤PX3 K+S≤F-1 (BSBR25_ _)	14,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 ⓨ5≤SC≤Px3 SC≤F−1	7,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC ⓨ5≤JIS SWC, SGC≤Px3 SWC, SGC≤F−1	7,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSBR	15	05 10	BRW	12	Round	○		P.693
			BUR	12			○	P.693
			BSW	12	Square Type	○		P.687
			BUN	12			○	P.689
	20	05 10	BRW	15	Round	○		P.693
			BUR	15			○	P.693
			BSW	15	Square Type	○		P.687
			BUN	15			○	P.689
	25	05 10	BRW	20	Round	○		P.693
			BUR	20			○	P.693
			BSW	20	Square Type	○		P.687
			BUN	20			○	P.689

ⓨOther than the above part numbers, variety of shapes and surface treatments for Support Units are available.(P.685~P.694)

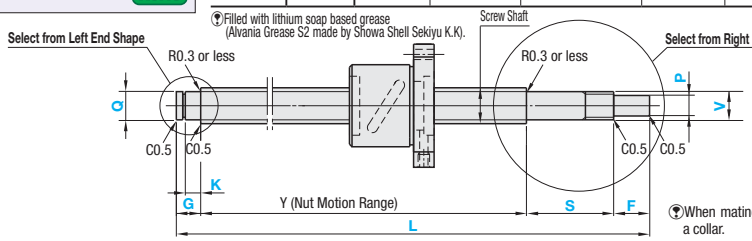
Rolled Ball Screws

-Shaft Ends Configurable- Accuracy Grade C10-



Nut Types	Type	Screw Shaft			Ball Nut		
		M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Ball Nut	FBSSR	1.1203/C55E	Induction Hardening 56-62HRC	Phosphate Conversion Coating	1.7264/ 20CrMo5	Carburized 58~62HRC	Low Temperature Black Chrome Plating (Screw Shaft 8 and 10 are applied with Phosphate conversion coating)
	FBSSZ			-			

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K.)

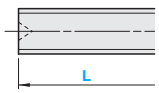


V	Tolerance
6	-0.002 -0.007
8	-0.002 -0.008
10	-0.002 -0.015
12 / 15	-0.003 -0.018
20 / 25	-0.004 -0.021

When mating with support units, please insert a collar.

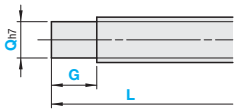
Left (Support Side) Shaft End Shape

A No Machining on the Shaft End

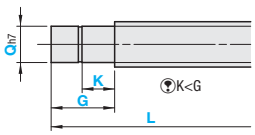


With a Centering Hole

B Stepped Machining

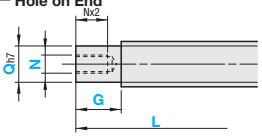


C Single Stepped – Retaining Ring Groove

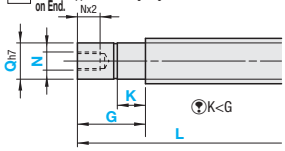


K<G

D Single Stepped – Female Thread Hole on End

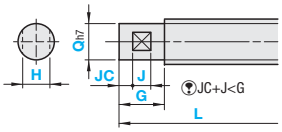


E Single Stepped – Retaining Ring Groove – Female Thread Hole on End.



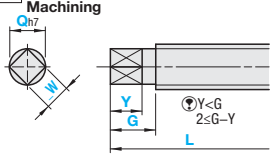
K<G

F Single Stepped – 2 Width Specified Flats Machined



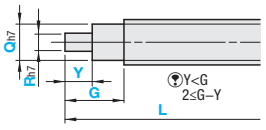
JC+J<G

G Single Stepped – Square End Machining



Y<G
2≤G–Y

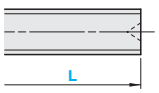
H Double Stepped End Machining



Y<G
2≤G–Y

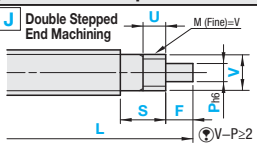
Right (Fixed Side) Shaft End Shape

A No Machining on the Shaft End



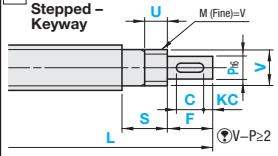
With a Centering Hole

J Double Stepped End Machining



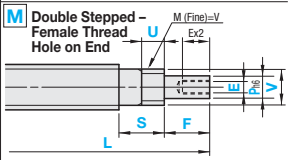
V–P≥2

K Double Stepped – Keyway



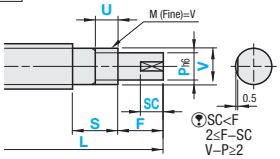
V–P≥2

M Double Stepped – Female Thread Hole on End



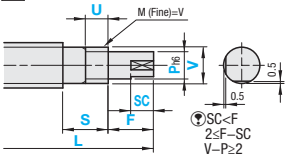
V–P≥2

N Double Stepped – One Flat



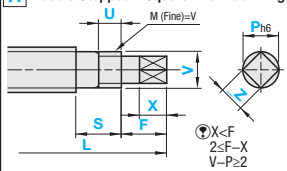
SC<F
2≤F–SC
V–P≥2

P Double Stepped – 90° Flats



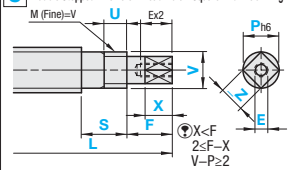
SC<F
2≤F–SC
V–P≥2

R Double Stepped – Square End Machining



X<F
2≤F–X
V–P≥2

S Double Stepped – Female Thread Hole – Square End Machining



X<F
2≤F–X
V–P≥2

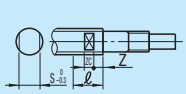
For each ball nut dimensions and specifications, please refer to the page where each product is listed. Shaft Diameter 8 P.655, 10 P.657, 12 P.659, 14 P.659, 15 P.661, 20 P.663, 25 P.665, 28 P.667, 32 P.667

When combining the left end shape F, G and the right end shape K, N, P, R, S, there is no angular phase relationship.

Part Number - L - F - P - S - V - U - C - KC - E - SC - X - Z - G - Q - K - N - J - JC - H - Y - W - R -(RLC · SZC)

FBSSZDJ2010 - 1200 - F36 - P12 - S60 - V15 - U15 - G20 - Q15 - N10 -RLC

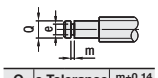
Alterations	Code	Spec.	Price Adder
Ball Nut Orientation Reversed (Left Shaft) (Right Shaft) Standard Changed	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
Wrench Flats on Fixed Side	SZC	Adds wrench flats on the shaft right end. Ordering Code SZC. Ball bearings will fall out if the ball nut crosses the wrench flats.	7,00



Shaft Diameter	Z	ZC	S	ℓ
8	4	4	5	18
10	5	5	8	20
12	5	5	8	20
14	5	7	10	22
15	5	7	10	22
20	6	9	16	25
25	7	10	18	27
28	8	11	21	29
32	9	13	27	32

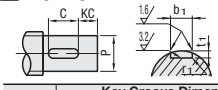
ℓ indicates incomplete hardened area

Retaining Ring Groove Details



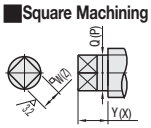
Q	e	Tolerance	m+0.14 0
6	5.7	0 -0.06	0.8
8	7.6		0.9
10	9.6	0 -0.09	1.15
12	11.5		
15	14.3	0 -0.11	
20	19	0 -0.21	1.35
25	23.9		

Keyway Details



Applicable Shaft · Hole Diameter P	Key Groove Dimension b1 Reference Dim.	b1 Tolerance	t1 Reference Dim.	t1 Tolerance	r1
6·7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11 / 12	4	0 -0.030	2.5		0.16 ~0.25
13~17	5		3.0		
18~22	6		3.5		
23	8	0 -0.036	4.0	+0.2 0	

Square Machining Details



Q (P)	W(Z)1mm Increment
6~10	5~ 8
11~14	8~10
15~19	10~14
20~25	14~20

Q (P)/2 √2≤W (Z)

Chamfering may not be available depending on the relationship between Q (P) and W(Z).

V (Fine Thread) Details

M	Pitch
6	0.75
8	1.0
10	1.0
12	1.0
15	1.0
20	1.0
25	1.5

CAD Data

Precision Class	Part Number: Type	Left End Support Side	Right End Fixed Side	Screw Shaft Outer Diameter	Lead	1mm Increment: L	1mm Increment: F P S U C KC SC X Z	Selection: V	Selection: E (Coarse)	1mm Increment: G K J JC H Y R W	Selection: Q	Selection: N (Coarse)
C10	FBSSR FBSSZ	A B C D E F G H	A J K M N P R S	08	02	100~400	5≤F≤Px3 5≤S≤Vx4 V≤U≤Vx2 b1<C≤60 F–C–KC≥2 KC=0 or KC≥2 5≤SC≤Px3 SC≤F-2 5≤X≤20 P≥4 P≥V/2 When V=6, P=4 When V≥8, P≤V–2	6	4 5 6 8 10	5≤G≤Qx3 5≤K≤Qx3 3≤J≤20 H≥Q–2 5≤Y≤20 R≤Q–2	6	-
				08	04	100~380					6	
				10	02	150~585		8			6	-
				10	04	150~600					6	
				10	10	150~585					6	
				12	04	150~800		8 10			6 8	4
				12	10	150~800		8 10				
				14	05	150~800		8 10			6 8 10	4 5 6
				15	05	150~1200		10 12			8 10 12	5 6 8
				15	10	200~1200						
				15	20							
				20	05	200~2000		10 12 15			8 10 12 15	5 6 8 10
				20	10	250~2000						
				20	20							
				25	05	200~2000		15 20			10 12 15 20	6 8 10
				25	10	300~2000						
				25	25							
				28	06	200~2000		15 20			10 12 15 20	6 8 10
				32	10	300~2000		20 25			10 12 15 20 25	6 8 10
				32	32							

※For FBSSZ type, sizes 0804, 1002 and 1010 are not available. ※E≤P–4 ※N≤Q–4

Order Example

Part Number - L - F - P - S - V - U - C - KC - E - SC - X - Z - G - Q - K - N - J - JC - H - Y - W - R

FBSSRAA1004 - 450

FBSSZDJ2010 - 1200 - F36 - P12 - S60 - V15 - U15 - G20 - Q15 - N10

Days to Ship 10 Days

Price ※Please add the shaft end machining charge to the unit price of the base shaft.
ex) FBSSZDJ2010–1200–F36~284,10+15,30+12,30=311,70 EUR

Shaft Diameter	Lead	€ Unit Price Qty. 1~4 Left End Shape: A Right End Shape: A — FBSSR: Min. L~200	201~400	401~600	601~800	801~1000	1001~1200	1201~1500	1501~2000	FBSSZ: Min. L~200	201~400	401~600	601~800	801~1000	1001~1200	1201~1500	1501~2000
08	02																
08	04																
10	02																
10	04																
10	10																
12	04																
12	10																
14	05																
15	05																
15	10																
15	20																
20	05																
20	10																
20	20																
25	05																
25	10																
25	25																
28	06																
32	10																
32	32																

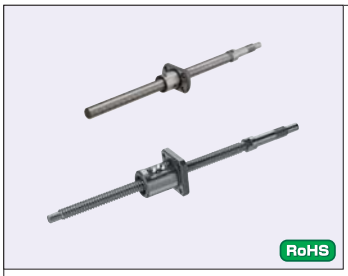
Shaft Diameter	Lead	Left Side Shaft Machining € Unit Price Qty. 1~4 — B	C	D	E	F	G	H	Right Side Shaft Machining € Unit Price Qty. 1~4 — J	K	M	N	P	R	S
08	02														
08	04														
10	02														
10	04														
10	10														
12	04														
12	10														
14	05														
15	05														
15	10														
15	20														
20	05														
20	10														
20	20														
25	05														
25	10														
25	25														
28	06														
32	10														
32	32														

※Caution: Do not let the nuts overrun as well as remove the nuts from the screw shafts.
It may cause the balls to fall out or damage the ball recirculation parts.
※For Rolled Ball Screws accuracy, refer to **P.651** · **P.653**
※For the Support Unit, **P.685**~**P.694**
※For Nut Brackets, refer to **P.695**

※For orders larger than indicated quantity, please request a quotation.

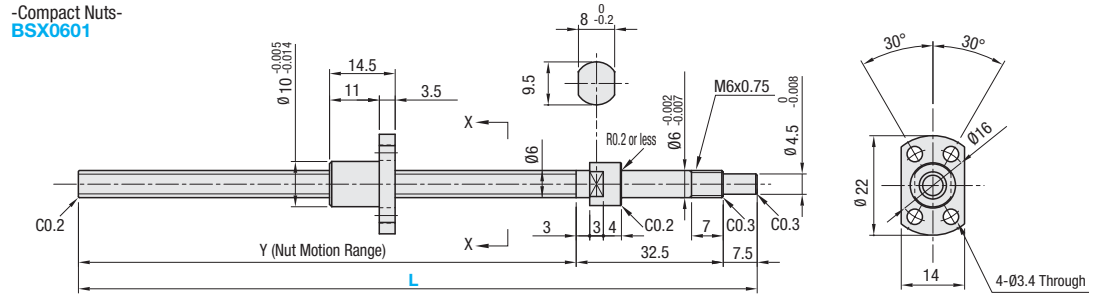
Precision Ball Screws -Shaft Diameter 6 · 8 Lead 1 · 2-

-Accuracy Grade C3 · C5 · C7-



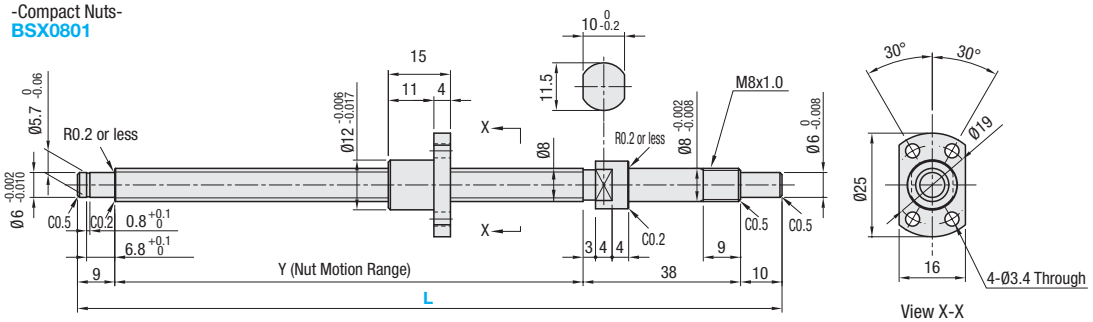
Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft		Ball Nut	
	Screw Twist Direction Right	Screw Twist Direction Left				M Material	H Hardness	M Material	H Hardness
Compact Nut	BSX	-	C3	6 · 8	1 · 2	1.7242/16CrMo4	Carburized 58~62HRC	1.7264/20CrMo5	Carburized 58~62HRC
Standard Nut	BSS	BSL	C5	8	2				
	BSSE	-	C7						

-Compact Nuts-
BSX0601



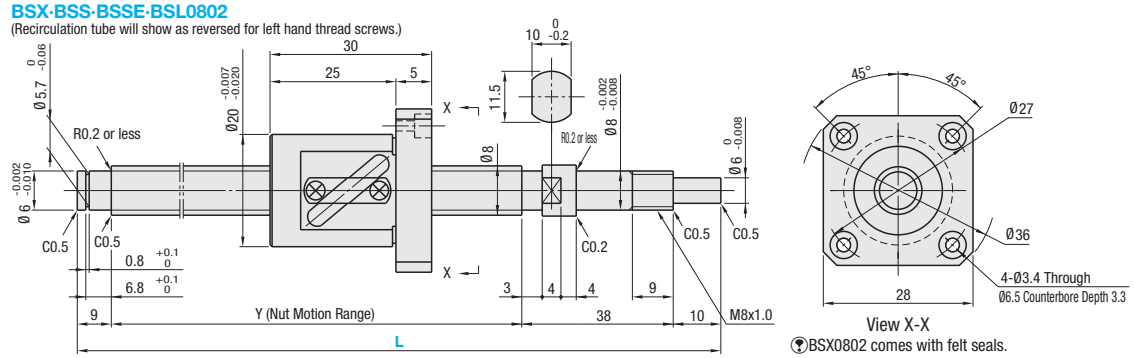
Allow ViewX-X

-Compact Nuts-
BSX0801



View X-X

-Standard Nuts-
BSX·BSS·BSSE·BSL0802
(Recirculation tube will show as reversed for left hand thread screws.)



View X-X

BSX0802 comes with felt seals.

Ball Nut Type	Precision Class	Part Number			1mm Increment	Y	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating		Allowable Axial Play	Preload Torque N·cm	Twisting Direction
		Type	Screw Shaft Diameter	Lead	L						C (Dynamic) kN	Co (Static) kN			
Compact Ball Nut	C3	BSX	06	01	80~205	L-40	0.800	6.24	(5.3)	1 turn, 3 rows	0.55	1.15	0 (Preloaded)	1.3 or Less	Right
			08	01	80~255			8.24	(7.3)		0.65	1.6		1.8 or Less	
Standard Ball Nut			08	02	100~240	L-57	1.5875	8.3	(6.6)	2.5 turns, 1 row	1.22	1.3		0.3~2.6	
	C5	BSS			100~210						1.95	2.6	0.005 or Less	0.5 or Less	
	C7	BSSE											0.030 or Less	-	
	C5	BSL											0.005 or Less	0.5 or Less	Left

kgf=Nx0.101972

Price Reduction 20%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4					
			L80~99	L100~160	L161~205	L206~210	L211~240	L241~255
Compact Nut	C3	BSX0601						
		BSX0801						
Standard Nut		BSX0802						
	C5	BSS0802						
	C7	BSSE0802						
	C5	BSL0802						

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
BSX0601	-	185
BSL0802	-	200
BSS0802L	-	210 (L Type Greased)
BSS0802G	-	210 (G Type Greased)

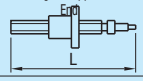
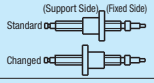
Days to Ship: 8 Days - BSL only: 10 Days

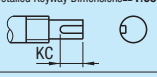
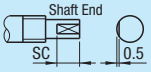
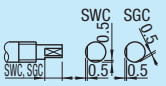
Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).(BSX is filled with Multemp Grease PS2 made by Kyodo Yushi Co., Ltd.)
- Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSX is not applicable.
- For accuracy of Ball Screws, refer to **P.651** and **653.**
- For Support Units details, refer to **P.685~694**.

Alterations

Part Number	-	L	-	(FC · KC…etc.)
BSS0802	-	190	-	KC3

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft 	NC	No machining added on the support side shaft end. Ordering Code NC ⊗BSX0601 is not applicable.	-20,00
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC Combination with FC is not available. ⊗BSX0601 is not applicable.	Free of charge
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 10≤FC≤20 Y dimension is shortened. ⊗BSX0601 and 0801 are not applicable.	10,00

Alterations	Code	Spec.	Price Adder
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on fixed side shaft end. KC = 1mm Increment Ordering Code KC6 3≤KC≤9 ⊗BSX0601 is not applicable.	14,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S1 4≤K+S≤9 ⊗BSX0601 is not applicable.	14,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤6 (BSX0601) 5≤SC≤9 (BS_ _0801, 0802)	6,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC, SGC≤6 (BSX0601) 5≤JIS SWC, SGC≤9 (BS_ _0801, 0802)	12,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSX BSS BSSE BSL	06	01	BRW	6	Round	0		P.693
			BSW	6	Square Type	0		P.687
	08	01 02	BRW	8	Round	0		P.693
			BUR	8			0	P.693
			BSW	8	Square Type	0		P.687
			BUN	8			0	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (**P.685~P.694**)

Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

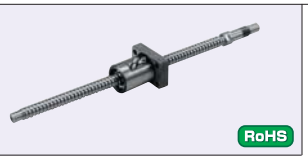
Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSX BSS BSSE BSL	06	01	-	-	-
	08	01	BNFB BNFM BNFR BNFA	801X	P.695
		02		802S	P.695

Variety of materials and surface treatments for Nut Brackets are available. (**P.695**)

Precision Ball Screws -Shaft Diameter 10, Lead 2 · 4 · 10-

-Accuracy Grade C3 · C5 · C7-

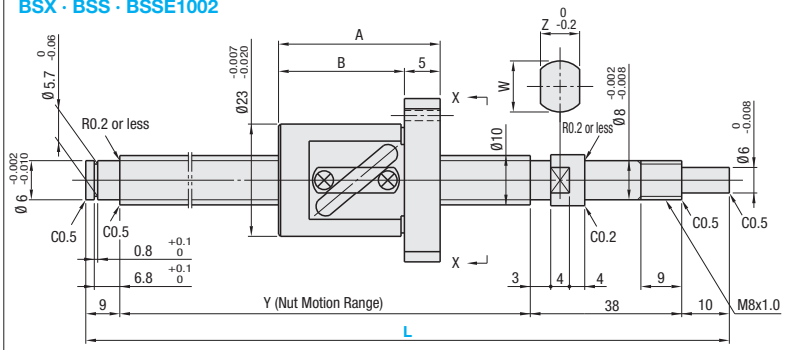


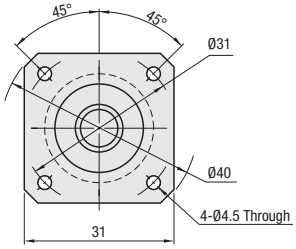
RoHS

Ball Nut Type	Type: Screw Twist Direction Right	Type: Screw Twist Direction Left	Precision Class	Shaft Diameter	Lead	Screw Shaft: Material	Screw Shaft: Hardness	Ball Nut: Material	Ball Nut: Hardness
Standard Nut	BSX	-	C3	10	2	*AISI4150	*Induction Hardening 58~62HRC	1.7264/ 20CrMo5	Carburized 58~62HRC
	BSS	BSL	C5		2·4·10				
	BSSE	-	C7						

* For 1002, shaft material 1.7242/16CrMo4 is carburized.

-Standard Nuts-
BSX · BSS · BSSE1002



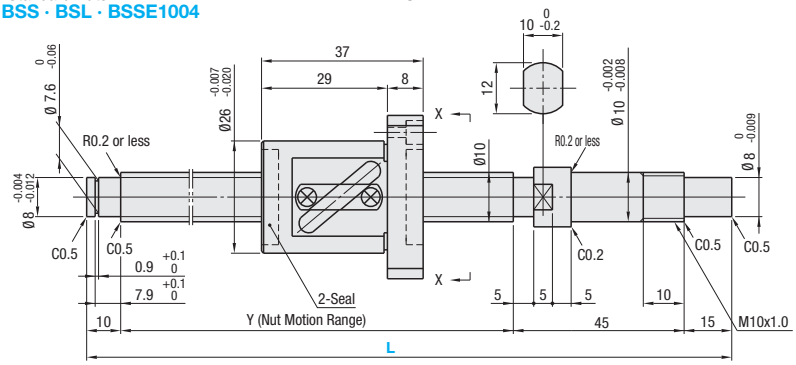


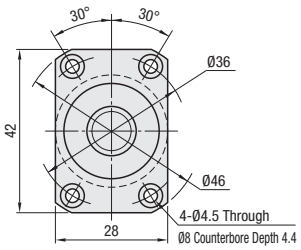
View X-X

BSX1002 comes with felt seals.

Recirculation tube will show as reversed for left hand thread screws.

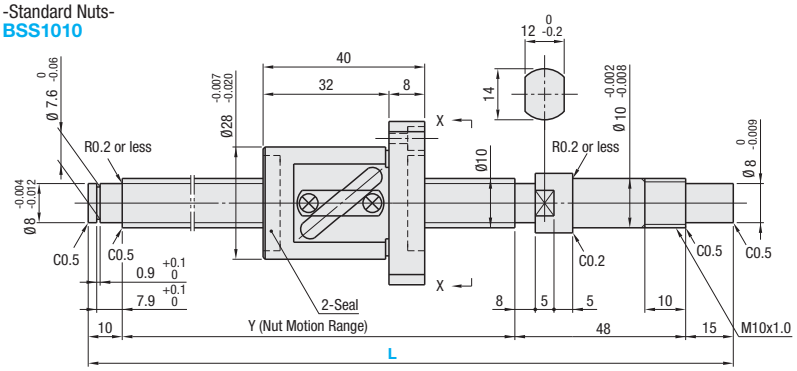
-Standard Nuts-
BSS · BSL · BSSE1004

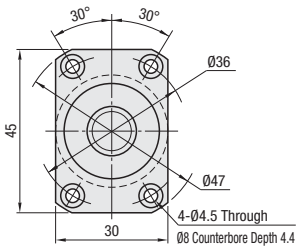




View X-X

-Standard Nuts-
BSS1010





View X-X

Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Diameter	Part Number: Lead	1mm Increment: L	Y	A	B	Z	W	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C3	BSX	10	02	100~310	L-57	30	25	10	11.5	1.5875	10.3	-8.6	2.5 turns, 1 row	1.41	1.65	0 (Preloaded)	0.3~2.5	Right
	C5	BSS			100~315		27	22	8	10					2.25	3.3	0.005 or Less	0.5 or Less	
	C7	BSSE															0.030 or Less	-	
	C5	BSS		04	150~380	L-70	-	-	-	-	2.3812	10.6	-8.1		3.35	5.9	0.005 or Less	1.0 or Less	
		BSL																	Left
	C7	BSSE															0.030 or Less	-	
	C5	BSS		10	150~450	L-73								1.5 turns, 1 row	2.2	3.5	0.005 or Less	1.0 or Less	Right

kgf=Nx0.101972

Price Reduction 20%

CAD Data

Price

Ball Nut Type	Precision Class	Part Number	€ Unit Price Qty. 1~4 L100~149	L150~200	L201~248	L249~250	L251~310	L311~315	L316~380	L381~450
Standard Nut	C3	BSX1002								
	C5	BSS1002								
	C7	BSSE1002								
	C5	BSS1004								
		BSL1004								
	C7	BSSE1004								
		BSS1010								

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
BSX1002	-	200
BSS1004L	-	320 (L Type Greased)
BSSE1004G	-	150 (G Type Greased)

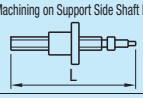
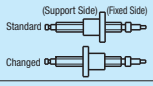
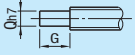
Days to Ship: 8 Days - BSL only: 10 Days

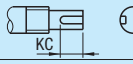
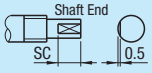
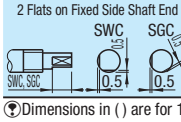
Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSX is not applicable.
- For accuracy of Ball Screws, refer to **P.651** and **653.**
- For Support Units details, refer to **P.685~694**.

Alterations

Part Number - L - (FC · KC...etc.)
BSS1004 - 270 - SC10

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	1002: -20,00 1004 · 1010: -25,00
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End Ordering Code RNC ⓨCombination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 6 · 8 ⓨY dimension is shortened. G=1mm Increment Ordering Code GC-Q8-G20 ⓨ5≤G≤Qx3 ⊗Not applicable to 1002	8,00
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 Size / ℓ / FC Range: 1002 / 6.8 / 10≤FC≤20; 1004 1010 / 7.9 / 11≤FC≤20 ⓨY dimension is shortened.	1002: 10,00 1004 · 1010: 12,00

Alterations	Code	Spec.	Price Adder
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 ⓨ3≤KC≤14 (9)	14,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S1 ⓨ4≤K+S≤14 (9)	14,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 ⓨ5≤SC≤14 (9)	6,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC ⓨ5≤JIS SWC, SGC≤14 (9)	12,00 each

ⓨDimensions in ( ) are for 1002.

Combination with Support Units

Ball Screw Part Number Type	Screw Shaft Outer Diameter	Lead	Recommended Support Units Part Number Type	No.	Shape	Fixed Side	Support Side	Page
BSX	10	02	BRW	8	Round	○		P.693
			BUR	8			○	P.693
			BSW	8	Square Type	○		P.687
			BUN	8			○	P.689
BSS BSSE		02	BRW	8S	Round	○		P.693
			BUR	8S			○	P.693
			BSW	8S	Square Type	○		P.687
			BUN	8S			○	P.689
BSS BSSE BSL		04	BRW	10S	Round	○		P.693
			BUR	10S			○	P.693
			BSW	10S	Square Type	○		P.687
			BUN	10S			○	P.689
BSS		10	BRW	10	Round	○		P.693
			BUR	10			○	P.693
			BSW	10	Square Type	○		P.687
			BUN	10			○	P.689

ⓨOther than the above part numbers, variety of shapes and surface treatments for Support Units are available. (**P.685~P.694**)

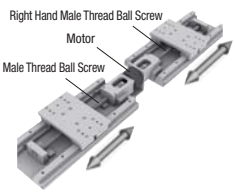
Combination with Nut Brackets

Ball Screw Part Number Type	Screw Shaft Outer Diameter	Lead	Recommended Nut Brackets Part Number Type	No.	Page
BSX BSS BSSE BSL	10	02	BNFB	1002X	-
			BNFM	1002S	P.695
		04	BNFR	1004S	P.695
		10	BNFA	1010S	P.695

ⓨVariety of materials and surface treatments for Nut Brackets are available. (**P.695**)

Example

·One motor driving a right hand twist screw and a left hand twist screw together enables synchronized operation.



Precision Ball Screws -Shaft Diameter 12, Lead 2 · 4 · 5 · 10-

-Accuracy Grade C3 · C5 · C7-

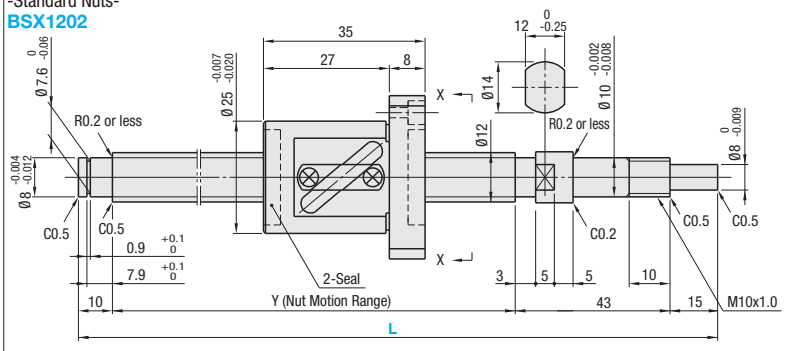


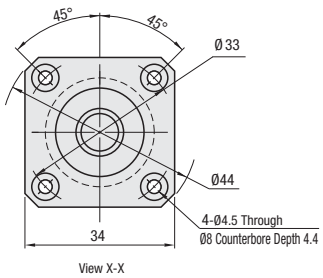
RoHS

Ball Nut Type	Type		Precision Class	Shaft Diameter	Lead	Screw Shaft		Ball Nut	
	Screw Twist Direction Right	Screw Twist Direction Left				M Material	H Hardness	M Material	H Hardness
Standard Nut	BSX	-	C3	12	2 · 5	*AISI4150	*Induction Hardening 58~62HRC	1.7264/20CrMo5	Carburized 58~62HRC
	BSS	BSL	C5		2 · 4 · 5 · 10				
	BSSE	-	C7						

* For 1202, screw shaft material 1.7242/16CrMo4 is carburized.

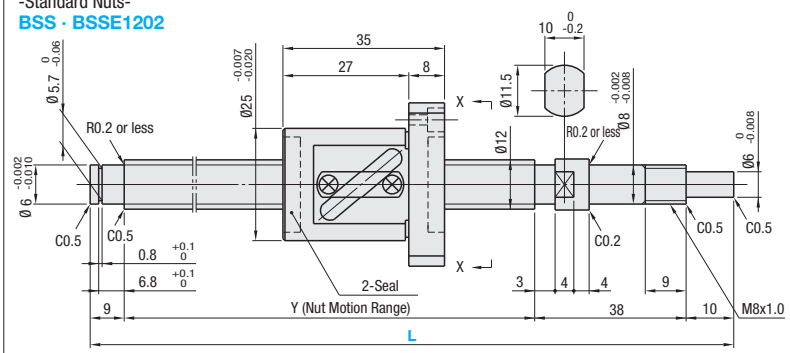
-Standard Nuts-
BSX1202

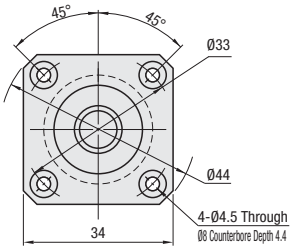




View X-X

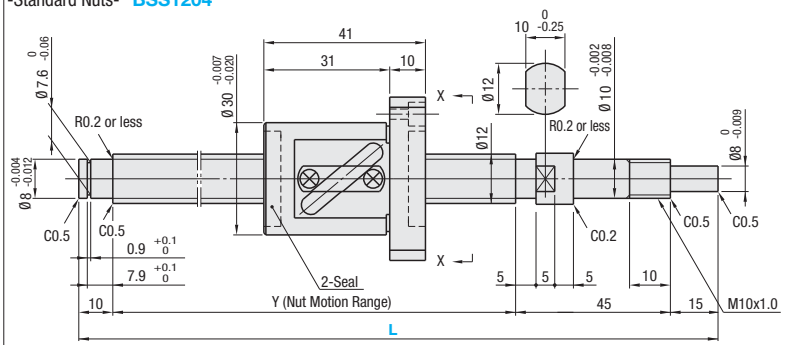
-Standard Nuts-
BSS · BSSE1202

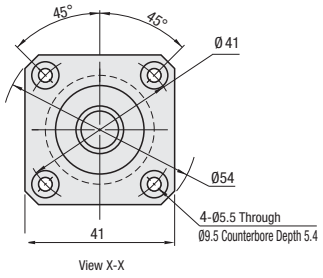




View X-X

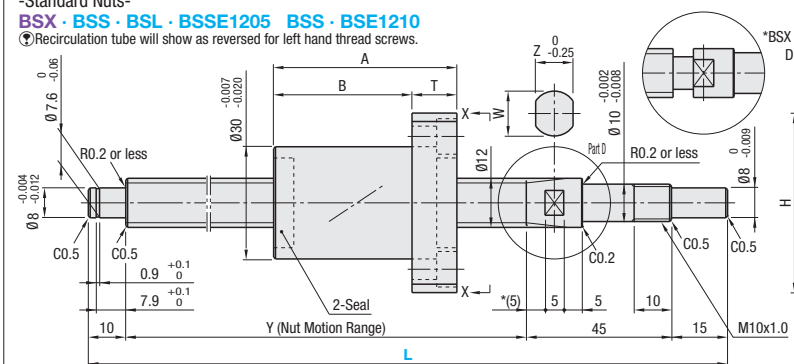
-Standard Nuts- **BSS1204**

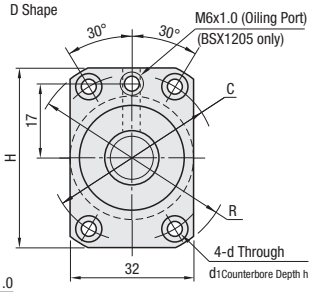




View X-X

-Standard Nuts-
BSX · BSS · BSL · BSSE1205 BSS · BSE1210
Recirculation tube will show as reversed for left hand thread screws.





View X-X

*BSS, BSSE1205 and 1210 will change to D Shape at anytime without notice. For details, refer to P.679.

Price Reduction
20%

CAD Data

Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Diameter	Part Number: Lead	1mm Increment: L	Y	A	B	T	Z	W	H	R	C	d	d1	h	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C3	BSX	12	02	150~390	L-68	-											1.5875	12.3	-10.6	2.5 turns 1 row	1.54	2.05	0 (Preloaded)	0.4~3.2	Right
	C5	BSS			150~445	L-57																2.45	4.1	0.005 or Less	1.0 or Less	
	C7	BSSE																						0.030 or Less	-	
	C5	BSS		04	150~400	L-70												2.3812	12.6	-10.1		3.6	6.75	0.005 or Less	1.0 or Less	
	C3	BSX		05	150~440	L-70	44	34	10	12	14	45	50	40	4.5	8	4.4	3.175	12.8	-9.5		3.74	4.9	0 (Preloaded)	1.5~5.0	Right
	C5	BSS			150~450					10	12											5.95	9.8	0.005 or Less	1.0 or Less	Left
		BSL																								
	C7	BSSE																						0.030 or Less	-	
	C5	BSS		10	200~600	L-70	49	37	12			48	54	41	5.5	9.5	5.4				1.5 turns 1 row	3.85	5.9	0.005 or Less	2.0 or Less	Right
	C7	BSSE																						0.030 or Less	-	

kgf=Nx0.101972

Order Example: Part Number BSX1202 - L 300
BSSE1210L - 420 (L Type Greased)
BSSE1210G - 420 (G Type Greased)

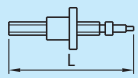
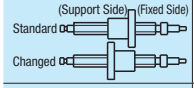
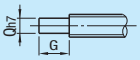
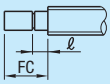
Price

Days to Ship: 8 Days - BSL only: 10 Days

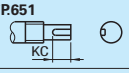
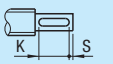
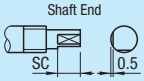
Precision Class	Part Number	€ Unit Price Qty. 1~4: L150 ~ 199	L200	L201 ~ 250	L251 ~ 290	L291 ~ 295	L296 ~ 300	L301 ~ 390	L391 ~ 400	L401 ~ 440	L441 ~ 445	L446 ~ 450	L451 ~ 600
C3	BSX1202												
C5	BSS1202												
C7	BSSE1202												
C5	BSS1204												
C3	BSX1205												
C5	BSS1205												
C5	BSL1205												
C7	BSSE1205												
C5	BSS1210												
C7	BSSE1210												

For orders larger than indicated quantity, please request a quotation.

Alterations: Part Number - L - (FC · KC…etc.) BSX1202 - 300 - SWC13

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	1202 · 1204: -20,00 BSX1202 1205 · 1210: -25,00
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	No Retaining Ring Groove on the Support Side Shaft End. Ordering Code RNC. Combination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 6, 8. Y dimension is shortened. G=1mm Increment. Ordering Code GC-Q8-G20. 5≤G≤Qx3. ⊗Not applicable to 1202 of C5 and C7.	10,00
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment. Ordering Code FC20. Y dimension is shortened.	1202: 10,00 1204 · 1205 · 1210: 12,00

Size	ℓ	FC Range
1202	6.8	10≤FC≤20
1204	7.9	11≤FC≤20
1205		
1210		

Alterations	Code	Spec.	Price Adder
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment. Ordering Code KC10. 3≤KC≤14 (9)	14,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment. Ordering Code KLC-K5-S1. 4≤K+S≤14 (9)	14,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment. Ordering Code SC7. 5≤SC≤14 (9)	6,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC : 90° Position SGC: 120° Position 1mm Increment. Ordering Code JIS SWC. 5≤JIS SWC , SGC≤14 (9)	12,00 each

Dimensions in ( ) are for 1202.

Combination with Support Units

Ball Screw Part Number: Type	Ball Screw Part Number: Screw Shaft Outer Diameter	Ball Screw Part Number: Lead	Recommended Support Units: Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSX	12	02	BRW	10	Round	○		P.693
			BUR	10			○	P.693
			BSW	10	Square Type	○		P.687
			BUN	10			○	P.689
		05	BRW	10	Round	○		P.693
			BUR	10			○	P.693
			BSW	10	Square Type	○		P.687
			BUN	10			○	P.689
BSS BSSE		02	BRW	8	Round	○		P.693
			BUR	8			○	P.693
			BSW	8	Square Type	○		P.687
			BUN	8			○	P.689
		04 05 10	BRW	10S	Round	○		P.693
			BUR	10S			○	P.693
			BSW	10S	Square Type	○		P.687
			BUN	10S			○	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (P.685~P.694)

Combination with Nut Brackets

Ball Screw Part Number: Type	Ball Screw Part Number: Screw Shaft Outer Diameter	Ball Screw Part Number: Lead	Recommended Nut Brackets: Part Number Type	Part Number No.	Page
BSX BSS BSSE	12	02	BNFB	1202S	P.695
		04	BNFM	1204S	P.695
		05	BNFR	1205S	P.695
		10	BNFA	1210S	P.695

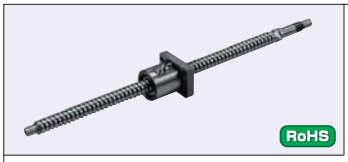
Variety of materials and surface treatments for Nut Brackets are available. (P.695)

Note

- Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
- Caution: Do not let the nuts overrun as well as remove the nuts from the screw shafts. It may cause the balls to fall out or damage the ball recirculation parts.
- Various grease options are available. For lead time, prices and Specifications, refer to P.651. ⊗BSX is not applicable.
- For accuracy of Ball Screws, refer to P.651 · 653
- For details support units, refer to P.685~P.694

Precision Ball Screws -Shaft Diameter 15, Lead 5 · 10 · 20 · 40-

-Accuracy Grade C3 · C5 · C7-

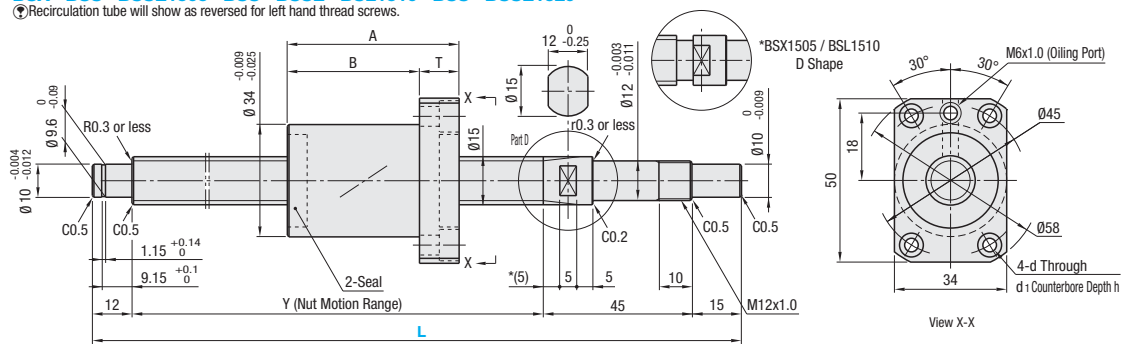


Ball Nut Type	Type: Screw Twist Direction Right	Type: Screw Twist Direction Left	Precision Class	Shaft Diameter	Lead	Screw Shaft: Material	Screw Shaft: Hardness	Ball Nut: Material	Ball Nut: Hardness
Standard Nut	BSX	-	C3	15	5	AISI4150	Induction Hardening 58~62HRC	1.7264/20CrMo5	Carburized 58~62HRC
	BSS	BSL	C5		5 · 10 · 20 · 40				
	BSSE	-	C7						

-Standard Nuts-

BSX · BSS · BSSE1505 BSS · BSSE · BSL1510 BSS · BSSE1520

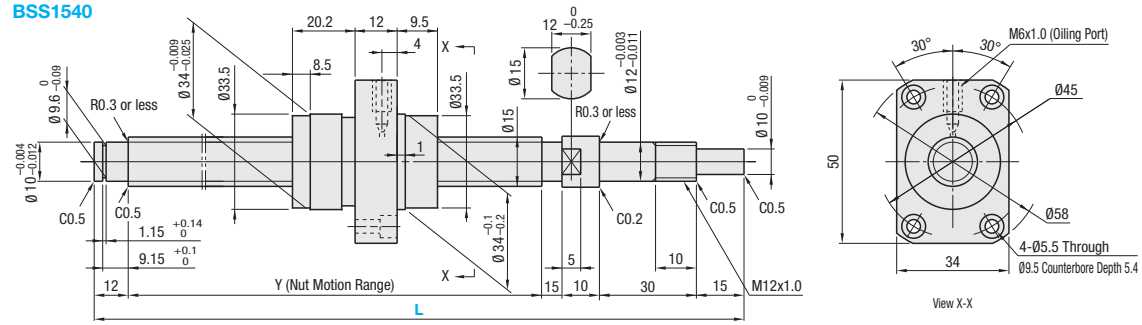
Recirculation tube will show as reversed for left hand thread screws.



*BSS, BSSE1505 · 1510 and 1520 will change to D Shape at anytime without notice.

-Standard Nuts-

BSS1540

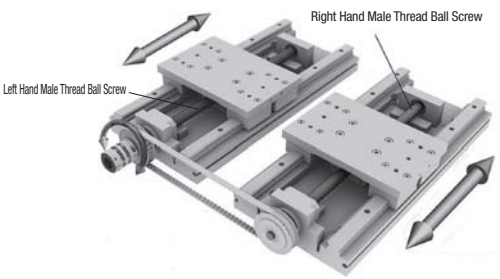


Ball Nut Type	Precision Class	Part Number: Type	Part Number: Screw Shaft Diameter	Part Number: Lead	1mm Increment: L	Y	A	B	T	d	d1	h	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating: C (Dynamic) kN	Basic Load Rating: Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C3	BSX	15	05	150~590	L-72	44	34	10	5.5	9.5	5.4	3.175	15.8	(12.5)	2.5 turns, 1 row	4.34	6.25	0 (Preloaded)	1.5~6.0	Right
	C5	BSS			150~1095												6.9	12.5	0.005 or Less	2.0 or Less	
	C7	BSSE																	0.030 or Less	-	
	C5	BSS		10	200~1095	L-72	52	40	12	6		6				1.5 turns, 1 row	4.4	7.9	0.005 or Less	3.0 or Less	Left
		BSL			200~895																
	C7	BSSE			200~1095														0.030 or Less	-	Right
	C5	BSS		20	230~1095	L-72	62	50											0.005 or Less	3.0 or Less	
	C7	BSSE																	0.030 or Less	-	
	C5	BSS		40	300~1095	L-82	-									0.67 turn, 3 line	5.6	8.6	0.010 or Less	-	

kgf=Nx0.101972

Example

·One motor driving a right hand twist screw and a left hand twist screw together enables synchronized operation



*Precaution for use of Ball Screws

The products shown in the Table 1 still have threads on their parts A. However, this is outside of the motion range, therefore, do not advance the nut into the A area.
Do not let the nuts overrun or remove the nuts from the screw shafts, as ball fall-outs and damages will occur.

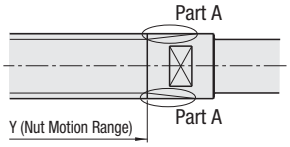


Table 1

Part Number: Type	Part Number: Screw Shaft Diameter	Part Number: Lead
BSS	12	05
		10
	15	05
		10
		20
	20	05
		10
		20
	25	10
BSSE	12	05
		10
	15	05
		10
		20
	20	05
		10
		20
	25	10

Price Reduction 20%

CAD Data

Price

Precision Class	Part Number	€ Unit Price Qty. 1~4													
		L150 ~199	L200	L201 ~229	L230 ~299	L300 ~390	L391 ~400	L401 ~590	L591 ~595	L596 ~600	L601 ~800	L801 ~895	L896 ~900	L901 ~1000	L1001 ~1095
C3	BSX1505								⊗	⊗	⊗	⊗	⊗	⊗	⊗
C5	BSS1505														
C7	BSSE1505														
C5	BSS1510	⊗													
C5	BSL1510	⊗											⊗	⊗	⊗
C7	BSSE1510	⊗													
C5	BSS1520	⊗	⊗	⊗											
C7	BSSE1520	⊗	⊗	⊗											
C5	BSS1540	⊗	⊗	⊗	⊗										

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L	
BSX1505	-	300	
BSSE1510L	-	420	(L Type Greased)
BSSE1510G	-	420	(G Type Greased)

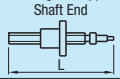
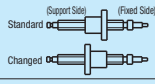
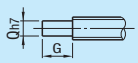
Days to Ship: 8 Days - BSL only: 10 Days

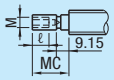
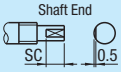
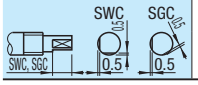
Note

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts.
It may cause the balls to fall out or damage the ball recirculation parts.
Various grease options are available. For lead time, prices and Specifications, refer to P.651 ⊗BSX is not applicable.
For accuracy of Ball Screws, refer to **P.651** and **653.**
For Support Units details, refer to **P.685~694**.

Alterations

Part Number - L - (FC · KC…etc.)
BSS1505 - 350 - KC10

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	-30,00
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤30 Y dimension is shortened.	14,00
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q: Selectable from 8, 10, 12 G=1mm Increment Ordering Code GC-Q8-G20 5≤G≤Qx3 Y dimension is shortened. ⊗Not applicable to BSS1540	10,00

Alterations	Code	Spec.	Price Adder
Female Thread Hole on Support Side Shaft End 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC20 (M: M5x0.8; ℓ: 12) Y dimension is shortened. 18≤MC≤30	14,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC10 3≤KC≤14	14,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K5-S3 4≤K+S≤14	14,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤14	7,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC: 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC, SGC≤14	1505 · 1510 · 1520: 14,00 each 1540: 7,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSX BSS BSSE BSL	15	05 10 20 40	BRW	12	Round	○		P.693
			BUR	12			○	P.693
			BSW	12	Square Type	○		P.687
			BUN	12			○	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (**P.685~P.694**)

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSX BSS BSSE BSL	15	05 10 20 40	BNFB BNFM BNFR BNFA	1505S	P.695
				1510S	P.695
				1520S	P.695

Variety of materials and surface treatments for Nut Brackets are available. (**P.695**)

Precision Ball Screws -Shaft Diameter 20, Lead 5 · 10 · 20 · 40-

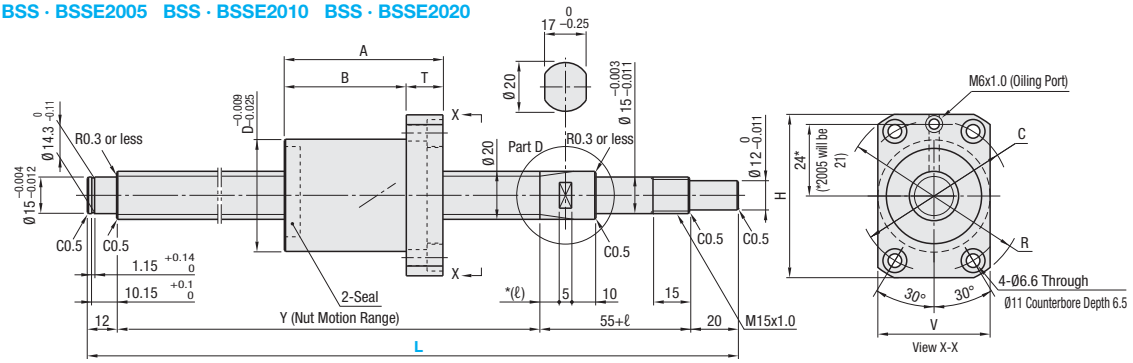
-Accuracy Grade C5 · C7-



Ball Nut Type	Type	Precision Class	Shaft Diameter	Lead	Screw Shaft		Ball Nut	
					M Material	H Hardness	M Material	H Hardness
Standard Nut	BSS	C5	20	5 · 10 · 20 · 40	AISI4150	Induction Hardening 58~62HRC	1.7264/20CrMo5	Carburized 58~62HRC
	BSSE	C7		5 · 10 · 20				

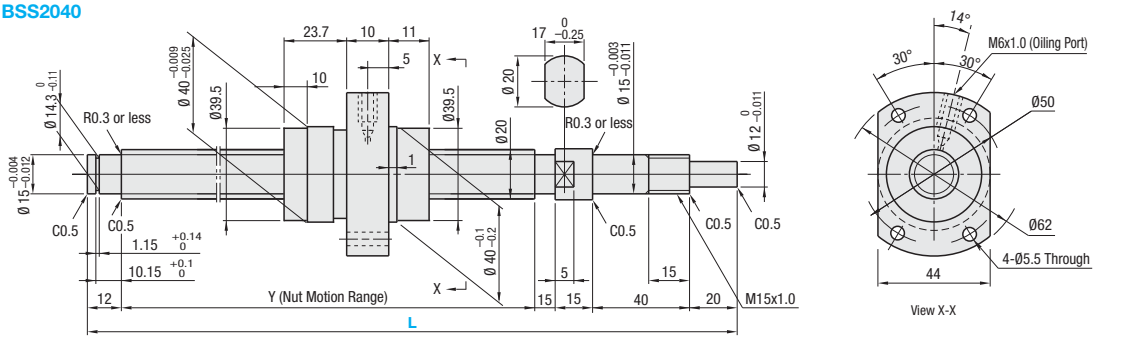
Ball bearings will fall out if the ball nut crosses the wrench flats.

-Standard Nuts-
BSS · BSSE2005 BSS · BSSE2010 BSS · BSSE2020



*BSS, BSSE2005 · 2010 and 2020 will change to D Shape at anytime without notice. For details, refer to P.679.

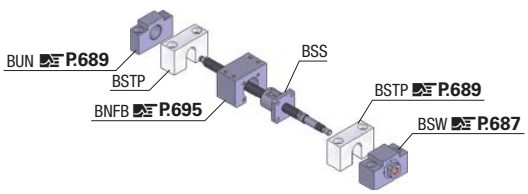
-Standard Nuts-
BSS2040



Ball Nut Type	Precision Class	Part Number Type	Part Number Screw Shaft Diameter	Part Number Lead	1mm Increment L	Y	D	A	B	T	(ℓ)	H	V	R	C	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating C (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Axial Play	Preload Torque N·cm	Twisting Direction
Standard Ball Nut	C5	BSS	20	05	200~1000	L-92	40	48	36	12	5	60	40	68	53	3.175	20.8	(17.5)	2.5 turns, 1 row	8.35	17.5	0.005 or Less	3.0 or Less	Right
	C7	BSSE																				0.030 or Less	-	
	C5	BSS		10	250~1500	L-95	46	65	50	15	8	66	46	74	59	4.7625	21	(16)		13.5	25.1	0.005 or Less	4.0 or Less	
	C7	BSSE																				0.030 or Less	-	
	C5	BSS		20	250~1500	L-95		70	55									(15.9)	1.5 turns, 1 row	9.2	16.2	0.005 or Less	4.0 or Less	
	C7	BSSE																				0.030 or Less	-	
	C5	BSS		40	300~1495	L-102	-									3.175	20.8	(17.5)	0.67 turn, rows 3 line	6.8	12.1	0.005 or Less	-	

kgf=Nx0.101972

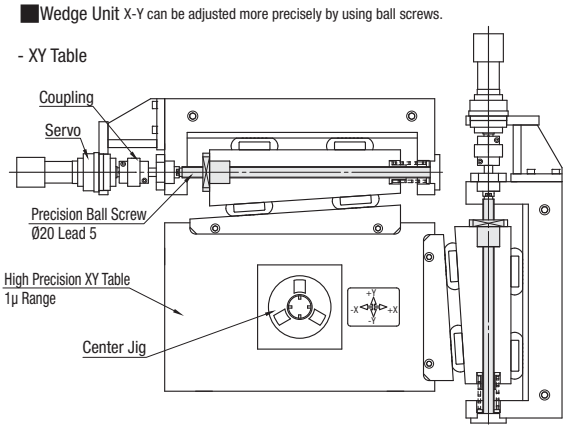
Example



-Combination example of a Ball Screw, Support Units, Ball Nut Brackets, and etc.

■Wedge Unit X-Y can be adjusted more precisely by using ball screws.

- XY Table



Price Reduction
20%

CAD Data

Price

Precision Class	Part Number	€ Unit Price Qty. 1~4											
		L200 ~249	L250 ~299	L300 ~400	L401 ~600	L601 ~700	L701 ~800	L801 ~995	L996 ~1000	L1001 ~1200	L1201 ~1300	L1301 ~1495	L1496 ~1500
C5	BSS2005												
C7	BSSE2005												
C5	BSS2010												
C7	BSSE2010												
C5	BSS2020												
C7	BSSE2020												
C5	BSS2040												

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
BSS2005	-	820
BSSE2010L	-	1000 (L Type Greased)
BSSE2010G	-	1000 (G Type Greased)

Days to Ship

8 Days

Note

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K.).
Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts.
It may cause the balls to fall out or damage the ball recirculation parts.
Various grease options are available. For lead time, prices and Specifications, refer to P.651
For accuracy of Ball Screws, refer to **P.651** and **653.**
For Support Units details, refer to **P.685~694**.

Alterations

Part Number	-	L	-	(FC · KC…etc.)
BSS2020	-	350	-	KC10

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End	NC	No machining added on the support side shaft end. Ordering Code NC	-30,00
Ball Nut Orientation Reversed	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Length	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 13≤FC≤30 Y dimension is shortened.	14,00
Change Support Side Shaft End Machining	GC	Changes the machining on the support side. Q is selectable from 10, 12, 15 G=1mm Increment Y dimension is shortened. Ordering Code GC-Q10-G20 5≤G≤Qx3 ⊗Not applicable to BSS2040	15,00

Alterations	Code	Spec.	Price Adder
Female Thread Hole on Support Side Shaft End	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC25 (M: M6x1.0 15; ℓ: 15) Y dimension is shortened. 21≤MC≤30	14,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC15 4≤KC≤19	14,00
Keyway on Fixed Side Shaft End	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K7-S2 5≤K+S≤19	14,00
Flat Machined on Fixed Side Shaft End	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC7 5≤SC≤19	7,00
2 Flats on Fixed Side Shaft End	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC : 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC , SGC≤19	2005 · 2010 ·2020: 14,00 each 2040: 7,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSS BSSE	20	05 10 20 40	BRW	15	Round	0		P.693
			BUR	15			0	P.693
			BSW	15	Square Type	0		P.687
			BUN	15			0	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (**P.685~P.694**)
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSS BSSE	20	05	BNFB BNFM BNFR BNFA	2005S	P.695
		10		2010S	P.695
		20		2020S	P.695
		40		2040S	P.695

Variety of materials and surface treatments for Nut Brackets are available. (**P.695**)

Precision Ball Screws -Shaft Diameter 25, Lead 5 · 10 · 20-

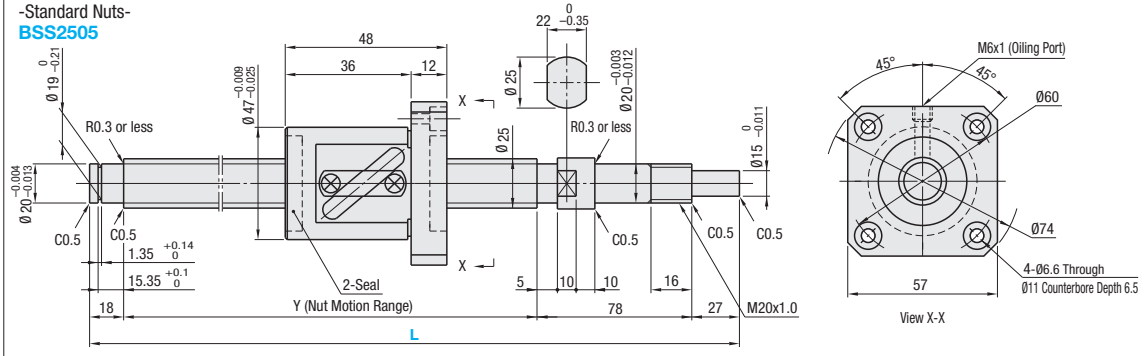
-Accuracy Grade C5 · C7-



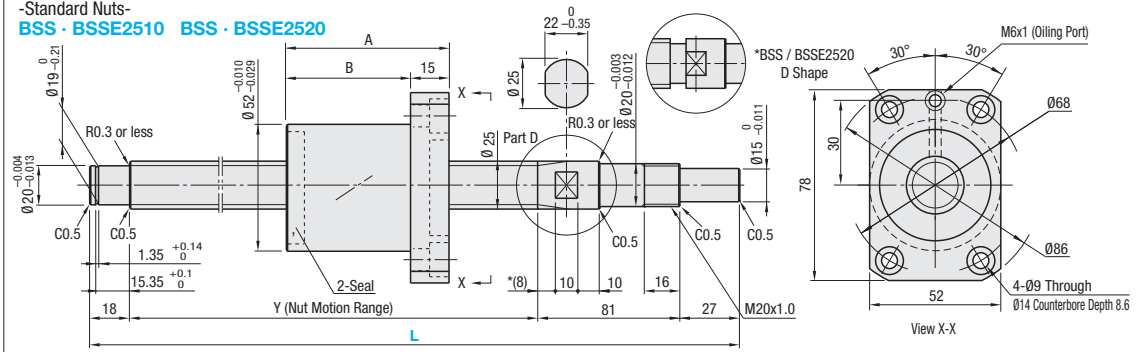
Ball Nut Type	Type	Precision Class	Shaft Diameter	Lead	Screw Shaft		Ball Nut	
					M Material	H Hardness	M Material	H Hardness
Standard Nut	BSS	C5	25	5 · 10 · 20	AISI4150	Induction Hardening 58~62HRC	1.7264/20CrMo5	Carburized 58~62HRC
	BSSE	C7		10 · 20				

Ⓣ Ball bearings will fall out if the ball nut crosses the wrench flats.

-Standard Nuts-
BSS2505



-Standard Nuts-
BSS · BSSE2510 BSS · BSSE2520



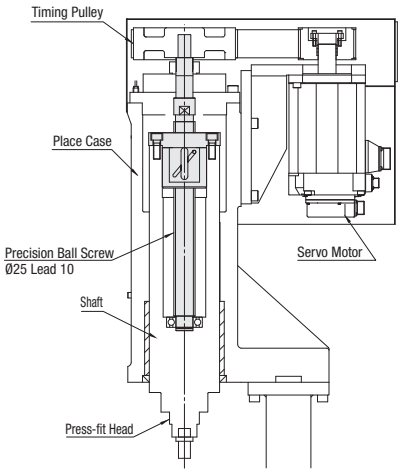
*BSS, BSSE2510 will change to D Shape at anytime without notice. For details, refer to P.679.

Ball Nut Type	Precision Class	Part Number			1mm Increment	Y	A	B	Ball Dia.	Ball Center Dia.	Screw Root Dia.	# of Circuits	Basic Load Rating		Allowable Axial Play	Preload Torque N·cm	Twisting Direction
		Type	Screw Shaft Diameter	Lead	L								C (Dynamic) kN	Co (Static) kN			
Standard Ball Nut	C5	BSS	25	05	300~995	L-123	-	-	3.175	25.8	(22.5)	2.5 turns 1 row	9.4	22.2	0.005 or Less	6.0 or Less	Right
	C5	BSS		10	300~1500	L-126	65	50	4.7625	26	(21)		16.1	33.4	0.005 or Less	6.0 or Less	
	C7	BSSE													0.030 or Less	-	
	C5	BSS		20	300~1500	L-126	70	55			(21)	1.5 turns 1 row	10.4	20.1	0.005 or Less	6.0 or Less	
	C7	BSSE													0.030 or Less	-	

kgf=Nx0.101972

Example

■Swaging Unit
In comparison to air, hydraulic cylinders, finer force control is made possible with a use of ball screw.



Price Reduction 20%

CAD Data

Price

Precision Class	Part Number	€ Unit Price Qty. 1~4							
		L300 ~400	L401 ~595	L596 ~600	L601 ~800	L801 ~995	L996~1000	L1001~1200	L1201 ~1500
C5	BSS2505								
C5	BSS2510								
C7	BSSE2510								
C5	BSS2520								
C7	BSSE2520								

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
BSS2510	-	700
BSSE2510L	-	420 (L Type Greased)
BSSE2510G	-	420 (G Type Greased)

Days to Ship

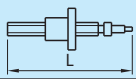
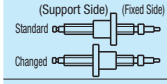
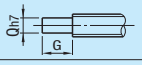
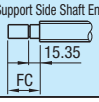
8 Days

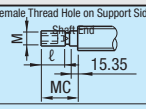
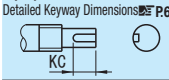
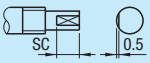
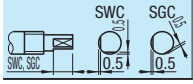
Note

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).
Notes: Do not let the nuts overrun, as well as remove the nuts from the screw shafts.
It may cause the balls to fall out or damage the ball recirculation parts.
Various grease options are available. For lead time, prices and Specifications, refer to P.651
For accuracy of Ball Screws, refer to P.651 · 653
For details support units, refer to P.685~P.694

Alterations

Part Number - L - (FC · MC...etc.)
BSS2505 - 700 - RLC

Alterations	Code	Spec.	Price Adder
No Machining on Support Side Shaft End 	NC	No machining added on the support side shaft end. Ordering Code NC	-40,00
Ball Nut Orientation Reversed 	RLC	Changes the nut direction. Ordering Code RLC	Free of charge
No Retaining Ring Groove on Support Side Shaft End 	RNC	Retaining ring groove in not machined on the support side shaft end. Ordering Code RNC Combination with FC is not available.	Free of charge
Change Support Side Shaft End Machining 	GC	Changes the machining on the support side. Q is selectable from 10 · 12 · 15 · 20 G=1mm Increment Ordering Code GC-Q10-G20 5≤G≤Qx3 Y dimension is shortened.	15,00
Change Support Side Shaft End Length 	FC	Changes the length of the support side shaft end. FC=1mm Increment Ordering Code FC20 19≤FC≤60 Y dimension is shortened.	14,00

Alterations	Code	Spec.	Price Adder
Female Thread Hole on Support Side 	MC	Adds a tapped hole on the support side shaft end. MC=1mm Increment Ordering Code MC40 (M: M8x1.25; ℓ: 20) Y dimension is shortened. 28≤MC≤60	14,00
Keyway on Fixed Side Shaft End Detailed Keyway Dimensions P.651 	KC	Adds a keyway on the fixed side shaft end. KC=1mm Increment Ordering Code KC20 5≤KC≤26	14,00
Keyway on Fixed Side Shaft End 	KLC	Adds a keyway at a customer specified area on the fixed side shaft end. (Key groove dim. is the same as KC.) K,S=1mm Increment Ordering Code KLC-K20-S3 6≤K+S≤26	14,00
Flat Machined on Fixed Side Shaft End 	SC	Adds a flat on the fixed side shaft end. SC=1mm Increment Ordering Code SC20 5≤SC≤26	7,00
2 Flats on Fixed Side Shaft End 	SWC SGC	Adds two flats on the fixed side shaft end. JIS SWC : 90° Position SGC: 120° Position 1mm Increment Ordering Code JIS SWC 5≤JIS SWC, SGC≤26	14,00 each

Combination with Support Units

Ball Screw Part Number			Recommended Support Units					
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Shape	Fixed Side	Support Side	Page
BSS BSSE	25	05 10 20	BRW	20	Round	0		P.693
			BUR	20			0	P.693
			BSW	20	Square Type	0		P.687
			BUN	20			0	P.689

Other than the above part numbers, variety of shapes and surface treatments for Support Units are available. (P.685~P.694)
Recommended products: Easy locating is possible with the Support Units with Dowel Holes as the dowel holes are provided on the units.

Combination with Nut Brackets

Ball Screw Part Number			Recommended Nut Brackets		
Type	Screw Shaft Outer Diameter	Lead	Part Number Type	Part Number No.	Page
BSS BSSE	25	05	BNFB BNFM BNFR BNFA	2505S	P.695
		10		2510S	P.695
		20		2520S	P.695

Variety of materials and surface treatments for Nut Brackets are available. (P.695)

Features of Support Units

■Features of Support Units (Fixed Side)

Preloaded bearings are incorporated in the Support Units and they provides steady rotation performance with high-rigidity and high-accuracy.
3 types of fixed side Support Units are available depending on the purpose.

-Standard Type Support Units
Uses the preloaded JIS 5 class Angular Contact Bearings. It is preferable to use for high-accuracy and high-speed precision ball screws.

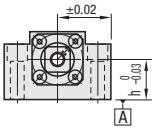
-Economy Type Support Units
Uses the preloaded JIS 0 class Angular Contact Bearing. While no Axial Play is regulated, it bears the axial load which is the same level to the JIS 5 class axial load. 20% lower in price comparing to those of the Standard Type. It is preferable to use for intermediate and low speed applications.

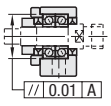
-Radial Bearing Type Support Units
Uses 2 preloaded JIS 0 class Angular Contact Bearings. Though the allowable axial load is low, it can bear the load from the axial direction. 30% lower in price comparing to those of the Standard Type. It is preferable to use for low speed screws.

■Support Units (Fixed Side) Mounting Interface Accuracies

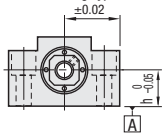
■Square Type

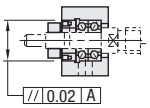
Standard Type





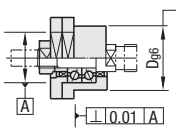
Economy Type
Radial Bearing Type



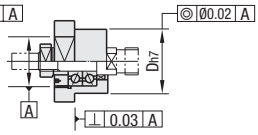


■Round

Standard Type



Economy Type
Radial Bearing Type



■Bearings

d	Standard Type		Economy Type		Radial Bearing Type	
	Bearings	Allowable Axial Load (N)	Bearings	Allowable Axial Load (N)	Bearings	Allowable Axial Load (N)
4	AC4-12DF/P5	1075	-	-	-	-
5	AC5-14DF/P5	1248	-	-	-	-
6	70M6DF/GMP5	1040	-	-	606ZZCNM	780
8	70M8DF/GMP5	1450	-	-	608ZZCNM	1300
10	7000DF/GMP5	2730	7000DF/Standard Class	2730	6000ZZCNM	2300
12	7001DF/GMP5	3040	7001DF/Standard Class	3040	6001ZZCNM	2600
15	7002DF/GMP5	3370	7002DF/Standard Class	3370	6002ZZCNM	2900
20	7204DF/GMP5	8260	7204DF/Standard Class	8260	6204ZZCNM	8100
25	7205DF/GMP5	9960	7205DF/Standard Class	9960	-	-

Keep radial bearing rotational speeds to under 3000rpm.

■Bearings Accuracy(extract)

■Inner Ring

Unit: µm

Nominal Bearings Inner Dia.		Flat Surface Average O.D. Dim. Differences				Radial Runout		Axial Play	
d		ΔDmp				Kia		Sia	
mm		Class 0		Class 5		Class 0	Class 5	Class 0	Class 5
More than	or Less	Over	Under	Over	Under	Max.		Max.	
2.5	10	0	-8	0	-5	10	4	-	7
10	18	0	-8	0	-5	10	4	-	7
18	30	0	-10	0	-6	13	4	-	8

■Outer Ring

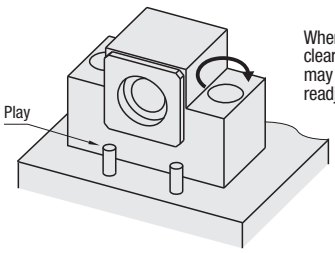
Unit: µm

Nominal Bearing O.D.		Flat Surface Average O.D. Dim. Differences				Radial Runout		Axial Play	
D		ΔDmp				Kea		Sea	
mm		Class 0		Class 5		Class 0	Class 5	Class 0	Class 5
More than	or Less	Over	Under	Over	Under	Max.		Max.	
6	18	0	-8	0	-5	15	5	-	8
18	30	0	-9	0	-6	15	6	-	8
30	50	0	-11	0	-7	20	7	-	8
50	80	0	-13	0	-9	25	8	-	10

■Features of Support Units with Dowel Holes P.688

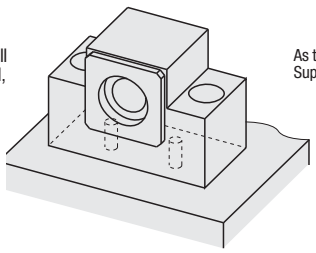
There is a method of pressing against vertical dowel pins for locating support units.
However, it required care in adjustments when tightening the mounting screws not cause clearances between the Pins and the support unit.

- Method of pressing against vertically placed dowel pins



When tightening the mounting screws, clearance between the Pins and the wall may be given. If this clearance is found, readjustment is required.

- Using the Support Units with Dowel Holes

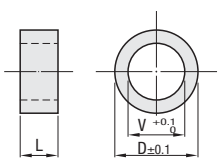


As the Dowel Holes are provided with the Support Units, locating is easy.

■Ball Screw Compatibility Chart

Support Units		No.6 No.6L	No.8S	No.8	No.10S	No.1022 No.10	No.12	No.152_ No.15	No.20	No.25
Ball Screw Fixed Side Shaft Dia.		Ø6	Ø8		Ø10		Ø12	Ø15	Ø20	Ø25
Oil Seal Applicable Diam.		Ø10	Ø10	Ø11.5	Ø12	Ø14	Ø15	Ø20	Ø25	Ø31
Applicable Ball Screws	Accuracy Grade C3	BSX0601	-	BSX0801 BSX0802 BSX1002	-	BSX1202 BSX1205	BSX1505	-	-	-
	Accuracy Grade C5	-	BSS1002	BSS0802 BSL0802 BSS1202	BS_1004 BS_1205 BSS1204 BSS1210	BSS1010	BSS15_ _ BSL1510	BSS20_ _	BSS25_ _	-
	Accuracy Grade C7	BSST0802	BSSE1002 BSST1004	BSSE0802 BSSE1202	BSSE1004 BSSE1205 BSSE1210 BSST1204	-	BSSE15_ _ BSS25_ _	BSSE20_ _ BSST20_ _	BSSE25_ _ BSST25_ _	-
	Accuracy Grade C10	BSSR08_ _ BSSZ08_ _ BSSC08_ _	BSSR10_ _ BSSZ10_ _ BSSC10_ _	-	BSSR12_ _ BSRR12_ _ BSSZ12_ _ BSSC12_ _	BSSR1405 BSRR1405 BSSZ1405	BSSR15_ _ BSRR15_ _ BSSZ15_ _ BSSC15_ _ BSBR15_ _	BSSR20_ _ BSRR20_ _ BSSZ20_ _ BSSC20_ _ BSBR20_ _	BSSR25_ _ BSRR25_ _ BSSZ25_ _ BSSC25_ _ BSBR25_ _ BSSR28_ _ BSRR28_ _ BSSZ28_ _	BSSR32_ _ BSSZ32_ _

■Support Units included Collars



*For 8S and 10S, the inner diameter of oil seal is smaller than the previous type. Use in accordance with the ball screw fixed side dimensions.

No.	D	V	L
4	5.5	4	4.5
5	7.5	5	5.5
6	9.5	6	5
8S	10	8	5.5
8	11.5	8	5.5
10S	12	10	5.5
10_ _	14	10	5.5
12_ _	15	12	5.5
15_ _	20	15	10
20	25	20	11
25	31	25	14

Support Unit Installation

Assembly of Support Units

Installing the support units incorrectly would cause degradation of accuracies and service life expectancy, and the machines would not perform up to their full potential. Considerable care must be taken during installation. Assembly procedure and cautionary points are outlined below.

(1) Pre-assembly Preparation

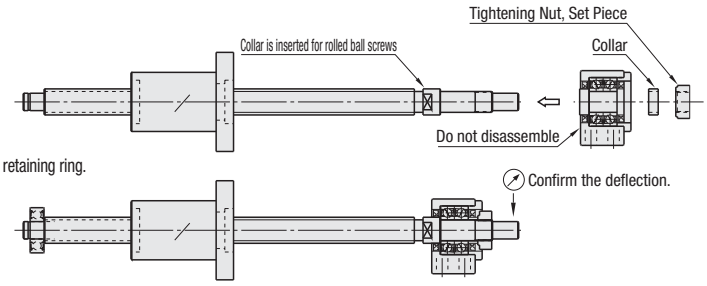
Find a sufficient work area that is as dust-free and moisture-free as possible. Make sure there is little variation in temperature. Choose a clean location and prepare necessary tools on a workbench.

(2) Inspection of Shafts and Support Units

Confirm that there is no dust, foreign objects or burrs on the shaft and bearing inner bore. If burrs are recognized, remove with a oilstone or similar, and brush or wipe off chips thoroughly.

(3) Installing the support unit to the ball screw shaft

- Prepare a ball screws and a support unit.
· Insert the fixed side shaft end into the support unit..
  Cautions on Insertion
  Insert the Shaft straight not to interfere with the Support Unit.
  Also, watch for curled back oil seal lip.
  Apply some grease for smooth insertion.
- Temporarily tighten the bearing nut.
-- Install a radial bearing on ball screw support side. Fix the bearing with a retaining ring.
- Maintain tip runout to be as small as possible.



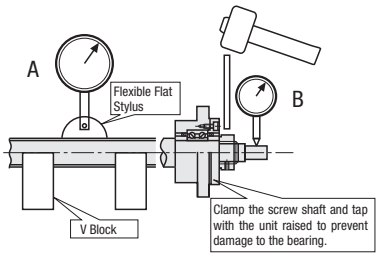
M	Clamping Nut Tightening Torque (N·cm)
4	160
5	200
6	245
8	490
10	930

M	Clamping Nut Tightening Torque (N·cm)
12	1370
15	2350
20	4700
25	8430

For reference only.

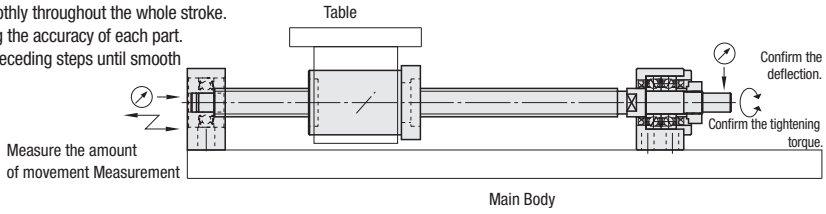
(4) Precautions on installation of bearing nut

(1) Lightly tighten the bearing nut.
  Tighten to 1/3 of the recommended torque (see table).
(2)Place the screw shaft on a set of V-blocks, place a dial indicator at A or B as shown, and rotate the shaft while seeking for a position where the largest indicator deflection is observed.
(3)Using a hammer or other appropriate tools as shown, lightly tap the bearing nut at the aforementioned angular position until the indicator reading becomes minimum.
(4)Progressively tighten the bearing nut by repeating the step (3) above 2 ~3 times until the specified tightening torque is fully reached.



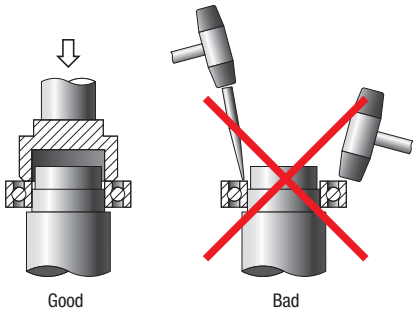
(5) Installation of support side bearing unit and accuracy check

- Move the carriage toward the support side bearing unit and align.
- Reciprocate the carriage so that it travels smoothly throughout the whole stroke.
- Fully tighten the mounting bolts while checking the accuracy of each part.
- If the outcome is not satisfactory, repeat the preceding steps until smooth motion is obtained.



Precautions on Support Unit Installation

When inserting ball screws into fixed side support units, some cases will be slip-fit and others may be light press-fit cases.
If the fit appears to be a light-press, do not force the bearing onto the screw shaft in a tilted manner, or do not strike the bearing inner ring and support unit housing. In case if there is any interferences between the screw shaft and bearing inner ring, do not insert the ball screw forcibly. Remove the screw at once and correct the swell on the shaft, then try reassembling.



Support Units · Square

-Fixed Side Standard Type / Fixed Side Economy Type-

Price Reduction
Up to 5%

CAD Data

The Standard Type uses the preloaded JIS 5 class Angular Contact Bearings. It is preferable to use for high-accuracy and high-speed precision applications.

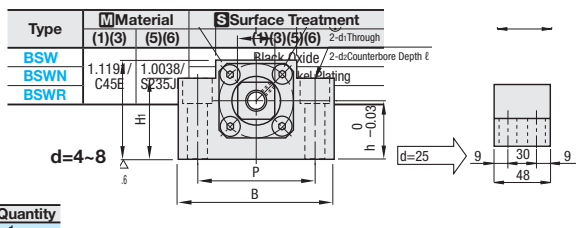
Support Units Fixed Side Standard Type

(Industry Standard, for High Speed Applications)



RoHS

Type	Material (1)(3)	Material (5)(6)	Surface Treatment (1)(3)(5)(6)
BSW BSWN BSWR	1.1191/ C45E	1.0038/ S235JR	Black Oxide Electroless Nickel Plating



Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	**Angular Contact Bearing Class 5**	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (With Set Piece)	1
(7)	Oil Seal	2

*4 Mounting Holes

Oil seal (7) is not included when d=6.

d=10~25

d=4, 5, 8 come with one oil seal (7) only.

Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.

BSWR bearing is filled with low particulate generation grease.
*Screws (4) for BSWR and BSWN are stainless steel type.

For No.8S and 10S, the inner diameter of oil seal is smaller than the previous type.

d25 is not counterbored. *4 Mounting Holes

Part Number Type	No.	d	L	L1	L2	L3	B	H	h	B1	H1	P	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BSW € Unit Price Qty. 1~9	BSW Volume Discount Qty. 10~	BSWN € Unit Price Qty. 1~9	BSWN Volume Discount Qty. 10~	BSWR € Unit Price Qty. 1~9	BSWR Volume Discount Qty. 10~
BSW BSWN BSWR	4	4	15	-	18	3	34	19	10	18	7	26	4.5	-	-	M4x0.5	10	6						
	5	5	16.5	-	19	3.5	36	21	11	20	8	28				M5x0.5	11	8						
	6	6	20	-	22.5	3.5	42	25	13	18	20	30	5.5	9.5	11	M6x0.75	12	-						
	8S	8	23	-	26	4	52	32	17	25	26	38	6.6	11		M8x1.0	14	10						
	8																	11.5						
	1022	10	24	6	29.5	6	70	40	22	36	32	52	9	14	11	M10x1.0	17	14						
	10S							43	25		35							12						
	10																	14						
	1223	12						41	23		33					M12x1.0	19	15						
	12							43	25		35													
	1526	15	25	6	38	5	80	46	26	41	36	60	11	17	15	M15x1.0	22	20						
	1528							48	28		38													
	15							50	30		40													
	20	20	42	10	52	10	95	58		56	45	75				M20x1.0	30	25						
	25	25	48	13	59	14	105	68	35	66	25	85	11	-	-	M25x1.5	35	31						

Support Units Fixed Side – Economy

(Economical, for intermediate and low speed applications)



RoHS

Type	Material (1)(3)	Material (4)(5)	Surface Treatment (1)(3)(4)(5)
BSWE BSWEM BSWER	1.1191/ C45E	1.0038/ S235JR	Black Oxide Electroless Nickel Plating LTBC plating

Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	**Angular contact bearing class 0**	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (With Set Piece)	1
(6)	Oil Seal	2

*4 Mounting Holes

d25 is not counterbored.

BSWER bearing is filled with low particulate generation grease.

Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.

For No.10S, the inner diameter of oil seal is smaller than the previous type.

*4 Mounting Holes

Part Number Type	No.	d	L	L1	L2	B	H	h	B1	H1	P	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BSWE € Unit Price Qty. 1~9	BSWE Volume Discount Qty. 10~	BSWEM € Unit Price Qty. 1~9	BSWEM Volume Discount Qty. 10~	BSWER € Unit Price Qty. 1~9	BSWER Volume Discount Qty. 10~
BSWE BSWEM BSWER	1022	10	27	29.5	6	70	40	22	36	32	52	9	14	11	M10x1.0	17	14						
	10S						43	25		35							12						
	10																14						
	1223	12					41	23		33					M12x1.0	19	15						
	12						43	25		35													
	1526	15	29	38	5	80	*48	26	41	36	60	11	17	15	M15x1.0	22	20						
	1528						*50	28		38													
	15						*52	30		40													
	20	20	48	52	10	95	58		56	45	75				M20x1.0	30	25						
	25	25	58	59	14	105	68	35	66	25	85	11	-	-	M25x1.5	35	31						

*When No.=15_ _, H dimension is taller than Standard Type in 2mm.

Order Example — Part Number: BSW15, BSWE20

Days to Ship: 6 Days P.87

MISUMI Original Economy Type uses the angular contact bearing class 0 and is economical than the Standard Type. For features P.685

For details of Support Units Mounting Interface Accuracies and bearings, refer to P.685

Ball Screw Compatibility Chart P.685

Raydent products are filled with Low Particulate Grease and for cleanrooms.

NEW

Support Units · Square

-Fixed Side Standard Type with Dowel Holes/Fixed Side Radial Bearing Type-

Price Reduction
Up to 5%

CAD Data

MISUMI original Standard Type with Dowel Holes achieves more accurate positioning than conventional products and repeatability. For features, P.685

Support Unit - Fixed Side - Standard with Dowel Holes

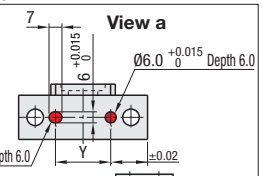
(Industry Standard, for High Speed Applications)



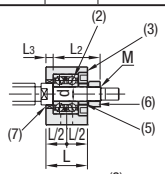
RoHS

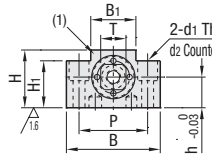
Type	Material (1)(3)	Material (5)(6)	Surface Treatment (1)(3)(5)(6)
BSWG	1.1191/ C45E	1.0038/ S235JR	Black Oxide
BSWGN			Electroless Nickel Plating
BSWGR			LTBC plating

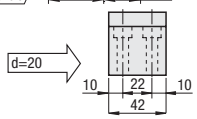
Dowel hole inner bores do not have surface coating.



d=8

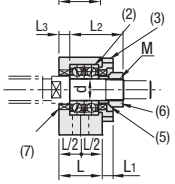


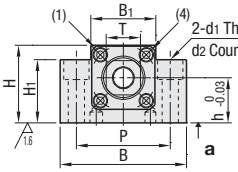




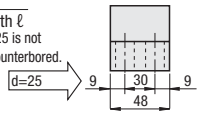
*4 Mounting Holes

d=10~25





d25 is not counterbored.



*4 Mounting Holes

Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	**Angular Contact Bearing Class 5**	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (With Set Piece)	1
(7)	Oil Seal	2

d=8 comes with one oil seal (7) only.
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
BSWGR bearing is filled with low particulate generation grease.
*Screws (4) for BSWGR and BSWGN are stainless steel type.
For No.8S and 10S, the inner diameter of oil seal is smaller than the previous type.

Part Number Type	No.	d	L	L1	L2	L3	B	H	h	B1	H1	P	Y	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BSWG € Unit Price Qty. 1~9	BSWG Volume Discount Qty. 10~	BSWGN € Unit Price Qty. 1~9	BSWGN Volume Discount Qty. 10~	BSWGR € Unit Price Qty. 1~9	BSWGR Volume Discount Qty. 10~
BSWG BSWGN BSWGR	8S	8	23	-	26	4	52	32	17	25	26	38	20	6.6	11	11	M8x1.0	14	10						
	8																		11.5						
	1022	10	24	6	29.5	6	70	40	22	36	32	52	30	9	14		M10x1.0	17	14						
	10S							43	25		35								12						
	10																		14						
	1223	12						41	23		33						M12x1.0	19	15						
	12							43	25		35														
	1526	15	25	6	38	5	80	46	26	41	36	60	36	11	17	15	M15x1.0	22	20						
	1528							48	28		38														
	15							50	30		40														
	20	20	42	10	52	10	95	58		56	45	75	50				M20x1.0	30	25						
	25	25	48	13	59	14	105	68	35	66	25	85	60	11	-	-	M25x1.5	35	31						

Fixed Side – Radial Bearing

(Economical, for low speed applications)



RoHS

Type	Material (1)(3)	Material (4)(5)	Surface Treatment (1)(3)(4)(5)
BSWZ	1.1191/ C45E	1.0038/ S235JR	Black Oxide
BSWZM			Electroless Nickel Plating

It is preloaded to bear the Thrust Load. Keep radial bearing rotational speeds to under 3,000rpm.

Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	**Radial Bearing**	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (With Set Piece)	1
(6)	Oil Seal	1

Oil seal (6) is not included when d=6.
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
For No.8S and 10S, the inner diameter of oil seal is smaller than the previous type.

*4 Mounting Holes

Part Number Type	No.	d	L	L1	L2	B	H	h	B1	H1	P	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BSWZ € Unit Price Qty. 1~9	BSWZ Volume Discount Qty. 10~	BSWZM € Unit Price Qty. 1~9	BSWZM Volume Discount Qty. 10~
BSWZ BSWZM	6	6	20	22.5	3.5	42	25	13	18	20	30	5.5	9.5	11	M6x0.75	12	-				
	8S	8	23	26	4	52	32	17	25	26	38	6.6	11		M8x1.0	14	10				
	8																11.5				
	1022	10	27	29.5	6	70	40	22	36	32	52	9	14		M10x1.0	17	14				
	10S						43	25		35							12				
	10																14				
	1223	12					41	23		33					M12x1.0	19	15				
	12						43	25		35											
	1526	15	29	38	5	80	*48	26	41	36	60	11	17	15	M15x1.0	22	20				
	1528						*50	28		38											
	15						*52	30		40											
	20	20	48	52	10	95	58		56	45	75				M20x1.0	30	25				

*When No.=15_ _, H dimension is taller than Standard Type in 2mm.

Order Example — Part Number: BSWG15, BSWZ20

Days to Ship: 6 Days P.87

For details of Support Units Mounting Interface Accuracies and bearings, refer to P.685
Ball Screw Compatibility Chart P.685
Raydent products are filled with Low Particulate Grease and for cleanrooms.

Support Units / Stoppers for Ball Screws

-Support Side Type-

CAD Data

Support Units Support Side



RoHS

Type		Material	Surface Treatment
Standard	With Retaining Ring		
BUN	BTN	1.1191/ C45E	Black Oxide
BUNM	BTNM		Electroless Nickel Plating
BUNR	-		LTBC plating

No.1022~25 is not counterbored.

Retaining Ring Type

Component Details

No.	Part Name	Quantity
(1)	Housing	1
(2)	Radial Bearing	1
(3)(4)	Retaining Ring*	1

BUNR bearing is stainless steel type filled with low particle generation grease.
*Retaining ring (3), (4) of BUNR and BUNM are stainless steel type.

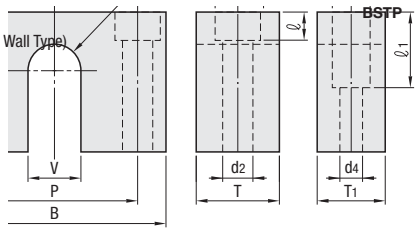
Part Number Type	No.	d	L	B	H	h	B1	H1	P	V	d1	d2	ℓ	Retaining Ring Type G	Retaining Ring	Bearings Type	Retaining Ring	BUN € Unit Price Qty. 1~9	BUN Volume Discount Qty. 10~	BUNM € Unit Price Qty. 1~9	BUNM Volume Discount Qty. 10~	BUNR € Unit Price Qty. 1~9	BUNR Volume Discount Qty. 10~	BTN € Unit Price Qty. 1~9	BTN Volume Discount Qty. 10~	BTNM € Unit Price Qty. 1~9	BTNM Volume Discount Qty. 10~
BUN BUNM BUNR	6	6	12	42	25	13	18	20	30	17	5.5	9.5	11	3	RTWN · S17	B606ZZ	STWN · S6										
	8		15	52	32	17	25	26	38		6.6	11															
	1022	8	20	70	40	22	36	21	52	22	9	-	-	3	RTWN · S22	B608ZZ	STWN · S8										
	10				43	25		24																			
	1223	10			41	23		22		26				3	RTWN · S26	B6000ZZ	STWN · S10										
	12				43	25		24																			
BTN BTNM	1526	15		80	46	26	41	21	60	32	11			4	RTWN · S32	B6002ZZ	STWN · S15										
	1528				48	28		23																			
	15				50	30		25																			
	20	20	26	95	58		56	30	75	47				4.5	RTWN · S47	B6204ZZ	STWN · S20										
	25	25	30	105	68	35	66	25	85	52					RTWN · S52	B6205ZZ	STWN · S25										

Stoppers for Ball Screws

RoHS



BSTP
BSTS (Thin Wall Type)



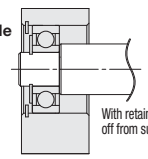
M Material: Ether-based Polyurethane
H Hardness: Shore A90

Part Number Type	No.	B	H	h	P	V	BSTP T	BSTP d1	BSTP d2	BSTP ℓ	BSTS T1	BSTS d3	BSTS d4	BSTS ℓ1	BSTP € Unit Price Qty. 1~9	BSTP Volume Discount Qty. 10~	BSTS € Unit Price Qty. 1~9	BSTS Volume Discount Qty. 10~
BSTP BSTS (Thin Wall Type)	6	42	25	13	30	12	20	9.5	5.5	5.5	13	8	4.5	15				
	8	52	32	17	38	14		11	6.5	6.5	15	9.5	5.5	17				
	1022	70	40	22	52	16	25	14	9	9	18	11	6.5	23				
	10		43	25														
	1223		41	23		18												
	12		43	25														
	1526	80	46	26	60	22	30	17	11	11	20	14	9	30				
	1528		48	28														
	15		50	30														
	20	95	58		75	28								33				
	25	105	68	35	85	35								38				

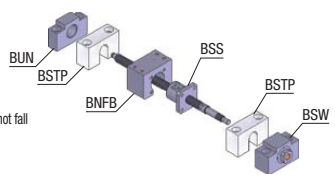
Order Example: Part Number BUN15 BSTP15

Days to Ship: 6 Days P.87

Example



With retaining ring type, the bearing does not fall off from support unit.



Raydent products are filled with Low Particulate Grease and for cleanrooms.

Support Units · Square

-Fixed Side With Damper/ Support Side With Damper-

CAD Data

Support Units with Damper integrate the Stopper for Ball Screw and the Support Unit, therefore, it fits in space-saving.

■Support Units – Fixed Side with Damper

(Industry Standard, for High Speed Applications)



RoHS

Type	M Material	S Surface Treatment
	(1)(3)(4)(5)	(1)(3)(4)(5)
BSWD	1.1191/C45E	Black Oxide

d25 is not counterbored.

*4 Mounting Holes

■Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	**Angular Contact Bearing Class 5**	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (With Set Piece)	1
(6)	Oil Seal	2
(7)	Urethane Damper (Shore A70)	1

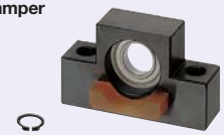
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit. *4 Mounting Holes

(7) is adhesive bonded to housing.

For No. 10S, the inner diameter of oil seal is smaller than the previous type.

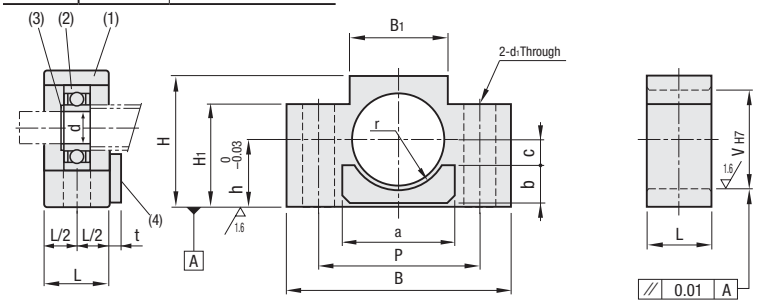
Part Number Type	No.	d	L	L_1	L_2	L_3	B	H	h	B_1	H_1	P	d_1	d_2	ℓ	M (Fine)	Oil Seal Applicable Shaft Dia.	Damper Dimensions a	b	c	r	t	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~
BSWD	1022	10	24	6	29.5	6	70	40	22	36	32	52	9	14	11	M10x1.0	14	34	10	6	12	10		
	10S							43	25		35						12							
	10																14							
	1223	12						41	23		33					M12x1.0	15							
	12							43	25		35													
	1526	15	25	6	38	5	80	46	26	41	36	60	11	17	15	M15x1.0	20	46	12	7	15.5			
	1528							48	28		38													
	15							50	30		40													
	20	20	42	10	52	10	95	58		56	45	75				M20x1.0	25	50	15	10	18			
	25	25	48	13	59	14	105	68	35	66	25	85	11	-	-	M25x1.5	31	60	19	10	25			

■Support Units – Support Side with Damper



RoHS

Type	M Material	S Surface Treatment
BUND	1.1191/C45E	Black Oxide



■Component Details

No.	Part Name	Quantity
(1)	Housing	1
(2)	Radial Bearing	1
(3)	Retaining Ring	1
(4)	Urethane Damper (Shore A70)	1

(4) is adhesive bonded to housing.

Part Number Type	No.	d	L	B	H	h	B_1	H_1	P	V	d_1	Damper Dimensions a	b	c	r	t	Bearings Type	Retaining Ring	€ Unit Price Qty. 1~9	Volume Discount Rate Qty. 10~
BUND	1022	8	20	70	40	22	36	21	52	22	9	34	10	6	12	10	B608ZZ	STWN8		
	10				43	25		24												
	1223	10			41	23		22		26		46	12	7	15.5		B6000ZZ	STWN10		
	12				43	25		24												
	1526	15		80	46	26	41	21	60	32	11	50	15	10	18		B6002ZZ	STWN15		
	1528				48	28		23												
	15				50	30		25												
	20	20	26	95	58		56	30	75	47		60	19	10	25		B6204ZZ	STWN20		
	25	25	30	105	68	35	66	25	85	52		80	19	15	28		B6205ZZ	STWN25		

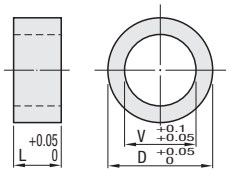
■Precision Collars for Support Units

RoHS



BUSC

As BUSC is slightly larger than the included collar in outer diameter, it is effective in bearing oil retention. The LTBC plating used helps for low particle generation.



M Material: 1.0038/S235JR

S Surface Treatment: LTBC plating

Part Number Type	No.	D	V	L	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~
BUSC	10	14.5	10	5.5		
	12	15.4	12	5.5		
	15	20.4	15	10		
	20	25.4	20	11		
	25	31.3	25	14		

Order Example — Part Number: BSWD15, BUND15, BUSC15

Days to Ship: 6 Days P.87 / 2 Days

For details of Support Units Mounting Interface Accuracies and bearings, refer to P.685

Support Units · Square

-Fixed Side Compact Type/ Fixed Side Low Profile Type/ Fixed Side Mounting Hole Narrow Pitch-

CAD Data

As compact in the height and width comparing to the conventional Support Units, it easily fits in space-saving and is best for small devices.

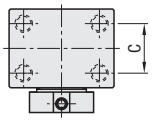
■Support Units – Fixed Side – Compact

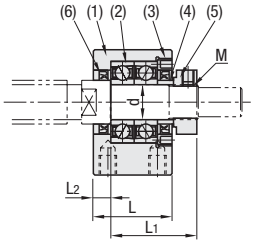


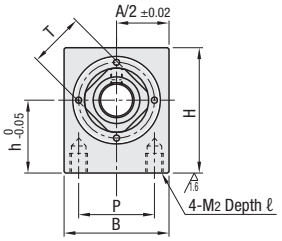
RoHS

Type	Material (1)(3)	Material (4)(5)	Surface Treatment (1)(3)(4)(5)
BSQ	1.1191/C45E	1.0038/S235JR	Black Oxide
BSQM			Electroless Nickel Plating

Most compact in size.







Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	Angular contact bearing class 5*	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (With Set Piece)	1
(6)	Oil Seal	2

Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
For d=8,only one oil seal (6) is provided.
*Angular contact bearing class 5 is used for No.8.
*For No.10S, the inner diameter of oil seal is smaller than the previous type.

Part Number Type	No.	d	L	L1	L2	B	H	h	P	M2	ℓ	C	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BSQ € Unit Price Qty. 1~9	BSQ Volume Discount Qty. 10~	BSQM € Unit Price Qty. 1~9	BSQM Volume Discount Qty. 10~
BSQ BSQM	8	8	23	26	4	32	32	17	23	5	6	14	M8x1.0	14	11.5				
	10S	10	27	29.5	6	36	43	25	26	6	10	17	M10x1.0	17	12				
	10														14				
	12	12	27	29.5	6	36	43	25	26	6		17	M12x1.0	19	15				
	15	15	29	38	5	46	52	30	34	6	12	19	M15x1.0	22	20				

■Support Units - Fixed Side - Low Profile

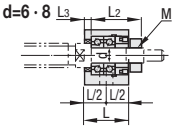


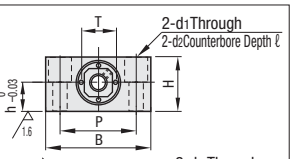
RoHS

Type	Material (1)(3)	Material (5)(6)	Surface Treatment (1)(3)(5)(6)
BSV	1.1191/C45E	1.0038/S235JR	Black Oxide
BSVM			Electroless Nickel Plating

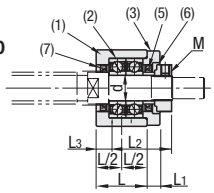
Lowest profile type.

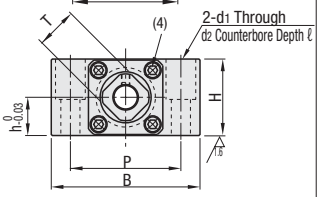
d=6・8





d=10~20





Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (With Set Piece)	1
(7)	Oil Seal	2

Oil seal (7) is not included when d=6.
d=8 comes with one oil seal (7) only.
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
Screws (4) for BSVM are Stainless Steel Type.
For No.8S and 10S, the inner diameter of oil seal is smaller than the previous type.

Part Number Type	No.	d	L	L1	L2	L3	B	H	h	P	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BSV € Unit Price Qty. 1~9	BSV Volume Discount Qty. 10~	BSVM € Unit Price Qty. 1~9	BSVM Volume Discount Qty. 10~
BSV BSVM	6	6	20	-	22.5	3.5	42	22	11	30	5.5	9.5	12	M6x0.75	12	-				
	8S	8	23	-	26	4	52	28	14	38	6.6	11	15	M8x1.0	14	10				
	10S	10	24	6	29.5	6	70	36	18	52	9	14	19	M10x1.0	17	12				
	10															14				
	12	12	24	6	29.5	6	70	36	18	52	9	14	19	M12x1.0	19	15				
	15	15	25	6	38	5	80	41	21	60	11	17	21	M15x1.0	22	20				
	20	20	42	10	52	10	95	56	28	75	11	17	29	M20x1.0	30	25				

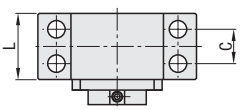
■Support Units Fixed Side – Mounting Hole Narrow Pitch

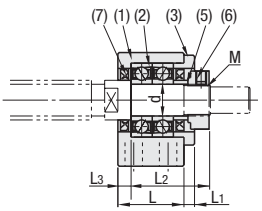


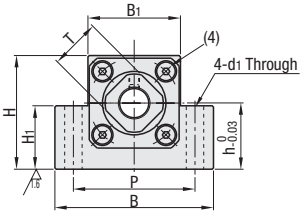
RoHS

Type	Material (1)(3)	Material (5)(6)	Surface Treatment (1)(3)(5)(6)
BSA	1.1191/C45E	1.0038/S235JR	Black Oxide
BSAM			Electroless Nickel Plating

Compact width design.







Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (With Set Piece)	1
(7)	Oil Seal	2

Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
*Screws (4) for BSAM are stainless steel type.
For No.10S, the inner diameter of oil seal is smaller than the previous type.
(4)The screw head (4) protrudes 2mm from the cover.

Part Number Type	No.	d	L	L1	L2	L3	B	H	h	B1	H1	P	C	d1	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BSA € Unit Price Qty. 1~9	BSA Volume Discount Qty. 10~	BSAM € Unit Price Qty. 1~9	BSAM Volume Discount Qty. 10~
BSA BSAM	10S	10	25	4	29.5	5	60	39	22	34	21	46	13	6.6	M10x1.0	17	12				
	10																14				
	12	12	25	4	29.5	5	60	43	25	35	24	46	13		M12x1.0	19	15				
	15	15	27	6	38	6	70	48	28	40	27	54	15		M15x1.0	22	20				

Order Example — Part Number: BSQM8, BSV10S, BSA12

Days to Ship: 6 Days P.87

For details of Support Units Mounting Interface Accuracies and bearings, refer to P.685

Ball Screw Compatibility Chart P.685

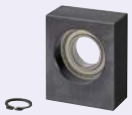
Support Units · Square

-Support Side Compact Type/ Support Side Low Profile Type/ Support Side Mounting Hole Narrow Pitch-

CAD Data

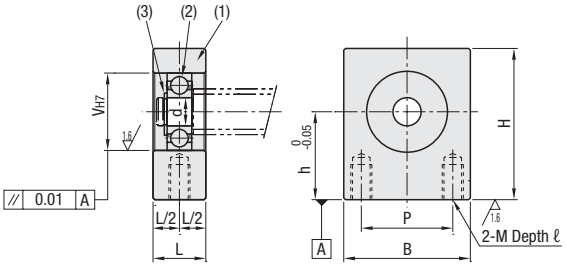
Same dimensions to the fixed side Support Units but compact in the height and width. Use the fixed side Support Units together.

Support Units Support Side – Compact



RoHS

Type	Material	Surface Treatment
BUQ	1.1191/C45E	Black Oxide
BUQM		Electroless Nickel Plating



Component Details

No.	Part Name	Quantity
(1)	Housing	1
(2)	Bearings	1
(3)	Retaining Ring*	1

*Retaining ring (3) of BUQM is stainless steel type.

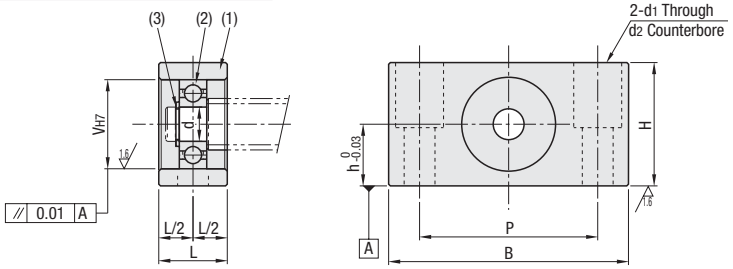
Part Number Type	No.	d	L	B	H	h	P	V	M	ℓ	Bearings Type	Retaining Ring	BUQ € Unit Price Qty. 1~9	BUQ Volume Discount Qty. 10~	BUQM € Unit Price Qty. 1~9	BUQM Volume Discount Qty. 10~
BUQ BUQM	8	6	15	32	32	17	23	17	5	6	B606ZZ	STWN · S6				
	10	8	20	36	43	25	26	22	6	10	B608ZZ	STWN · S8				
	12	10						26		10	B6000ZZ	STWN · S10				
	15	15		46	52	30	34	32		12	B6002ZZ	STWN · S15				

Support Units - Support Side - Low Profile



RoHS

Type	Material	Surface Treatment
BUV	1.1191/C45E	Black Oxide
BUVM		Electroless Nickel Plating



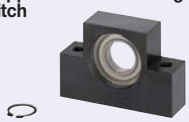
Component Details

No.	Part Name	Quantity
(1)	Housing	1
(2)	Bearings	1
(3)	Retaining Ring*	1

*Retaining ring (3) of BUVM is stainless steel type.

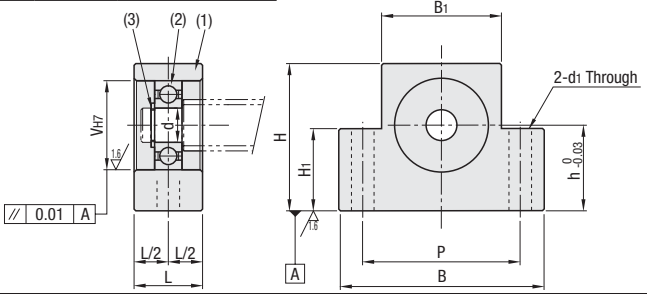
Part Number Type	No.	d	L	B	H	h	P	V	d1	d2	ℓ	Bearings Type	Retaining Ring	BUV € Unit Price Qty. 1~9	BUV Volume Discount Qty. 10~	BUVM € Unit Price Qty. 1~9	BUVM Volume Discount Qty. 10~
BUV BUVM	6	6	12	42	22	11	30	17	5.5	9.5	12	B606ZZ	STWN · S6				
	8	6	15	52	28	14	38	17	6.6	11	15	B606ZZ	STWN · S6				
	10	8	20	70	36	18	52	22	9	14	19	B608ZZ	STWN · S8				
	12	10						26				B6000ZZ	STWN · S10				
	15	15	20	80	41	21	60	32	11	17	21	B6002ZZ	STWN · S15				
	20	20	26	95	56	28	75	47	11	17	29	B6204ZZ	STWN · S20				

Support Units Support Side – Mounting Hole Narrow Pitch



RoHS

Type	Material	Surface Treatment
BUA	1.1191/C45E	Black Oxide
BUAM		Electroless Nickel Plating



Component Details

No.	Part Name	Quantity
(1)	Housing	1
(2)	Bearings	1
(3)	Retaining Ring*	1

*Retaining ring (3) of BUAM is stainless steel type.

Part Number Type	No.	d	L	B	H	h	B1	H1	P	V	d1	Bearings Type	Retaining Ring	BUA € Unit Price Qty. 1~9	BUA Volume Discount Qty. 10~	BUAM € Unit Price Qty. 1~9	BUAM Volume Discount Qty. 10~
BUA BUAM	10	8	20	60	39	22	34	21	46	22	6.6	B608ZZ	STWN · S8				
	12	10		43	25	35	24		26		B6000ZZ	STWN · S10				
	15	15	20	70	48	28	40	27	54	32		B6002ZZ	STWN · S15				

Order Example — Part Number: BUQ8, BUV10, BUAM12

Days to Ship: 6 Days P.87

Support Units · Round

-Fixed Side Standard Type / Support Side Type-

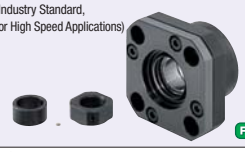
Price Reduction
Up to 8%

CAD Data

The Standard Type uses the preloaded JIS 5 class Angular Contact Bearings. It is preferable to use for high-accuracy and high-speed precision applications.

■Support Units – Fixed Side – Standard Type

(Industry Standard, for High Speed Applications)

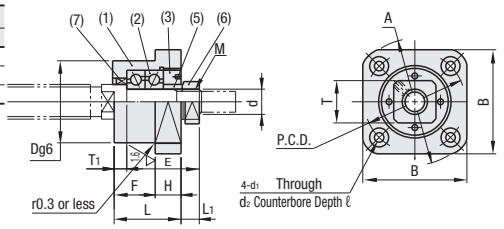


RoHS

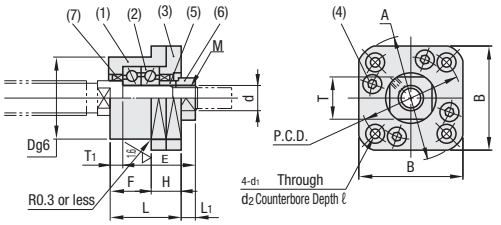
Type	M Material (1)(3)	M Material (5)(6)	S Surface Treatment (1)(3)(5)(6)
BRW	1.1191/C45E	1.0038/S235JR	Black Oxide
BRWN			Electroless Nickel Plating
BRWR			LTBC plating

For No.8S and 10S, the inner diameter of oil seal is smaller than the previous type.

d=4~8



d=10~25



Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	Angular Contact Bearing Class 5	1 Set
(3)	Cover	1
(4)	Hexagon Socket Head Cap Screw*	4
(5)	Collar	1
(6)	Clamping Nut (With Set Piece)	1
(7)	Oil Seal	2

Oil seal (7) is not included for No. 6.
No.4, 5, 6L, 8S and 8 come with one oil seal.
Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
BSWR bearing is filled with low particulate generation grease.
*Screws (4) for BRWR and BRWN are stainless steel type.
BRW housing pilot section will change to surface coated version at anytime without notice.

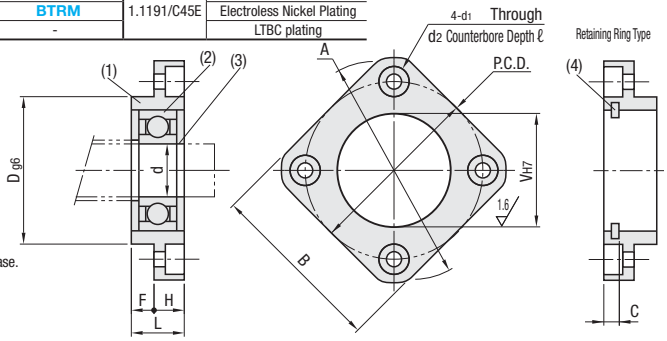
Part Number Type	No.	d	L	H	F	E	D	A	P.C.D.	B	L1	T1	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BRW € Unit Price Qty. 1~9	BRW Volume Discount Qty. 10~	BRWN € Unit Price Qty. 1~9	BRWN Volume Discount Qty. 10~	BRWR € Unit Price Qty. 1~9	BRWR Volume Discount Qty. 10~
BRW BRWN BRWR	4	4	15	6	9	18	18	32	24	25	6	3	3.4	6.5	4	M4x0.5	10	6						
	5	5	16.5	6	10.5	19	20	34	26	26		3.5	3.4	6.5	4	M5x0.5	11	8						
	6L	6	20	7	13	22.5	22	36	28	28		3.5	3.4	6.5	4	M6x0.75	12	10						
	6							35					2.9	5.5	3.5		12	-						
	8S	8	23	9	14	26	28	43	35	35	7	4	3.4	6.5	4	M8x1.0	14	10						
	8																	11.5						
	10S	10	29	13	16	29.5	34	52	42	42	5.5	5	4.5	8	6	M10x1.0	17	12						
	10																	14						
	12	12					36	54	44	44						M12x1.0	19	15						
	15	15	32	15	17	38	40	63	50	52	12	6	5.5	9.5		M15x1.0	22	20						
	20	20	52	22	30	52	57	85	70	68	10	10	6.6	11	10	M20x1.0	30	25						
	25	25	57	27	30	59	63	98	80	79	12	10	9	15	13	M25x1.5	35	31						

■Support Units - Fixed Side



RoHS

Type Standard	Type With Retaining Ring	M Material	S Surface Treatment
BUR	BTR	1.1191/C45E	Black Oxide
BURM	BTRM		Electroless Nickel Plating
BURR	-		LTBC plating



Component Details

No.	Part Name	Quantity
(1)	Housing	1
(2)	Radial Bearing	1
(3)(4)	Retaining Ring*	1

BURR bearing is stainless steel type filled with low particle generation grease.
*Retaining ring (3), (4) of BURR · BURM and BTRM are stainless steel type.

Part Number Type	No.	d	L	H	F	D	A	P.C.D.	B	V	d1	d2	ℓ	Retaining Ring Type C	Retaining Ring Type Retaining Ring	Bearings Type	Retaining Ring
BUR BTR BURM BTRM BURR	6	6	10	6	4	22	36	28	28	17	3.4	6.5	4	3	RTWN · S17	B606ZZ	STWN · S6
	10	8	12	7	5	28	43	35	35	22	3.4	6.5		3	RTWN · S22	B608ZZ	STWN · S8
	12	10	15	7	8	34	52	42	42	26	4.5	8		3	RTWN · S26	B6000ZZ	STWN · S10
	15	15	17	9	8	40	63	50	52	32	5.5	9.5	5.5	4	RTWN · S32	B6002ZZ	STWN · S15
	20	20	20	11	9	57	85	70	68	47	6.6	11	6.5	4.5	RTWN · S47	B6204ZZ	STWN · S20
	25	25	24	14	10	63	98	80	79	52	9	14	8.5	4.5	RTWN · S52	B6205ZZ	STWN · S25

Order Example: Part Number BRW15 BUR15

Days to Ship: 6 Days P.87

Price

No.	BUR € Unit Price Qty. 1~9	BUR Volume Discount Qty. 10~	BURM € Unit Price Qty. 1~9	BURM Volume Discount Qty. 10~	BURR € Unit Price Qty. 1~9	BURR Volume Discount Qty. 10~	BTR € Unit Price Qty. 1~9	BTR Volume Discount Qty. 10~	BTRM € Unit Price Qty. 1~9	BTRM Volume Discount Qty. 10~
6										
10										
12										
15										
20										
25										

For details of Support Units Mounting Interface Accuracies and bearings, refer to P.685
Raydent products are filled with Low Particulate Grease and for cleanrooms.

Support Units · Round

-Fixed Side Economy Type/ Fixed Side Radial Bearing Type-

Price Reduction
Up to 4%

CAD Data

MISUMI Original Economy Type uses the angular contact bearing class 0 and economical than the Standard Type. For features P.685

■Support Units Fixed Side – Economy

(Economical, for intermediate and low speed applications)



RoHS

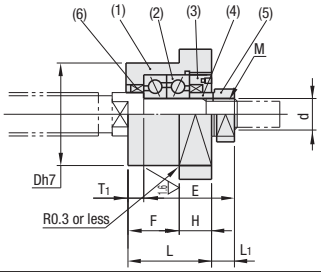
Type	Material (1)(3)	Material (4)(5)	Surface Treatment (1)(3)(4)(5)
BRWE	1.1191/C45E	1.0038/ S235JR	Black Oxide
BRWEM			Electroless Nickel Plating
BRWER			LTBC plating

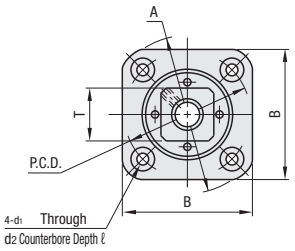
For No.10S, the inner diameter of oil seal is smaller than the previous type.

Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	Angular contact bearing class 0	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (With Set Piece)	1
(6)	Oil Seal	2

Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.
BRWER bearing is filled with low particulate generation grease.





Part Number Type	No.	d	L	H	F	E	D	A	P.C.D.	B	L1	T1	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BRWE € Unit Price Qty. 1~9	BRWE Volume Discount Qty. 10~	BRWEM € Unit Price Qty. 1~9	BRWEM Volume Discount Qty. 10~	BRWER € Unit Price Qty. 1~9	BRWER Volume Discount Qty. 10~
BRWE BRWEM BRWER	10S	10	26	10	16	29.5	34	52	42	42	8.5	5	4.5	8	4.5	M10x1.0	17	12						
	10																	14						
	12	12					36	54	44	44						M12x1.0	19	15						
	15	15	30	13	17	38	40	63	50	52	14	6	5.5	9.5	5.5	M15x1.0	22	20						
	20	20	48	18	30	52	57	85	70	68		10	6.6	11	6.5	M20x1.0	30	25						
	25	25	54	24	30	59	63	98	80	79	15	10	9	15	8.5	M25x1.5	35	31						

■Support Units – Fixed Side – Radial Bearing

(Economical, for low speed applications)



RoHS

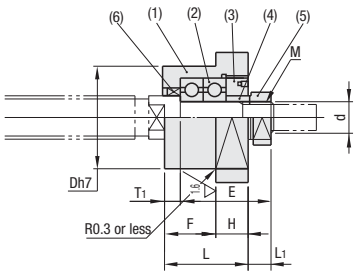
Type	Material (1)(3)	Material (4)(5)	Surface Treatment (1)(3)(4)(5)
BRWZ	1.1191/ C45E	1.0038/ S235JR	Black Oxide
BRWZM			Electroless Nickel Plating

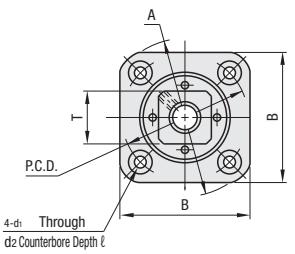
Oil seal (6) is not included when d=6.
For No.8S and 10S, the inner diameter of oil seal is smaller than the previous type.
It is preloaded to bear the Thrust Load.
Keep radial bearing rotational speeds to under 3,000rpm.

Component Details

No.	Part Name	Quantity
(1)	Bearing Housing	1
(2)	**Radial Bearing**	1 Set
(3)	Cover	1
(4)	Collar	1
(5)	Clamping Nut (With Set Piece)	1
(6)	Oil Seal	1

Do not disassemble (1), (2) and (3), as they must remain as an assembled unit.



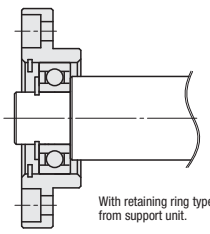


Part Number Type	No.	d	L	H	F	E	D	A	P.C.D.	B	L1	T1	d1	d2	ℓ	M (Fine)	T	Oil Seal Applicable Shaft Dia.	BRWZ € Unit Price Qty. 1~9	BRWZ Volume Discount Qty. 10~	BRWZM € Unit Price Qty. 1~9	BRWZM Volume Discount Qty. 10~
BRWZ BRWZM	6	6	20	7	13	22.5	22	35	28	28	6	3.5	2.9	5.5	3.5	M6x0.75	12	-				
	8S	8	23	9	14	26	28	43	35	35	7	4	3.4	6.5	4	M8x1.0	14	10				
	8																	11.5				
	10S	10	26	10	16	29.5	34	52	42	42	8.5	5	4.5	8	4.5	M10x1.0	17	12				
	10																	14				
	12	12					36	54	44	44						M12x1.0	19	15				
	15	15	30	13	17	38	40	63	50	52	14	6	5.5	9.5	5.5	M15x1.0	22	20				
	20	20	48	18	30	52	57	85	70	68		10	6.6	11	6.5	M20x1.0	30	25				

Order Example: Part Number BRWE15 BRWZ15

Days to Ship: 6 Days P.87

Example



With retaining ring type, the bearing does not fall off from support unit.

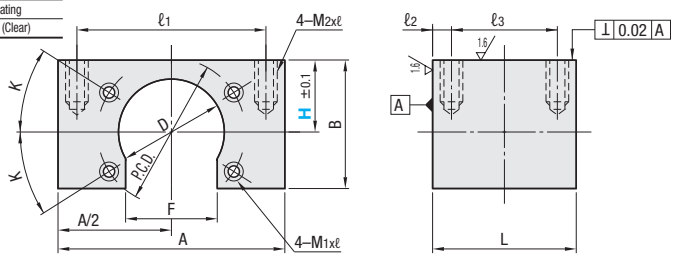
For details of Support Units Mounting Interface Accuracies and bearings, refer to P.685
Raydent products are filled with Low Particulate Grease and for cleanrooms.

Brackets for Ball Screws
-Block Type-

CAD Data



Type	Material	Surface Treatment
BNFB	1.1191/C45E	Black Oxide
BNFM		Electroless Nickel Plating
BNFR		LTBC plating
BNFA	EN AW-5052/AlMg2,5	Anodized (Clear)



Part Number		H																				MISUMI Ball Screws		
Type	No.	Selection								A	B	P.C.D.	K	M1xℓ	D	ℓ1	F	L	ℓ2	ℓ3	M2xℓ	BSX(C3)	BSS(C5) BSSE(C7)	BS_ _ _ (C10)
BNFB BNFM BNFR BNFA	801X	10	20							30	H+8	19	30	M3x5	12.4	24	8	16	3	10	M3x5	0801	-	-
	802S	18	20	23	25					40	H+13	27	45		20.4	30	14	28	8			0802	0802	-
	802C	17	20	23	25						H+10	24	30	M4x7	16.4		12					-	-	0802
	802R	17	20	23	25	28	30			43	H+12	30	0		20.4	34	17	24	6	12	M4x 8	-	-	0802
	804R	17	20	23	25	28	30						30	M3x 5	23.4		16					-	-	0804
	1002R	17	20	23	25	28	30			50	H+13.5	33				42						-	-	1002
	1002X	17	20	23	25	28	30			43	H+15.5	31	45			34		26	7			1002	-	-
	1002S	17	20	23	25	28	30	35	40									24	6			-	1002	-
	1004S		20	23	25	28	30	35	40	52	H+14	36		M4x 7	26.4	42	22	32	10	16		-	1004	-
	1004C	17	20	23	25	28	30	35	40	50	H+13	31	30		22.4	40	18	27	6	15	M5x10	-	-	1004
	1004R	17	20	23	25	28	30	35	40	52	H+14	36			26.4	42	22					-	-	1004
	1010R	17	20	23	25	28	30	35	40		H+15				28.4		23					-	-	1010
	1010S	17	20	23	25	28	30	35	40									34	7	20		-	1010	-
	1202S		20	23	25	28	30	35	40	50	H+17	33	45		25.4	40	15	28	8	14		1202	1202	-
	1204S			23	25	28	30	35	40		H+20.5	41		M5x 7	30.4		20	34	7	20		-	1204	-
	1204C		20	23	25	28	30	35	40	52	H+14	33			24.4	42		27	6	15		-	-	1204
	1204R		20	23	25	28	30	35	40	60	H+15	40		M4x 7	30.4	50	24	29	7			-	-	1204
	1205S		20	23	25	28	30	35	40		H+16							36	8			1205	1205	-
	1210S		20	23	25	28	30	35	40			41		M5x 7				40	10			-	1210	1210
	1405R		20	23	25	28	30	35	40			40		M4x 7								-	-	1405
	1505C		20	23	25	28	30	35	40	45		42		M5x 7	31.4			34	7	20		-	-	1505
	1505R		20	23	25	28	30	35	40	45		44		M4x 7								-	-	1505
	1505S		20	23	25	28	30	35	40	45		45			34.4		28	36	8			1505	1505	-
	1510S		20	23	25	28	30	35	40	45								42	11		M6x12	-	1510	-
	1510C		20	23	25	28	30	35	40	45		42		M5x 7	31.4	52	24	38	7	24		-	-	1510
	1510R		20	23	25	28	30	35	40	45		45			34.4		28	44		30		-	-	1510
	1520S			23	25	28	30	35	40	45								50				-	1520/1540	1520
	2005C				25	28	30	35	40	45		72	H+19	49		M6x10	36.4	60	26	40	10	20		-	-	2005
	2010C				25	28	30	35	40	45										50		30		-	-	2010
	2005S				25	28	30	35	40	45		76	H+20	53		M6x10	40.4	64	34	55		35		-	2005	-
	2005R				25	28	30	35	40	45						M4x 7				40		20	M8x16		-	2005
	2020R				25	28	30	35	40	45		68	H+19.5	50		M5x 7		56	32	70	15	40			-	2020
	2040S				25	28	30	35	40	45			H+20							40		20			2040	-
	2505C					28	30	35	40	45	55	76	H+24	53		M6x10	42.4	64							-	2505
	2505R					28	30	35	40	45	55		H+21	55		M5x 7	43.4	62	38	60		40	M10x20		-	2505
	2010S					28	30	35	40	45	55	82	H+23	59		M6x10	46.4	70	40	55		35		-	2010/2020	-
	2525R					28	30	35	40	45	55						47.4			90		70	M8x16		-	2525
	2505S						30	35	40	45	55	76	H+28.5	60	45			64	32	40	10	20			2505	-
	2010R							35	40	45	55	84	H+26	67			52.4	72	46	60		40			-	2010
	2510S							35	40	45	55	94		68	30	M8x12		80	44	55		35	M10x20		2510/2520	-
	2510R							35	40	45	55	100	H+30	78			60.4	86	54	60		40			-	2510
	2806R							35	40	45	55	87	H+26	65		M6x10	50.4	75	42				M8x16		-	2806
	3232R							35	40	45	55	106	H+30	74		M8x12	58.4	86	50	75		55	M10x20		-	3232
	3210R								40	45	55	116	H+33	85			67.4	96	58	80		60			-	3210

(P)No.802R has 2 holes. (P)No.____C are for C10 Rolled Ball Screws Compact Type.

Order Example

Part Number	-	H
BNFB802S	-	20

Days to Ship

-BNFB · BNFM · BNFA

8 Days

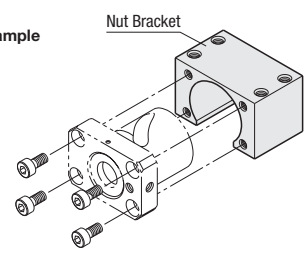
Express A 5,00 EUR/ piece P.88

(P)A Express Charge of 13,50 EUR for 3 or more identical pieces

-BNFR

13 Days

Example



Price

■Volume Discount ((P)Round down to one Cent.) P.87

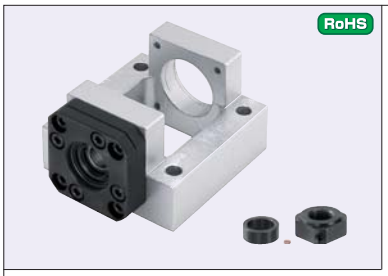
Quantity	1~9	10~12	13~14
Discount Rate	€ Unit Price	5%	10%

No.	€ Unit Price			
	BNFB	BNFM	BNFR	BNFA
801X				
802S				
802C				
802R				
804R				
1002R				
1002X				
1002S				
1004S				
1004C				
1004R				
1010R				
1010S				
1202S				
1204S				
1204C				
1204R				
1205S				
1210S				
1405R				

No.	€ Unit Price			
	BNFB	BNFM	BNFR	BNFA
1505C				
1505R				
1505S				
1510S				
1510C				
1510R				
1520S				
2005C				
2010C				
2005S				
2005R				
2020R				
2040S				
2505C				
2505R				
2010S				
2525R				
2505S				
2010R				
2510S				
2510R				
2806R				
3232R				
3210R				

Joint Units
-For AC Servo Motors-

CAD Data

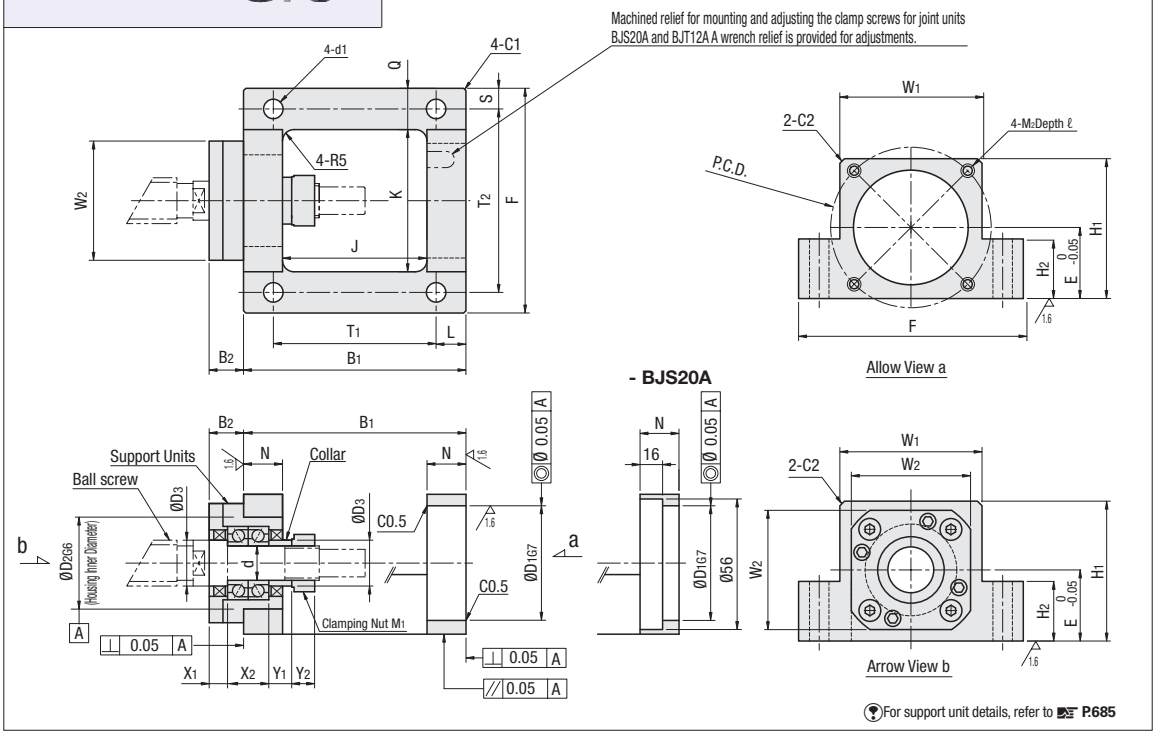


Type	Material		Surface Treatment		Accessory	Applicable Motor
	Main Body	Support Units	Main Body	Support Units		
BJS	EN AW-5052/ AlMg2,5	1.1191/C45E	Clear Anodize	Black Oxide	Collar 1 pc. Clamping Nut 1 pc. (Incl. 1 set piece)	AC Servo Motors
BJSM				Electroless Nickel Plating		

Features

·Simplification of assembly : With a support bearing unit already pre-installed, mounting and aligning a motor becomes simple with a build-in pilot.

·Accurate shaft centering : Unitized construction of the ball screw and motor mounts reduces shaft misalignments.



For support unit details, refer to P.685

Part Number Type	No.	d	B1	B2	D1	D2	D3	E	F	H1	H2	J	K	L	N	Q	S	T1	T2	W1	W2	X1	X2	Y1	Y2	P.C.D.	M1 (Fine)	M2 (Coarse)	d1	ℓ	Support Units BJS	Support Units BJSM
BJS BJSM	* 8A	8	67	9	30	28	11.5	21	64	41	19	43	40	10	12	12	6	47	52	40	35	5	14	5.5	6.5	45	M8x1.0	M3	5.5	8	BRW8	-
	* 8B																									46		M4		10		
	*10A	10	74	13	30	34	14	25	70	46	23	46	42	10	14	14	7	54	56	42	42	8	16	5.5	8	45	M10x1.0	M3	6.5	8	BRW10	BRWN10
	10B																									46		M4		10		
	*12A	12	74	13	30	36	15	25	72	47	23	46	44	10	14	14	7	54	58	44	44	8	16	5.5	8	45	M12x1.0	M3	6.5	8	BRW12	BRWN12
	12B																									46		M4		10		
	12C		84		50			31	98	62	26	56	62	13		18	9	58	80	62						70		M5	8.5	Through		
	15A	15	97	15	50	40	20	31	98	61	26	63	62	13	17	18	9	71	80	62	52	8	18	10	10	70	M15x1.0	M5	8.5	13	BRW15	BRWN15
	15B		106		70			41	128	82	36	72	82	16		23	11	74	106	70						90		M6	10.5	15		
	20A	20	117	22	50	57	25	35	116	70	30	69	70	20	24	23	11	77	94	70	68	14	28	11	13	70	M20x1.0	M5	10.5	13	BRW20	BRWN20
	20B		127		70			41	128	82	36	79	82					87	106	82	68					90		M6		15		

* marked sizes are for BJS

Order Example: Part Number BJS8A

Days to Ship: 6 Days P.87

Price

Motor Compatibility Chart

Part Number	Motor: Flanged Size	Motor: Manufacturer	Motor: Output (W)
BJS8A BJS10A BJS12A	_38	Panasonic	30
			50
			100
BJS8B BJS(M)10B BJS(M)12B	_40	Yaskawa Electric Corporation	30
			50
			100
		Mitsubishi Electric Corporation	50
			100
		Sanyo Denki Co.,Ltd.	30
			50
			100
		Omron Corporation	30
			50
			100
BJS(M)12C BJS(M)15A BJS(M)20A	_60	Yaskawa Electric Corporation	200
			400
		Mitsubishi Electric Corporation	200
			400
		Sanyo Denki Co.,Ltd.	200
			400
		Omron Corporation	200
			400
BJS(M)15B BJS(M)20B	_80	Yaskawa Electric Corporation	750
		Mitsubishi Electric Corporation	750
		Sanyo Denki Co.,Ltd.	750
		Omron Corporation	750

Part Number Type	No.	BJS € Unit Price Qty. 1~9	BJS Volume Discount 10~	BJSM € Unit Price Qty. 1~9	BJSM Volume Discount 10~
BJS BJSM	8A				
	8B				
	10A				
	10B				
	12A				
	12B				
	12C				
	15A				
	15B				
	20A				
	20B				

Motor part numbers and specifications are subject to change. Refer to motor manufacturers' specifications .

Selection of motors, ball screws and couplings should be made upon confirming user's application specific criteria.

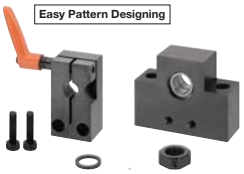
Other motors and couplings not listed in the chart above can also be used. Consult with mounting dimensions and specifications of each product.

When selecting ball screws, use MISUMI Technical Calculation Software.

Lead Screws/Slide Screws

Lead Screws/ Slide Screws


Easy Pattern Designing


Easy Pattern Designing


Easy Pattern Designing

Product Name	Lead Screws - For Lead Screw Support Units-	-Lead Screw Support Units - Fixed Side w/Radial Bearing-	-Support Side Type-
	703	705	706


Price Revision 2%


Price Revision 2%

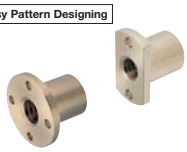

Price Revision 2%



Lead Screws - Both Ends Stepped	-One End Stepped - One End Double Stepped-	-One End Stepped-	-One End Double Stepped-
707	709	711	711






Easy Pattern Designing





-Both Ends Double Stepped-	-Straight-	-Nuts for Lead Screws - Flanged-	-Compact-	-Piloted - Female Thread Holes - Slotted Holes-
713	715	717	717	717










Price Revision 30% Max.

RoHS Compliant Nuts for Lead Screws - with Flange / Fine Pitch	-Anti-backlash Type-	Nuts for Lead Screws - Oil-less Flanged-	-Straight-	-High Strength Flanged Resin Type-
718	718	719	719	720




Price Revision 3% Max.


Price Revision 4% Max.


Easy Pattern Designing



-Resin Type-	-Block Nuts for Lead Screws - Tall Block-	-Wide Block-	Brackets for Lead Screws	Spacers for Wide Block
720	721	721	722	722


Easy Pattern Designing






Easy Pattern Designing





Digital Position Indicators Compact	Digital Position Indicators Large
725	726











Compact Clamp Plates-Standard Lever-	-Miniature Lever Type-	-Bearings with Housings-	Large Clamp Plates-Standard Lever-	-Bearings with Housings-
727	727	727	728	728









Stop Plates Sets for Lead Screws-Flanged, Bearing-	-Round Flanged-	-Square - 2 Screw-	-Square-
729	729	730	730



Price Revision
27% Max.



Price Revision
27% Max.



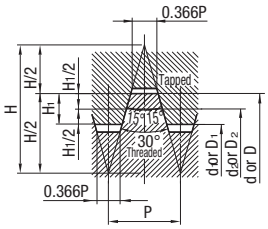
-Miniature Slide Screws - One End Stepped / Both Ends Stepped-	-Straight-	Nut Brackets
731	732	732

Lead Screws Technical Data

Lead Screws Accuracy Standards

Item	Content
Allowable Dimension and Tolerance	JIS B 0217, 0218
Screw Accuracies	7e Class
Nut Accuracies	7H Class
Single Pitch Error	±0.02
Accumulated Pitch Accuracy	±0.15/300mm
Shaft Maximum Runout	See table below
Length Tolerance	JIS B 0405(Medium Class)

30° Lead Screw Thread Geometry Standards



H=1.866P H_1=0.5P d_2=d-0.5P
d_1=d-P D=d D_2=d_2 D_1=d_1

Male Thread	d: Diameter	d_1: Root Diameter	d_2: Effective Diameter
Female Thread	D: Root Diameter	D_1: Inner Diameter	D_2: Effective Diameter
	P: Pitch	H_1: Engage Height	

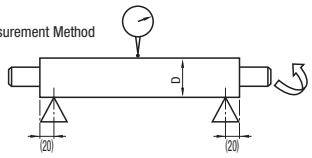
Pitch 3 of D Dimension 16, Pitch 5 of D Dimension 25 and Pitch 6 of D Dimension 40 conform to Tr Standard.

Screw Shaft Runout (Maximum)

Screw Shaft Outer Diameter	Shaft Overall Length										
	~125	126~200	201~315	315~400	401~500	501~630	631~800	801~1000	1001~1250	1251~1600	1601~2000
8	0.1	0.14	0.21	0.27	0.35	-	-	-	-	-	-
10	0.09	0.12	0.16	0.21	0.27	0.35	0.46	0.58			
12											
14	0.09	0.11	0.13	0.16	0.2	0.25	0.32	0.42	-	-	-
16									0.55	0.73	1.0
18	-										
20											
22	-	0.09	0.11	0.13	0.16	0.19	0.23	0.3	0.38	0.5	0.69
25											
28											
32											
36	-	0.11	0.11	0.11	0.13	0.15	0.17	0.22	0.27	0.34	0.46
40											
50											

·Runout Measurement Method

Bend Measurement Method



Easy Pattern Designing

A complete lead screw unit can easily be designed by sequentially selecting the components from Easy Pattern Designing program.

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
					
Lead Screws (P.703)	Fixed Side Support Unit (P.705)	Support Side Support Unit (P.706)	Lead Screw Nuts -Flanged Type- (P.717)	Lead Screw Nut Brackets (P.722)	Position Indicators (P.725, 726)

Lead Screws

-Lead Screw Characteristics / Lead Screw Selection Flow / Lead Screw Application Examples-

■Features of Each Screw Type

Type	Slide Screws	Lead Screws	Rolled Ball Screws	Precision Ball Screws
Shape				
Features	Simple feed and adjust mechanisms, etc. Uses stainless steel for the shaft, and resin for the nut. No-grease operation is possible. (App. Example) Stoppers In/Out - Transfer pitch changeover	In case where thrust loads and high loadings exist. (App. Example) Transfer pitch changeover Jacks - Feed screw for lathes	Can be applied at reasonable costs when precision ball screw accuracies are not required. (App. Example) Transfer Line	Little velocity errors are tolerable and high positioning accuracy is required. (App. Example) Measurement Instruments
Allowable Rotational Speed	Low Speed	Medium Speed	High Speed	High Speed
Accuracy	★★	★★	★★★★	★★★★★
Efficiency	Δ Efficiency 0.7	Good Efficiency 0.8	Excellent Efficiency 0.95	Excellent Efficiency 0.95
Allowable Axial Load ( ) is for reference	Δ (max. 540N)	Excellent (max. 30000N)	Good (max. 9960N)	Good (max. 9960N)
Price	★★★★	★★★★★	★★★	★★

■Lead Screw Selection Flow

Screw Selection
Select by characteristics of each type.

↓

Shaft D.I.A. / Shaft Length (Stroke)
Screw Pitch Selection

↓ *Please also see Easy Pattern Designing.

Nut Selection (Config/Material)

↓ OK

Screw Shaft Selection (Materials/ Surface Treatments)

↓

Shaft End Config Selection

↓

Re-confirming Lead Screw Technical Calculations

(3) Contact surface pressure, sliding speed calculated ☞P.701

↓

Lead Screw Model Selection

NG ←

Confirming Lead Screw Technical Calculations

↑ (2) Calculating Contact Pressure and Sliding Velocity ☞P.701

(1) Lead Screw Selection Chart ☞P.701

Lead Screws | **Slide Screws** ☞P.731 | **Ball Screw**

Ball Screw Selection Procedure ☞P.653

Lead Screw Nut Selection Chart

■Material: Brass, round flange group is selected as a foundation.

Photo	Type	Part Number	Purpose	Listed Page
	Standard Type	MTS__	Regularly used nut type. The round flange group is selected initially, then a sub-type is selected based on mounting space constraints.	P.717
	Compact	MTSP_ _	Outer diameter and overall length are smaller than the Standard Type nuts. Can be used in space limited applications.	
	Piloted Type	MTSJR	The Standard Nut with a pilot feature built-in. The pilot is inserted into bores to locate in Z axis applications, etc.	
	Female Thread Hole	MTSER	Mounting holes are tapped to mount from the reverse side with screws.	
	Slotted Hole	MTSQR	The standard mounting holes are replaced with slotted holes. Can be used for fine position adjustments in mounting.	
	RoHS compliant type	MTRFR MTXFR	The Standard Type that is RoHS compliant. Suitable when environmental concerns are of importance.	P.718
	Anti-backlash Type	MTBLR	Reduced axial play type. Has better repeatability than the Standard Type.	
	Oil Free	MTSM_ _	Standard Type with embedded solid lubricant. Reduces lubrication maintenance requirements.	P.719
	Resin	MTSR_ _ MTSF_ _	A resin type dimension compatible with the Standard Type. Reduces lubrication maintenance cycles.	P.720

Lead screw shaft end configuration standards page☞P.703~

Both Ends Stepped Config.☞P.707
One End Stepped / One End Double Stepped Config.☞P.709
One End Stepped - One End Double Stepped Config.☞P.711
Both Ends Double Stepped Config.☞P.713

■Easy Pattern Designing

A complete lead screw unit can easily be designed by sequentially selecting the components from Easy Pattern Designing program.

Step 1 —  — **Lead Screws (P.703)**

Step 2 —  — **Fixed Side Support Unit (P.705)**

Step 3 —  — **Support Side Support Unit (P.706)**

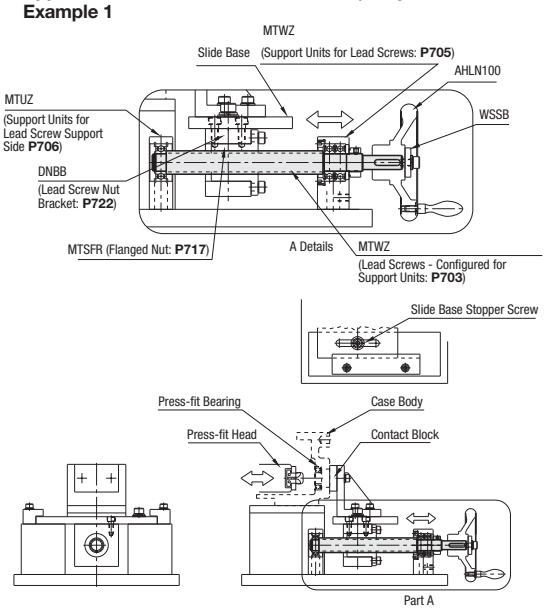
Step 4 —  — **Lead Screw Nuts -Flanged Type- (P.717)**

Step 5 —  — **Lead Screw Nut Brackets (P.722)**

Step 6 —  — **Position Indicators (P.725, 726)**

■Lead Screw Application Examples

■App. Machine Name Reference Shoulder Adjusting Mechanism
Example 1



Configuration comprised of: Shaft Support Unit for Lead Screws, Lead Screw Shaft, and a Position Indicator.

Applications and purposes
Used for transfer feeding, locating stoppers, and guiding of various work.
Adjustments are relatively small, but shock loads in axial direction are anticipated.
Additionally, the lead screw scheme is chosen for its economy.

Selection Criteria



Lead screw shaft
A lead screw shaft configured specifically for MISUMI Shaft Supports with a Keyway is selected.
The configuration supports each end of the shaft with a bearing.



Shaft Sport Unit for Lead Screws
A Shaft Support Unit for Lead Screws is selected for the fixed end.
Selected support unit has two radial bearings in preloaded arrangement and can bear axial and thrust loads.



Shaft Sport Unit for Lead Screws
A Shaft Support Unit for Lead Screws is selected for the shaft support side.
Comes with a radial bearing in the set, and used as is.



Lead Screw Nut
Commonly used Round Flanged Lead Screw Nut is selected.

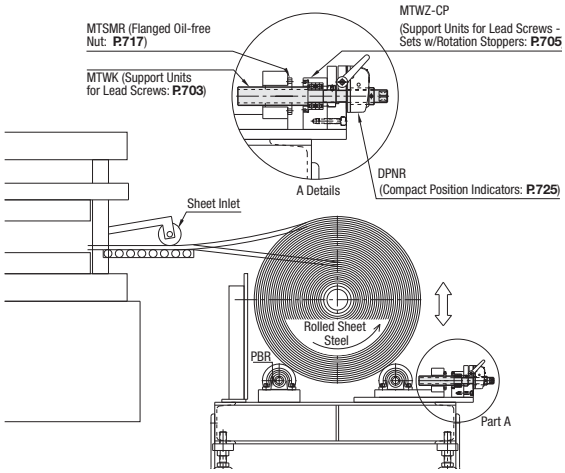


Nut Brackets
A Nut Bracket compatible with a lead screw nut is selected.

Use Condition

(1) Applied Load	200N Material Mass: 300N
(2) Setup change-over frequency	Once / Day for Rod changes, etc
(3) Positioning Accuracy	±0.5mm
(4) Stroke	150mm

■Example 2 Machine Name Sheet Steel Roll Base



Applications and purposes
Sheet steel roll's remaining O.D. is measured at set intervals, and the roll is raised accordingly with a lead screw.
The lead screw feed amount is measured by a position indicator, instead of using a conversion table.

Selection Criteria



Leas screw shaft
A lead screw shaft configured specifically for MISUMI Shaft Supports with no R machining on the support side (Alteration RC) is selected.



Shaft Sport Unit for Lead Screws
Shaft Sport Unit for Lead Screws is selected for the fixed side of the shaft.
Selected since axial loads can be supported, and a Compact Position Indicator can be directly mounted.



Lead Screw Nut
Round Flanged Oil-less Lead Screw Nut is selected.
Selected because the lubrication maintenance an be reduced to only once a year.



Position Indicators
A compact position indicator is selected for lead screw feed amount measurements.

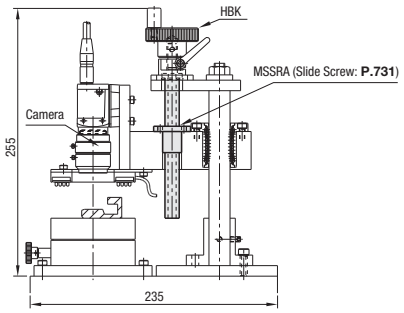
Use Condition

(1) Applied Load	20kN
(2) Maintenance	Once / Year
(3) Positioning Accuracy	1~2mm
(4) Stroke	150mm

■Slide Screw Application Example

A screw feed axis with a stainless steel shaft and a resin nut can be used without grease is suitable for clean environments.
Slide screws are economical and offer smooth movements.

■App. Example 1 Machine Name Camera Inspection Unit



A slide screw is utilized as the Z axis.

Applications and purposes
A slide screw is chosen for fine adjustability, and to be used with as little re-lubrications as possible.

Selection Criteria



Slide Screw Shaft
One end stepped type in 1.4301/X5CrNi18-10 material is selected.
Nut
Tribological resin nut is selected for zero grease requirement and good corrosion resistance.

Use Condition

(1) Applied Load	50N
(2) Setup change-over frequency	Once a day for Rod changes, etc.
(3) Positioning Accuracy	±0.5mm
(4) Stroke	100mm

Lead Screws

-Screw Shaft Specifications / Technical Calculations-

■Lead Screw Specifications

Shaft Dia.	Pitch	Screw Shaft Effective Diameter	Screw Shaft Minor Dia. (MIN.)	Screw Shaft Lead Angle	Lead Screw Nut Materials / Types					
					Brass/ Oil-less Brass	Resin with Sliding Property	Polyacetal Resin	Brass		Brass/ Oil-less Brass
					Flanged			Compact Flanged	Anti-backlash Type	Block nut Type
										
					P.717·719	P.720	P.720	P.717	P.718	P.721
					Allowable Dynamic Thrust (N)					
8	1.5	7.25	(5.9)	3°46'	1470	-	-	-	-	-
10	2	9	(7.2)	4°03'	2550	278	255	2020	2600	2550
12	2	11	(9.2)	3°19'	3920	428	392	3140	3390	3920
14	3	12.5	(10.1)	4°22'	4900	536	490	3920	-	4900
16	2	15	(13.18)	2°25'	6780	-	-	-	-	-
	3	14.5	(12.1)	3°46'	6670	686	628	5340	6290	6670
18	4	16	(13.1)	4°33'	8720	960	873	-	-	8720
20	2	19	(17.18)	1°55'	10100	-	-	-	-	-
	4	18	(15.1)	4°03'	9810	1071	980	7850	9320	9810
22	5	19.5	(16.1)	4°40'	12360	-	-	9890	-	12360
25	5	22.5	(19)	4°03'	14220	-	1412	11380	-	14220
28	5	25.5	(22)	3°34'	17950	-	1765	14420	-	17950(20050)
32	6	29	(24.5)	3°46'	21080	-	2050	16940	-	21080(22810)
36	6	33	(28.5)	3°19'	25780	-	-	-	-	-
40	6	37	(32.5)	2°57'	33830	-	-	-	-	-
50	8	46	(40.4)	3°10'	40310	-	-	-	-	-

( ) dimension is for Tall Block Nut type.

■Lead Screw Technical Calculations

1.Selection of Nut Material

Select the nut material which doesn't cause abnormal abrasion.

(1) Contact Pressure P (N/mm²)

$$P=\frac{Fs}{Fo}\times\alpha$$

Fs: Axial Load (N)
Fo: Allowable Dynamic Thrust (N)
α:α=9.8(Brass), 0.98(Resin)

(Allowable Dynamic Thrust: The thrust when the contact pressure acting on the screw shaft and nuts is 9.8N (0.98N)/mm²)

(2) Speed V (m/min)

$$V=\frac{\pi\cdot d_2\cdot n}{\cos(d)}\times10^{-3}$$

d₂: Pitch Dia. Of Screw Shaft (mm)
n: Screw Shaft Revolution Frequency per Minute (min⁻¹)
d: Screw Shaft Lead Angle (Degree)

2. Screw Efficiency and Load Torque

(1)Screw Efficiency η

$$\eta=\frac{1-\mu\tan(d)}{1+\mu/\tan(d)}$$

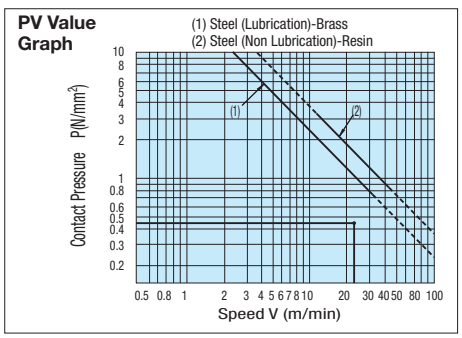
μ: Dynamic Friction Coefficient
d: Screw Shaft Lead Angle (Degree)

(2) Load Torque T (Ncm)

$$T=\frac{Fs*R}{2\pi\cdot\eta}$$

Fs: Axial Load (N)
η: Screw Efficiency
R: Lead (cm)

PV Value Graph



Calculation Example

In case of using MTSRW16 shaft, pitch 3 and MTSFR16 brass flanged nut when the axial load is 300N as rotational speed at 500min⁻¹

(1) Contact Pressure P (N/mm²)

$$P=\frac{Fs}{Fo}\times\alpha=\frac{300}{6670}\times9.8=0.44(N/mm^2)$$

(2) Speed V (m/min)

$$V=\frac{\pi\cdot d_2\cdot n}{\cos(d)}\times10^{-3}=\frac{\pi\times14.5\times500}{\cos(3°46')}\times10^{-3}=22.8(m/min)$$

When the PV Graph is viewed based on the calculated P and V values, the cross point V=22.8(m/min) when P=0.44(N/mm²) is located inside the line, thus it can be stated that no abnormal wear will occur.

Calculation Example

Required torque when using: screw shaft MTSRW16, pitch 3, nut MTSFR16 (flanged brass)

(1)Screw Efficiency η

$$\eta=\frac{1-\mu\tan(d)}{1+\mu/\tan(d)}=\frac{1-0.21\times\tan(3°46')}{1+0.21/\tan(3°46')}=0.24$$

Also, a case of calculating for the Load Torque T (Ncm) when the axial load is 300N.

(2) Load Torque T (Ncm)

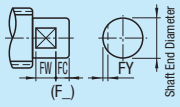
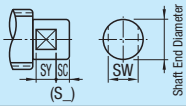
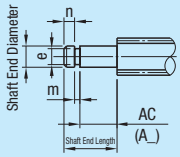
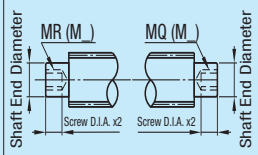
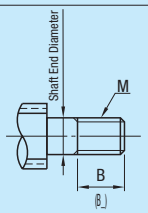
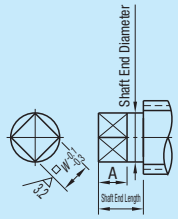
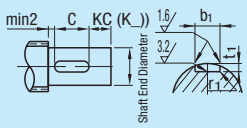
$$T=\frac{Fs*R}{2\pi*\eta}=\frac{300\times0.3}{2\pi\times0.24}=59.7(N\text{-}cm)$$

■Reference Value

Screw Shaft	Nut	Dynamic Friction Coefficient μ
Steel (Lubrication)	Brass	0.21
Steel (Non Lubrication)	Polyacetal/PPS Resin with Sliding Property	0.13

Overview of Lead Screw Shaft End Machining

Orders can be placed without drawings by adding the Alteration Specifications listed below to the standard Lead Screw product part numbers. Procurement is quick with short lead times.

Alterations	Alterations	Code	Spec.	Price Adder
Flat Machining		FV FQ FR FE FC	Adds a flat on shaft end. Ordering Code FC5-FW10-FY1 0.5mm Increment Use purpose Used for a screw point seat when mounting a handle Only one end of the shaft is machined When shaft end diameter ≤25, FY≤1.0 When shaft end diameter ≥26, FY≤2.0	2,00
2 flats machining		SQ SE SR SV	2 flats (Width Across Flats) are machined on one end of the shaft Ordering Code SC5-SW10-SY8 1mm Increment Use purpose For wrench use Only one end of the shaft is machined When Shaft End Dia. <15, SW≥ Shaft End Dia. -2 When 15≤ Shaft End Dia. ≤25, SW ≥ Shaft End Dia. -3 When 30≤ Shaft End Dia, SW≥ Shaft End Dia. -5 3≤SY≤20	4,00
Retaining Ring Groove		AC AQ AR AE	Adds a retaining ring groove on one end. Ordering Code AC13.3 Specify in 0.1mm increment Use purpose For bearing mounting, etc. AC (AQ, AR, AE) will be smaller than "End length-m-n"	4,00
Coarse Tap		MC MQ MR ME MV	Adds a coarse threaded tapped hole on a shaft end. Ordering Code MC24 Select from table on right Use purpose Used for threaded item (knobs, etc.) mounting Not applicable for D.I.A. 4 shafts	2,00
Male Thread For bearing nuts		BV BC BQ BR	Cuts a thread on a shaft end. Ordering Code BC20 Select from table on right Use purpose For anti-loosening bearing nuts ☞P.940 Not applicable to shaft end diameters 7, 9, 16. Tap length ≤ M x3 Tap length ≥ Pitch x3 Tap length ≤ Shaft End Length - Pitch x3	2,00
Square Chamfering		ZC ZQ ZE ZR ZV	Adds square chamfering to one end. Ordering Code ZC12-W10-A8 Specify ZC (Z_) as same as the end diameter W=Select from the table on right, or specify in 1mm increment A = 1mm Increment Use purpose For mounting handles, etc. 5≤A≤20 Only one end of the shaft is machined	8,00
Keyway		KC KQ KV KE KR	Adds a keyway on one end. Ordering Code KC8-C10 KC (K_) and C: Specify in 1m increment Use purpose For handle mounting keyway use Only one end of the shaft is machined C≤60 2mm min. required between the keyway and shaft shoulder KC(K_)≥2 When KC (K_)=0, there will be no keyway radius on the end side.	4,00

Shaft End Dia.	e	Tolerance	m+0.14 0	n Machining Limits	Used Retaining Ring
6	4	+0.075 0	0.7	n≥1.2	E shaped retaining ring
7					
8	5		0.9		
9	6				
10	9.6	0 -0.09	1.15	n≥1.5	C shaped retaining ring
12	11.5	0 -0.11			
14	13.4				
15	14.3				
16	15.2				
17	16.2				
20	19	0 -0.21	1.35		
25	23.9				
30	28.6		1.65		
35	33				
40	38	0 -0.25	1.9	n≥2	

Shaft End Dia.	MC (M_) selection range
5	3
6	3
7, 8	3, 4
9, 10	3, 4, 5
11, 12	3, 4, 5, 6
13~15	3, 4, 5, 6, 8
16~18	3, 4, 5, 6, 8, 10
19~24	3, 4, 5, 6, 8, 10, 12
25~30	3, 4, 5, 6, 8, 10, 12, 16
31~39	3, 4, 5, 6, 8, 10, 12, 16, 20
40, 50	3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30

Shaft End Dia.	MxPitch
6	M 6x0.75
8	M8x1.0
10	M10x1.0
12	M12x1.0
14	M14x1.0
15	M15x1.0
17	M17x1.0
20	M20x1.0
25	M25x1.5
30	M30x1.5
35	M35x1.5
40	M40x1.5

Shaft End Dia.	W 1mm Increment
6, 7	5
8	6
9	7
10	8
12	9 10
14, 15	10 11 12
16	11 12 13
17	12 13 14
20	14 15 16
25	17~20
30	21~24
35	25~28
40	29~30

Shaft End Dia.	W 1mm Increment
6~10	5~8
11~14	8~10
15~19	10~14
20~25	14~20
26~30	19~24
31~35	22~28
36~40	26~30

Applicable Shaft End Dia.	Keyway Dimension b1 Ref. Dim.	b1 Tol. (N9)	t1 Ref. Dim.	t1 Tol.	r1
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11, 12	4	0 -0.030	2.5		0.16 ~0.25
13~17	5		3		
18~22	6		3.5		
23~30	8	0 -0.036	4	+0.2 0	0.25 ~0.40
31~38	10		5		
39, 40	12	0 -0.043	5		

Notes on selections Alterations

- When flat machining, width across flats, square chamfering and keyway alterations are combined each other, their positions are random.
- When two or more features are specified on a shaft, the alterations may not coincide in angular phase.
- When adding multiple alterations, there must be 2mm or more between each feature.

Applies to Lead Screws with alterations for combination of square machining and tapping. P.703~714

Square Chamfering		Coarse Tap
Shaft End Dia.	Square Machining	Tap Diameter
6~10	5~8	3
11~14	8~10	3, 4
15~19	10~14	3, 4, 5
20~25	14~20	3, 4, 5, 6, 8
26~30	19~24	3, 4, 5, 6, 8, 10
31~35	22~28	3, 4, 5, 6, 8, 10, 12
36~40	26~30	3, 4, 5, 6, 8, 10, 12, 16

Lead Screws
-Lead Screws for Support Units-

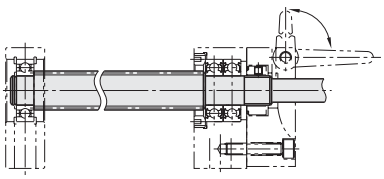
NEW

※A dedicated lead screw configured for bearings, stopper clamp, position indicator, and a handle. Ordering can be completed only with specifying D, L, and S dimensions.

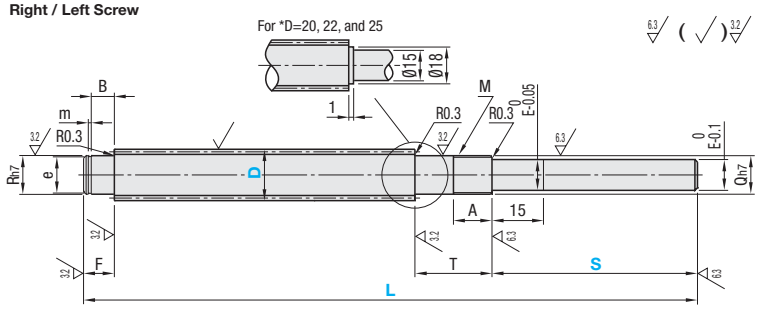


RoHS

Type		M Material	S Surface Treatment
Right-hand Thread	Left-hand Screw		
MTWK	MTWLK	1.1191/C45E	-
MTWBK	MTWBLK		Black Oxide
RMTWK	RMTWLK		Raydent
MTSWK	MTSWLK	1.4305/X10CrNiS18-9	-



Right / Left Screw



R	e Tolerance		m+0.14 0
8	5	+0.075 0	0.7
10	9.6	0 -0.09	1.15
12	11.5	0 -0.11	
15	14.3		

Part Number Type		D	1mm Increment L	1mm Increment S	F	R	B	T	Q	A	M x Pitch	E	D	Pitch P
(Right-hand Thread)	(Left-hand Screw)	12	80~1000	2≤S≤80	10	8	7	26	8	11	8x1.0	6	12	2
MTWK	MTWLK	14			12	10	8	29	10	12	10x1.0	8	14	3
MTWBK	MTWBLK	16	100~1200	2≤S≤95	12	12	8	29	12	12	12x1.0	10	16	3
RMTWK	RMTWLK	18			12	12	8	29	12	12	12x1.0	10	18	4
LTBC Plated Products	L≤1000	20	150~1200	2≤S≤100	12	15	9	34	15	14	15x1.0	12	20	4
MTSWK	MTSWLK	22			12	15	9	34	15	14	15x1.0	12	22	5
※D dimension 22 is not available for MTSWK		25			12	15	9	34	15	14	15x1.0	12	25	5
※D dimensions 22 or 25 are not available for MTSWLK														

Order Example

Part Number	-	L	-	S
MTWK20	-	800	-	S90

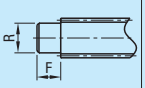
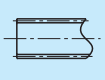
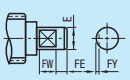
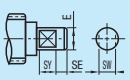
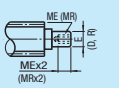
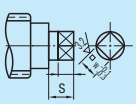
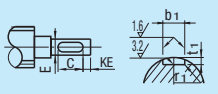
Days to Ship

•Right · Left Screw: 8 Days

•LTBC Plated Products: 13 Days

Alterations

Part Number	-	L	-	S	-	(NAR · RC · FE · SE · ME · MR · ZE · KE)
MTWK20	-	800	-	S90	-	KE0 - C30

Alterations	No Retaining Ring Groove on Support Side Shaft End	No machining on support side	Flat Machining	Width Across Flats	Tapping	Square Chamfering	Keyway
							
Code	NAR(R part)	RC(R part)	FE(E part)	SE(E part)	ME(E part) MR(Left Side)	ZE(E part)	KE(E part)
Spec.	No retaining ring machining performed on the R part for the support end. Ordering Code NAR	No retaining ring machining performed on the R part for the support end. Ordering Code RC ※Possible to combine with MR	FE, FW, FY=Specify in 0.5mm Increment Applied on FE (E) Ordering Code FE5-FW10-FY1 ※FY≤1.0	SE, SW, SY=Specify in 1mm Increment Applied on SE=E part Ordering Code SE3-SW10-SY7 ※SW≥E−2 ※3≤SY≤20	Applied on ME=E part MR=Applied on the R section and Left End Face Ordering Code ME6	A = 1mm Increment Applied on ZE=E part Ordering Code ZE12-W10-A8 ※Can be combined with Female Thread Hole machining only on a same shaft. For machining conditions, see: **P.702** ※5≤A≤20 ※ZE=E Specified	KE, C=Specify in 1mm increments ※C≤60 ※KE≥2 ※S-C-KE≥2 ※When KE=0, there will be no keyway radius on the shaft end side. Machining on KE=E part Ordering Code KE8-C10 ※Applicable to D dimension 16 or more When applying a Keyway machining, the E O.D. tolerance will all be $^{0}_{-0.05}$
Price Adder	-2,00	-3,00	2,00	4,00	2,00	8,00	4,00

E, R, D	ME - MR (Selection Range)
6	3
8	3, 4
10	3, 4, 5
12	3, 4, 5, 6
14, 15	3, 4, 5, 6, 8
16, 18	5, 6, 8, 10
20~25	5, 6, 8, 10, 12

ZE=E	W Selection
6	5
8	6
10	8
12	9, 10

Applicable Shaft Dia. E	Keyway Dimension b1 Reference Dimension	b1 Tolerance (N9)	t1 Reference Dimension	t1 Tolerance	r1
10	3	-0.004 -0.029	1.8	+0.1 0	0.08 ~0.16
12	4	0 -0.030	2.5		

CAD Data

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Right · Left Screw

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTWK MTWLK	12						
	14						
	16						
	18						
	20						
	22						
	25						

Black Oxide

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTWBK MTWBLK	12						
	14						
	16						
	18						
	20						
	22						
	25						

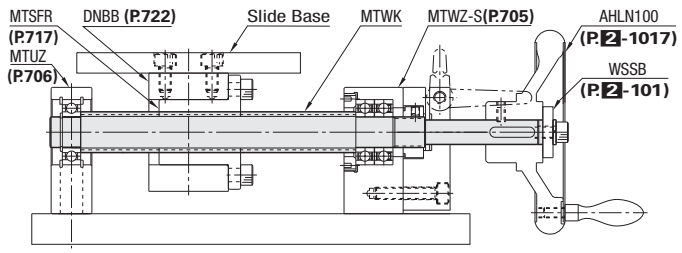
Right-hand Screw · Left-hand Screw Stainless Steel

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSWK MTSWLK	12						
	14						
	16						
	18						
	20						
MTSWK	25						

LTBC Plated Products

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
RMTWK RMTWLK	12					
	14					
	16					
	18					
	20					
	22					
	25					

Example

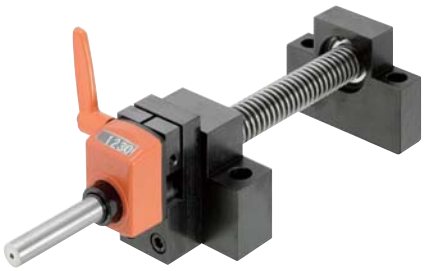


Features

A custom unit with manual lead screw rotation.
A dedicated lead screw, bearing unit and stopper clamp are combined in a set. P.705

The unit can support radial and axial loads, and can be constructed more economically in space saving dimensions.







Lead Screw Support Units
-Fixed Side Radial Bearing Type-

CAD Data

Dedicated bearing units for Lead Screws. They can support radial and axial loads.

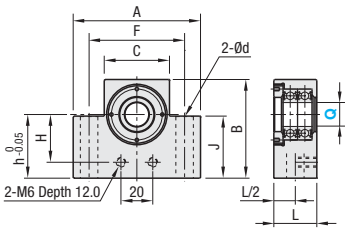


RoHS

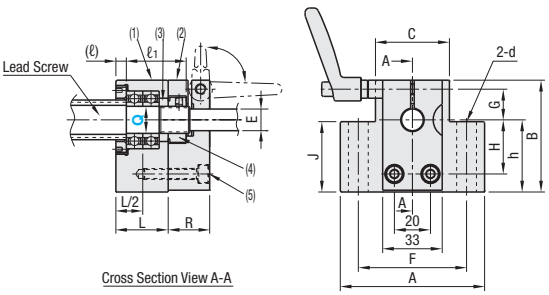
Type				Material				Surface Treatment	Accessory
Support Unit Main Body	Support Unit Set with a Rotation Stopper	Compact Indicator Mount Set	Large Position Indictor Indicator Mount Set	(1) Main Body	(2) Rotation Stopper Set	(3) Collar	(4) Bearing Nut		
MTWZ	MTWZ-S	MTWZ-CP	MTWZ-LP	1.1191/ C45E	1.0038/ S235JR	1.0038/ S235JR	1.0038/ S235JR	Black Oxide	Clamp Lever

Uses two preload adjusted JIS Class 0 radial bearings.

■Lead Screw Support Unit MTWZ

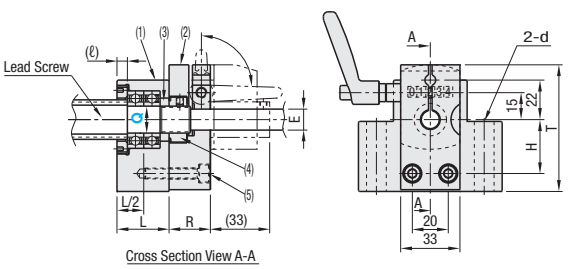


■Rotation Stopper Set MTWZ-S



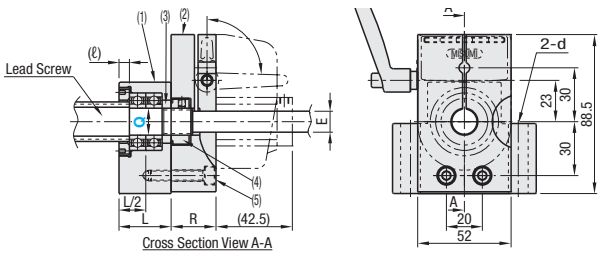
Cross Section View A-A

■Compact Position Indicator Mount Set With Rotation Stopper MTWZ-CP



Cross Section View A-A

■Large Position Indicator Mount Set With Rotation Stopper MTWZ-LP

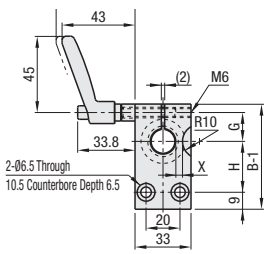


Cross Section View A-A

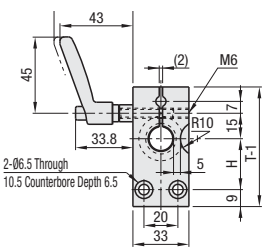
Number	Part Name	Quantity
(1)	Support Unit	1
(2)	Stop Plate Sets	1
(3)	Collar	1
(4)	Bearing Nut (w/ a Thread Protector)	1
(5)	Hex Socket Screw	2

Stop Plate Sets

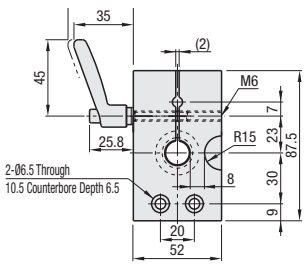
- Standard Type-



- Compact Position Indicator Mount Type-



- Large Position Indicator Mount Type-



A collar for the clamp lever is not included with Q8. The clamp lever mounting dimensions will be the same as the Large type.

Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.

Part Number Type	Q	A	B	C	F	h	J	H	G	T	L	R	(ℓ)	X	d	E	ℓ1	Bearing Nut	Clamp Lever
MTWZ MTWZ-S MTWZ-CP MTWZ-LP	8	52	48	25	38	30	35	20	13	60.5	22	22	5	4.5	6.6	6	24	BNR8	CLDM6-32-M
	10	70	53	36	52	35	34	25	13	65.5	24	23		4.5	9	8	27	BNR10	CLDM6-40-M
	12	70	58	36	52	40	39	30	13	70.5	24	23		4.5		10	27	BNR12	
	15	80	62	41	60	40	39	30	17		27	25	6	5.5	11	12	31	BNR15	

Order Example — Part Number: MTWZ15

Days to Ship: 6 Days P.87

Price

Part Number Type	Q	MTWZ € Unit Price 1~4 pcs.	MTWZ Volume Discount 5~10 pcs.	MTWZ-S € Unit Price 1~4 pcs.	MTWZ-S Volume Discount 5~10 pcs.	MTWZ-CP € Unit Price 1~4 pcs.	MTWZ-CP Volume Discount 5~10 pcs.	MTWZ-LP € Unit Price 1~4 pcs.	MTWZ-LP Volume Discount 5~10 pcs.
MTWZ MTWZ-S MTWZ-CP MTWZ-LP	8								
	10								
	12								
	15								

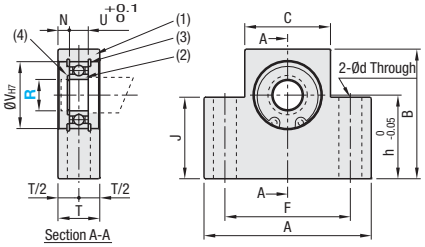
Lead Screw Support Units
-Support Side Type-

CAD Data



Number	Part Name	Quantity
(1)	Housing	1
(2)	Radial Bearing	1
(3)	Retaining ring for bore (installed)	2
(4)	Retaining ring for shaft (included)	1

Type	Material	Surface Treatment
MTUZ	1.1191/C45E	Black Oxide



Part Number Type	R	A	B	C	F	h	J	V	T	d	U	N	Bearing Type	Retaining Ring for Bore	Retaining Ring for Shaft	MTUZ € Unit Price 1~4 pcs.	MTUZ Volume Discount 5~10 pcs.
MTUZ	8	52	48	25	38	30	35	22	20	6.6	7	6.5	B608ZZ	RTWN22	NETW5		
	10	70	53	36	52	35	34	26		9	8	6	B6000ZZ	RTWN26	STWN10		
	12	70	58	36	52	40	39	28		9	8	6	B6001ZZ	RTWN28	STWN12		
	15	80	62	41	60	40	39	32		11	9	5.5	B6002ZZ	RTWN32	STWN15		

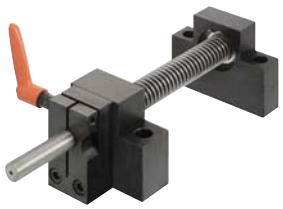
Order Example

Part Number
MTUZ15

Days to Ship: **6 Days** P.87

Example

■Rotation Stopper Set Type



■Compact Position Indicator Mount Type



■Large Position Indicator Mount Type



■For Position Indicators, see ☞P.1-725

■For Handles, see ☞P.2-1017

Q	E	Applicable position indicators: Type	Compact 4-Digit Type	Compact 5-Digit Type	Large 5-Digit Type
8	6	Standard	DPN_2-CSE6	DPNF_2-CSE6	-
		Front	DPM_2-CSE6	DPMF_2-CSE6	
		Vertical	DPT_2-CSE6	DPTF_2-CSE6	
10	8	Standard	DPN_3-CSE8	DPNF_3-CSE8	-
		Front	DPM_3-CSE8	DPMF_3-CSE8	
		Vertical	DPT_3-CSE8	DPTF_3-CSE8	
12	10	Standard	DPN_3,4-CSE10	DPNF_3,4-CSE10	DPL_3,4-CSE10
		Front	DPM_3,4-CSE10	DPMF_3,4-CSE10	DPR_3,4-CSE10
		Vertical	DTM_3,4-CSE10	DPTF_3,4-CSE10	DPZ_3,4-CSE10
15	12	Standard	DPN_4,5-CSE12	DPNF_4,5-CSE12	DPL_3,4-CSE12
		Front	DPM_4,5-CSE12	DPMF_4,5-CSE12	DPR_3,4-CSE12
		Vertical	DPT_4,5-CSE12	DPTF_4,5-CSE12	DPZ_3,4-CSE12

For silver covers, order with DP__ changed to DS__.

■Support Unit Mounting Procedure





(1) Insert the lead screw shaft into the fixed side support unit.
(2)After slipping a collar on, thread the included bearing nut on and temporarily tighten at 1/3 of the specified tightening torque.
Mount the support side unit on the support end of the shaft and mount.
(3)While rotating the screw shaft, gradually tighten the bearing nut to obtain smooth motion from end to end.
(4)When smooth motion is obtained, tighten to full tightening torque to finish.

■Support Unit Bearing Type

Q	Bearing Type	Allowable Axial Load (N)
8	608ZZCNM	1300
10	6000ZZCNM	2300
12	6001ZZCNM	2600
15	6002ZZCNM	2900

Use the position indicators within allowed maximum speed ranges.

M	Tightening Nut Tightening Torque (Ncm)
8	490
10	930
12	1370
15	2350

Value is for reference only.

Lead Screws
-Both Ends Stepped Type-

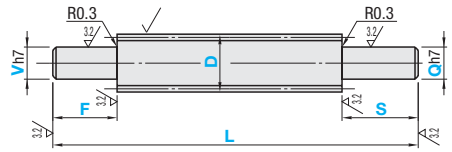
Type generally used.



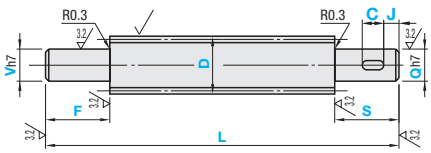
Type						Material	Surface Treatment
Right-hand Thread	With a keyway Right-hand Thread	Fine Pitch Right-hand Thread	Left-hand Screw	Right and Left-hand Screw	Precision Right and Left-hand Screw		
MTSRW	MTSRV	MTXRW	MTSLW	MTSWW	MTSYW	1.1191/C45E	-
MTSBRW	MTSBRV	MTXBRW	MTSBLW	MTSBWW	MTSBYW		Black Oxide
RMTSRW	RMTSRV	-	RMTSLW	RMTSWW	-		Raydent
MTSTRW	-	-	MTSTLW	-	-	1.4305/X10CrNiS18-9	-

- Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

Right-hand Screw · Left-hand Screw · Fine Thread Right-hand Screw

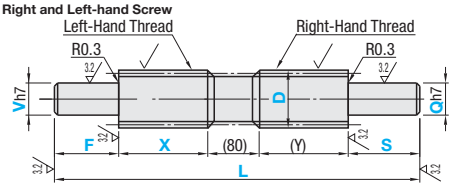


Right-hand Screw with Keyway

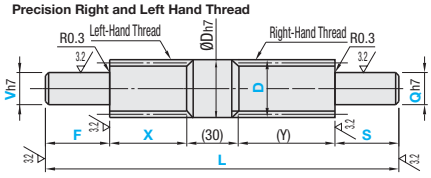


Keyway machining details conform to Shaft Keyway Dimensions shown on the right page.

Right and Left-hand Screw



Precision Right and Left Hand Thread



Incomplete threaded portion 80mm are not useable.

ØDh7 - 30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

■Right-hand Screw · Left-hand Screw · Right and Left-hand Screw · Precision Right and Left Hand Screw

Part Number Type	D	1mm Increment L	F / S	V / Q	Left/Right Screw · Precision Left/Right Screw X 1mm Increment	D	Pitch P
(Right-hand Thread)	*8	50~500	2≤F≤Vx7 2≤S≤Qx7 When V and Q are 6~9, 2≤F≤Vx5 2≤S≤Qx5	6	When D=10~14 50≤X≤460<485>-F (Y)=L-80<30>-F-S-X (Y)≤500-S-40<15> When D=16~50 50≤X≤560<585>-F (Y)=L-80<30>-F-S-X (Y)≤600-S-40<15> Dimensions in < > are for Precision Right and Left Hand Screw.	8	1.5
MTSRW MTSBRW RMTSRW	10	80~1000		6 7		10	2
MTSTRW (Left-hand Screw) D≤32,L≤1000 (Stainless Steel)	12			6 7 8 9		12	
MTSLW	14			8 9 10		14	3
MTSBLW RMTSLW MTSTLW (Right and Left Hand Screw) D≤32,L≤1000 (Stainless Steel)	16	100~1200		9 10 12		16	
	18	150~1200		9 10 12		18	4
	20			10 12 14 15		20	
MTSWW MTSBWW RMTSWW (Precision Right and Left Hand Screw) D≤32,L≤1000	22			10 12 14 15		22	5
	25			12 14 15 16 17		25	
	28			14 15 16 17 20		28	
MTSYW MTSBYW	32	200~1200		14 15 16 17 20 25		32	6
	36			17 20 25		36	
	40			20 25 30		40	
(D8 is applicable for MTSRW, MTSBRW, RMTSRW only)	50			25 30 35 40		50	8

For Precision Right and Left Hand Screw, D dimension 14, 16, 20, 25, 28 and 32 are available. When using with position indicators, the standard Q diameters are 8~20. ☞P.725

D dimension 22, 36, 40 and 50 are not applicable to Stainless Steel. D dimension 25, 28 and 32 are applicable to Right-hand Screw only.

■Right-hand Screw with Keyway

Part Number Type	D	1mm Increment L	F · S	V · Q	1mm Increment C	1mm Increment J	D	Pitch P
	12	80~1000	2≤F≤Vx7 2≤S≤Qx7 When Q,V≤9, F,S are five or less times of Q,V.	7 8 9	C≤60 S-C-J≥2	J≥2 or J=0 When J=0, keyway R will be eliminated.	12	2
	14			8 9 10			14	3
	16	100~1200		9 10 12			16	
	18	150~1200		9 10 12			18	4
	20			10 12 14 15			20	
MTSRV MTSBRV RMTSRV D≤32,L≤1000	22			10 12 14 15			22	5
	25			12 14 15 16 17			25	
	28			14 15 16 17 20			28	
	32	200~1200		14 15 16 17 20 25			32	6
	36			17 20 25			36	
	40			20 25 30			40	
	50			25 30 35 40			50	8

When using with position indicators, the standard Q diameters are 8~20. ☞P.725

■Fine Pitch Right-hand Screw

The fine pitch right-hand screw has a smaller pitch than the conventional standard products.

Part Number Type	D	1mm Increment L	F · S	V · Q	D	Pitch P
MTXRW MTXBRW	16	100~1000	2≤F≤Vx7 2≤S≤Qx7 When Q and V≤9, F and S will be less than 5x of Q and V.	9 10 12	16	2
	20	150~1000		10 12 14 15	20	2

For fine pitch right-hand screw nuts, see ☞P.718 When using with position indicators, the standard Q diameters are 8~20. ☞P.725

Price Reduction

CAD Data

Order Example

Part Number	-	L	-	F	-	V	-	S	-	Q	-	C	-	J
MTSRW16	-	282	-	F16	-	V10	-	S14	-	Q10				
MTSRV16	-	282	-	F16	-	V10	-	S14	-	Q10	-	C10	-	J2

Part Number	-	L	-	F	-	V	-	S	-	Q	-	X
MTSWW20	-	583	-	F20	-	V15	-	S30	-	Q15	-	X100

Days to Ship

·Right-Hand Thread · Left-hand Screw · Right-Hand Screw with Keyway · Right and Left-hand Screw · Precision Right and Left-hand Screw

8 Days Express A 8,00 EUR/piece P.88

Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.

·Fine Pitch Right-hand Screw **10 Days**

·LTBC Plated Products **13 Days**

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Ⓨ Volume Discount is not applicable to MTXRW, MTXBRW, MTSYW and MTSBYW

Ⓨ Calculations with multipliers applied to the prices shown in the table. Price in the table x Multiplier = € Unit Price (Round off to the nearest ten Cent.)
(EX) MTSBRW20-480-F20~ 35,60x1.1=39,16→39,20 EUR

■Right · Left Screw

Part Number Type	D	Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRW (Price in table)	8						
MTSBRW (Price in table x1.1)	10						
MTSLW (Price in table x1.02)	12						
MTSBLW (Price in table x1.12)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Ⓨ The unit price for this product will be the prices shown in the table with multipliers applied.
Ⓨ Price of RMTSWW, RMTSLW is MTS_W + price in the table below (Round off to the nearest ten Cent.)

■Right-hand Screw with Keyway

Part Number Type	D	Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRV (Price in table)	12						
MTSBRV (Price in table x1.1)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Ⓨ Standard price of this product = the price in the table x Rate
Ⓨ Price of RMTSRV is MTSRV + price in the table below (Round off to the nearest ten Cent.)

■Right and Left-hand Screw

Part Number Type	D	Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
	10						
	12						
MTSWW (Price in table)	14						
	16						
MTSBWW (Price in table x1.12)	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Ⓨ The unit price for this product will be the prices shown in the table with multipliers applied.
Ⓨ Price for RMTSWW is MTSWW price + prices in the table below. (Round off to the nearest ten Cent.)

■Right-hand Screw · Left-hand Screw, Stainless Steel

Part Number Type	D	Min. L~200	L200~400	L401~600	L601~800	L801~1000	L1001~1200
	10						
	12						
MTSTRW	14						
MTSTLW	16						
	18						
	20						
	25						
MTSTRW	28						
	32						

■Precision Right and Left Hand Thread

Part Number Type	D	Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSYW (Price in table)	14						
MTSBYW (Price in table x1.1)	16						
	20						
	25						
(Round off to the nearest ten Cenr.)	28						
	32						

■Fine Pitch Right-hand Screw

Part Number Type	D	Min. L~200	L201~400	L401~600	L601~800	L801~1000
MTXRW	16					
	20					
MTXBRW	16					
	20					

■LTBC Plated Products

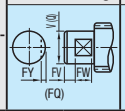
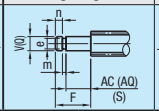
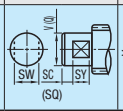
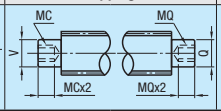
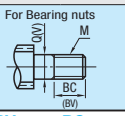
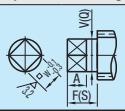
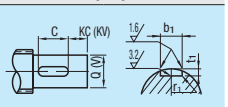
Part Number Type	D	Min. L~200	L201~400	L401~600	L601~800	L801~1000
RMTSRW (Price of MTSRW + Price in the Table)	8					
	10					
RMTSRV (Price of MTSRV + Price in the Table)	12					
	14					
RMTSLW (Price of MTSLW + Price in the Table)	16					
	18					
RMTSWW (Price of MTSWW + Price in the Table)	20					
	22					
	25					
	28					
	32					

Ⓨ For LTBC plated products, add the price of LTBC plating shown above to the non-plated product prices.
(EX) RMTSRW16-456 --- → (Price of MTSRW16-456: 32,80)+31,70=64,50 EUR

Alterations

Part Number - L - F - V - S - Q - (AC · SC · MC...etc.)
MTSRW16 - 282 - F16 - V10 - S14 - Q10 - AC13.3

Ⓨ Only AC · SC · MC · MQ and ZC are applicable to Right-hand Screw with Keyway

Alterations	Flat Machining	Retaining Ring Groove	Width Across Flats	Tapping	Male Thread	Square Chamfering	Keyway
							
Code	FV(V part) FQ(Q part)	AC(V part) AQ(Q part)	SC(V part) SQ(Q part)	MC(V part) MQ(Q part)	BV(V part) BC(Q part)	ZC(V part) ZQ(Q part)	KV(V part) KC(Q part)

Spec.

FV,FQ,FW,FY= 0.5mm Increment
FV=Machined on V area
FQ=Machined on Q area
Ⓨ Applies to only one of either V or Q

Ordering Code
FV5-FW10-FY1
Ⓨ When V (Q)≤25 FY≤1.0
Ⓨ When V (Q)≥26 FY≤2.0

AC, AQ=0.1mm Increment
AC, AQ≤F(S)-m-n Machining Limit Value

Ordering Code AC13.3
AC=Machine on V and AQ=Q.

V, Q	e	Tolerance	m+0.14 0	n Machining Limits
6 7	4	+0.075 0	0.7	n≥1.2
8	5			
9	6		0.9	
10	9.6	0 -0.09	1.15	n≥1.5
12	11.5			
14	13.4	0 -0.11		
15	14.3			
16	15.2			
17	16.2			
20	19		1.35	
25	23.9	0 -0.21		
30	28.6		1.65	
35	33			
40	38	0 -0.25	1.9	n≥2

SC,SQ,SW,SY= 1mm Increment
SC=Machining on V
SQ=Machining on Q
Ⓨ Applies to only one of either V or Q

Ordering Code
SC5-SW10-SY8
Ⓨ When Q(V)<15 SW≥Q(V)−2
Ⓨ When 15≤Q(V)≤25 SW≥Q(V)−3
Ⓨ When 30≤Q(V) SW≥Q(V)-5
Ⓨ 3≤SY≤20

MC=Machining on V
MQ=Machining on Q

Ordering Code MC24

V · Q	MC - MQ (Selection Range)
6	3
7 · 8	3, 4
9 · 10	3, 4, 5
12	3, 4, 5, 6
14 · 15	3, 4, 5, 6, 8
16 · 17	3, 4, 5, 6, 8, 10
20	3, 4, 5, 6, 8, 10, 12
25 · 30	3, 4, 5, 6, 8, 10, 12, 16
35	3, 4, 5, 6, 8, 10, 12, 16, 20
40	3, 4, 5, 6, 8, 10, 12, 16, 20, 24

Ⓨ BV,BC≤Mx3
Ⓨ BV,BC≥Pitchx3
Ⓨ BV,BC≤F,S−Pitchx3

Ordering Code BC20
BV=Machining on V
BC=Machining on Q

V · Q	MxPitch
6	M6x0.75
8	M8x1.0
10	M10x1.0
12	M12x1.0
14	M14x1.0
15	M15x1.0
17	M17x1.0
20	M20x1.0
25	M25x1.5
30	M30x1.5
35	M35x1.5
40	M40x1.5

⊗ Not applicable when V,Q=7, 9, 16

W,A=1mm Increment
ZC=Machining on V
ZQ=Machining on Q
Ⓨ Applicable to either V or Q.

Ordering Code ZC10-W8-A8
Ⓨ Can be combined with Female Thread Hole machining only on a same shaft. For machining conditions, see: P.702
Ⓨ 5≤A≤20
Ⓨ ZC=V, ZQ=Q Specified

ZC=V, ZQ=Q	W 1mm Increment
6, 7	5
8	6
9	7
10	8
12	9 10
14, 15	10 11 12
16	11 12 13
17	12 13 14
20	14 15 16
25	17~20
30	21~24
35	25~28
40	29~30

KC,KV,C = 1 mm Increment
Ordering Code KC8-C10
KV=Machining on V
KC=Machining on Q
Ⓨ Applies to only one of either V or Q

Ⓨ C≤60
Ⓨ S(F)−C−KC(KV)≥2
Ⓨ KC(KV)≥2
Ⓨ When KC,KV=0

Applicable Shaft Dia. V · Q	Keyway Dimension b1 Reference Dimension	b1 Tolerance (N9)	t1 Reference Dimension	t1 Tolerance	r1
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
12	4	0 -0.030	2.5		
14~17	5		3.0		0.16 ~0.25
20	6		3.5		
25, 30	8	0 -0.036	4.0		
35	10		5.0	+0.2 0	0.25 ~0.40
40	12	0 -0.043	5.0		

Price Adder	2,00	4,00	4,00	2,00	2,00	8,00	4,00

Ⓨ When width across flats, square chamfering and Keyway alterations are combined each other, their positions are random.

Lead Screws
-One End Stepped - One End Double Stepped-

Lead screws that are easy to combine with MISUMI Support Units.

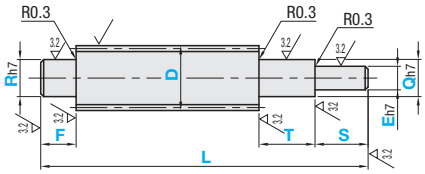


Type				M Material	S Surface Treatment
Right-hand Thread	Left-hand Screw	Right and Left-hand Screw	Precision Right and Left-hand Screw		
MTSRK	MTSLK	MTSWKA/B	MTSYKA/B	1.1191/C45E	-
MTSBRK	MTSBLK	MTSBWKA/B	MTSBYKA/B		Black Oxide
RMTSRK	RMTSLK	RMTSWKA/B	-		Raydent
MTSTRK	MTSTLK	-	-	1.4305/X10CrNiS18-9	-

- Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm -

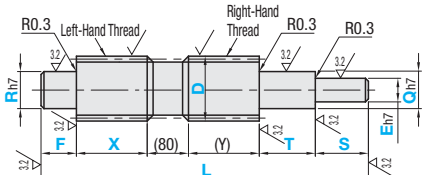
Type A or B are available for Right and Left-hand Screw and Precision Right and Left Hand Screw

Right / Left Screw

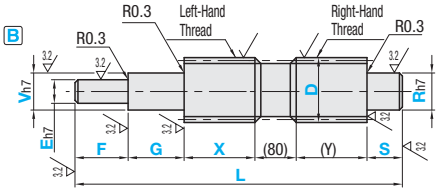


Right and Left-hand Screw

A



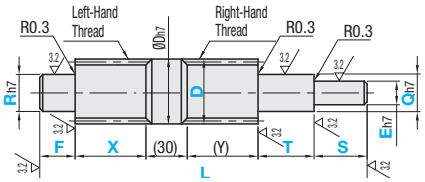
B



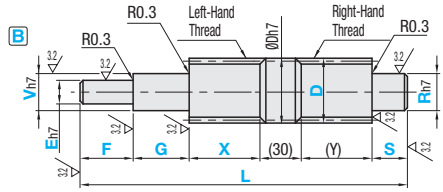
Incomplete threaded portion 80mm are not useable.

Precision Right and Left Hand Thread

A



B



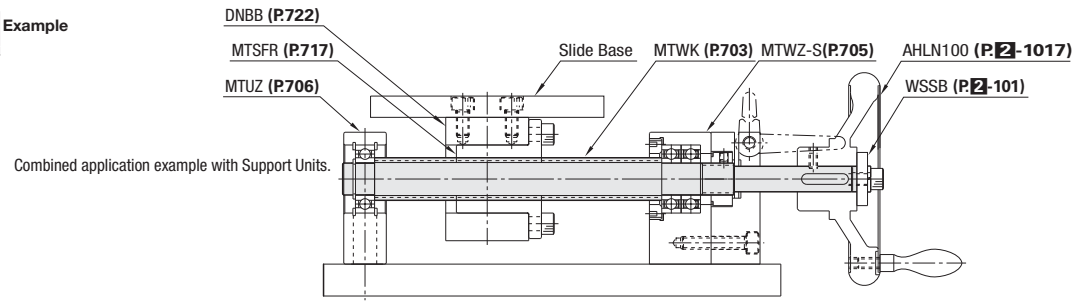
ØDh7 - 30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

Part Number Type		D	1mm Increment L	1mm Increment F · G · T · S	V · Q · R	E 1mm Increment	Left/Right Screw · Precision Left/Right Screw X 1mm Increment	D	Pitch P
(Right-hand Thread)		12	80~1000	2≤F≤E,Rx7 2≤G≤Vx7 2≤S≤E, Rx7 2≤T≤Qx7 When Q, V, R, and E≤ 9, F, G, T, S will be 5x or less of Q, V, R, E.	7 8 9	Q/2≤E≤Q−1 V/2≤E≤V−1	When D=12, 14 50≤X≤460<485>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤500-S-T-40<15> When D=16~50 50≤X≤560<585>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤600-S-T-40<15> Dimensions in < > are for Precision Right and Left Hand Screw.	12	2
MTSRK MTSBRK		14			8 9 10			14	3
RMTSRK MTSTRK	D≤32,L≤1000 (Stainless Steel)	16	100~1200		9 10 12			16	
(Left-hand Screw)		18	150~1200		9 10 12			18	4
MTSLK MTSBLK		20			10 12 14 15			20	
RMTSLK MTSTLK	D≤32,L≤1000 (Stainless Steel)	22			10 12 14 15			22	5
(Right and Left Hand Screw)		25			12 14 15 16 17			25	
MTSWKA/B		28			14 15 16 17 20			28	
MTSBWKA/B RMTSWKA/B	D≤32,L≤1000	32	200~1200		14 15 16 17 20 25			32	6
(Precision Right and Left Hand Screw)		36			17 20 25			36	
MTSYKA/B		40			20 25 30			40	
MTSBYKA/B		50			25 30 35 40			50	8

For Precision Right and Left Hand Screw, D dimension 14, 16, 20, 25, 28 and 32 are available. When combining with the position indicators, Q and V standard dimensions will be 8~20. P.725

D dimension 22, 36, 40 and 50 are not applicable to Stainless Steel. D dimension 25, 28 and 32 are applicable to Right-hand Screw only.

Example



Combined application example with Support Units.

Price Reduction

CAD Data

Order Example

Part Number	-	L	-	F	-	R	-	T	-	Q	-	S	-	E	-	X
MTSRK16	-	456	-	F37	-	R10	-	T20	-	Q12	-	S10	-	E9		
MTSWKA16	-	456	-	F37	-	R10	-	T20	-	Q12	-	S10	-	E9	-	X150

Part Number	-	L	-	F	-	E	-	G	-	V	-	S	-	R	-	X
MTSBWKB20	-	582	-	F10	-	E10	-	G15	-	V12	-	S25	-	R15	-	X200

Days to Ship

- Right-hand Screw/Left-hand Screw/Right and Left-hand Screw/Precision Right and Left Hand Screw

8 Days | Express A | 8,00 EUR/piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

-LTBC Plated Products

13 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Volume Discount is not applicable to MTSYKA/B and MTSBYKA/B.

Unit price for the product is found with price in the table multiplied by each table.
Price in the table x Multiplier = € Unit Price (Round off to the nearest ten Cent.)
(EX) MTSBRK20-480-F20~45,70x1.1=50,27→50,30 EUR

Right / Left Screw

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRK (Price in table)	12						
MTSBRK (Price in table x1.01)	14						
	16						
MTSLK (Price in table x1.02)	18						
	20						
MTSBLK (Price in table x1.12)	22						
	25						
	28						
	32						
	36						
	40						
	50						

The unit price for this product will be the prices shown in the table with multipliers applied.

Price of RMTSRK and RMTSLK are MTS_K + price in the table below (Round off to the nearest ten Cent.)

Right and Left-hand Screw

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSWKA/B (Price in table)	12						
	14						
	16						
MTSBWKA/B (Price in table x1.12)	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

The unit price for this product will be the prices shown in the table with multipliers applied.

Price of RMTSWKA/B is MTSWKA/B + price in the table below (Round off to the nearest ten Cent.)

Right-hand Screw/Left-hand Screw, Stainless Steel

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSTRK MTSTLK	12						
	14						
	16						
	18						
	20						
MTSTRK	25						
	28						
	32						

Precision Right and Left Hand Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
	14						
MTSYKA/B (Price in table)	16						
	20						
MTSBYKA/B (Price in table x1.1)	25						
(Round off to the nearest ten Cent.)	28						
	32						

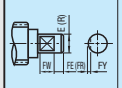
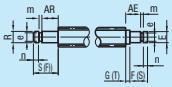
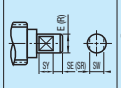
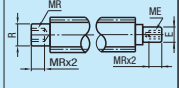
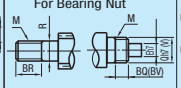
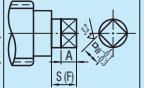
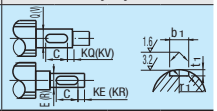
LTBC Plated Products

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
RMTSRK (Price of MTSRK + Price in the Table)	12					
	14					
	16					
RMTSLK (Price of MTSLK + Price in the Table)	18					
	20					
	22					
RMTSWKA/B (Price of MTSWK + Price in the Table)	25					
	28					
	32					

Please add the above prices for Raydent.
(EX) RMTSRK16-456 --- Price of MTSRK16-456: 40,50)+35,40=75,90 EUR

Alterations

Part Number	-	L	-	F	-	R	-	T	-	Q	-	S	-	E	-	(AR - SE - MR...etc.)
MTSTRK16	-	456	-	F37	-	R10	-	T20	-	Q12	-	S10	-	E9	-	MR4

Alterations	Flat Machining	Retaining Ring Groove	Width Across Flats	Tapping	Male Thread	Square Chamfering	Keyway
							
Code	FE(E part) FR(R part)	AR(R part) AE(E part)	SE(E part) SR(R part)	MR(R part) ME(E part)	BQ(Q part) BV(V part) BR(R part)	ZE(E part) ZR(R part)	KQ(Q part) KV(V part) KE(E part) KR(R part)
Spec.	FE,FR,FW,FY= 0.5mm Increment FE=Machining on E FR=Machining on R Ordering Code FR5-FW10-FY1 Applies to only one of either E or R When E (R)≤25 FY≤1.0 When E (R)≥26 FY≤2.0	AR, AE=0.1mm Increment AR(AE)≤S(F)+T(G)−m−n Machining Limits Ordering Code AE13.3 AR=Machining on R AE=Machining on E R, E / e Tolerance / m+0.14 0 / Machining Limits 7 4 +0.075 0 0.7 n≥1.2 8 5 -0.09 0.9 9 6 10 9.6 -0.09 1.15 12 11.5 14 13.4 0 -0.11 15 14.3 16 15.2 17 16.2 20 19 1.35 25 23.9 0 -0.21 30 28.6 1.65 n≥1.5 35 33 40 38 -0.25 1.9 n≥2	SE, SW, SY=1mm Increment SE=Machining on E SR=Machining on R Ordering Code SE3-SW10-SY7 When E(R)<15, SW≥E(R)−2 When 15E≤(R)≤25, SW≥E(R)−3 When 30≤E(R), SW≥E(R)−5 3≤SY≤20	MR=Machining on R ME=Machining on E Ordering Code MR24 R - E / ME - MR (Selection Range) 5 - 6 / 3 7 - 8 / 3, 4 9 - 10 / 3, 4, 5 11 - 12 / 3, 4, 5, 6 13~15 / 3, 4, 5, 6, 8 16~24 / 3, 4, 5, 6, 8, 10 25~30 / 3, 4, 5, 6, 8, 10, 12, 16 31~39 / 3, 4, 5, 6, 8, 10, 12, 16, 20 40 / 3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30 ⊗ Not applicable when R - E=4.	BQ,BV,BR≤Mx3 BQ,BV,BR≥Pitchx3 BQ,BV,BR≤F,S,T,G−Pitchx3 Ordering Code BR20 BQ=Machining on Q BV=Machining on V BR=Machining on R Q · V · R / MxPitch 8 / M8x1.0 10 / M10x1.0 12 / M12x1.0 14 / M14x1.0 15 / M15x1.0 17 / M17x1.0 20 / M20x1.0 25 / M25x1.5 30 / M30x1.5 35 / M35x1.5 40 / M40x1.5 ⊗ Cannot be applied to Q, V, and R= 7, 9, or 16.	W,A=1mm Increment ZE=Machining on E ZR=Machining on R Ordering Code ZE12-W10-A8 Applies to only one of either E or R Can be combined with Female Thread Hole machining only on a same shaft. For machining conditions, see:P.702 5≤A≤20 ZR=R Specified, ZR>W ZE=E Specified, ZE>W ZE=E , ZR=R / W 1mm Increment 6~10 / 5~8 11~14 / 8~10 15~19 / 10~14 20~25 / 14~20 26~30 / 19~24 31~35 / 22~28 36~40 / 26~30 (E x R/2) √2≤W May not be manufacturability depending on E, R, and W relationships.	KQ,KV,KE,KR,C=1mm Increment KQ=Machining on Q KV=Machining on V KE=Machining on E KR=Machining on R Ordering Code KQ8-C10 Applies to only one of Q, V, E, or E C≤60 T(G)-C-KQ(KV)≥2 S(F)-C-KE(KR)≥2 KQ(KV,KE,KR)≥2 When KQ(KV, KE, KR) =0, there will be no keyway radius on the end. Applicable Shaft Dia. Q · V · E · R / Keyway Dimension b1 Reference Dimension / b1 Tolerance (N9) / t1 Reference Dimension / t1 Tolerance / r1 6,7 / 2 / -0.004 -0.029 / 1.2 / +0.1 0 / 0.08 -0.16 8~10 / 3 / 1.8 11, 12 / 4 / 0 -0.030 / 2.5 / 0.16 -0.25 13~17 / 5 / 3.0 18~22 / 6 / 3.5 23~30 / 8 / 0 -0.036 / 4.0 / +0.2 0 / 0.25 -0.40 31~38 / 10 / 5.0 39 · 40 / 12 / 0 -0.043 / 5.0
Price Adder	2,00	4,00	4,00	2,00	2,00	8,00	4,00

When width across flats, square chamfering and Keyway alterations are combined each other, their positions are random.

Lead Screws
-One End Stepped / One End Double Stepped-

Used when cantilever application will not cause problems.



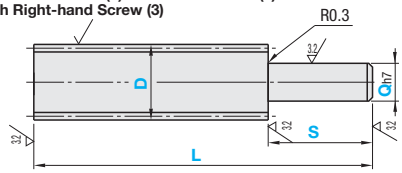
RoHS

Type								Material	Surface Treatment
One End Stepped				One End Double Stepped					
(1) Right-hand Thread	(2) With a keyway Right-hand Thread	(3) Fine Pitch Right-hand Thread	(4) Left-hand Screw	(5) Right-hand Thread	(6) With a keyway Right-hand Thread	(7) Fine Pitch Right-hand Thread	(8) Left-hand Screw		
MTSRA	MTSRB	MTXRA	MTSLA	MTSRC	MTSRD	MTXRC	MTSLC	1.1191/ C45E	-
MTSBRA	MTSBRB	MTXBRA	MTSBLA	MTSBRC	MTSBRD	MTXBRC	MTSBLC		Black Oxide
RMTSRA	RMTSRB	-	RMTSLA	RMTSRC	RMTSRD	-	RMTSLC		Raydent
MTSTRA	-	-	MTSTLA	MTSTRC	-	-	MTSTLC	1.4305/	-

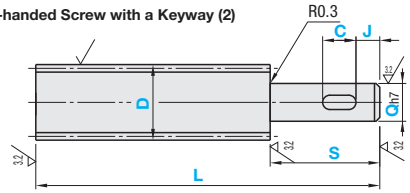
Single Pitch Error --- ±0.02mm Accumulated Pitch Error --- ±0.15/300mm

One End Stepped

Right-hand Screw (1) · Left-hand Screw (4) · Fine Pitch Right-hand Screw (3)



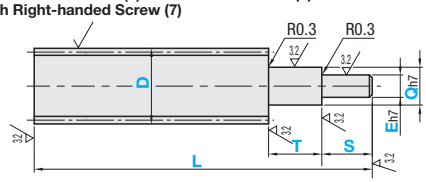
Right-handed Screw with a Keyway (2)



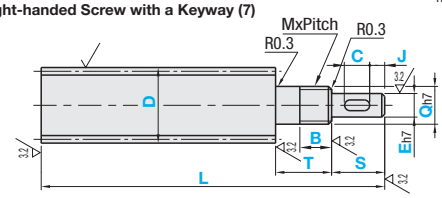
Keyway machining details conform to Shaft Keyway Dimensions shown on the right page.

One End Double Stepped

Right-handed Screw (5) · Left-handed Screw (8) · Fine Pitch Right-handed Screw (7)



Right-handed Screw with a Keyway (7)



ØDh7 - 30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

■Right / Left Screw

Part Number Type		D	1mm Increment L	1mm Increment T, S	Q	E 1mm Increment	D	Pitch P
(1) One End Stepped Right-hand Screw	(5) One End Double Stepped Right-hand Screw	*8	50~500	2≤S≤Q,Ex7 2≤T≤Qx7 (When Q,E≤9, T,S are five or less times of Q,E.)	6	-	8	1.5
MTSRA	MTSRC	10	80~1000		6 7	Q/2≤E≤Q−1	10	2
MTSBRA	MTSBRC	12			6 7 8 9		12	
RMTSRA	RMTSRC	14			8 9 10		14	3
D≤32,L≤1000		16	100~1200		9 10 12		16	
MTSTRA	MTSTRC	18	150~1200		9 10 12		18	4
		20			10 12 14 15		20	
(4) One End Stepped Left-hand Screw	(8) One End Double Stepped Left-hand Screw	22			10 12 14 15		22	5
MTSLA	MTSLC	25			12 14 15 16 17		25	
MTSBLA	MTSBLC	28			14 15 16 17 20		28	
RMTSLA	RMTSLC	32	200~1200		14 15 16 17 20 25		32	6
D≤32,L≤1000		36			17 20 25		36	
MTSTLA	MTSTLC	40			20 25 30		40	
(D8 is available for MTSRA, MTSBRA and RMTSRA only.)		50			25 30 35 40		50	8

For One End Double Stepped Type, Q dimension 6 cannot be selected when D dimension is 12. When using with position indicators, the standard Q diameters are 8~20. ☞P.725
D dimension 22 · 36 · 40 and 50 are not applicable to Stainless Steel. D dimension 25 · 28 and 32 are applicable to Right-hand Screw only.

■Right-hand Screw with Keyway

Part Number Type	D	1mm Increment L	1mm Increment T, S	Q	1mm Increment E	C	J	B	MxPitch	D	Pitch P
	12	80~1000	2≤S≤Q,Ex7 2≤T≤Qx7 (When Q,E≤9, T,S are five or less times of Q,E.)	7 8 9	E≥6 Q/2≤E≤Q-2 When the pitch is 1.5 Q/2≤E≤Q-3	C≤60 S-C-J≥2	J≥2 Or J=0 (When J=0, keyway R is straight.)	B=0 Or B≤Mx3 B≥ Pitch x3 B≤ T-Pitch x3	Q=M M8x1.0 M10x1.0 M12x1.0 M14x1.0 M15x1.0 M17x1.0 M20x1.0 M25x1.5 M30x1.5 M35x1.5 M40x1.5 Not applicable to 7,9,16.	12	2
	14			8 9 10						14	3
(2) One End Stepped Type	16	100~1200		9 10 12						16	
MTSRB	18	150~1200		9 10 12						18	4
MTSBRB	20			10 12 14 15						20	
RMTSRB D≤32,L≤1000	22			10 12 14 15						22	5
(6) One End Double Stepped Type	25			12 14 15 16 17						25	
MTSRD	28			14 15 16 17 20						28	
MTSBRD	32	200~1200		14 15 16 17 20 25						32	6
RMTSRD D≤32,L≤1000	36			17 20 25						36	
	40			20 25 30						40	
	50			25 30 35 40						50	8

When using with position indicators, the standard Q diameters are 8~20. ☞P.725

■Fine Pitch Right-hand Screw

Fine Pitch Right-hand Threads have finer pitches than the conventional type.

Part Number Type	D	1mm Increment L	1mm Increment T, S	Q	E 1mm Increment	D	Pitch P
(3) One End Stepped Type MTXRA MTXBRA	16	100~1000	2≤S≤Q,Ex7 2≤T≤Qx7 (When Q,E≤9, T,S are five or less times of Q,E.)	9 10 12	Q/2≤E≤Q−1	16	2
(7)One End Double Stepped Type MTXRC MTXBRC	20	150~1000		10 12 14 15		20	2

For Fine Pitch Right-hand Screw nuts, see P.718 When using with position indicators, the standard Q diameters are 8~20. ☞P.725

Price Reduction

CAD Data

Order Example

Part Number	L	S	Q	C	J
MTSRA16	456	S49	Q10		
MTSRB16	456	S10	Q12	C5	J0

Part Number	L	T	Q	S	E	X	C	J	B
MTSRC16	456	T20	Q12	S10	E9				
MTSRD16	456	T20	Q12	S10	E8		C5	J0	B10

Days to Ship

- Right-hand Screw · Left-hand Screw · Right-hand Screw w/Keyway: **8 Days** (Express A 8,00 EUR/piece) P.88
- A Express Charge of 21,60 EUR for 3 or more identical pieces.
- Fine Pitch Right-hand Thread: **10 Days**
- Raydent: **13 Days**

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

Volume discounts not available for MTXRA/C and MTXBRA/C

For orders larger than indicated quantity, please request a quotation.

Unit price for the product is found with price in the table multiplied by each table.
Price in the table x Multiplier = € Unit Price (Round off to one Cent)
(EX) MTSBRC20−480−T20~41,40EURx1.1=45,50 EUR

(1)(4) One End Stepped Right-hand/Left-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRA (Price in table)	8						
MTSBRA (Price in table x1.12)	10						
MTSLA (Price in table x1.02)	12						
MTSBLA (Price in table x1.12)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						
(Stainless Steel) MTSTRA MTSTLA	10						
	12						
	14						
	16						
	18						
	20						
MTSTRA	25						
	28						
	32						

Standard price of this product = the price in the table x Rate
Price of RMTSRA, RMTSLA = MTS_A + price in the table below (Round off to the one Cent.)

(2) One End Stepped w/Key Right-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRB (Price in table)	12						
MTSBRB (Price in table x1.1)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Standard price of this product = the price in the table x Rate
Price of RMTSRB is MTSRB + price in the table below (Round off to one Cent.)

(3) One End Stepped Fine Pitch Right-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
MTXRA	16					
	20					
MTXBRA	16					
	20					

(7) One End Double Stepped Fine Pitch Right-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
MTXRC	16					
	20					
MTXBRC	16					
	20					

(5)(8) One End Double Stepped Right-hand/Left-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRC (Price in table)	12						
MTSBRC (Price in table x1.1)	14						
MTSLC (Price in table)	16						
MTSBLC (Price in table x1.1)	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						
(Stainless Steel) MTSTRC MTSTLC	12						
	14						
	16						
	18						
	20						
MTSTRC	25						
	28						
	32						

The unit price for this product will be the prices shown in the table with multipliers applied.
Price of RMTSRC, RMTSLC is MTS_C + price in the table below (Round off to one Cent)

(6) One End Double Stepped w/Key Right-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRD (Price in table)	12						
MTSBR (Price in table x1.1)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Standard price of this product = the price in the table x Rate
Price of RMTSRD is MTSRD + price in the table below (Round off to one Cent)

LTBC Plated Products

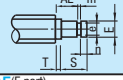
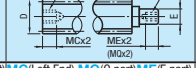
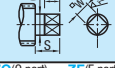
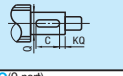
Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
RMTSRA/C (MTSRA/C price + Price in table)	8					
	10					
	12					
RMTSRB/D (MTSR/D price + Price in table)	14					
	16					
	18					
	20					
RMTSLA/C (MTSLA/C price + Price in table)	22					
	25					
	28					
	32					

For the LTBC plating products, add the price of non-treated products and LTBC plating price shown above.
(EX) RMTSRA16-456 ---→ (Price of MTSRA16-456: 27,30EUR)+32,60EUR=59,90 EUR

Alterations

Part Number - L - S - Q - C - J - (Mc, MQ...etc.)
MTSRB16 - 456 - S10 - Q12 - C5 - J0 - MC8

Only MC; MQ and ME are applicable to Right-hand Screw with Keyway. When flat machining, width across flats, square chamfering and keyway alterations are combined each other, their positions are random.

Alterations	Flat Machining	Retaining Ring Groove	Width Across Flats	Tapping	Male Thread	Square Chamfering	Keyway
					For bearing nuts 		
Code	FC(Q part) FE(E part)	AE(E part)	SC(Q part) SE(E part)	MC(Left End) MQ(Q part) ME(E part)	BQ(Q part)	ZQ(Q part) ZE(E part)	KQ(Q part)

Spec.

FC,FE,FW,FY=
0.5mm Increment

FC=Machining applied to Q part
FE=Machining on E
⊗FC not applicable to One end Stepped Type

Ordering Code
FC5-FW10-FY1

When Q (E)≤25 FY≤1.0
When Q (E)≥26 FY≤2.0

AE=0.1mm Increment
AE≤S+T-m-n Machining Limits
Ordering Code AE13.3
AE=Machining on E

E	e	Tolerance	m+0.14 0	n Machining Limits
7	4	+0.075 0	0.7	n≥1.2
8	5			
9	6		0.9	
10	9.6	0 -0.09	1.15	n≥1.5
12	11.5			
14	13.4	0 -0.11		
15	14.3			
16	15.2			
17	16.2			
20	19	0 -0.21	1.35	n≥2
25	23.9		1.65	
30	28.6			
35	33			
40	38	0 -0.25	1.9	

⊗Not applicable to One End Stepped Type

SC,SE,SW,SY=
1mm Increment
SC=Machining applied to Q part
SE=Applied on E
⊗FC not applicable to One end Stepped Type not applicable

Ordering Code
SC3-SW10-SY7
When Q(E)<15, then SW≥Q and E-2
When 15≤Q and E<25 SW≥Q,E-3
When 30≤Q and E SW≥Q,E-5
3≤SY≤20

MC: machined on the left end
MQ=Machining on Q
ME=Applied on E
Ordering Code MQ24

D · Q · E	MC, MQ, ME (Selection range)
5 · 6	3
7 · 8	3 · 4
9 · 10	3 · 4 · 5
11 · 12	3 · 4 · 5 · 6
13~15	3 · 4 · 5 · 6 · 8
16~24	3 · 4 · 5 · 6 · 8 · 10
25~30	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16
31~39	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16 · 20
40~50	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16 · 20 · 24 · 30

See below for Right-hand Screw with Keyway

Q · E	MQ (Selection Range)
9	3
10 · 11	3 · 4
12 · 13	3~5
14 · 15	3~6
16~18	3~8
19, 20	3~10
21~25	3~12
26~31	3~16
32~40	3~20

⊗E=3, 4 not applicable
⊗E≤8 is not applicable to Right-hand Screw with Keyway

BQ≤Mx3
BQ≥Pitchx3
BQ≤S,T-Pitchx3

Ordering Code
BQ20
BQ=Machining on Q

Q	MxPitch
6	M6x0.75
8	M8x1.0
10	M10x1.0
12	M12x1.0
14	M14x1.0
15	M15x1.0
17	M17x1.0
20	M20x1.0
25	M25x1.5
30	M30x1.5
35	M35x1.5
40	M40x1.5

⊗Not applicable when Q=7, 9, 16

WA=1mm Increment ZQ=Machining applied to Q ZE=Machining applied to E
Ordering Code ZQ15-W10-A10
Only tapping alteration is available on the same shaft. (See P.677 for machining conditions.) P.702
5≤A≤20
Specify ZQ=Q Specify ZE=E

ZQ=Q	W 1mm Increment
6, 7	5
8	6
9	7
10	8
12	9 10
14, 15	10 11 12
16	11 12 13
17	12 13 14
20	14 15 16
25	17~20
30	21~24
35	25~28
40	29~30

ZE=E	W 1mm Increment
6~10	5~8
11~14	8~10
15~19	10~14
20~25	14~20
26~30	19~24
31~35	22~28
36~40	26~30

(E/2)√2≤W ZE>W
May not be manufacturable due to the relation between E and W.
⊗Q2 not applicable to One End Double Stepped Type

Specify KQ and C in 1mm increments
KQ=Machining on Q

Ordering Code
KQ8-C10

C≤60
T-C-KQ≥2
KQ≥2
When KQ=0, there will be no keyway radius on the end.

Applicable Shaft Dia. Q	Keyway Dimension b1 Reference Dimension	b1 Tolerance (N9)	t1 Reference Dimension	t1 Tolerance	r1
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
12	4	0 -0.030	2.5		0.16 ~0.25
14~17	5		3		
20	6		3.5		
25, 30	8	0 -0.036	4	+0.2 0	0.25 ~0.40
35	10		5		
40	12	0 -0.043	5		

⊗Not applicable to One End Stepped Type

Price Adder	2,00	4,00	4,00	2,00	2,00	8,00	4,00

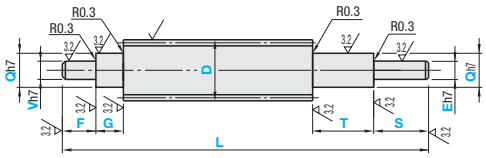
Lead Screws
-Both Ends Double Stepped-



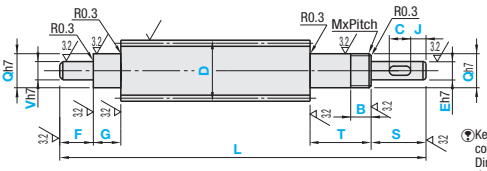
Type						Material	Surface Treatment
Right-hand Thread	With a keyway Right-hand Thread	Fine Pitch Right-hand Thread	Left-hand Screw	Right and Left-hand Screw	Precision Right and Left-hand Screw		
MTSRX	MTSRZ	MTXRX	MTSLX	MTSWX	MTSYX	1.1191/C45E	-
MTSBRX	MTSBRZ	MTXBRX	MTSBLX	MTSBWX	MTSBYX		Black Oxide
RMTSRX	RMTSRZ	-	RMTSLX	RMTSWX	-		Raydent
MTSTRX	-	-	MTSTLX	-	-	1.4305/X10CrNiS18-9	-

- Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

Right-hand Screw / Left-hand Screw / Fine Thread Right-hand Screw

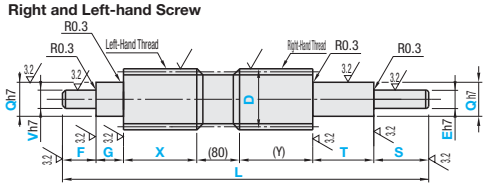


Right-hand Screw with Keyway



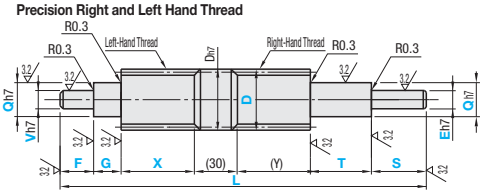
Keyway machining details conform to Shaft Keyway Dimensions shown on the right page.

Right and Left-hand Screw



Incomplete threaded portion 80mm are not useable.

Precision Right and Left Hand Thread



ØDh7 / 30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

Part Number Type	D	1mm Increment L	F · G · T · S	V · Q	E 1mm Increment	Left/Right Screw · Precision Left · Right Screw X 1mm Increment	D	Pitch P
(Right-hand Thread) MTSRX MTSBRX RMTSRX MTSTRX (Left-hand Screw) D≤32,L≤1000 (Stainless Steel)	12	80~1000	2≤F≤Vx7 2≤G≤Qx7 2≤S≤Ex7 2≤T≤Qx7 When Q,V,E≤9, F,G,T,S are five or less times of Q,V,E.	7 8 9	Q/2≤E≤Q−1	When D=12, 14 50≤X≤460<485>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤500-S-T-40<15> When D=16~50 50≤X≤560<585>-F-G (Y)=L-80<30>-F-G-S-T-X (Y)≤600-S-T-40<15> Dimensions in < > are for Precision Right and Left Hand Thread.	12	2
	14			8 9 10			14	3
	16	100~1200		9 10 12			16	
	18			9 10 12			18	4
	20			10 12 14 15			20	
(Left and Left Hand Screw) D≤32,L≤1000 (Stainless Steel) MTSLX MTSBLX RMTSLX MTSTLX	22	150~1200		10 12 14 15			22	5
	25			12 14 15 16 17			25	
	28			14 15 16 17 20			28	
(Right and Left Hand Screw) MTSWX MTSBWX RMTSWX D≤32,L≤1000 (Precision Right and Left Hand Screw)	32	200~1200		14 15 16 17 20 25			32	6
	36			17 20 25			36	
	40			20 25 30			40	
MTSYX MTSBYX	50			25 30 35 40			50	8

For Precision Right and Left Hand Screw, D dimension 14, 16, 20, 25, 28 and 32 are available. When using with position indicators, the standard Q diameters are 8~20. P.725
D dimension 22, 36, 40 and 50 are not applicable to Stainless Steel. D dimension 25, 28 and 32 are applicable to Right-hand Screw only.

■Right-hand Screw with Keyway

Part Number Type	D	1mm Increment L	F · G · T · S	V · Q	1mm Increment E	C	J	B	MxPitch	D	Pitch P
MTSRZ MTSBRZ RMTSRZ D≤32,L≤1000	12	80~1000	2≤F≤Vx7 2≤G≤Qx7 2≤T≤Qx7 2≤S≤Ex7 When Q, V, E≤9, F, G, T, and S will be 5x or less of Q, V, and E.	7 8 9	E≥6 Q/2≤E≤Q-2 When the pitch is 1.5 Q/2≤E≤Q-3	C≤60 S-C-J≥2	J≥2 J≥2 or J=0 When J=0, keyway R will be eliminated.	B=0 Or B≤Mx3 B≥Pitchx3 B≤T-Pitchx3	M8x1.0 M10x1.0 M12x1.0 M14x1.0 M15x1.0 M17x1.0 M20x1.0 M25x1.5 M30x1.5 M35x1.5 M40x1.5 ⊗Not applicable to 7, 9, 16	12	2
	14			8 9 10						14	3
	16	100~1200		9 10 12						16	
	18	150~1200		9 10 12						18	4
	20			10 12 14 15						20	
	22			10 12 14 15						22	5
	25			12 14 15 16 17						25	
	28			14 15 16 17 20						28	
	32	200~1200		14 15 16 17 20 25						32	6
	36			17 20 25						36	
	40			20 25 30						40	
	50			25 30 35 40						50	8

When B=0, no machining on male thread Q. When using with position indicators, the standard Q diameters are 8~20. P.725

■Fine Pitch Right-hand Screw

Fine Pitch Right-hand Threads have finer pitches than the conventional type.

Part Number Type	D	1mm Increment L	F · G · T · S	V · Q	E 1mm Increment	D	Pitch P
MTXRX MTXBRX	16	100~1000	2≤F≤Vx7 2≤G≤Qx7 2≤T≤Qx7 2≤S≤Ex7 When Q,V,E≤9, F,G,T,S are five or less times of Q,V,E.	9 10 12	Q/2≤E≤Q−1	16	2
	20	150~1000		10 12 14 15		20	2

For Both Ends Double Stepped, when F=0 V=0, no machining. Nuts for Fine Pitch Right-hand Screw P.718 When combining with the position indicators, Q and V standard dimensions will be 9~14. P.725

Order Example

Part Number	L	F	V	T	G	Q	S	E	C	J	B
MTSRX16	456	F37	V10	T47	G60	Q12	S49	E8			
MTSRZ20	583	F48	V12	T58	G70	Q15	S63	E10	C30	J0	B15

Part Number	L	F	V	T	G	Q	S	E	X
MTSWX20	582	F48	V12	T58	G70	Q15	S63	E10	X120

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Volume discounts not applicable to MTXRX · MTXBRX · MTSYX and MTSBYX.
Unit price for the product is found with price in the table multiplied by each table.
Price in the table x Multiplier = € Unit Price (Round off to the nearest ten yen.)
(Ex.) MTSBRX20-480-F48~5,820x1.1=6,402→6400 EUR

Days to Ship

- Right-hand Screw · Left-hand Screw · Right-hand Screw with Keyway · Right and Left-hand Screw · Precision Right and Left Hand Thread

8 Days — Express A — 8,00 EUR/ piece — P88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- Fine Pitch Right-hand Thread

10 Days

·Ø25 or Less

- Raydent

13 Days

Only applicable to MTSRX · MTSBRX · MTSTRX · MTSLX · MTSBLX and MTSTLX
For orders larger than indicated quantity, please request a quotation.

Right / Left Screw

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRX (Price in table)	12						
MTSBRX (Price in table x1.1)	14						
MTSLX (Price in table)	16						
MTSBLX (Price in table x1.1)	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

The unit price for this product will be the prices shown in the table with multipliers applied.
Price of RMTSRX and RMTSLX are MTS_X + price in the table below (Round off to the nearest ten Cent.)

Right and Left-hand Screw

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSWX (Price in table)	12						
MTSBWX (Price in table x1.1)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

The unit price for this product will be the prices shown in the table with multipliers applied.
Price of RMTSR and RMTSLX is MTSWX + Prices in the table below (Round off to the nearest ten Cent.)

Precision Right and Left Hand Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSYX (Price in table)	14						
MTSBYX (Price in table x1.1)	16						
(Round off to the nearest ten Cent.)	20						
	25						
	28						
	32						

Fine Pitch Right-hand Screw

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
MTXRX	16					
	20					
MTXBRX	16					
	20					

Right-hand Screw with Keyway

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSRZ (Price in table)	12						
MTSBRZ (Price in table x1.1)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Standard price of this product = the price in the table x Rate
Price for RMTSRZ is MTSRZ + Prices in chart below. (Round off to the nearest ten Cent.)

Right-hand Screw/Left-hand Screw, Stainless Steel

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSTRX MTSTLX	12						
	14						
	16						
	18						
	20						
MTSTRX	25						
	28						
	32						

LTBC Plated Products

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
RMTSRX (Price of MTSRX + Price in the Table)	12					
RMTSRZ (Price of MTSRZ + Price in the Table)	14					
	16					
	18					
	20					
RMTSLX (Price of MTSLX + Price in the Table)	22					
	25					
RMTSWX (Price of MTSWX + Price in the Table)	28					
	32					

Please add the above prices for Raydent.
(Ex.) RMTSRX16-456… (Price of MTSRX16-456: 51,70)+31,70=83,40 EUR

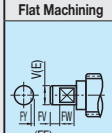
Only AC · SV · MV · ME and ZV are applicable to Right-hand Screw with Keyway

Alterations

Part Number - L - F - V - T - G - Q - S - E - C - J - B - (AC - SV - MV…etc.)
MTSRZ20 - 583 - F48 - V12 - T58 - G70 - Q15 - S63 - E10 - C30 - J0 - B15 - AC12.0

Alterations

Flat Machining

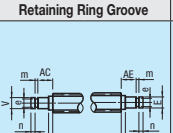


Code: FV (V part) FE (E part)

Spec.: FV,FE,FW,FY= 0.5mm Increment
FV=Machined on V area
FE=Machining on E
Applicable to either V or E.
Ordering Code FV5-FW10-FY1
When V (E)≤25 FY≤1.0
When V (E)≥26 FY≤2.0

Price Adder: 2,00

Retaining Ring Groove



Code: AC (V part) AE (E part)

Spec.: AC(AE)=0.1mm Increment
AC(AE)≤F(S)+G(T)−m−n Machining Limits
AC=Machining on V
AE=Machining on E
Ordering Code AC13.3

V, E	e	Tolerance	m+0.14 0	n	Machining Limits
7	4	+0.075 0	0.7	n≥1.2	
8	5				
9	6		0.9		
10	9.6	0 -0.09	1.15	n≥1.5	
12	11.5				
14	13.4	0 -0.11			
15	14.3				
16	15.2				
17	16.2				
20	19	0 -0.21	1.35		
25	23.9				
30	28.6		1.65		
35	33				
40	38	0 -0.25	1.9	n≥2	

Price Adder: 4,00

Width Across Flats

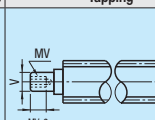


Code: SV (V part) SE (E part)

Spec.: SV,SE,SW,SY= 1mm Increment
SV=Machining on V part
SE=Applied on E part
Applicable to either V or E.
Ordering Code SV3-SW10-SY7
When V(E)<15 SW≥V(E)−2
When 15≤V(E)≤25 SW≥V(E)−3
When 30≤V(E) SW≥V(E)−5
3≤SY≤20

Price Adder: 4,00

Tapping



Code: MV (V part) ME (E part)

Spec.: MV=Machining on V part ME=Machining on E part
Ordering Code MV24

V - E	MV - ME (Selection Range)
5 · 6	3
7 · 8	3 · 4
9 · 10	3 · 4 · 5
11 · 12	3 · 4 · 5 · 6
13~15	3 · 4 · 5 · 6 · 8
16~18	3 · 4 · 5 · 6 · 8 · 10
19~24	3 · 4 · 5 · 6 · 8 · 10 · 12
25~30	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16
31~39	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16 · 20
40	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16 · 20 · 24 · 30

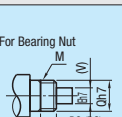
See the table below for Right-hand Screw with Keyway ME

E	ME (Selection Range)	E	ME (Selection Range)
9	3	19 · 20	3~10
10 · 11	3, 4	21~25	3~12
12 · 13	3~5	26~31	3~16
14 · 15	3~6	32~39	3~20
16~18	3~8		

⊗E=4 not applicable
⊗E≤8 not applicable for Right-hand Screw w/Keyway

Price Adder: 2,00

Male Thread



Code: BC (V side) BQ (E side)

Spec.: BC,BQ≤Mx3
BC,BQ≥Pitchx3
BC,BQ≤G,T−Pitchx3
Ordering Code BQ20
BC=Machining on Q part of V side
BQ=Machining on Q part of E side

Q	MxPitch
8	M8x1.0
10	M10x1.0
12	M12x1.0
14	M14x1.0
15	M15x1.0
17	M17x1.0
20	M20x1.0
25	M25x1.5
30	M30x1.5
35	M35x1.5
40	M40x1.5

⊗Not applicable when Q=7, 9, 16

Price Adder: 2,00

Square Chamfering



Code: ZV (V part) ZE (E part)

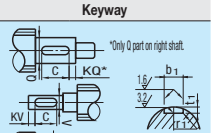
Spec.: WA=1mm Increment
ZV=Machining on V part ZE=Applied on E part
Applies to only one of either V or E
Ordering Code ZV12-W10-A8
Can be combined with Female Thread Hole machining only on a same shaft. For machining conditions, see: P702
0≤A≤20 ZV,ZE>W
ZV=V, ZE=E Specified

ZV=V / ZE=E	W 1mm Increment
6~10	5~8
11~14	8~10
15~19	10~14
20~25	14~20
26~30	19~24
31~35	22~28
36~40	26~30

(V(E)/2)√2≤W
May not be manufacturable depending on V (E), and W relationship.

Price Adder: 8,00

Keyway



Code: KQ (Q part) KV (V part) KE (E part)

Spec.: KQ,KV,KE,C=1mm Increment
KQ=Machining on Q
KV=Machining on V
KE=Machining on E
Ordering Code KQ8-C10
One of Q, V, or R
C≤60
T-C-KQ≥2
S(F)-C-KE(KV)≥2
KQ(KE,KV)≥2
When KQ, KE, KV=0, the thread end's Keyway R is straight.

Applicable Shaft Dia. Q · V · E	Keyway Dimension b1 Reference Dimension	b1 Tolerance (N9)	t1 Reference Dimension	t1 Tolerance	r1
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11, 12	4	0 -0.030	2.5		0.16 ~0.25
13~17	5		3.0		
18~22	6		3.5		
23~30	8	0 -0.036	4.0	+0.2 0	0.25 ~0.40
31~38	10		5.0		
39, 40	12	0 -0.043	5.0		

Price Adder: 4,00

When width across flats, square chamfering and Keyway alterations are combined each other, their positions are random.

Lead Screws
-Straight-

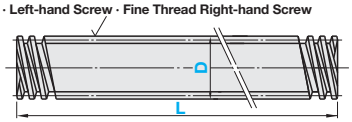


RoHS

Type					M Material	S Surface Treatment
Right-hand Thread	Fine Pitch Right-hand Thread	Left-hand Screw	Right and Left-hand Screw	Precision Right and Left-hand Screw		
MTSR	MTXR	MTSL	MTSW	MTSY	1.1191/C45E	-
MTSBR	MTXBR	MTSBL	MTSBW	MTSBY		Black Oxide
RMTSR	-	RMTSL	RMTSW	-		Raydent
MTSRL (Long Size)	-	MTSLL (Long Size)	-	-		-
MTSTR	-	MTSTL	-	-	1.4305	-

- Single Pitch Error --- ±0.02mm, Accumulated Pitch Error --- ±0.15/300mm

Right-hand Screw · Left-hand Screw · Fine Thread Right-hand Screw

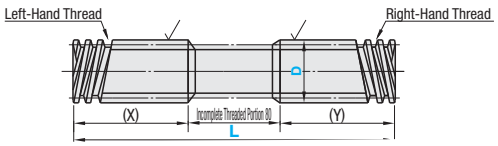


L Dimension Tolerance of MTSRL - MTSLL: 0~+5

6.3 3.2

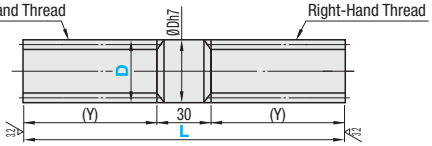
X=Y for Right and Left Hand Threads and Precision Right and Left Hand Threads.

Right and Left-hand Screw



Incomplete threaded portion 80mm are not useable.

Precision Right and Left Hand Thread



ØDh7 - 30mm part includes incomplete-thread portion by about 1.5 pitches at both ends (in total about 3 pitches).

■Right-hand Screw · Left-hand Screw

Part Number Type		D	MTS_ · MTST_ · MTSB_ · RMTS_ L 1mm Increment	MTSRL · MTSLL L 100mm Increment	D	Pitch P
(Right-hand Thread) MTSR MTSBR RMTSR MTSRL MTSTR (Left-hand Screw) MTSL MTSBL RMTSL MTSLL MTSTL	D≤32,L≤1000 (Long Size) (Stainless Steel)	*8	50~500	-	8	1.5
		10	80~1000	-	10	2
		12			12	
		14			14	3
		16	100~1200	800~2000	16	
		18	150~1200	800~2000	18	4
		20			20	
		22			22	5
		25			25	
		28			28	
	D≤32,L≤1000 (Long Size) (Stainless Steel)	32	200~1200	800~2000	32	6
		36			36	
		40			40	
(D8 available for MTSR and MTSBR and RMTSR only)		50		-	50	8

D dimension 22, 36, 40 and 50 are not applicable to Stainless Steel. D dimension 25, 28 and 32 are applicable to Right-hand Screw only.
The both ends of MTSRL and MTSLL have not been processed after they were cut with a grinding stone. For use, additional machining (chamfering, processing of the shaft ends, etc.) is required.

■Left/Right Screw · Precision Left/Right Screw

Part Number Type	D	L 1mm Increment	(X)(Y)	D	Pitch P
(Right and Left Hand Screw) MTSW MTSBW RMTSW D≤32,L≤1000 (Precision Right and Left Hand Screw) MTSY MTSBY	10	80~1000	When D=10~14 50≤(X)≤460(485) When D=16~50 50≤(X)≤560(585) (X)=(Y) (X)=(L-80<30>)/2 (Y)=(L-80<30>)/2 Dimensions in < > are for Precision Right and Left Hand Thread.	10	2
	12			12	
	*14			14	3
	*16	100~1200		16	
	18	150~1200		18	4
	*20			20	
	22			22	5
	*25			25	
	*28			28	
	*32	200~1200		32	6
	36			36	
	40			40	
(Precision Right and Left Hand Screws are available only in * marked sizes.)	50			50	8

■Fine Pitch Right-hand Screw

Fine Pitch Right-hand Threads have finer pitches than the conventional type.

Part Number Type	D	L 1mm Increment	D	Pitch P
MTXR (Right-hand Thread)	16	100~1000	16	2
MTXBR (Right-hand Thread)	20	150~1000	20	2

For Fine Pitch Right-hand Screw nuts, please see Nut listing pages. ☞P.718

Order Example

Part Number	-	L
MTSL25	-	480
MTSRL32	-	1800

Days to Ship

·Right-hand Screw·Left-hand Screw·Right and Left-hand Screw·Precision Right and Left Hand Screw

8 Days | Express A | 8,00 EUR/ piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

·MTSRL · MTSLL **8 Days**

·Fine Pitch Right-hand Screw **10 Days**

·LTBC Plated Products **13 Days**

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

Volume Discount is not applicable to MTXR, MTXBR, MTSY and MTSBY.

For orders larger than indicated quantity, please request a quotation.

Unit price for the product is found with price in the table multiplied by each table. Price in the table x Multiplier = € Unit Price (Round off to the nearest ten Cent.)
(EX) MTSBR20-480 27,70x1.1=30,47→30,50 EUR

Right · Left Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSR (Price in table) MTSBR (Price in table x1.1)	8						
	10						
	12						
MTSL (Price in table) MTSBL (Price in table x1.1)	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Standard price of this product = the price in the table x Rate
Prices of RMTSR and RMTSL are MTS_ + Prices in the table below
(Round off to the nearest ten Cent.)

Right and Left-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
	10						
MTSW (Price in table) MTSBW (Price in table x1.1)	12						
	14						
	16						
	18						
	20						
	22						
	25						
	28						
	32						
	36						
	40						
	50						

Standard price of this product = the price in the table x Rate
Prices of RMTSW is MTSW + Prices in the table below
(Round off to the nearest ten Cent.)

Precision Right and Left Hand Thread

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSY (Price in table) MTSBY (Price in table x1.1)	14						
	16						
	20						
	25						
	28						
	32						

(Round off to the nearest ten Cent.)

Right-hand Screw Long · Left-hand Screw

Part Number / Type	D	€ Unit Price L800 / 900	L1000 / 1100	L1200 / 1300	L1400 / 1500	L1600 / 1700	L1800 / 1900	L2000
MTSRL MTSLL	16							
	18							
	20							
	22							
	25							
	28							
	32							
	36							
	40							

Right-hand Screw/Left-hand Screw · Stainless Steel

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
MTSTR MTSTL	10						
	12						
	14						
	16						
	18						
	20						
MTSTR	25						
	28						
	32						

Fine Pitch Right-hand Screw

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
MTXR	16					
	20					
MTXBR	16					
	20					

LTBC Plated Products

Part Number / Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
RMTSR (Price of MTSR + Price in the Table) RMTSL (Price of MTSL + Price in the Table) RMTSW (Price of MTSW + Price in the Table)	8					
	10					
	12					
	14					
	16					
	18					
	20					
	22					
	25					
	28					
	32					

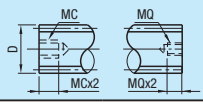
For LTBC plated products, add the plating prices to the non-plated product prices above.

Ex. RMTSR25-480→(Price of MTSR25-480: 36,80)+55,00=91,80 EUR

Alterations

Part Number	-	L	-	(MC, MQ)
MTSR20	-	456	-	MC8

Tapping



Code: MC(Left End) MQ(Right End)

Spec.

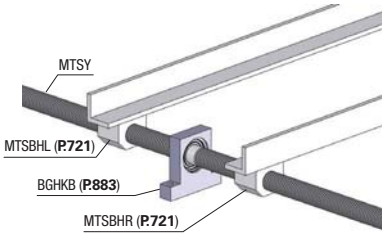
Ordering Code MC24
MC: machined on the left end,
MQ: machined on the right end

D	MC - MQ Selection Range
8	3 · 4
10	3 · 4 · 5
12 · 14	3 · 4 · 5 · 6
16	3 · 4 · 5 · 6 · 8
18	3 · 4 · 5 · 6 · 8 · 10
20 · 22	3 · 4 · 5 · 6 · 8 · 10 · 12
25 · 28	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16
32	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16 · 20
36 · 40 · 50	3 · 4 · 5 · 6 · 8 · 10 · 12 · 16 · 20 · 24

Not applicable to MTSRL, MTSLL

Price Adder: 2,00

Example



Nuts for Lead Screws

-Flanged · Compact Flanged · w/Pilot - Female Thread Holes - Slotted Holes-

CAD Data

Selectable from Round Flange, 2-hole Compact Flange, 4-hole Compact Flange, or 4-hole Square Flange.

■Flanged

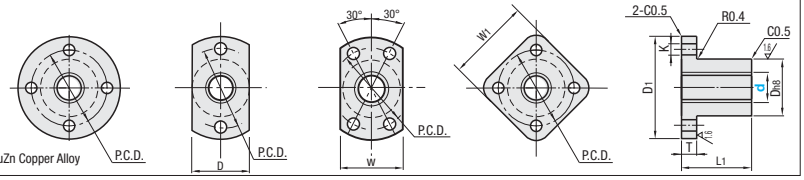


Round Flanged
MTSFR(Right-hand Thread)
MTSFL(Left-hand Screw)

Compact Flange, 2-Hole
MTSNR(Right-hand Thread)
MTSNL(Left-hand Screw)

Compact Flange, 4-Hole
MTSGR(Right-hand Thread)
MTSGL(Left-hand Screw)

Square Flange
MTSCR(Right-hand Thread)



Material: CuZn Copper Alloy

Part Number Type	d	Pitch P	D	L1	D1	T	P.C.D.	K	W	W1	Allowable Dynamic Thrust (kN)	Mass (g) MTSFR MTSFL	MTSNR MTSNL	MTSGR MTSGL	MTSCR	€ Unit Price MTSFR MTSFL	MTSNR MTSNL	MTSGR MTSGL	MTSCR
Round Flanged	(8)	1.5	15	20	30	5	22	4.3	-	-	1.47	41	33	-	-				
MTSFR	10	2	20	24	36		26		22	-	2.55	80	66	67	-				
MTSFL	12		22	30	44		31	5.4	24	-	3.92	120	95	96	-				
Compact Flange, 2-Hole	*14	3								33	4.90	110	85	86	91				
MTSNR	*16		28	35	51	6	38	6.6	30	38	6.67	200	169	172	169				
MTSNL	18	4	32	40	56		42		34	-	8.72	260	219	220	-				
Compact Flange - 4-Hole	*20									42	9.81	260	219	220	224				
MTSGR	*22	5	36	50	61	7	47		40	47	12.36	410	357	364	366				
MTSGL	*25										14.22	350	290	297	306				
Square Flange	*28		44	56	76	8	58	9	48	58	17.95	630	538	546	548				
MTSCR	*32	6									21.08	580	490	498	498				
(*Only * marked sizes are available for Square Flange Type.)	36		52	60	84		66		56	-	25.78	820	719	728	-				
(d8 is applicable to MTSFR and MTSNR only.)	40		58	70	98	10	76	11	62	-	33.83	1250	1034	1044	-				
	50	8	68	80	109		85		72	-	40.31	1631	1350	1362	-				

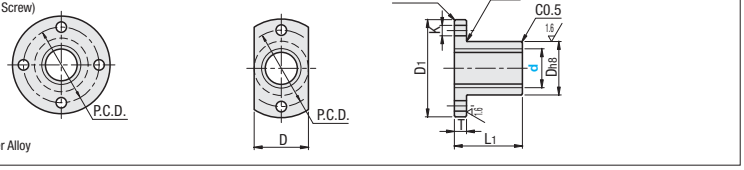
Compact in both the length and diameter. Short mounting hole pitch contributes to space savings

■Compact, Flanged



Compact, Round Flanged
MTSPFR(Right-hand Thread)
MTSPFL(Left-hand Screw)

Compact, Compact Flange, 2-Hole
MTSPNR(Right-hand Thread)



Material: CuZn Copper Alloy

Part Number Type	d	Pitch P	D	L1	D1	T	P.C.D.	K	Allowable Dynamic Thrust (kN) MTSPFR(L) MTSPNR	Mass (g) MTSPFR MTSPFL	MTSPNR	€ Unit Price MTSPFR MTSPFL	MTSPNR
Round Flanged	*10	2	16	19	32	4	24	3.3	2.02	39	-		
MTSPFR	*12		18	24	36	5	27	4.3	3.14	59	-		
MTSPFL	14	3	20		38		29		3.92	73	57		
Compact Flange, 2-Hole	16		22	28	40		31		5.34	89	73		
MTSPNR	20	4	26	32	44		35		7.85	112	94		
(*Only * marked sizes are available for MTSPFR only.)	22	5	28	40	50	6	39	5.4	9.89	174	143		
	25		31		53		42		11.38	174	143		
	28		34	45	58	7	46	6.6	14.42	213	170		
	32	6	38		62		50		16.94	272	227		

The pilotted type and tapped type are effective when used vertically on plates. The slotted hole type can be used to perform fine adjustments during installation.

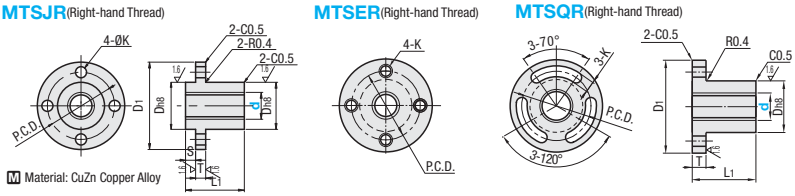
■With Pilot, Female Thread Hole, Slotted Hole



Round Flange, with Pilot
MTSJR(Right-hand Thread)

Round Flange, Female Thread Hole
MTSER(Right-hand Thread)

Round Flange, Slotted Hole
MTSQR(Right-hand Thread)



Material: CuZn Copper Alloy

Part Number Type	d	Pitch P	D	L1	D1 MTSJR	D1 MTSER MTSQR	T	S	P.C.D. MTSJR	P.C.D. MTSER MTSQR	K MTSJR MTSQR	K MTSER	Allowable Dynamic Force (kN)	Mass (g) MTSJR	MTSER	MTSQR	€ Unit Price MTSJR	MTSER	MTSQR
With Pilot	*14	3	22	30	44	44	5	5	33	31	5.4	M4	4.90	110	112	98			
MTSJR	*16		28	35	52	51	6	6	40	38	6.6	M5	6.67	204	204	178			
(Only * marked sizes are available.)	*20	4	32	40	56	56			44	42			9.81	260	264	236			
Female Thread Hole	*22	5	36	50	60	61	7		48	47			12.36	404	414	378			
MTSER	*25												14.22	344	354	318			
Slotted Hole	28	6	44	56	-	76	8	-	-	58	9	M6	17.95	-	645	570			
MTSQR	32												21.08	-	595	520			

Order Example
Part Number
MTSGR16
MTSPFL25

Days to Ship
- Flanged Type: 6 Days P.87
- Other than Flanged Type: 8 Days, Express A, 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent) P.87

Quantity	1~9	10~15	16~20	21~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Nuts for Lead Screws, Compliant with RoHS

-Flanged / Fine Pitch / Anti-backlash-

CAD Data

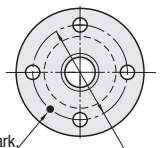
RoHS compliant Flanged Lead Screw Nut. Delivered in the shortest lead-time.

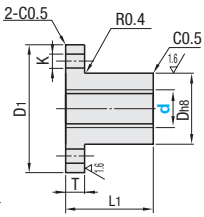
■Flanged



RoHS

MTRFR(Right-hand Thread)
MTXFR(Fine Pitch Right-Hand Thread)





MTRFR is a RoHS-compliant version of MTSFR.

Material: Brass

Part Number Type	d	Pitch P	D	L1	D1	T	P.C.D.	K	Allowable Dynamic Thrust (kN)	Mass (g)	€ Unit Price Qty. 1~4
MTRFR	10	2	20	24	36	5	26	4.3	2.55	80	
	12		22	30	44		31	5.4	3.92	120	
	14	3							4.90	110	
	16		28	35	51	6	38		6.67	200	
	20	4	32	40	56		42	6.6	9.81	260	
	25	5	36	50	61	7	47		14.22	350	
	28		44	56	76	8	58	9	17.95	630	
	32	6							21.08	580	
MTXFR	16	2	28	35	51	6	38	6.6	6.78	190	
	20		32	40	56		42		10.1	250	

For Fine Pitch Right-hand Screw shafts, please see MTX_ _ **(P.707, 711~715)**

For orders larger than indicated quantity, please request a quotation.

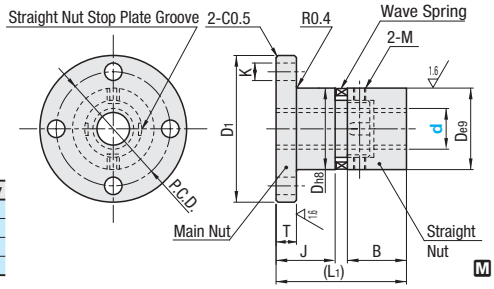
■Anti-backlash Type



RoHS

MTBLR(Right-hand Thread)

Main nut has 4 marks for confirmation of groove positioning.



Material: Brass

■Components

Part Name	Material	Quantity
Main Nut	Brass	1
Straight Nut	Brass	1
Wave Spring	JIS SWRH72B ~C43	1
Set Screw	1.7220/34CrMo4	2

Part Number Type	d	Pitch P	D	D1	T	(L1)	J	B	P.C.D.	K	M	Allowable Dynamic Thrust (kN)	Mass (g)	€ Unit Price Qty. 1~4
Round Flanged MTBLR	10	2	20	36	5	34	13	15	26	4.3	3	2.60	100	
	12		22	44		36.5	16.5	16	31	5.4		3.39	130	
	16	3	28	51	6	45	21	20	38	6.6	4	6.29	230	
	20	4	32	56		52	24	25	42			9.32	310	

For orders larger than indicated quantity, please request a quotation.

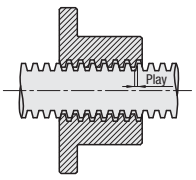
Order Example **Part Number** MTBLR20

Days to Ship **6 Days** P.87

-MTXFR **10 Days**

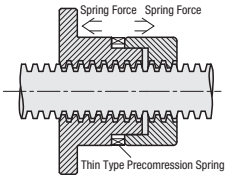
■Features of Anti-Backlash Type

Regular Type



Regular type has axial play of shaft and nut, and this causes backlash on reverse driving direction.

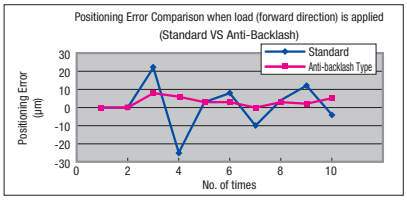
Anti-Backlash Type



Anti-Backlash Type can make a play between shaft and nut free by spring force of thin type pre-compression spring installed between main nut and accessory nut. Even if there is abrasion, spring force controls backlash.

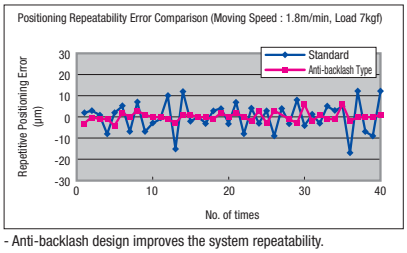
(Notes)The effects will vary based on applied conditions (Load and Direction).

(1) Positioning Error Comparison(Reference Value)



·Controls the deterioration in precision of positioning caused by Moment of Inertia during shut down of motion and driving fluctuation effect.

(2) Positioning Repeatability Error Comparison (Reference Value)



- Anti-backlash design improves the system repeatability.

Test Conditions: Sample Nut: MTBLR16 Axis: MTSRG16-270
Travel Distance: 75mm

■Installation of Anti-backlash Type

(1) Remove the sticker that is temporarily fixing the main and accessory nuts.
In this condition, the main and accessory nuts are fixed by 2 pieces of set screws.
(2) While the set screw is fixed, it is turned to screw shaft of lead screw as it is inserted.
(3) After insertion of accessory nut, set screw is rotated approximately 45° to 90° to loosen.
The tightening of main and accessory nuts is released and activates spring effectiveness.
(Caution)The mounted set screw must not protrude out from external diameter of accessory nut.
In order to prevent dropout of set screw due to vibration and the like, insert up to accessory nut part of housing.

Nuts for Lead Screws

-Oil-free Flanged / Straight Type-

Price Revision

: New Price

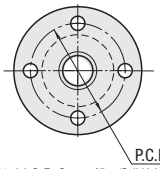
CAD Data

Oil free type reduces the amount and number of times of applying grease in comparison to the standard type. Initial greasing is recommended for effective use.

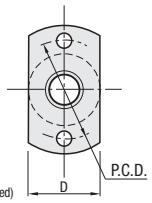
Oil Free Flanged



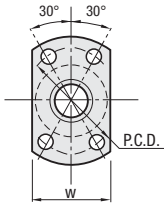
Round Flanged
MTSMR(Right-hand Thread)
MTSML(Left-hand Screw)

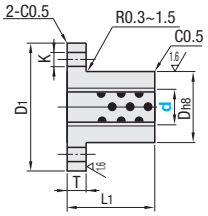


Compact Flange, 2-Hole
MTSMNR(Right-hand Thread)
MTSMNL(Left-hand Screw)



Compact Flange, 4-Hole
MTSMGR(Right-hand Thread)
MTSMGL(Left-hand Screw)





Material: CuZn Copper Alloy (Solid lubricant embedded)

Part Number Type	d	Pitch P	D	L1	D1	T	P.C.D.	K	W	Allowable Dynamic Thrust (kN)	Mass (g) MTSMR MTSML	Mass (g) MTSMNR MTSMNL	Mass (g) MTSMGR MTSMGL	€ Unit Price MTSMR MTSML	€ Unit Price MTSMNR MTSMNL	€ Unit Price MTSMGR MTSMGL
Round Flanged MTSMR(Right-hand Thread) MTSML(Left-hand Screw)	10	2	20	24	36	5	26	4.3	22	2.55	80	66	67			
	12		22	30	44		31	5.4	24	3.92	120	95	95			
	14	3								4.90	110	85	86			
Compact Flange, 2-Hole MTSMNR(Right-hand Thread) MTSMNL(Left-hand Screw)	16		28	35	51	6	38	6.6	30	6.67	200	169	172			
	20	4	32	40	56		42		34	9.81	260	219	220			
	22	5	36	50	61	7	47		40	12.36	410	357	364			
Compact Flange, 4-Hole MTSMGR(Right-hand Thread) MTSMGL(Left-hand Screw)	25									14.22	350	290	297			
	*28		44	56	76	8	58	9	-	17.95	630	-	-			
	*32	6							-	21.08	580	-	-			
	*36		52	60	84		66		-	25.78	820	-	-			
(*) marked sizes are for MTSMR only.)	*40		58	70	98	10	76	11	-	33.83	1250	-	-			

Order Example — Part Number: MTSMNL16

Days to Ship — 6 Days P. 87

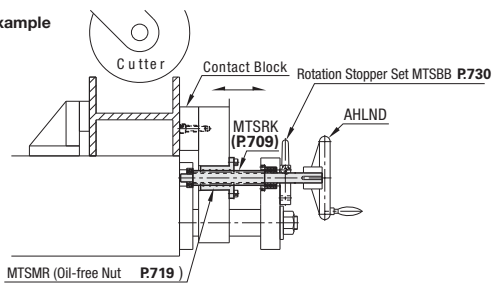
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~15	16~20	21~29
Rate	€ Unit Price	5%	10%	18%

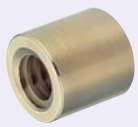
For orders larger than indicated quantity, please request a quotation.

Example

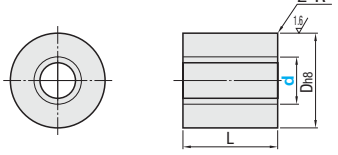


Requires to be mounted to a nut, and a rotation preventing measure is needed.

Straight



Straight
MTSSR(Right-hand Thread)
MTSSL(Left-hand Screw)



6.3 (1.6)

*d8:R0.5
d10~25:R1.0
d28~50:R1.5

Material: CC491K/CuSn5Zn5

Part Number Type	d	Pitch P	D	L	Allowable Dynamic Thrust (kN)	Mass (g) MTSSR MTSSL	€ Unit Price MTSSR	€ Unit Price MTSSL
Straight MTSSR MTSSL (d8 applicable to MTSSR only)	(8)	1.5	15	20	1.47	22		
	10	2	20		2.06	40		
	12		22	22	2.84	50		
	14	3			3.63	50		
	16		28	26	4.90	100		
	18	4	32	31	6.86	160		
	20				7.65	150		
	22	5	36	40	9.90	240		
	25				11.38	210		
	28		44	45	14.42	390		
	32	6			17.06	320		
	36		52	49	21.18	530		
	40		58	57	27.46	720		
	50	8	68	67	40.11	1126		

Order Example — Part Number: MTSSR16

Days to Ship — 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~20	21~29
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Nuts for Lead Screws
-High Strength Resin Type / Resin Type-

Price Reduction 30% Max.

CAD Data

The resin nuts have good mechanical properties and requires no lubrication. Can be used in clean greaseless applications by combining with stainless steel lead screw shafts.

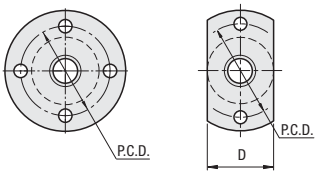
■High Strength Flanged Resin Type



RoHS

Round Flanged **MTSRR**(Right-hand Thread)

Compact Flanged **MTSRN**(Right-hand Thread)



Material: Tribological PPS Rein (PTFE+GF30%)

Higher allowable force than the conventional resin types.

Operation Temperature: −45°C~200°C

Part Number Type	d	Pitch P	D	L1	D1	T	P.C.D.	K	Allowable Dynamic Force (kN) Force (n)	Mass (g) MTSRR	Mass (g) MTSRN	€ Unit Price MTSRR	€ Unit Price MTSRN
Round Flanged MTSRR (Right-hand Thread)	10	2	20	24	36	5	26	4.3	278	19	16		
	12		22	30	44		31	5.4	428	30	24		
	14	3							536	27	21		
Compact Flanged MTSRN (Right-hand Thread)	16		28	35	51	6	38	6.6	686	46	39		
	18	4	32	40	56		42		954	64	54		
	20								1071	61	51		

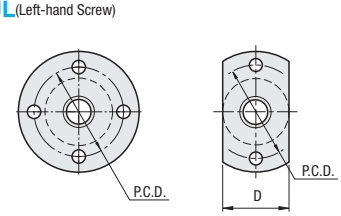
■Resin

RoHS



Round Flanged **MTSFJR**(Right-hand Thread) **MTSFJL**(Left-hand Screw)

Compact Flanged **MTSNJR**(Right-hand Thread)



Material: Polyacetal

Part Number Type	d	Pitch P	D	L1	D1	T	P.C.D.	K	Allowable Dynamic Thrust (N) MTSFJ_ MTSNJR	Mass (g) MTSFJR MTSFJL	Mass (g) MTSNJR	€ Unit Price MTSFJR MTSFJL	€ Unit Price MTSNJR
Round Flanged MTSFJR (Right-hand Thread) MTSFJL (Left-hand Screw) (* marked sizes are for MTSFJR only.)	10	2	20	24	36	5	26	4.3	255	16	13		
	12		22	30	44		31	5.4	392	25	20		
	14	3							490	23	18		
	16		28	35	51	6	38	6.6	628	39	33		
	18	4	32	40	56		42		873	54	45		
	20								980	51	43		
Compact Flanged MTSNJR (Right-hand Thread)	*25	5	36	50	61	7	47	6.6	1412	69	-		
	*28		44	56	76	8	58	9	1765	124	-		
	*32	6							2050	112	-		

Order Example Part Number: MTSRR20

Days to Ship 6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~15	16~20	21~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Material Properties

(Listed values are not guaranteed values but reference values.)

Material / Characteristics		Test Method (ASTM)	Unit	Resin with Sliding Property (PTFE+GF30%) Values	Polyacetal Values
Specific Gravity		D792	-	1.68	1.41
Water Absorption Ratio (At 23°C in water x 24h)		D570	%	0.02	0.22
Combustibility		UL94	-	V-0	HB
Mechanical Properties	Tensile Strength	D638	MPa	135	61
	Elongation	D638	%	2.9	40
	Bending Strength	D790	MPa	180	89
	Flexural Modulus	D790	GPa	10	2.59
	Shear Load Strength	D732	MPa	60	55
	Izot Impact Strength	D256	J/m	130	74
Chemical Resistance	Oil	-		Excellent	Good
	Acid	-		Excellent	Acceptable-Poor
	Alkali	-		Excellent	Good
	Organic Solvent	-		Excellent	Good

Block Nuts for Lead Screws

-Tall Block / Wide Block / Oil-free Type-

Price Reduction

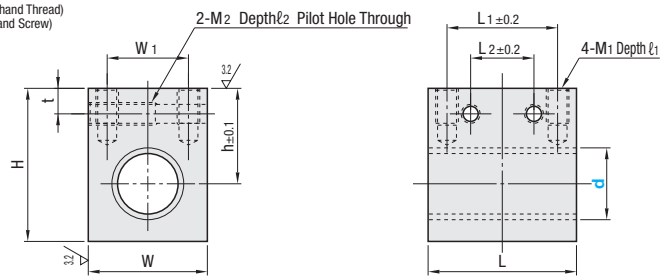
CAD Data

Can be used without a nut bracket.

■Tall Block



MTSBNR(Right-hand Thread)
MTSBNL(Left-hand Screw)



Material: CuZn Copper Alloy

Part Number Type	d	Pitch P	h	W	H	L	L1	L2	W1	M1	ℓ1	M2	ℓ2	t	Allowable Dynamic Thrust (kN)	Mass (g)	€ Unit Price MTSBNR	€ Unit Price MTSBNL
MTSBNR (Right-hand Thread) MTSBNL (Left-hand Screw)	10	2	20	20	30	24	16	-	12	M4	8	-	-	6	2.55	100		
	12		23	22	34	30	21	9	13	M5	10	M5	15		3.92	150		
	14	3													4.90	140		
	16		27	28	41	35	25	11	18	M6	12	M6	18	7	6.67	260		
	18	4	29	32	45	40	30	16	22						8.72	380		
	20														9.81	360		
	22	5	30	36	48	50	40	20	26						12.36	580		
	25														14.22	540		
	28		38	44	60	62	50	25	32	M8	16	M8	22	8	20.05	1050		
	32	6													22.81	970		

Order Example: Part Number — MTSBNR28

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~15	16~20	21~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

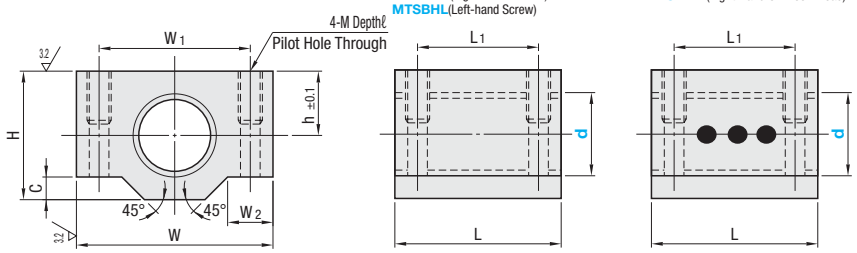
Days to Ship: 6 Days P.87

■Wide Block
■Oil Free



MTSBHR(Right-hand Thread)
MTSBHL(Left-hand Screw)

MTSMHR(Right-Hand Oil Free Thread)



Material: CuZn Copper Alloy (Solid lubricant embedded for MTSMHR)

Part Number Type	d	Pitch P	h	W	H	L	L1	W1	W2	C	M	ℓ	Allowable Dynamic Thrust (kN)	Mass (g)	€ Unit Price MTSBHR · MTSBHL	€ Unit Price MTSMHR
MTSBHR (Right-hand Thread) MTSBHL (Left-hand Screw) MTSMHR (Right-Hand Oil Free Thread) Only * marked sizes are available for MTSMHR.	*10	2	10	30	20	24	16	20	8	4	M4	8	2.55	87		
	*12	2	11	38	22	30	20	26	10	5	M5	10	3.92	147		
	*14	3	11	38	22	30	20	26	10	5	M5	10	4.90	140		
	*16	3	14	44	28	35	24	32	10	5	M5	10	6.67	267		
	18	4	16	48	32	40	28	36	11	6	M6	12	8.72	375		
	*20	4	16	48	32	40	28	36	11	6	M6	12	9.81	357		
	22	5	20	62	38	50	34	46	14	10	M8	16	12.36	670		
	*25	5	20	62	38	50	34	46	14	10	M8	16	14.22	629		
	28	5	25	68	47	56	40	52	14	10	M8	16	17.95	1041		
	*32	6	25	68	47	56	40	52	14	10	M8	16	21.08	970		

Order Example: Part Number — MTSMHR20

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~15	16~20	21~29
Rate	€ Unit Price	5%	10%	18%

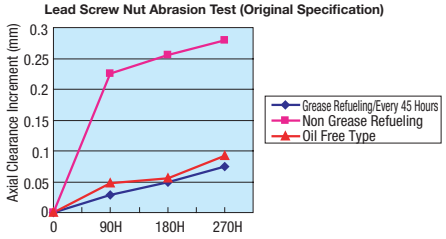
For orders larger than indicated quantity, please request a quotation.

■Features of Oil Free Nut for Lead Screws

As can be concluded by the test result shown to the right that MISUMI Oil-free nuts can achieve performance equivalent of once per 45hrs. lubrication cycles.

After initial greasing, this realizes oil-free operation.
It presents high performance especially under low-speed operation.

Lead Screw Nut Abrasion Test (Original Specification)



Test Conditions: Sample screw shaft: MTSRW10-270, Nut: MTSFR10/MTSMR10 (Oil-free Type)
Applied Load: 220N, Shaft Speed: 1500rpm

Brackets for Lead Screws/Spacers for Wide Block

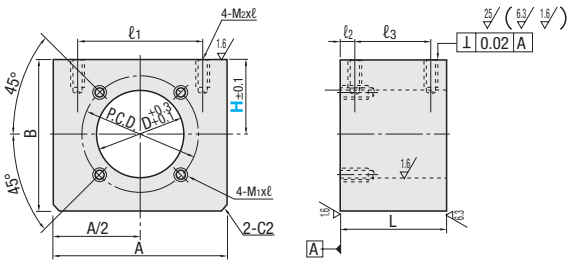
CAD Data

■Brackets for Lead Screws



RoHS

Type	M Material	S Surface Treatment
DNBB	1.1191/C45E	Black Oxide
DNBM		Electroless Nickel Plating
DNBA	EN AW-5052/ AlMg2,5	Clear Anodize



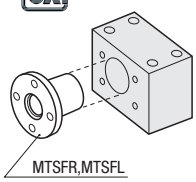
Part Number Type	No.	H	A	B	P.C.D.	M1xℓ	D	ℓ1	L	ℓ2	ℓ3	M2xℓ	Applicable Nuts MTS_R, MTSFL	€ Unit Price DNBB	DNBM	DNBA
DNBB DNBM DNBA	264	20 25 30 40	40	H+20	26	M4x7	20	30	24	6	12	M4x8	10			
	315	23 25 30 40	50	H+23	31	M5x7	22	35	30	8	14	M5x10	12, 14			
	386	27 30 35 50	60	H+27	38	M6x10	28	45	34		18	M6x12	16			
	426	29 30 35 40 50	65	H+29	42		32	50	39		23		18, 20			
	476	32 35 40 50	70	H+32	47		36	50	46		30		22, 25			
	588	40 45 50 60	80	H+40	58	M8x12	44	60	48		32	M8x16	28, 32			
	668	43 45 50 60	86	H+43	66		52	65	52		36		36			
	7610	50 55 60 70	100	H+50	76	M10x14	58	75	60	10	40	M10x20	40			
	8510	58 60 70	116	H+58	85		68	85	70		50		50			

Order Example: Part Number DNBB315 - H 30

Alterations: Part Number DNBB264 - 25 - H (HC) HC22.5

10 Days

Example



Days to Ship: 8 Days — Express A 5,00 EUR/piece ☞P.88

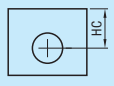
Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Ⓟ Round down to one Cent) P.87

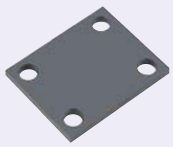
Quantity	1~9	10~12	13, 14
Rate	€ Unit Price	5%	10%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Alteration	Code	Spec.	Price Adder
	HC	H Dimension Specify in 0.1mm increment Ordering Code HC22.5	8,00

No.	H
264	20.0~40.0
315	23.0~40.0
386	27.0~50.0
426	29.0~50.0
476	32.0~50.0
588	40.0~60.0
668	43.0~60.0
7610	50.0~70.0
8510	58.0~70.0

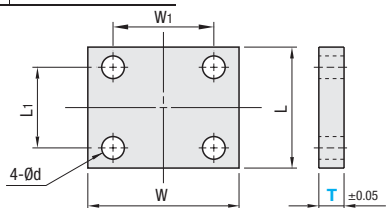
■Spacer Plates for Wide Block Type nuts



RoHS

Type	M Material	S Surface Treatment
MTKL	1.0038/S235JR	Black Oxide

■Height-Adjusting Spacer for Wide Block.

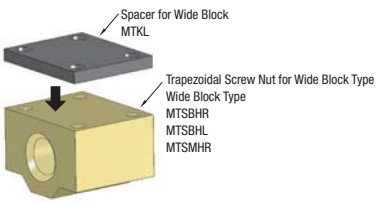


Ⓟ Thread Chamfering Square

Part Number Type	No.	T 0.1mm increment	Applicable Lead Screw Nuts Type	Inner Diameter d	W	L	W1	L1	d	€ Unit Price T=2.5~2.9	T=3.0~4.9	T=5.0~6.9	T=7.0~9.0
MTKL	1	2.5~9.0	MTSBHR MTSBHL MTSMHR	10	30	24	20	16	4.5				
	2			12, 14	38	30	26	20	5.5				
	3			16	44	35	32	24					
	4			18, 20	48	40	36	28	6.5				
	5			22, 25	62	50	46	34	9				
	6			28, 32	68	56	52	40					

Order Example: Part Number MTKL2 - T 3.5

Example



Days to Ship: 8 Days — Express A 5,00 EUR/piece ☞P.88

Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Ⓟ Round down to one Cent) P.87

Quantity	1~9	10~12	13, 14
Rate	€ Unit Price	5%	10%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Position Digital Indicators Guide

■Features

- Digital Display is easy to read.

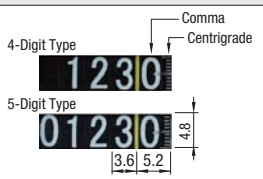
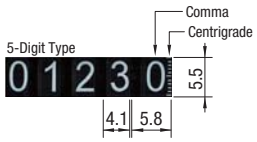
Positioning and determination with Feed Screw is easy.

It prevents wrong setting caused by error in display indication when the screw mechanism is changed at the factory.

- Various lineup

MISUMI Digital Position Indicators are designed to use in combination with our Lead Screws. Two sizes of display, three mounting types, two colors are available.

4-Digit and 5-Digit indication and With Counter Reset are available.

	Standard Spindle	Front Spindle	Vertical Spindle	Counter Indication
Mounting Position	Suitable for mounting at lower than the operator's eye-level.	Suitable for mounting at operator's eye-level.	Suitable for mounting on vertically configured screw feed mechanisms.	
Compact				 · The left most position is blank on the 4-digit counter.
Large (With Counter Reset)				

- Compact

Color		Display Digit		Feed Screw Pitch (Display Number per Revolution)
Orange	Silver	4-Digit	5-Digit	2 3 4 5 6

- 4-Digit Type and 5-Digit Type are available for the same size.
- Applicable to Mounting Shaft End Dia. 6 · 8 · 10 · 12 and 14.

*When used with a lead screw with the same pitch, display number and pitch number will be the same.

- Large

Color		Display Digit	Feed Screw Pitch (Display Number per Revolution)
Orange	Silver	5-Digit	3 4 5 6

- With Counter Reset
- Applicable to Mounting Shaft End Dia.12 · 14 · 15 · 16 · 17 and 20.

*When used with a lead screw with the same pitch, display number and pitch number will be the same.

- Color

Orange



Color used to make the counter more noticeable when installed.

Silver

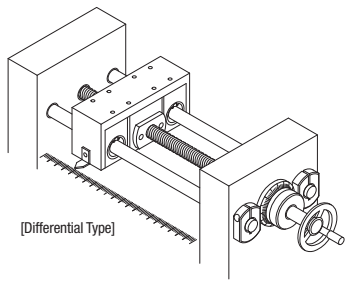


Color used to make the counter not noticeable when installed.

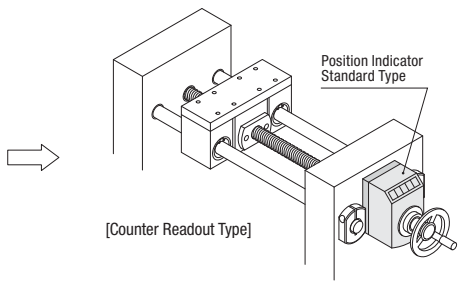
■Use purpose

Can be used to confirm the transfer of table that adopted screw handling mechanism, the slide adjustment and the present setting position.

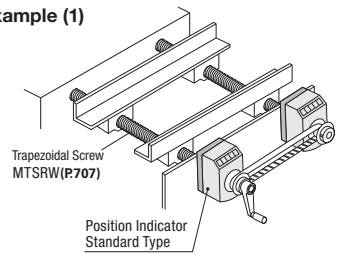
Conventional Method: Reading errors occur.



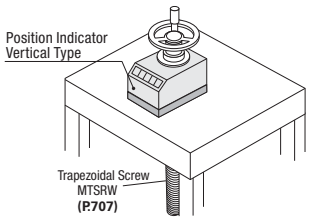
When indicator is used:Digital indication reduces the reading errors.



Example (1)



Example (2)



■Easy Pattern Designing

A complete lead screw unit can easily be designed by sequentially selecting the components from Easy Pattern Designing program.

Step1	Step 2	Step 3	Step 4	Step 5	Step 6
					
Lead Screws (P.703)	**Fixed Side Support Unit (P.705)**	**Support Side Support Unit (P.706)**	**Lead Screw Nuts -Flanged Type- (P.717)**	**Lead Screw Nut Brackets (P.722)**	**Position Indicators (P.725 · 726)**

■Feature of "Zero Set Function" (Only for Large Type)

For the conventional type, the counter needed to set at “0” before fixture on the screw shaft. However, With Counter Reset Type, the counter can be set after fixture. Therefore, precise adjustment is easy. Resetting the counter upon position moving is also easy.

■Zero Setting Procedures (Only for Large Type)

(1) Take off the caps of side holes. (See the figure below for the position of holes.)

(2) Insert a hex wrench (3mm hex), and turn in either direction within 40º.

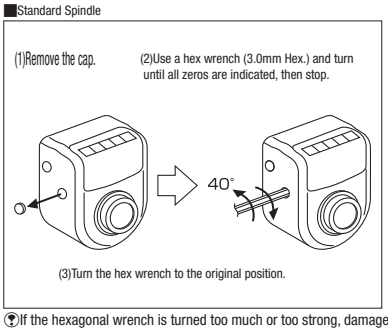
(3) Stop turning the wrench when the counter indicates all zeros. Then turn the wrench back to the original position.

?Caution

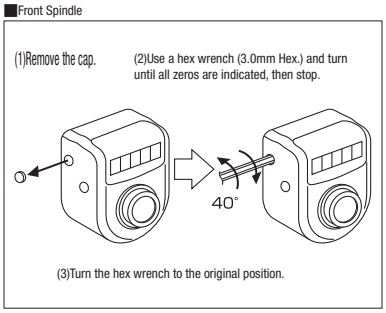
Turn the wrench slowly. Turning the wrench more than necessary may cause damages on the unit.

Please note that there should be space for hexagonal wrench.

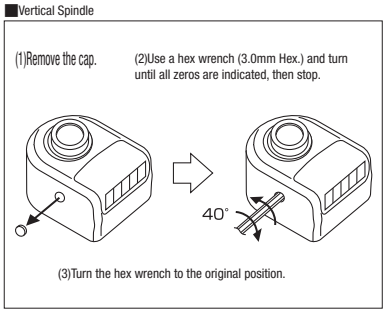
■Standard Spindle



■Front Spindle



■Vertical Spindle



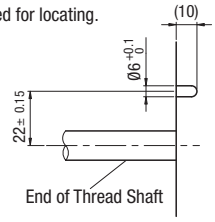
?If the hexagonal wrench is turned too much or too strong, damage will be caused.

■Notes

- The count goes up depending on turning distance, as the screw shaft (trapezoidal screw, slide screw, etc.) is turned clockwise. The count goes down as the screw shaft is turned counterclockwise.
- The rotary speed at the start-up should not exceed 1/3 of maximum rotary speed (rpm).
- Must not be abruptly accelerated or decelerated.
- Do not use a motorized driver. It will cause the breakage.
- Do not use when shafts move to the thrust (shaft) direction.

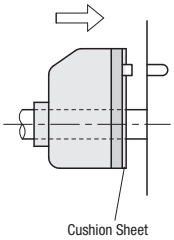
■CompactHow to Mount

(1)Provide a hole used for locating.

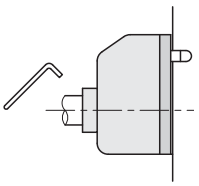


(Not necessary if a clamp plate is used.)

(2)Paste the cushion sheet, an accessory and pass it through the screw shaft.

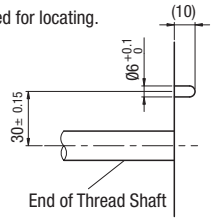


(3)Set the indicator at “0” and then fix it with the attached set screws.



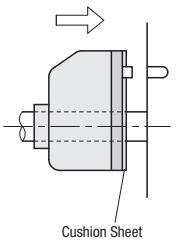
■LargeHow to Mount

(1)Provide a hole used for locating.

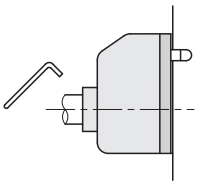


(Not necessary if a clamp plate is used.)

(2)Paste the cushion sheet, an accessory and pass it through the screw shaft.



(3)Make sure that the screw shaft is in the correct position and that the indicator is set at 0, fix it with the attached set screw.



Digital Position Indicators Compact

-Standard - Front / Vertical Types-

CAD Data

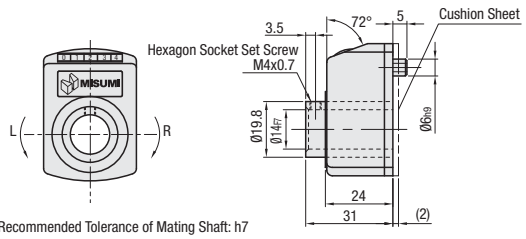
Compact units can be installed in small spaces. Four and five digit types are available.

■Standard Spindle Compact

RoHS



Type		Cover		Backboards	Sleeves		Accessory	
4-Digit Type	5-Digit Type	M Material	Color	M Material	M Material	S Surface Treatment		
DPNR · DPNL	DPNFR · DPNFL	Nylon	Orange	Polyphenylene Ether	1.0736/ 9SMn36	Black Oxide	Set Screws (Black) (1.7220/34CrMo4)	Cushion Sheets (Black) (Polyetylene Foam)
DSNR · DSNL	DSNFR · DSNFL		Silver					



Recommended Tolerance of Mating Shaft: h7

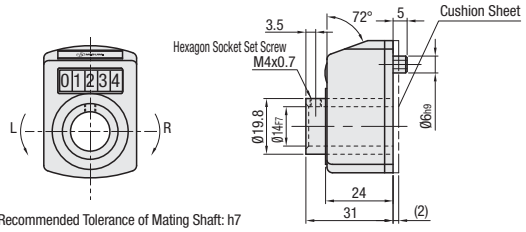
Operating Environment Temp : -10ºC~60ºC

■Front Spindle Compact

RoHS



Type		Cover		Backboards	Sleeves		Accessory	
4-Digit Type	5-Digit Type	M Material	Color	M Material	M Material	S Surface Treatment		
DPMR · DPML	DPMFR · DPMFL	Nylon	Orange	Polyphenylene Ether	1.0736/ 9SMn36	Black Oxide	Set Screws (Black) (1.7220/34CrMo4)	Cushion Sheets (Black) (Polyetylene Foam)
DSMR · DSML	DSMFR · DSMFL		Silver					



Recommended Tolerance of Mating Shaft: h7

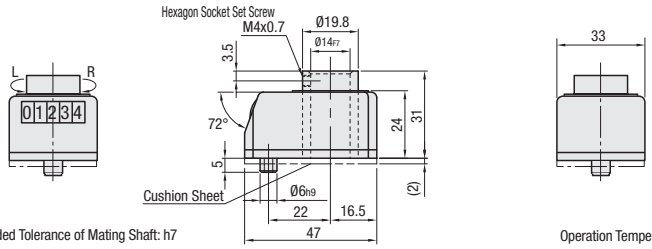
Operation Temperature:-10ºC~60ºC

■Vertical Spindle Compact

RoHS



Type		Cover		Backboards	Sleeves		Accessory	
4-Digit Type	5-Digit Type	M Material	Color	M Material	M Material	S Surface Treatment		
DPTR · DPTL	DPTFR · DPTFL	Nylon	Orange	Polyphenylene Ether	1.0736/ 9SMn36	Black Oxide	Set Screws (Black) (1.7220/34CrMo4)	Cushion Sheets (Black) (Polyetylene Foam)
DSTR · DSTL	-		Silver					



Recommended Tolerance of Mating Shaft: h7

Operation Temperature:-10ºC~60ºC

Part Number Type			Spindle Pitch	Count Increment per Revolution		Maximum Revolution Frequency (rpm)	Mass (g)	€ Unit Price
Color		Digit No., Rotating Direction		4-Digit	5-Digit			
(Orange)	(Silver)	R (4-Digit - Right Turn)	2	002.0	0002.0	150	44	
DPN	DSN	L (4-Digit - Left Turn)	3	003.0	0003.0	100		
DPM	DSM	FR (5-Digit - Right Turn)	4	004.0	0004.0	75		
DPT	DST	FL (5-Digit - Left Turn)	5	005.0	0005.0	60		
			6	006.0	0006.0	50		

Order Example Part Number: DPNFR4, DSML5, DPTR2

Days to Ship 6 Days P. 87 2 Days

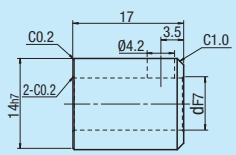
Price

■Volume Discount (Round down to one Cent) P. 87

Quantity	1~14	15~22	23~29	30~49
Rate	€ Unit Price	5%	10%	18%

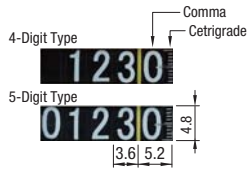
For orders larger than indicated quantity, please request a quotation.

Alterations Part Number - (CSE) DPNR2 - CSE8

Alteration	Code	Spec.	Price Adder
Includes an Adapter Collar in the set ■Indicator Collar Details  M Material: 1.1191/C45E S Surface Treatment Black Oxide d: 6, 8, 10, 12 — Mass (g): 16, 14, 9, 5	CSE	Use a collar on screw shafts less than 14mm diameter. Please select a collar with an I.D. of required shaft diameter, and order as an alteration. Ordering Code DPNR2-CSE 8 Add the needed collar "d" after the Indicator model number. Collar dimension 6 ….-CSE6 Collar dimension 8 ….-CSE8 Collar dimension 10….-CSE10 Collar dimension 12….-CSE12	7,60

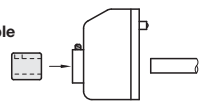
■Features

Enables screw shafts other than 14mm diameter (lead screws and slide screws, etc.) to be adapted to the indicators.



· The left most position is blank on the 4-digit counter.

Example



Screw shafts (Lead Screws/Slide Screws) can be selected from: P.703~P.732 Handles can be selected from: P.2-1013~1019

Digital Position Indicators Large

-Standard - Front · Vertical Zero Setting Types-

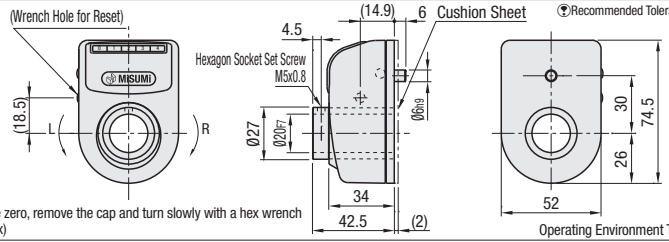
CAD Data

Large counters are easy to see even with handles mounted, and the Zero Set function resets the zero instantly.

■Standard Spindle Large RoHS



Type	Cover		Backboards	Sleeves		Accessory	
5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPLR · DPLL DSLR · DSLL	Nylon	Orange Silver	Polyphenylene Ether	1.0736/ 9SMn36	Black Oxide	Set Screws (Black) (1.7220/34CrMo4)	Cushion Sheets (Black) (Polyetylene Foam)



Recommended Tolerance of Mating Shaft: h7

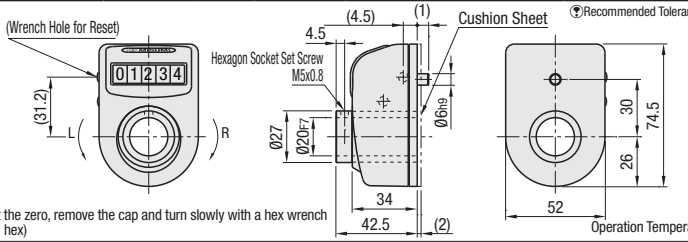
To set the zero, remove the cap and turn slowly with a hex wrench (3mm hex)

Operating Environment Temp.: -10ºC~60ºC

■Front Spindle Large RoHS



Type	Cover		Backboards	Sleeves		Accessory	
5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPRR · DPRL DSRR · DSRL	Nylon	Orange Silver	Polyphenylene Ether	1.0736/ 9SMn36	Black Oxide	Set Screws (Black) (1.7220/34CrMo4)	Cushion Sheets (Black) (Polyetylene Foam)



Recommended Tolerance of Mating Shaft: h7

To set the zero, remove the cap and turn slowly with a hex wrench (3mm hex)

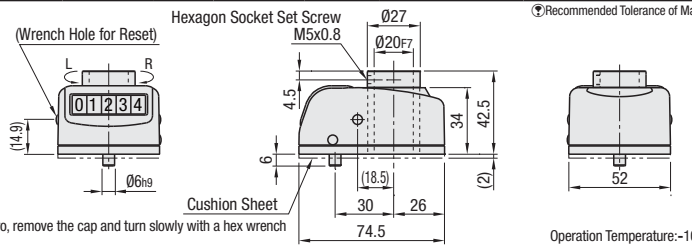
Operation Temperature:-10ºC~60ºC

■Vertical Spindle Large RoHS



Type	Cover		Backboards	Sleeves		Accessory	
5-Digit Type	Material	Color	Material	Material	Surface Treatment		
DPZR · DPZL DSZR · DSZL	Nylon	Orange Silver	Polyphenylene Ether	1.0736/ 9SMn36	Black Oxide	Set Screws (Black) (1.7220/34CrMo4)	Cushion Sheets (Black) (Polyetylene Foam)

Recommended Tolerance of Mating Shaft: h7

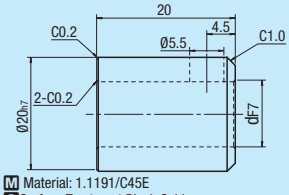


To set the zero, remove the cap and turn slowly with a hex wrench (3mm hex)

Operation Temperature:-10ºC~60ºC

Part Number Type Color		Digit No., Rotating Direction	Spindle Pitch	Count Increment per Revolution 5-Digit	Maximum Revolution Frequency (rpm)	Mass (g)	€ Unit Price
(Orange)	(Silver)	R	3	0003.0	100	100	
DPL	DSL	(5-Digit - Right Turn)	4	0004.0	75		
DPR	DSR	L	5	0005.0	60		
DPZ	DSZ	(5-Digit - Left Turn)	6	0006.0	50		

Alterations Part Number - (CSE) DPLR5 - CSE15

Alteration	Code	Spec.	Price Adder
Includes an Adapter Collar in the set ■Indicator Collar Details  M Material: 1.1191/C45E S Surface Treatment Black Oxide d / Mass (g): 10/37, 12/31, 14/25, 15/21, 16/17, 17/15	CSE	Shafts less than 20mm O.D. are used with a collar attached. Please select a collar with an I.D. of required shaft diameter, and order as an alteration. Ordering Code DPLR3-CSE 14 Add the needed collar "d" after the Indicator model number. Collar dimension 10….-CSE10 Collar dimension 12….-CSE12 Collar dimension 14….-CSE14 Collar dimension 15….-CSE15 Collar dimension 16….-CSE16 Collar dimension 17….-CSE17	8,00

Order Example Part Number: DPLR4, DSRL5, DPZR3

Days to Ship 6 Days P. 87

Price

■Volume Discount (Round down to one Cent) P. 87

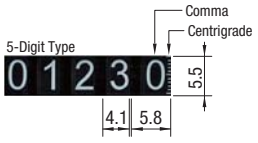
Quantity	1~14	15~22	23~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

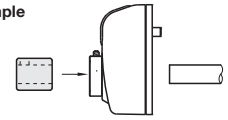
■For Zero Setting procedures, please see P.724

■Features

Enables screw shafts other than 20mm diameter (lead screws and slide screws, etc.) to be adapted to the indicators.



Example



Screw shafts (Lead Screws/Slide Screws) can be selected from: P.703~P.732 Handles can be selected from: P.2-1013~1019

Clamp Plates for Compact Position Indicator

-Standard - Miniature Lever Type · Bearing Housing Type-

CAD Data

■Standard Lever ■Miniature Lever

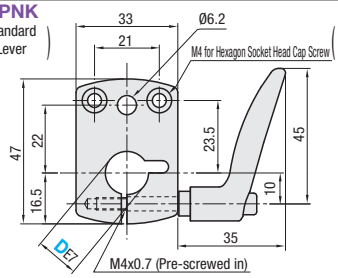


RoHS

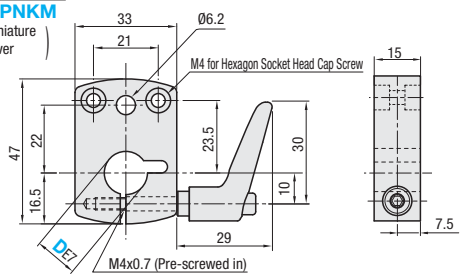
Type	Main Body		Clamp Lever	
	M Material	S Surface Treatment	M Material	S Surface Treatment
DPNK DPNKM	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

※Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.

DPNK Standard Lever



DPNKM Miniature Lever



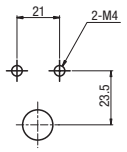
※Clamp Levers: CLDF (Female Thread Type) P.2-999

※Miniature Clamp Levers: CLDFC (Female Thread) P.2-1001

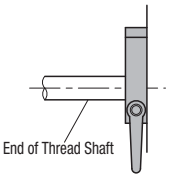
Part Number Type	D	Mass (g) Standard	Miniature	€ Unit Price
Standard Lever DPNK	8	86	77	
	10	85	76	
Miniature Lever DPNKM	12	83	74	
	14	81	72	

■How to Mount

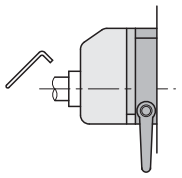
(1)Drill a screw hole for fixing the clamp plate on the mating plate.



(2)Fix the clamp plate using the hexagon socket bolt.



(3)Make sure that the screw shaft is in the correct position and that the memory of the indicator is set at 0, fix it with the set screw, an accessory for the indicator.



■Features

- Prevents rotations of the spindle due to machine vibrations.
- The screw shaft (lead screw, slide screw, etc.) can be securely locked for a long period. Both mounting surfaces are counterbored to enable mounting from either side.

Order Example Part Number DPNK12 DPNKM10

Days to Ship 6 Days P.87 / 2 Days

Price

■Volume Discount (※Round down to one Cent) P.87

Quantity	1~14	15~22	23~29	30~49
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

■Bearing with Housing



RoHS

Type	Main Body		Clamp Lever	
	M Material	S Surface Treatment	M Material	S Surface Treatment
DPNKB	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

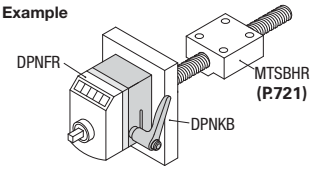
Bearing Accuracy JIS B 1514 Class 0

※Clamp Levers: CLDF (Female Thread Type) P.2-999

※Retaining Ring: RTWN P.2-254

Part Number Type	D	L	D_1	Mass (g)	Bearing used	Retaining ring	€ Unit Price
DPNKB	8	23	22	130	608ZZ	RTWN22	
	10	24	26	133	6000ZZ	RTWN26	
	12		28	132	6001ZZ	RTWN28	

Example



■Features of Bearing with Housings

The combination of the clamp plate and bearing in one piece, proves superior space-saving design.

Order Example Part Number DPNKB12

Days to Ship 6 Days P.87

Price

■Volume Discount (※Round down to one Cent) P.87

Quantity	1~14	15~22	23~29	30~49
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

■Components Selectable List for Compact Position Indicator

Compact Position Indicators P.725) Color	Type Digit No. Rotating Direction	Spindle Pitch	Clamp Plates Type	D
(Orange) DPN DPM DPT	(Silver) DSN DSM DST	2	DPNK DPNKM DPNKB	8
	R (4-Digit - Right Turn)	3		8 · 10
	L (4-Digit - Left Turn)			10 · 12
	FR (5-Digit - Right Turn)	4		10 · 12
	FL (5-Digit - Left Turn)			10 · 12 · 14
		5		10 · 12 · 14
				12 · 14
				14
		6		14

Lead Screws (P.707~P.716) Type		D	Shaft End Dia. V · Q · R	Shaft End Dia. E (1mm Increment)	Pitch
(Right-hand Thread)	(Left-hand Screw)	12	6, 8	Q/2≤E≤Q−1 V/2≤E≤V−1	2
MTSR_	MTSL_	14	8 · 10		3
MTSBR_	MTSBL_	16	10 · 12		
MTSTR_	MTSTL_	18	10 · 12		4
		20	10 · 12 · 14		
(Right and Left Hand Screw)	(Right and Left Hand Thread Machining)	22	10 · 12 · 14		5
		25	12 · 14		
MTSW_	MTSY_	28	14		
MTSBW_	MTSBY_	32	14		6

※For shaft end dia. 14 of Lead Screws, collar is not necessary.※D dimension of DPNKB is 8 · 10 and 12 only.

※For Shaft End Dia. V/Q/R of Lead Screws are applicable only to One End Stepped and Both Ends Stepped. E for Shaft End Dia. is applicable to only following types: One End Double Stepped, One End Stepped - One End Double Stepped, Both Ends Double Stepped.

Clamp Plates for Large Position Indicator

-Standard Lever Type · Bearing Housing Type-

CAD Data

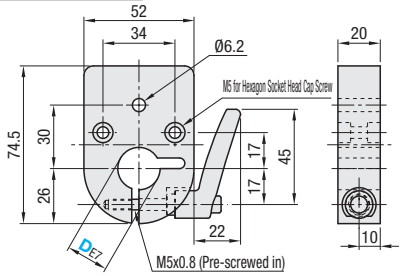
■Standard Lever



RoHS

Type	Main Body		Clamp Lever	
	M Material	S Surface Treatment	M Material	S Surface Treatment
DPQK	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

※Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.



※Clamp Levers: CLDF (Female Thread Type) P.2-999

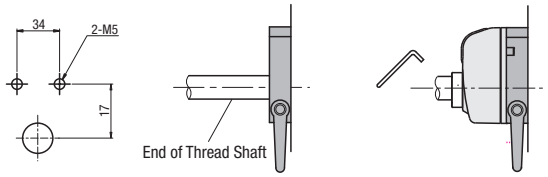
Part Number Type	D	Mass (g)	€ Unit Price
DPQK	12	202	
	14	200	
	15	198	
	16	197	
	17	196	
	20	191	

■How to Mount

(1)Drill a screw hole for fixing the clamp plate on the mating plate.

(2)Fix the clamp plate using the hexagon socket bolt.

(3)Make sure that the screw shaft is in the correct position and that the memory of the indicator is set at 0, fix it with the set screw, an accessory for the indicator.



■Features

- Prevents rotations of the spindle due to machine vibrations.
- The screw shaft (lead screw, slide screw, etc.) can be securely locked for a long period. Both mounting surfaces are counterbored to enable mounting from either side.

Order Example | Part Number DPQK12 | Days to Ship 6 Days P.87 | € Price

■Volume Discount (※Round down to one Cent) P.87

Quantity	1~14	15~22	23~29	30~49
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

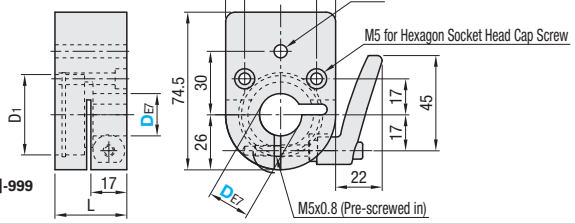
■Bearing with Housing



RoHS

Type	Main Body		Clamp Lever	
	M Material	S Surface Treatment	M Material	S Surface Treatment
DPQKB	Aluminum Alloy	Black Anodize	Zinc Die Casting	Baking Finish

※Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.



Bearing Accuracy JIS B 1514 Class 0

※Clamp Levers: CLDF (Female Thread Type) P.2-999

※Retaining Ring: RTWN P.2-254

Part Number Type	D	L	D1	Mass (g)	Bearing used	Bearing used Retaining ring	€ Unit Price
DPQKB	12	31	28	308	6001ZZ	RTWN28	
	15	33	32	312	6002ZZ	RTWN32	
	17	34	35	318	6003ZZ	RTWN35	
	20	34	37	312	6904ZZ	RTWN37	

Order Example | Part Number DPQKB12 | Days to Ship 6 Days P.87 | € Price

■Volume Discount (※Round down to one Cent) P.87

Quantity	1~14	15~22	23~29	30~49
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

■Components Selectable List for Large Position Indicator

Large Position Indicators P.726) Color	Type Digit No. Rotating Direction	Spindle Pitch	Clamp Plates Type	D
(Orange) (Silver) DPL DSL / DPR DSR / DPZ DSZ	R (5-Digit - Right Turn) / L (5-Digit - Left Turn)	3	DPQK DPQKB	12
		4		12
				12 · 14 · 15
		5		12 · 14 · 15
				12 · 14 · 15 · 16 · 17
				14 · 15 · 16 · 17 · 20
		6		14 · 15 · 16 · 17 · 20
				17 · 20
				20

Lead Screws (P.707~P.716) Type		D	Shaft End Dia. V · Q · R	Shaft End Dia. E (1mm Increment)	Pitch
(Right-hand Thread) MTSR_ / MTSBR_ / MTSTR_	(Left-hand Screw) MTSL_ / MTSBL_ / MTSTL_	16	10 · 12	Q/2≤E≤Q−1 V/2≤E≤V−1	3
		18	10 · 12		4
		20	10 · 12 · 14 · 15		
		22	10 · 12 · 14 · 15		5
		25	12 · 14 · 15 · 16 · 17		
(Right and Left Hand Screw) MTSW_ / MTSBW_	(Precision Right and Left Hand Screw) MTSY_ / MTSBY_	28	14 · 15 · 16 · 17 · 20		
		32	14 · 15 · 16 · 17 · 20		6
		36	17 · 20		
		40	20		

※For shaft end dia. 20 of Lead Screws, collar is not necessary. ※D dimension of DPQKB is 12 · 15 · 17 and 20 only.

Stop Plate Sets for Lead Screws
-Bearing Type-

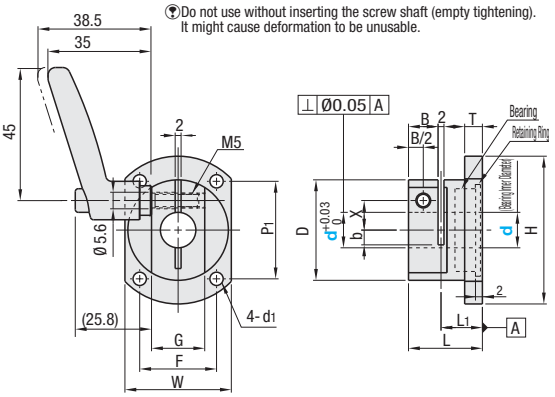
CAD Data

■Stop Plate Sets Flanged, Bearing



RoHS

Type	M Material	S Surface Treatment	Bearing
MTQDB	1.0038/ S235JR	Black Oxide	Radial Bearing
MTQDM		Electroless Nickel Plating	



Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.

■Features
- Rotation stopper clamp and a bearing are integrated for space saving designs.

Clamp Lever: CLDM5 P.2-999
Radial Bearing: JIS B 15140 Class

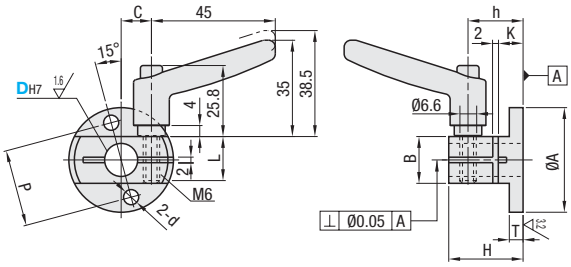
Part Number Type	d	L	L1	D	H	T	B	d1	X	b	W	P1	F	G	Clamp Lever	Bearing Bearing No.	€ Unit Price MTQDB	€ Unit Price MTQDM
MTQDB MTQDM	10	25	14	30	48	5	10	4.5	9	4	32	33	23	16	CLDM5-16-M	6900ZZ		
	12	25	14	32	50	6	10	4.5	10	5	34	35	25	18	CLDM5-16-M	6901ZZ		
	15	28	17	35	56	6	10	5.5	11.5	6	37	37	27	21	CLDM5-20-M	6902ZZ		
	20	28	17	40	64	8	10	6.6	14	8	42	43	30	27	CLDM5-25-M	6804ZZ		

■Stop Plate Sets Round Flanged



RoHS

Type	M Material	S Surface Treatment	A Accessory
MTQAB	1.0038/ S235JR	Black Oxide	Clamp Lever
MTQAM		Electroless Nickel Plating	



Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.

Part Number Type	DH7	A	B	C	H	h	P	d	T	L	K	Clamp Lever	€ Unit Price MTQAB	€ Unit Price MTQAM
MTQAB MTQAM	8 +0.015 0	32	13	9	24	18	23	4.5	4	12	9	CLDM6-12-M		
	10 +0.015 0	36	15	10	25	18	26	4.5	4	16	9	CLDM6-16-M		
	12 +0.018 0	38	17	11	27	20	28	5.5	5	16	11	CLDM6-16-M		
	15 +0.018 0	41	21	12	29	21	32	5.5	6	20	12	CLDM6-20-M		
	20 +0.021 0	50	26	15	34	25	39	6.6	8	25	16	CLDM6-25-M		

DH7 tolerance is measured before slit machining. For Clamp Levers, see P.2-999

Order Example Part Number: MTQDB12

Days to Ship 6 Days P.87

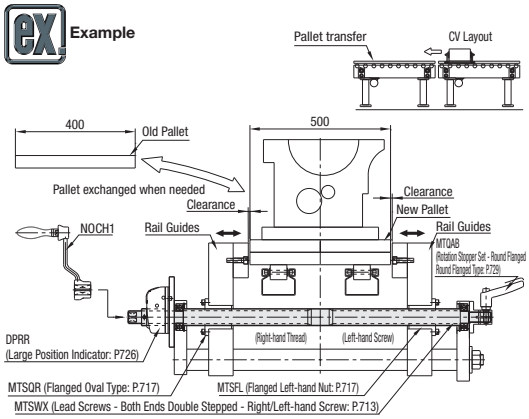
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Stop Plate Sets for Lead Screws

CAD Data

■Stop Plate Sets 2-Screw Mount Type

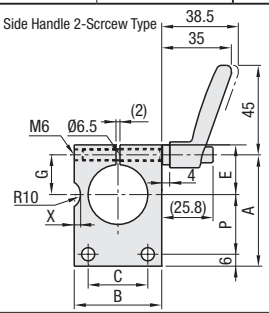


RoHS

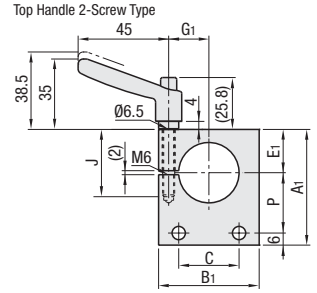
Type		Material	Surface Treatment	Accessory
Side Handle 2-Scrcew Type	Top Handle 2-Screw Type			
MTSWB	MTTBB	1.0038/ S235JR	Black Oxide	Clamp Lever
MTSWM	MTTBM		Electroless Nickel Plating	

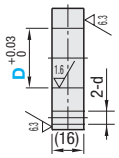
Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.

Side Handle 2-Scrcew Type



Top Handle 2-Screw Type





Part Number		P	Side Handle 2-Scrcew Type					Top Handle 2-Screw Type						d	Side Handle 2-Scrcew Type	Top Handle 2-Screw Type	€ Unit Price			
Type	D		A	B	C	E	G	X	A1	B1	C	E1	G1	J		Levers		MTSWB	MTSWM	MTTBB	MTTBM
Side Handle 2-Scrcew Type MTSWB MTSWM Top Handle 2-Screw Type MTTBB MTTBM	8	20	43	25	14	17	12	5	33	32	14	7	11	16	5.5	CLDM6-25-M	CLDM6-16-M				
	10							4	34			8		20			CLDM6-20-M				
	12							3	35			9									
	15	+0.03 0	44	32	20	18	13	4.7	37	38	20	11	13		6.5	CLDM6-32-M	CLDM6-25-M				
	20		56	38	26	20	15	4.6	50	44	26	14	15	25			CLDM6-32-M				
	25		59		28	23	18	1.3	54	50	28	18	18	32							
	30		61	44	30	25	20	1.2	57		30	21	20			CLDM6-40-M					

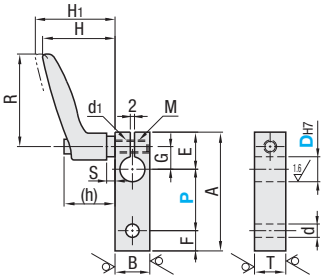
For Clamp Levers, see P.2-999

■Stop Plate Sets



RoHS

Type	Material	Surface Treatment	Accessory
MTSBB	1.0038/ S235JR	Black Oxide	Clamp Lever
MTSBM		Electroless Nickel Plating	



Do not use without inserting the screw shaft (empty tightening). It might cause deformation to be unusable.

Part Number		P	A	B	d	E	F	G	T	d1	M	H	H1	R	(h)	S	Levers	€ Unit Price	
Type	DH7																	MTSBB	MTSBM
Surface Contact MTSBB MTSBM (* marked sizes are for MTSBB only)	8	+0.015 0	20 30 40	P+26	12	6.5	16	10	9	16	6.5	M6	35	38.5	45	25.8	4	CLDM6-12-M		
	10			P+27	16		17		10									CLDM6-16-M		
	12	+0.018 0	30 40 50	P+28			18		11											
	15			P+29	22		19		12									CLDM6-20-M		
	17			P+30			20		13											
	20	+0.021 0		P+37	25	9.0	25	12	16	19	9.0	M8	45.5	49	63	32.3	7	CLDM8-25-M		
	25			P+39	32		27		18									CLDM8-32-M		
	30			P+42	38		30		21											
	*35	+0.025 0		P+44	44		32		23									CLDM8-40-M		
	*40			P+47			35		26											

DH7 tolerance is measured before slit machining. For Clamp Levers, see P.2-999

Order Example

Part Number	-	P
MTSWB15		
MTSBB8	-	30

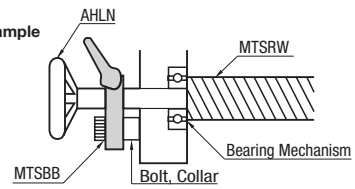
Days to Ship

8 Days

Express A 5,00 EUR/ piece. P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Example



Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Miniature Sliding Screws
-One End Stepped · Both Ends Stepped-

Price Reduction 27%

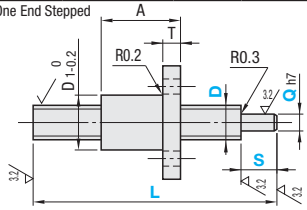
CAD Data

Stainless steel screw shaft and tribological resin nut combination can be used grease-less, and are corrosion resistant and quiet.



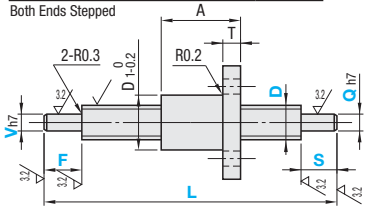
Type		Material Shafts	Material Nut
MSSRA	Right-hand Thread	1.4301	Special Resin

One End Stepped

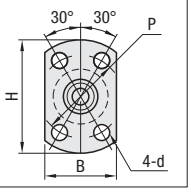


Type		Material Shafts	Material Nut
MSSRW	Right-hand Thread	1.4301	Special Resin

Both Ends Stepped



Set includes a shaft and a nut.



Part Number Type	D	Lead	1mm Increment L	F · S	V · Q	No. of Starts	Resin Nut Dimension D1	H	A	T	B	P	d	Allowable Axial Load N (reference)	Allowable Rotational Speed rpm (reference)	Tightening Torque Nmm
MSSRA MSSRW	4	01	30~150	2≤F≤Vx3 2≤S≤Qx3	2.5	1	10	23	11.5	3.5	15	15	2.9	50	2500	180
		02				2								60		
	6	01	30~250		3 4	1	12	26	14.5	3.5	17	18	3.4	120	2000	400
		02												60		
		09				4								90		
		18												110		
	8	01	40~250		4 5	1	14	29	18	4	18	21	3.4	200	2000	400
		02												290		
		12	40~350	*2≤F≤Vx4		4								210		
		24		2≤S≤Qx4	4 5 6	6								210		
	10	02	50~250	2≤F≤Vx5 2≤S≤Qx5	5 6 7	1	16	33	22	5	21	24	4.5	460	1500	500
		15	50~500			4								410		
		30				6								440		
	12	02	50~250		6 7 8 9	1	18	35	25	5	22	26	4.5	660	1000	500
		18	50~550			4								750		
		36				6								540		

There may be a centering hole on machined shaft end. * When V and Q=4, F and S will be less than 3x of V and Q.
The tightening toque applies to the screw for mounting the Resin Nut. Note that positioning repeatability changes when nut is exchanged for maintenance.

Order Example

Part Number - L - S - Q
MSSRA812 - 300 - S10 - Q5

Part Number - L - F - V - S - Q
MSSRW1202 - 250 - F20 - V6 - S8 - Q6

Days to Ship 8 Days — Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

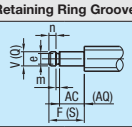
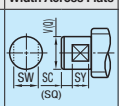
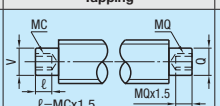
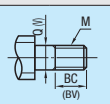
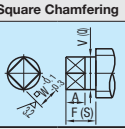
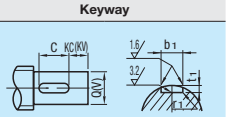
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - L - S - Q - (AC - SC...etc.)
MSSRA812 - 250 - S10 - Q5 - AQ13.3

Part Number Type	D	Lead	€ Unit Price Min.L~100	L101~200	L201~300	L301~400	L401~550
MSSRA	4	01					
		02					
	6	01					
		02					
		09					
		18					
	8	01					
		02					
		12					
		24					
	10	02					
		15					
		30					
	12	02					
		18					
		36					

Part Number Type	D	Lead	€ Unit Price Min.L~100	L101~200	L201~300	L301~400	L401~550
MSSRW	4	01					
		02					
	6	01					
		02					
		09					
		18					
	8	01					
		02					
		12					
		24					
	10	02					
		15					
		30					
	12	02					
		18					
		36					

Alterations	Retaining Ring Groove	Width Across Flats	Tapping	Male Thread	Square Chamfering	Keyway
						
Code	AC(V part) AQ(Q part)	SC(V part) SQ(Q part)	MC(V part) MQ(Q part)	BV(V part) BC(Q part)	ZC(V part) ZQ(Q part)	KV(V part) KC(Q part)
Spec.	AC - AQ=0.1mm Increment AC - AQ≤F(S)−m−n Machining Limits Ordering Code AC13.3 AC=Machining on V part AQ=Machining on Q part	SC,SQ,SW,SY= 1mm Increment SC=Machining on V part SQ=Machining on Q part Applies to only one of either V or Q Ordering Code SC5-SW5-SY5 Applicable when V(Q) ≥6 SW≥Q(V)−2 3≤SY≤20	MC=Machining on V part MQ=Machining on Q part Ordering Code MC5 Applicable when V(Q) ≥6	BC(BV)≤S(F)−(Screw Pitchx2) BV,BC≤Mx3 Ordering Code BC10 BV=Machining on V part BC=Machining on Q part V (Q)=9 not applicable	A = 1mm Increment ZC=Machining on V part ZQ=Machining on Q part Applies to only one of either V or Q Ordering Code ZC6-W5-A8 Other alteration may be combined on the same screw shaft Applicable when V - Q≥6 5≤A≤20 V(Q)=ZC(ZQ)	KC, KV, C= 1mm Increment Ordering Code KC8-C10 KV=Machining on V part KC=Machining on Q part C≤S (F)/2 C+KC (KV)<S (F KC (KV)≥2 When KC(KV)=0 F(S)-C-KC(KV)≥2 Applicable to either V or Q.

V · Q	e Tolerance		m+0.14 0	n Machining Limits
2.5	2	+0.06 0	0.5	n≥1.2
3				
4	2.5			
5	3			
6	4	+0.075 0	0.7	
7				
8	5			
9	6		0.9	

V · Q	MC - MQ (Selection Range)
6	3
7 · 8	3 · 4
9	3 · 4 · 5

V, Q	MxPitch
2.5	M2.5x0.45
3	M3 x0.5
4	M4 x0.5
5	M5 x0.5
6	M6 x0.75
8	M8 x1.0

ZC(ZQ)	W
67	5
8	6
9	7

Applicable Shaft Dia. V, Q	Keyway Dimension b1 Reference Dimension	b1 Tolerance (N9)	t1 Reference Dimension	t1 Tolerance	r1
67	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
89	3		1.8		

Price Adder	4,00	4,00	2,00	2,00	8,00	4,00

Miniature Sliding Screws/Nuts/Nut Brackets
-Straight-

Price Reduction 27%

CAD Data

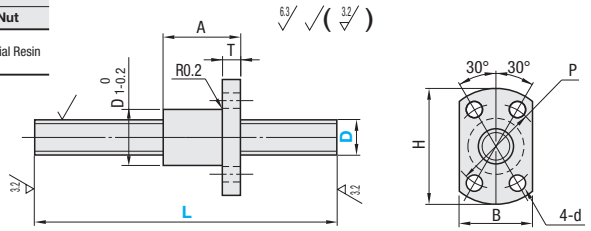
Miniature Slide Screws/Nuts



RoHS

Type		Material	
		Shafts	Nut
MSSR	Right-hand Thread	1.4301	Special Resin
MSSRN		-	

MSSR includes a shaft and a nut, MSSRN includes a nut only.



Part Number Type	D	Lead	L 1mm Increment	No. of Starts	Resin Nut Dimension D1	H	A	T	B	P	d	Allowable Axial Load N (reference)	Allowable Rotational Speed rpm (reference)	Tightening Torque Nmm	Mass (Reference) g/100mm	€ Unit Price MSSR Min.L~100	L101~200	L201~300	L301~400	L401~550	€ Unit Price MSSRN
MSSR MSSRN (Nut)	4	01	30~150	1	10	23	11.5	3.5	15	15	2.9	50	2500	180	11 (3)						
		02		2								60			11 (3)						
	6	01	30~250	1	12	26	14.5	3.5	17	18	3.4	120	2000	400	23 (3)						
		02										60			25 (3)						
		09		4								90			25 (3)						
		18										110			25 (3)						
	8	01	40~250	1	14	29	18	4	18	21	3.4	200	2000	400	42 (5)						
		02										290			38 (5)						
		12	40~350	4								210			40 (5)						
		24		6								210			41 (4)						
	10	02	50~250	1	16	33	22	5	21	24	4.5	460	1500	500	59 (6)						
		15	50~500	4								410			58 (6)						
		30		6								440			56 (6)						
	12	02	50~250	1	18	35	25	5	22	26	4.5	660	1000	500	86 (8)						
		18	50~550	6								750			86 (8)						
		36										540			87 (7)						

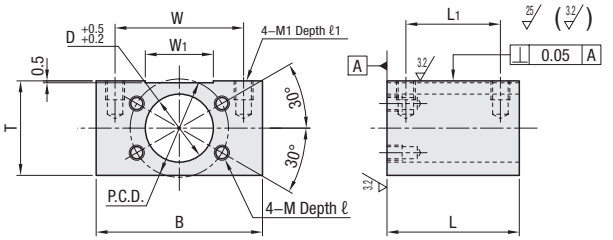
The tightening toque applies to the screw for mounting the Resin Nut. Note that positioning repeatability changes when nut is exchanged for maintenance. The dimension in ( ) of mass table is nut mass.

Nut Bracket



RoHS

Type	Material	Surface Treatment
MSSRH	1.119	Electroless Nickel Plating



Part Number Type	No.	D	T	B	L	L1	W	W1	M	ℓ	M1	ℓ1	P.C.D.	€ Unit Price
MSSRH	6	12	19	36	20	10	26	12	3	6	4	8	18	
	8	14	20	38	25	15	28	14	3	6	4	8	21	
	10	16	23	42	30	20	32	16	4	8	5	10	24	
	12	18	25	44	35	25	34	18	4	8	5	10	26	

Order Example: Part Number - L; MSSR812 - 300; MSSRN812

Days to Ship: 8 Days; Express A 8,00 EUR/piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Express not applicable to MSSRH

Price

Volume Discount (Round down to one Cent) P87

Quantity	1~4	5~7	8, 9	10~29
Rate	€ Unit Price	5%	10%	18%

Please request a quotation for qty. more than listed.

Features

Slide screw's nut is made of special resin composed of PPS as base material and solid lubricant (fluorine, for example) filled to increase sliding properties.
The material is superior in polypropylene, nylon, and polyacetal in tribological properties, heat resistance, and moisture absorbing characteristics. Quieter in comparison to ball screws, and lighter in motion with lower torque compared to lead screws.

Material Properties of Nuts

Item	Testing Method	Unit	Values
Base Material	-	-	
Specific Gravity	ASTM D792	-	1.53
Tensile Strength	ASTM D638	MPa	51
Hardness	-	Rockwell R	110
Elongation	ASTM D638	%	3
Water Absorption Ratio	ASTM D570	%	0.05
Application Limit Temperature	-	°C	230

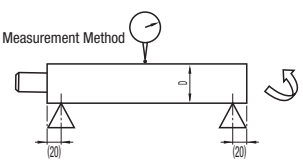
Caution

(1) Positioning repeatability is changed by wear due to usage and exchange of parts during maintenance.
(2) Do not use molybdenum and silicone based greases due to its negative impact to the nuts.
Do not use it due to its negative impact to the nuts.
(3) Sliding properties are based on 25°C. It may vary depending on temperature.
(4) The nuts are made of PPS base material; they may be "cracked" or "deformed" due to shocks or excessive tightening.

Screw Accuracies

- Initial Accumulative Lead Error ±0.21/300mm (Reference Temperature 25°C)
- Bending Accuracy 0.16 or Less

Bend Measurement Method



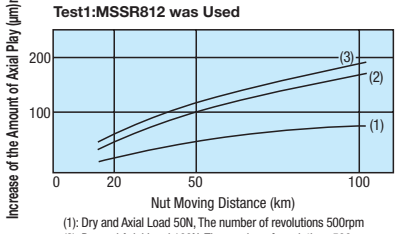
The screw shaft is supported on both ends with V-blocks and the measurements are taken with a dial indicator at arbitrary points while the shaft is rotated.

Leads

Lead is the travel distance of one revolution.
Lead 01···Travel Distance: 1mm
Lead 24···Travel Distance: 24mm

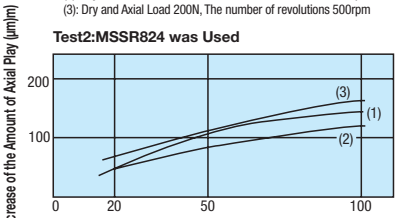
Friction Data (Reference Values)

Test1:MSSR812 was Used



(1): Dry and Axial Load 50N, The number of revolutions 500rpm
(2): Dry and Axial Load 100N, The number of revolutions 500rpm
(3): Dry and Axial Load 200N, The number of revolutions 500rpm

Test2:MSSR824 was Used



(1): Dry and Axial Load 200N, The number of revolutions 500rpm
(2): Dry and Axial Load 200N, The number of revolutions 1000rpm
(3): Dry and Axial Load 200N, The number of revolutions 2000rpm

Rotary Shafts

Rotary Shafts

Addition



Product Name	Rotary Shafts-Straight-	-Straight with Keyway-	-Retaining Ring Grooves on Both Ends-	-Retaining Ring Grooves on Both Ends with Keyway-
Page	735	737	739	741





Addition





-One End Female Thread-	-One End Female Thread with Keyway-	-Both Ends Female Thread-	-Both Ends Female Thread with Keyways-
743	745	747	749









-One End Stepped-	-One End Stepped, One End Female Thread-	-One End Stepped, One End Male Thread-	-One End Stepped, One End Male Thread, One End Female Thread-
751	753	755	757









-One End Stepped and Female Thread-	-One End Stepped, Both Ends Female Thread-	-Both Ends Stepped-	-Both Ends Stepped and Male Thread-
759	761	763	765









-Both Ends Stepped and Female Thread-	-One End Stepped with Retaining Ring Grooves-	-Both Ends Stepped with Retaining Ring Grooves-	-Both Ends Stepped, One End Male Thread-
767	769	769	771







Addition



-Both Ends Stepped, One End Male Thread, One End Female Thread-	-Both Ends Double Stepped-	Hollow Rotary Shafts-Straight-	Rotary Shafts-D-Cut-
771	773	774	775



NEW



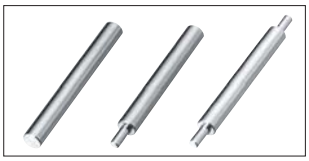




Shaft for Tension-Pull - Retaining Ring Groove-	-Push Type · Pull Type-	Rotary Shaft-End Shape Selectable-	Driving Shaft-Straight-
776	777	779	781



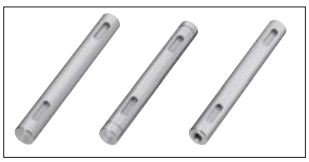
Driving Shaft-One End Stepped-	-Both Ends Stepped-	-One End Stepped, One End Double Stepped-	-With Flange-	-One End Stepped with Flange-
783	785	787	789	791



■D Tolerance h9 (Cold-drawn) / h7 (Ground)

Economical h9 (Cold-drawn) and standard grade h7 (Ground) are now available.

Standard Model: SFMR Page **P.735~P.768**



■Rotary Shafts with Keyways have been standardized.

Rotary Shafts with Keyways have been standardized.
Specification has become easier.

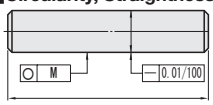
Standard Model: SFMKR Page **P.737**, **P.741**, **P.745**, **P.749**

■Accuracy Standards of Rotary Shafts and Driving Shafts

Values in ( ) are for driving shafts

⊗Not applicable to h9 (Cold-drawn).

■Circularity, Straightness



Straightness of size D2, D2.5 is 0.1/100.

■Circularity of Part D

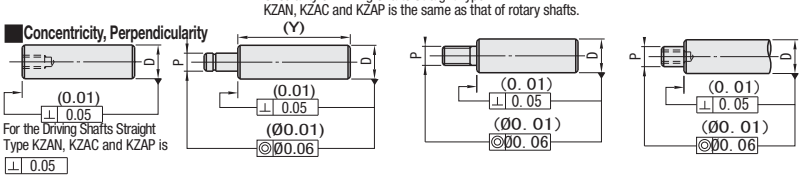
D Over	D To	Circularity M
2	2.5	0.006 (0.003)
3	13	0.004 (0.003)
13	20	0.005 (0.003)
20	40	0.006 (0.005)
40	50	0.007 (0.005)

Circularity of Driving Shafts Straight Type KZAN, KZAC and KZAP is the same as that of rotary shafts.

■Tolerances of L · Y and Other Dimensions

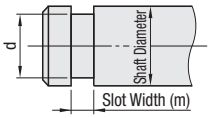
Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1 (±0.1)
6	30	±0.2 (±0.1)
30	120	±0.3 (±0.1)
120	400	±0.5 (±0.2)
400	800 (500)	±0.8 (±0.2)

■Concentricity, Perpendicularity



For the Driving Shafts Straight Type KZAN, KZAC and KZAP is ⊥ 0.05

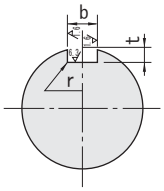
■Detailed Retaining Ring Groove Dimensions Rotary and Driving Shafts



Shaft Diameter	d Tolerance		Slot Width (m) Tolerance		Applicable Retaining Ring
2	1.2		0.4		JIS E Type 1.2
2.5	1.5	+0.06 0	0.5	+0.05 0	JIS E Type 1.5
3	2				JIS E Type 2
4	3		0.7		JIS E Type 3
5	4	+0.075 0			JIS E Type 4
6	5			+0.1 0	JIS E Type 5
7	6				JIS E Type 6
8	7	+0.09 0	0.9		JIS E Type 7
9	8				JIS E Type 8
10	9.6	0/-0.09			JIS C Type 10
11	10.5				JIS C Type 11
12	11.5				JIS C Type 12
13	12.4		1.15		JIS C Type 13
14	13.4				JIS C Type 14
15	14.3	0 -0.11		+0.14 0	JIS C Type 15
16	15.2				JIS C Type 16
17	16.2				JIS C Type 17
18	17		1.35		JIS C Type 18
19	18				JIS C Type 19
20	19				JIS C Type 20
21	20				JIS C Type 21
22	21				JIS C Type 22
23	22		1.35		JIS C Type 23
24	22.9	0 -0.21			JIS C Type 24
25	23.9				JIS C Type 25
26	24.9				JIS C Type 26
28	26.6				JIS C Type 28
29	27.6			+0.14 0	JIS C Type 29
30	28.6		1.65		JIS C Type 30
32	30.3				JIS C Type 32
35	33	0 -0.25			JIS C Type 35
40	38		1.9		JIS C Type 40
45	42.5				JIS C Type 45
50	47		2.2		JIS C Type 50

■Detailed Dimensions for Keyway and Male Thread Relief of Rotary Shafts and Driving Shafts

■Detailed dimensions of Keyway for Shaft Dia. (D · P · Q)



Shaft Diameter	b Reference Dimension	b Tolerance (N9)	t Reference Dimension	t Tolerance	r
6~ 7	2	-0.004 -0.029	1.2	+0.1 0	0.08~ 0.16
8~10	3		1.8		
11~12	4	0 -0.03	2.5		0.16~ 0.25
13~17	5		3.0		
18~22	6		3.5		
23~30	8	0 -0.036	4.0	+0.2 0	0.25~ 0.4
31~38	10		5.0		
39~44	12	0 -0.043	5.0		
45~50	14		5.5		

The example below shows the keyway shape for the specs KC, WKC, K=0, KC+A≥L and WKC+C+K+E>L.

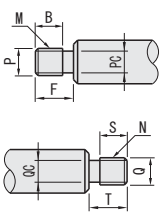
Ex.)



■Rotary ShaftsMale Thread Relief (PC · QC) Dimensions (Reference)

When Thread undercut machining (PC · QC) is specified, PC · QC dimension is as shown in the table below. As for the PC and QC Dimensions for the Fine Thread alteration (PMC · QMC), also refer to the tables below.

• Coarse Thread

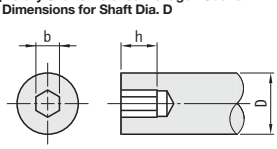


P (=M) Q (=N)	PC QC
3	2.4
4	3.2
5	4.1
6	4.4
8	6.0
10	7.7
12	9.4
16	13.0
20	16.4
24	19.6
30	25.0

• Combined with Fine Thread Alteration

PMC QMC	PC QC
3	2.4
4	3.2
5	4.1
6	4.8
8	6.4
10	8.4
12	10.4
15	13.4
17	15.4
20	18.4
25	22.7
30	27.7

■Rotary Shafts Detailed Hexagon Socket Dimensions for Shaft Dia. D



Shaft Diameter	b	h
6~ 7	2.5	4
8~ 9	3	5
10~11	4	6
12~15	5	8
16~19	6	9
20~24	8	12
25~30	10	15

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-

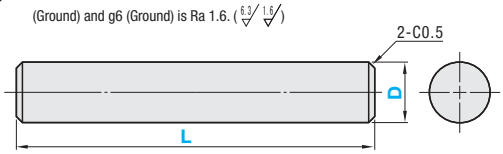
-Straight-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your purpose.

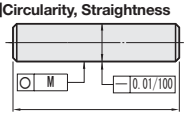


	Type	D Tolerance	M Material	S Surface Treatment
(1)	SFMR	h9 (Cold-drawn)	1.1191/C45E	Black Oxide
	PSFMR			Electroless Nickel Plating
	SSFMR		1.4301/X5CrNi18-10	-
(2)	SFHR	h7 (Ground)	1.1191/C45E	Black Oxide
	PSFHR			Electroless Nickel Plating
	SSFHR		1.4301/X5CrNi18-10	-
(3)	SFR	g6 (Ground)	1.1191/C45E	Black Oxide
	PSFR			Electroless Nickel Plating
	SSFR		1.4301/X5CrNi18-10	-
	HFR		1.7220/34CrMo4 H Hardness 30~35HRC	Black Oxide
	PHFR			Electroless Nickel Plating

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6 /)



■Circularity, Straightness



Straightness of size D2, D2.5 is 0.1/100.
Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
1	2.5	0.006
3	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■L Dimension Tolerance

Dimension Over	Dimension To	Dimension Tolerance
14	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type	Dh9		L 0.1mm Increment
SFMR	3	0 -0.025	15.0 ~ 150.0
	4	0 -0.030	15.0 ~ 200.0
	5		15.0 ~ 250.0
	6		20.0 ~ 300.0
PSFMR	8	0 -0.036	20.0 ~ 400.0
	10		20.0 ~ 500.0
SSFMR	12	0 -0.043	30.0 ~ 600.0
(D6 is not available for SSFMR.)	15		30.0 ~ 700.0
	20	0 -0.052	40.0 ~ 800.0
	25		50.0 ~ 800.0
	30		60.0 ~ 800.0
	35	0 -0.062	70.0 ~ 800.0
	40		80.0 ~ 800.0
	50		100.0 ~ 800.0

(2) h7 (Ground)

Part Number Type	Dh7		L 0.1mm Increment
	6	0 -0.012	20.0 ~ 300.0
	8	0 -0.015	20.0 ~ 400.0
	10		20.0 ~ 500.0
SFHR	12	0 -0.018	30.0 ~ 600.0
	15		30.0 ~ 700.0
PSFHR	20	0 -0.021	40.0 ~ 800.0
	25		50.0 ~ 800.0
SSFHR	30		60.0 ~ 800.0
	35	0 -0.025	70.0 ~ 800.0
	40		80.0 ~ 800.0
	50		100.0 ~ 800.0

(3) g6 (Ground)

Part Number Type	Dg6		L 0.1mm Increment
	2	-0.002 -0.008	15.0 ~50.0
	2.5		15.0 ~50.0
	3		15.0 ~ 150.0
	4	-0.004 -0.012	15.0 ~ 200.0
	5		15.0 ~ 250.0
SFR	6		20.0 ~ 300.0
	8	-0.005 -0.014	20.0 ~ 400.0
PSFR	10		20.0 ~ 500.0
	12	-0.006 -0.017	30.0 ~ 600.0
SSFR	13		30.0 ~ 600.0
	*15		30.0 ~ 700.0
*HFR	16		30.0 ~ 800.0
(Only *marked sizes are available)	17		40.0 ~ 800.0
	18		40.0 ~ 800.0
*PHFR	*20	-0.007 -0.020	40.0 ~ 800.0
(Only *marked sizes are available)	22		40.0 ~ 800.0
	*25		50.0 ~ 800.0
	*30		60.0 ~ 800.0
	*35	-0.009 -0.025	70.0 ~ 800.0
	*40		80.0 ~ 800.0
	*50		100.0 ~ 800.0

Order Example | Part Number | - | L
SFMR15 - 150
PSFHR20 - 300

Days to Ship
- 1.4301/X5CrNi18-10: 8 Days | Express A 8,00 EUR / piece | 5 Days
A Express Charge of 21,60 EUR for 3 or more identical pieces.
- 1.1191/C45E · 1.7220/34CrMo4: 8 Days | Express A 8,00 EUR / piece | 5 Days
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) h9 (Cold-drawn)

Type	€ SFMR(1.1191/C45E, Black Oxide)								€ PSFMR(1.1191/C45E, Electroless Nickel Plating)								€ SSFMR(1.4301/X5CrNi18-10)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
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(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHR · SFR(1.1191/C45E, Black Oxide)								€ PSFHR · PSFR(1.1191/C45E, Electroless Nickel Plating)								€ SSFHR · SSFR(1.4301/X5CrNi18-10)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
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Type	€ HFR(1.7220/34CrMo4 Hardness 30~35HRC·Black Oxide)								€ PHFR(1.7220/34CrMo4 Hardness 30~35HRC·Electroless Nickel Plating)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
15																
20																
25																
30																
35																
40																
50																

Example



Alterations

Part Number - L - (KC, WKC, FC...etc.)

PSFMR30 - 250 - KC20-A10

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance
	· One Key Groove: KC · Two Key Grooves: WKC,	· One Set Screw Flat: FC · Two Set Screw Flats: WFC				
Code	KC / WKC	FC / WFC	KFC	UC	SC	LKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 (?) KC, A, WKC, C, K, E=1 mm Increment (?) A, E, C≤100 (?) For keyway details, P.737 (?) If 3 keyways are required, use both KC and WKC. ⊗ Not applicable to D=2~5	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 (?) FC, G, WFC, J, W, V=1 mm Increment (?) G, J, V≤50 D / H: 3~5 / 0.5; 6~17 / 1; 18~40 / 2; 50 / 3 ⊗ Not applicable to D2 and D2.5.	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment (?) G≤50 Ordering Code KFC10-G3-AG120 D / H: 3~5 / 0.5; 6~17 / 1; 18~40 / 2; 50 / 3 ⊗ Not applicable to D2 and D2.5. (?) When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 (?) UC+ℓ1≤L (?) UC≥1 ⊗ Not applicable to D2 and D2.5. ⊗ Not applicable to D13 or more. D / d / ℓ1: 3 / 2; 4 / 3; 5 / 4; 6 / 5 (ℓ1: 4); 8 / 7; 10 / 8; 12 / 10 (ℓ1: 5)	Adds a wrench flat. SC=1 mm Increment (?) SC+ℓ2≤L SC=0 or SC≥1 D / W / ℓ2: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 10; 12/13 / 10 / 10; 15/16 / 13 / 10; 17/18 / 14 / 10; 20/22 / 17 / 10 D / W / ℓ2: 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20 ⊗ Not applicable to D2~5 (?) When combined with other alterations, ±2 degree phase differential may occur.	Changes L Dimension Tolerance. Ordering Code LKC (?) L<500⋯› L±0.05 L≥500⋯› L±0.1
	(?) Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.					
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	4,00

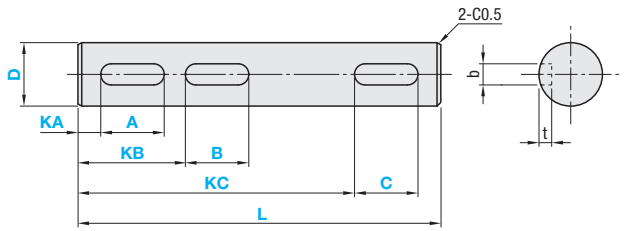
Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-Straight with Keyway-

■Rotary Shafts with Keyways have been standardized. No. of keyways can be specified up to 3. Specification of Keyways has become easier.

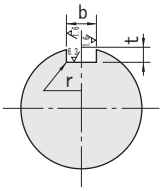


	Type	D Tolerance	M Material	S Surface Treatment
(1)	SFMKR	h9 (Cold-drawn)	1.1191/C45E	Black Oxide
	PSFMKR			Electroless Nickel Plating
	SSFMKR		1.4301/X5CrNi18-10	-
(2)	SFHKR	h7 (Ground)	1.1191/C45E	Black Oxide
	PSFHKR			Electroless Nickel Plating
	SSFHKR		1.4301/X5CrNi18-10	-
(3)	SFGKR	g6 (Ground)	1.1191/C45E	Black Oxide
	PSFGKR			Electroless Nickel Plating
	SSFGKR		1.4301/X5CrNi18-10	-

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)
No. of keyways can be specified up to 3.



■Detailed Keyway Dimensions

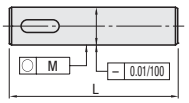


Shaft Diameter	b Reference Dimension	b Tolerance (N9)	t Reference Dimension	t Tolerance	r
6	2	-0.004 -0.029	1.2	+0.1 0	0.08~0.16
8, 10	3		1.8		
12	4	0 -0.03	2.5		0.16~0.25
13~17	5		3.0		
18~22	6		3.5		
25,30	8	0 -0.036	4.0	+0.2 0	0.25~0.4
35	10		5.0		
40	12	0 -0.043	5.0		
50	14		5.5		

When KA=0, KA+A=L, KB+B=L, KC+C=L, keyway shape is as shown below.

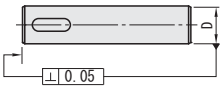


■Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type	Dh9	Tolerance	L 0.1mm Increment	Keyway (1) KA / A	Keyway (2) KB / B	Keyway (3) KC / C
				1mm Increment		
SFMKR	6	0 -0.030	20.0~300.0	KA+A≤L	KB+B≤L	KC+C≤L
	8	0 -0.036	20.0~400.0			
	10		20.0~500.0			
PSFMKR	12	0 -0.043	30.0~600.0	KA≥0	KB≥0	KC≥0
	15		30.0~700.0			
SSFMKR (D6 is not available for SSFMKR.)	20	0 -0.052	40.0~800.0	b≤A≤100	b≤B≤100	b≤C≤100
	25		50.0~800.0			
	30		60.0~800.0			
	35	0 -0.062	70.0~800.0			

(2) h7 (Ground)

Part Number Type	Dh7	Tolerance	L 0.1mm Increment	Keyway (1) KA / A	Keyway (2) KB / B	Keyway (3) KC / C
				1mm Increment		
SFHKR	6	0 -0.012	20.0~300.0	KA+A≤L	KB+B≤L	KC+C≤L
	8	0 -0.015	20.0~400.0			
	10		20.0~500.0			
	12	0 -0.018	30.0~600.0			
	15		30.0~700.0			
PSFHKR	20	0 -0.021	40.0~800.0	KA≥0	KB≥0	KC≥0
	25		50.0~800.0			
SSFHKR	30		60.0~800.0	b≤A≤100	b≤B≤100	b≤C≤100
	35	0 -0.025	70.0~800.0			
	40		80.0~800.0			
	50		100.0~800.0			

(3) g6 (Ground)

Part Number Type	Dg6	Tolerance	L 0.1mm Increment	Keyway (1) KA / A	Keyway (2) KB / B	Keyway (3) KC / C
				1mm Increment		
	6	-0.004 -0.012	20.0~300.0			
	8	-0.005 -0.014	20.0~400.0			
	10		20.0~500.0			
	12	-0.006 -0.017	30.0~600.0	KA+A≤L	KB+B≤L	KC+C≤L
	13		30.0~600.0			
SFGKR	15		30.0~700.0			
	16		30.0~800.0			
PSFGKR	17		40.0~800.0	KA≥0	KB≥0	KC≥0
	18		40.0~800.0			
SSFGKR (D13, 16, 18 and 22 are not available for SSFGKR.)	20	-0.007 -0.020	40.0~800.0	b≤A≤100	b≤B≤100	b≤C≤100
	22		40.0~800.0			
	25		50.0~800.0			
	30		60.0~800.0			
	35	-0.009 -0.025	70.0~800.0			
	40		80.0~800.0			
	50		100.0~800.0			

Order Example

	Part Number	-	L	-	Keyway (1) KA	-	Keyway (1) A	-	Keyway (2) KB	-	Keyway (2) B	-	Keyway (3) KC	-	Keyway (3) C
1 Keyway	SFMKR10	-	325	-	KA20	-	A50								
2 Keyways	SFHKR30	-	330	-	KA20	-	A50	-	KB120	-	B20				
3 Keyways	SFGKR25	-	350	-	KA10	-	A10	-	KB90	-	B30	-	KC210	-	C30

Days to Ship: 8 Days

Express A: 8,00 EUR / piece

P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) **P. 88**

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

Product unit price is the price shown in the table plus keyway machining charge.
(Ex.) SFMKR20-620-KA100-A20-KB200-B20
(Price in the table) + charge for 2 keyways = Total Price
18,40 EUR + 8,00 EUR = 26,40 EUR

Keyway Machining Charge

No. of keyways	Charge
1	4,00
2	8,00
3	12,00

(1) h9 (Cold-drawn)

Type	€ SFMKR (1.1191/C45E, Black Oxide)								€ PSFMKR (1.1191/C45E, Electroless Nickel Plating)								€ SSFMKR (1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0
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12																								
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35																								

(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHKR · SFGKR (1.1191/C45E, Black Oxide)								€ PSFHKR · PSFGKR (1.1191/C45E, Electroless Nickel Plating)								€ SSFHKR · SSFGKR (1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0
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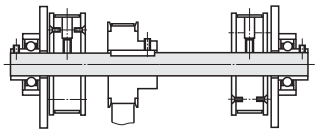
Example



Alterations

Part Number	L	KA	A	KB	B	KC	C	(FC, KFC...etc.)
SFHKR30	300	KA20	A50	KB120	B20			LKC

Alterations	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance
	· One Set Screw Flat: FC · Two Set Screw Flats: WFC				
Code	FC / WFC	KFC	UC	SC	LKC
Spec.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V=1 mm Increment G, J, V≤50 Set screw flat and keyway (s) are added to the same surface. D / H: 6~17 / 1; 18~40 / 2; 50 / 3 Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG120 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1: 6 / 5 / 4; 8 / 7 / 4; 10 / 8 / 5; 12 / 10 / 5	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 A wrench flat is added to the opposite surface of keyway alteration. D / W / ℓ2: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12/13 / 10 / 8; 15/16 / 13 / 10; 17/18 / 14 / 10; 20/22 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20 When combined with other alterations, ±2 degree phase differential may occur.	Changes L Dimension Tolerance. Ordering Code LKC L<500⋯› L±0.05 L≥500⋯› L±0.1
Price Adder	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	4,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) · h7 (Ground) ·g6 (Ground)-
-Retaining Ring Grooves on Both Ends-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your purpose.



	Type: Standard: No Retaining Ring	Standard: With Retaining Ring	Retaining Ring Groove Outside Datum: With Retaining Ring	D Tolerance	M Material	S Surface Treatment
(1)	SFMRR	SFMRRA	-	h9 (Cold-drawn)	1.1191/C45E	Black Oxide
	PSFMRR	PSFMRRA	-			Electroless Nickel Plating
	SSFMRR	SSFMRRA	-		1.4301/X5CrNi18-10	-
(2)	SFHRR	SFHRRA	-	h7 (Ground)	1.1191/C45E	Black Oxide
	PSFHRR	PSFHRRA	-			Electroless Nickel Plating
	SSFHRR	SSFHRRA	-		1.4301/X5CrNi18-10	-
(3)	SFRR	SFRRA	SFRRGA	g6 (Ground)	1.1191/C45E	Black Oxide
	PSFRR	PSFRRA	PSFRRGA			Electroless Nickel Plating
	SSFRR	SSFRRA	SSFRRGA		1.4301/X5CrNi18-10	-
	-	HFRRA	-		1.7220/34CrMo4 H Hardness 30~35HRC	Black Oxide
	-	PHFRRA	-			Electroless Nickel Plating

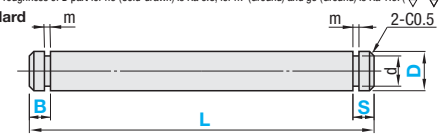
■Tolerance Table

D	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
2, 2.5, 3	-	-	-0.002 -0.008
4~6	0 -0.030	0 -0.012	-0.004 -0.012
8, 10	0 -0.036	0 -0.015	-0.005 -0.014
12~18	0 -0.043	0 -0.018	-0.006 -0.017
20~30	0 -0.052	0 -0.021	-0.007 -0.020
35~50	0 -0.062	0 -0.025	-0.009 -0.025

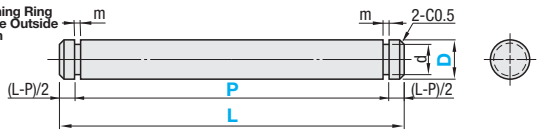
Detailed Retaining Ring Groove Dimensions P.734

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)

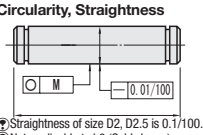
Standard



Retaining Ring Groove Outside Datum



■Circularity, Straightness



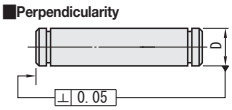
Straightness of size D2, D2.5 is 0.1/100.
Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
1	2.5	0.006
3	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type: Standard: No Retaining Ring	With Retaining Ring	D	L 0.1mm Increment	B · S 1mm Increment	Retaining Ring No. Accessories: Retaining Rings 2pcs. (With Retaining Ring only)
No Retaining Ring	With Retaining Ring	3	20.0~150.0	2≤B, S<L/2	NETWS2
		4	20.0~200.0		NETWS3
		5	20.0~250.0		NETWS4
		6	20.0~300.0		NETWS5
SFMRR	SFMRRA	8	20.0~400.0	3≤B, S<L/2	NETWS7
		10	25.0~500.0		STWS10
PSFMRR	PSFMRRA	12	40.0~600.0	4≤B, S<L/2	STWS12
		15	50.0~700.0		STWS15
		20	70.0~800.0		STWS20
SSFMRR (D6 is not available for SSFMRR.)	SSFMRRA (D6 is not available for SSFMRRA.)	25	80.0~800.0	5≤B, S<L/2	STWS25
		30	80.0~800.0		STWS30
		35	80.0~800.0		STWS35
		40	80.0~800.0		STWS40
		50	100.0~800.0		STWS50

(2) h7 (Ground)

Part Number Type: Standard: No Retaining Ring	With Retaining Ring	D	L 0.1mm Increment	B / S 1mm Increment	Retaining Ring No. Accessories: Retaining Rings 2pcs. (With Retaining Ring only)
No Retaining Ring	With Retaining Ring	6	20.0~300.0	2≤B, S<L/2	NETWS5
		8	20.0~400.0	3≤B, S<L/2	NETWS7
		10	25.0~500.0		STWS10
SFHRR	SFHRRA	12	40.0~600.0	4≤B, S<L/2	STWS12
		15	50.0~700.0		STWS15
PSFHRR	PSFHRRA	20	70.0~800.0		STWS20
		25	80.0~800.0	5≤B, S<L/2	STWS25
SSFHRR	SSFHRRA	30	80.0~800.0		STWS30
		35	80.0~800.0		STWS35
		40	80.0~800.0		STWS40
		50	100.0~800.0		STWS50

(3) g6 (Ground)

Part Number Type: Standard: No Retaining Ring	With Retaining Ring	Retaining Ring Groove Outside Datum: With Retaining Ring	D	L 0.1mm Increment	B · S 1mm Increment Standard	P 0.1mm Increment Retaining Ring Groove Outside Datum	m	Tolerance	d	Tolerance	Retaining Ring No. Accessories: Retaining Rings 2pcs. (With Retaining Ring only)
No Retaining Ring	With Retaining Ring	With Retaining Ring	2	20.0~ 50.0	2≤B, S<L/2	3≤P≤L-4	0.4	+0.05 0	1.2	+0.06 0	NETWS1.2
			2.5	20.0~ 50.0			0.5		1.5		NETWS1.5
			3	20.0~150.0					2		NETWS2
			4	20.0~200.0			0.7	+0.1 0	3		NETWS3
			5	20.0~250.0					4	+0.075 0	NETWS4
	SFRRA		6	20.0~300.0					5		NETWS5
SFRR		SFRRGA	8	20.0~400.0	3≤B, S<L/2	5≤P≤L-5	0.9		7	+0.09 0	NETWS7
	PSFRRA		10	25.0~500.0					9.6	0 -0.09	STWS10
PSFRR		PSFRRGA	12	40.0~600.0	4≤B, S<L/2	7≤P≤L-6	1.15	+0.14 0	11.5	0 -0.11	STWS12
	SSFRRA		13	40.0~600.0					12.4		STWS13
SSFRR		SSFRRGA	*15	50.0~700.0					14.3		STWS15
		(D13, 16, 18 and 22 are not available for SSFRRGA.)	16	50.0~800.0					15.2		STWS16
			17	70.0~800.0					16.2		STWS17
	*HFRRA (* marked sizes only)		18	70.0~800.0					17		STWS18
			*20	70.0~800.0			1.35		19	0 -0.21	STWS20
			22	70.0~800.0					21		STWS22
			*25	80.0~800.0	5≤B, S<L/2	10≤P≤L-8			23.9		STWS25
	*PHFRRA (* marked sizes only)		*30	80.0~800.0			1.65		28.6		STWS30
			35	80.0~800.0					33	0 -0.25	STWS35
			40	80.0~800.0			1.9		38		STWS40
			50	100.0~800.0					47		STWS50

For NETWS and STWS retaining rings details, refer to P.2-253 The material of retaining ring is 1.4301/X5CrNi18-10.

Order Example

Part Number	L	B	S	P
SFMRR30	150	B6	S6	
SFHRR40	230	B10	S10	
SFRRGA20	180			P150

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR/ piece P88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

■**Volume Discount** (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) h9 (Cold-drawn)

Type	€ SFMRR(1.1191/C45E, Black Oxide) SFMRRA For Retaining Ring Type, add 2,50 EUR to the prices shown below.								€ PSFMRR(1.1191/C45E, Electroless Nickel Plating) PSFMRRA For Retaining Ring Type, add 2,50 EUR to the prices shown below.								€ SSFMRR(1.4301/X5CrNi18-10) SSFMRRA For Retaining Ring Type, add 2,50 EUR to the prices shown below.							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0
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15																								
20																								
25																								
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35																								
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(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHRR · SFRR (1.1191/C45E, Black Oxide) SFHRRA · SFRRA · SFRRGA For Retaining Ring Type, add 2,50 EUR to the prices shown below.								€ PSFHRR · PSFRR (1.1191/C45E, Electroless Nickel Plating) PSFHRRA · PSFRRA · PSFRRGA For Retaining Ring Type, add 2,50 EUR to the prices shown below.								€ SSFHRR · SSFRR (1.4301/X5CrNi18-10) SSFHRRA · SSFRRA · SSFRRGA For Retaining Ring Type, add 2,50 EUR to the prices shown below.							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0
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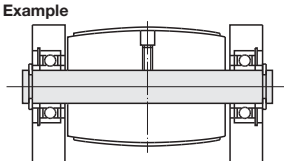
Type	€ HFRRA With Retaining Ring (1.7220/34CrMo4 Hardness30~35HRC, Black Oxide)								€ PHFRRA With Retaining Ring (1.7220/34CrMo4 Hardness30~35HRC, Electroless Nickel Plating)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 800.0
15																
20																
25																
30																

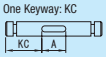
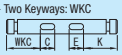
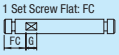
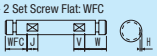
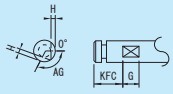
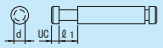
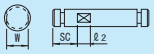
Example



Alterations

Part Number - L - B - S - (KC, WKC, FC...etc.)

SFRRA30 - 250 - B10 - S20 - KC20-A10

	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats
Alterations	- One Keyway: KC  - Two Keyways: WKC 	- 1 Set Screw Flat: FC  - 2 Set Screw Flat: WFC 			
Code	KC · WKC	FC · WFC	KFC	UC	SC
Spec.	KC: Adds one keyway. Ordering Code KC50-A10 WKC: Adds 2 Keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, refer to **P.737** If 3 keyways are required, use both KC and WKC. Not applicable to D=2~5	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H: 3~5 / 0.5; 6~17 / 1; 18~40 / 2; 50 / 3 Not applicable to D2 and D2.5.	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG120 D / H: 3~5 / 0.5; 6~17 / 1; 18~40 / 2; 50 / 3 Not applicable to D2 and D2.5. When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D2 and D2.5. Not applicable to D13 or more. D / d / ℓ1: 3 / 2; 4 / 3; 5 / 4; 6 / 5; 8 / 7; 10 / 8; 12 / 10 — ℓ1: 4 (D 3~8), 5 (D 10~12)	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 D / W / ℓ2: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 10; 12/13 / 10 / 13; 15/16 / 13 / 14; 17/18 / 14 / 17; 20/22 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20 Not applicable to D2~5 When combined with other alterations, ±2 degree phase differential may occur.
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00

Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-

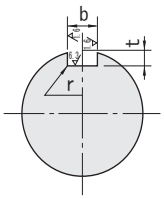
-Retaining Ring Grooves on Both Ends with Keyway-

■Rotary Shafts with Keyways have been standardized. No. of keyways can be specified up to 3. Specification of Keyways has become easier.



	Type		D Tolerance	M Material	S Surface Treatment
	Standard	Retaining Ring			
(1)	SFMKRR	SFMKRRA	h9 (Cold-drawn)	1.1191/ C45E	Black Oxide
	PSFMKRR	PSFMKRRA			Electroless Nickel Plating
	SSFMKRR	SSFMKRRA		1.4301	-
(2)	SFHKRR	SFHKRRA	h7 (Ground)	1.1191/ C45E	Black Oxide
	-	PSFHKRRA			Electroless Nickel Plating
	-	SSFHKRRA		1.4301	-
(3)	-	SFGKRRA	g6 (Ground)	1.1191/ C45E	Black Oxide
	PSFGKRR	PSFGKRRA			Electroless Nickel Plating
	SSFGKRR	SSFGKRRA		1.4301	-

■Detailed Keyway Dimensions

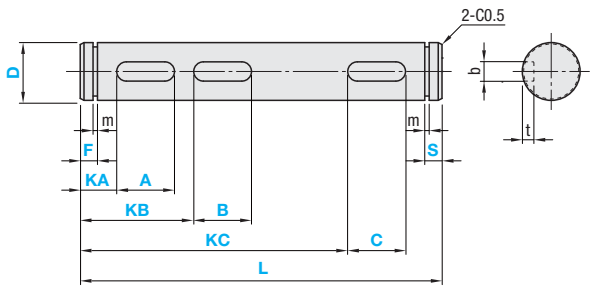


Shaft Diameter	b Reference Dimension	b Tolerance (N9)	t Reference Dimension	t Tolerance	r
6	2	-0.004 -0.029	1.2	+0.1 0	0.08~ 0.16
8, 10	3		1.8		
12	4	0 -0.03	2.5		0.16~ 0.25
13~17	5		3.0		
18~22	6		3.5		
25 · 30	8	0 -0.036	4.0	+0.2 0	0.25~ 0.4
35	10		5.0		
40	12	0 -0.043	5.0		
50	14		5.5		

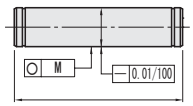
When KA=0, KA+A=L, KB+B=L, KC+C=L, keyway shape is as shown below.



Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)
No. of keyways are selectable up to 3.
The position of keyways should be specified within inner dimension (L-F-S) of a retaining ring.

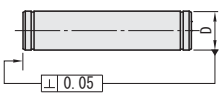


■Circularity · Straightness



Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type Standard	Part Number Type Retaining Ring	D h9	Tolerance	L 0.1mm Increment	F · S 1mm Increment	Keyway (1) KA · A 1mm Increment	Keyway (2) KB · B 1mm Increment	Keyway (3) KC · C 1mm Increment	Retaining Ring No. Accessories: Retaining Rings 2pcs. (With Retaining Ring Type only)
SFMKRR	SFMKRRA	6	0 -0.030	20.0~300.0	2≤F · S<L/2	KA+A≤L-S	KB+B≤L-S	KC+C≤L-S	NETWS5
		8	0 -0.036	20.0~400.0	3≤F · S<L/2				NETWS7
		10		25.0~500.0					STWS10
PSFMKRR	PSFMKRRA	12	0 -0.043	40.0~600.0	4≤F · S<L/2	KA≥F	KB≥KA+A	KC≥KB+B	STWS12
		15		50.0~700.0					STWS15
SSFMKRR (D6 is not available for SSFMKRR.)	SSFMKRRA (D6 is not available for SSFMKRRA.)	20	0 -0.052	70.0~800.0		b≤A≤100	b≤B≤100	b≤C≤100	STWS20
		25		80.0~800.0					STWS25
		30		80.0~800.0	5≤F · S<L/2				STWS30
		35	0 -0.062	80.0~800.0					STWS35

(2) h7 (Ground)

Part Number Type Standard	Part Number Type Retaining Ring	D h7	Tolerance	L 0.1mm Increment	F · S 1mm Increment	Keyway (1) KA · A 1mm Increment	Keyway (2) KB · B 1mm Increment	Keyway (3) KC · C 1mm Increment	Retaining Ring No. Accessories: Retaining Rings 2pcs. (With Retaining Ring Type only)
SFHKRR	SFHKRRA	6	0 -0.012	20.0~300.0	2≤F · S<L/2	KA+A≤L-S	KB+B≤L-S	KC+C≤L-S	NETWS5
		8	0 -0.015	20.0~400.0	3≤F · S<L/2				NETWS7
		10		25.0~500.0					STWS10
		12	0 -0.018	40.0~600.0	4≤F · S<L/2				STWS12
		15		50.0~700.0					STWS15
PSFHKRRA		20	0 -0.021	70.0~800.0		KA≥F	KB≥KA+A	KC≥KB+B	STWS20
		25		80.0~800.0					STWS25
SSFHKRRA		30		80.0~800.0		b≤A≤100	b≤B≤100	b≤C≤100	STWS30
		35	0 -0.025	80.0~800.0	5≤F · S<L/2				STWS35
		40		80.0~800.0					STWS40
		50		100.0~800.0					STWS50

(3) g6 (Ground)

Part Number Type Standard	Part Number Type Retaining Ring	D g6	Tolerance	L 0.1mm Increment	F · S 1mm Increment	Keyway (1) KA · A 1mm Increment	Keyway (2) KB · B 1mm Increment	Keyway (3) KC · C 1mm Increment	Retaining Ring No. Accessories: Retaining Rings 2pcs. (With Retaining Ring Type only)
		6	-0.004 -0.012	20.0~300.0	2≤F · S<L/2				NETWS5
		8	-0.005 -0.014	20.0~400.0	3≤F · S<L/2				NETWS7
		10		25.0~500.0					STWS10
	SFGKRRA	12	-0.006 -0.017	40.0~600.0	4≤F · S<L/2				STWS12
		13		40.0~600.0					STWS13
		15		50.0~700.0					STWS15
PSFGKRR	PSFGKRRA	16		50.0~800.0		KA+A≤L-S	KB+B≤L-S	KC+C≤L-S	STWS16
		17		70.0~800.0					STWS17
SSFGKRR (D13 ·16 · 18 and 22 are not available for SSFGKRR.)	SSFGKRRA (D13 · 16 · 18 and 22 are not available for SSFGKRRA.)	18		70.0~800.0		KA≥F	KB≥KA+A	KC≥KB+B	STWS18
		20	-0.007 -0.020	70.0~800.0		b≤A≤100	b≤B≤100	b≤C≤100	STWS20
		22		70.0~800.0					STWS22
		25		80.0~800.0					STWS25
		30		80.0~800.0					STWS30
		35	-0.009 -0.025	80.0~800.0	5≤F · S<L/2				STWS35
		40		80.0~800.0					STWS40
		50		100.0~800.0					STWS50

Order Example

	Part Number	-	L	-	F	-	S	-	Keyway (1) KA	-	A	-	Keyway (2) KB	-	B	-	Keyway (3) KC	-	C
1 Keyway	SFMKRR10	-	325	-	F10	-	S10	-	KA20	-	A50								
2 Keyways	SFHKRR30	-	300	-	F10	-	S10	-	KA20	-	A20	-	KB120	-	B20				
3 Keyways	SSFGKRR25	-	350	-	F10	-	S10	-	KA10	-	A10	-	KB90	-	B30	-	KC210	-	C30

Days to Ship: 8 Days

Express A 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

Product unit price is the price shown in the table plus keyway machining charge.
(Ex.) SFMKRR20-630-KA150-A20-KB250-B20
(Price in the table) + charge for 2 keyways = Total Price
22,70 EUR + 8,00 EUR = 30,70 EUR

Keyway Machining Charge

No. of keyways	Charge
1	4,00
2	8,00
3	12,00

(1) h9 (Cold-drawn)

Type	€ SFMKRR (1.1191/C45E, Black Oxide) SFMKRRA (For Retaining Ring Type, add 2,50 EUR to the prices shown below.)	€ PSFMKRR (1.1191/C45E, Electroless Nickel Plating) PSFMKRRA (For Retaining Ring Type, add 2,50 EUR to the prices shown below.)	€ SSFMKRR (1.4301/X5CrNi18-10) SSFMKRRA (For Retaining Ring Type, add 2,50 EUR to the prices shown below.)

D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
6	○	○	○	○	○			
8	○	○	○	○	○	○		
10	○	○	○	○	○	○	○	
12	○	○	○	○	○	○	○	
15	○	○	○	○	○	○	○	○
20		○	○	○	○	○	○	○
25		○	○	○	○	○	○	○
30		○	○	○	○	○	○	○
35		○	○	○	○	○	○	○

(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHKRR (1.1191/C45E, Black Oxide) SFHKRRA · SFGKRRA (For Retaining Ring Type, add 2,50 EUR to the prices shown below.)	€ PSFGKRR (1.1191/C45E, Electroless Nickel Plating) PSFHKRRA · PSFGKRRA (For Retaining Ring Type, add 2,50 EUR to the prices shown below.)	€ SSFGKRR (1.4301/X5CrNi18-10) SSFHKRRA · SSFGKRRA (For Retaining Ring Type, add 2,50 EUR to the prices shown below.)

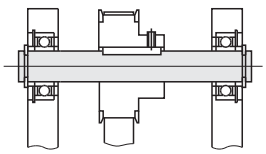
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
6	○	○	○	○	○			
8	○	○	○	○	○	○		
10	○	○	○	○	○	○	○	
12	○	○	○	○	○	○	○	
13	○	○	○	○	○	○	○	○
15	○	○	○	○	○	○	○	○
16	○	○	○	○	○	○	○	○
17		○	○	○	○	○	○	○
18		○	○	○	○	○	○	○
20		○	○	○	○	○	○	○
22		○	○	○	○	○	○	○
25		○	○	○	○	○	○	○
30		○	○	○	○	○	○	○
35		○	○	○	○	○	○	○
40		○	○	○	○	○	○	○
50		○	○	○	○	○	○	○

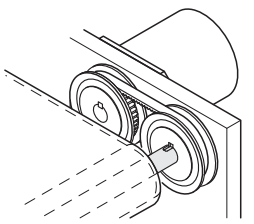
Alterations

Part Number - L - F - S - KA - A - KB - B - KC - C - (FC · KFC...etc.)
SFHKRR30 - 300 - F10 - S10 - KA20 - A50 - KB120 - B20 - FC80-G5

Alterations	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats
Code	FC · WFC	KFC	UC	SC
Spec.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V=1 mm Increment G, J, V≤50 Set screw flat and keyway (s) are added to the same surface. D / H: 6~17 / 1; 18~40 / 2; 50 / 3 Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG120 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1: 6 / 5 / 4; 8 / 7 / 4; 10 / 8 / 5; 12 / 10 / 5	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 A wrench flat is added to the opposite surface of keyway alteration. D / W / ℓ2: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12~13 / 10 / 10; 15~16 / 13 / 10; 17~18 / 14 / 10; 20~22 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20 When combined with other alterations, ±2 degree phase differential may occur.
Price Adder	FC: 2,00 WFC: 4,00	6,00	2,00	4,00

Example





Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-One End Female Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your purpose.



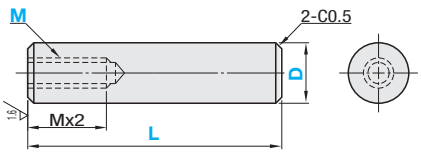
	Type: Standard	Type: Wrench Flats	D Tolerance	M Material	S Surface Treatment
(1)	SFMRT	SFMRTS	h9 (Cold-drawn)	1.1191/C45E	Black Oxide
	PSFMRT	PSFMRTS			Electroless Nickel Plating
	SSFMRT	SSFMRTS		1.4301/X5CrNi18-10	-
(2)	SFHRT	SFHRTS	h7 (Ground)	1.1191/C45E	Black Oxide
	PSFHRT	PSFHRTS			Electroless Nickel Plating
	SSFHRT	SSFHRTS		1.4301/X5CrNi18-10	-
(3)	SFRT	SFRTS	g6 (Ground)	1.1191/C45E	Black Oxide
	PSFRT	PSFRTS			Electroless Nickel Plating
	SSFRT	SSFRTS		1.4301/X5CrNi18-10	-
	HFRT	-		1.7220/34CrMo4 H Hardness 30~35HRC	Black Oxide
	PHFRT	-			Electroless Nickel Plating

■Tolerance Table

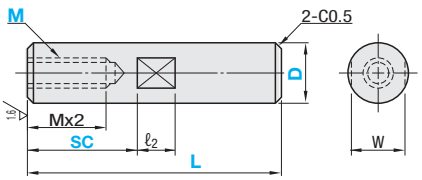
D	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
4~6	0 / -0.030	0 / -0.012	-0.004 / -0.012
8, 10	0 / -0.036	0 / -0.015	-0.005 / -0.014
12~18	0 / -0.043	0 / -0.018	-0.006 / -0.017
20~30	0 / -0.052	0 / -0.021	-0.007 / -0.020
35~50	0 / -0.062	0 / -0.025	-0.009 / -0.029

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) Ra is 1.6. (6.3 / 1.6)

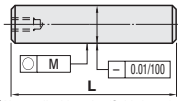
Standard



Wrench Flats



■Circularity, Straightness



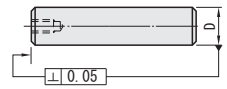
Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
3	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type: Standard	Type: Wrench Flats	D	L 0.1mm Increment	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2
SFMRT	SFMRTS	4	15.0~200.0	2	-	-	-
		5	15.0~250.0	2.6 3			
PSFMRT	PSFMRTS	6	20.0~300.0	3 4	SC+ℓ2≤L SC=0 or SC≥1 For SC≤Mx3 W-M≥2	5	8
		8	20.0~400.0	3 4 5 6		7	
		10	20.0~500.0	4 5 6		8	
SSFMRT (D4, D5 and D6 are not available for SSFMRT.)	SSFMRTS (D4, D5 and D6 are not available for SSFMRTS.) (Wrench flats not available for D4 and D5.)	12	30.0~600.0	5 6 8		10	10
		15	30.0~700.0	5 6 8 10		13	
		20	40.0~800.0	5 6 8 10 12 16		17	
		25	50.0~800.0	5 6 8 10 12 16		22	
		30	60.0~800.0	8 10 12 16 20		27	15
		35	70.0~800.0	8 10 12 16 20 24		30	

(2) h7 (Ground)

Part Number Type: Standard	Type: Wrench Flats	D	L 0.1mm Increment	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2
		4	15.0~200.0	2	-	-	-
		5	15.0~250.0	2.6 3			
		6	20.0~300.0	3 4	SC+ℓ2≤L SC=0 or SC≥1 For SC≤Mx3 W-M≥2	5	8
SFHRT	SFHRTS	8	20.0~400.0	3 4 5 6		7	
		10	20.0~500.0	4 5 6		8	
PSFHRT	PSFHRTS	12	30.0~600.0	5 6 8		10	10
		15	30.0~700.0	5 6 8 10		13	
SSFHRT	SSFHRTS	20	40.0~800.0	5 6 8 10 12 16		17	
		25	50.0~800.0	5 6 8 10 12 16		22	
		30	60.0~800.0	8 10 12 16 20		27	15
	(Wrench flats not available for D4 and D5.)	35	70.0~800.0	8 10 12 16 20 24		30	
		40	80.0~800.0	12 16 20 24 30		36	20
		50	100.0~800.0	16 20 24 30		41	

(3) g6 (Ground)

Part Number Type: Standard	Type: Wrench Flats	D	L 0.1mm Increment	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2
		4	15.0~200.0	2	-	-	-
		5	15.0~250.0	2.6 3			
SFRT		6	20.0~300.0	3 4	SC+ℓ2≤L SC=0 or SC≥1 For SC≤Mx3 W-M≥2	5	8
		8	20.0~400.0	3 4 5 6		7	
PSFRT		10	20.0~500.0	4 5 6		8	
		12	30.0~600.0	5 6 8		10	10
SSFRT	SFRTS	13	30.0~600.0	5 6 8		11	
		*15	30.0~700.0	5 6 8 10		13	
*HFRT (* marked sizes only)	PSFRTS	16	30.0~800.0	5 6 8 10		14	
		17	40.0~800.0	5 6 8 10 12			
	SSFRTS	18	40.0~800.0	5 6 8 10 12		15	
		*20	40.0~800.0	5 6 8 10 12 16		17	
*PHFRT (* marked sizes only)	(Wrench flats not available for D4 and D5.)	22	40.0~800.0	5 6 8 10 12 16		19	
		*25	50.0~800.0	5 6 8 10 12 16		22	
		*30	60.0~800.0	8 10 12 16 20		27	15
		*35	70.0~800.0	8 10 12 16 20 24		30	
		*40	80.0~800.0	12 16 20 24 30		36	20
		*50	100.0~800.0	16 20 24 30		41	

Order Example

Part Number	L	M	SC
SFMRT30	250	M12	
SSFHRTS25	200	M8	SC20

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR / piece

A Express Charge of 21,60 EUR for 3 or more identical pieces.

P88

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) h9 (Cold-drawn)

Type	€ SFMRT(1.1191/C45E, Black Oxide) SFMRTS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFMRT(1.1191/C45E, Electroless Nickel Plating) PSFMRTS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFMRT(1.4301/X5CrNi18-10) SSFMRTS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
4																								
5																								
6																								
8																								
10																								
12																								
15																								
20																								
25																								
30																								
35																								

(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHRT / SFRT(1.1191/C45E, Black Oxide) SFHRTS / SFRTS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFHRT / PSFRT(1.1191/C45E, Electroless Nickel Plating) PSFHRTS / PSFRTS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFHRT / SSFRT(1.4301/X5CrNi18-10) SSFHRTS / SSFRTS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
4																								
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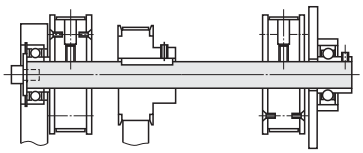
Type	€ HFRT (1.7220/34CrMo4 Hardness 30~35HRC·Black Oxide)								€ PHFRT (1.7220/34CrMo4 Hardness 30~35HRC·Electroless Nickel Plating)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
15																
20																
25																
30																
35																
40																
50																

Example



Alterations

Part Number - L - M - [ ] - (KC, WKC, FC...etc.)
SFMRTS10 - 150 - M4 - SC30 - LKC

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	L Dimension Tolerance	Retaining Ring Groove
	· One Key Groove: KC · Two Key Grooves: WKC	· One Set Screw Flat: FC · Two Set Screw Flats: WFC				
Code	KC / WKC	FC / WFC	KFC	UC	LKC	TA / TB
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E=1 mm Increment A, E, C≤100 For keyway details, refer to P737 If 3 keyways are required, use both KC and WKC. Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V=1 mm Increment G, J, V≤50 D / H: 4, 5 / 0.5; 6~17 / 1; 18~40 / 2; 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG120 D / H: 4, 5 / 0.5; 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1: 4 / 3 / 4; 5 / 4 / 4; 6 / 5 / 4; 8 / 7 / 4; 10 / 8 / 5; 12 / 10 / 5	Changes L Dimension Tolerance. Ordering Code LKC L<500⋯› L±0.05 L≥500⋯› L±0.1	Adds a retaining ring groove. (Applicable retaining rings are included.) TA, TB = 1mm Increment Ordering Code TA10-TB10 4≤TA, TB<L/2 For dimensions of the retaining ring groove, please refer to P734
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	4,00

NEW

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-

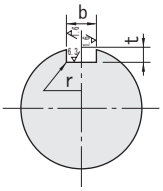
-One End Female Thread with Keyway-

■Rotary Shafts with Keyways have been standardized. No. of keyways can be specified up to 3. Specification of Keyways has become easier.



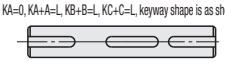
	Type	D Tolerance	M Material	S Surface Treatment
(1)	SFMKRT	h9 (Cold-drawn)	1.1191/C45E	Black Oxide
	PSFMKRT			Electroless Nickel Plating
(2)	SFHKRT	h7 (Ground)	1.1191/C45E	Black Oxide
	PSFHKRT			Electroless Nickel Plating
	SSFHKRT		1.4301/X5CrNi18-10	-
(3)	SFGKRT	g6 (Ground)	1.1191/C45E	Black Oxide
	PSFGKRT			Electroless Nickel Plating
	SSFGKRT		1.4301/X5CrNi18-10	-

■Detailed Keyway Dimensions



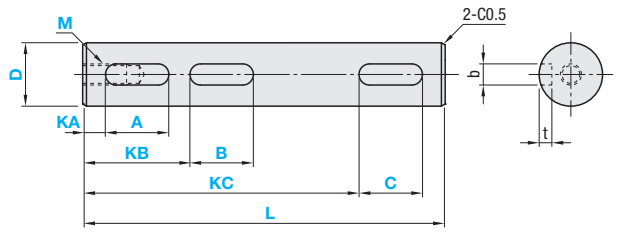
Shaft Diameter	b Reference Dimension	b Tolerance (N9)	t Reference Dimension	t Tolerance	r
6	2	-0.004 -0.029	1.2	+0.1 0	0.08~0.16
8・10	3		1.8		
12	4	0 -0.03	2.5		0.16~0.25
13~17	5		3.0		
18~22	6		3.5		
25・30	8	0 -0.036	4.0	+0.2 0	0.25~0.4
35	10		5.0		
40	12	0 -0.043	5.0		
50	14		5.5		

When KA=0, KA+A=L, KB+B=L, KC+C=L, keyway shape is as shown below.



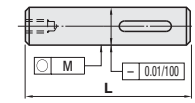
Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)

No. of keyways can be specified up to 3.



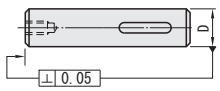
Thread depth of M (Coarse) is M x 2.

■Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type	D_{h9}	Tolerance	L 0.1mm Increment	M (Coarse) Selectable	Keyway (1) KA / A 1mm Increment	Keyway (2) KB / B 1mm Increment	Keyway (3) KC / C 1mm Increment
SFMKRT PSFMKRT	6	0 -0.030	20.0~300.0	-3 -4	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100
	8	0 -0.036	20.0~400.0	-3 -4 -5 -6			
	10		20.0~500.0	4 -5 -6			
	12	0 -0.043	30.0~600.0	5 -6 -8			
	15		30.0~700.0	5 6 -8			
	20	0 -0.052	40.0~800.0	5 6 8 10			
	25		50.0~800.0	5 6 8 10 12			
	30		60.0~800.0	8 10 12 16			
	35	0 -0.062	70.0~800.0	8 10 12 16 20			

(2) h7 (Ground)

M Sizes in ( ) can be selected when KA≥M x 2.

Part Number Type	D_{h7}	Tolerance	L 0.1mm Increment	M (Coarse) Selectable	Keyway (1) KA / A 1mm Increment	Keyway (2) KB / B 1mm Increment	Keyway (3) KC / C 1mm Increment
SFHKRT PSFHKRT SSFHKRT	6	0 -0.012	20.0~300.0	-3 -4	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100
	8	0 -0.015	20.0~400.0	-3 -4 -5 -6			
	10		20.0~500.0	4 -5 -6			
	12	0 -0.018	30.0~600.0	5 -6 -8			
	15		30.0~700.0	5 6 -8			
	20	0 -0.021	40.0~800.0	5 6 8 10			
	25		50.0~800.0	5 6 8 10 12			
	30		60.0~800.0	8 10 12 16			
	35	0 -0.025	70.0~800.0	8 10 12 16 20			
	40		80.0~800.0	12 16 20 24			
	50		100.0~800.0	16 20 24 30			

(3) g6 (Ground)

M Sizes in ( ) can be selected when KA≥M x 2.

Part Number Type	D_{g6}	Tolerance	L 0.1mm Increment	M (Coarse) Selectable	Keyway (1) KA / A 1mm Increment	Keyway (2) KB / B 1mm Increment	Keyway (3) KC / C 1mm Increment
SFGKRT PSFGKRT SSFGKRT (D13, 16, 18 and 22 are not available for SSFGKRT.)	6	-0.004 -0.012	20.0~300.0	-3 -4	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100
	8	-0.005 -0.014	20.0~400.0	-3 -4 -5 -6			
	10		20.0~500.0	4 -5 -6			
	12	-0.006 -0.017	30.0~600.0	5 -6 -8			
	13		30.0~600.0	5 6 -8			
	15		30.0~700.0	5 6 -8			
	16		30.0~800.0	5 6 8 -10			
	17		40.0~800.0	5 6 8 -10 -12			
	18		40.0~800.0	5 6 8 -10 -12			
	20	-0.007 -0.020	40.0~800.0	5 6 8 10 -12 -16			
	22		40.0~800.0	5 6 8 10 12 -16			
	25		50.0~800.0	5 6 8 10 12 -16			
	30		60.0~800.0	8 10 12 16			
	35	-0.009 -0.025	70.0~800.0	8 10 12 16 20			
	40		80.0~800.0	12 16 20 24			
	50		100.0~800.0	16 20 24 30			

M Sizes in ( ) can be selected when KA≥M x 2.

Order Example

	Part Number	-	L	-	M	-	Keyway (1) KA	-	A	-	Keyway (2) KB	-	B	-	Keyway (3) KC	-	C
1 Keyway	SFMKRT10	-	325	-	M4	-	KA20	-	A50								
2 Keyways	SFHKRT30	-	300	-	M10	-	KA20	-	A50	-	KB120	-	B20				
3 Keyways	SFGKRT25	-	350	-	M8	-	KA10	-	A60	-	KB90	-	B30	-	KC210	-	C30

Days to Ship: 8 Days

Express A 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

Product unit price is the price shown in the table plus keyway machining charge.
(Ex.) SFMKRT20-630-KA120-A20-KB220-B20
(Price in the table) + charge for 2 keyways = Total Price
20,60 EUR + 8,00 EUR = 28,60 EUR

Keyway Machining Charge

No. of keyways	Charge
1	4,00
2	8,00
3	12,00

(1) h9 (Cold-drawn)

Type	€ SFMKRT (1.1191/C45E, Black Oxide)								€ PSFMKRT (1.1191/C45E, Electroless Nickel Plating)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
6																
8																
10																
12																
15																
20																
25																
30																
35																

(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHKRT / SFGKRT (1.1191/C45E, Black Oxide)								€ PSFHKRT / PSFGKRT (1.1191/C45E, Electroless Nickel Plating)								€ SSFHKRT / SSFGKRT (1.4301/X5CrNi18-10)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
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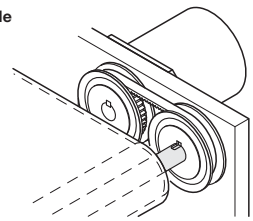
Example



Alterations

Part Number - L - M - KA - A - KB - B - KC - C - (LKC, FC...etc.)
SFHKRT30 - 300 - M10 - KA20 - A50 - KB120 - B20 - LKC

Alterations	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance	Retaining Ring Groove
	· One Set Screw Flat: FC · Two Set Screw Flats: WFC					
Code	FC · WFC	KFC	UC	SC	LKC	TA · TB
Spec.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V=1 mm Increment G, J, V≤50 Set screw flat and keyway (s) are added to the same surface. D: 6~17 H: 1; 18~40 H: 2; 50 H: 3 Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG120 D: 6~17 H: 1; 18~40 H: 2; 50 H: 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D: 6 d: 5 ℓ1: 4; 8 7 4; 10 8 5; 12 10 5	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 A wrench flat is added to the opposite surface of keyway alteration. D: 6 W: 5 ℓ2: 8; 8 7 8; 10 8 8; 12/13 10 10; 15/16 13 10; 17/18 14 10; 20/22 17 10 D: 25 W: 22 ℓ2: 10; 30 27 10; 35 30 15; 40 36 20; 50 41 20 When combined with other alterations, ±2 degree phase differential may occur.	Changes L Dimension Tolerance. Ordering Code LKC L<500⋯ L±0.05 L≥500⋯ L±0.1	Adds a retaining ring groove. (Applicable retaining rings are included.) TA, TB = 1mm Increment Ordering Code TA10-TB10 4≤TA, TB<L/2 For dimensions of the retaining ring groove, please refer to P.734
Price Adder	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	4,00	4,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-Both Ends Female Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your purpose.



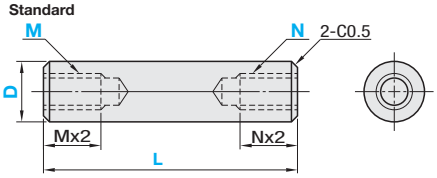
	Type		D Tolerance	M Material	S Surface Treatment
	Standard	Wrench Flats			
(1)	SFMRW	SFMRWS	h9 (Cold-drawn)	1.1191/C45E	Black Oxide
	PSFMRW	PSFMRWS			Electroless Nickel Plating
	SSFMRW	SSFMRWS		1.4301/X5CrNi18-10	-
(2)	SFHRW	SFHRWS	h7 (Ground)	1.1191/C45E	Black Oxide
	PSFHRW	PSFHRWS			Electroless Nickel Plating
	SSFHRW	SSFHRWS		1.4301/X5CrNi18-10	-
(3)	SFRW	SFRWS	g6 (Ground)	1.1191/C45E	Black Oxide
	PSFRW	PSFRWS			Electroless Nickel Plating
	SSFRW	SSFRWS		1.4301/X5CrNi18-10	-
	HFRW	HFRWS		1.7220/34CrMo4 H Hardness 30~35HRC	Black Oxide
	PHFRW	-			Electroless Nickel Plating

■Tolerance Table

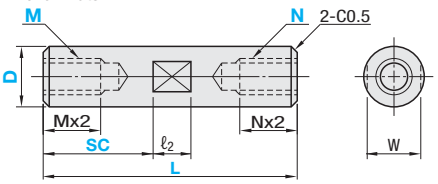
D	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
4~6	0 / -0.030	0 / -0.012	-0.004 / -0.012
8, 10	0 / -0.036	0 / -0.015	-0.005 / -0.014
12~18	0 / -0.043	0 / -0.018	-0.006 / -0.017
20~30	0 / -0.052	0 / -0.021	-0.007 / -0.020
35~50	0 / -0.062	0 / -0.025	-0.009 / -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)

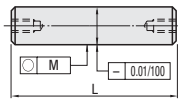
Standard



Wrench Flats



■Circularity, Straightness



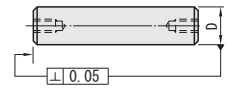
Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
3	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type Standard	Wrench Flats	D	L 0.1mm Increment	M (Coarse) · N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2
		4	15.0~200.0	2	-	-	-
		5	15.0~250.0	2.6 3			
SFMRW	SFMRWS	6	20.0~300.0	3 4		5	
		8	20.0~400.0	3 4 5 6		7	8
PSFMRW	PSFMRWS	10	20.0~500.0	4 5 6	SC+ℓ2≤L	8	
		12	30.0~600.0	5 6 8		10	
SSFMRW	SSFMRWS	15	30.0~700.0	5 6 8 10	SC=0 or SC≥1	13	10
(D4, D5 and D6 are not available for SSFMRW.)	(D4, D5 and D6 are not available for SSFMRWS.)	20	40.0~800.0	5 6 8 10 12 16		17	
		25	50.0~800.0	5 6 8 10 12 16		22	
		30	60.0~800.0	8 10 12 16 20	For SC≤Mx3 W-M≥2	27	
	(Wrench flats not available for D4 and D5.)	35	70.0~800.0	8 10 12 16 20 24		30	15
		40	80.0~800.0	12 16 20 24 30		36	20
		50	100.0~800.0	16 20 24 30		41	

(2) h7 (Ground)

Part Number Type Standard	Wrench Flats	D	L 0.1mm Increment	M (Coarse) · N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2
		4	15.0~200.0	2	-	-	-
		5	15.0~250.0	2.6 3			
		6	20.0~300.0	3 4		5	
SFHRW	SFHRWS	8	20.0~400.0	3 4 5 6		7	8
		10	20.0~500.0	4 5 6	SC+ℓ2≤L	8	
PSFHRW	PSFHRWS	12	30.0~600.0	5 6 8		10	
		15	30.0~700.0	5 6 8 10	SC=0 or SC≥1	13	10
SSFHRW	SSFHRWS	20	40.0~800.0	5 6 8 10 12 16		17	
		25	50.0~800.0	5 6 8 10 12 16		22	
		30	60.0~800.0	8 10 12 16 20	For SC≤Mx3 W-M≥2	27	
	(Wrench flats not available for D4 and D5.)	35	70.0~800.0	8 10 12 16 20 24		30	15
		40	80.0~800.0	12 16 20 24 30		36	20
		50	100.0~800.0	16 20 24 30		41	

(3) g6 (Ground)

Part Number Type Standard	Wrench Flats	D	L 0.1mm Increment	M (Coarse) · N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2
		4	15.0~200.0	2	-	-	-
		5	15.0~250.0	2.6 3			
SFRW	SFRWS	6	20.0~300.0	3 4		5	
		8	20.0~400.0	3 4 5 6		7	8
PSFRW	PSFRWS	10	20.0~500.0	4 5 6		8	
		12	30.0~600.0	5 6 8		10	
SSFRW	SSFRWS	13	30.0~600.0	5 6 8		11	
		*15	30.0~700.0	5 6 8 10	SC+ℓ2≤L	13	
*HFRW	*HFRWS	16	30.0~800.0	5 6 8 10	SC=0 or SC≥1	14	10
(* marked sizes only)	(* marked sizes only)	17	40.0~800.0	5 6 8 10 12		15	
		18	40.0~800.0	5 6 8 10 12		17	
*PHFRW		*20	40.0~800.0	5 6 8 10 12 16	For SC≤Mx3 W-M≥2	19	
(* marked sizes only)		22	40.0~800.0	5 6 8 10 12 16		22	
	(Wrench flats not available for D4 and D5.)	*25	50.0~800.0	5 6 8 10 12 16		27	
		*30	60.0~800.0	8 10 12 16 20		30	15
		*35	70.0~800.0	8 10 12 16 20 24		36	20
		*40	80.0~800.0	12 16 20 24 30		41	
		*50	100.0~800.0	16 20 24 30			

For overall length L, Mx2+Nx2≤L is required. When L is less than the pilot hole depth of tapped hole, the pilot hole might go through.

Order Example

Part Number	L	M	N	SC
SFMRW30	250	M12	N10	
SFHRWS25	200	M8	N12	SC20

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR / piece

P88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) h9 (Cold-drawn)

Type	€ SFMRW (1.1191/C45E, Black Oxide) SFMRWS (With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFMRW (1.1191/C45E, Electroless Nickel Plating) PSFMRWS (With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFMRW (1.4301/X5CrNi18-10) SSFMRWS (With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
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(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHRW / SFRW (1.1191/C45E, Black Oxide) SFHRWS / SFRWS (With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFHRW / PSFRW (1.1191/C45E, Electroless Nickel Plating) PSFHRWS / PSFRWS (With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFHRW / SSFRW (1.4301/X5CrNi18-10) SSFHRWS / SSFRWS (With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
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Type	€ HFRW (1.7220/34CrMo4 Hardness 30~35HRC·Black Oxide) HFRWS (With wrench flats, add 4,00 EUR to the prices shown below.								€ PHFRW (1.7220/34CrMo4 Hardness 30~35HRC·Electroless Nickel Plating)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
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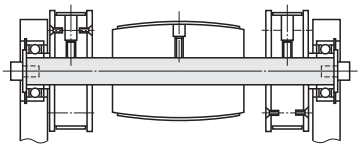
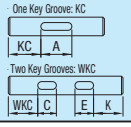
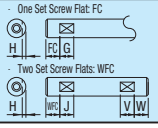
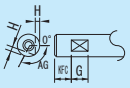
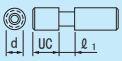
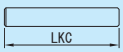
Example



Alterations

Part Number	-	L	-	M	-	N	-	SC	-	(KC, WKC, FC...etc.)
SSFRW10	-	150	-	M4	-	N6	-	SC30	-	LKC

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	L Dimension Tolerance
					
Code	KC · WKC	FC · WFC	KFC	UC	LKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E=1 mm Increment A, E, C≤100 For keyway details, refer to P.737 If 3 keyways are required, use both KC and WKC.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V=1 mm Increment G, J, V≤50 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 Not applicable to D4 and D5.	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG120 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur. Not applicable to D4 and D5.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D4, D5 and D13 or more. D / d / ℓ1: 6 / 5 / 4; 8 / 7 / 4; 10 / 8 / 5; 12 / 10 / 5	Changes L Dimension Tolerance. Ordering Code LKC L<500⋯› L±0.05 L≥500⋯› L±0.1
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.				
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-

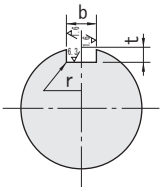
-Both Ends Female Thread with Keyways-

■Rotary Shafts with Keyways have been standardized. No. of keyways can be specified up to 3. Specification of Keyways has become easier.



	Type	D Tolerance	M Material	S Surface Treatment
(1)	SFMKRW	h9 (Cold-drawn)	1.1191/C45E	Black Oxide
	PSFMKRW			Electroless Nickel Plating
	SSFMKRW		1.4301/X5CrNi18-10	-
(2)	SFHKRW	h7 (Ground)	1.1191/C45E	Black Oxide
	PSFHKRW			Electroless Nickel Plating
	SSFHKRW		1.4301/X5CrNi18-10	-
(3)	SFGKRW	g6 (Ground)	1.1191/C45E	Black Oxide
	PSFGKRW			Electroless Nickel Plating
	SSFGKRW		1.4301/X5CrNi18-10	-

■Detailed Keyway Dimensions



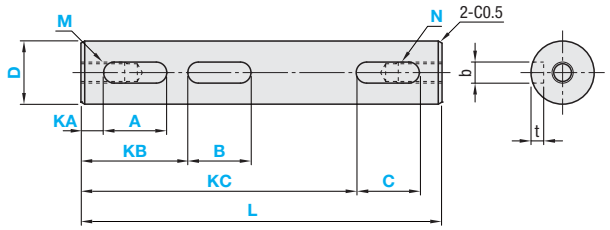
Shaft Diameter	b Reference Dimension	b Tolerance (N9)	t Reference Dimension	t Tolerance	r
6	2	-0.004 -0.029	1.2	+0.1 0	0.08~0.16
8, 10	3		1.8		
12	4	0 -0.03	2.5		0.16~0.25
13~17	5		3.0		
18~22	6		3.5		
25 / 30	8	0 -0.036	4.0	+0.2 0	0.25~0.4
35	10		5.0		
40	12	0 -0.043	5.0		
50	14		5.5		

When KA=0, KA+A=L, KB+B=L, KC+C=L, keyway shape is as shown below.



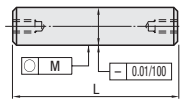
Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6.(6.3 / 1.6)

No. of keyways can be specified up to 3.



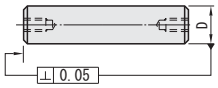
Thread depth of M (Coarse) and N (Coarse) is M x 2 and N x 2 respectively.

■Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■Perpendicularity



Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Tolerances of L and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) h9 (Cold-drawn)

Part Number Type	Dh9	Dh9 Tolerance	L 0.1mm Increment	M (Coarse) · N (Coarse) Selectable	Keyway (1) KA · A 1mm Increment	Keyway (2) KB · B 1mm Increment	Keyway (3) KC · C 1mm Increment
SFMKRW PSFMKRW SSFMKRW	6	0 -0.030	20.0~300.0	-3 -4	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100
	8	0 -0.036	20.0~400.0	-3 -4 -5 -6			
	10		20.0~500.0	4 -5 -6			
	12	0 -0.043	30.0~600.0	5 -6 -8			
	15		30.0~700.0	5 6 -8			
	20	0 -0.052	40.0~800.0	5 6 8 10			
	25		50.0~800.0	5 6 8 10 12			
	30		60.0~800.0	8 10 12 16			
	35	0 -0.062	70.0~800.0	8 10 12 16 20			

(2) h7 (Ground)

M, N Sizes in ( ) can be selected when KA≥M x 2, L-KC-C≥Nx2.

Part Number Type	Dh7	Dh7 Tolerance	L 0.1mm Increment	M (Coarse) · N (Coarse) Selectable	Keyway (1) KA · A 1mm Increment	Keyway (2) KB · B 1mm Increment	Keyway (3) KC · C 1mm Increment
SFHKRW PSFHKRW SSFHKRW	6	0 -0.012	20.0~300.0	-3 -4	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100
	8	0 -0.015	20.0~400.0	-3 -4 -5 -6			
	10		20.0~500.0	4 -5 -6			
	12	0 -0.018	30.0~600.0	5 -6 -8			
	15		30.0~700.0	5 6 -8			
	20	0 -0.021	40.0~800.0	5 6 8 10			
	25		50.0~800.0	5 6 8 10 12			
	30		60.0~800.0	8 10 12 16			
	35	0 -0.025	70.0~800.0	8 10 12 16 20			
	40		80.0~800.0	12 16 20 24			
	50		100.0~800.0	16 20 24 30			

(3) g6 (Ground)

M, N Sizes in ( ) can be selected when KA≥M x 2, L-KC-C≥Nx2.

Part Number Type	Dg6	Dg6 Tolerance	L 0.1mm Increment	M (Coarse) · N (Coarse) Selectable	Keyway (1) KA · A 1mm Increment	Keyway (2) KB · B 1mm Increment	Keyway (3) KC · C 1mm Increment
SFGKRW PSFGKRW SSFGKRW (D13 · 16 · 18 and 22 are not available for SSFGKRW.)	6	-0.004 -0.012	20.0~300.0	-3 -4	KA+A≤L KA≥0 b≤A≤100	KB+B≤L KB≥KA+A b≤B≤100	KC+C≤L KC≥KB+B b≤C≤100
	8	-0.005 -0.014	20.0~400.0	-3 -4 -5 -6			
	10		20.0~500.0	4 -5 -6			
	12	-0.006 -0.017	30.0~600.0	5 -6 -8			
	13		30.0~600.0	5 6 -8			
	15		30.0~700.0	5 6 -8			
	16		30.0~800.0	5 6 8 -10			
	17		40.0~800.0	5 6 8 -10 -12			
	18		40.0~800.0	5 6 8 -10 -12			
	20	-0.007 -0.020	40.0~800.0	5 6 8 10 -12 -16			
	22		40.0~800.0	5 6 8 10 12 -16			
	25		50.0~800.0	5 6 8 10 12 -16			
	30		60.0~800.0	8 10 12 16			
	35	-0.009 -0.025	70.0~800.0	8 10 12 16 20			
	40		80.0~800.0	12 16 20 24			
	50		100.0~800.0	16 20 24 30			

M, N Sizes in ( ) can be selected when KA≥M x 2, L-KC-C≥Nx2.

Order Example

	Part Number	-	L	-	M	-	N	-	Keyway (1) KA	-	A	Keyway (2) KB	-	B	Keyway (3) KC	-	C
1 Keyway	SFMKRW10	-	325	-	M4	-	N4	-	KA20	-	A50						
2 Keyways	SFHKRW30	-	300	-	M10	-	N10	-	KA20	-	A50	-	KB120	-	B20		
3 Keyways	SFGKRW25	-	350	-	M8	-	N8	-	KA10	-	A60	-	KB90	-	B30	- KC210 -	C30

Days to Ship: 8 Days

Express A: 8,00 EUR / piece

A Express Charge of 21,60 EUR for 3 or more identical pieces.

P. 88

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

Product unit price is the price shown in the table plus keyway machining charge.
(Ex.) SFMKRW20-620-KA150-A20-KB250-B20
(Price in the table) + charge for 2 keyways = Total Price
22,40 EUR + 8,00 EUR = 30,40 EUR

Keyway Machining Charge

No. of keyways	Charge
1	4.00
2	8.00
3	12,00

(1) h9 (Cold-drawn)

Type	€ SFMKRW(1.1191/C45E, Black Oxide)								€ PSFMKRW(1.1191/C45E, Electroless Nickel Plating)								€ SSFMKRW(1.4301/X5CrNi18-10)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
6																								
8																								
10																								
12																								
15																								
20																								
25																								
30																								
35																								

(2) h7 (Ground) (3) g6 (Ground)

Type	€ SFHKRW · SFGKRW(1.1191/C45E, Black Oxide)								€ PSFHKRW · PSFGKRW(1.1191/C45E, Electroless Nickel Plating)								€ SSFHKRW · SSFGKRW(1.4301/X5CrNi18-10)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0
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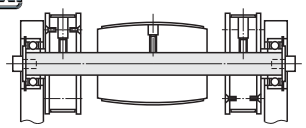
Example



Alterations

Part Number - L - M - N - KA - A - KB - B - KC - C - (FC · LKC...etc.)
SFHKRW30 - 300 - M10 - N10 - KA20 - A50 - KB120 - B20 - LKC

	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance
Alterations	· One Set Screw Flat: FC · Two Set Screw Flats: WFC				
Code	FC · WFC	KFC	UC	SC	LKC
Spec.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC · G · WFC · J · W · V = 1mm Increment G · J · V≤50 Set screw flat and keyway (s) are added to the same surface. D / H: 6~17 / 1; 18~40 / 2; 50 / 3 Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG120 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1: 6 / 5 / 4; 8 / 7 / 4; 10 / 8 / 5; 12 / 10 / 5	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 A wrench flat is added to the opposite surface of keyway alteration. D / W / ℓ2: 6 / 5 / 8; 8 / 7 / 8; 10 / 8 / 8; 12·13 / 10 / 10; 15·16 / 13 / 10; 17·18 / 14 / 10; 20·22 / 17 / 10; 25 / 22 / 10; 30 / 27 / 15; 35 / 30 / 15; 40 / 36 / 20; 50 / 41 / 20 When combined with other alterations, ±2 degree phase differential may occur.	Changes L Dimension Tolerance. Ordering Code LKC L<500··· L±0.05 L≥500··· L±0.1
Price Adder	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	4,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-One End Stepped-

■h9 (Cold-drawn) and h7 (Ground) are newly added. h7 or g6 can be selected for P part tolerance of h9 (Cold-drawn).

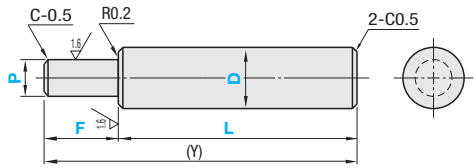


Type		Tolerance D	Tolerance P	M Material	S Surface Treatment
(1)	SFRMHP	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHP				Electroless Nickel Plating
	SSFRMHP			1.4301/X5CrNi18-10	-
(2)	SFRMGP		g6	1.1191/C45E	Black Oxide
	SSFRMGP			1.4301/X5CrNi18-10	-
(3)	SFRHP	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	PSFRHP				Electroless Nickel Plating
	SSFRHP			1.4301/X5CrNi18-10	-
(4)	SFRP	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRP				Electroless Nickel Plating
	SSFRP			1.4301/X5CrNi18-10	-
	HFRP			H 1.7220/34CrMo4 Hardness 30-35HRC	Black Oxide

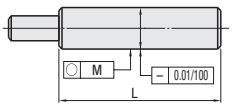
■ Tolerance Table

D / P	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
3	0 -0.025	0 -0.010	-0.002 -0.008
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)

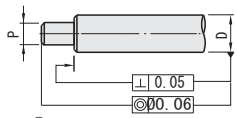


■ Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■ Perpendicularity



Not applicable to h9 (Cold-drawn).

■ D Part Circularity

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ L, Y and Other Dimensions Tolerances

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Part Number Type	D	0.1mm Increment L	F	1mm Increment P	(Y) max.
(1) D part h9 / P part h7 SFRMHP PSFRMHP SSFRMHP (2) D part h9 / P part g6 SFRMGP SSFRMGP (D6 is not available for SSFRMHP and SSFRMGP.)	6	20.0~298.0	2≤F≤Px5	345	300
	8	20.0~398.0		3≤P<D	400
	10	20.0~498.0			500
	12	25.0~598.0		5≤P<D	600
	15	25.0~698.0			700
	20	30.0~798.0			800
	25	30.0~798.0		10≤P<D	
	30	30.0~798.0			
	35	40.0~798.0		16≤P<D	

(3) h7 (Ground) Type

Part Number Type	D	0.1mm Increment L	F	1mm Increment P	(Y) max.
SFRHP PSFRHP SSFRHP	6	20.0~298.0	2≤F≤Px5	3 4 5	300
	8	20.0~398.0		3≤P<D	400
	10	20.0~498.0			500
	12	25.0~598.0		5≤P<D	600
	15	25.0~698.0			700
	20	30.0~798.0			800
	25	30.0~798.0		10≤P<D	
	30	30.0~798.0			
	35	40.0~798.0		16≤P<D	
	40	40.0~798.0			
	50	40.0~798.0			

(4) g6 (Ground) Type

Part Number Type	D	0.1mm Increment L	F	1mm Increment P	(Y) max.
SFRP PSFRP SSFRP *HFRP (* marked sizes only)	6	20.0~298.0	2≤F≤Px5	3 4 5	300
	8	20.0~398.0		3≤P<D	400
	10	20.0~498.0			500
	12	25.0~598.0		5≤P<D	600
	13	25.0~598.0			
	* 15	25.0~698.0			700
	16	25.0~798.0			800
	17	30.0~798.0			
	18	30.0~798.0			
	* 20	30.0~798.0			
	22	30.0~798.0		10≤P<D	
	* 25	30.0~798.0			
	* 30	30.0~798.0			
	* 35	40.0~798.0		16≤P<D	
	* 40	40.0~798.0			
	* 50	40.0~798.0			

When D-P≤2, chamfer C at the step is 0.2 or less.

Order Example
(1) D part h9 / P part h7
(3) h7 (Ground) Type
(4) g6 (Ground) Type

Part Number	-	L	-	F	-	P
SFRMHP30	-	250	-	F30	-	P10
SFRHP25	-	200	-	F25	-	P15

Days to Ship: 8 Days / 5 Days
Express A 8,00 EUR / piece P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Type	€ SFRMHP · SFRMGP (1.1191/C45E, Black Oxide)								€ PSFRMHP (1.1191/C45E, Electroless Nickel Plating)								€ SSFRMHP · SSFRMGP (1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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20																								
25																								
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35																								

(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRHP · SFRP (1.1191/C45E, Black Oxide)								€ PSFRHP · PSFRP (1.1191/C45E, Electroless Nickel Plating)								€ SSFRHP · SSFRP (1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ~ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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Type	€ HFRP (1.7220/34CrMo4 Hardness 30~35HRC·Black Oxide)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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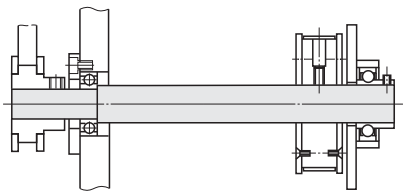
Example



Alterations

Part Number - L - F - P - (KC, WKC, FC...etc.)
SSFRMGP10 - 200 - F10 - P5 - KFC10-G10-AG90

	Keyway	Keyway on Shaft End	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance – Concentricity
Alterations	- One Keyway: KC - Two Keyways: WKC	PKC	- 1 Set Screw Flat: FC - 2 Set Screw Flats: WFC	H, AG, KFC, G	UC, ℓ1, d	SC, ℓ2, W	LKC
Code	KC · WKC	PKC	FC · WFC	KFC	UC	SC	LKC · CKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, refer to P.737 If 3 keyways are required, use both KC and WKC.	Adds a keyway on the shaft end P. Ordering Code PKC10 PKC = 1mm Increment PKC≤50 PKC≤F(T) Keyway Details P.737 Not applicable to P5 or less.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 / 4 10 / 8 / 5 12 / 10 / 5	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 D / W / ℓ2 6 / 5 / 8 8 / 7 / 8 10 / 8 / 8 12 / 13 / 10 / 10 15 / 16 / 13 / 10 17 / 18 / 14 / 10 20 / 22 / 17 / 10 25 / 22 / 10 30 / 27 / 15 35 / 30 / 15 40 / 36 / 20 50 / 41 / 20 When combined with other alterations, ±2 degree phase differential may occur.	LKC: Changes L Dimension Tolerance. Ordering Code LKC L<500···L±0.05 L≥500···L±0.1 CKC: Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. Not applicable to D part of h9 (Cold-drawn) . D / Lmax 6~22 / 450 25~50 / 600
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.						
Price Adder	KC: 4,00 WKC: 8,00	4,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	LKC:4,00 CKC:8,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) · h7 (Ground) ·g6 (Ground)-
-One End Stepped, One End Female Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. h7 or g6 can be selected for P part tolerance of h9 (Cold-drawn).

RoHS



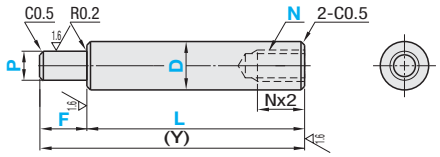
	Type Standard	Type Wrench Flats	Tolerance D	Tolerance P	M Material	S Surface Treatment
(1)	SFRMHF	SFRMHFS	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHF	-				Electroless Nickel Plating
	SSFRMHF	-			1.4301/X5CrNi18-10	-
(2)	-	SFRMGFS		g6	1.1191/C45E	Black Oxide
	PSFRMGF	-				Electroless Nickel Plating
	SSFRMGF	-			1.4301/X5CrNi18-10	-
(3)	SFRHF	SFRHFS	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	SSFRHF	-			1.4301/X5CrNi18-10	-
(4)	SFRF	SFRFS	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRF	-				Electroless Nickel Plating
	SSFRF	-			1.4301/X5CrNi18-10	-
	PHFRF	-			H 1.7220/34CrMo4 Hardness 30~35HRC	Electroless Nickel Plating

■ Tolerance Table

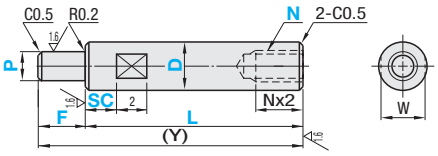
D / P	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
3	0 -0.025	0 -0.010	-0.002 -0.008
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)

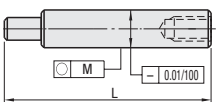
Standard



Wrench Flats



■ Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■ D Part Circularity

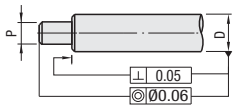
D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ L, Y and Other Dimensions Tolerances

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

■ Concentricity, Perpendicularity



Not applicable to h9 (Cold-drawn).

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F	1mm Increment P	N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
(1) D part h9 / P part h7 SFRMHF PSFRMHF SSFRMHF D6 is not available for SSFRMHF.)	(1) D part h9 / P part h7 SFRMHFS	6	20.0~298.0	2≤F≤Px5	3≤P<D	3 4	SC+ℓ2≤L SC=0 or SC≥1 (For SC≤Mx3 W-M≥2)	5	8	300
		8	20.0~398.0			3 4 5 6		7		400
		10	20.0~498.0			4 5 6		8		500
		12	30.0~598.0		5≤P<D	5 6 8		10	10	600
		15	30.0~698.0			5 6 8 10		13		700
(2) D part h9 / P part g6 PSFRMGF SSFRMGF (D6 is not available for SSFRMGF.)	(2) D part h9 / P part g6 SFRMGFS	20	40.0~798.0			5 6 8 10 12 16		17		800
		25	50.0~798.0		10≤P<D	5 6 8 10 12 16		22		
		30	60.0~798.0			8 10 12 16 20		27	15	
		35	70.0~798.0		16≤P<D	8 10 12 16 20 24		30		

(3) h7 (Ground) Type

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F	1mm Increment P	N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
SFRHF SSFRHF	SFRHFS	6	20.0~298.0	2≤F≤Px5	3≤P<D	3 4	SC+ℓ2≤L SC=0 or SC≥1 (For SC≤Mx3 W-M≥2)	5	8	300
		8	20.0~398.0			3 4 5 6		7		400
		10	20.0~498.0			4 5 6		8		500
		12	30.0~598.0		5≤P<D	5 6 8		10	10	600
		15	30.0~698.0			5 6 8 10		13		700
		20	40.0~798.0			5 6 8 10 12 16		17		800
		25	50.0~798.0		10≤P<D	5 6 8 10 12 16		22		
		30	60.0~798.0			8 10 12 16 20		27	15	
		35	70.0~798.0		16≤P<D	8 10 12 16 20 24		30		
		40	80.0~798.0			12 16 20 24 30		36	20	
		50	100.0~798.0			16 20 24 30		41		

(4) g6 (Ground) Type

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F	1mm Increment P	N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
SFRF PSFRF SSFRF *PHFRF (* marked sizes only)	SFRFS	6	20.0~298.0	2≤F≤Px5	3≤P<D	3 4	SC+ℓ2≤L SC=0 or SC≥1 (For SC≤Mx3 W-M≥2)	5	8	300
		8	20.0~398.0			3 4 5 6		7		400
		10	20.0~498.0			4 5 6		8		500
		12	30.0~598.0		5≤P<D	5 6 8		10	10	600
		13	30.0~598.0			5 6 8		11		
		* 15	30.0~698.0			5 6 8 10		13		700
		16	40.0~798.0			5 6 8 10		14		800
		17	40.0~798.0			5 6 8 10 12		15		
		18	40.0~798.0			5 6 8 10 12		17		
		* 20	40.0~798.0			5 6 8 10 12 16		19		
		22	40.0~798.0		10≤P<D	5 6 8 10 12 16		22		
		* 25	50.0~798.0			5 6 8 10 12 16		27	15	
		* 30	60.0~798.0			8 10 12 16 20		30		
		* 35	70.0~798.0		16≤P<D	8 10 12 16 20 24		36	20	
		* 40	80.0~798.0			12 16 20 24 30		41		
		* 50	100.0~798.0			16 20 24 30				

When D-P≤2, chamfer C at the step is 0.2 or less. Overall length requires Nx3≤L.

Order Example
(1) D part h9 / P part h7
(3) h7 (Ground) with Wrench Flat
(4) g6 (Ground) Type

Part Number	L	F	P	N	SC
PSFRMHF30	250	F30	P10	N10	
SFRHFS25	200	F25	P15	N12	SC30

Days to Ship: 8 Days

Express A | 8,00 EUR / piece

P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

5 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D part tolerance h9 (Cold-drawn) · P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) · P part tolerance g6

Type	€ SFRMHF (1.1191/C45E, Black Oxide) SFRMHFS · SFRMGFS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRMHF · PSFRMGF (1.1191/C45E, Electroless Nickel Plating)								€ SSFRMHF · SSFRMGF (1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRF (1.1191/C45E, Black Oxide) SFRHFS · SFRFS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRF (1.1191/C45E, Electroless Nickel Plating)								€ SSFRHF · SSFRF (1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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Type	€ PHFRF (1.7220/34CrMo4 Hardness 30~35HRC-Electroless Nickel Plating)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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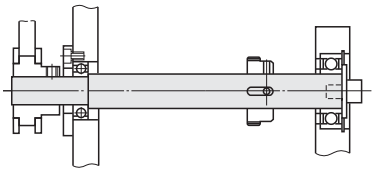
Example



Alterations

Part Number - L - F - P - N - SC - (KC, WKC, FC...etc.)

SSFRHF10 - 150 - F10 - P5 - N5 - KFC10-G10-AG90

Alterations	Keyway	Keyway on Shaft End	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance - Concentricity
	- One Keyway: KC - Two Keyways: WKC	PKC	- 1 Set Screw Flat: FC - 2 Set Screw Flats: WFC				
Code	KC / WKC	PKC	FC / WFC	KFC	UC	SC	LKC / CKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, refer to **P.737** If 3 keyways are required, use both KC and WKC.	Adds a keyway on the shaft end P. Ordering Code PKC10 PKC = 1mm Increment PKC≤50 PKC≤F(T) Keyway Details **P.737** Not applicable to P5 or less.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	Adds a wrench flat. SC≤1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 D / W / ℓ2 6 / 5 / 8 8 / 7 10 / 8 12 / 13 / 10 / 10 15 / 16 / 13 17 / 18 / 14 20 / 22 / 17 25 / 22 30 / 27 / 15 35 / 30 40 / 36 / 20 50 / 41 When combined with other alterations, ±2 degree phase differential may occur.	LKC: Changes L Dimension Tolerance. Ordering Code LKC L<500⋯›L±0.05 L≥500⋯›L±0.1 CKC: Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. Not applicable to D part of h9 (Cold-drawn) . D / Lmax 6~22 / 450 25~50 / 600
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.						
Price Adder	KC: 4,00 WKC: 8,00	4,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	LKC:4,00 CKC:8,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-One End Stepped · One End Male Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. h7 or g6 can be selected for P part tolerance of h9 (Cold-drawn).

RoHS



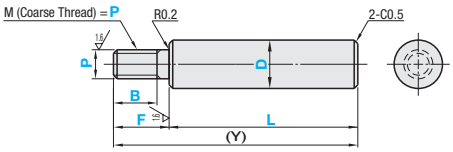
	Type Standard	Type Wrench Flats	Tolerance D	Tolerance P	M Material	S Surface Treatment
(1)	SFRMHN	SFRMHNS	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHN	PSFRMHNS				Electroless Nickel Plating
	SSFRMHN	SSFRMHNS			1.4301/X5CrNi18-10	-
(2)	SFRMGN	SFRMGNS		g6	1.1191/C45E	Black Oxide
	PSFRMGN	PSFRMGNS				Electroless Nickel Plating
	-	SSFRMGNS			1.4301/X5CrNi18-10	-
(3)	SFRHN	SFRHNS	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	-	PSFRHNS				Electroless Nickel Plating
	SSFRHN	SSFRHNS			1.4301/X5CrNi18-10	-
(4)	SFRN	SFRNS	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRN	PSFRNS				Electroless Nickel Plating
	SSFRN	SSFRNS			1.4301/X5CrNi18-10	-
	HFRN	HFRNS			1.7220/34CrMo4 H Hardness 30~35HRC	Black Oxide
	PHFRN	-				Electroless Nickel Plating

■ Tolerance Table

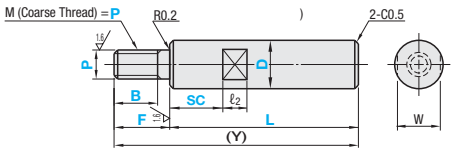
D · P	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
3	0 -0.025	0 -0.001	-0.002 -0.008
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6.

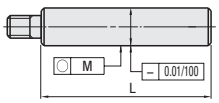
Standard



Wrench Flats



■ Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■ D Part Circularity

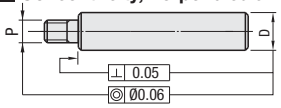
D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ L, Y and Other Dimensions Tolerances

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

■ Concentricity, Perpendicularity



Not applicable to h9 (Cold-drawn).

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F	1mm Increment B	P (Coarse) Selectable	1mm Increment SC With Wrench Flats only	W	ℓ2	(Y) max.
(1) D part h9 / P part h7	(1) D part h9 / P part h7	6	20.0~295.0	5≤F≤Px7	When P≤6 B≤Px3 & B≤F-2	3 4 5	SC+ℓ2≤L SC=0 or SC≥1	5	8	300
SFRMHN PSFRMHN SSFRMHN (D6 is not available for SSFRMHN.)	SFRMHNS PSFRMHNS SSFRMHNS (D6 is not available for SSFRMHNS.)	8	20.0~395.0			3 4 5 6		7		400
		10	20.0~495.0			4 5 6 8		8		500
		12	25.0~595.0		When P=8 or 10 B≤Px3 & B≤F-3	5 6 8 10		10	10	600
		15	25.0~695.0			5 6 8 10 12		13		700
(2) D part h9 / P part g6	(2) D part h9 / P part g6	20	30.0~795.0		When P≥12 B≤Px3 & B≤F-5	6 8 10 12 16		17		800
SFRMGN PSFRMGN	SFRMGNS PSFRMGNS SSFRMGNS (D6 is not available for SSFRMGNS.)	25	30.0~795.0			8 10 12 16 20		22		
		30	30.0~795.0			8 10 12 16 20 24		27	15	
		35	40.0~795.0			10 12 16 20 24 30		30		

(3) h7 (Ground) Type

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F	1mm Increment B	P (Coarse) Selectable	1mm Increment SC With Wrench Flats only	W	ℓ2	(Y) max.
SFRHN	SFRHNS	6	20.0~295.0	5≤F≤Px7	When P≤6 B≤Px3 & B≤F-2	3 4 5	SC+ℓ2≤L SC=0 or SC≥1	5	8	300
		8	20.0~395.0			3 4 5 6		7		400
		10	20.0~495.0			4 5 6 8		8		500
		12	25.0~595.0		When P=8 or 10 B≤Px3 & B≤F-3	5 6 8 10		10	10	600
	PSFRHNS	15	25.0~695.0			5 6 8 10 12		13		700
		20	30.0~795.0			6 8 10 12 16		17		800
SSFRHN	SSFRHNS	25	30.0~795.0			8 10 12 16 20		22		
		30	30.0~795.0		When P≥12 B≤Px3 & B≤F-5	8 10 12 16 20 24		27	15	
		35	40.0~795.0			10 12 16 20 24 30		30		
		40	40.0~795.0			12 16 20 24 30		36	20	
		50	40.0~795.0			16 20 24 30		41		

(4) g6 (Ground) Type

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F	1mm Increment B	P (Coarse) Selectable	1mm Increment SC With Wrench Flats only	W	ℓ2	(Y) max.
SFRN	SFRNS	6	20.0~295.0	5≤F≤Px7	When P≤6 B≤Px3 & B≤F-2	3 4 5	SC+ℓ2≤L SC=0 or SC≥1	5	8	300
		8	20.0~395.0			3 4 5 6		7		400
PSFRN	PSFRNS	10	20.0~495.0			4 5 6 8		8		500
		12	25.0~595.0			5 6 8 10		10	10	600
		13	25.0~595.0			5 6 8 10		11		
SSFRN	SSFRNS	* 15	25.0~695.0		When P=8 or 10 B≤Px3 & B≤F-3	5 6 8 10 12		13		700
		16	25.0~795.0			5 6 8 10 12		14		800
*HFRN (* marked sizes only)	*HFRNS (* marked sizes only)	17	30.0~795.0			5 6 8 10 12		15	10	
		18	30.0~795.0			5 6 8 10 12		17		
		* 20	30.0~795.0			6 8 10 12 16		19		
*PHFRN (* marked sizes only)		22	30.0~795.0		When P≥12 B≤Px3 & B≤F-5	6 8 10 12 16		22		
		* 25	30.0~795.0			8 10 12 16 20		27	15	
		* 30	30.0~795.0			8 10 12 16 20 24		30		
		* 35	40.0~795.0			10 12 16 20 24 30		36	20	
		* 40	40.0~795.0			12 16 20 24 30		41		
		* 50	40.0~795.0			16 20 24 30				

When D-P≤2, chamfer C at the step is 0.2 or less.

Order Example

(1) D part h9 / P part h7
(3) h7 (Ground) with Wrench Flat
(4) g6 (Ground) Type

Part Number	L	F	B	P	SC
SFRMHN30	250	F30	B8	P10	
SFRHNS25	200	F25	B15	P12	SC30

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Type	SFRMHN · SFRMGN (1.1191, Black Oxide) € SFRMHNS · SFRMGNS With wrench flats, add 4,00 EUR to the prices shown below.								PSFRMHN · PSFRMGN (1.1191, Electroless Nickel Plating) € PSFRMHNS · PSFRMGNS With wrench flats, add 4,00 EUR to the prices shown below.								SSFRMHN (1.4301/X5CrNi18-10) € SSFRMHNS · SSFRMGNS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0
6																								
8																								
10																								
12																								
15																								
20																								
25																								
30																								
35																								

(3) h7 (Ground) (4) g6 (Ground)

Type	SFRHN · SFRN (1.1191, Black Oxide) € SFRHNS · SFRNS With wrench flats, add 4,00 EUR to the prices shown below.								PSFRN (1.1191, Electroless Nickel Plating) € PSFRHNS · PSFRNS With wrench flats, add 4,00 EUR to the prices shown below.								SSFRHN · SSFRN (1.4301/X5CrNi18-10) € SSFRHNS · SSFRNS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0
6																								
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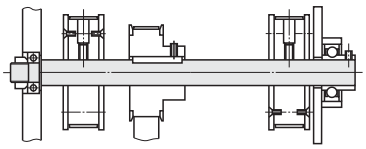
Type	HFRN(1.7220 Hardness 30~35HRC·Black Oxide) € HFRNS With wrench flats, add 4,00 EUR to the prices shown below.								PHFRN (1.7220 Hardness 30~35HRC·Electroless Nickel Plating) €							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 795.0
15																
20																
25																
30																
35																
40																
50																

Example



Alterations

Part Number - L - F - B - P (PMC) - SC - (KC, WKC, FC...etc.)

SSFRHNS10 - 150 - F10 - B5 - P5 - SC20 -

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Undercut, L Dimension Tolerance	Keyway on Shaft End, Concentricity	Fine Thread
	- One Keyway: KC - Two Keyways: WKC	- 1 Set Screw Flat: FC - 2 Set Screw Flat: WFC					
Code	KC / WKC	FC / WFC	KFC	UC	PC / LKC	KC /CKC	PMC
Spec.	KC: Adds one keyway. Ordering Code KC50-A10 WKC: Adds 2 Keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, refer to **P.737** If 3 keyways are required, use both KC and WKC. Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H: 6~17 / 1; 18~40 / 2; 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1: 6 / 5 / 4; 8 / 7 / 4; 10 / 8 / 5; 12 / 10 / 5	PC: Adds an undercut on P. Ordering Code PC For undercut dimension details, refer to **P.734** F-B≤Mx2 Not applicable when D=P. LKC: Changes L dimension tolerance. Ordering Code LKC L<500···L±0.05 L≥500···L±0.1	PKC: Adds a keyway on the shaft end P. Ordering Code PKC10 = 1mm Increment PKC≤50 PKC≤F(T) For keyway details, **P.737** Not applicable to P5 or less. CKC: Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. D / Lmax: 6~22 / 450; 25~50 / 600 Not applicable to D part of h9 (Cold-drawn) .	Changes threads to Fine Thread in the table below. Ordering Code PMC20 D / PMC: 6 3 4 5; 8 3 4 5 6; 10 4 5 6 8; 12 / 13 5 6 8 10; 15 / 16 5 6 8 10 12; 17 / 18 6 8 10 12 15; 20 / 22 6 8 10 12 15 17; 25 8 10 12 15 17 20; 30 8 10 12 15 17 20 25; 35 10 12 15 17 20 25 30; 40 12 15 17 20 25 30 35; 50 15 17 20 25 30 35 40; Pitch 0.35 0.5 0.75 1.0 1.5 P dimension is the same as PMC. Specify PMC instead of P
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	PC: Free LKC: 4,00	PKC:4,00 CKC:8,00	3,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-

-One End Stepped · One End Male Thread · One End Female Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. h7 or g6 can be selected for P part tolerance of h9 (Cold-drawn).

RoHS



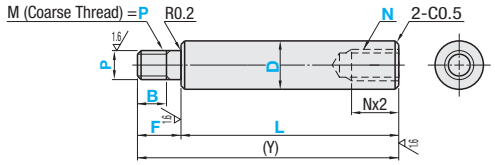
	Type Standard	Type Wrench Flats	Tolerance D	Tolerance P	M Material	S Surface Treatment
(1)	SFRMHD	SFRMHDS	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHD	PSFRMHDS				Electroless Nickel Plating
	SSFRMHD	SSFRMHDS			1.4301/X5CrNi18-10	-
(2)	SFRMGD	-		g6	1.1191/C45E	Black Oxide
	-	PSFRMGDS				Electroless Nickel Plating
	SSFRMGD	SSFRMGDS			1.4301/X5CrNi18-10	-
(3)	-	SFRHDS	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	PSFRHD	PSFRHDS				Electroless Nickel Plating
	SSFRHD	SSFRHDS			1.4301/X5CrNi18-10	-
(4)	SFRD	SFRDS	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRD	PSFRDS				Electroless Nickel Plating
	SSFRD	SSFRDS			1.4301/X5CrNi18-10	-

■ Tolerance Table

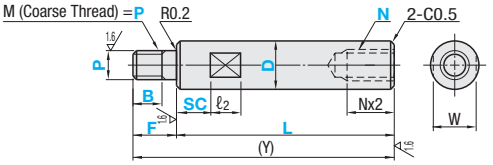
D · P	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
3	0 -0.025	0 -0.010	-0.002 -0.008
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra1.6. (6.3 / 1.6)

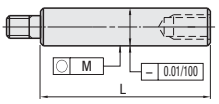
Standard



Wrench Flats



■ Circularity · Straightness



Not applicable to h9 (Cold-drawn).

■ D Part Circularity

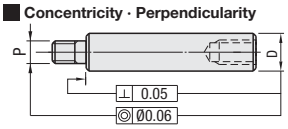
D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ L · Y and Other Dimensions Tolerances

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

■ Concentricity · Perpendicularity



Not applicable to h9 (Cold-drawn).

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Part Number Type Standard	Type Wrench Flats	D	0.1mm Increment L	F	1mm Increment B	P Selectable	N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
(1) D part h9 · P part h7	(1) D part h9 · P part h7	6	20.0~295.0	5≤F≤Px7	When P≤6	3 4 5	3 4	SC+ℓ2≤L SC=0 or SC≥1 For SC≤Mx3 W-M≥2	5	8	300
SFRMHD	SFRMHDS	8	20.0~395.0		B≤Px3 & B≤F-2	3 4 5 6	3 4 5 6		7		400
PSFRMHD	PSFRMHDS	10	20.0~495.0			4 5 6 8	4 5 6		8		500
SSFRMHD	SSFRMHDS	12	30.0~595.0		When P=8 or 10	5 6 8 10	5 6 8		10	10	600
(D6 is not available for SSFRMHD.)	(D6 is not available for SSFRMHDS.)	15	30.0~695.0		B≤Px3 & B≤F-3	5 6 8 10 12	5 6 8 10		13		700
(2) D part h9 · P part g6	(2) D part h9 · P part g6	20	40.0~795.0			5 6 8 10 12 16	5 6 8 10 12 16		17		
SFRMGD	PSFRMGDS	25	50.0~795.0		When P≥12	5 6 8 10 12 16 20	5 6 8 10 12 16		22		800
SSFRMGD	SSFRMGDS	30	60.0~795.0		B≤Px3 & B≤F-5	8 10 12 16 20 24	8 10 12 16 20		27	15	
(D6 is not available for SSFRMGD.)	(D6 is not available for SSFRMGDS.)	35	70.0~795.0			8 10 12 16 20 24 30	12 16 20 24		30		

(3) h7 (Ground) Type

Part Number Type Standard	Type Wrench Flats	D	0.1mm Increment L	F	1mm Increment B	P Selectable	N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~295.0	5≤F≤Px7	When P≤6	3 4 5	3 4	SC+ℓ2≤L SC=0 or SC≥1 For SC≤Mx3 W-M≥2	5	8	300
	SFRHDS	8	20.0~395.0		B≤Px3 & B≤F-2	3 4 5 6	3 4 5 6		7		400
PSFRHD		10	20.0~495.0			4 5 6 8	4 5 6		8		500
	PSFRHDS	12	30.0~595.0		When P=8 or 10	5 6 8 10	5 6 8		10	10	600
SSFRHD		15	30.0~695.0		B≤Px3 & B≤F-3	5 6 8 10 12	5 6 8 10		13		700
		20	40.0~795.0			5 6 8 10 12 16	5 6 8 10 12 16		17		
	SSFRHDS	25	50.0~795.0			5 6 8 10 12 16 20	5 6 8 10 12 16		22		
		30	60.0~795.0		When P≥12	8 10 12 16 20 24	8 10 12 16 20		27	15	800
		35	70.0~795.0		B≤Px3 & B≤F-5	8 10 12 16 20 24 30	12 16 20 24		30		
		40	80.0~795.0			12 16 20 24 30	12 16 20 24 30		36	20	
		50	100.0~795.0			16 20 24 30	16 20 24 30		41		

(4) g6 (Ground) Type

Part Number Type Standard	Type Wrench Flats	D	0.1mm Increment L	F	1mm Increment B	P Selectable	N (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~295.0	5≤F≤Px7		3 4 5	3 4	SC+ℓ2≤L SC=0 or SC≥1 For L-SC≤Nx3 W-N≥2	5	8	300
		8	20.0~395.0			3 4 5 6	3 4 5 6		7		400
		10	20.0~495.0		When P≤6	4 5 6	4 5 6		8		500
		12	30.0~595.0		B≤Px3 & B≤F-2	5 6 8	5 6 8		10	10	600
		13	25.0~595.0			5 6 8	5 6 8		11		
SFRD	SFRDS	15	30.0~695.0			5 6 8 10	5 6 8 10		13		700
		16	25.0~795.0		When P=8 or 10	5 6 8 10	5 6 8 10		14		
PSFRD	PSFRDS	17	40.0~795.0		B≤Px3 & B≤F-3	5 6 8 10 12	5 6 8 10 12			10	
		18	30.0~795.0			5 6 8 10 12	5 6 8 10 12		15		
		20	40.0~795.0			5 6 8 10 12 16	5 6 8 10 12 16		17		
SSFRD	SSFRDS	22	30.0~795.0		When P≥12	5 6 8 10 12 16	5 6 8 10 12 16		19		800
		25	50.0~795.0		B≤Px3 & B≤F-5	5 6 8 10 12 16	5 6 8 10 12 16		22		
		30	60.0~795.0			8 10 12 16 20	8 10 12 16 20		27	15	
		35	70.0~795.0			8 10 12 16 20 24	8 10 12 16 20 24		30		
		40	80.0~795.0			12 16 20 24 30	12 16 20 24 30		36	20	
		50	100.0~795.0			16 20 24 30	16 20 24 30		41		

When D-P≤2, chamfer C at the step is 0.2 or less. Overall length requires Nx3≤L.

Order Example

(1) D part h9 / P part h7
(3) h7 (Ground) Type
(4) g6 (Ground) Type

Part Number	L	F	B	P	N	SC
SFRMHD30	250	F30	B8	P10	N8	
SFRHDS25	200	F25	B15	P12	N12	SC30

Days to Ship

8 Days (Express A 8,00 EUR / piece)

5 Days

P. 88

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Type	€ SFRMHD · SFRMGD (1.1191/C45E, Black Oxide) SFRMHDS (With wrench flats, add 4,00 EUR to the prices shown below.)								€ PSFRMHD (1.1191/C45E, Electroless Nickel Plating) PSFRMHDS · PSFRMGDS (With wrench flats, add 4,00 EUR to the prices shown below.)								€ SSFRMHD · SSFRMGD (1.4301/X5CrNi18-10) SSFRMHDS · SSFRMGDS (With wrench flats, add 4,00 EUR to the prices shown below.)							
D	Min. L ↕ 50.0	L50.1 ↕ 100.0	L100.1 ↕ 150.0	L150.1 ↕ 200.0	L200.1 ↕ 300.0	L300.1 ↕ 400.0	L400.1 ↕ 600.0	L600.1 ↕ 795.0	Min. L ↕ 50.0	L50.1 ↕ 100.0	L100.1 ↕ 150.0	L150.1 ↕ 200.0	L200.1 ↕ 300.0	L300.1 ↕ 400.0	L400.1 ↕ 600.0	L600.1 ↕ 795.0	Min. L ↕ 50.0	L50.1 ↕ 100.0	L100.1 ↕ 150.0	L150.1 ↕ 200.0	L200.1 ↕ 300.0	L300.1 ↕ 400.0	L400.1 ↕ 600.0	L600.1 ↕ 795.0
6																								
8																								
10																								
12																								
15																								
20																								
25																								
30																								
35																								

(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRD(1.1191/C45E, Black Oxide) SFRHDS · SFRDS (With wrench flats, add 4,00 EUR to the prices shown below.)								€ PSFRHD · PSFRD(1.1191/C45E, Electroless Nickel Plating) PSFRHDS · PSFRDS (With wrench flats, add 4,00 EUR to the prices shown below.)								€ SSFRHD · SSFRD(1.4301/X5CrNi18-10) SSFRHDS · SSFRDS (With wrench flats, add 4,00 EUR to the prices shown below.)							
D	Min. L ↕ 50.0	L50.1 ↕ 100.0	L100.1 ↕ 150.0	L150.1 ↕ 200.0	L200.1 ↕ 300.0	L300.1 ↕ 400.0	L400.1 ↕ 600.0	L600.1 ↕ 795.0	Min. L ↕ 50.0	L50.1 ↕ 100.0	L100.1 ↕ 150.0	L150.1 ↕ 200.0	L200.1 ↕ 300.0	L300.1 ↕ 400.0	L400.1 ↕ 600.0	L600.1 ↕ 795.0	Min. L ↕ 50.0	L50.1 ↕ 100.0	L100.1 ↕ 150.0	L150.1 ↕ 200.0	L200.1 ↕ 300.0	L300.1 ↕ 400.0	L400.1 ↕ 600.0	L600.1 ↕ 795.0
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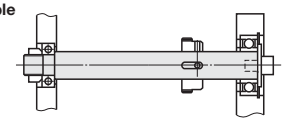
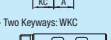
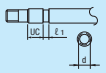
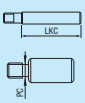
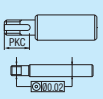
Example



Alterations

Part Number - L - F - B - P (PMC) - N - SC - (KC · WKC · FC...etc.)
SSFRHDS10 - 150 - F10 - B5 - P5 - N5 - SC20 -

	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Undercut, L Dimension Tolerance	Keyway on Shaft End, Concentricity	Fine Thread
Alterations	- One Keyway: KC  - Two Keyways: WKC 	- 1 Set Screw Flat: FC - 2 Set Screw Flat: WFC 					PMC (Fine Thread) 
Code	KC · WKC	FC · WFC	KFC	UC	PC · LKC	PKC · CKC	PMC
Spec.	KC: Adds one keyway. Ordering Code KC50-A10 WKC: Adds 2 Keyways. Ordering Code WKC50-C8-K40-E10 (?) KC, A, WKC, C, K, E = 1mm Increment (?) A, E, C≤100 (?) For keyway details, P.737 (?) If 3 keyways are required, use both KC and WKC.	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 (?) FC, G, WFC, J, W, V = 1mm Increment (?) G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment (?) G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 (?) When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 (?) UC+ℓ1≤L (?) UC≥1 ⊗ Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	PC: Adds an undercut on P. Ordering Code PC (?) For undercut dimension details, refer to P.734 (?) F-B≤Mx2 ⊗ Not applicable when D=P. LKC: Changes L dimension tolerance. Ordering Code LKC (?) L<500→L±0.05 L≥500→L±0.1	PKC: Adds a keyway on the shaft end P. Ordering Code PKC10 (?) = 1mm Increment (?) PKC≤50 PKC≤F(T) (?) For keyway details, P.737 ⊗ Not applicable to P5 or less. CKC: Changes the concentricity to Ø0.02. Ordering Code CKC (?) Applicable within dimension L range in the table below. D / Lmax 6~22 / 450 25~50 / 600 (?) Not applicable to D part of h9 (Cold-drawn) .	Changes threads to Fine Thread in the table below. Ordering Code PMC20 D / PMC 6 / 3 4 5 8 / 3 4 5 6 10 / 4 5 6 / 8 12 / 13 / 5 6 / 8 10 15 / 16 / 5 6 / 8 10 12 17 / 18 / 6 / 8 10 12 15 20 / 22 / 6 / 8 10 12 15 17 25 / 8 10 12 15 17 20 30 / 8 10 12 15 17 20 / 25 35 / 10 12 15 17 20 / 25 30 40 / 12 15 17 20 / 25 30 35 50 / 15 17 20 / 25 30 35 40 Pitch / 0.35 / 0.5 / 0.75 / 1.0 / 1.5 (?) P dimension is the same as PMC. (?) Specify PMC instead of P
	(?) Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.						
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	PC: Free LKC: 4,00	PKC:4,00 CKC:8,00	3,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-One End Stepped and Female Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. h7 or g6 can be selected for P part tolerance of h9 (Cold-drawn).

RoHS



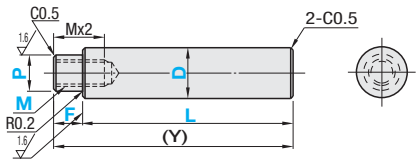
	Type Standard	Type Wrench Flats	Tolerance D	Tolerance P	Material	Surface Treatment
(1)	SFRMHG	SFRMHGS	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHG	-				Electroless Nickel Plating
	SSFRMHG	-			1.4301/X5CrNi18-10	-
(2)	SFRMGG	SFRMGGS		g6	1.1191/C45E	Black Oxide
	PSFRMGG	-				Electroless Nickel Plating
	SSFRMGG	-			1.4301/X5CrNi18-10	-
(3)	SFRHG	SFRHGS	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	PSFRHG	PSFRHGS				Electroless Nickel Plating
(4)	SFRG	SFRGS	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRG	PSFRGS				Electroless Nickel Plating
	SSFRG	-			1.4301/X5CrNi18-10	-

■ Tolerance Table

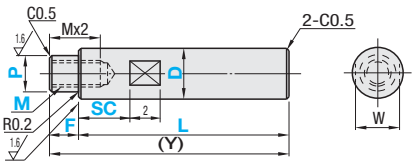
D / P	h9 (Cold-drawn)	h7 (Ground)	g6 Ground)
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is 1.6. (6.3 / 1.6)

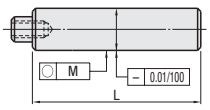
Standard



Wrench Flats



■Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■Circularity of Part D

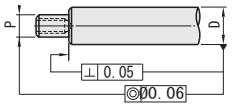
D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■Tolerances of L, Y and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

■Concentricity, Perpendicularity



Not applicable to h9 (Cold-drawn).

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Part Number Type Standard	Type Wrench Flats	D	0.1mm Increment L	F	1mm Increment P	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
(1) D part h9 / P part h7		6	20.0~298.0	2≤F≤Px5	5	3		5	8	300
SFRMHG		8	20.0~398.0			3 4 5		7		400
PSFRMHG		10	20.0~498.0		When M3~M8	4 5 6	SC+ℓ2≤L	8		500
SSFRMHG	(1) D part h9 / P part h7	12	25.0~598.0		M+2≤P<D	5 6 8		10	10	600
(D6 is not available for SSFRMHG.)	SFRMHGS	15	25.0~698.0		When M10~16	5 6 8 10	SC=0 or SC≥1	13		700
(2) D part h9 / P part g6		20	30.0~798.0		M+3≤P<D	5 6 8 10 12		17		
SFRMGG	(2) D part h9 / P part g6	25	30.0~798.0		When M20 or M24	5 6 8 10 12 16	For SC≤Mx3-F W-M≥2	22		800
PSFRMGG	SFRMGGS	30	30.0~798.0		M+4≤P<D	8 10 12 16 20		27	15	
SSFRMGG		35	40.0~798.0			8 10 12 16 20 24		30		
(D6 is not available for SSFRMGG.)										

(3) h7 (Ground) Type

Part Number Type Standard	Type Wrench Flats	D	0.1mm Increment L	F	1mm Increment P	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~298.0	2≤F≤Px5	5	3		5	8	300
		8	20.0~398.0			3 4 5		7		400
		10	20.0~498.0		When M3~M8	4 5 6	SC+ℓ2≤L	8		500
SFRHG	SFRHGS	12	25.0~598.0		M+2≤P<D	5 6 8		10	10	600
		15	25.0~698.0		When M10~16	5 6 8 10	SC=0 or SC≥1	13		700
PSFRHG	PSFRHGS	20	30.0~798.0		M+3≤P<D	5 6 8 10 12		17		
		25	30.0~798.0		When M20 or M24	5 6 8 10 12 16	For SC≤Mx3-F W-M≥2	22		
		30	30.0~798.0		M+4≤P<D	8 10 12 16 20		27	15	800
		35	40.0~798.0		When M30	8 10 12 16 20 24		30		
		40	40.0~798.0		M+5≤P<D	12 16 20 24 30		36	20	
		50	40.0~798.0			16 20 24 30		41		

(4) g6 (Ground) Type

Part Number Type Standard	Type Wrench Flats	D	0.1mm Increment L	F	1mm Increment P	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~298.0	2≤F≤Px5	5	3		5	8	300
		8	20.0~398.0			3 4 5		7		400
		10	20.0~498.0			4 5 6		8		500
		12	25.0~598.0			5 6 8		10	10	600
		13	25.0~598.0		When M3~M8	5 6 8		11		
SFRG	SFRGS	15	25.0~698.0		M+2≤P<D	5 6 8 10	SC+ℓ2≤L	13		700
		16	30.0~798.0		When M10~16	5 6 8 10		14		
PSFRG	PSFRGS	17	30.0~798.0		M+3≤P<D	5 6 8 10 12	SC=0 or SC≥1	15	10	
		18	30.0~798.0			5 6 8 10 12		17		
SSFRG		20	30.0~798.0		When M20 or M24	5 6 8 10 12	For SC≤Mx3-F W-M≥2	19		800
		22	30.0~798.0		M+4≤P<D	5 6 8 10 12 16		22		
		25	30.0~798.0		When M30	5 6 8 10 12 16		27	15	
		30	30.0~798.0		M+5≤P<D	8 10 12 16 20		30		
		35	40.0~798.0			8 10 12 16 20 24		36	20	
		40	40.0~798.0			12 16 20 24 30		41		
		50	40.0~798.0			16 20 24 30				

When D-P≤2, chamfer C at the step is 0.2 or less.

Order Example (1) D part h9 / P part h7 (3) h7 (Ground) with Wrench Flat (4) g6 (Ground) Type

Part Number	L	F	P	M	
SFRMHG30	250	F30	P16	M10	
SFRHGS25	200	F40	P20	M10	SC30

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Type	€ SFRMHG / SFRMGG(1.1191/C45E, Black Oxide) SFRMHGS / SFRMGGS (With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRMHG / PSFRMGG(1.1191/C45E, Electroless Nickel Plating)								€ SSFRMHG / SSFRMGG(1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRHG / SFRG(1.1191/C45E, Black Oxide) SFRHGS / SFRGS (With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRHG / PSFRG(1.1191/C45E, Electroless Nickel Plating) PSFRHGS / PSFRGS (With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRG(1.4301/X5CrNi18-10)							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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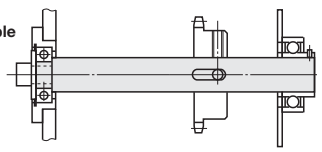
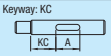
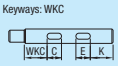
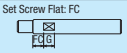
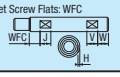
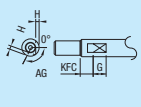
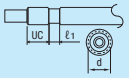
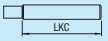
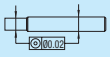


Alterations

Part Number	-	L	-	F	-	P	-	M	-	SC	-	(KC, WKC, FC...etc.)
PSFRHGS8	-	150	-	F20	-	P7	-	M5	-	SC20	-	LKC

	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	L Dimension Tolerance	Concentricity
Alterations	- One Keyway: KC  - Two Keyways: WKC 	- 1 Set Screw Flat: FC  - 2 Set Screw Flats: WFC 				
Code	KC · WKC	FC · WFC	KFC	UC	LKC	CKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, refer to P.737 If 3 keyways are required, use both KC and WKC.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	Changes L Dimension Tolerance. Ordering Code LKC L<500···L±0.05 L≥500···L±0.1	Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. D / Lmax 6~22 / 450 25~50 / 600 Not applicable to D part of h9 (Cold-drawn).
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.					
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	8,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-One End Stepped, Both Ends Female Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. h7 or g6 can be selected for P part tolerance of h9 (Cold-drawn).



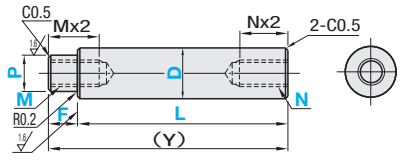
	Type: Standard	Type: Wrench Flats	Tolerance: D	Tolerance: P	Material	Surface Treatment
(1)	SFRMHA	SFRMHAS	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHA	PSFRMHAS				Electroless Nickel Plating
	-	SSFRMHAS			1.4301/X5CrNi18-10	-
(2)	PSFRMGA	-		g6	1.1191/C45E	Electroless Nickel Plating
	SSFRMGA	-			1.4301/X5CrNi18-10	-
(3)	SFRHA	SFRHAS	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	PSFRHA	-				Electroless Nickel Plating
	SSFRHA	SSFRHAS			1.4301/X5CrNi18-10	-
(4)	SFRA	SFRAS	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRA	PSFRAS				Electroless Nickel Plating
	SSFRA	SSFRAS			1.4301/X5CrNi18-10	-

■ Tolerance Table

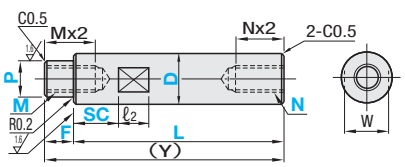
D / P	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)

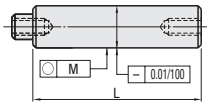
Standard



Wrench Flats



■ Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■ Circularity of Part D

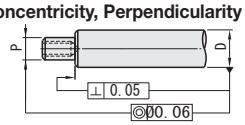
D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ Tolerances of L, Y and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

■ Concentricity, Perpendicularity



Not applicable to h9 (Cold-drawn).

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Part Number Type: Standard	Part Number Type: Wrench Flats	D	0.1mm Increment: L	F	1mm Increment: P	M (Coarse) Selectable	N (Coarse) Selectable	1mm Increment: SC With Wrench Flats only	W	ℓ2	(Y) max.
(1) D part h9 / P part h7 SFRMHA PSFRMHA (2) D part h9 / P part g6 PSFRMGA SSFRMGA (D6 is not available for SSFRMGA.)	(1) D part h9 / P part h7 SFRMHAS PSFRMHAS SSFRMHAS (D6 is not available for SSFRMHAS.)	6	20.0~298.0	2≤F≤Px5	5	3	3	SC+ℓ2≤L SC=0 or SC≥1 ▼SC≤Mx3-F or W-M(N)≥2	5	8	300
		8	20.0~398.0		When M3~M8, M+2≤P<D	3 4 5	3 4 5 6		7		400
		10	20.0~498.0			4 5 6	4 5 6		8		500
		12	30.0~598.0		When M10~16, M+3≤P<D	5 6 8	5 6 8		10	10	600
		15	30.0~698.0			5 6 8 10	5 6 8 10		13		
		20	40.0~798.0		When M20 or M24 M+4≤P<D	5 6 8 10 12	5 6 8 10 12 16		17		700
		25	50.0~798.0			5 6 8 10 12 16	5 6 8 10 12 16		22		
		30	60.0~798.0			8 10 12 16 20	8 10 12 16 20		27	15	
		35	70.0~798.0			8 10 12 16 20 24	8 10 12 16 20 24		30		

(3) h7 (Ground) Type

Part Number Type: Standard	Part Number Type: Wrench Flats	D	0.1mm Increment: L	F	1mm Increment: P	M (Coarse) Selectable	N (Coarse) Selectable	1mm Increment: SC With Wrench Flats only	W	ℓ2	(Y) max.
SFRHA PSFRHA SSFRHA	SFRHAS SSFRHAS	6	20.0~298.0	2≤F≤Px5	5	3	3	SC+ℓ2≤L SC=0 or SC≥1 ▼SC≤Mx3-F or W-M(N)≥2	5	8	300
		8	20.0~398.0		When M3~M8, M+2≤P<D	3 4 5	3 4 5 6		7		400
		10	20.0~498.0			4 5 6	4 5 6		8		500
		12	30.0~598.0		When M10~16, M+3≤P<D	5 6 8	5 6 8		10	10	600
		15	30.0~698.0			5 6 8 10	5 6 8 10		13		
		20	40.0~798.0		When M20 or M24 M+4≤P<D	5 6 8 10 12	5 6 8 10 12 16		17		700
		25	50.0~798.0			5 6 8 10 12 16	5 6 8 10 12 16		22		
		30	60.0~798.0			8 10 12 16 20	8 10 12 16 20		27	15	
		35	70.0~798.0		When M30 M+5≤P<D	8 10 12 16 20 24	8 10 12 16 20 24		30		
		40	80.0~798.0			12 16 20 24 30	12 16 20 24 30		36	20	
		50	100.0~798.0			16 20 24 30	16 20 24 30		41		

(4) g6 (Ground) Type

Part Number Type: Standard	Part Number Type: Wrench Flats	D	0.1mm Increment: L	F	1mm Increment: P	M (Coarse) Selectable	N (Coarse) Selectable	1mm Increment: SC With Wrench Flats only	W	ℓ2	(Y) max.
SFRA PSFRA SSFRA (D13, 16, 18 and 22 are not available for SSFRA.)	SFRAS PSFRAS SSFRAS (D13, 16, 18 and 22 are not available for SSFRAS.)	6	20.0~298.0	2≤F≤Px5	5	3	3	SC+ℓ2≤L SC=0 or SC≥1 ▼For SC≤Mx3-F or L-SC≤Nx3, W-M(N)≥2	5	8	300
		8	20.0~398.0		When M3~M8, M+2≤P<D	3 4 5	3 4 5 6		7		400
		10	20.0~498.0			4 5 6	4 5 6		8		500
		12	30.0~598.0			5 6 8	5 6 8		10	10	600
		13	30.0~598.0		When M3~M8, M+2≤P<D	5 6 8 10	5 6 8 10		11		
		15	30.0~698.0			5 6 8 10	5 6 8 10		13		700
		16	40.0~798.0		When M10~16, M+3≤P<D	5 6 8 10 12	5 6 8 10 12		14		
		17	40.0~798.0			5 6 8 10 12	5 6 8 10 12				
		18	40.0~798.0		When M20 or M24 M+4≤P<D	5 6 8 10 12	5 6 8 10 12 16		15		
		20	40.0~798.0			5 6 8 10 12	5 6 8 10 12 16		17		
		22	50.0~798.0			5 6 8 10 12 16	5 6 8 10 12 16		19		
		25	50.0~798.0		When M30 M+5≤P<D	5 6 8 10 12 16	5 6 8 10 12 16		22		800
		30	60.0~798.0			8 10 12 16 20	8 10 12 16 20		27	15	
		35	70.0~798.0			8 10 12 16 20 24	8 10 12 16 20 24		30		
		40	80.0~798.0			12 16 20 24 30	12 16 20 24 30		36	20	
		50	100.0~798.0			16 20 24 30	16 20 24 30		41		

▼When D-P≤2, chamfer C at the step is 0.2 or less. ▼Overall length requires Nx3≤L. ▼Mx2+Nx2≤(Y) is required for (Y).

Order Example

(1) D part h9 / P part h7
(3) h7 (Ground) with Wrench Flat
(4) g6 (Ground) Type

Part Number	L	F	P	M	N	SC
SFRMHA30	250	F30	P16	M10	N10	
SFRHAS25	200	F40	P20	M10	N10	SC30

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR / piece P.88

▼A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Type	€ SFRMHA(1.1191/C45E, Black Oxide) SFRMHAS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRMHA · PSFRMGA(1.1191/C45E, Electroless Nickel Plating) PSFRMHAS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRMGA(1.4301/X5CrNi18-10) SSFRMHAS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
6																								
8																								
10																								
12																								
15																								
20																								
25																								
30																								
35																								

(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRHA · SFRA(1.1191/C45E, Black Oxide) SFRHAS · SFRAS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRHA · PSFRA(1.1191/C45E, Electroless Nickel Plating) PSFRAS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRHA · SSFRA(1.4301/X5CrNi18-10) SSFRHAS · SSFRAS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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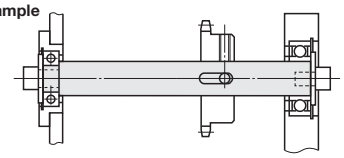
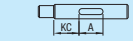
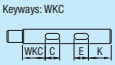
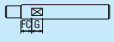
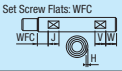
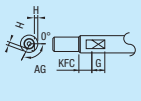
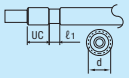
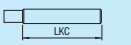
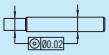
Example



Alterations

Part Number - L - F - P - M - N - SC - (KC, WKC, FC...etc.)
SSFRHAS8 - 150 - F20 - P7 - M5 - N5 - SC20 - LKC

	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	L Dimension Tolerance	Concentricity
Alterations	- One Keyway: KC  - Two Keyways: WKC 	- 1 Set Screw Flat: FC  - 2 Set Screw Flats: WFC 				
Code	KC · WKC	FC · WFC	KFC	UC	LKC	CKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, **P.737** If 3 keyways are required, use both KC and WKC.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	Changes L Dimension Tolerance. Ordering Code LKC L<500···L±0.05 L≥500···L±0.1	Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. D / Lmax 6~22 / 450 25~50 / 600 Not applicable to D part of h9 (Cold-drawn).
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.					
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	8,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-Both Ends Stepped-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your purpose.

RoHS

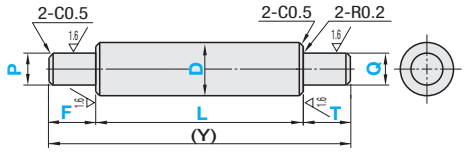


	Type	Tolerance D	Tolerance P / Q	Material M	Surface Treatment S
(1)	SFRMHQ	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHQ				Electroless Nickel Plating
	SSFRMHQ			1.4301/X5CrNi18-10	-
(2)	SFRMGQ		g6	1.1191/C45E	Black Oxide
	PSFRMGQ				Electroless Nickel Plating
	SSFRMGQ			1.4301/X5CrNi18-10	-
(3)	SFRHQ	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	PSFRHQ				Electroless Nickel Plating
	SSFRHQ			1.4301/X5CrNi18-10	-
(4)	SFRQ	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRQ				Electroless Nickel Plating
	SSFRQ			1.4301/X5CrNi18-10	-
	HFRQ			1.7220/34CrMo4 H Hardness 30~35HRC	Black Oxide
	PHFRQ				Electroless Nickel Plating

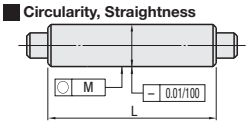
■ Tolerance Table

D / P	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
3	0 -0.025	0 -0.010	-0.002 -0.008
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)

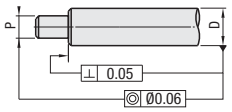


■ Circularity, Straightness



Not applicable to h9 (Cold-drawn).

■ Concentricity, Perpendicularity



Not applicable to h9 (Cold-drawn).

■ Circularity of Part D

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ Tolerances of L, Y and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) D tolerance h9 (Cold-drawn) / P, Q tolerance h7 (2)D tolerance h9 (Cold-drawn) / P, Q tolerance g6

Part Number Type	D	0.1mm Increment L	F / T	1mm Increment P / Q	(Y) max.
(1) D part h9 / P, Q part h7	6	20.0~296.0	2≤F≤Px5 2≤T≤Qx5	345	300
SFRMHQ	8	20.0~396.0		3≤P, Q<D	400
PSFRMHQ	10	20.0~496.0			500
SSFRMHQ	12	25.0~596.0		5≤P, Q<D	600
(D6 is not available for SSFRMHQ.)	15	25.0~696.0			700
(2) D part tolerance h9 / P, Q part g6	20	30.0~796.0		10≤P, Q<D	800
SFRMGQ	25	30.0~796.0			
PSFRMGQ	30	30.0~796.0			
SSFRMGQ	35	40.0~796.0		16≤P, Q<D	
(D6 is not available for SSFRMGQ.)					

(3) h7 (Ground) Type

Part Number Type	D	0.1mm Increment L	F / T	1mm Increment P / Q	(Y) max.
	6	20.0~296.0	2≤F≤Px5 2≤T≤Qx5	345	300
	8	20.0~396.0		3≤P, Q<D	400
	10	20.0~496.0			500
SFRHQ	12	25.0~596.0		5≤P, Q<D	600
	15	25.0~696.0			700
PSFRHQ	20	30.0~796.0		10≤P, Q<D	800
	25	30.0~796.0			
SSFRHQ	30	30.0~796.0			
	35	40.0~796.0		16≤P, Q<D	
	40	40.0~796.0			
	50	40.0~796.0			

(4) g6 (Ground) Type

Part Number Type	D	0.1mm Increment L	F / T	1mm Increment P / Q	(Y) max.
	6	20.0~296.0	2≤F≤Px5 2≤T≤Qx5	345	300
	8	20.0~396.0		3≤P, Q<D	400
	10	20.0~496.0			500
SFRQ	12	25.0~596.0		5≤P, Q<D	600
	13	25.0~596.0			
PSFRQ	*15	25.0~696.0			700
	16	25.0~796.0			
SSFRQ	17	30.0~796.0			
	18	30.0~796.0			
*HFRQ	*20	30.0~796.0			800
(* marked sizes only)	22	30.0~796.0		10≤P, Q<D	
*PHFRQ	*25	30.0~796.0			
(* marked sizes only)	*30	30.0~796.0			
	*35	40.0~796.0		16≤P, Q<D	
	*40	40.0~796.0			
	*50	40.0~796.0			

When D-P(Q)≤2, chamfer C at the step is 0.2 or less. For P and Q dimensions, 27, 31, 33, 34, 36, 37, 38, 39, 41, 42, 43, 44, 46, 47, 48 and 49 cannot be specified.

Order Example

	Part Number	- L -	F -	P -	T -	Q
(1) D part h9 / P,Q part h7	SFRMHQ20	- 325 -	F25 -	P10 -	T25 -	Q10
(3) h7 (Ground) Type	SFRHQ15	- 150 -	F15 -	P8 -	T15 -	Q8
(4) g6 (Ground) Type	SFRQ30	- 400 -	F28 -	P20 -	T28 -	Q20

Days to Ship: 8 Days (Express A: 8,00 EUR / piece) P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

5 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D tolerance h9 (Cold-drawn) / P, Q tolerance h7 (2)D tolerance h9 (Cold-drawn) / P, Q tolerance g6

Type	€ SFRMHQ / SFRMGQ (1.1191/C45E, Black Oxide)								€ PSFRMHQ / PSFRMGQ (1.1191/C45E, Electroless Nickel Plating)								€ SSFRMHQ / SSFRMGQ (1.4301/X5CrNi18-10)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0
6																								
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10																								
12																								
15																								
20																								
25																								
30																								
35																								

(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRHQ / SFRQ (1.1191/C45E, Black Oxide)								€ PSFRHQ / PSFRQ (1.1191/C45E, Electroless Nickel Plating)								€ SSFRHQ / SSFRQ (1.4301/X5CrNi18-10)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0
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Type	€ HFRQ(1.7220/34CrMo4 Hardness 30~35HRC·Black Oxide)								€ PHFRQ(1.7220/34CrMo4 Hardness 30~35HRC·Electroless Nickel Plating)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 796.0
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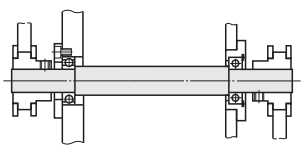
50																

Example



Alterations

Part Number - L - F - P - T - Q - (KC, WKC, FC...etc.)

SFRMHQ30 - 300 - F25 - P10 - T25 - Q10 - KC40 -A20

	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance – Concentricity	Keyway on Shaft End
Alterations	- One Keyway: KC - Two Keyways: WKC	- 1 Set Screw Flat: FC - 2 Set Screw Flats: WFC					
Code	KC / WKC	FC / WFC	KFC	UC	SC	LKC / CKC	PKC / QKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, **P.737** If 3 keyways are required, use both KC and WKC. Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G = 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 D / W / ℓ2 6 / 5 / 8 8 / 7 10 / 8 12 / 13 / 10 / 10 15 / 16 / 13 17 / 18 / 14 20 / 22 / 17 25 / 22 30 / 27 / 15 35 / 30 40 / 36 / 20 50 / 41 When combined with other alterations, ±2 degree phase differential may occur.	LKC: Changes L dimension tolerance. Ordering Code LKC L<500⋯L±0.05 L≥500⋯L±0.1 CKC:Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. D / Lmax 6~22 / 450 25~50 / 600 Not applicable to D part of h9 (Cold-drawn).	Adds a keyway on the shaft end P (Q). Ordering Code PKC10 (QKC10) PKC, QKC=1mm Increment PKC, QKC≤50 (QKC)≤F (T) Keyway Details **P.737** Not applicable to P (Q)=5 or less.
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	LKC:4,00 CKC:8,00	4,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-Both Ends Stepped and Male Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your purpose.



Standard

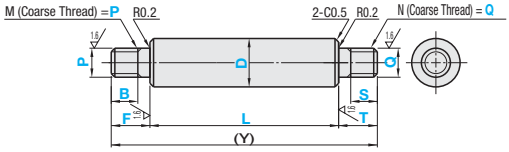
	Type		Tolerance		M Material	S Surface Treatment
	Standard	Wrench Flats	D	P / Q		
(1)	SFRMHM	SFRMHMS	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHM	PSFRMHMS				Electroless Nickel Plating
	SSFRMHM	SSFRMHMS			1.4301/X5CrNi18-10	-
(2)	-	SFRMGMS		g6	1.1191/C45E	Black Oxide
	PSFRMGM	-				Electroless Nickel Plating
	SSFRMGM	SSFRMGMS			1.4301/X5CrNi18-10	-
(3)	SFRHM	SFRHMS	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	PSFRHM	-				Electroless Nickel Plating
	SSFRHM	SSFRHMS			1.4301/X5CrNi18-10	-
(4)	SFRM	SFRMS	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRM	PSFRMS				Electroless Nickel Plating
	SSFRM	SSFRMS			1.4301/X5CrNi18-10	-
	HFRM	-			H 1.7220/34CrMo4 Hardness 30~35HRC	Black Oxide

Wrench Flats

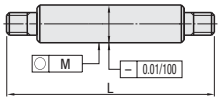
■Tolerance Table

D / P	h9 (Cold-drawn)	h7 Ground)	g6 (Ground)
3	0 -0.025	0 -0.010	-0.002 -0.008
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3 / 1.6)



■Circularity, Straightness



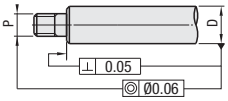
Not applicable to h9 (Cold-drawn).

■Circularity of Part D

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ Concentricity, Perpendicularity



Not applicable to h9 (Cold-drawn).

■Tolerances of L, Y and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) D tolerance h9 (Cold-drawn) / P, Q tolerance h7 (2)D tolerance h9 (Cold-drawn) / P, Q tolerance g6

Part Number Type Standard	Wrench Flats	D	0.1mm Increment L	F / T	1mm Increment B	S	P / Q Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
(1) D part h9 / P, Q part h7	(1) D part h9 / P, Q part h7	6	20.0~290.0	5≤F≤Px7 5≤T≤Qx7	When P≤6 B≤Px3 & B≤F-2	When Q≤6 S≤Qx3 & S≤T-2	3 4 5	SC+ℓ2≤L SC=0orSC≥1	5	8	300
SFRMHM	SFRMHMS	8	20.0~390.0				3 4 5 6		7		400
PSFRMHM	PSFRMHMS	10	20.0~490.0				4 5 6 8		8		500
SSFRMHM (D6 is not available for SSFRMHM.)	SSFRMHMS (D6 is not available for SSFRMHMS.)	12	25.0~590.0		When P=8 or 10 B≤Px3 & B≤F-3	When Q=8 or 10 S≤Qx3 & S≤T-3	5 6 8 10		10	10	600
(2) D part h9 / P, Q part g6	(2) D part h9 / P, Q part g6	15	25.0~690.0				5 6 8 10 12		13		700
PSFRMGM	SFRMGMS	20	30.0~790.0		When P≥12 B≤Px3 & B≤F-5	When Q≥12 S≤Qx3 & S≤T-5	6 8 10 12 16		17		800
SSFRMGM (D6 is not available for SSFRMGM.)	SSFRMGMS (D6 is not available for SSFRMGMS.)	25	30.0~790.0				8 10 12 16 20		22		
		30	30.0~790.0				8 10 12 16 20 24		27	15	
		35	40.0~790.0				10 12 16 20 24 30		30		

(3) h7 (Ground) Type

Part Number Type Standard	Wrench Flats	D	0.1mm Increment L	F	1mm Increment B	S	P / Q Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~290.0	5≤F≤Px7 5≤T≤Qx7	When P≤6 B≤Px3 & B≤F-2	When Q≤6 S≤Qx3 & S≤T-2	3 4 5	SC+ℓ2≤L SC=0orSC≥1	5	8	300
		8	20.0~390.0				3 4 5 6		7		400
SFRHM	SFRHMS	10	20.0~490.0				4 5 6 8		8		500
		12	25.0~590.0				5 6 8 10		10	10	600
		15	25.0~690.0		When P=8 or 10 B≤Px3 & B≤F-3	When Q=8 or 10 S≤Qx3 & S≤T-3	5 6 8 10 12		13		700
PSFRHM		20	30.0~790.0				6 8 10 12 16		17		800
		25	30.0~790.0				8 10 12 16 20		22		
SSFRHM	SSFRHMS	30	30.0~790.0				8 10 12 16 20 24		27	15	
		35	40.0~790.0		When P≥12 B≤Px3 & B≤F-5	When Q≥12 S≤Qx3 & S≤T-5	10 12 16 20 24 30		30		
		40	40.0~790.0				12 16 20 24 30		36	20	
		50	40.0~790.0				16 20 24 30		41		

(4) g6 (Ground) Type

Part Number Type Standard	Wrench Flats	D	0.1mm Increment L	F / T	1mm Increment B	S	P / Q Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~290.0	5≤F≤Px7 5≤T≤Qx7	When P≤6 B≤Px3 & B≤F-2	When Q≤6 S≤Qx3 & S≤T-2	3 4 5	SC+ℓ2≤L SC=0 or SC≥1	5	8	300
		8	20.0~390.0				3 4 5 6		7		400
SFRM	SFRMS	10	20.0~490.0				4 5 6 8		8		500
		12	25.0~590.0				5 6 8 10		10	10	600
		13	25.0~590.0				5 6 8 10		11		
PSFRM	PSFRMS	*15	25.0~690.0		When P=8 or 10 B≤Px3 & B≤F-3	When Q=8 or 10 S≤Qx3 & S≤T-3	5 6 8 10 12		13		700
		16	25.0~690.0				5 6 8 10 12		14		800
SSFRM	SSFRMS	17	30.0~790.0				5 6 8 10 12		15		
		18	30.0~790.0				5 6 8 10 12		17		
		*20	30.0~790.0				6 8 10 12 16		19		
		22	30.0~790.0		When P≥12 B≤Px3 & B≤F-5	When Q≥12 S≤Qx3 & S≤T-5	6 8 10 12 16		22		
*HFRM		*25	30.0~790.0				8 10 12 16 20		27	15	
(* marked sizes only)		*30	30.0~790.0				8 10 12 16 20 24		30		
		*35	40.0~790.0				10 12 16 20 24 30		36	20	
		*40	40.0~790.0				12 16 20 24 30		41		
		*50	40.0~790.0				16 20 24 30				

When D-P(Q)≤2, chamfer C at the step is 0.2 or less.

Order Example

Part Number - L - F - B - P - T - S - Q - SC

(1) D part h9 / P,Q part h7 SFRMHM30 - 250 - F30 - B8 - P10 - T30 - S8 - Q10 - SC30
(3) h7 (Ground) with Wrench Flat SFRHMS25 - 200 - F25 - B15 - P12 - T25 - S15 - Q12
(4) g6 (Ground) Type

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR / piece

A Express Charge of 21,60 EUR for 3 or more identical pieces.

P88

Price

Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D tolerance h9 (Cold-drawn) / P, Q tolerance h7 (2)D tolerance h9 (Cold-drawn) / P, Q tolerance g6

Type	€ SFRMHM(1.1191/C45E, Black Oxide) SFRMHMS / SFRMGMS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRMHM / PSFRMGM(1.1191/C45E, Electroless Nickel Plating) PSFRMHMS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRMHM / SSFRMGM(1.4301/X5CrNi18-10) SSFRMHMS / SSFRMGMS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 790.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 790.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 790.0
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(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRHM / SFRM(1.1191/C45E, Black Oxide) SFRHMS / SFRMS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRHM / PSFRM(1.1191/C45E, Electroless Nickel Plating) PSFRMS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRHM / SSFRM(1.4301/X5CrNi18-10) SSFRHMS / SSFRMS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 790.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 790.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 790.0
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Type	€ HFRM(1.7220/34CrMo4 Hardness 30~35HRC / Black Oxide)							
D	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 790.0
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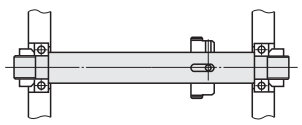
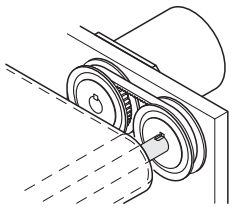
Example

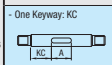
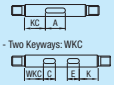
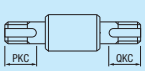
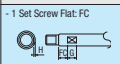
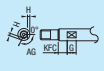
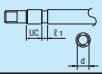
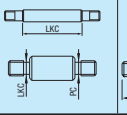
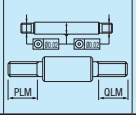
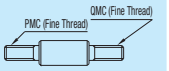




Alterations

Part Number - L - F - B - P(PMC) - T - S - Q(QMC) - SC - (KC, WKC, FC...etc.)

SSFRHMS10 - 300 - F25 - B15 - P12 - T25 - S15 - Q12 - SC30 - LKC

Alterations	Keyway	Keyway on Shaft End, Retaining Ring Groove	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Undercut, L Dimension Tolerance	Concentricity, Left-hand Thread / Thread	Fine Thread
	- One Keyway: KC  - Two Keyways: WKC 		- 1 Set Screw Flat: FC  - 2 Set Screw Flats: WFC 					
Code	KC · WKC	PKC · QKC	FC · WFC	KFC	UC	PC · QC· LKC	CKC· PLM · QLM	PMC · QMC
Spec.	KC: Adds a keyway. Ordering Code KC50-A10 WKC: Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, **P.737** If 3 keyways are required, use both KC and WKC combined.	PKC · QKC: Adds a Keyway on the shaft end P (Q). Ordering Code PKC10 (QKC10) PKC, QKC=1mm Increment PKC, QKC≤50 (QKC)≤F (T) For keyway details, **P.737** Not applicable to P (Q)=5 or less.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D | H 6~17 | 1 18~40 | 2 50 | 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D | H 6~17 | 1 18~40 | 2 50 | 3 When combined with other alterations, ± 2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D | d | ℓ1 6 | 5 | 4 8 | 7 10 | 8 | 5 12 | 10	PC, QC: Adds an undercut on P and Q. Ordering Code PC For undercut dimension details, refer to **P.734** F-B≤Mx2 Not applicable to D=P or D=Q. LKC: Changes L dimension tolerance. Ordering Code LKC L<500⋯L±0.05 L≥500⋯L±0.1	CKC: Changes the concentricity to Ø0.02 Ordering Code CKC Applicable within dimension L range in the table below. Not applicable to D part of h9 (Cold-drawn). D | Lmax 6~22 | 450 25~50 | 600 PLM / QLM: Changes the threads on shaft end P(Q) to Left-hand Thread. Ordering Code PLM-(QLM) Applicable to Both Ends Male Thread Type only. Combination with PMC and QMC is not applicable.	Changes threads to Fine Threads in the table below. Ordering Code PMC20 (QMC16) D | PMC / QMC 6 | 3 4 5 8 | 3 4 5 6 10 | 4 5 6 8 12 / 13 | 5 6 8 10 15 / 16 | 5 6 8 10 12 17 / 18 | 6 8 10 12 15 20 / 22 | 6 8 10 12 15 17 25 | 8 10 12 15 17 20 30 | 8 10 12 15 17 20 25 35 | 10 12 15 17 20 25 30 40 | 12 15 17 20 25 30 35 50 | 15 17 20 25 30 35 40 Pitch | 0.35 0.5 0.75 | 1.0 | 1.5 P(Q) dimension is the same as PMC(QMC)002E Use PMC(QMC) to specify P(Q) dimension.
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.							
Price Adder	KC: 4,00 WKC: 8,00	4,00	FC: 2,00 WFC: 4,00	6,00	2,00	PC, QC: Free LKC: 4,00	8,00	3,00

Rotary Shafts -D Tolerance h9 (Cold-drawn) / h7 (Ground) /g6 (Ground)-
-Both Ends Stepped and Female Thread-

■ h9 (Cold-drawn) and h7 (Ground) are newly added. Select from h9 (Cold-drawn), h7 (Ground) and g6 (Ground) for your purpose.

RoHS



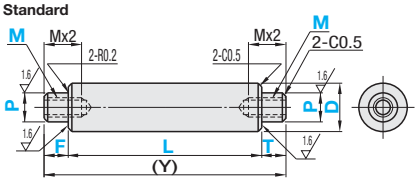
	Type		Tolerance		Material	Surface Treatment
	Standard	Wrench Flats	D	P		
(1)	SFRMHH	SFRMHHS	h9 (Cold-drawn)	h7	1.1191/C45E	Black Oxide
	PSFRMHH	PSFRMHHS				Electroless Nickel Plating
	SSFRMHH	SSFRMHHS			1.4301	-
(2)	SFRMGH	SFRMGHS		g6	1.1191/C45E	Black Oxide
	PSFRMGH	PSFRMGHS				Electroless Nickel Plating
	SSFRMGH	SSFRMGHS			1.4301	-
(3)	SFRHH	SFRHHS	h7 (Ground)	h7	1.1191/C45E	Black Oxide
	PSFRHH	PSFRHHS				Electroless Nickel Plating
	SSFRHH	SSFRHHS			1.4301	-
(4)	SFRH	SFRHS	g6 (Ground)	g6	1.1191/C45E	Black Oxide
	PSFRH	PSFRHS				Electroless Nickel Plating
	SSFRH	SSFRHS			1.4301	-

■ Tolerance Table

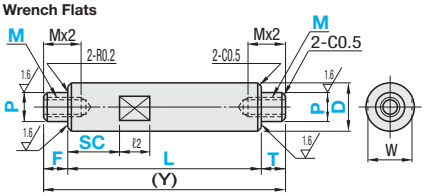
D · P	h9 (Cold-drawn)	h7 (Ground)	g6 (Ground)
3.1~6	0 -0.030	0 -0.012	-0.004 -0.012
6.1~10	0 -0.036	0 -0.015	-0.005 -0.014
10.1~18	0 -0.043	0 -0.018	-0.006 -0.017
18.1~30	0 -0.052	0 -0.021	-0.007 -0.020
30.1~50	0 -0.062	0 -0.025	-0.009 -0.025

Surface roughness of D part for h9 (Cold-drawn) is Ra 6.3, for h7 (Ground) and g6 (Ground) is Ra 1.6. (6.3/ 1.6/)

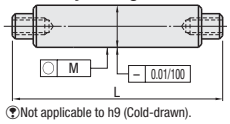
Standard



Wrench Flats



■ Circularity · Straightness



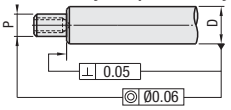
Not applicable to h9 (Cold-drawn).

■ Circularity of Part D

D Over	D To	Circularity M
5	13	0.004
13	20	0.005
20	40	0.006
40	50	0.007

Not applicable to h9 (Cold-drawn).

■ Concentricity · Perpendicularity



Not applicable to h9 (Cold-drawn).

■ Tolerances of L · Y and Other Dimensions

Dimension Over	Dimension To	Dimension Tolerance
2	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F · T	1mm Increment P	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
(1) D part h9 · P part h7	(1) D part h9 · P part h7	6	20.0~298.0	2≤F · T≤Px5	5	3	SC+2≤L SC=0 or SC≥1 For SC≤Mx3-F(T), W-M≥2.	5	8	300
SFRMHH	SFRMHHS	8	20.0~398.0		When M3~M8 M+2≤P<D	3 4 5		7		400
PSFRMHH	PSFRMHHS	10	20.0~498.0			4 5 6		8		500
SSFRMHH	SSFRMHHS	12	25.0~598.0		M+2≤P<D	5 6 8		10	10	600
(D6 is not available for SSFRMHH.)	(D6 is not available for SSFRMHHS.)	15	25.0~698.0		When M10~16 M+3≤P<D	5 6 8 10		13		700
(2) D part h9 · P part g6	(2) D part h9 · P part g6	20	30.0~798.0			5 6 8 10 12		17		
SFRMGH	SFRMGHS	25	30.0~798.0		When M20 or M24 M+4≤P<D	5 6 8 10 12 16		22		800
PSFRMGH	PSFRMGHS	30	30.0~798.0			8 10 12 16 20		27	15	
SSFRMGH	SSFRMGHS	35	40.0~798.0			8 10 12 16 20 24		30		
(D6 is not available for SSFRMGH.)	(D6 is not available for SSFRMGHS.)									

(3) h7 (Ground) Type

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F · T	1mm Increment P	M (Coarse) Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~298.0	2≤F · T≤Px5	5	3	SC+2≤L SC=0 or SC≥1 For SC≤Mx3-F(T), W-M≥2.	5	8	300
		8	20.0~398.0		When M3~M8 M+2≤P<D	3 4 5		7		400
SFRHH	SFRHHS	10	20.0~498.0			4 5 6		8		500
		12	25.0~598.0		M+2≤P<D	5 6 8		10	10	600
		15	25.0~698.0		When M10~16 M+3≤P<D	5 6 8 10		13		700
PSFRHH	PSFRHHS	20	30.0~798.0			5 6 8 10 12		17		
		25	30.0~798.0		When M20 or M24 M+4≤P<D	5 6 8 10 12 16		22		800
		30	30.0~798.0			8 10 12 16 20		27	15	
SSFRHH	SSFRHHS	35	40.0~798.0		When M30 M+5≤P<D	8 10 12 16 20 24		30		
		40	40.0~798.0			12 16 20 24 30		36	20	
		50	40.0~798.0			16 20 24 30		41		

(4) g6 (Ground) Type

Part Number Type Standard	Part Number Type Wrench Flats	D	0.1mm Increment L	0.1mm Increment F · T	1mm Increment P	M (Coarse) Selectable	1mm Increment W ith Wrench Flats only	W	ℓ2	(Y) max.
		6	20.0~298.0	2≤F · T≤Px5	5	3	SC+2≤L SC=0 or SC≥1 For SC≤Mx3-F(T), W-M≥2.	5	8	300
		8	20.0~398.0		When M3~M8 M+2≤P<D	3 4 5		7		400
		10	20.0~498.0			4 5 6		8		500
		12	25.0~598.0		M+2≤P<D	5 6 8		10	10	600
SFRH	SFRHS	13	25.0~598.0			5 6 8		11		
		15	25.0~698.0		When M10~16 M+3≤P<D	5 6 8 10		13		700
PSFRH	PSFRHS	16	30.0~798.0			5 6 8 10		14		
		17	30.0~798.0			5 6 8 10 12				800
		18	30.0~798.0			5 6 8 10 12		15		
SSFRH	SSFRHS	20	30.0~798.0		When M20 or M24 M+4≤P<D	5 6 8 10 12		17		
		22	30.0~798.0			5 6 8 10 12 16		19		
		25	30.0~798.0			5 6 8 10 12 16		22		
		30	30.0~798.0		When M30 M+5≤P<D	8 10 12 16 20		27	15	
		35	40.0~798.0			8 10 12 16 20 24		30		
		40	40.0~798.0			12 16 20 24 30		36	20	
		50	40.0~798.0			16 20 24 30		41		

When D-P(Q)≤2, chamfer C at the step is 0.2 or less. Mx4≤(Y) is required for (Y). When (Y) is less than the depth of tapped thread, the pilot hole might go through.

Order Example (1) D part h9 / P part h7 (3) h7 (Ground) with Wrench Flat

Part Number	L	F	P	T	M	SC
SFRMHH30	250	F30	P28	T30	M20	
SSFRHHS20	200	F25	P18	T25	M10	SC20

Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR / piece

A Express Charge of 21,60 EUR for 3 or more identical pieces.

P.88

Price

Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(1) D part tolerance h9 (Cold-drawn) / P part tolerance h7 (2) D part tolerance h9 (Cold-drawn) / P part tolerance g6

Type	€ SFRMHH · SFRMGH (1.1191/C45E, Black Oxide) SFRMHHS · SFRMGHS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRMHH · PSFRMGH (1.1191/C45E, Electroless Nickel Plating) PSFRMHHS · PSFRMGHS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRMHH · SSFRMGH (1.4301/X5CrNi18-10) SSFRMHHS · SSFRMGHS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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(3) h7 (Ground) (4) g6 (Ground)

Type	€ SFRHH · SFRH (1.1191/C45E, Black Oxide) SFRHHS · SFRHS With wrench flats, add 4,00 EUR to the prices shown below.								€ PSFRHH · PSFRH (1.1191/C45E, Electroless Nickel Plating) PSFRHHS · PSFRHS With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRHH · SSFRH (1.4301/X5CrNi18-10) SSFRHHS · SSFRHS With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0	Min. L ≥ 50.0	L50.1 ≥ 100.0	L100.1 ≥ 150.0	L150.1 ≥ 200.0	L200.1 ≥ 300.0	L300.1 ≥ 400.0	L400.1 ≥ 600.0	L600.1 ≥ 798.0
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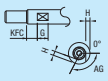
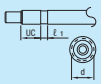
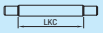
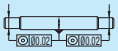
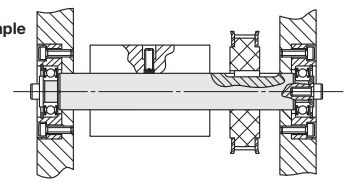
Alterations

Part Number - L - F - P - T - M - SC - (KC · WKC · FC...etc.)

SSFRMGHS25 - 300 - F15 - P18 - T15 - M10 - SC30 - LKC

Alterations	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	L Dimension Tolerance	Concentricity
	• One Keyway: KC • Two Keyways: WKC	• 1 Set Screw Flat: FC • 2 Set Screw Flats: WFC				
Code	KC · WKC	FC · WFC	KFC	UC	LKC	CKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC · A · WKC · C · K · E = 1mm Increment A · E · C≤100 For keyway details, **P.737** If 3 keyways are required, use both KC and WKC.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC · G · WFC · J · W · V = 1mm Increment G · J · V≤50 D / H: 6~17 / 1; 18~40 / 2; 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC · G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H: 6~17 / 1; 18~40 / 2; 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1: 6 / 5 / 4; 8 / 7; 10 / 8 / 5; 12 / 10	LKC: Changes L dimension tolerance. Ordering Code LKC L<500⋯±0.05 L≥500⋯L±0.1	CKC: Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. Not applicable to D part of h9 (Cold-drawn). D / Lmax: 6~22 / 450; 25~50 / 600
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.					
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	8,00

Example



Rotary Shafts

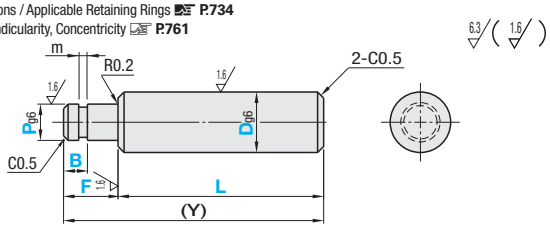
-One End Stepped with Retaining Ring Groove / Both Ends Stepped with Retaining Ring Grooves-

■One End Stepped with Retaining Ring Groove RoHS



Type	Material	Surface Treatment
SFRX	1.1191/C45E	Black Oxide
PSFRX		Electroless Nickel Plating
SSFRX	1.4301/X5CrNi18-10	-

Retaining Ring Groove Dimensions / Applicable Retaining Rings P.734
Circularity, Straightness, Perpendicularity, Concentricity P.761



Part Number Type	Dg6		L	F	B	P	(Y) max.
SFRX PSFRX SSFRX	6	-0.004 -0.012	20.0~298.0	F≤Px5	When P≤6 2≤B	345	300
	8	-0.005 -0.014	20.0~398.0			3≤P<D	400
	10		20.0~498.0				500
	12	-0.006 -0.017	25.0~598.0		When 6<P≤10, 3≤B	5≤P<D	600
	13		25.0~598.0				
	15		25.0~698.0				700
	16		25.0~798.0				800
	17		30.0~798.0				
	18	-0.007 -0.020	30.0~798.0		When 10<P≤20 4≤B		
	20		30.0~798.0				
	22		30.0~798.0			10≤P<D	
	25		30.0~798.0				
	30		30.0~798.0		When 20<P 5≤B		
	35	-0.009 -0.025	40.0~798.0			16≤P<D	
	40		40.0~798.0				
	50		40.0~798.0				

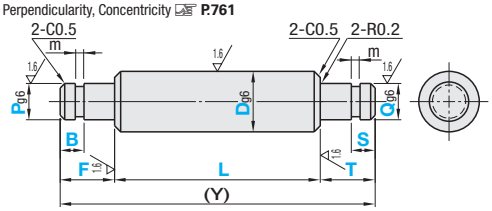
When D-P≤2, chamfer C at the step is 0.2 or less. For P dimension, 27, 31, 33, 34, 36, 37, 38, 39, 41, 42, 43, 44, 46, 47, 48 and 49 cannot be specified.

■Both Ends Stepped With Retaining Ring Grooves RoHS



Type	Material	Surface Treatment
SFRZ	1.1191/C45E	Black Oxide
PSFRZ		Electroless Nickel Plating
SSFRZ	1.4301/X5CrNi18-10	-

Retaining Ring Groove Dimensions / Applicable Retaining Rings P.734
Circularity, Straightness, Perpendicularity, Concentricity P.761



Part Number Type	Dg6		L	F / T	B / S	P / Q	(Y) max.
SFRZ PSFRZ SSFRZ	6	-0.004 -0.012	20.0~296.0	F≤Px5 T≤Qx5	When P, Q≤6, 2≤B, S	345	300
	8	-0.005 -0.014	20.0~396.0			3≤P, Q<D	400
	10		20.0~496.0				500
	12	-0.006 -0.017	25.0~596.0		When 6<P and Q≤10, 3≤B, S	5≤P, Q<D	600
	13		25.0~596.0				
	15		25.0~696.0				700
	16		25.0~796.0				800
	17		30.0~796.0				
	18	-0.007 -0.020	30.0~796.0		When 10<P and Q≤20, 4≤B, S		
	20		30.0~796.0				
	22		30.0~796.0			10≤P, Q<D	
	25		30.0~796.0				
	30		30.0~796.0		When 20<P, Q, 5≤B, S		
	35	-0.009 -0.025	40.0~796.0			16≤P, Q<D	
	40		40.0~796.0				
	50		40.0~796.0				

When D-P(Q)≤2, chamfer C at the step is 0.2 or less. For P and Q dimensions, 27, 31, 33, 34, 36, 37, 38, 39, 41, 42, 43, 44, 46, 47, 48 and 49 cannot be specified.

Order Example

Part Number	-	L	-	F	-	B	-	P	-	T	-	S	-	Q
SFRX30	-	500	-	F20	-	B10	-	P15						
PSFRZ30	-	340	-	F13	-	B9	-	P8	-	T12	-	S10	-	Q8

Days to Ship: 5 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

One End Stepped with Retaining Ring Groove

Type	€ SFRX								€ PSFRX								€ SSFRX							
D	Min. L z 50.0	L50.1 z 100.0	L100.1 z 150.0	L150.1 z 200.0	L200.1 z 300.0	L300.1 z 400.0	L400.1 z 600.0	L600.1 z 798.0	Min. L z 50.0	L50.1 z 100.0	L100.1 z 150.0	L150.1 z 200.0	L200.1 z 300.0	L300.1 z 400.0	L400.1 z 600.0	L600.1 z 798.0	Min. L z 50.0	L50.1 z 100.0	L100.1 z 150.0	L150.1 z 200.0	L200.1 z 300.0	L300.1 z 400.0	L400.1 z 600.0	L600.1 z 798.0
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Both Ends Stepped With Retaining Ring Grooves

Type	€ SFRZ								€ PSFRZ								€ SSFRZ							
D	Min. L z 50.0	L50.1 z 100.0	L100.1 z 150.0	L150.1 z 200.0	L200.1 z 300.0	L300.1 z 400.0	L400.1 z 600.0	L600.1 z 796.0	Min. L z 50.0	L50.1 z 100.0	L100.1 z 150.0	L150.1 z 200.0	L200.1 z 300.0	L300.1 z 400.0	L400.1 z 600.0	L600.1 z 796.0	Min. L z 50.0	L50.1 z 100.0	L100.1 z 150.0	L150.1 z 200.0	L200.1 z 300.0	L300.1 z 400.0	L400.1 z 600.0	L600.1 z 796.0
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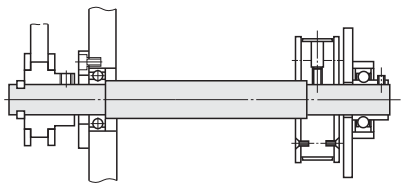
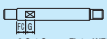
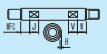
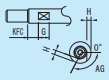
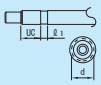
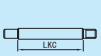
Alterations

Part Number - L - F - B - P - (LKC, FC...etc.)
SFRX30 - 500 - F20 - B10 - P15 - LKC

Part Number - L - F - B - P - T - S - Q - (LKC, FC...etc.)
PSFRZ30 - 340 - F13 - B9 - P8 - T12 - S10 - Q8 - LKC

Example



	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	L Dimension Tolerance
Alterations	- One Keyway: KC  - Two Keyways: WKC 	- 1 Set Screw Flat: FC  - 2 Set Screw Flats: WFC 			
Code	KC / WKC	FC / WFC	KFC	UC	LKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details, **P.737** If 3 keyways are required, use both KC and WKC.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	LKC: Changes L dimension tolerance. Ordering Code LKC L<500⋯±0.05 L≥500⋯L±0.1
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.				
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00

Rotary Shafts

-Both Ends Stepped, One End Male Thread / Both Ends Stepped, One End Male Thread, One End Female Thread-

■Both Ends Stepped, One End Male Thread

RoHS



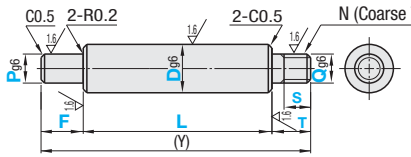
Type		Material	Surface Treatment Nylon
Standard	Wrench Flats		6 (Glass Fiber 30%)
SFRE	SFRES	1.1191/C45E	Black Oxide
-	SSFRES	1.4301/X5CrNi18-10	-

Circularity, Straightness, Perpendicularity, Concentricity P.761

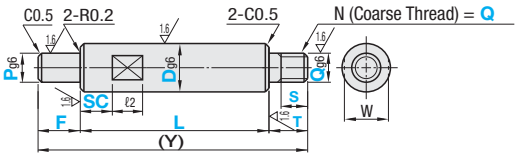
D Tolerance (g6)	
6	-0.004 -0.012
8, 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020
35~50	-0.009 -0.025

6.3 (1.6)

Standard



Wrench Flats



Part Number Type		D	0.1mm Increment L	F	T	1mm Increment P	S	Q Selectable	1mm Increment With Wrench Flats only	W	ℓ2	(Y) max.
Standard	Wrench Flats											
SFRE	SFRES SSFRES	6	20.0~295.0	2≤F≤Px5	5≤T≤Qx7	3≤P<D	When Q≤6, S≤Qx3 & S≤T-2	3 4 5	SC+ℓ2≤L SC=0 or SC≥1	5	8	300
		8	20.0~395.0					3 4 5 6		7		400
		10	20.0~495.0					4 5 6 8		8		500
		12	25.0~595.0			5≤P<D		5 6 8 10		10	10	600
		13	30.0~595.0					5 6 8 10		11		
		15	25.0~695.0					5 6 8 10 12		13		700
		16	40.0~795.0				When Q=8 or 10, S≤Qx3 & S≤T-3	5 6 8 10 12		14		800
		17	30.0~795.0					5 6 8 10 12				
		18	40.0~795.0					5 6 8 10 12		15		
		20	30.0~795.0					6 8 10 12 16		17		
		22	40.0~795.0			10≤P<D	When Q≥12, S≤Qx3 & S≤T-5	6 8 10 12 16		19		
		25	30.0~795.0					8 10 12 16 20		22		
		30	30.0~795.0					8 10 12 16 20 24		27	15	
		35	40.0~795.0			16≤P<D		10 12 16 20 24 30		30		
		40	40.0~795.0					12 16 20 24 30		36	20	
		50	40.0~795.0					16 20 24 30		41		

When D-P(Q)≤2, chamfer C at the step is 0.2 or less.

■One End Male Thread, One End Female Thread

RoHS

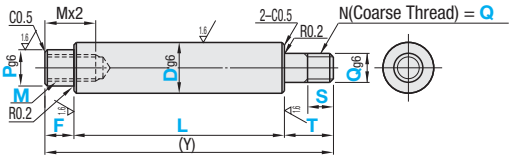


Type	Material	Surface Treatment
SFRB	1.1191/C45E	Black Oxide
PSFRB		Electroless Nickel Plating

Circularity, Straightness, Perpendicularity, Concentricity P.761

D Tolerance (g6)	
6	-0.004 -0.012
8, 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020
35~50	-0.009 -0.025

6.3 (1.6)



Part Number Type	D	0.1mm Increment L	F	T	1mm Increment P	S	M (Coarse) Selectable	Q Selectable	(Y) max.
SFRB PSFRB	6	20.0~296.0	2≤F≤Px5	5≤T≤Qx7	5	When Q≤6 S≤Qx3 & S≤T-2	3	3 4 5	300
	8	20.0~396.0			When M3~M8 M+2≤P<D		3 4 5	3 4 5 6	400
	10	20.0~496.0					4 5 6	4 5 6 8	500
	12	30.0~496.0					5 6 8	5 6 8 10	600
	13	30.0~496.0			When M10~16 M+3≤P<D	When Q8, 10 S≤Qx3 & S≤T-3	5 6 8 10	5 6 8 10	
	15	25.0~496.0					5 6 8 10	5 6 8 10 12	
	16	40.0~496.0					5 6 8 10 12	5 6 8 10 12	
	17	30.0~496.0					5 6 8 10 12	5 6 8 10 12	
	18	40.0~496.0					5 6 8 10 12	5 6 8 10 12	
	20	30.0~496.0			When M20 or M24 M+4≤P<D		5 6 8 10 12	5 6 8 10 12 16	
	22	50.0~496.0				When Q≥12 S≤Qx3 & S≤T-5	5 6 8 10 12 16	6 8 10 12 16	
	25	30.0~496.0					5 6 8 10 12 16	8 10 12 16 20	
	30	30.0~496.0			When M30 M+5≤P<D		8 10 12 16 20	8 10 12 16 20 24	
	35	40.0~496.0					8 10 12 16 20 24	10 12 16 20 24 30	
	40	40.0~496.0					12 16 20 24 30	12 16 20 24 30	
	50	40.0~496.0					16 20 24 30	16 20 24 30	

When D-P(Q)≤2, chamfer C at the step is 0.2 or less.

Order Example

Part Number	L	F	P	T	S	Q	SC			
SFRE25	300	F50	P20	T20	S15	Q10	SC70			
Part Number	L	F	P	M	T	S	Q			
SFRB20	400	F25	P16	M10	T20	S15	Q10			

Days to Ship 5 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

Both Ends Stepped, One End Male Thread

Type	€ SFRE SFRES With wrench flats, add 4,00 EUR to the prices shown below.								€ SSFRES With wrench flats, add 4,00 EUR to the prices shown below.							
D	Min. L ≀ 50.0	L50.1 ≀ 100.0	L100.1 ≀ 150.0	L150.1 ≀ 200.0	L200.1 ≀ 300.0	L300.1 ≀ 400.0	L400.1 ≀ 600.0	L600.1 ≀ 795.0	Min. L ≀ 50.0	L50.1 ≀ 100.0	L100.1 ≀ 150.0	L150.1 ≀ 200.0	L200.1 ≀ 300.0	L300.1 ≀ 400.0	L400.1 ≀ 600.0	L600.1 ≀ 795.0
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One End Male Thread, One End Female Thread

Type	€ SFRB							€ PSFRB						
D	Min. L ≀ 50.0	L50.1 ≀ 100.0	L100.1 ≀ 150.0	L150.1 ≀ 200.0	L200.1 ≀ 300.0	L300.1 ≀ 400.0	L400.1 ≀ 496.0	Min. L ≀ 50.0	L50.1 ≀ 100.0	L100.1 ≀ 150.0	L150.1 ≀ 200.0	L200.1 ≀ 300.0	L300.1 ≀ 400.0	L400.1 ≀ 496.0
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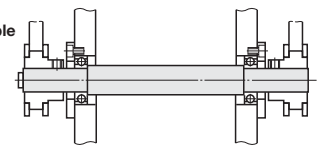
Alterations

Part Number - L - F - P - T - S - Q (QMC) - SC - (LKC, FC...etc.)
SFRE25 - 300 - F50 - P20 - T20 - S15 - Q10 - SC70 - LKC

Part Number - L - F - P - M - T - S - Q (QMC) - (LKC, FC...etc.)
SFRB25 - 400 - F25 - P16 - M10 - T20 - S15 - Q10 - LKC

Example



	Keyway	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Undercut, L Dimension Tolerance	Concentricity	Fine Thread
Alterations	- One Keyway: KC - Two Keyways: WKC	- 1 Set Screw Flat: FC - 2 Set Screw Flats: WFC					
Code	KC / WKC	FC / WFC	KFC	UC	PC / QC- LKC	CKC	QMC
Spec.	KC: Adds a keyway. Ordering Code KC50-A10 WKC: Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E = 1mm Increment A, E, C≤100 For keyway details,P.737 If 3 keyways are required, use both KC and WKC combined.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D / H 6~17 / 1 18~40 / 2 50 / 3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~17 / 1 18~40 / 2 50 / 3 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	PC, QC: Adds an undercut on P and Q. Ordering Code PC For undercut dimension details, refer to P.734 F-B≤Mx2 Not applicable to D=P or D=Q. LKC: Changes L dimension tolerance. Ordering Code LKC L<500⋯L±0.05 L≥500⋯L±0.1	Changes the concentricity to Ø0.02. Ordering Code CKC Applicable within dimension L range in the table below. D / Lmax 6~22 / 450 25~50 / 600	Changes threads to Fine Thread in the table below. Ordering Code QMC17 Q dimension is the same as QMC. Specify QMC instead of Q.
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.						
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	6,00	2,00	PC, QC: Free LKC: 4,00	8,00	3,00

QMC

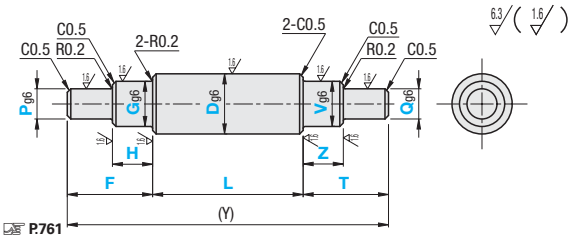
D	QMC				
6	3	4.5			
8	3	4.5	6		
10		4.5	6	8	
12 / 13		5	6	8	10
15 / 16		5	6	8	10 12
17 / 18			6	8	10 12 15
20 / 22			6	8	10 12 15 17
25				8	10 12 15 17 20
30				8	10 12 15 17 20 25
35					10 12 15 17 20 25 30
40					12 15 17 20 25 30 35
50					15 17 20 25 30 35 40
Pitch	0.35	0.5	0.75	1.0	1.5

Rotary Shafts
-Both Ends Double Stepped-



RoHS

Type	Material	Surface Treatment
SFRJ	1.1191/C45E	Black Oxide
SSFRJ	1.4301/X5CrNi18-10	-



Circularity, Straightness, Perpendicularity, Concentricity P.761

Part Number Type	Dg6		0.1mm Increment L	F / T	H / Z	1mm Increment G / V	P / Q	(Y) max.
SFRJ SSFRJ	6	-0.004 -0.012	20.0~296.0	2<F≤Px5 2<T≤Qx5	2≤H 2≤Z	4~ 5	3 ~ 4	300
	8	-0.005	20.0~396.0			4~ 7	3 ~ 6	400
	10	-0.014	20.0~496.0			4~ 9	3 ~ 8	500
	12	-0.006 -0.017	25.0~596.0			6~11	5~10	600
	13		25.0~596.0			6~12	5~11	
	15		25.0~696.0			6~14	5~13	700
	16		25.0~796.0			6~15	5~14	800
	17		25.0~796.0			6~15	5~14	800
	18		25.0~796.0			6~17	5~16	800
	20	-0.007 -0.020	30.0~796.0			6~19	5~18	800
	22		30.0~796.0			6~21	5~20	800
	25		30.0~796.0			11~24	10~23	800
	30		30.0~796.0			11~29	10~28	800

When D-G(V)≤2 and G(V)-P(Q)≤2, chamfer C at the step is 0.2 or less. P<G<D, Q<V<D

Order Example Part Number - L - F - H - G - P - T - Z - V - Q
SFRJ10 - 400 - F25 - H20 - Q8 - P6 - T20 - Z10 - V8 - Q6

Days to Ship 5 Days

Alterations Part Number - L - F - H - G - P - T - Z - V - Q - (KC, WKC, FC...etc.)
SFRJ20 - 300 - F30 - H20 - G15 - P12 - T25 - Z15 - V15 - Q12 - SC10

Alterations	Keyway	Keyway on Shaft End	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	L Dimension Tolerance
	One Keyway: KC Two Keyways: WKC	PKC QKC	One Set Screw Flat: FC Two Set Screw Flats: WFC	H 0° AG KFC G	UC ℓ1 d	SC ℓ2 W	LKC
Code	KC / WKC	PKC / QKC	FC / WFC	KFC	UC	SC	LKC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, K, E=1 mm Increment A, E, C≤100 For keyway details,P.737 If 3 keyways are required, use both KC and WKC.	Adds a keyway on the shaft end P (Q). Ordering Code PKC10 (QKC10) PKC, QKC=1mm Increment PKC, QKC≤50 PKC (QKC)≤F (T) Keyway Details P.737 Not applicable to P (Q)=5 or less.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V=1 mm Increment G, J, V≤50 D / H 6~15 / 1 16~30 / 2	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D / H 6~15 / 1 16~30 / 2 When combined with other alterations, ±2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Not applicable to D13 or more. D / d / ℓ1 6 / 5 / 4 8 / 7 10 / 8 / 5 12 / 10	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 D / W / ℓ2 6 / 5 8 / 7 / 8 10 / 8 12 / 13 / 10 15 / 16 / 13 17 / 18 / 14 / 10 20 / 22 / 17 25 / 22 30 / 27 / 15 When combined with other alterations, ±2 degree phase differential may occur.	Changes L Dimension Tolerance. Ordering Code LKC L<500⋯L±0.05 L≥500⋯L±0.1
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.						
Price Adder	KC: 4,00 WKC: 8,00	4,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	4,00

Price ■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

D	€ SFRJ Min. L 50.0	L50.1 100.0	L100.1 150.0	L150.1 200.0	L200.1 300.0	L300.1 400.0	L400.1 600.0	L600.1 796.0	€ SSFRJ Min. L 50.0	L50.1 100.0	L100.1 150.0	L150.1 200.0	L200.1 300.0	L300.1 400.0	L400.1 600.0	L600.1 796.0
6																
8																
10																
12																
13																
15																
16																
17																
18																
20																
22																
25																
30																

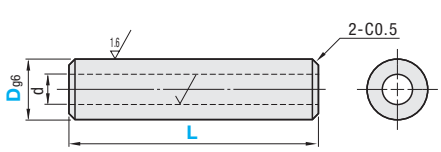
Hollow Rotary Shafts
-Lightweight - Straight-



RoHS

Type	Material	Surface Treatment
PFR	1.1191/C45E	Black Oxide
PPFR		Electroless Nickel Plating
SPFR	1.4301/X5CrNi18-10	-

Circularity, Straightness, Perpendicularity P.761





Surface treatment is not applied to the shaft ends.

Part Number Type	Dg6		L 0.1mm Increment	d
PFR PPFR SPFR	10	-0.005 -0.014	20.0~500.0	6
	12	-0.006	30.0~600.0	6
	15	-0.017	30.0~600.0	10
	20	-0.007 -0.020	40.0~600.0	11.7
	25		50.0~600.0	15.2
	30		60.0~600.0	16
	35	-0.009 -0.025	70.0~600.0	20.1
	40		80.0~600.0	22.7
	50		100.0~600.0	24

Order Example

Part Number	-	L
PFR20	-	300

Days to Ship

10 Days

Express B 8,00 EUR / piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number	-	L	-	(KC, WKC, FC...etc.)
SPFR30	-	150	-	SC10

Alterations	Keyway	Set Screw Flat	Wrench Flats	L Dimension Tolerance
	-One Keyway: KC -Two Keyways: WKC	- One Set Screw Flat: FC -Two Set Screw Flats: WFC		
Code	KC · WKC	FC · WFC	SC	LKC
Spec.	KC: Adds one keyway. Ordering Code KC50-A10 WKC: Adds 2 Keyways. Ordering Code WKC50-C8-K40-E10 Applicable when D≥30 KC, A, WKC, C, K, E=1 mm Increment KC, WKC, K≥2 KC+A+4≤L WKC+C+K+E+6≤L A, E, C≤100 For keyway details, P.737 If 3 keyways are required, use both KC and WKC.	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V=1 mm Increment FC, WFC, W≥2 FC+G+4≤L WFC+J+V+W+6≤L G, J, V≤50 D: 10~15 H: 1; 20~40 H: 2; 50 H: 3	Adds a wrench flat. SC=1 mm Increment SC≥2 SC+ℓ₂+4≤L W-M(N)≥2 for SC≤M(N)x3 D: 10 12 15 20 25 — W: 8 10 13 17 22 — ℓ₂: 10 D: 30 35 40 50 — W: 27 30 36 41 — ℓ₂: 15 20	Changes L dimension tolerance. Ordering Code LKC L<500··· L±0.05 L≥500··· L±0.1
Price Adder	KC: 4,00 WKC: 8,00	FC: 2,00 WFC: 4,00	4,00	4,00

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

D	€ PFR							€ PPFR							€ SPFR						
	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	Min. L ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0
10																					
12																					
15																					
20																					
25																					
30																					
35																					
40																					
50																					

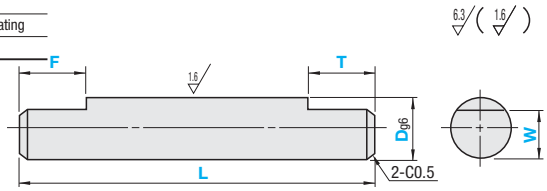
Rotary Shafts
-D-Cut-

CAD Data

■D-Cut



Type	M Material	S Surface Treatment
SFRV	1.1191/C45E	Black Oxide
PSFRV		Electroless Nickel Plating
SSFRV	1.4301/X5CrNi18-10	-



-Use this shaft type for conveyer rollers where roller rotation is undesired.
Ⓥ Circularity, Straightness P.761

Part Number Type	Dg6		0.1mm Increment L	F / T	1mm Increment W
	6	-0.004 -0.012	20.0~300.0	2.0~30.0	4~5
	8	-0.005	20.0~400.0		5~7
	10	-0.014	20.0~500.0		7~9
	12	-0.006 -0.017	30.0~600.0	2.0~54.0	9~11
SFRV	13		30.0~600.0		10~12
	15		30.0~700.0		12~14
PSFRV	16		30.0~700.0		13~15
	17		40.0~800.0		14~16
SSFRV	18		40.0~800.0		15~17
	20	-0.007 -0.020	40.0~800.0	2.0~90.0	15~18
	22		50.0~800.0		17~20
	25		50.0~800.0		20~23
	30		60.0~800.0		25~28

Ⓥ Max value for W will be used if W dimension is not specified.
Ⓥ When L>600, machined D-Cut ends are not exactly aligned. (Misalignment up to 1° may result.) Ⓥ L≥F+T+20

Order Example

Part Number	-	L	-	F	-	T	-	W
SFRV15	-	300	-	F30	-	T7	-	W13
SSFRV20	-	350	-	F35	-	T35		

(W will be 18 since it is not specified in the above.)

Days to Ship 5 Days

Price

■Volume Discount (Ⓥ Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

Ⓥ For orders larger than indicated quantity, please request a quotation.

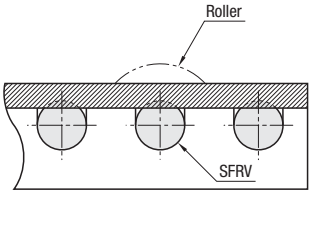
D	€ SFRV								€ PSFRV								€ SSFRV							
	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~800.0	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~800.0	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~800.0
6																								
8																								
10																								
12																								
13																								
15																								
16																								
17																								
18																								
20																								
22																								
25																								
30																								

Alterations

Part Number	-	L	-	F	-	T	-	W	-	(FC, LKC...etc.)
SFRV15	-	300	-	F15	-	T8	-	W12	-	LKC

Alterations	Set Screw Flat	Wrench Flats	L Dimension Tolerance	Retaining Ring Groove
	・1 Set Screw Flat: FC ・2 Set Screw Flats: WFC			
Code	FC・WFC	SC	LKC	TA・TB
Spec.	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 Ⓥ FC, G, WFC, J, W, V = 1mm Increment Ⓥ G, J, V≤50 Ⓥ Processed ends will not be aligned with each other. D: 6~17 → H: 1; 18~30 → H: 2	Adds a wrench flat. SC=1 mm Increment Ⓥ SC+ℓ2≤L SC=0 or SC≥1 Ⓥ Processed ends will not be aligned with each other. D: 6 → W: 5; 8 → W: 7; 10 → W: 8; 12・13 → W: 10; 15・16 → W: 13; 17・18 → W: 14; ℓ2: 8 D: 20・22 → W: 17; 25 → W: 22; 30 → W: 27; ℓ2: 10, 15	Changes L Dimension Tolerance. Ordering Code LKC Ⓥ L<500···L±0.05 L≥500···L±0.1	Adds a retaining ring groove. (Applicable retaining rings are included.) TA, TB = 1mm Increment Ordering Code TA10-TB10 Ⓥ For dimensions of the retaining ring groove, please refer to P.734 Ⓥ F(T)+4≤TA(TB)≤L−1/2
Price Adder	FC: 2,00 WFC: 4,00	4,00	4,00	4,00

Example



Shaft for Tension

-Pull - Retaining Ring Groove-

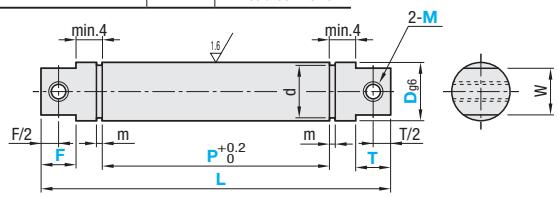
CAD Data

■For Tension



RoHS

Type	Material	Surface Treatment	Accessory	
SFRRT	1.1191/C45E	Black Oxide	Retaining Rings 2pcs.	Spring Steel
PSFRRT		Electroless Nickel Plating		
SSFRRT	1.4301/X5CrNi18-10	-		1.4301/X5CrNi18-10



6.3 (1.6)

-Suitable for where tension needs to be applied such as belt conveyer.
(?)Circularity, Straightness P.761

Min4 >> 4mm or more is required

Part Number Type	Dg6		1mm Increment L	F	T	P	M (Coarse) Selectable	W	d	Tolerance	m	Tolerance
SFRRT	8	-0.005 -0.014	20~400	7~30	7~30	5~370	3	7	7	+0.09 0	0.9	+0.1 0
	10		30~500	10~30	10~30	5~470	4	8	9.6	0 -0.09	1.15	+0.14 0
	12		30~500				4 5	9	11.5	0 -0.11		
PSFRRT	15	-0.006 -0.017	30~600				4 5 6	12	14.3			
	17		40~600				5 6 8	13	16.2			
SSFRRT	20		40~600	16~50	16~50	10~550	6 8 10	16	19	0 -0.21	1.35	
	25	-0.007 -0.020	50~600				8 10 12	20	23.9			
	30		60~600					25	28.6		1.65	

(?)L≥P+F+T+8

Order Example

Part Number	-	L	-	F	-	T	-	P	-	M
SFRRT20	-	250	-	F30	-	T30	-	P184	-	M10

Days to Ship: 5 Days

Price

■Volume Discount ((?)Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

(?)For orders larger than indicated quantity, please request a quotation.

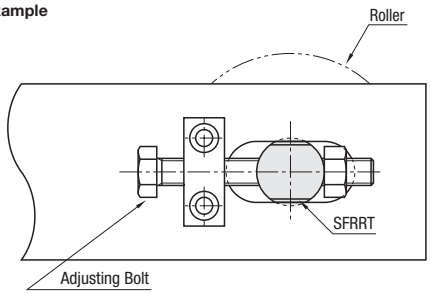
D	€ SFRRT Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~600	€ PSFRRT Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~600	€ SSFRRT Min. L ~50	L51 ~100	L101 ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~600
8							✕							✕							✕
10																					
12																					
15																					
17																					
20																					
25																					
30	✕							✕							✕						

Alterations

Part Number	-	L	-	F	-	T	-	P	-	M	-	(FC, WFC, SC...etc.)
SFRRT20	-	250	-	F30	-	T30	-	P184	-	M10	-	LKC

	Set Screw Flat	Wrench Flats	L Dimension Tolerance
Alterations	• 1 Set Screw Flat: FC • 2 Set Screw Flats: WFC	SC, ℓ2, W	LKC
Code	FC · WFC	SC	LKC
Spec.	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 (?)FC, G, WFC, J, W, V = 1mm Increment (?)G, J, V≤50 (?)Processed ends will not be aligned with each other. D: 8~17 H: 1; 20~30 H: 2	Adds a wrench flat. SC=1 mm Increment (?)SC+ℓ2≤L SC=0 or SC≥1 (?)Processed ends will not be aligned with each other. D 8 10 12 15 17: W 7 8 10 13 14: ℓ2 8 8 8 10 10 D 20 25 30: W 17 22 27: ℓ2 10 10 15	Changes L Dimension Tolerance. Ordering Code LKC (?)L<500⋯L±0.05 L≥500⋯L±0.1
Price Adder	FC: 2,00 WFC: 4,00	4,00	4,00

ex. Example

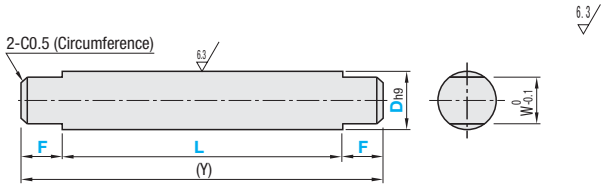


Shaft for Tension
-Push Type / Pull Type-

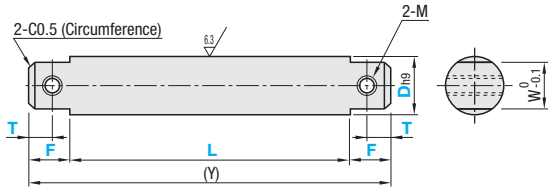


Type		D	M	S
Push Type	Pull Type	Tolerance	Material	Surface Treatment
SFMRPS	SFMRPL	h9	1.1191/C45E	Black Oxide
PSFMRPS	PSFMRPL			Electroless Nickel Plating
SSFMRPS	SSFMRPL		1.4301/X5CrNi18-10	-

Push Type



Pull Type



■L, Y and T Tolerances

Dimension		Dimension Tolerance
Over	To	
3	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	680	±0.8

Part Number			0.1mm Increment			M (Coarse)	W	(Y) max.
Type	D h9		L	F	T			
Push Type SFMRPS PSFMRPS SSFMRPS (D6 is not available for SSFMRPS.) Pull Type SFMRPL PSFMRPL SSFMRPL (D6 is not available for SSFMRPL.)	6	0 -0.030	20.0~286.0	7.0~15.0	3.0~8.0	2.6	4.5	300
	8	0 -0.036	20.0~384.0	8.0~20.0	4.0~10.0	4	6	400
	10		20.0~482.0	9.0~20.0	5.0~10.0	5	8	500
	12	0 -0.043	30.0~582.0				9	600
	15		30.0~660.0	10.0~25.0	6.0~13.0	6	12	680
	20	0 -0.052	40.0~656.0	12.0~30.0	8.0~15.0	8	16	680
	25		50.0~656.0				20	680
	30		60.0~652.0	14.0~35.0	10.0~18.0	10	25	680
	35	0 -0.062	70.0~648.0	16.0~45.0	12.0~23.0	12	30	680

?L+2F≤(Y)

Order Example

	Part Number	-	L	-	F	-	T
Push Type	SFMRPS20	-	250	-	F30		
Pull Type	SFMRPL12	-	300	-	F15	-	T7

Days to Ship

8 Days

Express A 8,00 EUR / piece P. 88

?A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	20%

Push Type

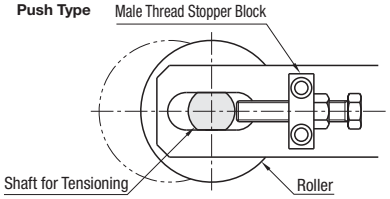
Type	€ SFMRPS								€ PSFMRPS								€ SSFMRPS							
D	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~660.0	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~660.0	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~660.0
6																								
8																								
10																								
12																								
15																								
20																								
25																								
30																								
35																								

Pull Type

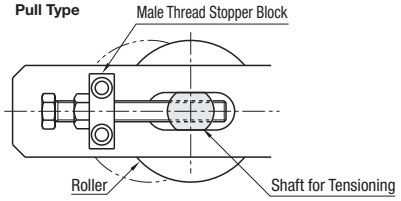
Type	€ SFMRPL								€ PSFMRPL								€ SSFMRPL							
D	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~660.0	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~660.0	Min. L ~50.0	L50.1 ~100.0	L100.1 ~150.0	L150.1 ~200.0	L200.1 ~300.0	L300.1 ~400.0	L400.1 ~600.0	L600.1 ~660.0
6																								
8																								
10																								
12																								
15																								
20																								
25																								
30																								
35																								

Example

Push Type

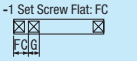
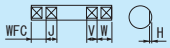


Pull Type



Alterations

Part Number	-	L	-	F	-	T	-	(FC, WFC, SC...etc.)
PSFMRPS15	-	280	-	F13			-	LKC
SSFMRPL25	-	350	-	F18	-	T8	-	LKC

	Set Screw Flat	Wrench Flats	Retaining Ring Groove
Alterations	-1 Set Screw Flat: FC  -2 Set Screw Flats: WFC 	 	
Code	FC · WFC	SC	TA · TB
Spec.	FC: Adds 1 set screw flat. Ordering Code FC10-G3 WFC: Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 Processed ends will not be aligned with each other. D: 6~15 → H: 1; 20~35 → H: 2	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 Processed ends will not be aligned with each other. D: 6, 8, 10, 12, 15 → W: 5, 7, 8, 10, 13; ℓ2: 8 (D 6~10), 10 (D 12~15) D: 20, 25, 30, 35 → W: 17, 22, 27, 30; ℓ2: 10 (D 20~25), 15 (D 30~35)	Adds a retaining ring groove. (Applicable retaining rings are included.) TA, TB = 1mm Increment Ordering Code TA10-TB10 For dimensions of the retaining ring groove, please refer to P.734 F(T)+4≤TA(TB)≤L-1/2
Price Adder	FC: 2,00 WFC: 4,00	4,00	4,00

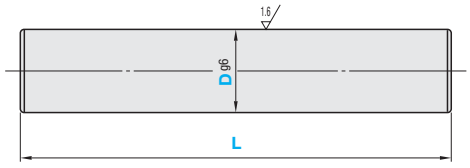
Rotary Shafts
-End Shape Selectable-

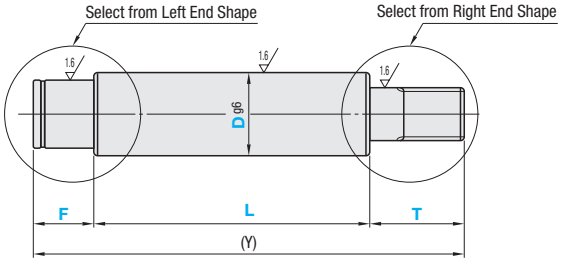


RoHS

Type	Material	Surface Treatment
SFR_ _	1.1191/C45E	Black Oxide
PSFR_ _		Electroless Nickel Plating
SSFR_ _	1.4301/X5CrNi18-10	-

Base Shape (A Shape on Both Ends)

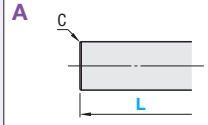
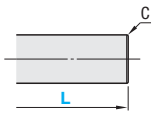
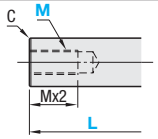
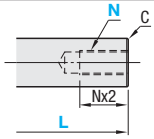
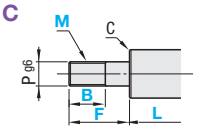
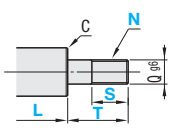
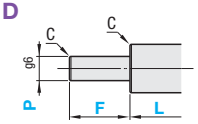
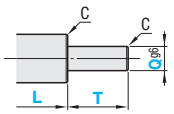
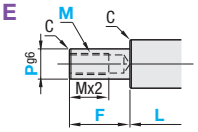
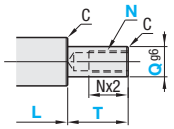
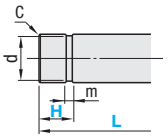
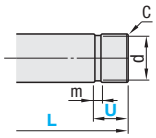
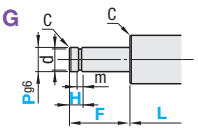
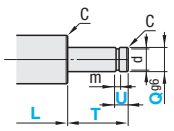
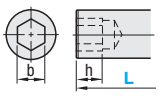
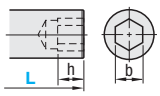
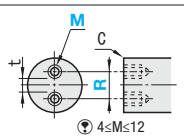
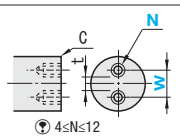




(Y)≤Dx50 is required for (Y) Dimension.

When only one end needs to be machined, select A Shape for the other end.

When L dimension is less than the tap pilot hole depth, the pilot hole might go through.

Left End Shape	Right End Shape	Machining Conditions
A 	A 	-
B 	B 	When M3~M8, M≤D-2 When M10~16, M≤D-3 When M20, 24, M≤D-4 When M30 M≤D-5
C 	C 	P(Q)=M(N) Specify M(N) Dimension.
D 	D 	-
E 	E 	When M3~M8, M(N)≤P(Q)-2 When M10~16, M(N)≤P(Q)-3 When M20, 24, M(N)≤P(Q)-4 When M30 M(N)≤P(Q)-5
F 	F 	Retaining ring dimension details Refer to **P.734** P dimension 27, 31, 33, 34, 36, 37, 38, 39, 41, 42, 43, 44, 46, 47, 48 and 49 cannot be specified.
G 	G 	Retaining ring dimension details Refer to **P.734** P dimension 27, 31, 33, 34, 36, 37, 38, 39, 41, 42, 43, 44, 46, 47, 48 and 49 cannot be specified.
H 	H 	Detailed Hexagon Socket Dimensions Refer to **P.734** Applicable when D≤ 30.
J  4≤M≤12	J  4≤N≤12	R(W)-M(N)≥t D-R-M≥2 D-W-N≥2 M (N) / tmin: 4~ 5 / 0.8; 6~12 / 1.0 Tap Depth Mx2 Nx2

Part Number			1mm Increment	0.1mm Increment		1mm Increment			Selectable	1mm Increment	C
Type	Left End Shape	Right End Shape	D	L	F · T	B · S	H · U	P · Q	M · N	R · W	
SFR PSFR SSFR	A B C D E F G H J	A B C D E F G H J	6~50	20.0~800.0 (L≤Dx50)	2≤F≤Px5 2≤T≤Qx5	When M, N≤10 2≤B≤Mx3 2≤S≤Nx3 & B≤F-3 S≤T-3 When M, N≤12 2≤B≤Mx3 2≤S≤Nx3 & B≤F-5 S≤T-5	When D, P, Q≤6 2≤H, U When 6<D, P, Q≤10 3≤H, U When 10<D, P, Q≤20 4≤H, U When 20<D, P, Q 5≤H, U	D/3≤P, Q<D	3 4 5 6 8 10 12 16 20 24 30	D≥M+4+R D≥N+4+W R≥M+3 W≥N+3	0.5

For D Dimension, 31, 37, 39, 41~44 and 46~49 cannot be specified.

Price

Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Please add shaft end machining charge to the unit price of the base shaft.
Ex.) SFRBC-D9-L99~5,20+1,00+2,20=8,40 EUR

Type	D	Material € Unit Price Left Shaft: A Shape Right Shaft: A Shape								Shaft End Machining € Unit Price							
		L20.0 ~ 50.0	L50.1 ~ 100.0	L100.1 ~ 150.0	L150.1 ~ 200.0	L200.1 ~ 300.0	L300.1 ~ 400.0	L400.1 ~ 600.0	L600.1 ~ 800.0	B	C	D	E	F	G	H	J
SFR_ _	6~10																
	11~15																
	16~20																
	21~25																
	26~30																
	31~35																
	36~40																
	41~50																
PSFR_ _	6~10																
	11~15																
	16~20																
	21~25																
	26~30																
	31~35																
	36~40																
	41~50																
SSFR_ _	6~10																
	11~15																
	16~20																
	21~25																
	26~30																
	31~35																
	36~40																
	41~50																

Order Example

Part Number	-	D	-	L	-	F	-	B	-	H	-	P	-	M	-	T	-	S	-	U	-	Q	-	N	-	R	-	W
SFRCE	-	D15	-	L350	-	F20	-	B16						M8	-	T20						Q14	-	N6				

Days to Ship

10 Days — Express B — 10,00 EUR/ piece — **P.88**

A Express Charge of 27,00 EUR for 3 or more identical pieces.

5 Days

Alterations

Part Number	-	D	-	L	-	F	-	B	-	H	-	P	-	M (PMC)	-	T	-	S	-	U	-	Q	-	N (QNC)	-	R	-	W	-	(KC, WKC, FC...etc.)
SFRCE	-	D15	-	L350	-	F20	-	B16						PMC8	-	T20						Q14	-	N6					-	LKC

Alterations	Keyway	Keyway on Shaft End	Set Screw Flat	2 Set Screw Flats (Angle Specified)	Slit Cam Groove	Wrench Flats	Undercut, L Dimension Tolerance	Concentricity	Fine Thread
	· 1 Keyway: KC · 2 Keyways: WKC		· 1 Set Screw Flat: FC · 2 Set Screw Flats: WFC						PMC (Fine Thread) QNC (Fine Thread)
Code	KC · WKC	PKC · QKC	FC · WFC	KFC	UC	SC	PC · QC · LKC	CKC	PMC · QNC
Spec.	KC:Adds a keyway. Ordering Code KC50-A10 WKC:Adds two keyways. Ordering Code WKC50-C8-K40-E10 KC, A, WKC, C, KE = 1mm Increment A, E, C≤100 For keyway details,**P.737** If 3 keyways are required, use both KC and WKC.	Adds a Keyway on the shaft end P (Q). Ordering Code PKC10 (QKC10) PKC, QKC= 1mm Increment PKC, QKC≤50 PKC (QKC)≤F (T) Available for shaft end shape C and D only. For keyway details,**P.737** Not applicable to P (Q)=5 or less.	FC:Adds 1 set screw flat. Ordering Code FC10-G3 WFC:Adds 2 set screw flats. Ordering Code WFC10-J3-W10-V3 FC, G, WFC, J, W, V = 1mm Increment G, J, V≤50 D: 6~15 h:1; 16~40 h:2; 41~50 h:3	Adds a set screw flat at any designated angle besides the datum plane (0°). KFC, G= 1mm Increment AG = 15° Increment G≤50 Ordering Code KFC10-G3-AG90 D: 6~15 h:1; 16~40 h:2; 41~50 h:3 When combined with other alterations, ± 2 degree phase differential may occur.	Adds a slit cam groove. UC=1mm Increment Ordering Code UC10 UC+ℓ1≤L UC≥1 Applicable when D=6, 8, 10 and 12. D: 6 d:5 ℓ1:4; 8 d:7 ℓ1:4; 10 d:8 ℓ1:5; 12 d:10 ℓ1:5	Adds a wrench flat. SC=1 mm Increment SC+ℓ2≤L SC=0 or SC≥1 D: 6,7 W:5 ℓ2:8; 8,9 W:7 ℓ2:8; 10,11 W:8 ℓ2:10; 12~14 W:10 ℓ2:10; 15~19 W:13 ℓ2:10; 20~24 W:17 ℓ2:10; 25~29 W:22 ℓ2:15; 30~34 W:27 ℓ2:15; 35~39 W:30 ℓ2:15; 40~49 W:36 ℓ2:20; 50 W:41 ℓ2:20 When combined with other alterations, ± 2 degree phase differential may occur.	PC, QC: Adds an undercut on P and Q. Ordering Code PC For undercut dimension details, refer to P.**P.73** F-B≤Mx2 Not applicable to D=P or D=Q LKC: Changes L dimension tolerance. Ordering Code LKC L<500⋯L±0.05 L≥500⋯L±0.1	Changes the concentricity to Ø0.02. Ordering Code CKC	Changes threads to Fine Threads in the table below. Ordering Code PMC20 (QNC16) D: 6, 7 PMC/QNC 3 4 5 6; 8, 9 3 4 5 6 8; 10, 11 4 5 6 8 10; 12~14 5 6 8 10 12; 15~19 5 6 8 10 12 15 17; 20~24 6 8 10 12 15 17 20; 25~29 8 10 12 15 17 20 25; 30~34 8 10 12 15 17 20 25 30; 35~39 10 12 15 17 20 25 30 35; 40~49 12 15 17 20 25 30 35 40; 50 15 17 20 25 30 35 40; Pitch 0.35 0.5 0.75 1.0 1.5 P(Q) dimension is the same as PMC(QMC). Use PMC(QMC) to specify P(Q) dimension.
	Keyways and set screw flats are added in the same plane. When the distance of the alterations are over 500mm, ±2 degree phase differential may occur.								
Price Adder	KC: 4,00 WKC: 8,00	4,00	FC: 2,00 WFC: 4,00	6,00	2,00	4,00	PC, QC: Free LKC: 4,00	8,00	3,00

Driving Shafts
-Straight-

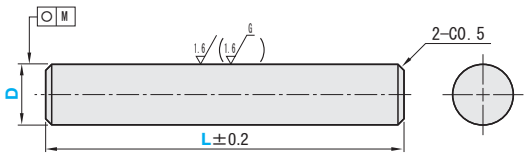
■**Features:** Rotary Shafts suitable for driving motion. Needed accuracies and shapes are provided for rotary driving applications.

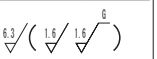


Type	D Tolerance	M Material	H Hardness	S Surface Treatment
KZAN	h7	1.1191/ C45E	-	-
KZAC				Black Oxide
KZAP				Electroless Nickel Plating
KZAF	h6	1.1191/C45E	Induction Hardening Surface Hardness 50HRC~	-

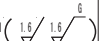
D	Tolerance h7	Tolerance h6
10	0 -0.015	0 -0.009
12	0 -0.018	0 -0.011
15		
17		
20	0 -0.021	0 -0.013
25		
30		
35	0 -0.025	0 -0.016
40		
45		
50		

D	Circularity M No Hardening	Circularity M Hardening
10	0.004	0.003
12		
15	0.005	
17		
20		
25	0.006	0.005
30		
35		
40		
45	0.007	
50		





* For KZAF, Ra 1.6 will be Ra 1.6G.



* KZAF may have centering holes on shaft ends.

Please note that D dimension tolerance of KZAF is different from that of KZAN, KZAC and KZAP.

Part Number Type	D	L 0.5mm Increment
KZAN KZAC KZAP KZAF	10	50.0~300.0
	12	
	15	100.0~400.0
	17	
	20	
	25	100.0~500.0
	30	
KZAF	35	
	40	
	45	200.0~500.0
	50	

Order Example

Part Number	-	L
KZAN50	-	500

Days to Ship

- KZAN KZAC KZAP: 8 Days
- KZAF: 12 Days

- KZAF (Induction Hardening)

When alterations on the right page are specified, the shafts are induction hardened (except the threaded sections) after machining.

Thus far, the following may occur:
(1) : Due to thermal conduction to the thread, the threads may be hardened by 2~3mm.
(2) : Induction Hardening may shrink the keyway width (around -0.01~-0.02).
If the key becomes hard to fit, adjust by spot fixing.

Price

■**Volume Discount** (Round down to one Cent.) P. 87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Type	€ KZAN					€ KZAC					€ KZAP				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10															
12															
15															
17															
20															
25															
30															

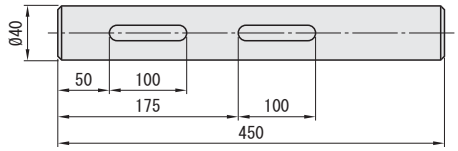
Type	€ KZAF				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10					
12					
15					
17					
20					
25					
30					
35					
40					
45					
50					

■Selection of Driving Shaft

In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part No.>

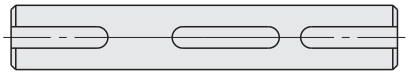
- Alteration Selection: Two Keyways



The example below shows the keyway shape under the following conditions:

KA, KB, KC, KD, ZA, ZB, ZC, ZD=0

KA+HA, KB+HB, KC+HC, KD+HD, ZA+HA, ZB+HB, ZC+HC, ZD+HD=L

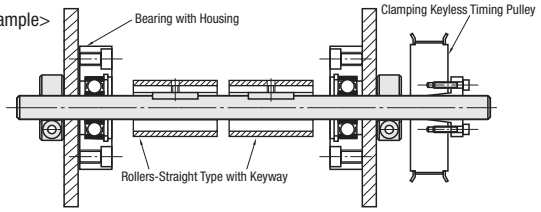


<Price Calculation Example>

Body Price 68,70 EUR + Keyway 4,00 EUR x 2

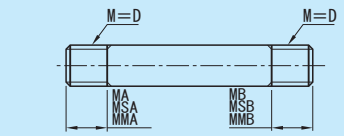
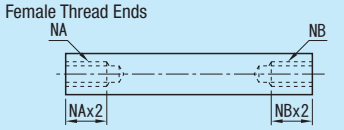
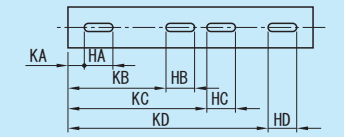
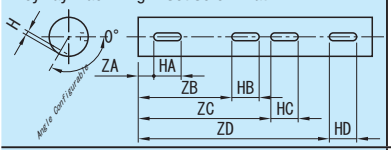
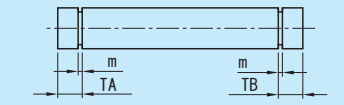
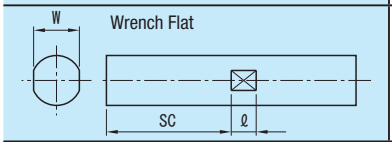
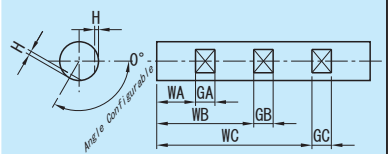
= Total Price 76,70 EUR

<Example>



Alterations Part Number - L - (MA, NA, KA, TA, SC, WA...etc.)

KZAF40 - 450 - KA50 - HA100 - KB175 - HB100

Alterations	Code Left End	Code Right End	Spec.	Price Adder Coarse	Price Adder Fine
Male Thread Ends 	MA MSA MMA	MB MSB MMB	Adds threads at shaft ends. Specify the length of the threads. (For accuracy, coarse or fine threads can be specified by an ordering code.) Ordering Code MA15-MSB15 1 mm Increment 5≤Thread length≤Mx5 Code: Left End / Right End: MA / MB = Coarse JIS6h (Class 2); MSA / MSB = Fine (Coarse) JIS6h (Class 2); MMA / MMB = Fine (Precision Class) JIS4h (Class 1) M (Coarse) / Pitch: M10 1.5; M12 1.75; M20 2.5; M30 3.5 M (Fine) / Pitch: M10 0.75; M12 1.0; M15 1.0; M17 1.0; M20 1.0 M (Fine) / Pitch: M25 1.5; M30 1.5; M35 1.5; M40 1.5; M45 1.5; M50 1.5 When D=M, thread length can be specified. MMA, MMB (Fine Thread, Precision Class) is available for KZAF only.	M10 / M12 2,50 M20 / M30 5,00	M10~ M20 3,00 M25~ M50 6,00
Female Thread Ends 	NA	NB	Adds a tap at the shaft end. Select the thread diameter. Ordering Code NA5-NB5, NA, NB≤D-4 NA (Coarse) NB (Coarse) Selectable: M3 M4 M5 M6 M8 M10 M12 M16 M20 M24 M30 M36	M3~M16 3,00 M20~M36 4,50	
Keyway 	KA KB KC KD		Adds a keyway. Specify the position and the length of the keyway. Ordering Code KA10-HA30-KB100-HB50 KA,HA,KB,HB,KC,HC,KD,HD=1 mm Increment 3≤HA,HB,HC,HD≤100 Keyway Details P.737 When more than 2 keyways are added, the tolerances may shift by up to 0.2°.	D10~D17 2,00 D20~D50 4,00	
Keyway Machining + Set Screw Flat 	ZA ZB ZC ZD		Adds a flat at any designated angle based on the keyways. Specify the position and the length for each keyway, and the angle for the set screw flats. Ordering Code ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC, ZD, HD=1 mm Increment AA, AB, AC, AD=30° Increment30°≤ AA, AB, AC, AD≤330° 3≤HA,HB,HC,HD≤100 Keyway Details P.737 - Ordering Code Keyway Position Specified / Keyway Width Specified / Angle Specified 30° Increment: ZA HA AA; ZB HB AB; ZC HC AC; ZD HD AD D: 10~17 / 18~40 / 45, 50; H: 1 / 2 / 3 The length of each set screw flat is the same as that of each keyway. For a keyway and the angle of a set screw flat, the tolerances may shift by up to ±0.2°.	6,00	
Retaining Ring Groove 	TA	TB	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB10 TA,TB=1mm Increment 4≤TA (TB) Retaining rings are attached. For dimensions of the retaining ring groove, P.734 Driving Shafts: Material: 1.1191/C45E; Hardness: -; Surface Treatment: -; Black Oxide; Electroless Nickel Plating; Surface 50HRC-; Retaining Ring Type C Material: Spring Steel; 1.4301/X5CrNi18-10-CSP; - ; Spring Steel	D10~D17 3,00 D20~D50 4,50	
Wrench Flat 	SC		Adds a Wrench Flat. Specify the position of a wrench flat. Ordering Code SC180SC=1mm Increment 0≤SC≤L-ℓ D: 10 12 15 17 20 25 30 35 40 45 50 W: 8 10 13 14 17 22 27 30 36 38 41 ℓ: 8 10 15 20	4,00	
2 Set Screw Flats (Angle Specified) 	WA WB WC		Adds a flat at any designated angle besides the datum plane 0°. Specify the position, the length and the angle of the set screw flats. When 0°is specified, only one set screw flat is machinable. Ordering Code WA15-GA10-AA0 WA, WB, WC, GA, GB, GC=1mm Increment AA, AB, AC=30°Increment 0°≤AA, AB, AC≤330° - Ordering Code Set Screw Flat Position Specified / Set Screw Flat Width Specified / Angle Specified 30° Increment: WA GA AA; WB GB AB; WC GC AC D: 10~17 / 18~40 / 45, 50; H: 1 / 2 / 3	5,00	

Driving Shafts
-One End Stepped-

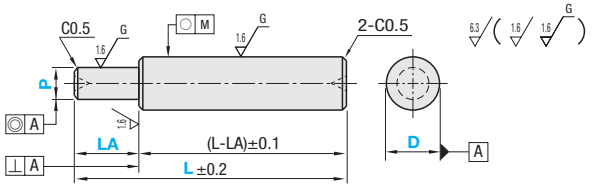
Features: Rotary Shafts suitable for driving motion. Needed accuracies and shapes are provided for rotary driving applications.



Type	D, P Tolerance	Concentricity	Perpendicularity	M Material	H Hardness	S Surface Treatment
KZBE	h7	φ0.05	⊥0.05	1.1191/C45E	-	Black Oxide
KZBN	h6	φ0.01	⊥0.01	1.1191/C45E	-	-
KZBC						Black Oxide
KZBP						Electroless Nickel Plating
KZBF				1.1191/C45E	Induction Hardening Surface Hardness 50HRC~	-

D	Tolerance h7	Tolerance h6
10	0 -0.015	0 -0.009
12		
15	0 -0.018	0 -0.011
17		
20	0 -0.021	0 -0.013
25		
30		
35	-	0 -0.016
40		
45		
50		

D	Circularity M KZBE	Circularity M Others
10	0.004	0.003
12		
15	0.005	
17		
20		0.005
25	0.006	
30		
35	-	
40		
45		
50		



LA≤L/2
The shaft may have centering holes on ends.
There is an undercut less than 1.5mm in width and less than 0.3mm in depth on the stepped part.
Step P of KZBE has no grinding undercut. Step R=0.2 or less.

Part Number Type	D	0.5mm Increment L	1mm Increment P	0.5mm Increment LA
KZBE (D10~30) KZBN KZBC KZBP KZBF	10	50.0~300.0	7~9	10.0~50.0
	12		7~11	
	15	100.0~400.0	10~14	10.0~70.0
	17		10~16	
	20		14~19	10.0~100.0
	25	100.0~500.0	14~24	
	30		20~29	20.0~150.0
	*35		20~34	
	*40	200.0~500.0	20~39	
	*45		20~44	
	*50		25~49	20.0~200.0

Order Example: Part Number - L - P - LA
KZBN30 - 320 - P25 - LA40

Days to Ship
- KZBE: 8 Days
- KZBN KZBC: 10 Days
- KZBP KZBF: 12 Days

- KZBF (Induction Hardening)

When alterations on the right page are specified, the shafts are induction hardened (except the threaded sections) after machining.

Thus far, the following may occur:
(1) : Due to thermal conduction to the thread, the threads may be hardened by 2~3mm.
(2) : Induction Hardening may shrink the keyway width (around -0.01~-0.02). If the key becomes hard to fit, adjust by spot fixing.

*marked sizes are not available for KZBE.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Type	€ KZBE					€ KZBN					€ KZBC				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10															
12															
15															
17															
20															
25															
30															
35															
40															
45															
50															

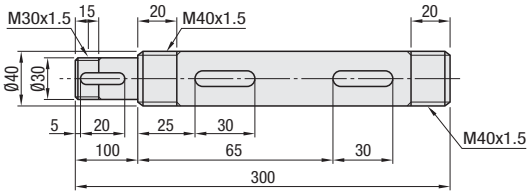
Type	€ KZBP					€ KZBF				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10										
12										
15										
17										
20										
25										
30										
35										
40										
45										
50										

■Selection of Driving Shaft

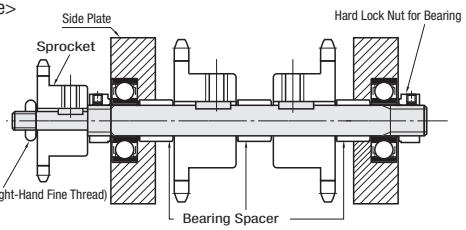
In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part No.>
- Alteration Selection: Three Keyways, Three Male Thread Ends (Fine Thread)

<Price Calculation Example>
Body Price 41,20 EUR + Keyway 4,00 EUR x 3 + Male Thread End 6,00 EUR x 3
= Total Price 71,20 EUR

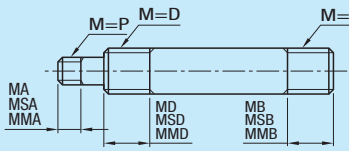
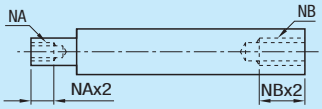
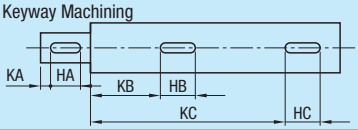
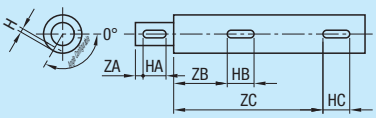
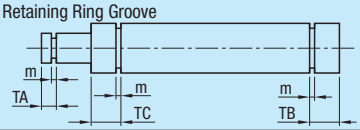
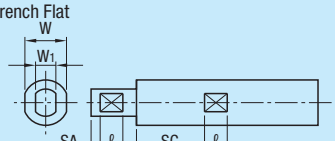
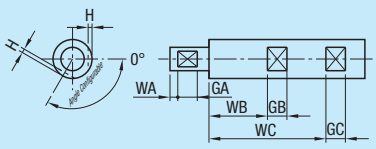


<Example>



Alterations Part Number - L - P - LA - (MA, NA, KA, TA, SA, WA...etc.)

KZBN40 - 300 - P30 - LA100 - MSA15 - MSD20 - MSB20 - KA5 - HA20 - KB25 - HB30 - KC65 - HA30

Alterations	Code Left End	Code Right End	Spec.	Price Adder
Male Thread Ends 	MA MSA MMA MD MSD	MB MSB MMB	Adds threads at shaft ends. Specify the length of the threads. (For accuracy, coarse or fine threads can be specified by an ordering code.) Ordering Code MA15-MSB15 1mm Increment 5≤Thread length≤Mx5, LA-2 Code: Left End / Right End — MA MD / MB: Coarse JIS6h (Class 2); MSA MSD / MSB: Fine (Coarse) JIS6h (Class 2); MMA / MMB: Fine (Precision Class) JIS4h (Class 1) M (Coarse) / Pitch / M (Fine) / Pitch / M (Fine) / Pitch: M8 1.25 M8 0.75 M25 1.5; M10 1.5 M10 0.75 M30 1.5; M12 1.75 M12 1.0 M35 1.5; M20 2.5 M15 1.0 M40 1.5; M24 3 M17 1.0 M45 1.5; M30 3.5 M20 1.0 M50 1.5; M36 4 When D, P=M, thread length can be specified. Fine Thread (Precision Class) is not available for KZBE.	Coarse: M8 ~M12 2,50; M20 ~M36 5,00 Fine: M8 ~M20 3,00; M25 ~M50 6,00
Female Thread Ends 	NA	NB	Adds a tap at the shaft end. Select the thread diameter. Ordering Code NA5-NB5, NA,NB≤D (P)-4 NA (Coarse) NB (Coarse) Selectable: M3 M4 M5 M6 M8 M10 M12 M16 M20 M24 M30 M36	M3~M16 3,00 M20~M36 4,50
Keyway Machining 	KA KB KC		Adds a keyway. Specify the position and the length of the keyway. Ordering Code KA10-HA30-KB100-HB50 KA, HA, KB, HB, KC, HC = 1 mm Increment 3≤HA, HB, HC≤100 For Keyway details, **P.737** When more than 2 keyways are added, the tolerances may shift by up to 0.2°. Specify the keyway position more than 2mm away from the stepped part.	D10~D17 2,00 D20~D50 4,00
Keyway Machining + Set Screw Flat 	ZA ZB ZC		Adds a flat at any designated angle based on the keyways. Specify the position and the length for each keyway, and the angle for the set screw flats. Ordering Code ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC = 1 mm Increment AA, AB, AC = 30° Increment 30°≤AA, AB, AC≤330° 3≤HA, HB, HC≤100 Keyway Details **P.737** Specify the keyway position more than 2mm away from the stepped part. ·Ordering Code Keyway Position Specified: ZA ZB ZC; Keyway Width Specified: HA HB HC; Angle Specified 30° Increment: AA AB AC D / P: H 7~17 1 18~40 2 41~50 3 The length of each set screw flat is the same as that of each keyway. For a keyway and the angle of a set screw flat, the tolerances may shift by up to ±0.2°.	6,00
Retaining Ring Groove 	TA TC	TB	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB10-TC10 TA, TB, TC= 1mm Increment 4≤TA≤LA-3 Retaining rings are attached. For dimensions of the retaining ring groove, **P.734** P=27,31,33,34,36~39,41~44, Not available for 46~48. P=7, 8: Retaining Ring Type E P≥9, D≥10: Retaining Ring Type C Driving Shafts: M Material / H Hardness / S Surface Treatment; Retaining Ring: M Material 1.1191 / C45E: - / - / Black Oxide / Spring Steel 1.1191 / C45E: - / - / Electroless Nickel Plating / 1.4301 1.1191 / C45E: - / Surface 50HRC / - / Spring Steel	D10~D17 3,00 D20~D50 4,50
Wrench Flat 	SA		Adds a Wrench Flat. Specify the position of a wrench flat. Ordering Code SA5 SA, SC= 1mm Increment 0≤SA,SC≤LA-ℓ, L-ℓ D: 10 12 15 17 20 25 30 35 40 45 50 W: 8 10 13 14 17 22 27 30 36 38 41 ℓ: 8 10 15 20 P: 7 8~10 11~13 14~15 16~18 19~21 22~25 26~28 29~31 32~37 38~41 42~45 46~49 W1: 5.5 7 10 13 14 17 19 22 27 30 36 38 41 ℓ: 8 10 15 20	4,00
2 Set Screw Flats (Angle Specified) 	WA WB WC		Adds a flat at any designated angle besides the datum plane 0°. Specify the position, length and the angle of the set screw flats. When 0° is specified, only one set screw flat is machinable. Ordering Code WA15-GA10-AA0WA, WB, WC, GA, GB, GC=1mm Increment AA, AB, AC=30°Increment 0°≤AA, AB, AC≤330° ·Ordering Code Set Screw Flat Position Specified: WA WB WC; Set Screw Flat Width Specified: GA GB GC; Angle Specified 30° Increment: AA AB AC D / P: H 7~17 1 18~40 2 41~50 3	5,00

Driving Shafts
-Both Ends Stepped Type-

Features: Rotary Shafts suitable for driving motion. Needed accuracies and shapes are provided for rotary driving applications.

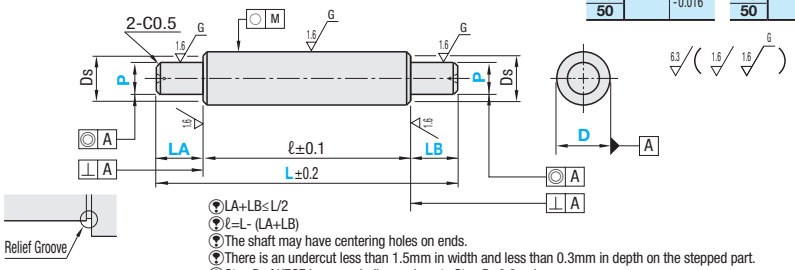
RoHS



Type	D, P Tolerance	Concentricity	Perpendicularity	M Material	H Hardness	S Surface Treatment
KZCE	h7	φ0.05	⊥0.05	1.1191/C45E	-	Black Oxide
KZCN	h6	φ0.01	⊥0.01	1.1191/C45E	-	-
KZCC						Black Oxide
KZCP						Electroless Nickel Plating
KZCF				1.1191/C45E	Induction Hardening Surface Hardness 50HRC~	-

D	Tolerance h7	Tolerance h6
10	0 -0.015	0 -0.009
12	0 -0.018	0 -0.011
15	0 -0.021	0 -0.013
20		
25		
30		
35	-	0 -0.016
40		
50		

D	Circularity M KZCE	Circularity M Others
10	0.004	0.003
12		
15	0.005	
20		
25	0.006	0.005
30		
35	-	
40		
50		



- LA+LB≤L/2
- ℓ=L- (LA+LB)
- The shaft may have centering holes on ends.
- There is an undercut less than 1.5mm in width and less than 0.3mm in depth on the stepped part.
- Step P of KZCE has no grinding undercut. Step R=0.2 or less.

Part Number Type	D	0.5mm Increment L	Selectable P	0.5mm Increment LA	0.5mm Increment LB	Ds
KZCE (D10~30) KZCN KZCC KZCP KZCF	10	50.0~300.0	6	4.0~40.0	4.0~40.0	8
			8			9.5
	12		8			10
			10	5.0~50.0	5.0~50.0	11.5
	15	100.0~400.0	10			13
			12	5.0~75.0		14
	20		15			18
			17	5.0~100.0		19
	25	100.0~500.0	17			21
			20	10.0~100.0	10.0~60.0	24
	30		20			27
			25	10.0~125.0		29
	*35		25			31
			30	15.0~150.0	15.0~70.0	34
	*40	200.0~500.0	30			37
			35			39
	*50		40	20.0~150.0	20.0~70.0	48
			45			49

Order Example

Part Number	-	L	-	P	-	LA	-	LB
KZCF50	-	450	-	P45	-	LA80	-	LB50

Days to Ship

- KZCE: 8 Days
- KZCN KZCC: 10 Days
- KZCP KZCF: 12 Days

- KZCF (Induction Hardening)

When alterations on the right page are specified, the shafts are induction hardened (except the threaded sections) after machining.
Thus far, the following may occur:
(1) : Due to thermal conduction to the thread, the threads may be hardened by 2~3mm.
(2) : Induction Hardening may shrink the keyway width (around -0.01~-0.02). If the key becomes hard to fit, adjust by spot fixing.

*marked sizes are not available for KZCE.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Type	€ KZCE					€ KZCN					€ KZCC				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10															
12															
15															
20															
25															
30															
35															
40															
50															

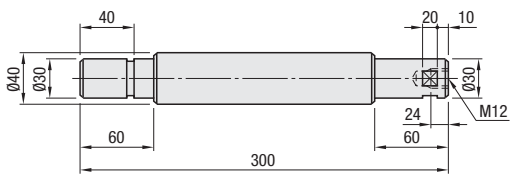
Type	€ KZCP					€ KZCF				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10										
12										
15										
20										
25										
30										
35										
40										
50										

■Selection of Driving Shaft

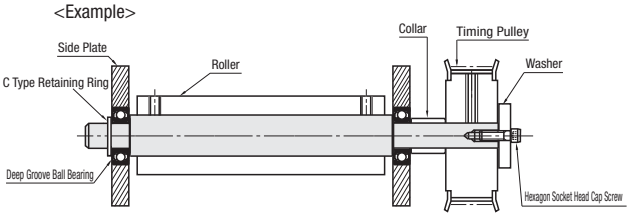
In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part No.>
- Alteration Selection: A retaining ring groove, two set screw flats at 0° and 90° and a tap.

<Price Calculation Example>
Body Price 74,00 EUR + Retaining Ring Groove 4,50 EUR + Set Screw Flat 5,00 EUR + Female Thread Hole Machining 3,00 EUR
= Total Price 74,00 EUR

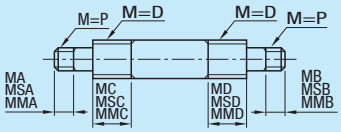
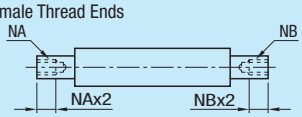
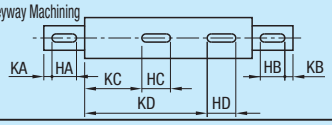
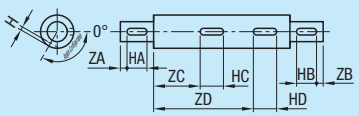
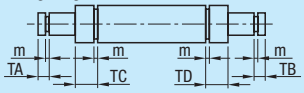
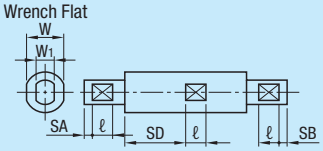
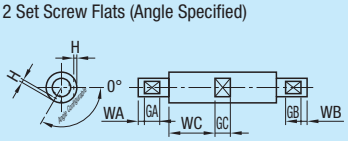


<Example>



Alterations Part Number - L - P - LA - LB - (MA, NA, KA, TA, SA, WA...etc.)

KZCF40 - 300 - P30 - LA60 - LB60 - NB12 - TA40 - WB10 - GB20 - AB90

Alterations	Code Left End	Code Middle	Code Right End	Spec.	Price Adder
Male Thread Ends 	MA MSA MMA	Left End MC MSC Right End MD MSD	MB MSB MMB	Adds threads at shaft ends. Specify the length of the threads. (For accuracy, coarse or fine threads can be specified by an ordering code.) Ordering Code MA15-MSB15 1 mm Increment 5≤Thread length≤Mx5, LA(LB)-2 Code: Left, Middle / Right, Middle / Screw Precision MA MC / MB MD / Coarse JIS6h (Class 2) MSA MSC / MSB MSD / Fine (Coarse) JIS6h (Class 2) MMA / MMB / Fine (Precision Class) JIS4h (Class 1) M (Coarse) Pitch: M6 1.0; M8 1,25; M10 1.5; M12 1.75; M20 2.5; M30 3.5 M (Fine) Pitch: M6 0.75; M8 0.75; M10 0.75; M12 1.0; M15 1.0; M17 1.0; M20 1.0 M25 1.5; M30 1.5; M35 1.5; M40 1.5; M45 1.5; M50 1.5 When D, P=M, thread length can be specified. Fine (Precision Class) is not available for KZCE.	Coarse / Fine M6~M12: 2,50 / 3,00 M6~M20: 2,50 / 3,00 M20 / M30: 5,00 / 6,00 M25~M50: 5,00 / 6,00
Female Thread Ends 	NA	-	NB	Adds a tap at the shaft end. Select the thread diameter. Ordering Code NA5-NB5(P)NA, NB≤P-4 NA (Coarse) NB (Coarse) Selectable: M3 M4 M5 M6 M8 M10 M12 M16 M20 M24 M30 M36	M3~M16: 3,00 M20~M36: 4,50
Keyway Machining 	KA	KC KD	KB	Adds a keyway. Specify the position and the length of the keyway. Ordering Code KA10-HA30-KB100-HB50 KA,HA,KB,HB,KC,HC,KD,HD=1 mm Increment (P)3≤HA,HB,HC,HD≤100 (P)For Keyway details, **P.737** (P)When more than 2 keyways are added, the tolerances may shift by up to 0.2°. (P)Specify the keyway position more than 2mm away from the stepped part.	D10~D15: 2,00 D20~D50: 4,00
Keyway Machining + Set Screw Flat 	ZA	ZC ZD	ZB	Adds a flat at any designated angle based on the keyways. Specify the position and the length for each keyway, and the angle for the set screw flats. Ordering Code ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC, ZD, HD=1 mm Increment AA, AB, AC, AD=30° Increment 30°≤AA, AB, AC, AD≤330° (P)HA, HB, HC, HD≤100 (P)Keyway Details**P.737** (P)Specify the keyway position more than 2mm away from the stepped part. ·Ordering Code Keyway Position Specified: ZA HA AA; ZB HB AB; ZC HC AC; ZD HD AD Keyway Width Specified / Angle Specified 30° Increment D / P: H 1; 6~17 1; 20~40 2; 45, 50 3 (P)The length of each set screw flat is the same as that of each keyway. (P)For a keyway and the angle of a set screw flat, the tolerances may shift by up to ±0.2°.	6,00
Retaining Ring Groove 	TA	TC TD	TB	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB10 TA, TB = 1mm Increment 4≤TA (TB)≤LA (LB)-3 (P)Retaining rings are attached. (P)For dimensions of the retaining ring groove, **P.734** P=6, 8: Retaining Ring Type E P≥10, D≥10: Retaining Ring Type C Driving Shafts: M Material 1.1191/C45E; H Hardness -; S Surface Treatment - / Black Oxide / Electroless Nickel Plating; M Material Spring Steel / Spring Steel Retaining Ring: 1.4301/X5CrNi18-10 Surface 50HRC~	D10~D15: 3,00 D20~D50: 4,50
Wrench Flat 	SA	SD	SB	Adds a Wrench Flat. Specify the position of a wrench flat. Ordering Code SA5 SA, SB, SD= 1mm Increment SA, SB, SD≥0 SA≤LA-ℓ, SB≤LB-ℓ, SD≤L-LA-LB-ℓ D: 10 12 15 20 25 30 35 40 50 W: 8 10 13 17 22 27 30 36 41 ℓ: 8 10 15 20 P: 6 8, 10 12 15 17 20 25 30 35 40 45 W1: 5 7 10 13 14 17 19 27 30 36 38 ℓ: 8 10 15 20	4,00
2 Set Screw Flats (Angle Specified) 	WA	WC	WB	Adds a flat at any designated angle besides the datum plane 0°. Specify the position, the length and the angle of the set screw flats. When 0°is specified, only one set screw flat is machinable. Ordering Code WA15-GA10-AA0 WA, WB, WC, GA, GB, GC=1mm Increment AA, AB, AC=30°Increment 0°≤AA, AB, AC≦330° ·Ordering Code Set Screw Flat Position Specified: WA GA AA; WB GB AB; WC GC AC Set Screw Flat Width Specified / Angle Specified 30° Increment D / P: H 1; 6~17 1; 20~40 2; 45, 50 3	5,00
Tolerance Change 	PJ(js6) PK(k6)			Changes the tolerance of P Dimension of the stepped part to js6 or k6. Ordering Code PJ or PK (P)Both LA and LB tolerances will be changed. Not available for KZCE.	10,00

Driving Shafts
-One End Stepped, One End Double Stepped-

Features: Rotary Shafts suitable for driving motion. Needed accuracies and shapes are provided for rotary driving applications.

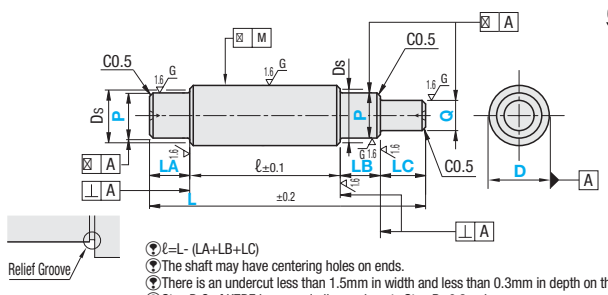
RoHS



Type	D, P, Q Tolerance	Concentricity	Perpendicularity	M Material	H Hardness	S Surface Treatment
KZDE	h7	ϕ0.05	$\perp$0.05	1.1191/C45E	-	Black Oxide
KZDN	h6	ϕ0.01	$\perp$0.01	1.1191/C45E	-	-
KZDC						Black Oxide
KZDP						Electroless Nickel Plating
KZDS				1.4301		-
KZDF				1.1191/C45E	Induction Hardening Surface Hardness 50HRC~	-

D	Tolerance h7	Tolerance h6
10	0 -0.015	0 -0.009
12	0 -0.018	0 -0.011
15		
20	0 -0.021	0 -0.013
25		
30		
35	-	0 -0.016
40		
50		

D	Circularity M KZDE	Circularity M Others
10	0.004	0.003
12		
15	0.005	
20		
25	0.006	0.005
30		
35	-	
40		
50		



ℓ=L- (LA+LB+LC)
The shaft may have centering holes on ends.
There is an undercut less than 1.5mm in width and less than 0.3mm in depth on the stepped part.
Step P, Q of KZDE has no grinding undercut. Step R=0.2 or less.

Part Number Type	D	0.5mm Increment L	Selectable P	0.5mm Increment LA	0.5mm Increment LB	1mm Increment Q	0.5mm Increment LC	Ds
KZDE (D10~30) KZDN KZDC KZDP KZDS KZDF	10	50.0~300.0	6	4.0~40.0	4.0~40.0	5~7	3.0~30.0	8
			8				4.0~40.0	9.5
	12		8					10
			10	5.0~50.0	5.0~50.0	7~9	5.0~50.0	11.5
	15	100.0~400.0	10					13
			12	5.0~75.0		7~11	5.0~60.0	14
	20		15			10~14	5.0~75.0	18
			17	5.0~100.0		10~16	5.0~100.0	19
	25	100.0~500.0	17					21
			20	10.0~100.0	10.0~60.0	14~19	10.0~100.0	24
	30		20					27
			25	10.0~125.0		14~24	10.0~125.0	29
	*35		25					31
			30	15.0~150.0	15.0~70.0	20~29	15.0~150.0	34
	*40	200.0~500.0	30					37
			35			20~34		39
	*50		40	20.0~150.0	20.0~70.0	20~39	20.0~150.0	48
			45			20~44		49

*marked sizes are not available for KZDE.

Order Example

Part Number	-	L	-	P	-	LA	-	LB	-	Q	-	LC
KZDN25	-	500	-	P20	-	LA100	-	LB60	-	Q15	-	LC80

Days to Ship

- KZDE: 8 Days
- KZDN KZDC KZDS: 10 Days
- KZDP KZDF: 12 Days

- KZDF (Induction Hardening)

When alterations on the right page are specified, the shafts are induction hardened (except the threaded sections) after machining.
Thus far, the following may occur:
(1) : Due to thermal conduction to the thread, the threads may be hardened by 2~3mm.
(2) : Induction Hardening may shrink the keyway width (around -0.01~-0.02). If the key becomes hard to fit, adjust by spot fixing.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

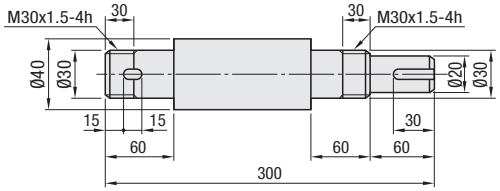
Type	€ KZDE					€ KZDN					€ KZDC				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10															
12															
15															
20															
25															
30															
35															
40															
50															

Type	€ KZDP					€ KZDS					€ KZDF				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10															
12															
15															
20															
25															
30															
35															
40															
50															

■Selection of Driving Shaft

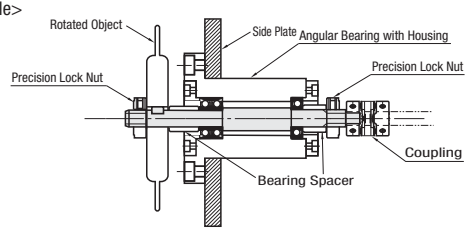
In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part No.>
- Alteration Selection: Two Male Thread Ends, Two Keyways



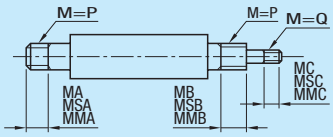
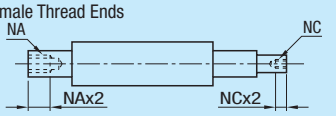
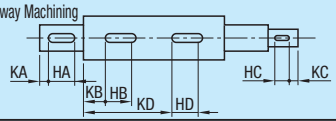
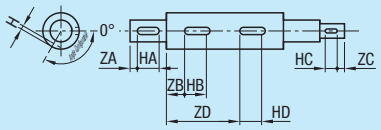
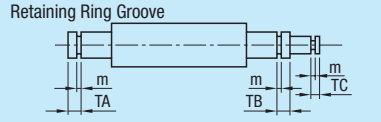
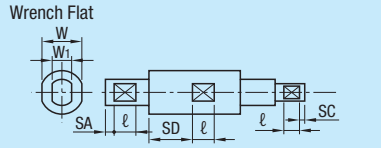
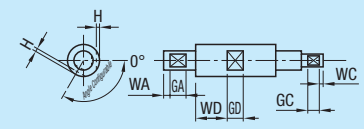
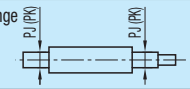
<Price Calculation Example>
Body Price 96,00 EUR + Male Thread End 6,00 EUR x 2 + Keyway 4,00 EUR x 2
= Total Price 116,00 EUR

<Example>



Alterations | Part Number | L | P | LA | LB | Q | LC | (MA, NA, KA, TA, SA, WA...etc.)

KZDN40 - 300 - P30 - LA60 - LB60 - Q20 - LC60 - MMA30 - MMB30 - KA15 - HA15 - KC0 - HC30

Alterations	Code Left End	Code Right End	Spec.	Price Adder Coarse	Price Adder Fine
Male Thread Ends 	MA MSA MMA	MB MSB MMB MC MSC	Adds threads at shaft ends. Specify the length of the threads. (For accuracy, coarse or fine threads can be specified by an ordering code.) Ordering Code MA15-MSB15 1mm Increment 5≤Thread Length≤Mx5, LA(LB,LC)-2 Code: Left End MA, MSA, MMA; Right End MB MC, MSB MSC, MMB; Screw Precision: Coarse JIS6h (Class 2), Fine (Coarse) JIS6h (Class 2), Fine (Precision Class) JIS4h (Class 1) M (Coarse) / Pitch / M (Fine) / Pitch / M (Fine) / Pitch: M5 0.8 M5 0.5 M20 1.0; M6 1.0 M6 0.75 M25 1.5; M8 1.25 M8 0.75 M30 1.5; M10 1.5 M10 0.75 M35 1.5; M12 1.75 M12 1.0 M40 1.5; M20 2.5 M15 1.0 M45 1.5; M30 3.5 M17 1.0 M50 1.5 When P, Q=M, thread length can be specified. Fine (Precision Class) is not available for KZDE.	M5~M12 2,50	M5~M20 3,00 M20 / M30 5,00 M25~M50 6,00
Female Thread Ends 	NA	NC	Adds a tap at the shaft end. Select the thread diameter. Ordering Code NA5-NC5 NA, NC≤P (Q)-4 NA (Coarse) NC (Coarse) Selectable: M3 M4 M5 M6 M8; M10 M12 M16 M20; M24 M30 M36	M3~M16 3,00 M20~M36 4,50	
Keyway Machining 	KA KB	KC KD	Adds a keyway. Specify the position and the length of the keyway. Ordering Code KA10-HA30-KB100-HB50 KA,HA,KB,HB,KC,HC,KD,HD=1 mm Increment 3≤HA,HB,HC,HD≤100 For Keyway details, **P.737** When more than 2 keyways are added, the tolerances may shift by up to 0.2°. Specify the keyway position more than 2mm away from the stepped part.	D10~D15 2,00 D20~D50 4,00	
Keyway Machining + Set Screw Flat 	ZA ZB	ZC ZD	Adds a flat at any designated angle based on the keyways. Specify the length on and width of a keyway, and the angle of a set screw flat. Ordering Code ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC, ZD, HD=1 mm Increment AA, AB, AC, AD=30° Increment 30°≤AA, AB, AC, AD≤330° 3≤HA,HB,HC,HD≤100 Keyway Details **P.737** Specify the keyway position more than 2mm away from the stepped part. ·Ordering Code Keyway Position Specified: ZA, ZB, ZC, ZD; Keyway Width Specified: HA, HB, HC, HD; Angle Specified 30° Increment: AA, AB, AC, AD D / P / Q: 5 6~17 18~40 41~50; H: 0.5 1 2 3 The length of each set screw flat is the same as that of each keyway. Keyway and set screw flat may be shifted by up to ±0.2°.	6,00	
Retaining Ring Groove 	TA	TB TC	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB10-TC10 TA, TB, TC= 1mm Increment 4≤TA≤LA-3 Retaining rings are attached. For dimensions of the retaining ring groove, **P.734** Q=27,31,33,34,36~39, Not available for 41~44. P, Q≤8: Retaining Ring Type E P, Q>9: Retaining Ring Type C Driving Shafts: Material 1.1191/C45E, 1.4301, 1.1191/C45E; Hardness -, -, Surface 50HRC~; Surface Treatment -, Black Oxide, Electroless Nickel Plating, -, -; Retaining Ring Material: Spring Steel, 1.4301, Spring Steel	D10~D15 3,00 D20~D50 4,50	
Wrench Flat 	SA SD	SC	Adds a Wrench Flat. Specify the position of a wrench flat. Ordering Code SA5 SA, SC, SD=1mm Increment SA, SC, SD≥0 SA≤LA-ℓ, SC≤LC-ℓ, SD≤L-LB-LC-ℓ D: 10 12 15 20 25 30 35 40 50 W: 8 10 13 17 22 27 30 36 41 ℓ: 8 10 15 20 P / Q: 5 6 7 8~10 11~13 14~15 16~18 19~21 22~25 26~28 29~31 32~37 38~41 42~45 W1: 4 5 5.5 7 10 13 14 17 19 22 27 30 36 38 ℓ: 8 10 15 20	4,00	
2 Set Screw Flats (Angle Specified) 	WA WD	WC	Adds a flat at any designated angle besides the datum plane 0°. Specify the position, the length and the angle of the set screw flats. When 0°is specified, only one set screw flat is machinable. Ordering Code WA15-GA10- AA0 WA, WB, WC, GA, GB, GC=1mm Increment AA, AB, AC=30°Increment 0°≤AA, AB, AC≤330° ·Ordering Code Set Screw Flat Position Specified: WA, WB, WC; Set Screw Flat Width Specified: GA, GB, GC; Angle Specified 30° Increment: AA, AB, AC D / P / Q: 5 6~17 18~40 41~50; H: 0.5 1 2 3	5,00	
Tolerance Change 	PJ (js6) PK (k6)		Changes the tolerance of P Dimension of the stepped part to js6 or k6. Ordering Code PJ or PK Both LA and LB tolerances will be changed. Not available for KZDE.	10,00	

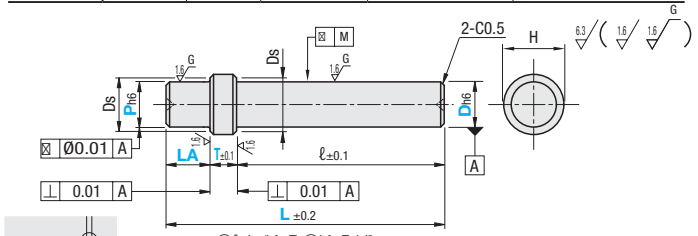
Driving Shafts
-With Flange-

Features: Rotary Shafts suitable for driving motion. Needed accuracies and shapes are provided for rotary driving applications.



Type	D, P Tolerance	Concentricity	Material	Hardness	Surface Treatment
KZEN	h6	ϕ0.01	1.1191/C45E	-	-
KZEC					Black Oxide
KZEP					Electroless Nickel Plating
KZES			1.4301/X5CrNi18-10		-
KZEF			1.1191/C45E	Induction Hardening Surface Hardness 50HRC~	-

D	Tolerance h6	Circularity M
8	0 -0.009	0.003
10		
12 / 12A	0 -0.011	
15		
17 / 17A		
20	0 -0.013	0.005
25		
30		
35	0 -0.016	
40		
45		



℗ℓ=L- (LA+T) ℗LA+T≤L/2
℗The shaft may have centering holes on ends.
℗There is an undercut 1.5mm or less in width and 0.3mm or less in depth on the stepped part.

Part Number Type	D	0.5mm Increment L	Selectable T	1mm Increment P	0.5mm Increment LA	H	Ds
KZEN KZEC KZEP KZES KZEF	8	50.0~300.0	5 10 15 20	6~9	4.0~40.0	12	10
	10			8~12	5.0~50.0	15	13
	12			10~13	5.0~60.0		14
	12A		10 15 20 25	12~18		20	16
	15	100.0~400.0		12~18	5.0~75.0		18
	17			14~18	5.0~100.0		19
	17A			14~20		25	21
	20			17~23			24
	25	100.0~500.0	10 20 30 40 50	20~28	10.0~125.0	30	29
	30			25~33	15.0~150.0	35	34
	35			28~38		40	39
	40	200.0~500.0		35~47	20.0~150.0	50	48
	45			35~48			49

Order Example

Part Number	-	L	-	T	-	P	-	LA
KZEN30	-	350	-	T20	-	P25	-	LA50

Days to Ship

- KZEN KZEC KZES: **10 Days**
- KZEP KZEF: **12 Days**

- KZEF (Induction Hardening)

When alterations on the right page are specified, the shafts are induction hardened (except the threaded sections) after machining.
Thus far, the following may occur:
(1) : Due to thermal conduction to the thread, the threads may be hardened by 2~3mm.
(2) : Induction Hardening may shrink the keyway width (around -0.01~-0.02). If the key becomes hard to fit, adjust by spot fixing.

Price

Volume Discount (℗Round down to one Cent.) P.87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

℗For orders larger than indicated quantity, please request a quotation.

Type	€ KZEN					€ KZEC					€ KZEP				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
8															
10															
12															
12A															
15															
17															
17A															
20															
25															
30															
35															
40															
45															

Type	€ KZES					€ KZEF				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
8										
10										
12										
12A										
15										
17										
17A										
20										
25										
30										
35										
40										
45										

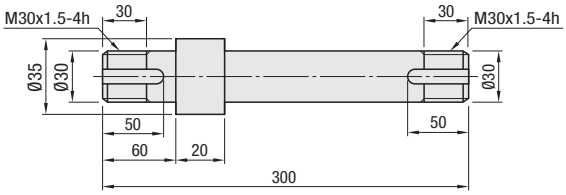
■Selection of Driving Shaft

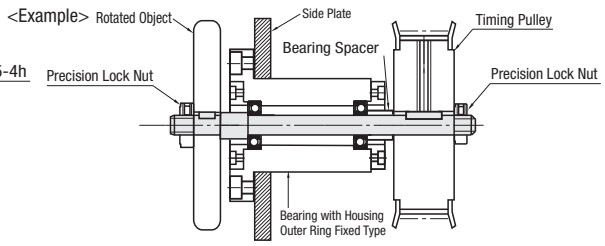
In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part No.>

- Alteration Selection: Two Male Thread Ends (Fine Thread, Precision Class), Two Keyways

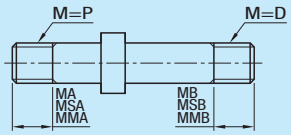
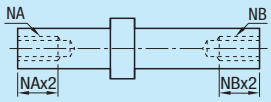
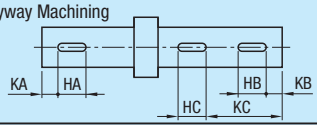
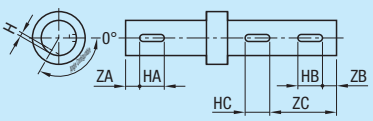
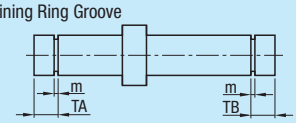
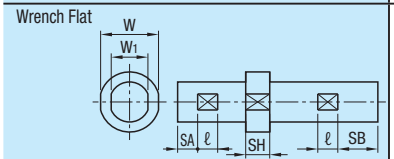
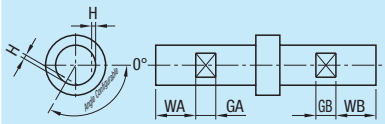
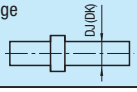
<Price Calculation Example>
Body Price 90,00 EUR + Male Thread End (Fine Thread) 6,00 EUR x 2 + Keyway 4,00 EUR x 2
= Total Price 110,00 EUR





Alterations

Part Number	-	L	-	T	-	P	-	LA	-	(MA, NA, KA, TA, SA, WA...etc.)
KZEF30	-	300	-	T20	-	P30	-	LA60	-	MMA30 - MMB30 - KA0 - HA50 - KB0 - HB50

Alterations	Code Left End	Code Right End	Spec.	Price Adder Coarse	Price Adder Fine
Male Thread Ends 	MA MSA MMA	MB MSB MMB	Adds threads at shaft ends. Specify the length of the threads. (For accuracy, coarse or fine threads can be specified by an ordering code.) Ordering Code MA15 - MSB15 1 mm Increment 5≤Thread length≤Mx5, LA-2 Code: Left End / Right End: MA–MB, MSA–MSB, MMA–MMB; Screw Precision: Coarse JIS 6h (Class 2); Fine (Coarse) JIS 6h (Class 2); Fine (Precision Class) JIS 4h (Class 1) M (Coarse) / Pitch / M (Fine) / Pitch: M6 1.0 M6 0.75 M25 1.5; M8 1.25 M8 0.75 M30 1.5; M10 1.5 M10 0.75 M35 1.5; M12 1.75 M12 1.0 M40 1.5; M20 2.5 M15 1.0 M45 1.5; M24 3 M17 1.0; M30 3.5 M20 1.0; M36 4 ▼When D, P=M, thread length can be specified.	M6~M12 2,50 M20~M36 5,00	M6~M20 3,00 M25~M45 6,00
Female Thread Ends 	NA	NB	Adds a tap at the shaft end. Select the thread diameter. Ordering Code NA5-NB5▼NA,NB≤D (P)-4 NA (Coarse) NB (Coarse) Selectable: M3 M4 M5 M6 M8 M10 M12 M16 M20 M24 M30 M36	M3~M16 3,00 M20~M36 4,50	
Keyway Machining 	KA	KB KC	Adds a keyway. Specify the position and the length of the keyway. Ordering Code KA10-HA30-KB100-HB50 KA, HA, KB, HB, KC, HC = 1 mm Increment ▼3≤HA, HB, HC≤100 ▼Keyway Details **P.737** ▼When more than 2 keyways are added, the tolerances may shift by up to 0.2°. ▼Specify the keyway position more than 2mm away from the flanged part.	D8~D17 2,00 D20~D45 4,00	
Keyway Machining + Set Screw Flat 	ZA	ZB ZC	Adds a flat at any designated angle based on the keyways. Specify the position and the length for each keyway, and the angle for the set screw flats. Ordering Code ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC, ZD, HD=1 mm Increment AA, AB, AC, AD=30° Increment 30°≤AA, AB, AC, AD≤330° ▼3≤HA,HB,HC,HD≤100 ▼Keyway Details **P.737** ▼Specify the keyway position more than 2mm away from the flanged part. ·Ordering Code Keyway Position Specified / Keyway Width Specified / Angle Specified 30° Increment: ZA HA AA; ZB HB AB; ZC HC AC D / P: H 6~17 1 18~40 2 41~48 3 ▼The length of each set screw flat is the same as that of each keyway. ▼For a keyway and the angle of a set screw flat, the tolerances may shift by up to ±0.2°.	6,00	
Retaining Ring Groove 	TA	TB	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB100 TA, TB= 1mm Increment▼4≤TA≤LA-3 ▼Retaining rings are attached. ▼For dimensions of the retaining ring groove, **P.734** ⊗P=27,31,33,34,36~39, Not available for 41~44 and 46~48. P, D≤8: Retaining Ring Type E P≥9, D≥10: Retaining Ring Type C Driving Shafts: Material / Hardness / Surface Treatment; Retaining Ring Material 1.1191/C45E – – Spring Steel; 1.1191/C45E Surface 50HRC– – Spring Steel; Black Oxide 1,4301; Electroless Nickel Plating 1,4301	D8~D17 3,00 D20~D45 4,50	
Wrench Flat 	SA SH	SB	Adds a Wrench Flat. Specify the position of a wrench flat. Ordering Code SA5-SB10-SHSA, SB= 1mm Increment SA, SB≥0SA≤LA-ℓ, SB≤L-LA-T-ℓ ▼Specification of the length for SH is not necessary. Adds wrench flats on the shoulder. (ℓ=h) D 8 10 12 15 17 20 25 30 35 40 45 W 7 8 10 13 14 17 22 27 30 36 38 ℓ 8 10 15 20 P 6 7 8~10 11~13 14~15 16~18 19~21 22~25 26~28 29~31 32~37 38~41 42~45 46~48 W1 5 5.5 7 10 13 14 17 19 22 27 30 36 38 41 ℓ 8 10 15 20	4,00	
2 Set Screw Flats (Angle Specified) 	WA	WB	Adds a flat at any designated angle besides the datum plane 0°. Specify the position, the length and the angle of the set screw flats. When 0°is specified, only one set screw flat is machinable. Ordering Code WA15-GA10-AA0 WA, WB, GA, GB=1mm Increment AA, AB=30°Increment 0°≤AA, AB≦330° ·Ordering Code Set Screw Flat Position Specified / Set Screw Flat Width Specified / Angle Specified 30° Increment: WA GA AA; WB GB AB D / P: H 6~17 1 18~40 2 41~48 3	5,00	
Tolerance Change 	DJ(js6) DK(k6)		Changes the D dimension tolerance to js6 or k6. Ordering Code DJ or DK	5,00	

Driving Shafts

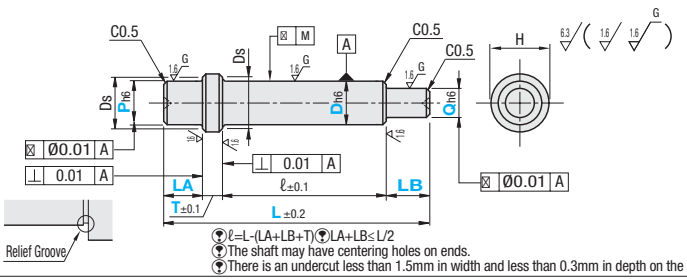
-One End Stepped with Flange-

Features: Rotary Shafts suitable for driving motion. Needed accuracies and shapes are provided for rotary driving applications.



Type	D, P, Q Tolerance	Concentricity	M Material	H Hardness	S Surface Treatment
KZFN	h6	ϕ0.01	1.1191/C45E	-	-
KZFC					Black Oxide
KZFP					Electroless Nickel Plating
KZFS			1.4301/X5CrNi18-10		-
KZFF			1.1191/C45E	Induction Hardening Surface Hardness 50HRC~	-

D	Tolerance h6	Circularity M
8	0 - 0.009	0.003
10		
12 / 12A	0 - 0.011	
15		
17 / 17A		
20	0 - 0.013	0.005
25		
30		
35	0 - 0.016	
40		
45		



ℓ=L-(LA+LB+T) LA+LB≤L/2
The shaft may have centering holes on ends.
There is an undercut less than 1.5mm in width and less than 0.3mm in depth on the stepped part.

Part Number Type	D	0.5mm Increment L	Selectable T	1mm Increment P	0.5mm Increment LA	1mm Increment Q	0.5mm Increment LB	H	Ds
KZFN KZFC KZFP KZFS KZFF	8	50.0~300.0	5 10 15 20	6~9	4.0~40.0	5~7	4.0~40.0	12	10
	10			8~12	5.0~50.0	7~9	5.0~50.0	15	13
	12			10~13	5.0~60.0	7~11	5.0~60.0		14
	12A		10 15 20 25	12~18				20	16
	15	100.0~400.0		12~18	5.0~75.0	10~14	5.0~75.0		18
	17			14~18	5.0~100.0	10~16	5.0~100.0		19
	17A			14~20				25	21
	20			17~23		14~19			24
	25	100.0~500.0	10 20 30 40 50	20~28	10.0~125.0	14~24	10.0~125.0	30	29
	30			25~33	15.0~150.0	20~29	15.0~150.0	35	34
	35			28~38		20~34		40	39
	40	200.0~500.0		35~47	20.0~150.0	20~39	20.0~150.0	50	48
	45			35~48		20~44			49

Order Example

Part Number	-	L	-	T	-	P	-	LA	-	Q	-	LB
KZFN30	-	350	-	T20	-	P30	-	LA50	-	Q25	-	LB30

Days to Ship

- KZFN KZFC KZFS: **10 Days**
- KZFP KZFF: **12 Days**

- KZFF (Induction Hardening)

When alterations on the right page are specified, the shafts are induction hardened (except the threaded sections) after machining.
Thus far, the following may occur:
(1) : Due to thermal conduction to the thread, the threads may be hardened by 2~3mm.
(2) : Induction Hardening may shrink the keyway width (around -0.01~-0.02). If the key becomes hard to fit, adjust by spot fixing.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Type	€ KZFN					€ KZFC					€ KZFP				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
8															
10															
12															
12A															
15															
17															
17A															
20															
25															
30															
35															
40															
45															

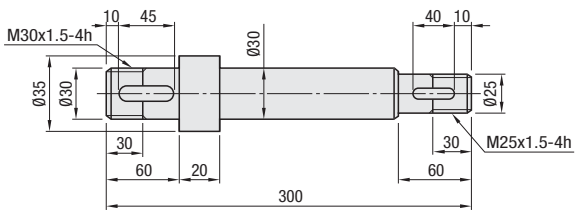
Type	€ KZFS					€ KZFF				
D	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0	Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
8										
10										
12										
12A										
15										
17										
17A										
20										
25										
30										
35										
40										
45										

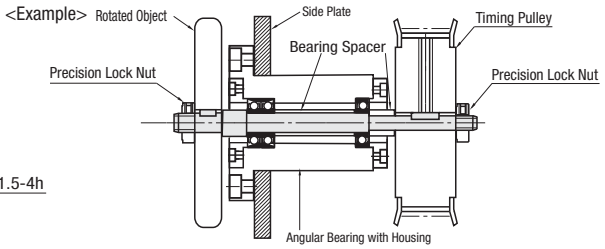
■Selection of Driving Shaft

In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part No.>
- Alteration Selection: Two Male Thread Ends (Fine Thread, Precision Class), Two Keyways

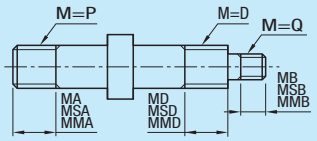
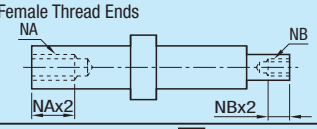
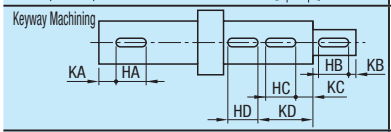
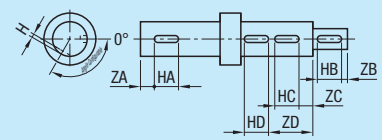
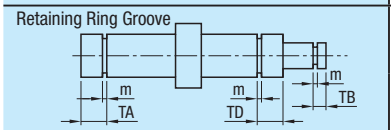
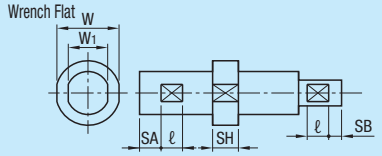
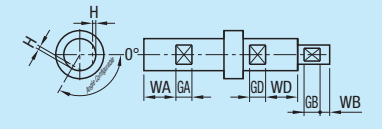
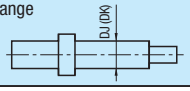
<Price Calculation Example>
Body Price 104,00 EUR + Male Thread End (Fine Thread) 6,00 EURx2
+ Keyway 4,00 EUR x 2 = Total Price 124,00 EUR





Alterations Part Number - L - T - P - LA - Q - LB - (MA, NA, KA, TA, SA...etc.)

KZFF30 - 300 - T20 - P30 - LA60 - Q25 - LB60 - MMA30 - MMB30 - KA10 - HA45 - KB10 - HB40

Alterations	Code Left End	Code Right End	Spec.	Price Adder Coarse	Price Adder Fine
Male Thread Ends 	MA MSA MMA	MB MSB MMB MD MSD	Adds threads at shaft ends. Specify the length of the threads. (For accuracy, coarse or fine threads can be specified by an ordering code.) Ordering Code MA15-MSB15 1 mm Increment 5≤Thread length ≤Mx5, LA(LB)-2 Code: Left End / Right End — Screw Precision MA MB MD — Coarse JIS 6h (Class 2) MSA MSB MSD — Fine (Coarse) JIS 6h (Class 2) MMA MMB — Fine (Precision Class) JIS 4h (Class 1) M (Coarse) / Pitch / M (Fine) / Pitch: M5 0.8 M5 0.5 M25 1.5; M6 1.0 M6 0.75 M30 1.5; M8 1.25 M8 0.75 M35 1.5; M10 1.5 M10 0.75 M40 1.5; M12 1.75 M12 1.0 M45 1.5; M20 2.5 M15 1.0; M24 3 M17 1.0; M30 3.5 M20 1.0; M36 4 When D, P, Q=M, thread length can be specified. Specify Q diameter smaller than MD, MSD and MMD root diameter.	M5~M12 2,50	M5~M20 3,00 M20~M36 5,00 M25~M45 6,00
Female Thread Ends 	NA	NB	Adds a tap at the shaft end. Select the thread diameter. Ordering Code NA5-NB5 NA, NB≤P(Q)-4 NA (Coarse) NB (Coarse) Selectable: M3 M4 M5 M6 M8 / M10 M12 M16 M20 / M24 M30 M36	M3~M16 3,00 M20~M36 4,50	
Keyway Machining 	KA	KB KC KD	Adds a keyway. Specify the position and the length of the keyway. Ordering Code KA10-HA30-KB100-HB50 KA,HA,KB,HB,KC,HC,KD,HD=1 mm Increment 3≤HA,HB,HC,HD≤100 Keyway Details **P.737** When more than 2 keyways are added, the tolerances may shift by up to 0.2°. Specify the keyway position more than 2mm away from the flanged or stepped part.	D10~D17 2,00 D20~D50 4,00	
Keyway Machining + Set Screw Flat 	ZA	ZB ZC ZD	Adds a flat at any designated angle based on the keyways. Specify the position and the length for each keyway, and the angle for the set screw flats. Ordering Code ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC, ZD, HD = 1 mm Increment AA, AB, AC, AD = 30°Increment 30°≤AA, AB, AC, AD≤330° 3≤HA,HB,HC,HD≤100 Keyway Details **P.737** Specify the keyway position more than 2mm away from the flanged or stepped part. ·Ordering Code Keyway Position Specified / Keyway Width Specified / Angle Specified 30° Increment: ZA HA AA; ZB HB AB; ZC HC AC; ZD HD AD D / P / Q: 5 — H: 0.5; 6~17 — 1; 18~40 — 2; 41~48 — 3 The length of each set screw flat is the same as that of each keyway. For a keyway and the angle of a set screw flat, the tolerances may shift by up to ±0.2°.	6,00	
Retaining Ring Groove 	TA	TB TD	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB100 TA, TB, TD = 1mm Increment 4≤TA(TB)≤LA(LB)-3 Retaining rings are attached. For dimensions of the retaining ring groove, **P.734** P,Q=27,31,33,34,36~39, Not available for 41~44 and 46~48. P, Q, D≤8: Retaining Ring Type EP; Q>9 D≥10: Retaining Ring Type C Driving Shafts: Material / Hardness / Surface Treatment; Retaining Ring: Material 1.1191/C45E — - — - — Spring Steel 1.1191/C45E — - — Black Oxide — Spring Steel 1.4301 — - — Electroless Nickel Plating — 1.4301 1.4301 — Surface 50HRC~ — - — Spring Steel	D10~D17 3,00 D20~D50 4,50	
Wrench Flat 	SA SH	SB	Adds a Wrench Flat. Specify the position of a wrench flat. Ordering Code SA5-SB10-SH SA, SB=1mm Increment SA, SB≥0 SA≤LA-ℓ, SB≤LB-ℓ Specification of the length for SH is not necessary. Adds wrench flats on the shoulder. (ℓ=h) D: 8 10 12 15 17 20 25 30 35 40 45 W: 7 8 10 13 14 17 22 27 30 36 38 ℓ: 8 — 10 — 15 — 20 P / Q: 5 6 7 8~10 11~13 14~15 16~18 19~21 22~25 26~28 29~31 32~37 38~41 42~45 46~48 W1: 4 5 5.5 7 10 13 14 17 19 22 27 30 36 38 41 ℓ: 8 — 10 — 15 — 20	4,00	
2 Set Screw Flats (Angle Specified) 	WA	WB WD	Adds a flat at any designated angle besides the datum plane 0°. Specify the position, the length and the angle of the set screw flats. When 0°is specified, only one set screw flat is machinable. Ordering Code WA15-GA10-AA0 WA, WB, WD, GA, GB, GD=1mm Increment AA, AB, AC=30°Increment 0°≤AA, AB, AC≤330° ·Ordering Code Set Screw Flat Position Specified / Set Screw Flat Width Specified / Angle Specified 30° Increment: WA GA AA; WB GB AB; WD GD AC D / P / Q: 5 — H: 0.5; 6~17 — 1; 18~40 — 2; 41~48 — 3	5,00	
Tolerance Change 	DJ(js6) DK(k6)		Changes the D dimension tolerance to js6 or k6. Ordering Code DJ or DK	5,00	

Cantilever Shafts / Pivot Pins / Fulcrum Pins

Cantilever Shafts / Pivot Pins/ Fulcrum Pins



Cantilever Shafts -Male Thread with Retaining Ring Groove- 795



-Male Thread with Female Thread End- 797



-Male Thread with Male Thread Ends- 799



Cantilever Shafts-Pilot - Male Thread with Retaining Ring Groove- 801



-Pilot - Male Thread with Female Thread End- 803



-Pilot - Male Thread with Male Thread Ends- 805



-Screw Mount with Retaining Ring Groove- 807



Cantilever Shafts -Screw Mount with Female Thread End- 809



-Screw Mount with Male Thread End- 811



-Heavy Load- 813



Cantilever Shafts -Flanged- 815



-For Tension- 817



Pivot Pins -Split Pins- 819



-Straight Retaining Ring- 820



-Split Pins with Flange- 821



-Retaining Ring with Flange- 822



-Lock Nut with Flange- 823



-Lock Nut with Hexagon Socket Head- 824



-Lock Nut with Extra Low Hexagon Socket Head- 825



-Female Thread with Flange- 826



-Female Thread - Hexagon Socket Head with Flange- 826



-Both Ends Female Thread- 827



-Both Ends Male Thread- 827



-With Key Groove- 828



Keys for Precision Pivot Pins 828



Pivot Pins -Set Screw Flat- 829



-Flanged with Set Screw Flat- 829



Pivot Pins -D Cut-	Pivot Pins -End Shape Selectable-	Dia. Tolerance Selectable Type	Fulcrum Pins -Standard-
830	831	833	835









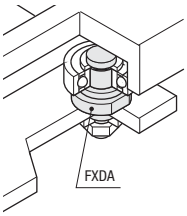
Fulcrum Pins -Configurable-	Fulcrum Pins -Low Head Stepped with Lock Nut-	Precision Pivot Pins -Retaining Rings-	-Female Thread Ends-
836	837	838	838

Cantilever Shafts

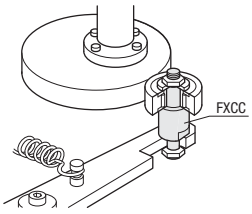
Can be used as a fulcrum for rotary parts such as Idlers.
Tension type is also available.

Example

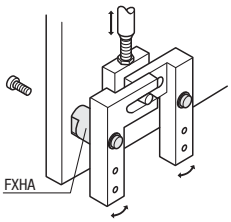
P.801



P.805



P.807

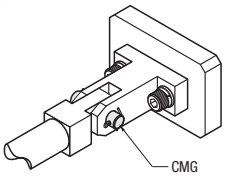


Pivot Pins

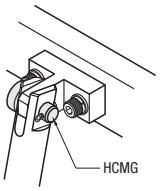
Can be used as a fulcrum for various types of connections.
We offer two types: the affordable L dimension selectable type and the L dimension configurable type.

Example

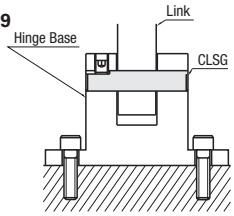
P.819



P.821



P.829

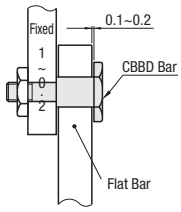


Fulcrum Pins

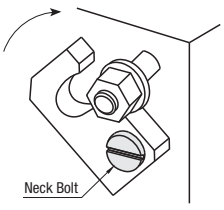
Can be used as a fulcrum for rotary motions of steel metal parts.
Four types of screw heads are available such as Straight Slot Groove and Hexagonal Sockets.

Example

P.835



P.836



Cantilever Shafts

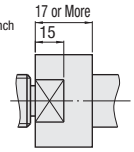
-Male Thread with Retaining Ring Groove-

■Standard RoHS

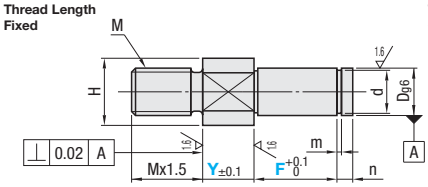


Type		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable		
FXAA	FXNAA	1.1191/C45E	Black Oxide
PFXAA	PFXNAA		Electroless Nickel Plating
SFXAA	SFXNAA	1.4301/X5CrNi18-10	-
HFXAA	-	1.7220/34CrMo4 Hardness 35~40 HRC	Black Oxide

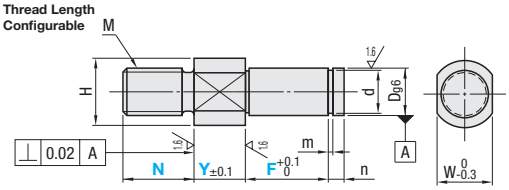
Dimensions of Wrench Flats when Y≥17



Thread Length Fixed



Thread Length Configurable



Refer to the table on P.758 for thread undercut dimensions.

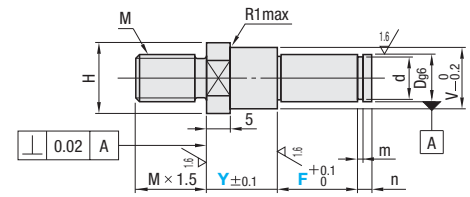
Part Number Type	No.	Dg6		1mm Increment Y	F	N	H	W	M (Coarse Thread)	d Ref. Dims.	d Tolerance	m	n	€ Unit Price Thread Length Fixed FXAA	PFXAA	SFXAA	HFXAA	Thread Length Configurable FXNAA	PFXNAA	SFXNAA
Thread Length Fixed	3	3	-0.002 -0.008	2~30	3~50	3~ 6	7	5	M 3	2	+0.060 0	0.5	2							
	3A						11	9												
	4	4	-0.004 -0.012			4~ 8	8	6	M 4	3		0.7								
	4A						12	10												
	5	5				5~10	9	7	M 5	4	+0.075 0									
	5A						13	11												
FXAA	6	6		2~60	5~100	6~12	10	8	M 6	5										
PFXAA	6A						14	12												
SFXAA	8	8	-0.005 -0.014			8~16	12	10	M 8	7	+0.090 0	0.9	3							
HFXAA	8A						16	14												
(D≥6)	10	10				10~20	15	13	M10	9.6	0 -0.090	1.15	4							
	10A						20	17												
Thread Length Configurable	12	12	-0.006 -0.017			12~24	17	14	M12	11.5	0 -0.110									
	13	13					18	15		12.4										
	15	15					20	17		14.3										
	16	16					21	18		15.2										
	17	17					22	19		16.2										
	18	18					23	20		17										
FXNAA	20	20	-0.007 -0.020	4~60	10~150	20~40	26	24	M20 M16	19	0 -0.210	1.35	5							
PFXNAA	20A																			
SFXNAA	22	22					28		M20 M16	21										
	22A																			
	25	25					31	27	M20 M16	23.9										
	25A																			
	30	30					36	32	M20 M16	28.6		1.65								
	30A																			

HFXAA is applicable to D6 or larger specifications. N is available for Thread Length Configurable Type only.

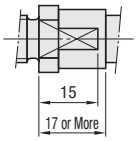
■Stepped RoHS



Type	Material	Surface Treatment
FXBA	1.1191/C45E	Black Oxide
PFXBA		Electroless Nickel Plating
SFXBA	1.4301/X5CrNi18-10	-
PHFXBA	1.7220/34CrMo4 Hardness 35-40 HRC	Electroless Nickel Plating



Dimensions of Wrench Flats when W<V, Y ≥17



Refer to the table on **P.758** for thread undercut dimensions.

Part Number Type	No.	Dg6		1mm Increment Y	F	V	H	W	M (Coarse Thread)	d Ref. Dims.	d Tolerance	m	n	€ Unit Price FXBA	PFXBA	SFXBA	PHFXBA
	3	3	-0.002 -0.008	7~30	3~ 50	5	7	5	M 3	2	+0.060 0	0.5	2				
	3A					9	11	9									
	4	4	-0.004 -0.012			6	8	6	M 4	3							
	4A					10	12	10									
	5	5				7	9	7	M 5	4	+0.075 0	0.7					
	5A					11	13	11									
	6	6		7~60	5~100	8	10	8	M 6	5							
	6A					12	14	12									
FXBA	8	8	-0.005 -0.014			10	12	10	M 8	7	+0.090 0	0.9	3				
PFXBA	8A					14	16	14									
SFXBA	10	10				13	15	13	M10	9.6	0 -0.090	1.15	4				
PHFXBA	10A					18	20	17									
(D≥6)	12	12	-0.006 -0.017		10~150	15	17	14	M12	11.5	0 -0.110						
	13	13				16	18	15		12.4							
	15	15				18	20	17		14.3							
	16	16				19	21	18		15.2							
	17	17				20	22	19		16.2							
	18	18				21	23	20		17							
	20	20	-0.007 -0.020	7~60		24	26	24	M20 M16	19	0 -0.210	1.35	5				
	20A																
	22	22				26	28		M20 M16	21							
	22A																
	25	25				29	31	27	M20 M16	23.9							
	25A																
	30	30				34	36	32	M20 M16	28.6		1.65					
	30A																

When W<V, width across flats W reaches outer diameter V. PHFXBA is applicable to D6 or larger specifications.

■Hexagon

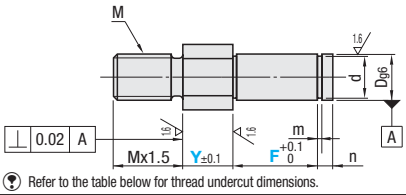
RoHS



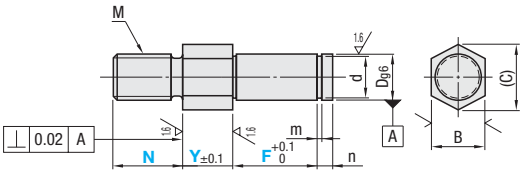
Type		Ⓜ Material	Ⓢ Surface Treatment
Thread Length Fixed	Thread Length Configurable		
LXAA	LXNAA	1.1191/C45E	Black Oxide
PLXAA	PLXNAA		Electroless Nickel Plating
SLXAA	SLXNAA	1.4301/X5CrNi18-10	-

6.3/(1.6/)

Thread Length Fixed



Thread Length Configurable



Ⓟ Refer to the table below for thread undercut dimensions.

Part Number Type	No.	Dg6		1mm Increment Y	F	Ⓟ N	B	(C)	M (Coarse Thread)	d Ref. Dims.	d Tolerance	m	n	€ Unit Price Thread Length Fixed LXAA	PLXAA	SLXAA	Thread Length Configurable LXNAA	PLXNAA	SLXNAA
Thread Length Fixed	3	3	-0.002 -0.008	2~30	3~ 50	3~ 6	6	6.9	M 3	2	+0.060 0	0.5	2						
	4	4	-0.004 -0.012			4~ 8			M 4	3									
	5	5				5~10	7	8.1	M 5	4	+0.075 0	0.7							
	6	6			5~100	6~12	8	9.2	M 6	5									
	8	8	-0.005 -0.014			8~16	10	11.5	M 8	7	+0.090 0	0.9	3						
	10	10				10~20	13	15.0	M10	9.6	0 -0.090								
LXAA PLXAA SLXAA	12	12	-0.006 -0.017	2~60		12~24	14	16.2	M12	11.5	0 -0.110	1.15	4						
	13	13					17	19.6		12.4									
	15	15								14.3									
	16	16					19	21.9		15.2									
Thread Length Configurable	17	17								16.2									
	18	18					24	27.7		17									
LXNAA PLXNAA SLXNAA	20	20	-0.007 -0.020	4~60	10~150	20~40			M20	19	0 -0.210	1.35							
	20A								M16										
	22	22							M20	21			5						
	22A								M16										
	25	25					27	31.2	M20	23.9									
	25A								M16										
	30	30					32	36.9	M20	28.6		1.65							
	30A								M16										

Ⓟ N is available for Thread Length Configurable Type only.

Order Example

Part Number	-	Y	-	F	-	N
FXAA10	-	25	-	F18		
PLXNAA12	-	15	-	F25	-	N12

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P.88

Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.

⊗ Express Serviceis not available for HFXAA or PHFXBA.

Price

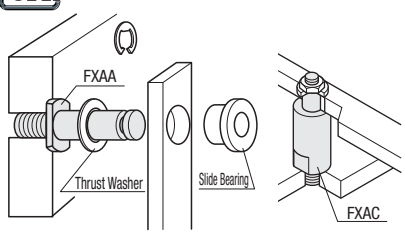
■Volume Discount (Ⓟ Round down to one Cent.) P. 87

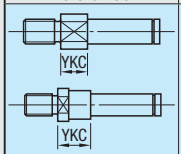
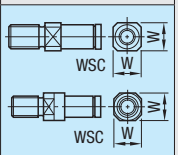
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	Y	-	F	-	N	- (YKC · WSC · SET)
FXAA20	-	20	-	F20			- YKC

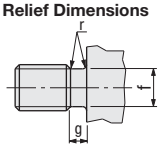
Example



Alterations	Y Dimension Tolerance	Four Wrench Flats	Retaining Ring Set
			
Code	YKC	WSC	SET
Spec.	Changes Y dimension tolerance to±0.05. Ⓟ Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Ⓟ Applicable to the stan-dard / stepped types. Ordering Code WSC	Attaches a retaining ring to each applicable shaft diameter. Ordering Code SET Ⓟ Applicable to all types. Retaining Ring Shape No.=3~8A: E Type Retaining Ring No.=3~8A: E Type Retaining Ring Retaining Ring Material
Price Adder	4,00	4,00	2,50

Cantilever Shafts Material	Surface Treatment	Retaining Ring Material
1.1191/ C45E	Black Oxide	Spring Steel
	Electroless Nickel Plating	1.4301/X5CrNi18-10
1.4301/ X5CrNi18-10	-	
1.7220/ 34CrMo4	Black Oxide	Spring Steel
	Electroless Nickel Plating	1.4301/X5CrNi18-10

Ⓟ Male Thread Relief Dimensions



Coarse Thread Thread Dia. (M)	g	r	f
3	1.2~1.5	0.2~0.3	2.1~2.4
4			2.9~3.2
5			3.9~4.1
6	1.5~2.5	0.2~0.6	4.3~4.9
8			6.3~6.6
10			8.1~8.3
12	1.5~3.0	0.2~1.0	9.8~10.1
16			13.6~13.8
20	1.5~4.0		17.0~17.2

Cantilever Shafts

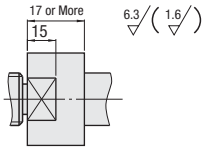
-Male Thread with Female Thread End-

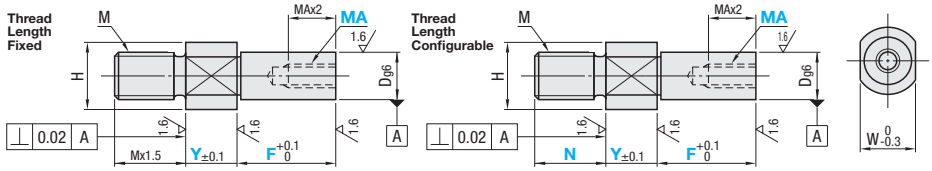
■Standard RoHS



Type		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable		
FXAB	FXNAB	1.1191/C45E	Black Oxide
PFXAB	PFXNAB		Electroless Nickel Plating
SFXAB	SFXNAB	1.4301/X5CrNi18-10	-
PHFXAB	-	1.7220/34CrMo4 Hardness 35~40 HRC	Electroless Nickel Plating

Dimensions of Wrench Flats when Y≥17





Please refer to Table 1 to specify dimensions Y and F.
Refer to the table on P.758 for thread undercut dimensions.

Part Number Type	No.	Dg6		1mm Increment Y	F	N	MA (Coarse) Selection	H	W	M (Coarse Thread)	€ Unit Price FXAB	PFXAB	SFXAB	PHFXAB	FXNAB	PFXNAB	SFXNAB
	6	6	-0.004 -0.012	2~60	5~100	6~12	3	10	8	M 6							
	6A							14	12								
	8	8	-0.005 -0.014			8~16	4	12	10	M 8							
Thread Length Fixed	8A							16	14								
FXAB	10	10				10~20	4 5 6	15	13	M10							
PFXAB	10A							20	17								
SFXAB	12	12	-0.006 -0.017		10~150	12~24	5 6 8	17	14	M12							
PHFXAB	13	13						18	15								
	15	15					6 8 10	20	17								
	16	16						21	18								
	17	17						22	19								
Thread Length Configurable	18	18						23	20								
	20	20	-0.007 -0.020	4~75		20~40	6 8 10 12	26	24	M20							
FXNAB	20A									M16							
PFXNAB	22	22						28		M20							
SFXNAB	22A									M16							
	25	25					8 10 12 16	31	27	M20							
	25A									M16							
	30	30					8 10 12 16 20	36	32	M20							
	30A									M16							

N is available for Thread Length Configurable Type only.

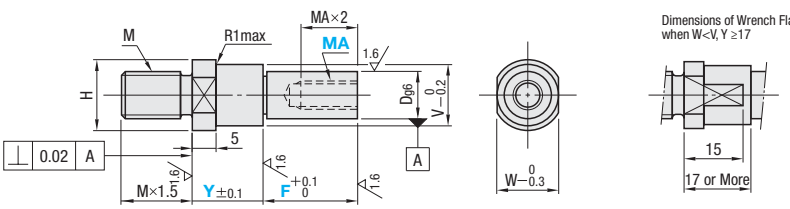
Table 1

MA	Y+F
M 3	Y+F≥11.5
M 4	Y+F≥14.0
M 5	Y+F≥16.2
M 6	Y+F≥18.5
M 8	Y+F≥23.5
M10	Y+F≥28.5
M12	Y+F≥35.5
M16	Y+F≥45.0
M20	Y+F≥55.0

■Stepped RoHS



Type	Material	Surface Treatment
FXBB	1.1191/C45E	Black Oxide
PFXBB		Electroless Nickel Plating
SFXBB	1.4301/X5CrNi18-10	-



Please refer to Table 1 to specify dimensions Y and F.
Refer to the table on P.758 for Male Thread Relief dimensions.

Part Number Type	No.	Dg6		1mm Increment Y	F	MA (Coarse) Selection	V	H	W	M (Coarse Thread)	€ Unit Price FXBB	PFXBB	SFXBB
	6	6	-0.004 -0.012	7~60	5~75	3	8	10	8	M 6			
	6A						12	14	12				
	8	8	-0.005 -0.014			4	10	12	10	M 8			
	8A						14	16	14				
	10	10				4 5 6	13	15	13	M10			
	10A						18	20	17				
	12	12	-0.006 -0.017		10~75	5 6 8	15	17	14	M12			
	13	13					16	18	15				
FXBB	15	15				6 8 10	18	20	17				
PFXBB	16	16					19	21	18				
SFXBB	17	17					20	22	19				
	18	18					21	23	20				
	20	20	-0.007 -0.020			6 8 10 12	24	26	24	M20			
	20A									M16			
	22	22				8 10 12 16	26	28		M20			
	22A									M16			
	25	25					29	31	27	M20			
	25A									M16			
	30	30				8 10 12 16 20	34	36	32	M20			
	30A									M16			

When W<V, width across flats W reaches outer diameter V.

Table 1

MA	Y+F
M 3	Y+F≥11.5
M 4	Y+F≥14.0
M 5	Y+F≥16.2
M 6	Y+F≥18.5
M 8	Y+F≥23.5
M10	Y+F≥28.5
M12	Y+F≥35.5
M16	Y+F≥45.0
M20	Y+F≥55.0

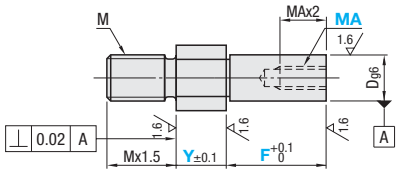
Hexagon RoHS



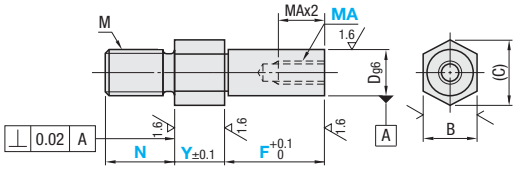
Type		M Material	S Surface Treatment
Thread Length Fixed	Thread Length Configurable		
LXAB	LXNAB	1.1191/C45E	Black Oxide
PLXAB	PLXNAB		Electroless Nickel Plating
SLXAB	SLXNAB	1.4301/X5CrNi18-10	-

6.3 (1.6)

Thread Length Fixed



Thread Length Configurable



Please refer to Table 1 to specify dimensions Y and F. Refer to the table below for thread undercut dimensions.

Part Number Type	No.	Dg6		1mm Increment Y	F	N	MA (Coarse) Selection	B	(C)	M (Coarse Thread)	€ Unit Price Thread Length Fixed LXAB	PLXAB	SLXAB	Thread Length Configurable LXNAB	PLXNAB	SLXNAB
Thread Length Fixed LXAB PLXAB SLXAB	6	6	-0.004 -0.012	2~60	5~100	6~12	3	8	9.2	M 6						
	8	8	-0.005 -0.014			8~16	4	10	11.5	M 8						
	10	10				10~20	4 5 6	13	15.0	M10						
	12	12	-0.006 -0.017			12~24	5 6 8	14	16.2	M12						
	13	13						17	19.6							
	15	15					6 8 10	19	21.9							
	16	16														
	17	17														
	18	18						24	27.7	M20						
Thread Length Configurable LXNAB PLXNAB SLXNAB	20	20	-0.007 -0.020	4~60	10~100	20~40	6 8 10 12			M16						
	20A									M20						
	22	22								M16						
	22A						8 10 12 16	27	31.2	M20						
	25	25								M16						
	25A						8 10 12 16 20	32	36.9	M20						
	30	30								M16						
	30A															

Table 1

MA	Y+F
M 3	Y+F≥11.5
M 4	Y+F≥14.0
M 5	Y+F≥16.2
M 6	Y+F≥18.5
M 8	Y+F≥23.5
M10	Y+F≥28.5
M12	Y+F≥35.5
M16	Y+F≥45.0
M20	Y+F≥55.0

N is available for Thread Length Configurable Type only.

Order Example

Part Number	-	Y	-	F	-	N	-	MA
FXAB10	-	25	-	F18			-	MA5
PLXNAB12	-	15	-	F25	-	N12	-	MA6

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.
Express Serviceis not available for PHFXAB.

Price

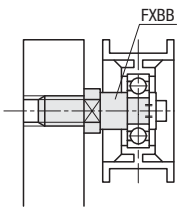
Volume Discount (Round down to one Cent.) P.87

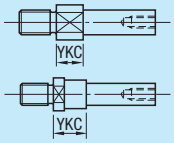
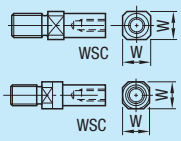
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

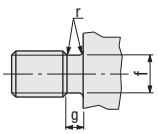
Part Number	-	Y	-	F	-	N	-	MA	- (YKC · WSC)
FXAB20	-	20	-	F20			-	MA10	- YKC

Example



Alterations	Y Dimension Tolerance	Four Wrench Flats
		
Code	YKC	WSC
Spec.	Changes Y dimension tolerance to±0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the standard / stepped types. Ordering Code WSC
Price Adder	4,00	4,00

Male Thread Relief Dimensions



Coarse Thread Thread Dia. (M)	g	r	f
6	1.5~2.5	0.2~0.6	4.3~4.9
8			6.3~6.6
10			8.1~8.3
12	1.5~3.0	0.2~1.0	9.8~10.1
16			13.6~13.8
20	1.5~4.0		17.0~17.2

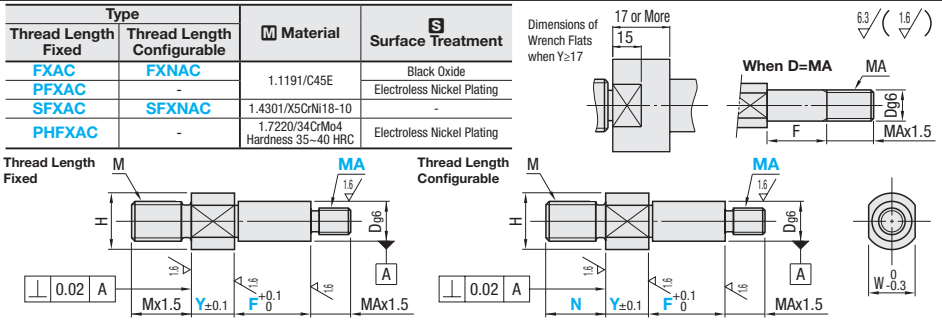
Cantilever Shafts

-Male Thread with Male Thread Ends-

■Standard RoHS



Type		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable		
FXAC	FXNAC	1.1191/C45E	Black Oxide
PFXAC	-		Electroless Nickel Plating
SFXAC	SFXNAC	1.4301/X5CrNi18-10	-
PHFXAC	-	1.7220/34CrMo4 Hardness 35~40 HRC	Electroless Nickel Plating



Refer to the table on P.758 for thread undercut dimensions.

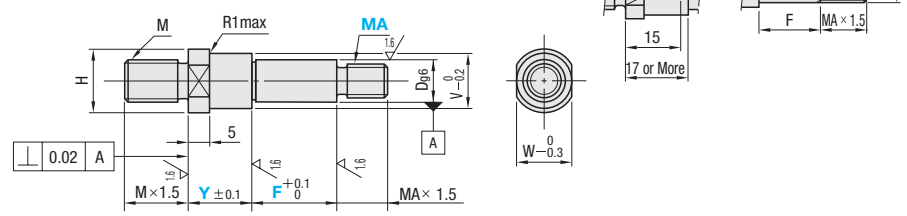
Part Number Type	No.	Dg6		1mm Increment Y	F	N	MA (Coarse) Selection	H	W	M (Coarse Thread)	€ Unit Price FXAC	PFXAC	SFXAC	PHFXAC	FXNAC	SFXNAC
Thread Length Fixed FXAC PFXAC SFXAC PHFXAC (D≥6)	3	3	-0.002 -0.008	2~30	3~ 50	3~ 6	3	7	5	M 3						
	3A							11	9							
	4	4	-0.004 -0.012			4~ 8	3 4	8	6	M 4						
	4A							12	10							
	5	5				5~10	3 4 5	9	7	M 5						
	5A							13	11							
	6	6			5~100	6~12	4 5 6	10	8	M 6						
	6A							14	12							
	8	8	-0.005 -0.014	2~60		8~16	5 6 8	12	10	M 8						
	8A							16	14							
	10	10				10~20	6 8 10	15	13	M10						
	10A							20	17							
	12	12	-0.006 -0.017		10~100	12~24	6 8 10 12	17	14	M12						
	13	13						18	15							
	15	15					6 8 10 12 (15)	20	17							
	16	16						21	18							
Thread Length Configurable FXNAC SFXNAC	17	17					8 10 12 (15)	22	19							
	18	18						23	20							
	20	20	-0.007 -0.020	4~60		20~40	10 12 (15) 16 20	26	24	M20						
	20A									M16						
	22	22						28		M20						
	22A									M16						
	25	25					10 12 (15) 16 20 24 (25)	31	27	M20						
	25A									M16						
	30	30					12 (15) 16 20 24 (25) 30	36	32	M20						
	30A									M16						

MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA. N is available for Thread Length Configurable Type only. PHFXAC is applicable to D6 or larger specifications.

■Stepped RoHS



Type	Material	Surface Treatment
FXBC	1.1191/C45E	Black Oxide
PFXBC		Electroless Nickel Plating
SFXBC	1.4301/X5CrNi18-10	-



Refer to the table on P.758 for thread undercut dimensions.

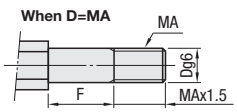
Part Number Type	No.	Dg6		1mm Increment Y	F	MA (Coarse) Selection	V	H	W	M (Coarse Thread)	€ Unit Price FXBC	PFXBC	SFXBC
FXBC PFXBC SFXBC	3	3	-0.002 -0.008	7~30	3~ 50	3	5	7	5	M 3			
	3A						9	11	9				
	4	4	-0.004 -0.012			3 4	6	8	6	M 4			
	4A						10	12	10				
	5	5				3 4 5	7	9	7	M 5			
	5A						11	13	11				
	6	6		7~60	5~100	4 5 6	8	10	8	M 6			
	6A						12	14	12				
	8	8	-0.005 -0.014			5 6 8	10	12	10	M 8			
	8A						14	16	14				
	10	10				6 8 10	13	15	13	M10			
	10A						18	20	17				
	12	12	-0.006 -0.017		10~100	6 8 10 12	15	17	14	M12			
	13	13					16	18	15				
	15	15				8 10 12 (15)	18	20	17				
	16	16					19	21	18				
	17	17					20	22	19				
	18	18					21	23	20				
	20	20	-0.007 -0.020			10 12 (15) 16 20	24	26	24	M20			
	20A									M16			
	22	22					26	28		M20			
	22A									M16			
	25	25				10 12 (15) 16 20 24 (25)	29	31	27	M20			
	25A									M16			
	30	30				12 (15) 16 20 24 (25) 30	34	36	32	M20			
	30A									M16			

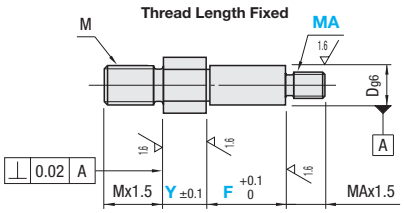
MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA. When W<V, width across flats W reaches outer diameter V.

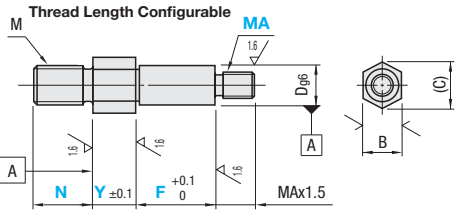
Hexagon RoHS



Type		M Material	S Surface Treatment
Thread Length Fixed	Thread Length Configurable		
LXAC	LXNAC	1.1191/C45E	Black Oxide
PLXAC	-		Electroless Nickel Plating
SLXAC	-	1.4301/X5CrNi18-10	-







Refer to the table below for thread undercut dimensions.

Part Number Type	No.	Dg6	1mm Increment Y	1mm Increment F	1mm Increment N	MA (Coarse) Selection	B	(C)	M (Coarse Thread)	€ Unit Price Thread Length Fixed LXAC	Thread Length Fixed PLXAC	Thread Length Fixed SLXAC	Thread Length Configurable LXNAC
Thread Length Fixed LXAC PLXAC SLXAC	3	3 -0.002 -0.008	2~30	3~ 50	3~ 6	3	6	6.9	M 3				
	4	4 -0.004 -0.012			4~ 8	3 4			M 4				
	5	5			5~10	3 4 5	7	8.1	M 5				
	6	6	2~60	5~75	6~12	4 5 6	8	9.2	M 6				
	8	8 -0.005 -0.014			8~16	5 6 8	10	11.5	M 8				
	10	10			10~20	6 8 10	13	15.0	M10				
	12	12 -0.006 -0.017		10~75	12~24	6 8 10 12	14	16.2	M12				
	13	13					17	19.6					
	15	15				8 10 12 (15)							
	16	16					19	21.9					
	17	17											
	18	18											
Thread Length Configurable LXNAC	20	20	4~60		20~40	10 12 (15) 16 20	24	27.7	M20				
	20A								M16				
	22	22 -0.007 -0.020							M20				
	22A								M16				
	25	25				10 12 (15) 16 20 24 (25)	27	31.2	M20				
	25A								M16				
	30	30				12 (15) 16 20 24 (25) 30	32	36.9	M20				
	30A								M16				

MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA. N is available for Thread Length Configurable Type only.

Order Example

Part Number	-	Y	-	F	-	N	-	MA
FXAC12	-	25	-	F22			-	MA8
LXNAC10	-	30	-	F50	-	N10	-	MA6

Days to Ship 8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.
Express Serviceis not available for PHFXAC.

Price

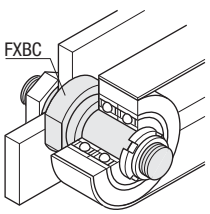
Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

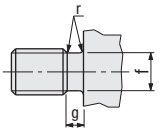
Alterations

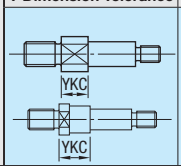
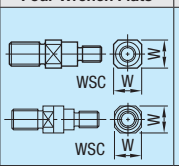
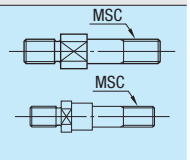
Part Number	-	Y	-	F	-	N	-	MA (MSC)	-	(YKC • WSC)
FXAC10	-	53	-	F30			-	MSC10	-	WSC

Example



Male Thread Relief Dimensions



Alterations	Y Dimension Tolerance	Four Wrench Flats	Fine Thread
			
Code	YKC	WSC	MSC
Spec.	Changes Y dimension tolerance to±0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the standard / stepped types. Ordering Code WSC	Changes Thread MA to Fine Thread in the table below. Applicable to all types. Specify MSC instead of MA. Ordering Code MSC8
Price Adder	4,00	4,00	Free of Charge

MSC	Pitch
M 3	0.35
M 4	0.5
M 5	
M 6	0.75
M 8	1.0
M10	

MSC	Pitch
M12	1.0
M15	
M20	
M25	1.5
M30	

Coarse Thread Thread Dia. (M / MA)	g	r	f	Fine Thread Thread Dia. (MSC)	g	r	f
3	1.2~1.5	0.2~0.3	2.1~ 2.4	3	1.2~1.5	0.2~0.3	2.1~2.4
4			2.9~ 3.2	4			2.9~3.2
5			3.9~ 4.1	5			3.9~4.1
6	1.5~2.5	0.2~0.6	4.3~ 4.9	6	1.5~2.5	0.2~0.6	4.3~4.9
8			6.3~ 6.6	8			6.3~6.6
10			8.1~ 8.3	10			8.3~8.6
12	1.5~3.0	0.2~1.0	9.8~10.1	12	1.5~3.0	0.2~1.0	9.8~10.7
16			13.6~13.8	15			13.6~13.8
20	1.5~4.0		17.0~17.2	20	1.5~4.0		17.2~18.8
24	2.5~5.0	0.2~1.5	20.2~20.7	25	2.5~5.0	0.2~1.5	20.2~23.2
30			26.0~26.2	30			26.2~28.2

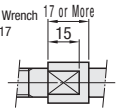
Cantilever Shafts

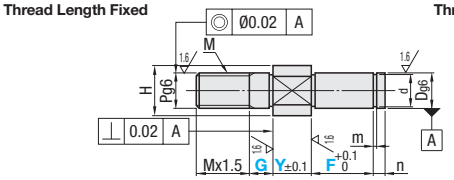
-Pilot · Male Thread with Retaining Ring Groove-

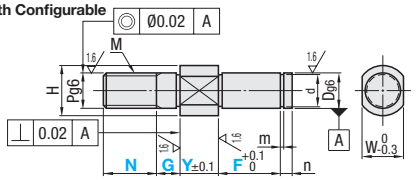
■Standard RoHS



Type		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable		
FXCA	FXNCA	1.1191/C45E	Black Oxide
PFXCA	PFXNCA		Electroless Nickel Plating
SFXCA	SFXNCA	1.4301/X5CrNi18-10	-
HFXCA	-	1.7220/34CrMo4 Hardness 35~40 HRC	Black Oxide







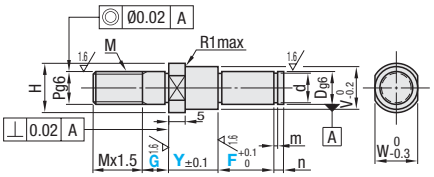
Part Number Type	No.	Dg6		1mm Increment Y	F	G	ⓟN	Pg6	M (Coarse Thread)	H	W	d Ref. Dims.	d Tolerance	m	n	€ Unit Price Thread Length Fixed FXCA	PFXCA	SFXCA	HFXCA	Thread Length Configurable FXNCA	PFXNCA	SFXNCA
	3	3	-0.002 -0.008	2~30	3~50	3~8	3~6	3	M 3	7	5	2	+0.060 0	0.5	2							
	4	4	-0.004 -0.012				4~8	4	M 4	8	6	3										
	5	5					5~10	5	M 5	9	7	4	+0.075 0	0.7								
	6	6			5~100	5~10	6~12	6	M 6	10	8	5										
Thread Length Fixed	8	8	-0.005 -0.014				8~16	8	M 8	12	10	7	+0.090 0	0.9	3							
FXCA PFXCA SFXCA HFXCA (D≥6)	10	10					10~20	10	M10	15	13	9.6	0 -0.090	1.15								
	12	12	-0.006 -0.017	2~60	10~150	5~15	12~24	12	M12	17	14	11.5	0 -0.110		4							
	13	13								18	15	12.4										
	15	15								20	17	14.3										
	16	16								21	18	15.2										
Thread Length Configurable	17	17				5~20				23	20	16.2										
	18	18										17										
FXNCA PFXNCA SFXNCA	20	20	-0.007 -0.020	4~75			20~40	20	M20	26	24	19	0 -0.210	1.35	5							
	20A							16	M16													
	22	22						20	M20	28	25	21										
	22A							16	M16													
	25	25						20	M20	31	27	23.9										
	25A							16	M16													
	30	30						20	M20	36	32	28.6		1.65								
	30A							16	M16													

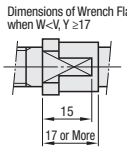
ⓟ HFXCA is applicable to D6 or larger specifications. ⓟ N is available for Thread Length Configurable Type only.

■Stepped RoHS



Type	Material	Surface Treatment
FXDA	1.1191/C45E	Black Oxide
PFXDA		Electroless Nickel Plating
SFXDA	1.4301/X5CrNi18-10	-





Part Number Type	No.	Dg6		1mm Increment Y	F	G	Pg6	M (Coarse Thread)	V	H	W	d Ref. Dims.	d Tolerance	m	n	€ Unit Price FXDA	PFXDA	SFXDA
	3	3	-0.002 -0.008	7~30	3~50	3~8	3	M 3	5	7	5	2	+0.060 0	0.5	2			
	4	4	-0.004 -0.012				4	M 4	6	8	6	3						
	5	5					5	M 5	7	9	7	4	+0.075 0	0.7				
	6	6		7~60	5~100	5~10	6	M 6	8	10	8	5						
	8	8	-0.005 -0.014				8	M 8	10	12	10	7	+0.090 0	0.9	3			
	10	10					10	M10	13	15	13	9.6	0 -0.090	1.15				
FXDA	12	12	-0.006 -0.017		10~100	5~15	12	M12	15	17	14	11.5	0 -0.110		4			
	13	13							16	18	15	12.4						
PFXDA	15	15							18	20	17	14.3						
	16	16							19	21	18	15.2						
SFXDA	17	17				5~20			20	23	20	16.2						
	18	18							21			17						
	20	20	-0.007 -0.020				20	M20	24	26	24	19	0 -0.210	1.35	5			
	20A						16	M16										
	22	22					20	M20	26	28	25	21						
	22A						16	M16										
	25	25					20	M20	29	31	27	23.9						
	25A						16	M16										
	30	30					20	M20	34	36	32	28.6		1.65				
	30A						16	M16										

ⓟ When W<V, width across flats W reaches outer diameter V.

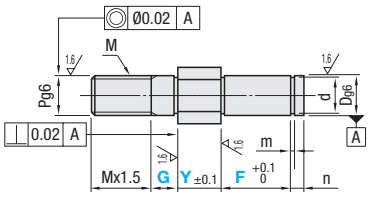
CAD Data

Hexagon RoHS

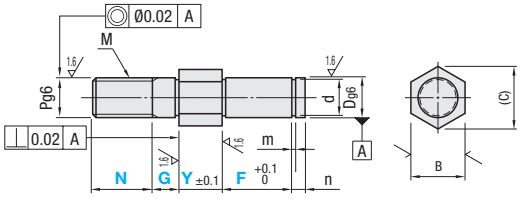


Type		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable		
LXCA	LXNCA	1.1191/C45E	Black Oxide
PLXCA	-		Electroless Nickel Plating
SLXCA	SLXNCA	1.4301/X5CrNi18-10	-

Thread Length Fixed



Thread Length Configurable



Part Number Type	No.	Dg6		1mm Increment Y	F	G	N	Pg6	M (Coarse Thread)	B	(C)	d Ref. Dims.	d Tolerance	m	n	€ Unit Price Thread Length Fixed LXCA	PLXCA	SLXCA	Thread Length Configurable LXNCA	SLXNCA
Thread Length Fixed LXCA PLXCA SLXCA	3	3	-0.002 -0.008	2~30	3~50	3~8	3~6	3	M 3	6	6.9	2	+0.060 0	0.5	2					
	4	4	-0.004 -0.012				4~8	4	M 4			3								
	5	5					5~10	5	M 5	7	8.1	4	+0.075 0	0.7						
	6	6					6~12	6	M 6	8	9.2	5								
	8	8	-0.005 -0.014		5~100	5~10	8~16	8	M 8	10	11.5	7	+0.090 0	0.9	3					
	10	10					10~20	10	M10	13	15.0	9.6	0 -0.090							
Thread Length Configurable LXNCA SLXNCA	12	12	-0.006 -0.017	2~60	10~100	5~15	12~24	12	M12	14	16.2	11.5	0 -0.110	1.15	4					
	13	13								17	19.6	12.4								
	15	15										14.3								
	16	16								19	21.9	15.2								
	17	17				5~20						16.2								
	18	18								24	27.7	17								
	20	20	-0.007 -0.020	4~60			20~40	20	M20			19	0 -0.210	1.35	5					
	20A							16	M16											
	22	22						20	M20			21								
	22A							16	M16											
	25	25						20	M20	27	31.2	23.9								
	25A							16	M16											
	30	30						20	M20	32	36.9	28.6		1.65						
	30A							16	M16											

N is available for Thread Length Configurable Type only.

Order Example

Part Number	-	Y	-	F	-	G	-	N
FXCA12	-	12	-	F15	-	G6		
LXNCA20	-	25	-	F30	-	G10	-	N40

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Express Serviceis not available for HFXCA.

Price

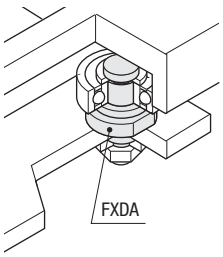
Volume Discount (Round down to one Cent.) P.87

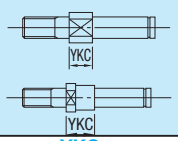
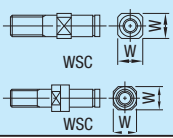
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	Y	-	F	-	G	-	N	- (YKC · WSC · SET)
FXCA25	-	30	-	F15	-	G8			- YKC

Example



Alterations	Y Dimension Tolerance	Four Wrench Flats	Retaining Ring Set
			
Code	YKC	WSC	SET
Spec.	Changes Y dimension tolerance to±0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the stand-ard / stepped types. Ordering Code WSC	Attaches a retaining ring to each applicable shaft diameter. Ordering Code SET Applicable to all types. Retaining Ring Shape No.=3~8A: E Type Retaining Ring No.=3~8A: E Type Retaining Ring Retaining Ring Material
Price Adder	4,00	4,00	2,50

Cantilever Shafts		Retaining Ring
Material	Surface Treatment	Material
1.1191/C45E	Black Oxide	Spring Steel
	Electroless Nickel Plating	1.4301-CSP
1.4301/X5CrNi18-10	-	
1.7220/34CrMo4	Black Oxide	Spring Steel
	Electroless Nickel Plating	1.4301-CSP

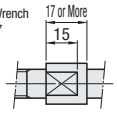
Cantilever Shafts

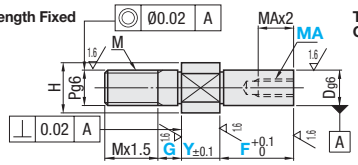
-Pilot - Male Thread with Female Thread End-

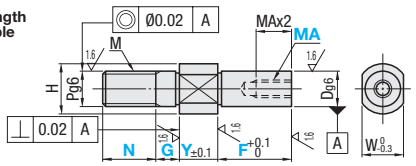
■Standard RoHS



Type		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable		
FXCB	FXNCB	1.1191/C45E	Black Oxide
PFXCB	PFXNCB		Electroless Nickel Plating
SFXCB	-	1.4301/X5CrNi18-10	-







Please refer to Table 1 to specify dimensions Y and F.

Part Number Type	No.	Dg6		1mm Increment Y	F	G	N	MA (Coarse) Selection	Pg6	M (Coarse Thread)	H	W	€ Unit Price Thread Length Fixed FXCB	PFXCB	SFXCB	Thread Length Configurable FXNCB	PFXNCB
	6	6	-0.004 -0.012	2~60	5~100	5~10	6~12	3	6	M 6	10	8					
	8	8	-0.005 -0.014				8~16	4	8	M 8	12	10					
Thread	10	10					10~20	4 5 6	10	M10	15	13					
Length	12	12	-0.006 -0.017		10~120	5~15	12~24	5 6 8	12	M12	17	14					
Fixed	13	13									18	15					
FXCB	15	15									20	17					
PFXCB	16	16						6 8 10			21	18					
SFXCB	17	17				5~20					23	20					
	18	18															
Thread	20	20	-0.007 -0.020	4~60			20~40	6 8 10 12	20	M20	26	24					
Length	20A								16	M16							
Configurable	22	22							20	M20	28	25					
FXNCB	22A								16	M16							
PFXNCB	25	25						8 10 12 16	20	M20	31	27					
	25A								16	M16							
	30	30						8 10 12 16 20	20	M20	36	32					
	30A								16	M16							

N is available for Thread Length Configurable Type only.

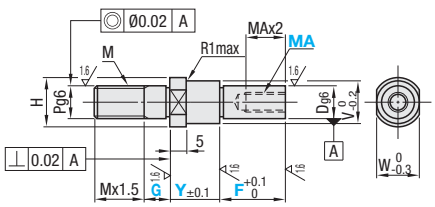
Table 1

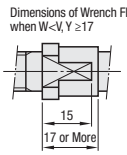
MA	Y+F
M 3	Y+F≥11.5
M 4	Y+F≥14.0
M 5	Y+F≥16.2
M 6	Y+F≥18.5
M 8	Y+F≥23.5
M10	Y+F≥28.5
M12	Y+F≥35.5
M16	Y+F≥45.0
M20	Y+F≥55.0

■Stepped RoHS



Type	Material	Surface Treatment
FXDB	1.1191/C45E	Black Oxide
PFXDB		Electroless Nickel Plating





Please refer to Table 1 to specify dimensions Y and F.

Part Number Type	No.	Dg6		1mm Increment Y	F	G	MA (Coarse) Selection	Pg6	M (Coarse Thread)	V	H	W	€ Unit Price FXDB	PFXDB
	6	6	-0.004 -0.012	7~60	5~100	5~10	3	6	M 6	8	10	8		
	8	8	-0.005 -0.014				4	8	M 8	10	12	10		
	10	10					4 5 6	10	M10	13	15	13		
	12	12	-0.006 -0.017		10~100	5~15	5 6 8	12	M12	15	17	14		
	13	13								16	18	15		
	15	15								18	20	17		
	16	16					6 8 10			19	21	18		
FXDB	17	17				5~20				20	23	20		
PFXDB	18	18								21				
	20	20	-0.007 -0.020				6 8 10 12	20	M20	24	26	24		
	20A							16	M16					
	22	22						20	M20	26	28	25		
	22A							16	M16					
	25	25					8 10 12 16	20	M20	29	31	27		
	25A							16	M16					
	30	30					8 10 12 16 20	20	M20	34	36	32		
	30A							16	M16					

Table 1

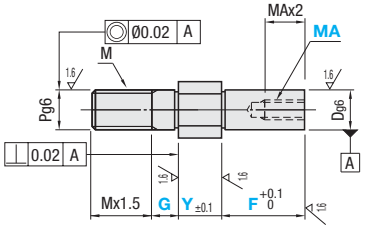
MA	Y+F
M 3	Y+F≥11.5
M 4	Y+F≥14.0
M 5	Y+F≥16.2
M 6	Y+F≥18.5
M 8	Y+F≥23.5
M10	Y+F≥28.5
M12	Y+F≥35.5
M16	Y+F≥45.0
M20	Y+F≥55.0

When W<V, width across flats W reaches outer diameter V.

Hexagon RoHS



Type	M Material	S Surface Treatment
PLXCB	1.1191/C45E	Electroless Nickel Plating



Please refer to Table 1 to specify dimensions Y and F.

Part Number Type	No.	Dg6		1mm Increment Y	F	G	MA (Coarse) Selection	Pg6	M (Coarse Thread)	B	(C)	€ Unit Price
PLXCB	6	6	-0.004 -0.012	2~60	5~100	5~10	3	6	M 6	8	9.2	
	8	8	-0.005 -0.014				4	8	M 8	10	11.5	
	10	10					4 5 6	10	M10	13	15.0	
	12	12	-0.006 -0.017		10~150	5~15	5 6 8	12	M12	14	16.2	
	13	13								17	19.6	
	15	15					6 8 10					
	16	16								19	21.9	
	17	17				5~20						
	18	18								24	27.7	
	20	20	-0.007 -0.020	4~60			6 8 10 12	20	M20			
	20A							16	M16			
	22	22						20	M20			
	22A							16	M16			
	25	25					8 10 12 16	20	M20	27	31.2	
	25A							16	M16			
	30	30					8 10 12 16 20	20	M20	32	36.9	
	30A							16	M16			

Table 1

MA	Y+F
M 3	Y+F≥11.5
M 4	Y+F≥14.0
M 5	Y+F≥16.2
M 6	Y+F≥18.5
M 8	Y+F≥23.5
M10	Y+F≥28.5
M12	Y+F≥35.5
M16	Y+F≥45.0
M20	Y+F≥55.0

Order Example

Part Number	-	Y	-	F	-	G	-	N	-	MA
FXCB8	-	15	-	F25	-	G5			-	MA4
PFXNCB10	-	27	-	F10	-	G5	-	N10	-	MA5

Days to Ship: 8 Days

Express A — 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

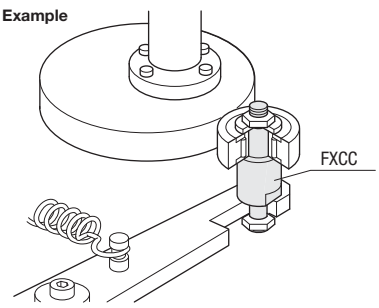
Volume Discount (Round down to one Cent.) P.87

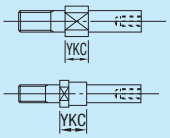
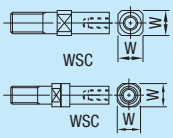
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	Y	-	F	-	G	-	N	-	MA	-	(YKC · WSC)
FXCB15	-	10	-	F21	-	G7			-	MA6	-	WSC

Example



Alterations	Y Dimension Tolerance	Four Wrench Flats
		
Code	YKC	WSC
Spec.	Changes Y dimension tolerance to± 0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the standard / stepped types. Ordering Code WSC
Price Adder	4,00	4,00

Cantilever Shafts

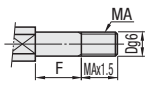
-Pilot · Male Thread with Male Thread Ends-

■Standard RoHS

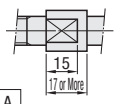


Type		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable		
FXCC	FXNCC	1.1191/C45E	Black Oxide
PFXCC	-		Electroless Nickel Plating

When D=MA

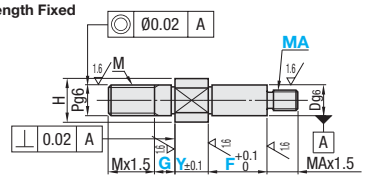


Dimensions of Wrench Flats when Y≥17

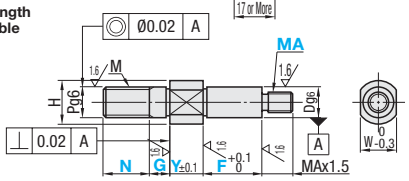




Thread Length Fixed



Thread Length Configurable



Refer to the table on P.758 for thread undercut dimensions.

Part Number Type	No.	Dg6		1mm Increment Y	F	G	N	MA (Coarse) Selection	Pg6	M (Coarse Thread)	H	W	€ Unit Price Thread Length Fixed FXCC	PFXCC	Thread Length Configurable FXNCC
	3	3	-0.002 -0.008	2~30	3~ 50	3~ 8	3~ 6	3	3	M 3	7	5			
	4	4	-0.004 -0.012				4~ 8	3 4	4	M 4	8	6			
	5	5					5~10	3 4 5	5	M 5	9	7			
	6	6			5~100	5~10	6~12	4 5 6	6	M 6	10	8			
	8	8	-0.005 -0.014				8~16	5 6 8	8	M 8	12	10			
	10	10					10~20	6 8 10	10	M10	15	13			
Thread Length Fixed	12	12	-0.006 -0.017	2~60	10~150	5~15	12~24	6 8 10 12	12	M12	17	14			
	13	13									18	15			
FXCC	15	15						8 10 12 (15)			20	17			
PFXCC	16	16									21	18			
	17	17				5~20		10 12 (15) 16			23	20			
Thread Length Configurable	18	18													
FXNCC	20	20	-0.007 -0.020	4~60			20~40	10 12 (15) 16 20	20	M20	26	24			
	20A								16	M16					
	22	22							20	M20	28	25			
	22A								16	M16					
	25	25						10 12 (15) 16 20 24 (25)	20	M20	31	27			
	25A								16	M16					
	30	30						12 (15) 16 20 24 (25) 30	20	M20	36	32			
	30A								16	M16					

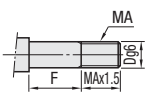
MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA. N is available for Thread Length Configurable Type only.

■Stepped RoHS

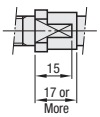


Type	Material	Surface Treatment
FXDC	1.1191/C45E	Black Oxide
PFXDC		Electroless Nickel Plating
SFXDC	1.4301/X5CrNi18-10	-

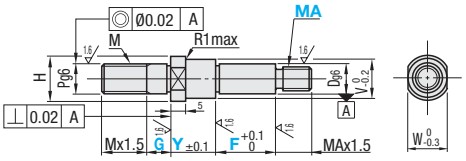
When D=MA



Dimensions of Wrench Flats when W<V, Y ≥17







Refer to the table on P.758 for thread undercut dimensions.

Part Number Type	No.	Dg6		1mm Increment Y	F	G	MA (Coarse) Selection	Pg6	M (Coarse Thread)	V	H	W	€ Unit Price FXDC	PFXDC	SFXDC
	3	3	-0.002 -0.008	7~30	3~ 50	3~ 8	3	3	M3	5	7	5			
	4	4	-0.004 -0.012				3 4	4	M4	6	8	6			
	5	5					3 4 5	5	M5	7	9	7			
	6	6	-0.005 -0.014	7~60	5~75	5~10	4 5 6	6	M6	8	10	8			
	8	8					5 6 8	8	M8	10	12	10			
	10	10					6 8 10	10	M10	13	15	13			
FXDC	12	12	-0.006 -0.017		10~75	5~15	6 8 10 12	12	M12	15	17	14			
	13	13								16	18	15			
PFXDC	15	15					8 10 12 (15)			18	20	17			
	16	16								19	21	18			
SFXDC	17	17				5~20	10 12 (15) 16			20	23	20			
	18	18								21					
	20	20	-0.007 -0.020	7~60			10 12 (15) 16 20	20	M20	24	26	24			
	20A							16	M16						
	22	22						20	M20	26	28	25			
	22A							16	M16						
	25	25					10 12 (15) 16 20 24 (25)	20	M20	29	31	27			
	25A							16	M16						
	30	30					12 (15) 16 20 24 (25) 30	20	M20	34	36	32			
	30A							16	M16						

MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA. When W<V, width across flats W reaches outer diameter V.

CAD Data

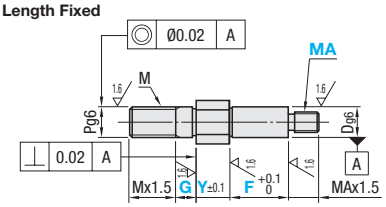
Hexagon RoHS

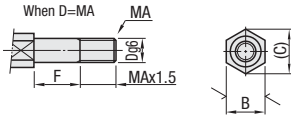


Type	Material	Surface Treatment
LXCC	1.1191/C45E	Black Oxide

6.3 (1.6)

Thread Length Fixed





Refer to the table below for thread undercut dimensions.

Part Number Type	No.	Dg6	1mm Increment Y	F	G	MA (Coarse) Selection	Pg6	M (Coarse Thread)	B	(C)	€ Unit Price LXCC
LXCC	3	3 -0.002 -0.008	2~30	3~50	3~8	3	3	M 3	6	6.9	
	4	4 -0.004 -0.012				3 4	4	M 4			
	5	5				3 4 5	5	M 5	7	8.1	
	6	6		5~75	5~10	4 5 6	6	M 6	8	9.2	
	8	8 -0.005 -0.014				5 6 8	8	M 8	10	11.5	
	10	10				6 8 10	10	M10	13	15.0	
	12	12	2~60	10~75	5~15	6 8 10 12	12	M12	14	16.2	
	13	13							17	19.6	
	15	15 -0.006 -0.017				8 10 12 (15)					
	16	16							19	21.9	
	17	17			5~20	10 12 (15) 16					
	18	18							24	27.7	
	20	20	4~60			10 12 (15) 16 20	20	M20			
	20A						16	M16			
	22	22 -0.007 -0.020					20	M20			
	22A						16	M16			
	25	25				10 12 (15) 16 20 24 (25)	20	M20	27	31.2	
	25A						16	M16			
	30	30				12 (15) 16 20 24 (25) 30	20	M20	32	36.9	
	30A						16	M16			

MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA.

Order Example

Part Number	-	Y	-	F	-	G	-	N	-	MA
FXCC8	-	15	-	F25	-	G5			-	MA5
FXNCC10	-	27	-	F10	-	G5	-	N10	-	MA6

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

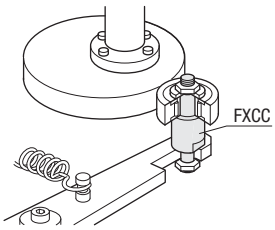
Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

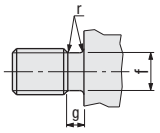
Alterations

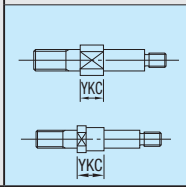
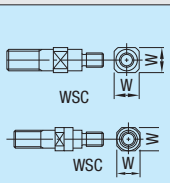
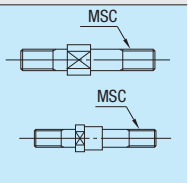
Part Number	-	Y	-	F	-	G	-	N	-	MA (MSC)	-	(YKC · WSC)
FXCC15	-	10	-	F21	-	G7			-	MSC15	-	WSC

Example



Male Thread Relief Dimensions



Alterations	Y Dimension Tolerance	Four Wrench Flats	Fine Thread
			
Code	**YKC**	**WSC**	**MSC**
Spec.	Changes Y dimension tolerance to±0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the standard · stepped types. Ordering Code WSC	Changes Thread MA to Fine Thread in the table below. Applicable to all types. Specify MSC instead of MA. Ordering Code MSC12
Price Adder	4,00	4,00	Free of Charge

MSC	Pitch	MSC	Pitch
M 3	0.35	M12	1.0
M 4	0.5	M15	
M 5		M20	
M 6	0.75	M25	1.5
M 8	1.0	M30	
M10			

Coarse Thread Thread Dia. (M · MA)	g	r	f	Fine Thread Thread Dia. (MSC)	g	r	f
3	1.2~1.5	0.2~0.3	2.1~ 2.4	3	1.2~1.5	0.2~0.3	2.1~2.4
4			2.9~ 3.2	4			2.9~3.2
5			3.9~ 4.1	5			3.9~4.1
6	1.5~2.5	0.2~0.6	4.3~ 4.9	6	1.5~2.5	0.2~0.6	4.3~4.9
8			6.3~ 6.6	8			6.3~6.6
10			8.1~ 8.3	10			8.3~8.6
12	1.5~3.0	0.2~1.0	9.8~10.1	12	1.5~3.0	0.2~1.0	9.8~10.7
16			13.6~13.8	15			13.6~13.8
20	1.5~4.0		17.0~17.2	20	1.5~4.0		17.2~18.8
24	2.5~5.0	0.2~1.5	20.2~20.7	25	2.5~5.0	0.2~1.5	20.2~23.2
30			26.0~26.2	30			26.2~28.2

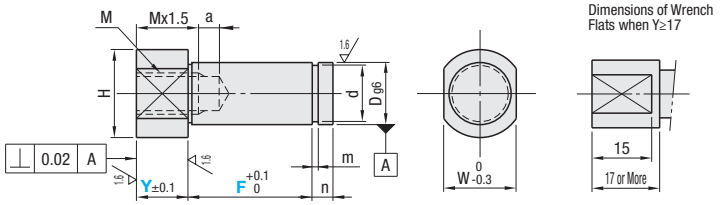
Cantilever Shafts

-Screw Mount with Retaining Ring Groove-

■Standard RoHS



Type	Material	Surface Treatment
FXHA	1.1191/C45E	Black Oxide
PFXHA		Electroless Nickel Plating
SFXHA	1.4301/X5CrNi18-10	-



Part Number Type	No.	Dg6		1mm Increment Y	F	M (Coarse Thread)	H	W	d Ref. Dims.	d Tolerance	m	n	€ Unit Price FXHA	PFXHA	SFXHA
FXHA PFXHA SFXHA	6	6	-0.004 -0.012	2~60	5~100	M 3	10	8	5	+0.075 0	0.7	2			
	8	8	-0.005 -0.014			M 4	12	10	7	+0.090 0	0.9	3			
	10	10				M 6	15	13	9.6	0 -0.090	1.15				
	12	12	-0.006 -0.017		10~150	M 8	17	14	11.5	0 -0.110		4			
	13	13					18	15	12.4						
	15	15				M10	20	17	14.3						
	16	16					21	18	15.2						
	17	17					23	20	16.2						
	18	18							17						
	20	20	-0.007 -0.020	4~75		M12	26	24	19	0 -0.210	1.35	5			
	22	22				M16	28	26	21						
	25	25					31	27	23.9						
	25A					M12									
	30	30				M20	36	32	28.6		1.65				
	30A					M16									

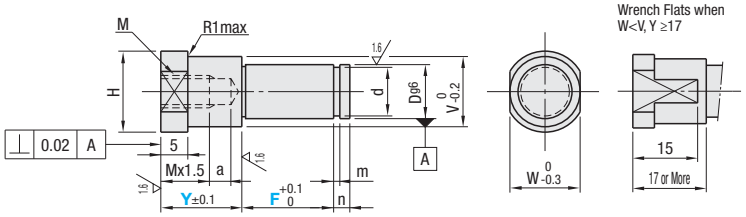
M	a
M 3~M10	5
M12~M20	7

When (Mx1.5)+a≥ Y+F, the pilot hole for M goes through. When Mx1.5 ≥Y+F, M goes through, too.

■Stepped RoHS



Type	Material	Surface Treatment
FXJA	1.1191/C45E	Black Oxide
PFXJA		Electroless Nickel Plating
SFXJA	1.4301/X5CrNi18-10	-



Part Number Type	No.	Dg6		1mm Increment Y	F	M (Coarse Thread)	a	V	H	W	d Ref. Dims.	d Tolerance	m	n	€ Unit Price FXJA	PFXJA	SFXJA
FXJA PFXJA SFXJA	6	6	-0.004 -0.012	7~60	5~100	M 3	5	8	10	8	5	+0.075 0	0.7	2			
	8	8	-0.005 -0.014			M 4		10	12	10	7	+0.090 0	0.9	3			
	10	10				M 6		13	15	13	9.6	0 -0.090	1.15				
	12	12	-0.006 -0.017		10~100	M 8		15	17	14	11.5	0 -0.110		4			
	13	13						16	18	15	12.4						
	15	15				M10		18	20	17	14.3						
	16	16						19	21	18	15.2						
	17	17						20	23	20	16.2						
	18	18						21			17						
	20	20	-0.007 -0.020	7~75		M12	7	24	26	24	19	0 -0.210	1.35	5			
	22	22						26	28	26	21						
	25	25				M16		29	31	27	23.9						
	25A					M12											
	30	30				M20		34	36	32	28.6		1.65				
	30A					M16											

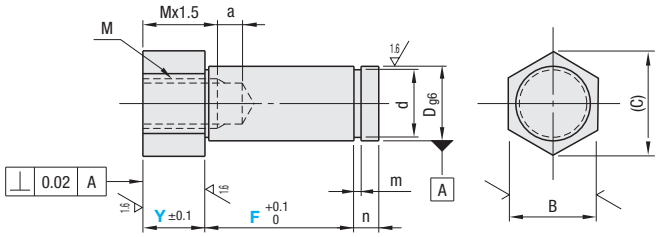
When W<V, width across flats W reaches outer diameter V. When (Mx1.5)+a≥Y+F, the pilot hole for M goes through. When Mx1.5≥Y+F, M also goes through.

Hexagon

RoHS



Type	Material	Surface Treatment
LXHA	1.1191/C45E	Black Oxide
PLXHA		Electroless Nickel Plating



Part Number Type	No.	D_{g6}		1mm Increment Y	1mm Increment F	M (Coarse Thread)	a	B	(C)	d Ref. Dims.	d Tolerance	m	n	€ Unit Price LXHA	€ Unit Price PLXHA
LXHA PLXHA	6	6	-0.004 -0.012	2~60	5~100	M 3	5	8	9.2	5	+0.075 0	0.7	2		
	8	8	-0.005 -0.014			M 4		10	11.5	7	+0.090 0	0.9	3		
	10	10				M 6		13	15.0	9.6	0 -0.090	1.15			
	12	12	-0.006 -0.017		10~150	M 8		14	16.2	11.5	0 -0.110		4		
	13	13						17	19.6	12.4					
	15	15				M10				14.3					
	16	16						19	21.9	15.2					
	17	17								16.2					
	18	18						24	27.7	17		1.35			
	20	20	-0.007 -0.020	4~75		M12	7			19	0 -0.210		5		
	22	22								21					
	25	25				M16		27	31.2	23.9					
	25A					M12									
	30	30				M20		32	36.9	28.6		1.65			
	30A					M16									

When (Mx1.5)+a≥Y+F, the pilot hole for M goes through. When Mx1.5≥Y+F, M also goes through.

Order Example

Part Number	-	Y	-	F
FXHA12	-	5	-	F15
PLXHA10	-	20	-	F35

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

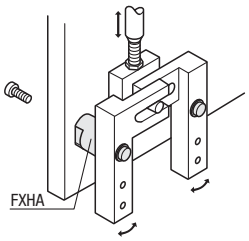
Volume Discount (Round down to one Cent.) P. 87

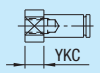
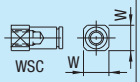
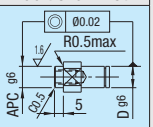
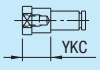
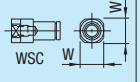
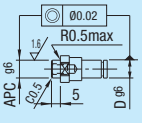
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	Y	-	F	-	(YKC / WSC / APC / SET)
FXHA15	-	20	-	F22	-	APC

Example



Alterations	Y Dimension Tolerance	Four Wrench Flats	Additional Pilot	Retaining Ring Set
				
				
Code	YKC	WSC	APC	SET
Spec.	Changes Y dimension tolerance to ±0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the standard / stepped types. Ordering Code WSC	Adds a pilot to the shaft seat. Applicable to all types. Ordering Code APC	Attaches a retaining ring to each applicable shaft diameter. Ordering Code SET Applicable to all types. Retaining Ring Shape No.=6, 8: E Type Retaining Ring No.=3~8A: E Type Retaining Ring Retaining Ring Material
Price Adder	4,00	4,00	6,00	2,50

D	M	APC Ø6
6	M 3	6
8	M 4	8
10	M 6	10
12	M 8	12
13		13
15	M10	15
16		16
17		17
18	M12	18
20		20
22		22
25	M16	25
25A	M12	
30	M20	30
30A	M16	

Cantilever Shafts		Retaining Ring
Material	Surface Treatment	Material
1.1191/C45E	Black Oxide	Spring Steel
	Electroless Nickel Plating	1.4301/ X5CrNi18-10-CSP
1.4301/ X5CrNi18-10	-	

Cantilever Shafts

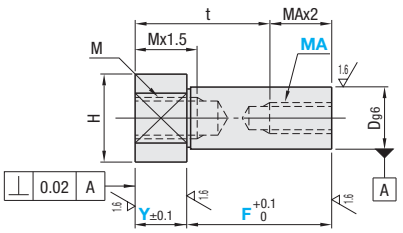
-Screw Mount · with Female Thread End-

■Standard

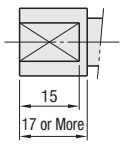
RoHS



Type	Material	Surface Treatment
FXHB	1.1191/C45E	Black Oxide
PFXHB		Electroless Nickel Plating
SFXHB	1.4301/X5CrNi18-10	-
PHFXHB	1.7220/34CrMo4 Hardness 35-40 HRC	Electroless Nickel Plating



Dimensions of Wrench Flats when Y≥17



Part Number Type	No.	Dg6		1mm Increment Y	1mm Increment F	MA (Coarse) Selection	M (Coarse Thread)	H	W	€ Unit Price FXHB	PFXHB	SFXHB	PHFXHB
FXHB PFXHB SFXHB PHFXHB	6	6	-0.004 -0.012	2~60	5~100	3	M 3	10	8				
	8	8	-0.005 -0.014			4	M 4	12	10				
	10	10				4 5 6	M 6	15	13				
	12	12	-0.006 -0.017		10~150	5 6 8	M 8	17	14				
	13	13						18	15				
	15	15				6 8 10	M10	20	17				
	16	16						21	18				
	17	17						23	20				
	18	18											
	20	20	-0.007 -0.020	4~75		6 8 10 12	M12	26	24				
	22	22					M16	28	26				
	25	25				8 10 12 16		31	27				
	25A						M12						
	30	30				8 10 12 16 20	M20	36	32				
	30A						M16						

D	M	t
6	M 3	11
8	M 4	12.5
10	M 6	14
12 / 13	M 8	17
15	M10	20
16		
17		
18		
20	M12	25
22		
25	M16	31
30	M20	37

Specify dimensions Y and F not to make the dimension "t" less than the values in the above table.

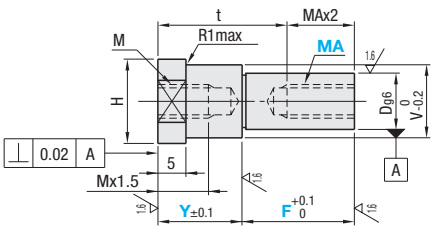
When the pilot hole interferes, it becomes a through hole.

■Stepped

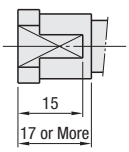
RoHS



Type	Material	Surface Treatment
FXJB	1.1191/C45E	Black Oxide
PFXJB		Electroless Nickel Plating



Dimensions of Wrench Flats when W<V, Y ≥17



Part Number Type	No.	Dg6		1mm Increment Y	1mm Increment F	MA (Coarse) Selection	M (Coarse Thread)	V	H	W	€ Unit Price FXJB	PFXJB
FXJB PFXJB	6	6	-0.004 -0.012	7~60	5~100	3	M 3	8	10	8		
	8	8	-0.005 -0.014			4	M 4	10	12	10		
	10	10				4 5 6	M 6	13	15	13		
	12	12	-0.006 -0.017		10~100	5 6 8	M 8	15	17	14		
	13	13						16	18	15		
	15	15				6 8 10	M10	18	20	17		
	16	16						19	21	18		
	17	17						20	23	20		
	18	18						21				
	20	20	-0.007 -0.020	7~60		6 8 10 12	M12	24	26	24		
	22	22						26	28	26		
	25	25				8 10 12 16	M16	29	31	27		
	25A						M12					
	30	30				8 10 12 16 20	M20	34	36	32		
	30A						M16					

D	M	t
6	M 3	11
8	M 4	12.5
10	M 6	14
12 · 13	M 8	17
15	M10	20
16		
17		
18		
20	M12	25
22		
25	M16	31
30	M20	37

Specify dimensions Y and F not to make the dimension "t" less than the values in the above table.

When the pilot hole interferes, it becomes a through hole.

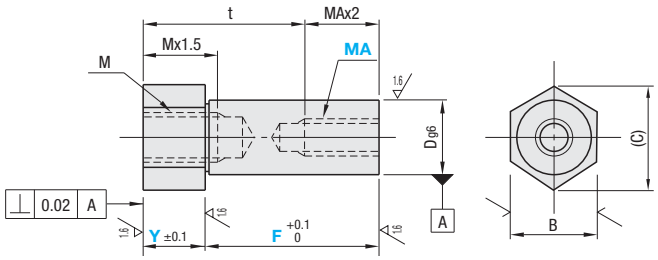
When W<V, width across flats W reaches outer diameter V.

Hexagon

RoHS



Type	M Material	S Surface Treatment
LXHB	1.1191/C45E	Black Oxide
SLXHB	1.4301/X5CrNi18-10	-



Part Number Type	No.	Dg6	1mm Increment Y	1mm Increment F	MA (Coarse) Selection	M (Coarse Thread)	B	(C)	€ Unit Price LXHB	€ Unit Price SLXHB
LXHB SLXHB	6	6 -0.004 -0.012	2~60	5~100	3	M 3	8	9.2		
	8	8 -0.005 -0.014			4	M 4	10	11.5		
	10	10			4 5 6	M 6	13	15.0		
	12	12 -0.006 -0.017		10~150	5 6 8	M 8	14	16.2		
	13	13					17	19.6		
	15	15			6 8 10	M10	19	21.9		
	16	16								
	17	17					24	27.7		
	18	18								
	20	20	4~60		6 8 10 12	M12				
	22	22								
	25	25 -0.007 -0.020			8 10 12 16	M16	27	31.2		
	25A					M12				
	30	30			8 10 12 16 20	M20	32	36.9		
	30A					M16				

D	M	t
6	M 3	11
8	M 4	12.5
10	M 6	14
12 / 13	M 8	17
15	M10	20
16		
17		
18		
20	M12	25
22		
25	M16	31
30	M20	37

Specify dimensions Y and F not to make the dimension "t" less than the values in the above table.

When the pilot hole interferes, it becomes a through hole.

Order Example

Part Number	-	Y	-	F	-	MA
FXHB20	-	17	-	F25	-	MA10
FXJB12	-	24	-	F18	-	MA6

Days to Ship

8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

⊗ Express Serviceis not available for PHFXHB.

Price

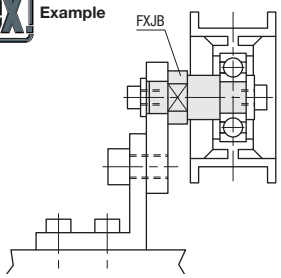
Volume Discount (Round down to one Cent.) P.87

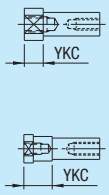
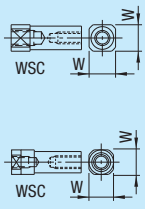
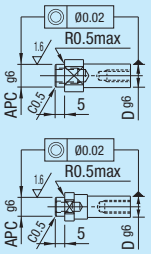
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	Y	-	F	-	MA	- (YKC · WSC · APC)
FXHB25	-	50	-	F32	-	MA10	- YKC- APC

Example



	Y Dimension Tolerance	Four Wrench Flats	Additional Pilot
Alterations			
Code	YKC	WSC	APC
Spec.	Changes Y dimension tolerance to±0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the standard · stepped types. Ordering Code WSC	Adds a pilot to the shaft seat. Applicable to all types. Ordering Code APC
Price Adder	4,00	4,00	6,00

D	M	APCg6
6	M 3	6
8	M 4	8
10	M 6	10
12	M 8	12
13		13
15	M10	15
16		16
17		17
18		18
20	M12	20
22		22
25	M16	25
25A	M12	
30	M20	30
30A	M18	

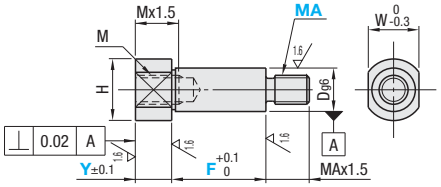
Cantilever Shafts

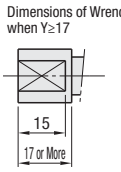
-Screw Mount with Male Thread End-

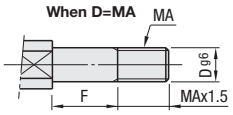
■Standard RoHS



Type	Material	Surface Treatment
FXHC	1.1191/C45E	Black Oxide
SFXHC	1.4301/X5CrNi18-10	-







Please refer to Table 1 to specify dimensions Y and F.
Refer to the table on P.758 for thread undercut dimensions.

Part Number Type	No.	D_{g6}		1mm Increment Y	1mm Increment F	MA (Coarse) Selection	M (Coarse Thread)	H	W	€ Unit Price FXHC	€ Unit Price SFXHC
FXHC SFXHC	6	6	-0.004 -0.012	2~60	5~100	4 5 6	M3	10	8		
	8	8	-0.005 -0.014			5 6 8	M4	12	10		
	10	10				6 8 10	M6	15	13		
	12	12	-0.006 -0.017		10~150	6 8 10 12	M8	17	14		
	13	13						18	15		
	15	15				8 10 12 (15)	M10	20	17		
	16	16						21	18		
	17	17				10 12 (15) 16		23	20		
	18	18									
	20	20		4~75		10 12 (15) 16 20	M12	26	24		
	22	22					M16	28	26		
	25	25	-0.007 -0.020			10 12 (15) 16 20 24 (25)		31	27		
	25A						M12				
	30	30				12 (15) 16 20 24 (25) 30	M20	36	32		
	30A						M16				

Table 1

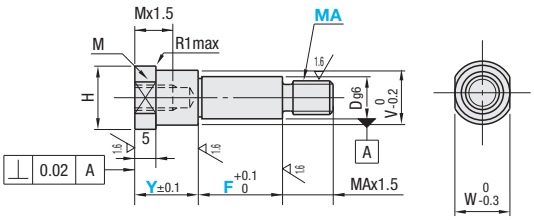
M	Y+F
M3	Y+F≥10
M4	Y+F≥12
M6	Y+F≥15.5
M8	Y+F≥19.5
M10	Y+F≥23.5
M12	Y+F≥29.5
M16	Y+F≥37
M20	Y+F≥45

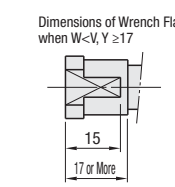
MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA.

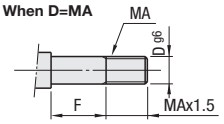
■Stepped RoHS



Type	Material	Surface Treatment
FXJC	1.1191/C45E	Black Oxide







Please refer to Table 1 to specify dimensions Y and F.
Refer to the table on P.758 for thread undercut dimensions.

Part Number Type	No.	D_{g6}		1mm Increment Y	1mm Increment F	MA (Coarse) Selection	M (Coarse Thread)	V	H	W	€ Unit Price FXJC
FXJC	6	6	-0.004 -0.012	7~60	5~75	4 5 6	M3	8	10	8	
	8	8	-0.005 -0.014			5 6 8	M4	10	12	10	
	10	10				6 8 10	M6	13	15	13	
	12	12	-0.006 -0.017		10~75	6 8 10 12	M8	15	17	14	
	13	13						16	18	15	
	15	15				8 10 12 (15)	M10	18	20	17	
	16	16						19	21	18	
	17	17				10 12 (15) 16		20	23	20	
	18	18						21			
	20	20				10 12 (15) 16 20	M12	24	26	24	
	22	22						26	28	26	
	25	25	-0.007 -0.020			10 12 (15) 16 20 24 (25)	M16	29	31	27	
	25A						M12				
	30	30				12 (15) 16 20 24 (25) 30	M20	34	36	32	
	30A						M16				

Table 1

M	Y+F
M3	Y+F≥10
M4	Y+F≥12
M6	Y+F≥15.5
M8	Y+F≥19.5
M10	Y+F≥23.5
M12	Y+F≥29.5
M16	Y+F≥37
M20	Y+F≥45

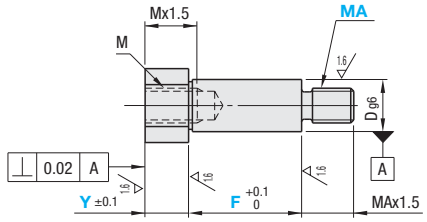
MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA.
When W<V, width across flats W reaches outer diameter V.

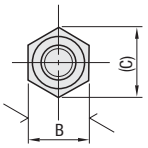
Hexagon

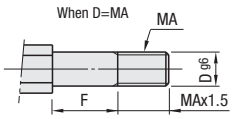
RoHS



Type	Material	Surface Treatment
LXHC	1.1191/C45E	Black Oxide







Please refer to Table 1 to specify dimensions Y and F.
Refer to the table below for thread undercut dimensions.

Part Number Type	No.	D_{g6}		1mm Increment Y	1mm Increment F	MA (Coarse) Selection	M (Coarse Thread)	B	(C)	€ Unit Price LXHC
LXHC	6	6	-0.004 -0.012	2~60	5~100	4 5 6	M3	8	9.2	
	8	8	-0.005 -0.014			5 6 8	M4	10	11.5	
	10	10				6 8 10	M6	13	15.0	
	12	12	-0.006 -0.017		10~100	6 8 10 12	M8	14	16.2	
	13	13						17	19.6	
	15	15				8 10 12 (15)	M10			
	16	16						19	21.9	
	17	17				10 12 (15) 16				
	18	18						24	27.7	
	20	20	-0.007 -0.020	4~60		10 12 (15) 16 20	M12			
	22	22								
	25	25				10 12 (15) 16 20 24 (25)	M16	27	31.2	
	25A						M12			
	30	30				12 (15) 16 20 24 (25) 30	M20	32	36.9	
	30A						M16			

Table 1

M	Y+F
M3	Y+F≥10
M4	Y+F≥12
M6	Y+F≥15.5
M8	Y+F≥19.5
M10	Y+F≥23.5
M12	Y+F≥29.5
M16	Y+F≥37
M20	Y+F≥45

MA dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of MA.

Order Example

Part Number	-	Y	-	F	-	MA
FXHC12	-	5	-	F15	-	MA8
LXHC10	-	20	-	F35	-	MA6

Days to Ship 8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

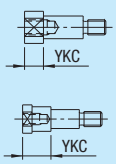
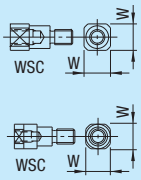
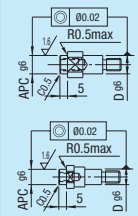
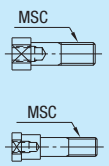
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

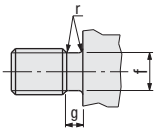
Part Number	-	Y	-	F	-	MA (MSC)	-	(YKC · WSC · APC)
FXHC15	-	20	-	F22	-	MSC15	-	APC

	Y Dim. Tolerance	Four Wrench Flats	Additional Pilot	Fine Thread
Alterations				
Code	YKC	WSC	APC	MSC
Spec.	Changes Y dimension tolerance to ±0.05. Applicable to all types. Ordering Code YKC	Changes from two wrench flats to four wrench flats. Applicable to the standard / stepped types. Ordering Code WSC	Adds a pilot to the shaft seat. Applicable to all types. Ordering Code APC	Changes Thread MA to Fine Thread in the table below. Applicable to all types. Specify MSC instead of MA. Ordering Code MSC12
Price Adder	4,00	4,00	6,00	Free of Charge

D	M	APC 96
6	M3	6
8	M4	8
10	M6	10
12	M8	12
13		13
15	M10	15
16		16
17		17
18		18
20	M12	20
22		22
25	M16	25
25A	M12	
30	M20	30
30A	M16	

MSC	Pitch	MSC	Pitch
M4	0.5	M12	1.0
M5		M15	
M6	0.75	M20	1.5
M8	1.0	M25	
M10		M30	

Male Thread Relief Dimensions



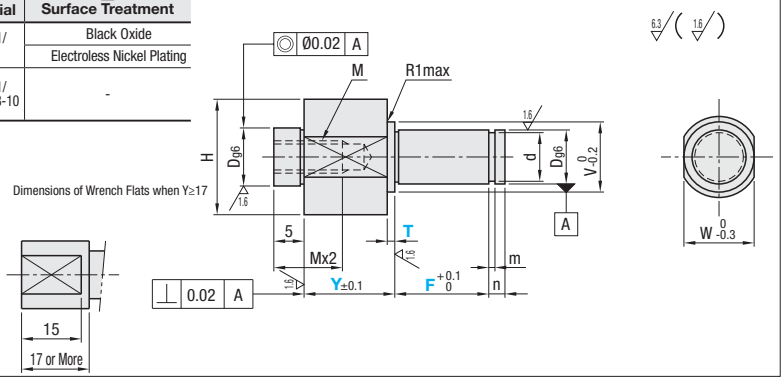
Coarse Thread Thread Ø (MA)	g	r	f	Fine Thread Thread Ø (MSC)	g	r	f
4	1.2~1.5	0.2~0.3	2.9~3.2	4	1.2~1.5	0.2~0.3	2.9~3.2
5			3.9~4.1	5			3.9~4.1
6	1.5~2.5	0.2~0.6	4.3~4.9	6	1.5~2.5	0.2~0.6	4.3~4.9
8			6.3~6.6	8			6.3~6.6
10			8.1~8.3	10			8.3~8.6
12	1.5~3.0	0.2~1.0	9.8~10.1	12	1.5~3.0	0.2~1.0	9.8~10.7
16			13.6~13.8	15			13.6~13.8
20	1.5~4.0		17.0~17.2	20	1.5~4.0		17.2~18.8
24	2.5~5.0	0.2~1.5	20.2~20.7	25	2.5~5.0	0.2~1.5	20.2~23.2
30			26.0~26.2	30			26.2~28.2

Cantilever Shafts
-Heavy Load-

Feature: This is the highly stable type with a tapped hole mounting on a large base.



Type	M Material	S Surface Treatment
FXMA	1.1191/ C45E	Black Oxide
PFXMA		Electroless Nickel Plating
SFXMA	1.4301/ X5CrNi18-10	-



Part Number Type	No.	Dg6		1mm Increment Y	1mm Increment F	Selection T	M Coarse	V	H	W	d Ref. Dims.	d Tolerance	m	n	€ Unit Price FXMA	€ Unit Price PFXMA	€ Unit Price SFXMA
FXMA PFXMA SFXMA	6	6	-0.004 -0.012	4~60	5~75	1 3 5	M3	8	14	12	5	+0.075 0	0.7	2			
	8	8	-0.005 -0.014				M4	10	17	14	7	+0.090 0	0.9	3			
	10	10				2 5 8	M6	13	21	18	9.6	0 -0.090	1.15				
	12	12	-0.006 -0.017		10~100		M8	15	24	21	11.5	0 -0.110		4			
	15	15						18	28	25	14.3						
	17	17						20	32	28	16.2						
	20	20	-0.007 -0.020	4~75				24	36	32	19	0 -0.120	1.35	5			
	25	25						29	43	38	23.9						
	30	30						34	50	44	28.6		1.65				

For the pilot hole depth≥Y+F+5, M has a through pilot hole. For Mx2≥Y+F+5, M is a through hole.

Order Example

Part Number	-	Y	-	F	-	T
FXMA20	-	20	-	F70	-	T5
SFXMA12	-	10	-	F100	-	T2

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

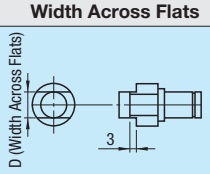
Alterations

Part Number	-	Y	-	F	-	T	-	(SET · SC)
PFXMA15	-	20	-	F60	-	T8	-	SET-SC

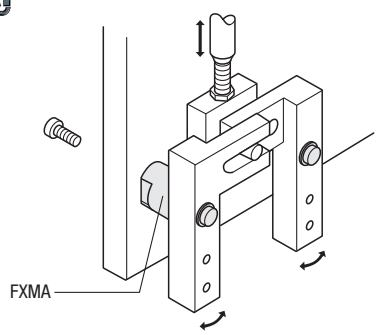
Alterations	Retaining Ring Set	Width Across Flats
Code	SET	SC
Spec.	Attaches a retaining ring to each applicable shaft diameter. Ordering Code SET Retaining Ring Shape No.=6, 8: E Type Retaining Ring No.10~30: C Type Retaining Ring Retaining Ring Material	An alteration of width across flats can be made for a slot hole guide. Ordering Code SC
Price Adder	2,50	4,00

Cantilever Shafts

Material	Surface Treatment	Retaining Ring Material
1.1191/C45E	Black Oxide	Spring Steel
	Electroless Nickel Plating	1.4301/ X5CrNi18-10
1.4301/ X5CrNi18-10	~	



Example

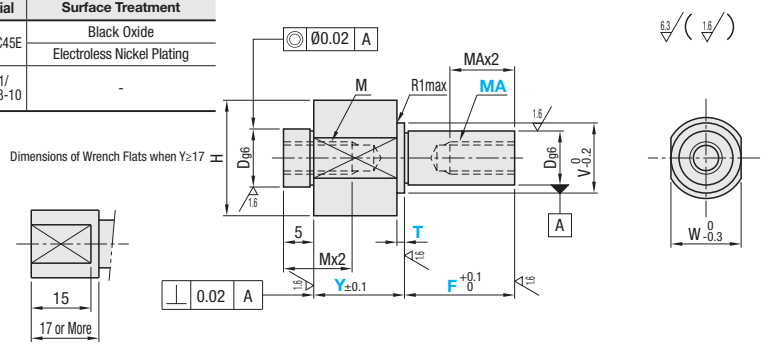


CAD Data

RoHS



Type	M Material	S Surface Treatment
FXMB	1.1191/C45E	Black Oxide
PFXMB		Electroless Nickel Plating
SFXMB	1.4301/ X5CrNi18-10	-



Part Number Type	No.	Dg6		1mm Increment Y	F	Selection T	MA (Coarse)	M Coarse	V	H	W	€ Unit Price FXMB	PFXMB	SFXMB
FXMB PFXMB SFXMB	6	6	-0.004 -0.012	4~60	5~75	1 3 5	3	M3	8	14	12			
	8	8	-0.005 -0.014				4	M4	10	17	14			
	10	10				2 5 8	4 5 6	M6	13	21	18			
	12	12	-0.006 -0.017		10~100		5 6 8	M8	15	24	21			
	15	15							18	28	25			
	17	17					6 8 10		20	32	28			
	20	20	-0.007 -0.020						24	36	32			
	25	25					8 10 12		29	43	38			
	30	30					8 10 12 16		34	50	44			

Tap Size	Effective Length	Pilot Hole Depth
M3	6	11
M4	8	14
M5	10	17
M6	12	20
M8	12	25
M10	20	29
M12	24	34
M16	32	44

Please select Y, F and T so that M and MA don't interfere with each other. When the pilot hole interferes, it goes through.

Order Example

Part Number	-	Y	-	F	-	T	-	MA
FXMB20	-	20	-	F70	-	T5	-	MA6
SFXMB12	-	10	-	F100	-	T2	-	MA6

Days to Ship

8 Days

Express A 8,00 EUR/ piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

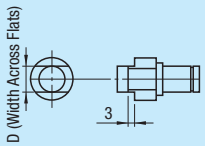
Price

Volume Discount (Round down to one Cent.) P. 87

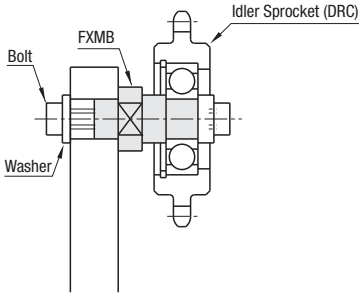
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	Y	-	F	-	T	-	MA	-	(SC)
PFXMB15	-	20	-	F60	-	T8	-	MA10	-	

Alterations	Width Across Flats
	
Code	SC
Spec.	An alteration of width across flats can be made for a slot hole guide. Ordering Code SC
Price Adder	4,00

Example

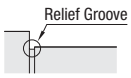


Cantilever Shafts
-Flanged-

■Retaining Ring RoHS



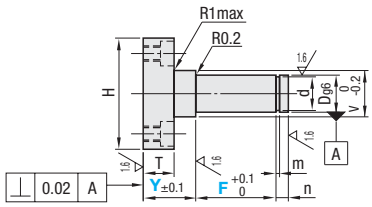
Type		Material	Surface Treatment
Round	Compact		
FXFA	FXEA	1.1191/C45E	Black Oxide
PFXFA	PFXEA		Electroless Nickel Plating
SFXFA	-	1.4301/ X5CrNi18-10	-



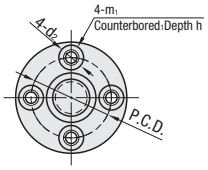


All types except FXFA and FXEA have an undercut groove at R0.2 step.

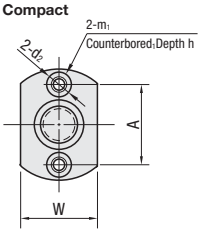
D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020
35~50	-0.009 -0.025



Round



Compact



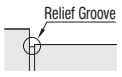
Part Number Type	No.	D	1mm Increment Y	F	V	H	T	m1	d1	d2	h	P.C.D.	D Tolerance	m	n	W	A	€ Unit Price Round FXFA	Round PFXFA	Round SFXFA	Compact FXEA	Compact PFXEA
	6	6			8	26						17				14	17					
	6A					32		M 4	6.5	3.5	3.5	23	5 +0.075 0	0.7	2	-	-					
	8	8		5~100	10	28						19				15	19					
	8A					36		M 5	8	4.3	4.4	26	7 +0.090 0	0.9	3	-	-					
	10	10			13	32		M 4	6.5	3.5	3.5	23				16	23					
	10A					40						30	9.6 0 -0.090			-	-					
Round FXFA PFXFA SFXFA	12	12	12~60		15	36	10					26	11.5	1.15	4	20	26					
	13	13			16	38						27	12.4			22	27					
	15	15			18	40		M 5	8	4.3	4.4	30	14.3 0 -0.110			24	30					
	16	16			19	42						31	15.2			25	31					
Compact FXEA PFXEA	17	17			20	44						32	16.2			28	32					
	18	18			21	46						34	17			31	34					
	20	20		10~150	24	48						36	19	1.35		32	36					
	22	22			26	50		M 6	9.5	5.2	5.4	39	21 0 -0.210		5	34	39					
	25	25	17~75		29	54						42	23.9			38	42					
	30	30			34	62	15					49	28.6			42	49					
	35	35			39	70		M 8	11	6.8	6.5	55	33	1.65		50	55					
	40	40	20~75		44	80		M10	14	8.6	9	63	38 0 -0.250	1.9		56	63					
	50	50			54	90						73	47	2.2		70	73					

Mounting holes are tapped and counterbored to allow mounting from either the front or the back side.

■Screw Mount RoHS



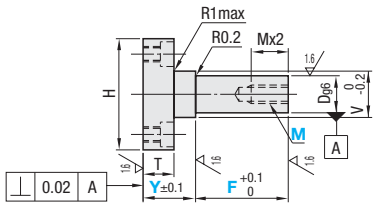
Type		Material	Surface Treatment
Round	Compact		
FXFB	FXEB	1.1191/C45E	Black Oxide
PFXFB	PFXEB		Electroless Nickel Plating
SFXFB	-	1.4301/ X5CrNi18-10	-



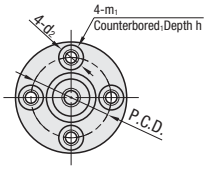


All types except FXFB and FXEB have an undercut groove at R0.2 step.

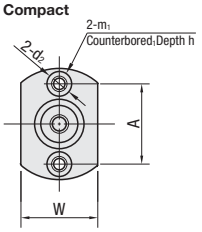
D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020
35~50	-0.009 -0.025



Round



Compact



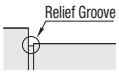
Part Number Type	No.	D	1mm Increment Y	F	M (Coarse) Selection	V	H	T	m1	d1	d2	h	P.C.D.	W	A	€ Unit Price Round FXFB	Round PFXFB	Round SFXFB	Compact FXEB	Compact PFXEB
	6	6			3	8	26						17	14	17					
	6A						32		M 4	6.5	3.5	3.5	23	-	-					
	8	8		5~100	4	10	28						19	15	19					
	8A						36		M 5	8	4.3	4.4	26	-	-					
	10	10			4 5 6	13	32		M 4	6.5	3.5	3.5	23	16	23					
	10A						40						30	-	-					
Round FXFB PFXFB SFXFB	12	12	12~60			15	36	10					26	20	26					
	13	13			5 6 8		16						27	22	27					
	15	15				18	40						30	24	30					
	16	16			6 8 10	19	42		M 5	8	4.3	4.4	31	25	31					
Compact FXEB PFXEB	17	17				20	44						32	28	32					
	18	18				21	46						34	31	34					
	20	20		10~150	6 8 10 12	24	48						36	32	36					
	22	22				26	50		M 6	9.5	5.2	5.4	39	34	39					
	25	25	17~75		8 10 12 16	29	54						42	38	42					
	30	30			8 10 12 16 20	34	62	15					49	42	49					
	35	35				39	70		M 8	11	6.8	6.5	55	50	55					
	40	40	20~75		12 16 20	44	80		M10	14	8.6	9	63	56	63					
	50	50			16 20	54	90						73	70	73					

Mounting holes are tapped and counterbored to allow mounting from either the front or the back side.

■Lock Nut RoHS



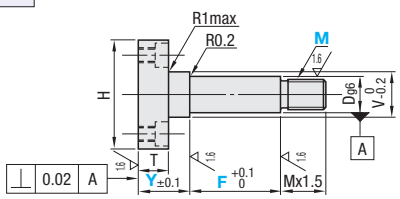
Type / Round	M Material	S Surface Treatment
FXFC	1.1191/C45E	Black Oxide
PFXFC		Electroless Nickel Plating
SFXFC	1.4301/X5CrNi18-10	-



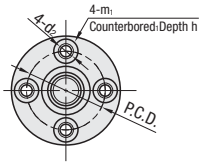


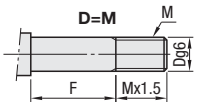
※All types except FXFC have an undercut groove at R0.2 step.
※Refer to the table below for thread undercut dimensions.

D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020
35~50	-0.009 -0.025



Round





Part Number Type	No.	D	1mm Increment Y	F	M (Coarse) Selection	V	H	T	m1	d1	d2	h	P.C.D.	€ Unit Price Round FXFC	PFXFC	SFXFC
Round FXFC PFXFC SFXFC	6	6	12~60	5~100	4 5 6	8	26	10	M 4	6.5	3.5	3.5	17			
	6A						32						23			
	8	8			5 6 8	10	28						19			
	8A						36		M 5	8	4.3	4.4	26			
	10	10			6 8 10	13	32		M 4	6.5	3.5	3.5	23			
	10A						40						30			
	12	12		10~150	6 8 10 12	15	36		M 5	8	4.3	4.4	26			
	13	13				16	38						27			
	15	15			8 10 12 (15)	18	40						30			
	16	16				19	42						31			
	17	17			10 12 (15) 16	20	44						32			
	18	18				21	46						34			
	20	20	17~75		10 12 (15) 16 20	24	48	15	M 6	9.5	5.2	5.4	36			
	22	22				26	50						39			
	25	25			10 12 (15) 16 20 24 (25)	29	54						42			
	30	30			12 (15) 16 20 24 (25) 30	34	62		M 8	11	6.8	6.5	49			
	35	35				39	70						55			
	40	40	20~75			44	80		M10	14	8.6	9	63			
	50	50				54	90						73			

※M dimensions with ( ) (M15 and M25) are Fine Thread. Specify MSC instead of M. ※Mounting holes are tapped and counterbored to allow mounting from either the front or the back side.

Order Example

Part Number	-	Y	-	F	-	M
FXFA12	-	27	-	F35		
FXFB10	-	30	-	F40	-	M4

Price

■Volume Discount (※Round down to one Cent.) P.87

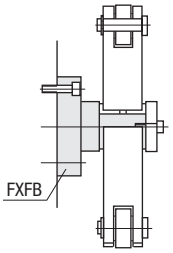
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Days to Ship

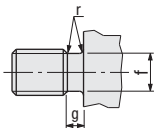
8 Days | Express A | 8,00 EUR/ piece | P.88

※A Express Charge of 21,60 EUR for 3 or more identical pieces.

Example

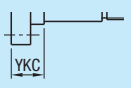
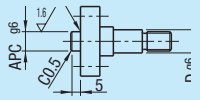
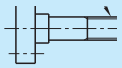


※Male Thread Relief Dimensions



Alterations

Part Number	-	Y	-	F	-	M (MSC)	-	(YKC · APC…etc.)
PFXFC10	-	20	-	F40	-	MSC10	-	APC

Alterations	Retaining Ring Set	Y Dimension Tolerance	Additional Pilot	Fine Thread
				
Code	SET	YKC	APC	MSC
Spec.	Attaches a retaining ring to each applicable shaft diameter. Ordering Code SET Available for retaining ring type. Retaining Ring Shape No.=6~8A: E Type Retaining Ring No.10~30: C Type Retaining Ring Retaining Ring Material Cantilever Shafts: Material: 1.1191/C45E, 1.4301/X5CrNi18-10; Surface Treatment: Black Oxide, Electroless Nickel Plating, -; Retaining Ring Material: Spring Steel, 1.4301/X5CrNi18-10-CSP	Changes Y dimension tolerance to ±0.05. ※Applicable to all types. Ordering Code YKC	Adds a pilot to the flange seat. ※Applicable to all types. Ordering Code APC D: 6 → APC g6: 8; 8~30 → 10; 35~50 → 12	Changes the Lock Nut Type Thread M to Fine Thread listed in the table below. ※Applicable to Lock Nut Type only. ※Specify MSC instead of M. Ordering Code MSC8 MSC: M6 → Pitch: 0.75; M 8~20 → 1.0; M25 · 30 → 1.5
Price Adder	2,50	4,00	6,00	Free of Charge

Coarse Thread Thread Dia. (M)	g	r	f
4	1.2	0.2	2.9~ 3.2
5	~1.5	~0.3	3.9~ 4.1
6	1.5	0.2	4.3~ 4.9
8	~2.5	~0.6	6.3~ 6.6
10			8.1~ 8.3
12	1.5		9.8~10.1
16	~3.0	0.2	13.6~13.8
20	1.5 ~4.0	~1.0	17.0~17.2
24	2.5	0.2	20.2~20.7
30	~5.0	~1.5	26.0~26.2

Fine Thread Thread Dia. (MSC)	g	r	f
4	1.2	0.2	2.9~ 3.2
5	~1.5	~0.3	3.9~ 4.1
6	1.5	0.2	4.3~ 4.9
8	~2.5	~0.6	6.3~ 6.6
10			8.3~ 8.6
12	1.5		9.8~10.7
15	~3.0	0.2	13.6~13.8
20	1.5 ~4.0	~1.0	17.2~18.8
25	2.5	0.2	20.2~23.2
30	~5.0	~1.5	26.2~28.2

Cantilever Shafts
-For Tension-

For Idlers, refer to P.1175

Retaining Ring

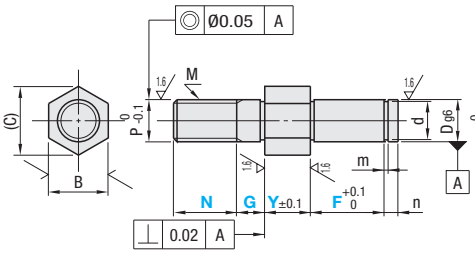
RoHS



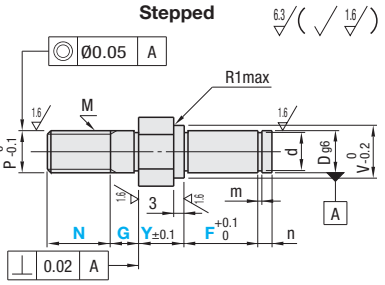
D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020

Standard Type		Stepped		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable	Thread Length Fixed	Thread Length Configurable		
FXKA	-	FXLA	FXNLA	1.1191/C45E	Black Oxide
PFXKA	PFXNKA	PFXLA	PFXNLA		Electroless Nickel Plating
SFXKA	-	SFXLA	-	1.4301/X5CrNi18-10	-

Standard



Stepped



Part Number Type		No.	D	1mm Increment Y	F	G	N Thread Length Fixed	N Thread Length Configurable	P	M (Coarse Thread)	V (Stepped Only)	B	(C)	d Ref. Dims.	d Tolerance	m	n
Standard Fixed	Configurable	6	6	5~60	5~100	5~10	9	6~12	6	M 6	8	10	11.5	5	+ 0.075 0	0.7	2
FXKA	PFXNKA	8	8				12	8~16	8	M 8	10	12	13.9	7	+ 0.090 0	0.9	
PFXKA		10	10				15	10~20	10	M10	13	14	16.2	9.6	0 -0.090	1.15	3
SFXKA		12	12			5~15	18	12~24	12	M12	15	17	19.6	11.5	0 -0.110		
		13	13								16			12.4			
		15	15								18	19	21.9	14.3			4
		16	16								19			15.2			
		17	17								20	22	27.5	16.2			
Stepped Fixed	Configurable	18	18								21	24	27.7	17			
FXLA	FXNLA	20	20	5~75	10~150	5~20	30	20~40	20	M20	24	27	31.2	19	0 -0.210	1.35	
PFXLA	PFXNLA	20A							16	M16							
SFXLA		22	22						20	M20	26			21			5
		22A							16	M16							
		25	25						20	M20	29	30	34.6	23.9			
		25A							16	M16							
		30	30						20	M20	34	36	41.6	28.6		1.65	
		30A							16	M16							

Bolt Fixing

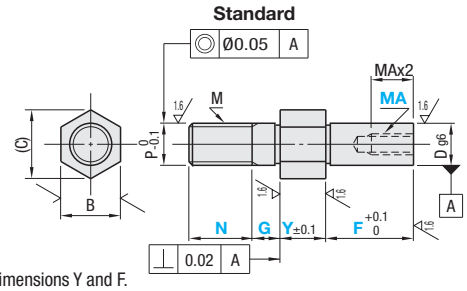
RoHS



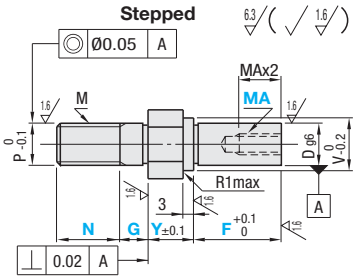
D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020

Standard Type		Stepped		Material	Surface Treatment
Thread Length Fixed	Thread Length Configurable	Thread Length Fixed	Thread Length Configurable		
FXKB	FXNKB	FXLB	-	1.1191/C45E	Black Oxide
PFXKB	-	PFXLB	PFXNLB		Electroless Nickel Plating
SFXKB	-	SFXLB	SFXNLB	1.4301/X5CrNi18-10	-

Standard



Stepped



Please refer to Table 1 to specify dimensions Y and F.

Part Number Type		No.	D	1mm Increment Y	F	G	N Thread Length Fixed	N Thread Length Configurable	MA (Coarse) Selection	P	M (Coarse Thread)	V (Stepped Only)	B	(C)
Standard Fixed	Configurable	6	6	5~60	5~100	5~10	9	6~12	3	6	M 6	8	10	11.5
FXKB	FXNKB	8	8				12	8~16	4	8	M 8	10	12	13.9
PFXKB		10	10				15	10~20	4 5 6	10	M10	13	14	16.2
SFXKB		12	12			5~15	18	12~24	5 6 8	12	M12	15	17	19.6
		13	13									16		
		15	15						6 8 10			18	19	21.9
		16	16									19		
		17	17									20	22	27.5
		18	18									21	24	27.7
Stepped Fixed	Configurable	20	20	5~75	10~120	5~20	30	20~40	6 8 10 12	20	M20	24	27	31.2
FXLB	PFXNLB	20A								16	M16			
PFXLB	SFXNLB	22	22							20	M20	26	27	31.2
SFXLB		22A								16	M16			
		25	25						8 10 12 16	20	M20	29	30	34.6
		25A								16	M16			
		30	30						8 10 12 16 20	20	M20	34	36	41.6
		30A								16	M16			

Table 1

MA	Y+F
M 3	Y+F≥11.5
M 4	Y+F≥14.0
M 5	Y+F≥16.2
M 6	Y+F≥18.5
M 8	Y+F≥23.5
M 10	Y+F≥28.5
M 12	Y+F≥35.5
M 16	Y+F≥45.0
M 20	Y+F≥55.0

CAD Data

Order Example

Part Number	-	Y	-	F	-	G	-	N	-	MA
FXKA20A	-	20	-	F12	-	G8				
FXNKB12	-	15	-	F21	-	G5	-	N14	-	MA6

Days to Ship 8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Retaining Ring

No.	€ Unit Price								
	Standard Type				Stepped				
	Thread Length Fixed			Thread Length Configurable	Thread Length Fixed			Thread Length Configurable	
	FXKA	PFXKA	SFXKA	PFXNKA	FXLA	PFXLA	SFXLA	FXNLA	PFXNLA
6									
8									
10									
12									
13									
15									
16									
17									
18									
20									
20A									
22									
22A									
25									
25A									
30									
30A									

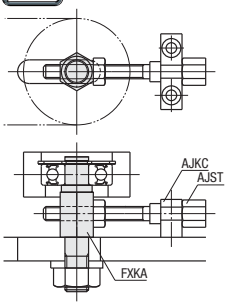
Bolt Fixing

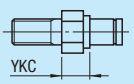
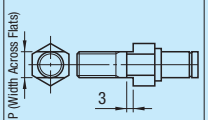
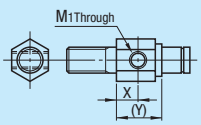
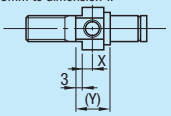
No.	€ Unit Price								
	Standard Type				Stepped				
	Thread Length Fixed			Thread Length Configurable	Thread Length Fixed			Thread Length Configurable	
	FXKB	PFXKB	SFXKB	FXNKB	FXLB	PFXLB	SFXLB	PFXNLB	SFXNLB
6									
8									
10									
12									
13									
15									
16									
17									
18									
20									
20A									
22									
22A									
25									
25A									
30									
30A									

Alterations

Part Number	-	Y	-	F	-	G	-	N	-	MA	- (YKC · SC · MSC · SET)
FXLB12	-	27	-	F15	-	G7	-			MA6	- MTC

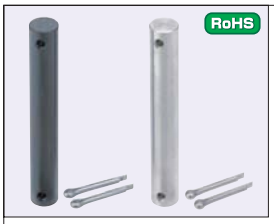
Example



Alterations	Retaining Ring Set	Y Dimension Tolerance	Width Across Flats	Female Thread Hole
				
Code	SET	YKC	SC	MTC
Spec.	Attaches a retaining ring to each applicable shaft diameter. Ordering Code SET Available for retaining ring type. Retaining Ring Shape No.=6~8: E Type Retaining Ring No.=3˝8A: E Type Retaining Ring Retaining Ring Material Cantilever Shafts / Retaining Ring Material / Surface Treatment / Material 1.1191/C45E / Black Oxide / Spring Steel 1.1191/C45E / Electroless Nickel Plating / 1.4301/ X5CrNi18-10-CSP 1.4301/ X5CrNi18-10 / - / 1.4301/ X5CrNi18-10-CSP	Changes Y dimension tolerance to ±0.05. Applicable to all types. Ordering Code YKC	An alteration of width across flats can be made for a slot hole guide. Applicable to all types. Ordering Code	An alteration of a tapped hole made for shaft push/pull. Allows combined use of AJST (**P.1433**) or AJKC (**P.1435**). (Specifiable dimension Y is limited. Refer to the table below.) Ordering Code MTC D / X / M1 / Ymin. Standard / Ymin. Stepped 6 / 10 / M 4 / 15 / 18 8 / 10 / M 5 / 15 / 18 10 / 10 / M 6 / 16 / 19 12~18 / 10 / M 8 / 18 / 21 20~25A / 15 / M10 / 25 / 28 30 / 30A / 15 / M12 / 27 / 30 When combined with SC, add 3mm to dimension Y. 
Price Adder	2,50	4,00	4,00	4,00

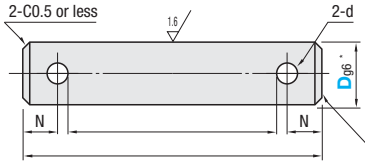
Pivot Pins
-Cotter Pin-

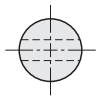
CAD Data



Type		M Material	H Hardness	S Surface Treatment	A Accessory	
L Dimension Selectable	L Dimension Configurable					
CMG	CLGN	1.1191/C45E	-	Black Oxide	Split Pin 2 pcs.	M Material JIS SWRM
CMGH	CLGHN		40~45HRC			M Material 1.4301/ X5CrNi18-10
-	PCLGN		-	Electroless Nickel Plating		M JIS SWRM
-	PCLGHN		40~45HRC			M Material 1.4301/X5CrNi18-10
-	GCLGN	1.1191/C45E	Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3μm or More		
SCMG	SCLGN	1.4301	-	-		
-	SCLGHN	1.4125	45~50HRC			

D Tolerance (g6)	
3	-0.002 -0.008
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020





CMG,CLGN,PCLGN Identification Groove

25 / 1.6

*Dg6 Tolerance is available for L dimensions only. Others are general tolerance.
Identification grooves on the side of CMG, CLGN and PCLGN to be distinguished from Hardening Type.

■L Dimension Selectable

Part Number Type	D	L Selection	L_1	N	d	Attached Split Pins CMG·CMGH	Attached Split Pins SCMG	€ Unit Price CMG	€ Unit Price CMGH	€ Unit Price SCMG
CMG (The L dimensions with * are not available.)	3	10 12 14 *15 *16 18 20	L+4.8	2	0.8	NPN0.8-8	NSPN0.8-8			
	4	10 12 14 15 *16 18 20	L+6	2.5	1	NPN1-10	NSPN1-10			
	5	10 12 14 15 16 18 20	L+7.2	3	1.2	NPN1.2-10	NSPN1.2-10			
	6	15 16 18 20 22 24 25 30	L+8.6	3.5	1.6	NPN1.6-10	NSPN1.6-10			
CMGH (Hardening Type)	8	18 20 22 24 25 30 35 40 45 50	L+10	4	2	NPN2-12	NSPN2-12			
SCMG (Stainless Steel)	10		L+12.5	5	2.5	NPN2.5-15	NSPN2.5-15			
	12	22 24 25 30 35 40 45 50	L+15.2	6	3.2	NPN3.2-20	NSPN3.2-20			

■L Dimension Configurable Type (0.1mm Increment)

Part Number Type	D	L 0.1mm Increment	L_1	N	d	Attached Split Pins CLGN·CLGHN GCLGN	Attached Split Pins PCLGN·PCLGHN SCLGN·SCLGHN	€ Unit Price CLGN	CLGHN	PCLGN	PCLGHN	GCLGN	SCLGN	SCLGHN
CLGN CLGHN PCLGN PCLGHN GCLGN SCLGN SCLGHN	3	5.0~ 50.0	L+4.8	2	0.8	NPN0.8-8	NSPN0.8-8							
	4		L+6	2.5	1	NPN1-10	NSPN1-10							
	5	10.0~ 70.0	L+7.2	3	1.2	NPN1.2-10	NSPN1.2-10							
	6	10.0~100.0	L+8.6	3.5	1.6	NPN1.6-10	NSPN1.6-10							
	8		L+10	4	2	NPN2-12	NSPN2-12							
	10	15.0~110.0	L+12.5	5	2.5	NPN2.5-15	NSPN2.5-15							
	12	15.0~200.0	L+15.2	6	3.2	NPN3.2-20	NSPN3.2-20							
	13	25.0~200.0	L+18	7	4	NPN4-20	NSPN4-20							
	14													
	15													
	16					NPN4-25	NSPN4-25							
	17	30.0~200.0												
	18													
	20		L+22	8.5	5	NPN5-35	NSPN5-35							
	22													
	25													

SCLGHN may be discolored by hardening.

Order Example

Part Number	-	L
CMG8	-	30
CLGN15	-	120.3

Alterations

Part Number - L - (NC)
CLGN15 - 120.3 - NC3
Applicable to L Dimension Configurable Type.

Alteration	Split Pin Hole Position
	NC NC
Code	NC
Spec.	Ordering Code NC3

D	NC (Selection Range)
3	1.5
4	1.5 2
5	1.5 2 2.5
6 / 8	2 2.5 3
10	2.5 3 4
12	3 4 5
13~18	3 4 5 6
20~25	4 5 6 7

L1=L+NCx2+d

Price Adder	2,00

Days to Ship

■L Dimension Selectable
6 Days P.87

■L Dimension Configurable
8 Days | Express A | 2,00 EUR/ piece P.88
A Express Charge of 5,40 EUR for 3 or more identical pieces.
Except Hard 1.1191/C45E

Price

■L Dimension Selectable
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	10%	25%	40%

For orders larger than indicated quantity, please request a quotation.

■L Dimension Configurable
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Pivot Pins
-Straight Retaining Ring-

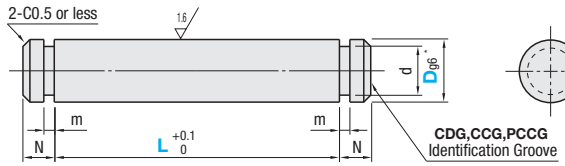
CAD Data

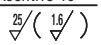


RoHS

Type		M Material	H Hardness	S Surface Treatment	A Accessory	
L Dimension Selectable	L Dimension Configurable					
CDG	CCG	1.1191/C45E	-	Black Oxide	Retaining Ring 2 pcs.	M Spring Steel
CDGH	CCGH		40~45HRC			M 1.4301/ X5CrNi18-10
-	PCCG		-	Electroless Nickel Plating		
-	PCCGH		40~45HRC			
-	GCCG	1.1191/C45E	Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3µm or More		M Spring Steel
SCDG	SCCG	1.4301	-	-		M 1.4301/ X5CrNi18-10
-	SCCGH	1.4125	45~50HRC			
-	GSCCGH		45~50HRC Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3µm or More		M 1.4301/ X5CrNi18-10

D Tolerance (g6)	
2 / 3	-0.002 -0.008
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020





*Dge Tolerance is available for L dimensions only. Others are general tolerance.
Identification grooves on the side of CMG, CLGN and PCLGN to be distinguished from Hardening Type.

L Dimension Selectable

Part Number Type	D	L Selection	m	Tolerance	N	d	Tolerance	Attached Retaining Rings Shape	JIS Nominal*	€ Unit Price CDG	CDGH	SCDG
CDG CDGH (Hardening Type)	3	10 12 14 15 16 18 20 22 24 25 30	0.5	+0.05 0	2	2	+0.06 0	E Type	No. 2			
	4		0.7	+0.1 0		3			No. 3			
	5					4	+0.075 0		No. 4			
	6	15 16 18 20 22 24 25 30 35 40 45 50				5			No. 5			
SCDG (Stainless Steel)	8		0.9		3	7	+0.09 0		No. 7			
	10	18 20 22 24 25 30 35 40 45 50	1.15	+0.14 0		9.6	0 -0.09	C Type	No.10			
	12	22 24 25 30 35 40 45 50			4	11.5	0 -0.11		No.12			

* For details, please refer to **P.1965**

L Dimension Configurable Type (0.1mm Increment)

Part Number Type	D	L 0.1mm Increment	m	Tolerance	N	d	Tolerance	Attached Retaining Rings Shape	JIS Nominal*	€ Unit Price CCG	CCGH	PCCG	PCCGH	GCCG	SCCG	SCCGH	GSCCGH
CCG CCGH PCCG PCCGH GCCG SCCG SCCGH GSCCGH	2	5.0~30.0	0.5	+0.05 0	2	1.5	+0.06 0	E Type	No. 1.5								
	3	5.0~50.0				2			No. 2								
	4		0.7	+0.1 0		3			No. 3								
	5	10.0~60.0				4	+0.075 0		No. 4								
	6	10.0~100.0				5			No. 5								
	8		0.9		3	7	+0.09 0		No. 7								
	10	15.0~100.0	1.15	+0.14 0		9.6	0 -0.09	C Type	No.10								
	12	15.0~200.0			4	11.5	0 -0.11		No.12								
	13	25.0~200.0				12.4			No.13								
	14					13.4			No.14								
	15					14.3			No.15								
	16	30.0~200.0				15.2			No.16								
	17					16.2			No.17								
	18		1.35			17			No.18								
	20					19	0 -0.21		No.20								
	22					21			No.22								
	25					23.9			No.25								

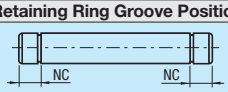
* For details, please refer to **P.1965** SCCGH and GSCCGH may be discolored by hardening.

Order Example

Part Number	-	L
CDG8	-	30
CCG15	-	120.3
SF-SCDG8	-	30

Alterations

Part Number - L - (NC)
CCG15 - 120.3 - NC3
Applicable to L Dimension Configurable Type.

Alteration	Retaining Ring Groove Position
	
Code	NC
Spec.	Ordering Code NC3

D	NC (Selection Range)
2~4	1.5~3
5	1.7~3
6	1.9~4
8	2.4~5
10~18	2.7~5
20~25	2.9~5

Full Length is L+NCx2.

Price Adder	2,00

Days to Ship

L Dimension Selectable
6 Days P.87

L Dimension Configurable
8 Days | Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.
Except Hard 1.1191/C45E and Hard 1.4125/X105CrMo17

Price

L Dimension Selectable
Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	10%	25%	40%

For orders larger than indicated quantity, please request a quotation.

L Dimension Configurable
Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Pivot Pins

-Split Pins with Flange-

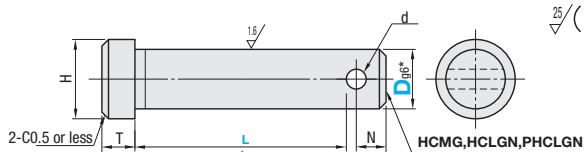
CAD Data



RoHS

Type		M Material	H Hardness	S Surface Treatment	A Accessory	
L Dimension Selectable	L Dimension Configurable					
HCMG	HCLGN	1.1191/C45E * L Dimension Selectable Type is 1.1191/C45E .	-	Black Oxide	Split Pin 1 Pc.	M Material JIS SWRM
HCMGH	HCLGHN		40~45HRC			M Material 1.4301/ X5CrNi18-10
-	PHCLGN		-	Electroless Nickel Plating		M JIS SWRM
-	PHCLGHN		40~45HRC			
-	GHCLGN		Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3µm or More		
SHCMG	SHCLGN	1.4301/X5CrNi18-10	-	-		M Material 1.4301/ X5CrNi18-10
-	SHCLGHN	1.4125/X105CrMo17	45~50HRC			
-	GSHCLGHN		45~50HRC Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3µm or More		

D Tolerance (g6)	
3	-0.002 -0.008
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



*Dg6 Tolerance is available for L dimensions only. Others are general tolerance.

Identification grooves on the side of HCMG, HCLGN and PHCLGN to be distinguished from Hardening Type

■L Dimension Selectable

Part Number Type	D	L Selection	L1	N	d	T	H	Attached Split Pins HCMG HCMGH	Attached Split Pins SHCMG	€ Unit Price HCMG	€ Unit Price HCMGH	€ Unit Price SHCMG
HCMG HCMGH (Hardening Type) SHCMG (Stainless Steel)	3	10 12 14 15 16 18 20	L+4.4	2.5	0.8	1.5	5.5	NPN0.8- 8	NSPN0.8- 8			
	4		L+4.5		1		6.5	NPN1 -10	NSPN1 -10			
	5		L+5.6	3.5	1.2		8	NPN1.2-10	NSPN1.2-10			
	6	15 16 18 20 22 24 25 30	L+5.8		1.6		9	NPN1.6-10	NSPN1.6-10			
	8	18 20 22 24 25 30 35 40 45 50	L+7	4	2	2	12	NPN2 -12	NSPN2 -12			
	10		L+8.25	5	2.5		14	NPN2.5-15	NSPN2.5-15			
	12	22 24 25 30 35 40 45 50	L+10.6	6	3.2	3	17	NPN3.2-20	NSPN3.2-20			

■L Dimension Configurable Type (0.1mm Increment)

Part Number Type	D	L 0.1mm Increment	L1	N	d	T	H	Attached Split Pins HCLGN HCLGHN GHCLGN	Attached Split Pins PHCLGN PHCLGHN SHCLGN SHCLGHN GSHCLGHN	€ Unit Price HCLGN	HCLGHN	PHCLGN	PHCLGHN	GHCLGN	SHCLGN	SHCLGHN	GSHCLGHN
HCLGN HCLGHN PHCLGN PHCLGHN GHCLGN SHCLGN SHCLGHN GSHCLGHN	3	5.0~50.0	L+4.4	2.5	0.8	1.5	5.5	NPN0.8- 8	NSPN0.8- 8								
	4		L+4.5		1		6.5	NPN1 -10	NSPN1 -10								
	5	10.0~60.0	L+5.6	3.5	1.2		8	NPN1.2-10	NSPN1.2-10								
	6		L+5.8		1.6		9	NPN1.6-10	NSPN1.6-10								
	8	10.0~100.0	L+7	4	2	2	12	NPN2 -12	NSPN2 -12								
	10	15.0~100.0	L+8.25	5	2.5		14	NPN2.5-15	NSPN2.5-15								
	12	15.0~200.0	L+10.6	6	3.2	3	17	NPN3.2-20	NSPN3.2-20								
	13	20.0~200.0	L+12	7	4		18	NPN4 -20	NSPN4 -20								
	14						19										
	15						20										
	16	20.0~200.0					21	NPN4 -25	NSPN4 -25								
	17						22										
	18						23										
	20		L+14.5	8	5	4	26	NPN5 -35	NSPN5 -35								
	22						27										
	25		L+15.5	9			30										

SHCCGH and GSHCCGH may be discolored by hardening.

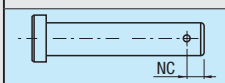
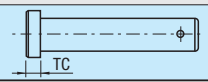
Order Example

Part Number	-	L
HCMG8	-	30
HCLGN15	-	120.3

Alterations

Part Number - L - (NC · TC · HC) Applicable to L Dimension Configurable Type.

HCLGN15 - 120.3 - NC3

Alterations	Split Pin Hole Position	Shoulder Thickness	Shoulder Diameter Cut
			
Code	NC	TC	HC
Spec.	Ordering Code NC3 D / NC (Selection Range) 3 / 1.5 4 / 1.5 2 5 / 1.5 2 2.5 6 / 8 / 2 2.5 3 10 / 2.5 3 4 12 / 3 4 5 13~18 / 3 4 5 6 20~25 / 4 5 6 7 L1=L+NC+d/2+T.	Ordering Code TC3 TC=0.5mm Increment T<TC≤5 L1=L+N+d/2+TC.	Ordering Code HC - D=3~10 HC=H/2-1 - D=12~25 HC=H/2-2
Price Adder	2,00	3,00	3,00

Days to Ship

■L Dimension Selectable

6 Days

■L Dimension Configurable

8 Days | Express A | 2,00 EUR/ piece | P. 87

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Except Hard 1.1191/C45E and Hard 1.4125/X105CrMo17

Price

■L Dimension Selectable

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	10%	25%	40%

For orders larger than indicated quantity, please request a quotation.

■L Dimension Configurable

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Pivot Pins

-Retaining Ring with Flange-

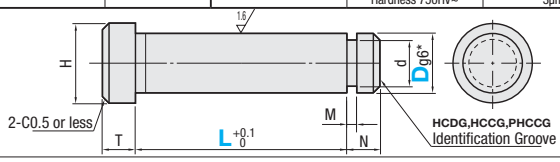
CAD Data



RoHS

Type		M Material	H Hardness	S Surface Treatment	A Accessory	
L Dimension Selectable	L Dimension Configurable					
HCDG	HCCG	* 1.1191/C45E L Dimension Selectable Type is 1.1191/C45E or Equival-ent.	-	Black Oxide	Retai-ning Ring 1 pc.	M Material Spring Steel
HCDGH	HCCGH		40~45HRC			
-	PHCCG		-	Electroless Nickel Plating		M Material 1.4301/ X5CrNi18-10
-	PHCCGH		40~45HRC			
-	GHCCG		Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3µm or More		M Material Spring Steel
SHCDG	SHCCG	1.4301/X5CrNi18-10	-	-		M Material 1.4301/ X5CrNi18-10
-	SHCCGH	1.4125/X105CrMo17	45~50HRC			
-	GSHCCGH		45~50HRC Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3µm or More		

D Tolerance (g6)	
2 / 3	-0.002 -0.008
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



25 / 1.6

*Dg6 Tolerance is available for L dimensions only. Others are general tolerance.

Identification grooves on the side of HCDG, HCCG and PHCCG to be distinguished from Hardening Type

■L Dimension Selectable

Part Number Type	D	L Selection	M	Tolerance	N	d	Tolerance	T	H	Attached Retaining Rings Shape	JIS Nominal*	€ Unit Price HCDG	HCDGH	SHCDG
HCDG HCDGH (Hardening Type)	3	10 12 14 15 16 18 20 22 24 25 30	0.5	+0.05 0	2	2	+0.06 0	1.5	5.5	E Type	No. 2			
	4		0.7	+0.1 0		3			6.5		No. 3			
	5					4	+0.075 0		8		No. 4			
	6	15 16 18 20 22 24 25 30 35 40 45 50				5			9		No. 5			
SHCDG (Stainless Steel)	8		0.9		3	7	+0.09 0	2	12		No. 7			
	10	18 20 22 24 25 30 35 40 45 50	1.15	+0.14 0		9.6	0 -0.09		14	C Type	No.10			
	12	22 24 25 30 35 40 45 50				11.5	0 -0.11	3	17		No.12			

* For details, please refer to P.1965

■L Dimension Configurable Type (0.1mm Increment)

Part Number Type	D	L 0.1mm Increment	M	Tolerance	N	d	Tolerance	T	H	Attached Retaining Rings Shape	JIS Nominal*	€ Unit Price HCCG	HCCGH	PHCCG	PHCCGH	GHCCG	SHCCG	SHCCGH	GSHCCGH
HCCG HCCGH PHCCG PHCCGH GHCCG SHCCG SHCCGH GSHCCGH	2	5.0~ 30.0	0.5	+0.05 0	2	1.5	+0.06 0	1.5	4.5	E Type	No. 1.5								
	3	5.0~ 50.0				2			5.5		No. 2								
	4		0.7	+0.1 0		3			6.5		No. 3								
	5	10.0~ 60.0				4	+0.075 0		8		No. 4								
	6	10.0~100.0				5			9		No. 5								
	8		0.9		3	7	+0.09 0	2	12		No. 7								
	10	15.0~100.0	1.15	+0.14 0		9.6	0 -0.09		14	C Type	No.10								
	12	15.0~200.0				11.5	0 -0.11	3	17		No.12								
	13	20.0~200.0				12.4			18		No.13								
	14					13.4			19		No.14								
	15					14.3			20		No.15								
	16					15.2			21		No.16								
	17					16.2			22		No.17								
	18	20.0~200.0	1.35			17			23		No.18								
	20					19	0 -0.21	4	26		No.20								
	22					21			27		No.22								
	25					23.9			31		No.25								

* For details, please refer to P.1965 SHCCGH and GSHCCGH may be discolored by hardening.

Order Example

Part Number	-	L
HCDG8	-	30
HCCG15	-	120.3

Days to Ship

■L Dimension Selectable

6 Days P. 87

■L Dimension Configurable

8 Days Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.
Except Hard 1.1191/C45E and Hard 1.4125/X105CrMo17

Price

■L Dimension Selectable

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	10%	25%	40%

For orders larger than indicated quantity, please request a quotation.

■L Dimension Configurable

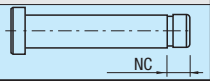
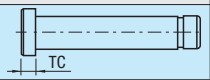
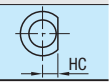
■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (NC · TC · HC)
HCCG15 - 120.3 - NC3.5 - TC3.5

Applicable to L Dimension Configurable Type.

Alterations	Retaining Ring Groove Position	Shoulder Thickness	Shoulder Diameter Cut
			
Code	NC	TC	HC
Spec.	Ordering Code NC3.5 D / NC (0.1mm Increment) 2~4 / 1.5~3 5 / 1.7~3 6 / 1.9~4 8 / 2.4~5 10~18 / 2.7~5 20~25 / 2.9~5 Full Length is L+NC+T.	Ordering Code TC3 TC=0.5mm Increment T<TC≤5 Full Length is L+N+TC.	Ordering Code HC - D=2~10 HC=H/2-1 - D=12~25 HC=H/2-2
Price Adder	2,00	3,00	3,00

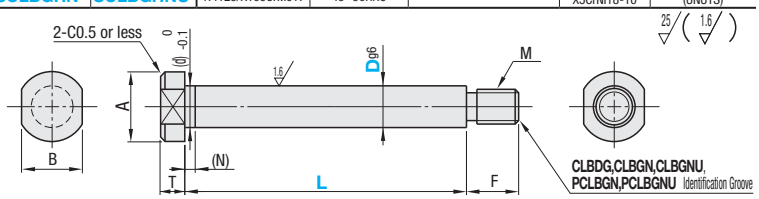
Pivot Pins
-Lock Nut with Flange-

CAD Data



Type			M Material	H Hardness	S Surface Treatment	A Accessory (1 pc.)	
L Dimension Selectable	L Dimension Configurable					Standard Nut	U Nut
Standard Nut	Standard Nut	U Nut					
CLBDG	CLBGN	CLBGNU	1.1191/C45E *L Dimension Selectable Type is 1.1191/C45E or Equivalent.	-	Black Oxide	M Material 1.0303/C4C	M Material 1.0038/S235JR (UNUTK)
CLBDGH	CLBGHN	CLBGHNU		40~45HRC			
-	PCLBGN	PCLBGNU		-	Electroless Nickel Plating	M Material 1.4301/ X5CrNi18-10	M Material 1.4301/ X5CrNi18-10 (UNUTS)
	PCLBGHN	PCLBGHNU		40~45HRC			
	GCLBGN	-		Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3μm or More	M Material 1.0303/C4C	M Material 1.0038/ S235JR (UNUTK)
SCLBDG	SCLBGN	SCLBGNU	1.4301/X5CrNi18-10	-	-	M Material 1.4301/ X5CrNi18-10	M Material 1.4301/ X5CrNi18-10 (UNUTS)
-	SCLBGHN	SCLBGHNU	1.4125/X105CrMo17	45~50HRC			

D Tolerance (g6)	
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~18	-0.006 -0.017
20~30	-0.007 -0.020



For details of U nut specifications, please refer to **P.2-231**
Identification grooves on the side of CLBDG · CLBGN · CLBGNU · PCLBGN and PCLBGNU to be distinguished from Hardening Type
Relief dimension under flange is for reference.

L Dimension Standard Type

Part Number Type	D	L Selection	A	B	T	F	(d)	(N)	M (Coarse Thread)	Attached Nuts	€ Unit Price CLBDG	CLBDGH	SCLBDG
CLBDG CLBDGH (Hardening Type) SCLBDG (Stainless Steel)	4	10 12 14 15 16 18 20 22 24 25 30	7	5	3	6	3.9	1.5	M 3	M 3x0.5			
	5		9	7	4		4.9		M 4	M 4x0.7			
	6	15 16 18 20 22 24 25 30	10	8	5	9	5.8		M 5	M 5x0.8			
	8	15 16 18 20 22 24 25 30 35 40 45 50	13	10			7.8		M 6	M 6x1.0			
	10	18 20 22 24 25 30 35 40 45 50	16	13		12	9.8		M 8	M 8x1.25			
	12	22 24 25 30 35 40 45 50	18	14		16	11.8		M10	M10x1.5			

L Dimension Configurable Type (0.1mm Increment)

Part Number Type	D	L 0.1mm Increment	A	B	T	F	(d)	(N)	M (Coarse Thread)	Attached Nuts	€ Unit Price Standard Nut CLBGN	CLBGHN	PCLBGN	PCLBGHN	GCLBGN	SCLBGN	SCLBGHN	U Nut CLBGNU	CLBGHNU	PCLBGNU	PCLBGHNU	SCLBGNU	SCLBGHNU
Standard Nut CLBGN CLBGHN PCLBGN PCLBGHN GCLBGN SCLBGN SCLBGHN U Nut CLBGNU CLBGHNU PCLBGNU PCLBGHNU SCLBGNU SCLBGHNU	4	5.0~ 50.0	7	5	3	6	3.9	1.5	M 3	M 3x0.5													
	5	5.0~ 60.0	9	7	4		4.9		M 4	M 4x0.7													
	6	10.0~100.0	10	8	5	9	5.8		M 5	M 5x0.8													
	8		13	10			7.8		M 6	M 6x1.0													
	10		16	13		12	9.8		M 8	M 8x1.25													
	12	15.0~200.0	18	14		16	11.8		M10	M10x1.5													
	13	20.0~200.0	24	21	5	18	12.8		M12	M12x1.75													
	14						13.8																
	15						14.8																
	16	20.0~200.0					15.8																
	17						16.8																
	18						17.8																
	20		27	23		24	19.8		M16	M16x2.0													
	22						21.8																
	25		30	27			24.8																
	30	40.0~200.0	35	32		30	29																

SCLBGHN and SCLBGHNU may be discolored by hardening.

Order Example

Part Number	-	L
SCLBDG8	-	30
CLBGHN15	-	120.3

Alterations Part Number - L - (FC · MC · TC · LKC)
CLBGHN15 - 120.3 - FC20 - MC10
Applicable to L Dimension Configurable Type.

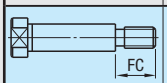
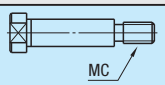
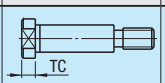
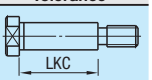
Days to Ship

L Dimension Selectable: 6 Days P.87

L Dimension Configurable: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.
Except Hard 1.1191/C45E

Alterations	Thread Part Length	Thread Diameter	Shoulder Thickness	L Dimension Tolerance
				
Code	FC	MC	TC	LKC
Spec.	Ordering Code FC4 FC=1 mm Increment M(MC)≤FC≤M(MC)x3	Ordering Code MC3 D / MC (Selection Range) 5: 3 6: 3 4 8: 3 4 5 10: 4 5 6 12: 5 6 8 13~18: 6 8 10 20 / 22: 8 10 12 25: 10 12 ⊗Not available for D4 and D30. ⊗MC3 is not available for U Nut Type.	Ordering Code TC3 TC=0.5mm Increment 2≤TC≤5	Ordering Code LKC Changes L dimension tolerance to ±0.05.
Price Adder	2,00	2,00	3,00	5,00

Price

L Dimension Selectable
Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	10%	25%	40%

For orders larger than indicated quantity, please request a quotation.

L Dimension Configurable
Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Pivot Pins

-Lock Nut with Hexagon Socket Head-

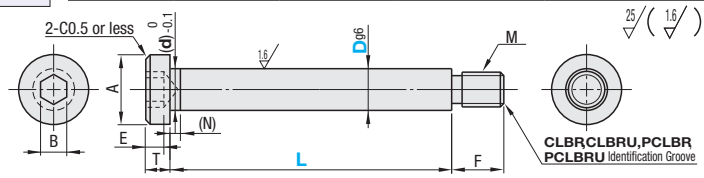
CAD Data



RoHS

Type		M Material	H Hardness	S Surface Treatment	A Accessory (1 pc.)	
Standard Nut	U Nut				Standard Nut	U Nut
CLBR	CLBRU	1.1191/C45E	-	Black Oxide	M Material 1.0303/C4C	M Material 1.0038/S235JR (UNUTK)
CLBRH	CLBRHU		40~45HRC			
PCLBR	PCLBRU		-	Electroless Nickel Plating	M Material 1.4301/ X5CrNi18-10	M Material 1.4301/ X5CrNi18-10 (UNUTS)
PCLBRH	PCLBRHU		40~45HRC			
GCLBR	GCLBRU		Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3μm or More	M JIS SWRM	M 1.0038/S235JR (UNUTK)
SCLBR	SCLBRU	1.4301/X5CrNi18-10	-	-	M Material 1.4301/ X5CrNi18-10	M Material 1.4301/ X5CrNi18-10 (UNUTS)
SCLBRH	SCLBRHU	1.4125/X105CrMo17	45~50HRC			
GSCLBR	GSCLBRU		45~50HRC Plating Hardness 750HV~	Hard Chrome Platinag Plating Thickness 3μm or More		

D Tolerance (g6)	
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



For details of U nut specifications, please refer to P.**2-231**

Identification grooves on the side of CLBR · CLBRU · PCLBR and PCLBRU to be distinguished from Hardening Type

Relief dimension under flange is for reference.

Part Number Type	D	L 0.1mm Increment	A	T	F	B	E	(d)	(N)	M (Coarse Thread)	Attached Nuts
Standard Nut / U Nut	4	10.0~ 50.0	7	5	6	2.5	2	3.9	1.5	M 3	M 3x0.5
CLBR CLBRU	5	10.0~ 60.0	9					4.9		M 4	M 4x0.7
CLBRH CLBRHU	6	10.0~100.0	10		9	3		5.8		M 5	M 5x0.8
PCLBR PCLBRU	8	10.0~100.0	13			5	3	7.8		M 6	M 6x1.0
PCLBRH PCLBRHU	10		16		12	6	4	9.8		M 8	M 8x1.25
GCLBR GCLBRU	12	10.0~200.0	18		16			11.8		M10	M10x1.5
SCLBR SCLBRU	13	20.0~200.0	24		18	8	5	12.8		M12	M12x1.75
SCLBRH SCLBRHU	14							13.8			
GSCLBR GSCLBRU	15							14.8			
	16	20.0~200.0						15.8			
	17							16.8			
	18							17.8			
	20		27		24	10	6	19.8		M16	M16x2.0
	22	20.0~200.0						21.8			
	25		30			12	8	24.8			

SCLBRH, SCLBRHU. GSCLBR and GSCLBRU may be discolored by hardening.

Order Example

Part Number	-	L
CLBR15	-	120.3

Days to Ship: **8 Days**

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Except Hard 1.1191/C45E and Hard 1.4125/X105CrMo17

Price

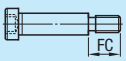
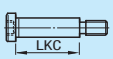
Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

D	€ Unit Price															
	Standard Nut								U Nut							
	CLBR	CLBRH	PCLBR	PCLBRH	GCLBR	SCLBR	SCLBRH	GSCLBR	CLBRU	CLBRHU	PCLBRU	PCLBRHU	GCLBRU	SCLBRU	SCLBRHU	GSCLBRU
4																
5																
6																
8																
10																
12																
13																
14																
15																
16																
17																
18																
20																
22																
25																

Alterations

Part Number	-	L	-	(FC · MC · LKC · HC)
CLBR10		- 50.5	-	FC8

Alterations	Thread Part Length	Thread Diameter	L Dimension Tolerance	Shoulder Diameter Cut
				
Code	FC	MC	LKC	HC
Spec.	Ordering Code FC4 FC=1 mm Increment M(MC)≤FC≤M(MC)x3	Ordering Code MC3 D / MC (Selection Range) 5 / 3 6 / 3 4 8 / 3 4 5 10 / 4 5 6 12 / 5 6 8 13~18 / 6 8 10 20 / 22 / 8 10 12 25 / 10 12 Not applicable to D4. MC3 is not available for U Nut Type.	Ordering Code LKC Changes L dimension tolerance to ±0.05.	Ordering Code HC - D=4~8 HC=A/2-1 - D=10~25 HC=A/2-2
Price Adder	2,00	2,00	5,00	3,00

Pivot Pins

-Lock Nut with Extra Low Hexagon Socket Head-

CAD Data

Feature: Thinner shoulder design ensures use in space-savings.

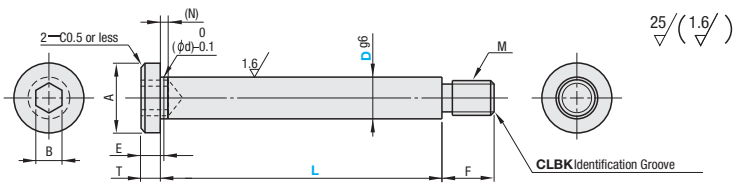


RoHS

Type	M Material	H Hardness	S Surface Treatment	A Accessory	
CLBK	1.1191/C45E	-	Black Oxide	Nut 1 pc.	M Material 1.0303/C4C
CLBKH		40~45HRC			
SCLBK	1.4301/X5CrNi18-10	-	-		M Material 1.4301/X5CrNi18-10
SCLBKH	1.4125/X105CrMo17	45~50HRC			

Identification grooves on the side of CLBK to be distinguished from Hardening Type

Relief dimension under flange is for reference.



D Tolerance (g6)	
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020

Part Number Type	D	L 0.1mm Increment	A	T	F	B	E	(d)	(N)	M (Coarse Thread)	€ Unit Price CLBK	CLBKH	SCLBK	SCLBKH
CLBK CLBKH SCLBK SCLBKH	4	10.0~50.0	7	1.5	6	2	2	3.9	1.5	M3				
	5	10.0~60.0	9			2.5		4.9		M4				
	6	10.0~100.0	10		9			5.8		M5				
	8		13			3		7.8		M6				
	10	15.0~100.0	16		12	4	3	9.8		M8				
	12	15.0~200.0	18	2.5	16			11.8		M10				
	13	25.0~200.0	24		18			12.8		M12				
	14					5		13.8						
	15							14.8						
	16							15.8						
	20	30.0~200.0	27		24	6	4	19.8		M16				
	25		30			8	5	24.8						

SCLBKH may be discolored by hardening.

Order Example

Part Number	-	L
CLBK15	-	120.3

Days to Ship

8 Days

Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

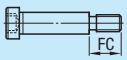
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	-	L	-	(FC…etc.)
CLBK10	-	50.5	-	FC8

Alterations	Thread Part Length	Thread Diameter	L Dimension Tolerance	Shoulder Diameter Cut
				
Code	FC	MC	LKC	HC
Spec.	Ordering Code FC4 FC=1 mm Increment M(MC)≤FC≤M(MC)x3	Ordering Code MC3	Ordering Code LKC Changes L dimension tolerance to ± 0.05.	Ordering Code HC - D=4~10 HC=A/2-1 - D=12~25 HC=A/2-2
Price Adder	2,00	2,00	5,00	3,00

D	MC (Selection Range)
5	3
6	3 4
8	3 4 5
10	4 5 6
12	5 6 8
13~16	6 8 10
20	8 10 12
25	10 12

Not applicable to D4.

Pivot Pins

-Female Thread with Flange · Female Thread, Hexagon Socket Head-

CAD Data

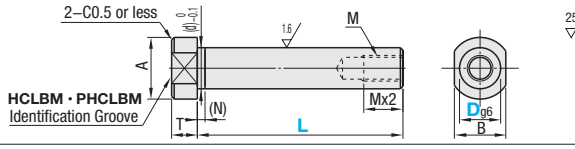
■Female Thread with Flange

RoHS



Type	M Material	H Hardness	S Surface Treatment
HCLBM	1.1191/C45E	-	Black Oxide
HCLBHM		40~45HRC	
PHCLBM		-	Electroless Nickel Plating
PHCLBHM		40~45HRC	
GHCLBM		Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3μm or More
SHCLBM	1.4301/X5CrNi18-10	-	-
SHCLBHM	1.4125/X105CrMo17	45~50HRC	
GSHCLBHM		45~50HRC Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3μm or More

D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



Identification grooves on the side of HCLBM and PHCLBM to be distinguished from Hardening Type

Relief dimension under the shoulder is for reference.

Part Number Type	D	L 0.1mm Increment	A	B	(d)	T	(N)	M (Coarse Thread)	€ Unit Price HCLBM	HCLBHM	PHCLBM	PHCLBHM	GHCLBM	SHCLBM	SHCLBHM	GSHCLBHM
HCLBM HCLBHM PHCLBM PHCLBHM GHCLBM SHCLBM SHCLBHM GSHCLBHM	6	15.0~100.0	10	8	5.8	5	1.5	M 3								
	8	15.0~100.0	13	10	7.8			M 5								
	10	20.0~100.0	16	13	9.8			M 6								
	12	20.0~200.0	18	14	11.8											
	13	25.0~200.0	24	21	12.8			M 8								
	14				13.8											
	15				14.8											
	16	30.0~200.0			15.8			M10								
	17				16.8			M12								
	18				17.8											
	20	35.0~200.0	27	23	19.8			M16								
	22				21.8											
	25		30	27	24.8											

SHCLBHM and GSHCLBHM may be discolored by hardening.

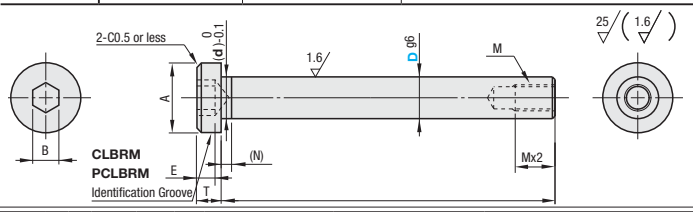
■Female Thread, Hexagon Socket Head with Flange

RoHS



Type	M Material	H Hardness	S Surface Treatment
CLBRM	1.1191/C45E	-	Black Oxide
CLBRHM		40~45HRC	
PCLBRM		-	Electroless Nickel Plating
PCLBRHM		40~45HRC	
GCLBRM		Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3μm or More
SCLBRM	1.4301/X5CrNi18-10	-	-
SCLBRHM	1.4125/X105CrMo17	45~50HRC	

D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



CLBRM · PCLBRM
Identification grooves on the side of HCLBM and PHCLBM to be distinguished from Hardening Type

Relief dimension under the shoulder is for reference.

Part Number Type	D	L 0.1mm Increment	A	T	B	E	(d)	(N)	M (Coarse Thread)	€ Unit Price CLBRM	CLBRHM	PCLBRM	PCLBRHM	GCLBRM	SCLBRM	SCLBRHM
CLBRM CLBRHM PCLBRM PCLBRHM GCLBRM SCLBRM SCLBRHM	6	15.0~100.0	10	5	3	2	5.8	1.5	M 3							
	8	20.0~100.0	13		5	3	7.8		M 5							
	10	25.0~100.0	16		6	4	9.8		M 6							
	12	25.0~200.0	18				11.8									
	13	30.0~200.0	24		8	5	12.8		M 8							
	14						13.8									
	15						14.8									
	16	35.0~200.0					15.8		M10							
	17						16.8		M12							
	18						17.8									
	20	40.0~200.0	27		10	6	19.8		M16							
	22						21.8									
	25	55.0~200.0	30		12	8	24.8									

SCLBRHM may be discolored by hardening.

Order Example

Part Number	-	L
HCLBHM8	-	35.8
SCLBRHM10	-	50.5

Days to Ship

8 Days

Express A — 2,00 EUR/piece — P88

A Express Charge of 5,40 EUR for 3 or more identical pieces.
Except Hard 1.1191/C45E and Hard 1.4125/X105CrMo17

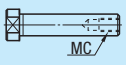
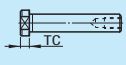
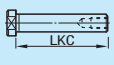
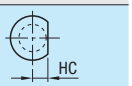
Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number - L - (MC · TC · LKC · HC)
HCLBHM10 - 50.5 - TC3

Alterations	Thread Diameter	Shoulder Thickness	L Dimension Tolerance	Shoulder Diameter Cut
				
Code	MC	TC	LKC	HC
Spec.	Ordering Code MC3 D / MC (Selection Range) 6 / 2.6 8 / 3 4 10 / 12 / 4 5 13~15 / 5 6 16~18 / 6 8 20 / 22 / 8 10 25 / 10 12	Ordering Code TC3 TC=0.5mm Increment 2≤TC≤5 Not available for tapped type with hexagon socket head.	Ordering Code LKC Changes L dimension tolerance to ±0.05.	Ordering Code HC · D=6~8 HC=A/2-1 · D=10~25 HC=A/2-2
Price Adder	2,00	3,00	5,00	3,00

Pivot Pins

-Both Ends Female Thread · Both Ends Male Thread-

CAD Data

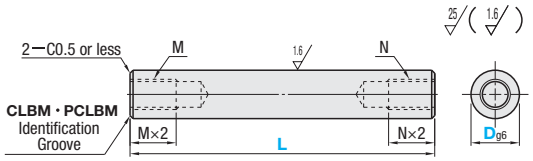
■Both Ends Female Thread

RoHS



Type	Material	Hardness	Surface Treatment
CLBM	1.1191/C45E	-	Black Oxide
CLBHM		40~45HRC	
PCLBM		-	Electroless Nickel Plating
PCLBHM		40~45HRC	
SCLBM	1.4301/X5CrNi18-10	-	-
SCLBHM	1.4125/X105CrMo17	45~50HRC	

Identification grooves on the side of **CLBM** and **PCLBM** to be distinguished from Hardening Type



D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020

Part Number Type	D	L 0.1mm Increment	M (Coarse Thread)	N (Coarse Thread)	€ Unit Price CLBM	CLBHM	PCLBM	PCLBHM	SCLBM	SCLBHM
CLBM CLBHM PCLBM PCLBHM SCLBM SCLBHM	6	20.0~100.0	M 3	M 3						
	8		M 5	M 5						
	10	25.0~100.0	M 6	M 6						
	12	25.0~200.0								
	13	35.0~200.0	M 8	M 8						
	14									
	15									
	16	40.0~200.0	M10	M10						
	17		M12	M12						
	18									
	20	50.0~200.0	M16	M16						
	22									
	25									

SCLBHM may be discolored by hardening. For full length L, Mx2+Nx2≤L is required.

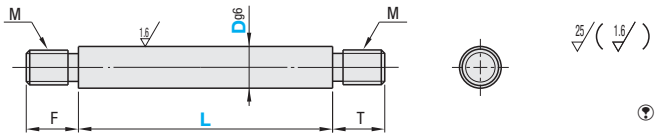
■Both Ends Male Thread

RoHS



Type	Material	Hardness	Surface Treatment	Accessory	
CLBN	1.1191/C45E	-	Black Oxide	Nut 2 pcs.	M1.0303/C4C

D Tolerance (g6)	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



Identification grooves on the side of CLBN to be dis-tinguished from Hardening Type

Part Number Type	D	L 0.1mm Increment	F · T	M (Coarse Thread)	€ Unit Price
CLBN	6	15.0~100.0	9	M 5	
	8	20.0~100.0		M 6	
	10	25.0~100.0	12	M 8	
	12	25.0~200.0	16	M10	
	13				
	14				
	15		18	M12	
	16	30.0~200.0			
	17				
	18		24	M16	
	20	35.0~200.0			
	22			M20	
	25				

Order Example

Part Number	-	L
CLBM15	-	120.3

Alterations

Part Number	-	L	-	(MC · NC · NMC · NNC)
CLBM10	-	50	-	MC5

Days to Ship

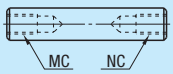
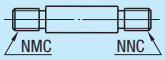
8 Days | Express A | 2,00 EUR/ piece | P88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations	Thread Diameter	Thread Diameter
		
Code	MC · NC	NMC · NNC
Spec.	Ordering Code MC3 D / MC · NC (Selection Range) 8: 3 4 10: 4 5 12: 4 5 13 · 14: 5 6 15: 5 6 8 16~18: 6 8 20 · 22: 8 10 25: 10 12 ⊗Not applicable to D6. L≥MCx2+NCx2 ⊗Not applicable to Both Ends Male Thread	Ordering Code NMC8 D / NMC · NNC (Selection Range) 6: 3 4 8: 3 4 5 10: 4 5 6 12 · 13: 4 5 6 8 14: 4 5 6 8 10 15~17: 5 6 8 10 18 · 20: 6 8 10 12 22 · 25: 8 10 12 16 ⊗Not applicable to Both Ends Female Thread
Price Adder	2,00 each	2,00 each

Precision Pivot Pins · Keys for Precision Pivot Pins

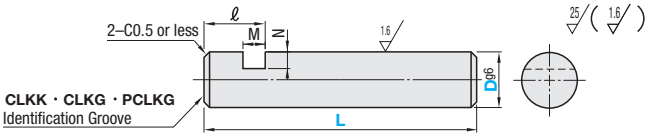
-With Key Groove-

CAD Data



Type		Material	Hardness	Surface Treatment
L Dimension Selectable	L Dimension Configurable			
CLKK	CLKG	1.1191/C45E	-	Black Oxide
CLKKH	CLKGH		40~45HRC	
-	PCLKG		-	Electroless Nickel Plating
-	PCLKGH		40~45HRC	
-	GCLKG		Plating Hardness 750HV~	Hard Chrome Plating Plating Thickness 3μm or More
SCLKK	SCLKG	1.4301/X5CrNi18-10	-	-
-	SCLKGH	1.4125/X105CrMo17	45~50HRC	

Identification grooves on the key groove side of **CLKK · CLKG** and **PCLKG** to be distinguished from Hardening Type



D Tolerance (g6)	
3	-0.002 -0.008
4~6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020

L Dimension Selectable

Part Number Type	D	L CLKK	L CLKKH	L SCLKK	ℓ	M	N	€ Unit Price CLKK	CLKKH	SCLKK
CLKK CLKKH (Hardening Type) SCLKK (Stainless Steel)	3	10 14 18 20	12 20	10 15 20	8	2.5	1			
	4	10	10 18 20	10 12 14 15 20						
	5	20	10 12 20	10 20			1.5			
	6	15 16 20 30	24 25 30	25 30			2			
	8	18 30 35 40 45 50	24 25 30 35 40 45 50	20 22 35 40 45 50						
	10	30 35 40 45 50	20 24 30 35 40 45 50	25 30 35 40 45 50						
	12	24 30 35 40 45 50	30 35 40 45 50	30 35 40 45 50						

L Dimension Configurable

Part Number Type	D	L 0.1mm Increment	ℓ	M	N	€ Unit Price CLKG	CLKGH	PCLKG	PCLKGH	GCLKG	SCLKG	SCLKGH
CLKG CLKGH PCLKG PCLKGH GCLKG SCLKG SCLKGH	3	10.0~ 50.0	8	2.5	1							
	4											
	5	10.0~ 60.0			1.5							
	6	10.0~100.0			2							
	8											
	10	15.0~100.0										
	12	15.0~200.0										
	13	25.0~200.0										
	14											
	15											
	16	30.0~200.0		3.7	3							
	17											
	18											
	20											
	22											
	25											

SCLKGH may be discolored by hardening.

Order Example

Part Number	-	L
CLKK8	-	30
CLKG15	-	120.3

Days to Ship

- L Dimension Selectable: **6 Days** P.87
- L Dimension Configurable: **8 Days**

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.
Excluding Hardening 1.1191/1.4125/X105CrMo17 and 1.4125/X105CrMo17 equivalent.

Price

- L Dimension Selectable

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	10%	25%	40%

For orders larger than indicated quantity, please request a quotation.

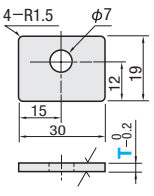
- L Dimension Configurable

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

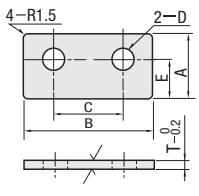
Keys for Precision Pivot Pins

1-Hole Type
HPK
SHPK(Stainless Steel)



HPK · WHPK
Material: 1.0330/DC01
Surface Treatment: Black Oxide

2-Hole Type
WHPK
WSHPK(Stainless Steel)



SHPK · WSHPK
Material: 1.4301/X5CrNi18-10-CP

Part Number Type	T	€ Unit Price Qty. 1~29	Volume Discount 30~
HPK	2		
	3.2		
SHPK (Stainless Steel)	2		
	3		

Order Example Part Number: HPK2

Degreasing Service P.83

Days to Ship 6 Days P.87

Part Number Type	No.	A	B	C	D	E	T	WHPK € Unit Price Qty. 1~29	WHPK Volume Discount 30~	WSHPK € Unit Price Qty. 1~29	WSHPK Volume Discount 30~
WHPK WSHPK (Stainless Steel)	4	10	18	10	4.5	6	2.0				
	5	14	24	15	5.5	8					
	6	16	30	18	6.5	10	3.2 (3.0)				
	7	20		15	7	12	2.0				
	8		40	25			3.2 (3.0)				

( ) are the dimensions for WSHPK plate thickness T.

Pivot Pins

-Set Screw Flat · Flanged with Set Screw Flat-

CAD Data

■Configurable

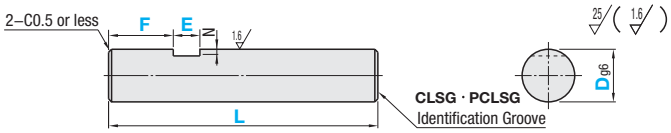
RoHS



Type	M Material	H Hardness	S Surface Treatment
CLSG	1.1191/C45E	-	Black Oxide
CLSGH		40~45HRC	
PCLSG		-	Electroless Nickel Plating
PCLSGH		40~45HRC	
SCLSG	1.4301/X5CrNi18-10	-	-
SCLSGH	1.4125/X105CrMo17	45~50HRC	

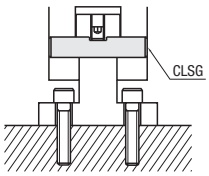
Identification grooves on the side of CLSG and PCLSG to be distinguished from Hardening Type

D Tolerance (g6)	
3	-0.002 -0.008
4~6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



Part Number Type	D	L 0.1mm Increment	1mm Increment F	1mm Increment E	N	€ Unit Price CLSG	CLSGH	PCLSG	PCLSGH	SCLSG	SCLSGH
CLSG CLSGH PCLSG PCLSGH SCLSG SCLSGH	3	5.0~ 50.0	0≤F≤L/2	1≤E≤50	0.5						
	4										
	5	10.0~ 60.0									
	6	10.0~100.0			1						
	8										
	10	15.0~100.0									
	12	15.0~200.0									
	13	25.0~200.0									
	14										
	15										
	16	30.0~200.0			2						
	17										
	18										
	20										
	22										
	25										

Example



SCLSGH may be discolored by hardening.

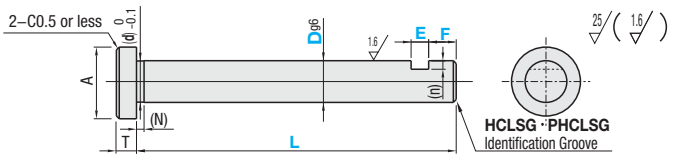
■Flanged with Set Screw Flat

RoHS



Type	T D Tolerance	M Material	H Hardness	S Surface Treatment
HCLSG	g6	1.1191/C45E	-	Black Oxide
HCLSGH			40~45HRC	
PHCLSG			-	Electroless Nickel Plating
PHCLSGH			40~45HRC	
SHCLSG		1.4301/X5CrNi18-10	-	-
SHCLSGH		1.4125/X105CrMo17	45~50HRC	

D Tolerance (g6)	
3	-0.002 -0.008
4~6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20~25	-0.007 -0.020



Identification grooves on the side of HCLSG and PHCLSG to be distinguished from Hardening Type

Relief dimension under the shoulder is for reference.

Part Number Type	D	L 0.1mm Increment	0.1mm Increment E	0.1mm Increment F	A	(d)	T	(N)	(N)	€ Unit Price HCLSG	HCLSGH	PHCLSG	PHCLSGH	SHCLSG	SHCLSGH
HCLSG HCLSGH PHCLSG PHCLSGH SHCLSG SHCLSGH	3	5.0~50.0	1≤E≤50	0≤F≤L/2	5.5	2.9	1.5	1.5	0.5						
	4				6.5	3.9									
	5	10.0~60.0			8	4.9									
	6	10.0~100.0			9	5.8			1						
	8				12	7.8	2								
	10	15.0~100.0			14	9.8									
	12	15.0~200.0			17	11.8	3								
	13	20.0~200.0			18	12.8									
	14				19	13.8									
	15				20	14.8									
	16	20.0~200.0			21	15.8			2						
	17				22	16.8									
	18				23	17.8									
	20				26	19.8	4								
	22				27	21.8									
	25				30	24.8									

SHCLSGH may be discolored by hardening.

Order Example

Part Number	L	E · F	E · F
CLSGH15	100.0	F20	E10
HCLSG20	120.3	E10	F10

For Set Screw Flat and Set Screw Flat with Flange Types, specifying order of E and F is reversed.

Days to Ship

8 Days

Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

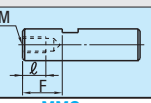
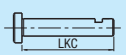
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	L	E · F	E · F	(MMC · TC · LKC)
CLSGH15	100.0	F20	E10	MMC

Alterations	Tapping	Shoulder Thickness	L Dimension Tolerance
			
Code	MMC	TC	LKC
Spec.	Ordering Code MMC D / M (Coarse) / ℓ 6 / M3 / 6 8~14 / M4 / 8 15~22 / M6 / 12 25 / M8 / 16 ⊗Not applicable to set screw flat flanged type. ⊗Not applicable to D3~5. (D-M)/2 -N≤1, F>Mx2 L>Mx2 When L≤Mx3, the pilot hole for tapping might go through.	Ordering Code TC3 TC=0.5mm Increment T<TC≤5 L1=L+N+d/2+TC ⊗Not applicable to Set Screw Flat Type.	Ordering Code LKC Changes L dimension tolerance to ±0.05. ⊗Not applicable to Set Screw Flat Type.
Price Adder	2,00	3,00	5,00

Pivot Pins
-D Cut-

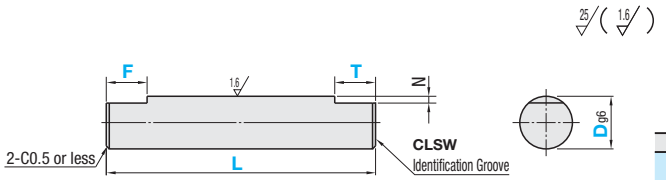
CAD Data

■Feature: Two flats will effectively stop pins from rotating.



Type	M Material	H Hardness	S Surface Treatment
CLSW	1.1191/C45E	-	Black Oxide
CLSWH		40~45HRC	
SCLSW	1.4301/X5CrNi18-10	-	-

Identification grooves on the side of CLSW to be distinguished from Hardening Type



D Tolerance (g6)	
4~6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~16	-0.006 -0.017
20 · 25	-0.007 -0.020

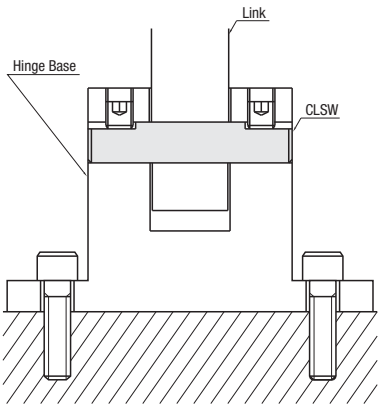
Part Number Type	D	L 0.1mm Increment	1mm Increment F	1mm Increment T	N	€ Unit Price CLSW	€ Unit Price CLSWH	€ Unit Price SCLSW
CLSW CLSWH SCLSW	4	10.0~50.0	2≤F≤20	2≤T≤20	0.5			
	5	10.0~60.0						
	6	10.0~100.0	2≤F≤30	2≤T≤30	1			
	8							
	10	15.0~100.0						
	12	15.0~200.0	5≤F≤30	5≤T≤30				
	13	25.0~200.0						
	14							
	15							
	16	30.0~200.0			2			
	20							
	25							

F+T≤L

Order Example

Part Number	-	L	-	F	-	T
CLSWH15	-	120.5	-	F30	-	T30

Example



Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Pivot Pins

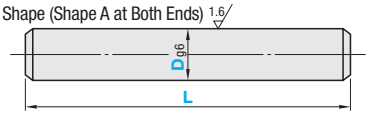
-End Shape Selectable-

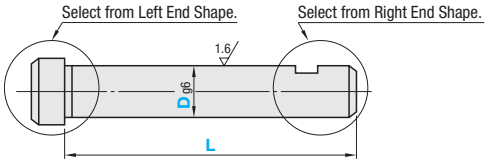


RoHS

Type	Material	Surface Treatment	Hardness
FCL_ _	1.1191/C45E	Black Oxide	-
FCLH_ _			40~45HRC
PFCL_ _		Electroless Nickel Plating	-
PFCLH_ _			40~45HRC
GFCL_ _		Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV~
FCLS_ _	1.4301	-	-
FCLSH_ _	1.4125		45~50HRC
GFCLSH_ _		Hard Chrome Plating Plating Thickness 3μm or More	45~50HRC Plating Hardness 750HV~

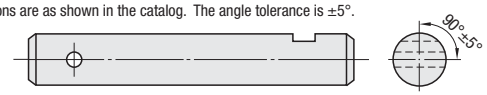
Base Shape (Shape A at Both Ends)





- When machining is needed at one end only, select Shape A for the other end.
- Identification grooves on the side of FCL_ _ and PFCL_ _ are to be distinguished from Hardening Type.
- FCLSH_ _ and GFCLSH_ _ (1.4125/X105CrMo17 equivalent) may be discolored by hardening.
- When selecting shapes B and G or BG and GB for both ends, hole and flat positions are as shown in the catalog. The angle tolerance is ±5°.

ex)



- For L ≤the depth of tap's pilot hole, the pilot hole might go through.
- ⊗ Selecting Shape D (FCLDD) for both ends is not available.

Shape C: e · m Dimensions for Selection

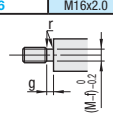
D	e Ref. Dims.	e Tolerance	m +0.14 0
3	2	+0.06 0	0.5
4	3		
5	4	+0.075 0	0.7
6	5		
7	6		
8	7	+0.09 0	0.9
9	8		
10	9.6	0 -0.09	1.15
11	10.5	0 -0.11	
12	11.5		
13	12.4		
14	13.4		
15	14.3		
16	15.2		
17	16.2		
18	17		1.35
19	18		
20	19	0 -0.21	

Shape D: (d) / (n) Dimensions for Selection

D	(d)	(n)
3	2.9	1.0~1.5
4	3.9	
5	4.9	
6	5.9	
7	6.9	
8	7.9	
9	8.9	
10	9.9	
11	10.9	
12	11.9	
13	12.9	
14	13.9	
15	14.9	
16	15.9	
17	16.9	
18	17.9	
19	18.9	
20	19.9	

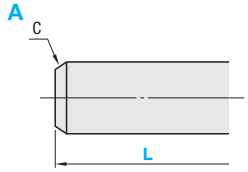
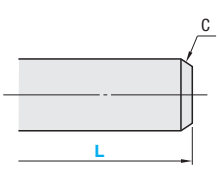
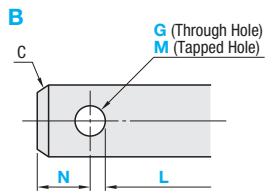
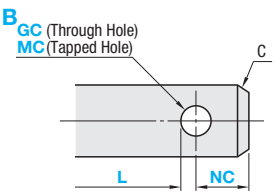
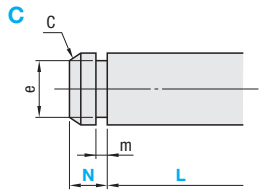
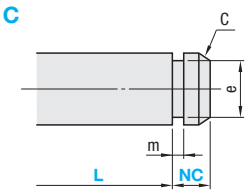
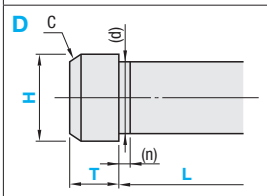
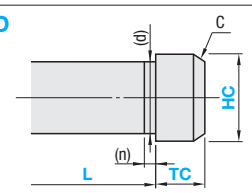
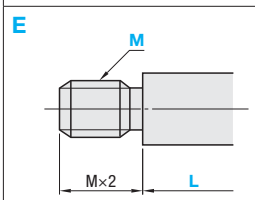
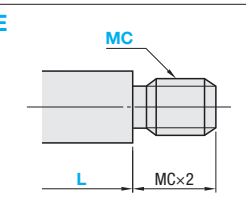
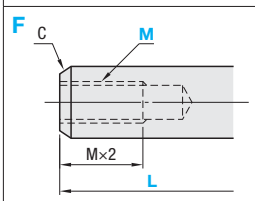
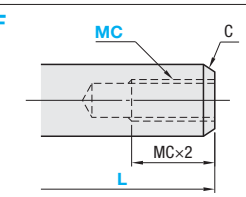
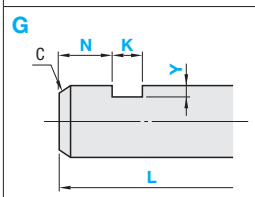
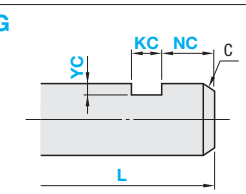
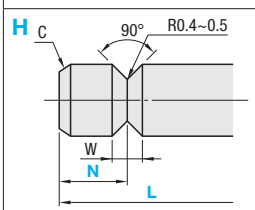
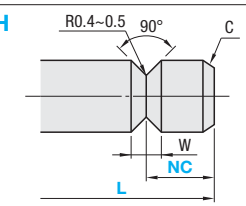
Shape E: Details of Thread Relief Machining

M (Coarse Thread)	MxPitch	g	r	f
3	M3x0.5	1.2	0.3	0.9
4	M4x0.7			
5	M5x0.8			
6	M6x1.0	2.5	0.6	1.7
8	M8x1.25			
10	M10x1.5			
12	M12x1.75	3	1.0	2.2
16	M16x2.0			



Shape H: W Dimension for Selection

D	W
6	1.5
7	
8	
9	
10	2
11	
12	
13	
14	
15	
16	
17	3
18	
19	
20	

Left End Shape	Right End Shape
A 	A 
B 	B 
C 	C 
D 	D 
E 	E 
F 	F 
G 	G 
H 	H 

Part Number			1mm Increment	0.1mm Increment					0.5mm Increment	Selection	C
Type	Left End Shape	Right End Shape	D	L	T (TC)	N (NC)	G (GC)	K (KC)	Y (YC)	H (HC)	M (MC) (Coarse Thread)	
FCL FCLH PFCL PFCLH GFCL FCLS FCLSH GFCLSH	A B C D E F G H	A B C D E F G H	3~20 4≤D (Shaft End Shape E) 6≤D (Shaft End Shape B · F · H)	5~200 (L≤Dx20)	0.5 ≤T(TC)≤ L/4	2≤N (NC)≤L/4 (Shaft End Shape C) G(GC) · M(MC)/2+1 ≤N(NC)≤L/4 (Shaft End Shape B) 0≤N (NC)≤L/4 (Shaft End Shape G) 2≤N (NC)≤L/4 (Shaft End Shape H)	D/5 ≤G(GC) ≤D/2	2 ≤K(KC) ≤30	Y(YC) ≤D/2	D+1 ≤H(HC) ≤D+10	3 4 5 6 8 10 12 16 (M(MC)≤D/2) (Shaft End Shape B) (M(MC)<D) (Shaft End Shape E) (M(MC)≤D-3) (Shaft End Shape F)	0.5 or Less

Order Example

Part Number			-	D	-	L	-	T	-	N	-	G	-	K	-	Y	-	H	-	M	-	TC	-	NC	-	GC	-	KC	-	YC	-	HC	-	MC
Type	Left End	Right End																																
FCL	D	G	-	D10	-	L100	-	T2										- H14 - H14						- NC10 - NC10				- KC6.5 - KC6.5	-	YC1.5 YC1.5				

Days to Ship

10 Days — Express B — 10,00 EUR/ piece — P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.
Express Serviceis not available for hard chrome plated products.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

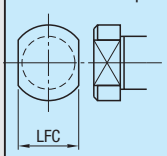
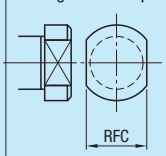
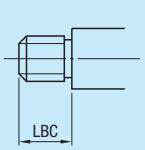
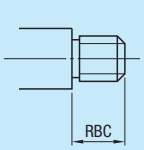
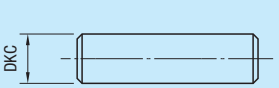
For orders larger than indicated quantity, please request a quotation.

Please add unit price for shaft end machining to the unit price of base shaft.ex) FCLDG-D10-L100~4,80+4,00+2,00=10,80 EUR

Type	D	€ Unit Price		Left Shaft: A Shape	Right Shaft: A Shape	€ Unit Price of Shaft End Machining						
		L5.0~50.0	L50.1~100.0	L100.1~150.0	L150.1~200.0	B	C	D	E	F	G	H
FCL_ _	3~5											
	6~10											
	11~15											
	16~20											
FCLH_ _	3~5											
	6~10											
	11~15											
	16~20											
PFCL_ _	3~5											
	6~10											
	11~15											
	16~20											
PFCLH_ _	3~5											
	6~10											
	11~15											
	16~20											
GFCL_ _	3~5											
	6~10											
	11~15											
	16~20											
FCLS_ _	3~5											
	6~10											
	11~15											
	16~20											
FCLSH_ _	3~5											
	6~10											
	11~15											
	16~20											
GFCLSH_ _	3~5											
	6~10											
	11~15											
	16~20											

Alterations

Part Number			-	D	-	L	-	T	-	N	-	G	-	K	-	Y	-	H	-	M	-	TC	-	NC	-	GC	-	KC	-	YC	-	HC	-	MC	-	LFC (RFC) · LBC (RBC) · DKC
Type	Left End	Right End																																		
FCL	D	G	-	D10	-	L100	-	T2										- H14						- NC10				- KC6.5	-	YC1.5					-	LFC13-DKC

Alterations	Shape D: T (TC) Dimension, Wrench Flats		Shape E M (MC) Length Change		Outer Dia. Tolerance
	Left End Shape	Right End Shape	Left End Shape	Right End Shape	
					
Code	LFC	RFC	LBC	RBC	DKC
Spec.	Ordering Code LFC (RFC) 10 LFC (RFC) =0.5mm Increment D≤LFC(RFC)<H(HC)		Ordering Code LBC (RBC) 20 LBC (RBC) =0.5mm Increment 4≤LBC(RBC)≤M(MC)x3		Changes outer diameter tolerance to h6. Ordering Code DKC
Price Adder	3,00		3,00		Free of Charge

Diameter Tolerance Selectable Type



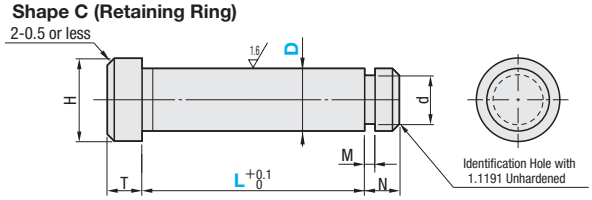
Type	M Material	H Hardness	S Surface Treatment	A Accessory Shape C (Retaining Ring)		A Accessory Shape B (Lock Nut)	
KCL_ _	1.1191/C45E	-	Black Oxide	Retaining Ring 1 pc.	M Spring Steel	Nut 1 pc.	M 1.0303/C4C
KCLH_ _		40~45HRC					
PKCL_ _		-	Electroless Nickel Plating		M 1.4301		M 1.4301
PKCLH_ _		40~45HRC					
KCLS_ _	1.4301	-	-		M 1.4301		M 1.4301
KCLSH_ _	1.4125	45~50HRC	-		M 1.4301		M 1.4301

D	Tolerance Selection					
	M	P	H	F	C	*LF
	m6	p6	h7	f8	c9	-
2 · 3	+0.008 +0.002	+0.012 +0.006	0 -0.010	-0.006 -0.020	-0.060 -0.085	-0.025 -0.034
4 · 5 · 6	+0.012 +0.004	+0.020 +0.012	0 -0.012	-0.010 -0.028	-0.070 -0.100	-0.025 -0.037
8 · 10	+0.015 +0.006	+0.024 +0.015	0 -0.015	-0.013 -0.035	-0.080 -0.116	-0.025 -0.040
12~18	+0.018 +0.007	+0.029 +0.018	0 -0.018	-0.016 -0.043	-0.095 -0.138	-0.025 -0.043
20~25	+0.021 +0.008	+0.035 +0.022	0 -0.021	-0.020 -0.053	-0.110 -0.162	-0.025 -0.046

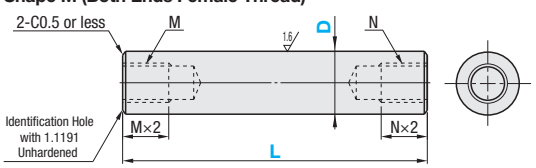
* LF tolerances are recommended values for Multi-Layer Oil Free Bushings LF Type (MDZB, MDZF).

KCLSH_ _ may be discolored by hardening.

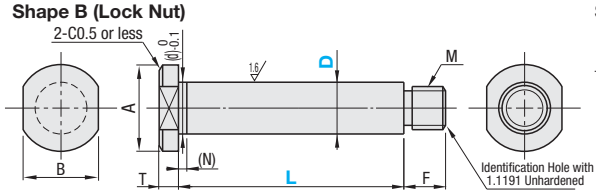
Shape C (Retaining Ring)



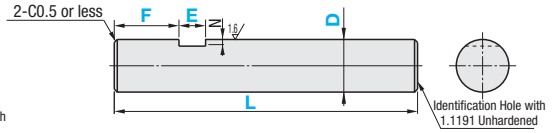
Shape M (Both Ends Female Thread)



Shape B (Lock Nut)



Shape S (Set Screw Flat)



Alterations

Part Number - L - (NC, TC...etc.)

KCLCF15 - 120.3 - NC3.5 - TC3.5

Alterations	Retaining Ring Groove Position	Shoulder Thickness	Thread Part Length	Thread Diameter	Shoulder Thickness	L Dimension Tolerance
	Shape C NC	TC Shape C	Shape B FC	Shape B MC	TC Shape B	LKC Shape B
Code	NC	TC	FC	MC	TC	LKC
Spec.	Ordering Code NC3.5 D / NC (0.1mm Increment) 2~4 / 1.5~3 5 / 1.7~3 6 / 1.9~4 8 / 2.4~5 10~18 / 2.7~5 20~25 / 2.9~5 Full Length is L+NC+T.	Ordering Code TC3 TC=0.5mm Increment T<TC≤5 Full Length is L+N+TC.	Ordering Code FC4 FC=1 mm Increment M(MC)≤FC≤M(MC)x3	Ordering Code MC3 D / MC (Selection Range) 5 / 3 6 / 3 4 8 / 3 4 5 10 / 4 5 6 12 / 5 6 8 13~18 / 6 8 10 20 / 22 / 8 10 12 25 / 10 12 Not applicable to D4.	Ordering Code TC3 TC=0.5mm Increment 2≤TC≤5	Ordering Code LKC Changes L dimension tolerance to ±0.05.
Price Adder	2,00	3,00	2,00	2,00	3,00	5,00

Alterations	Thread Diameter	Tapping
	Shape M MC NC	Shape S M ℓ F
Code	MC · NC	MMC
Spec.	Ordering Code MC3 D / MC · NC (Selection Range) 8 / 3 4 10 / 12 / 4 5 13~15 / 5 6 16~18 / 6 8 20 / 22 / 8 10 25 / 10 12 Not applicable to D6. L≥MCx2+NCx2	Order aing Code D / M (Coarse) / ℓ 6 / M3 / 6 8~14 / M4 / 8 15~22 / M6 / 12 25 / M8 / 16 Not applicable to D3~5. (D-M)/2 -N≤1, F>Mx2 L≥Mx2 When L≤Mx3, the pilot hole for tapping might go through.
Price Adder	2,00 each	2,00

Shape C (Retaining Ring)

* For details,please refer to P.1965

Part Number Type	D Tolerance	D	L 0.1mm Increment	M	M Tolerance	N	d	d Tolerance	T	H	Attached Retaining Rings Shape	Attached Retaining Rings JIS Nominal*	€ Unit Price KCLC	KCLHC	PKCLC	PKCLHC	KCLSC	KCLSHC
KCLC KCLHC PKCLC PKCLHC KCLSC KCLSHC	M (m6)	2	5.0~30.0	0.5	+0.05 0	2	1.5	+0.06 0	1.5	4.5	E Type	No. 1.5						
		3					2			5.5		No. 2						
		4	5.0~50.0	0.7	+0.1 0		3	+0.075 0		6.5		No. 3						
	P (p6)	5	10.0~60.0				4			8		No. 4						
		6	10.0~100.0				5			9		No. 5						
		8		0.9			7	+0.09 0 -0.09	2	12		No. 7						
	H (h7)	10	15.0~100.0	1.15	+0.14 0	3	9.6			14	C Type	No.10						
		12	15.0~200.0				11.5	0 -0.11	3	17		No.12						
	F (f8)	13	25.0~200.0				12.4			18		No.13						
		14					13.4			19		No.14						
		15					14.3			20		No.15						
	C (c9)	16					15.2			21		No.16						
		17					16.2			22		No.17						
	LF (for Bushings)	18	30.0~200.0	1.35			17			23		No.18						
		20					19	0 -0.21	4	26		No.20						
		22					21			27		No.22						
		25					23.9			31		No.25						

Shape B (Lock Nut)

Part Number Type	D Tolerance	D	L 0.1mm Increment	A	B	T	F	(d)	(N)	M (Coarse Thread)	Attached Nuts	€ Unit Price KCLB	KCLHB	PKCLB	PKCLHB	KCLSB	KCLSHB
KCLB KCLHB PKCLB PKCLHB KCLSB KCLSHB	M (m6)	4	5.0~50.0	7	5	3	6	3.9	1.5	M 3	M 3x0.5						
		5	5.0~60.0	9	7	4		4.9		M 4	M 4x0.7						
		6		10	8	5	9	5.8		M 5	M 5x0.8						
	P (p6)	8	10.0~100.0	13	10			7.8		M 6	M 6x1.0						
		10		16	13		12	9.8		M 8	M 8x1.25						
	H (h7)	12	15.0~200.0	18	14		16	11.8		M10	M10x1.5						
		13		24	21		18	12.8		M12	M12x1.75						
	F (f8)	14	25.0~200.0					13.8									
		15						14.8									
	C (c9)	16						15.8									
		17						16.8									
	LF (for Bushings)	18	30.0~200.0					17.8									
		20		27	23		24	19.8		M16	M16x2.0						
		22						21.8									
		25		30	27			24.8									

Shape M (Both Ends Female Thread)

Part Number Type	D Tolerance	D	L 0.1mm Increment	M (Coarse Thread)	N (Coarse Thread)	€ Unit Price KCLM	KCLHM	PKCLM	PKCLHM	KCLSM	KCLSHM
KCLM KCLHM PKCLM PKCLHM KCLSM KCLSHM	M (m6)	6	20.0~100.0	M 3	M 3						
		8		M 5	M 5						
	P (p6)	10	25.0~100.0	M 6	M 6						
		12	25.0~200.0								
	H (h7)	13	35.0~200.0	M 8	M 8						
		14									
	F (f8)	15									
	C (c9)	16	40.0~200.0	M10	M10						
		17		M12	M12						
	LF (for Bushings)	18									
		20	50.0~200.0	M16	M16						
		22									
		25									

Shape S (Set Screw Flat)

Part Number Type	D Tolerance	D	L 0.1mm Increment	1mm Increment F	1mm Increment E	N	€ Unit Price KCLS	KCLHS	PKCLS	PKCLHS	KCLSS	KCLSHS
KCLS KCLHS PKCLS PKCLHS KCLSS KCLSHS	M (m6)	3	5.0~ 50.0	0≤F≤L/2	1≤E≤50	0.5						
		4										
		5	10.0~ 60.0									
	P (p6)	6	10.0~100.0			1						
		8										
	H (h7)	10	15.0~100.0									
		12	15.0~200.0									
	F (f8)	13	25.0~200.0									
		14										
		15										
	C (c9)	16	30.0~200.0			2						
		17										
	LF (for Bushings)	18										
		20										
		22										
		25										

Order Example

Part Number	-	L	-	F	-	E
Type	D Tolerance Selection	D				
KCLC	M	15	-	120.3		
KCLS	F	15	-	50.5	- F0 -	E10

Days to Ship

10 Days | Express B | 3,00 EUR/ piece | P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

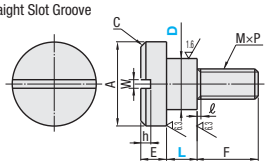
Fulcrum Pins
-Standard-

CAD Data

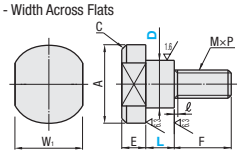


Straight Slot Groove		Hexagonal Hole		Width Across Flats	Hexagonal Head	M Material	H Hard-ness	S Surface Treatment
Standard Class	Precision Class	Standard Class	Precision Class	Standard Class	Standard Class			
D-0.01 -0.05	Dg6	D-0.01 -0.05	Dg6	D-0.01 -0.05	D-0.01 -0.05			
CBBD	-	CBDBR	CBDGBR	CBDBW	CBDBL	1.1191/C45E	-	Black Oxide
CBBDH	-	CBDBRH	-	CBDBWH	-		40~45HRC	
CBD	CBDG	CBDR	CBDGR	CBDW	CBDL	1.4305/X10CrNiS18-9	-	-

- Straight Slot Groove

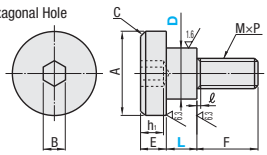


- Width Across Flats

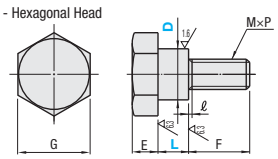


25 / 6.3 / 1.6

- Hexagonal Hole



- Hexagonal Head



- Precision Type

D Tolerance (g6)	
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~15	-0.006 -0.017

L Dimension Tolerance

	Standard
Unhardened	+0.15 +0.05
Hardening	+0.2 0

Standard

Part Number Type		D	L 1mm Increment	A	E Straight Slot Groove	E Hexagonal Hole Width Across Flats Hexagonal Head	MxP (Coarse Thread)	F	ℓ	W	B	h	h_1	C	W_1	G
Straight Slot Groove (Standard)	Width Across Flats (Standard)	4	1~20 (For Hexagonal Hole 5~20)	6	2	3.5	2.6x0.45	4	0.8	0.8	2	1	2	0.5	5	7
*CBBD	CBDBW	5		8		4	3 x0.5	6	1		2.5		2.5		7	8
*CBBDH	CBDBWH	6		10	2.5		4 x0.7	8	1.2	1.2	3	1.5	3		8	10
*CBD	CBDW	8		12	3	4.5	5 x0.8	10	1.4		4		3.5		10	13
Straight Slot Groove (Precision) *CBDG (D4~12)		10		16	4	6	x1.0	12	1.5	1.4	5	1.8	4	1	13	17
Hexagonal Hole (Standard) CBDBR CBDBRH CBDR	Hexagonal Head (Standard) CBDBL	12		18	5	5	8 x1.25			1.5		2			14	19
Hexagonal Hole (Precision) CBDGBR CBDGR	CBDL	13								-		-			15	
		15		20			10 x1.5	15							17	

D13 and D15 are not available for the * marked types.

Order Example

Part Number	-	L
CBD6	-	10
CBDGBR8	-	15

Days to Ship

8 Days — Express A — 3,00 EUR/ piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces .
Express Service A is available for Standard Class only.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders of 101 or more pieces of Precision class, please request a quotation for Days to Ship and Price.

- 1.1191/C45E Hardening Type

10 Days — Express B — 5,00 EUR/ piece P. 88

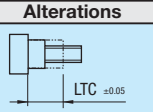
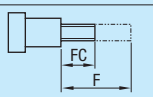
A Express Charge of 13,50 EUR for 3 or more identical pieces.

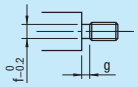
D	€ Unit Price													
	Straight Slot Groove				Hexagonal Hole					Width Across Flats			Hexagonal Head	
	CBBD	CBBDH	CBD	CBDG	CBDBR	CBDBRH	CBDR	CBDGBR	CBDGR	CBDBW	CBDBWH	CBDW	CBDBL	CBDL
4														
5														
6														
8														
10														
12														
13														
15														

Alterations

Part Number	-	L	-	(LTC/ FC / PC)
CBD8	-	12.6	-	LTC-FC8-PC
CBDG8	-	16	-	PC

8 Days — Express Serviceis not available.
- 1.1191/C45E Hardening Type
10 Days — Express Serviceis not available.

Alterations	Code	Spec.	Price Adder
	LTC	Changes L Dimension Increment LTC=0.1 mm Increment 1.1≤LTC≤19.9(CBD) 5.1≤LTC≤19.9(CBDR)	3,00
	FC	Changes Thread Part Length FC=1 mm Increment Mx1≤FC<F When D=4, FC=3 only	2,00

Alterations	Code	Spec.	Price Adder
	PC	Adds a relief to M.	2,00

D	MxPitch	g	f
4	M2.6x0.45	1	1.9
5	M3 x 0.5		2.3
6	M4 x 0.7	1.2	3.2
8	M5 x 0.8	1.4	4.0
10	M6 x 1.0	1.7	4.8
12 / 13	M8 x1.25		6.5
15	M10 x 1.5	2	8.2

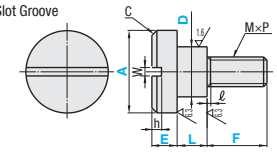
Fulcrum Pins
-Configurable-

CAD Data

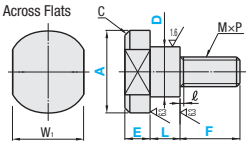


Straight Slot Groove	Hexagonal Hole		Width Across Flats	Hexagonal Head	M Material	H Hardness	S Surface Treatment
Standard Class	Standard Class	Precision Class	Standard Class	Standard Class			
D-0.01 -0.05	D-0.01 -0.05	Dg6	D-0.01 -0.05	D-0.01 -0.05			
FCBBD	FCBDBR	FCBDGBR	FCBDBW	FCBDBL	1.1191/C45E	-	Black Oxide
FCBBDH	FCBDBRH	-	FCBDBWH	-		40~45HRC	
FCBD	FCBDR	FCBDGR	FCBDW	FCBDL	1.4305/ X10CrNiS18-9	-	-

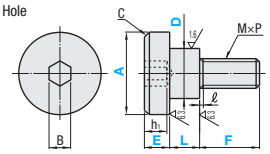
- Straight Slot Groove



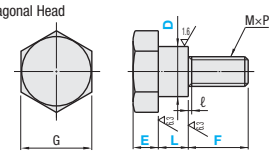
- Width Across Flats



- Hexagonal Hole



- Hexagonal Head



25 / (6.3 / 1.6 /)

- Precision Type

D Tolerance (g6)	
4~6	-0.004 -0.012
8 / 10	-0.005 -0.014
12~15	-0.006 -0.017

L Dimension Tolerance

	Configurable
Unhardened	+0.1 0
Hardening	+0.2 0

Configurable

Part Number Type	D	L 0.1mm Increment	A Selection	E 0.1mm Increment	F 1mm Increment	MxP (Coarse Thread)	ℓ	W	B	h	h1	C	W1	G
Straight Slot Groove (Standard) *FCBBD *FCBBDH *FCBD Hexagonal Hole (Standard) FCBDBR FCBDBRH FCBDR Hexagonal Hole (Precision) FCBDGBR FCBDGR	4	1.0~20.0 (For Hexagonal Hole 5.0~20.0)	6 8	2.0~4.0	3 / 4	2.6x0.45	0.8	0.8	2	1	2	0.5	5	7
Width Across Flats (Standard) FCBDBW FCBDBWH FCBDW Hexagonal Head (Standard) FCBDBL FCBDL	5		8 10		3~ 6	3 x0.5	1		2.5		2.5		7	8
	6		10 12	2.5~4.0	4~ 8	4 x0.7	1.2	1.2	3	1.5	3		8	10
	8		12 16		5~10	5 x0.8	1.4		4		3.5		10	13
	10		16 18 20	3.0~5.0	6~12	6 x1.0	1.5	1.4	5	1.8	4	1	13	17
	12		18 20 22 24		8~12	8 x1.25		1.5		2			14	19
	13							-		-			15	
	15		20 22 24		10~15	10 x1.5							17	

Machining Conditions ⓥFor FCBDBR · FCBDBRH · FCBDR, E+L≥2xh1+2ⓥD13 and D15 are not available for the * marked types.

Order Example

Part Number	L	A	E	F
FCBBD6	10.0	A10	E2.5	F6
FCBD6	10.0	A12	E3.0	F4

Days to Ship

8 Days — Express A — 3,00 EUR/ piece — P. 88

ⓥA Express Charge of 8,10 EUR for 3 or more identical pieces.
ⓥExpress Service A is available for Standard Class only.

- 1.1191/C45E Hardening Type

10 Days — Express B — 5,00 EUR/ piece — P. 88

ⓥA Express Charge of 13,50 EUR for 3 or more identical pieces.
ⓥExpress Service is not available.

Price

Volume Discount (ⓥRound down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

ⓥFor orders of 101 or more pieces of Precision class, please request a quotation for Days to Ship and Price.

D	€ Unit Price											
	Straight Slot Groove			Hexagonal Hole					Width Across Flats			Hexagonal Head	
	FCBBD	FCBBDH	FCBD	FCBDBR	FCBDBRH	FCBDR	FCBDGBR	FCBDGR	FCBDBW	FCBDBWH	FCBDW	FCBDBL	FCBDL
4													
5													
6													
8													
10													
12													
13													
15													

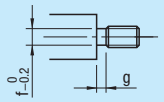
Alterations

Part Number	L	A	E	F	(PC)
FCBBD6	12.6	A10	E3.0	F6	PC
FCBD8	16.5	A12	E3.5	F8	PC

8 Days ⊗Express Serviceis not available.

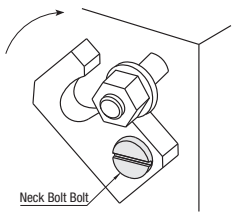
- 1.1191/C45E Hardening Type

10 Days ⊗Express Serviceis not available.

Alteration	Code	Spec.	Price Adder
	PC	Adds a relief to M.	2,00

D	MxPitch	g	f
4	M2.6x0.45	1	1.9
5	M3 x 0.5		2.3
6	M4 x 0.7	1.2	3.2
8	M5 x 0.8	1.4	4.0
10	M6 x 1.0	1.7	4.8
12 / 13	M8 x1.25		6.5
15	M10 x 1.5	2	8.2

Example



Fulcrum Pins

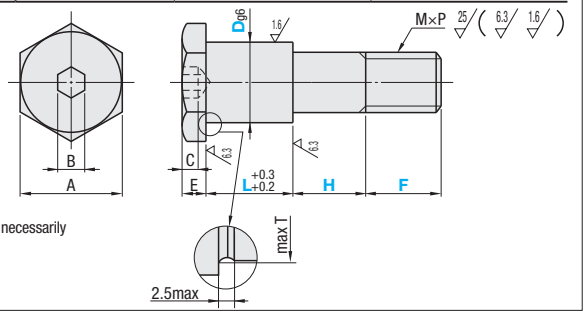
-Low Head Stepped, With Lock Nut-

CAD Data



Type		M Material	S Surface Treatment	H Hardness
Standard	Configurable			
CMSG	FCMSG	1.7220/34CrMo4	Black Oxide	33~38HRC
SCMSG	FSCMSG	1.4301/X5CrNi18-10	-	-

D Tolerance	
6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~18	-0.006 -0.017
20	-0.007 -0.020



The two hexagons denoted by A and B are not necessarily aligned with each other.

Precaution for Use
Tighten the external hexagon A to finish.

Standard

Part Number Type	Dg6	L Selection	H 0.1mm Increment	A	B	C	E	F	MxP (Coarse Thread)	T	€ Unit Price CMSG	€ Unit Price SCMSG
	6	5 6 9 10 12	2.0~ 50.0	10	3	2	5	7	4x0.7	6.5		
	8	5 6 9 10 12 16		13	5	3		9	6x1.0	8.7		
	10	10 12 16 19 22 25	3.0~ 70.0	17	6	4		12	8x1.25	10.8		
CMSG	12			19						12.8		
	13				8	5	6	16	10x1.5	14		
SCMSG	15	16 19 22 25	4.0~ 80.0	24	10	6	7	18	12x1.75	17		
	16											
	18			27		7	8			19		
	20		4.0~100.0	30	14			24	16x2.0	21		

Configurable

Part Number Type	Dg6	L 1mm Increment	H 0.1mm Increment	F 1mm Increment	A	B	C	E	MxP (Coarse Thread)	T	€ Unit Price FCMSG	€ Unit Price FSCMSG
	6	5~12	2.0~ 50.0	4~ 7	10	3	2	5	4x0.7	6.5		
	8	5~16		6~ 9	13	5	3		6x1.0	8.7		
	10	10~25	3.0~ 70.0	8~12	17	6	4		8x1.25	10.8		
FCMSG	12				19					12.8		
	13			10~16		8	5	6	10x1.5	14		
FSCMSG	15		4.0~ 80.0	12~18	24	10	6	7	12x1.75	17		
	16											
	18				27		7	8		19		
	20		4.0~100.0	16~24	30	14			16x2.0	21		

Order Example

Part Number	-	L	-	H	-	F
CMSG15	-	16	-	20.5		
FSCMSG12	-	13	-	8	-	10

Days to Ship

8 Days | Express A | 3,00 EUR/ piece | P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

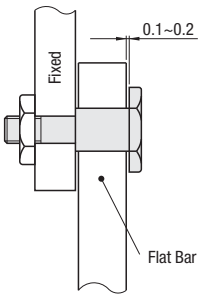
Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

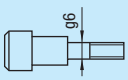
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	L	-	H	-	F	- (HKC)
CMSG10	-	12	-	15.2			- HKC

Example



Alterations	Code	Spec.	Price Adder
	HKC	Dimension H will have an outer diameter tolerance of g6. Dimension H applicable range D: 6 · 8 — H: 10~50 D: 10 · 12 · 13 — H: 15~70 D: 15 · 16 · 18 — H: 20~80 D: 20 — H: 20~100	3,00

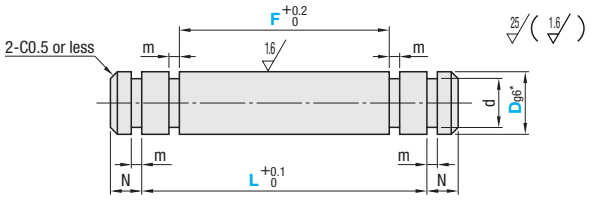
Precision Pivot Pins

-Retaining Rings · Female Thread Ends-

CAD Data



Type	Material	Surface Treatment	Accessory	
CNPR	1.1191/C45E	Black Oxide	Retaining Rings 4 pcs.	Material Spring Steel
SCNPR	1.4301/X5CrNi18-10	-		Material 1.4301/X5CrNi18-10



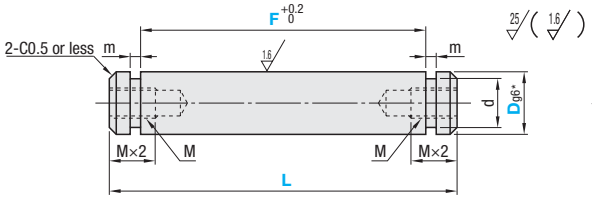
D Tolerance (g6)	
3	-0.002 -0.008
4~6	-0.004 -0.012
8 · 10	-0.005 -0.014
12~16	-0.006 -0.017
20 · 25	-0.007 -0.020

Part Number Type	D	1mm Increment L	F	N	d	Tolerance	m	Tolerance	€ Unit Price CNPR	SCNPR
CNPR SCNPR	3	8~60	5~47	2	2	+0.06 0	0.5	+0.05 0		
	4	9~60	5~48		3		0.7	+0.1 0		
	5	14~60	10~56		4	+0.075 0				
	6	14~100	10~96		5					
	8			3	7	+0.09 0	0.9			
	10	20~100	15~95		9.6	0 -0.09	1.15	+0.14 0		
	12	20~200	15~195	4	11.5					
	13	30~200	25~195		12.4					
	14				13.4	0 -0.11				
	15				14.3					
	16	35~200	30~195		15.2					
	20				19	0	1.35			
	25				23.9	-0.21				

F≤L-(2m+2)



Type	Material	Surface Treatment	Accessory	
CNPP	1.1191/C45E	Black Oxide	Retaining Ring 2 pcs.	Material Spring Steel
SCNPP	1.4301/X5CrNi18-10	-		Material 1.4301/X5CrNi18-10



D Tolerance (g6)	
8 · 10	-0.005 -0.014
12~16	-0.006 -0.017
20 · 25	-0.007 -0.020

Part Number Type	D	1mm Increment L	F	M (Coarse Thread)	d	Tolerance	m	Tolerance	€ Unit Price CNPP	SCNPP
CNPP SCNPP	8	14~100	10~96	M4	7	+0.09 0	0.9	+0.1 0		
	10	20~100	15~95	M6	9.6	0 -0.09	1.2	+0.14 0		
	12	20~200	15~195		11.5					
	13	30~200	25~195	M8	12.4	0 -0.11				
	14				13.4					
	15				14.3					
	16	35~200	30~195	M10	15.2					
	20			M12	19	0 -0.21	1.4			
	25			M16	23.9					

F≤L-(2+2m)

Order Example

Part Number	-	L	-	F
CNPR15	-	120	-	F100
CNPP20	-	80	-	F60

Days to Ship

8 Days — Express A — 2,00 EUR/ piece — P.88

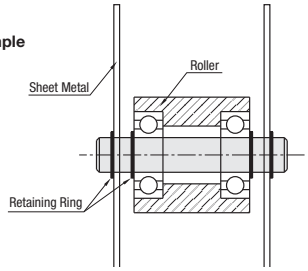
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Example



Bearings with Housings / Bearings

Bearings with Housings/ Bearings








Product Name	Bearings with Housings-Small Flanged-	-Retained-	-with Pilot - Retained-	-Direct Mount Non-retained-	-Thrust Bearings-	-Short Double Bearing Retained-
Page	842	843	845	847	849	850







-Double Retained - Standard / Configurable-	-Double Non-retained - Standard / Configurable-	-Double with Pilot - Retained - Standard / Configurable-	-Double with Pilot - Non-retained, L Selectable / Configurable-	-Long Double Non-retained, Configurable-
851~854	855~858	859~862	863~866	867









Low Particulate Grease Bearings with Housings-Single and Double-	Bearings with Housings - L-Shaped-	-T-Shaped Short, Double-	–L-Shaped Retained–	-T-Shaped Double Bearingss-
869-870	871	872	873	875








-L-Shaped Retained-	-T-Shaped Double Bearings-	Low Particulate Grease Bearings with Housings-L-Shaped-	-T-Shaped Double Bearings-	Bearings with Housings-Block-	-Block - Double Bearings-
877	878	879	880	881	882








-Bottom Mount-	-Bottom Mount Double-	-Front Mount Type-	-Front Mount Shouldered Type-	Bearings with Housings -Outer Ring Captured-	-Outer Ring Captured with Pilot-
883	884	885	886	888	889










Price Reduced Up to 46%

Price Reduced Average 27%

Price Reduced Average 19%

-Outer Ring Captured, T-Shaped-	Angular Contact Bearings with Housing-Flanged-	-Angular Contact + Deep Groove / Flanged-	-Angular Contact + Deep Groove / With Pilot-	Deep Groove -Double Shielded-	-Economy Type-	-Open-	-With Retaining Ring - Double Shielded-
890	892	893	895	897-898	899	900	901-902




Price Reduced Average 33%

Price Reduced Average 21% or 37%

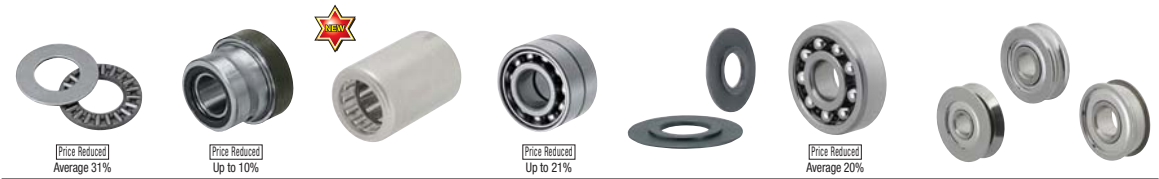
Price Reduced Average 34%

Price Reduced Up to 41%

Deep Groove -Single Shielded-	-Double Shielded with C3 Clearance-	-Non-contact / Contact Rubber Sealed-	-Stainless Steel- Small	-Double Shielded-	-Economy Type-	-Non-contact / Contact Rubber Sealed-	-Open Type-	Small Deep Groove Ball Bearings with Flange
903	904	905	906	907-908	909	909	910	911-912



Low Particulate Grease Bearings	1.4301/X5CrNi18-10 for Special Environments	Non-grease, Non-oil Ball Bearings for Special Environments	Plastic Bearings	Heat-Resistant Grease Filled Ball Bearings	Bearings with Set Screw Shaft Sleeve	Thrust Bearings
913-914	915	915	916	917 / 918	918	919



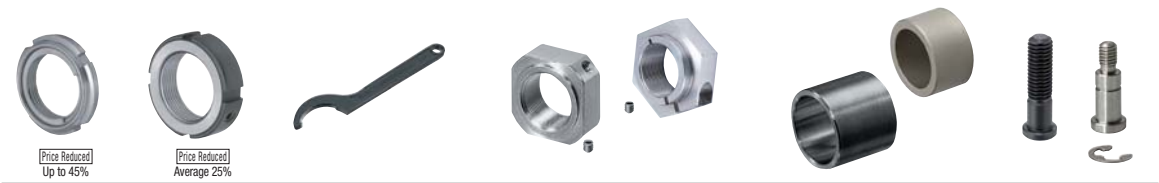
Thrust Needle Roller Bearings	Needle Roller Bearings	One-way Clutches	Angular Contact Bearings	Grease Seal Rings	Self-aligning Ball Bearings	Stainless Steel Deep Groove Bearings
920	921	922	923-924	924	925	926



Housing Units	Housing Units -Cast-	Deep Groove Ball Bearing Units (Economy Type) -Cast-	Steel Plate Ball Bearing Units
927	928~930	931-932	933



Shaft End Caps	Steel Plate Ball Bearing Units	Bearing Cover Plates -Standard / With Seal-	Bearing Cover Plates	Lock Nuts and Toothed Lock Washers	Hard Locking Bearing Nuts
933	934	935	936	937	938



Fine U Nuts®	Precision Lock Nuts	Hook Spanners for Bearing Lock Nuts	Bearing Lock Nuts-Square / Hexagon-	Bearing Spacers	Bearing Shaft Screws
938	939	939	940	941	943-944



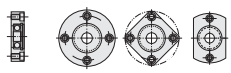
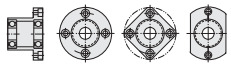
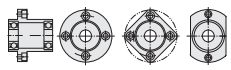
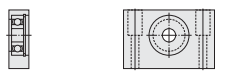
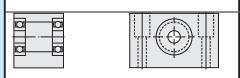
Cam Followers with Brackets	Cam Followers-Standard-	-With Female Thread Hole for Grease Fitting-	-With Hexagon Socket-	Guide Followers	Solid Eccentric Cam Followers	Miniature Cam Followers
945-946	947	948	949-950	951	951	952

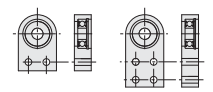
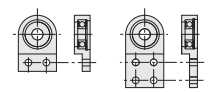


Resin Cam Followers	Cam Followers Urethane Type	Brackets for Cam Followers	Brackets for Cam Followers	Roller Followers-Separate / Solid-	Roller Follower Pins
953	955	956	956	957-958	958

Selection List of Shapes for Bearings with Housings

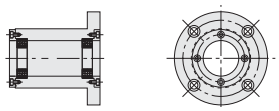
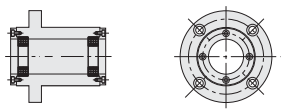
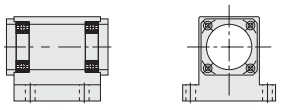
■Selection List of Shapes for Bearings with Housings

Name of Shape	Shape	Features	Bearing	Selection Configurable	Pages
Single		Small Flanged	Yes / No	-	P.842
		Standard	Yes	-	P.843
			No	-	P.847
		with Pilot	Yes	-	P.845
		Low Particulate Generation	Yes	-	P.869
Double		Short	Yes	Selection	P.850
		Standard	Yes	Selection	P.851
			Yes	Configurable	P.853
			No	Selection	P.855
			No	Configurable	P.857
		Low Particulate Generation	Yes / No	Yes / No	P.870
Double with Pilot		Standard	Yes	Selection	P.859
			Yes	Configurable	P.861
			No	Selection	P.863
			No	Configurable	P.865
		Long	No	Configurable	P.867
Thrust Bearing Type		Standard	-	-	P.849
Block		Standard	Yes	Selection	P.881
		Standard	No	Selection	P.882

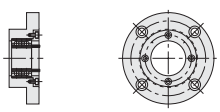
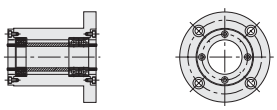
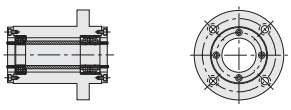
Name of Shape	Shape	Features	Bearing	Selection Configurable	Pages
T-Shaped Single		Standard	Yes	Yes / No	P.873
		Datums	Yes	Yes / No	P.877
		Low Particulate Generation	Yes	Yes / No	P.879
T-Shaped Double		Short	Yes	Selection	P.872
		Standard	No	Yes / No	P.875
		Datums	No	Yes / No	P.878
		Low Particulate Generation	No	Yes / No	P.880
Bottom Mount		Standard	Yes	Selection	P.883
			No	Selection	P.884
L-Shaped		Standard	Yes	Yes / No	P.871
Front Mount		Standard	Yes	Selection	P.885
		Standard	Yes	Selection	P.886

*Retaining Ring = It denotes if retaining rings are used to retain the bearings on shafts.
*Selectable · Configurable = Length and height are selectable or configurable by 1mm increment.

■Selection List of Shapes for Bearings with Housings Outer Ring Fixed Type

Name of Shape	Shape	Page
Double		P.888
Double with Pilot		P.889
T-Shaped Double		P.890

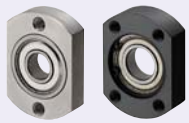
■Selection List of Shapes for Angular Contact Bearings with Housings

Name of Shape	Shape	Page
Short Double		P.892
Double		P.893
Double with Pilot		P.895

Bearings with Housings

-Space Saving Small Flanged-

CAD Data



RoHS

For No Retaining Ring Type, bearing may protrude 0.1 and 0.2mm due to negative tolerance of B dimension.

Type		Material		Surface Treatment
Retained	Non-retained	Bearings	Housing	Housing
BGTAB	BGTNB	Steel	1.1191/C45E	Black Oxide
BGTCA	BGTN			Electroless Nickel Plating
SBGTA	SBGTN	Stainless Steel	1.4301/X5CrNi18-10	-

* Bearings with Rubber Seals (V V and DD) are all made of steel.

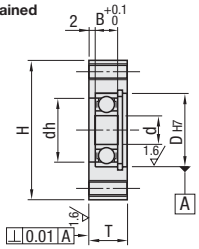
Bearing Accuracy JIS B 1514 Class 0

6.3 (1.6)

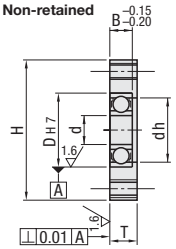
Features

By changing the conventional counterbored holes to tapped holes, this product has 4 to 13mm smaller flange dimensions suitable for use in space-savings.

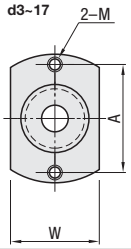
- Retained



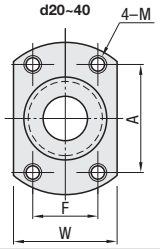
- Non-retained



d3~17



d20~40



Part Number			d	D_{H7}	Tolerance	B	H	W	T		dh	A	F	M (Coarse)
Type	Bearing No.	Seal							Retained	Non-retained				
(Retained) BGTAB BGTCA SBGTA (Non-retained) BGTNB BGTN SBGTN	623	ZZ (Double Shielded) *VV (Non-contact Rubber Sealed) DD (Contact Rubber Sealed)	3	10	+0.015 0	4	25	13	9	6	7	18	-	M4
	624		4	13		5	28	15	10	7	9	21		
	605		5	14	+0.018 0	5	32	17	10	7	10	23		M5
	625			16		5	34	19	10	7	12	25		
	606		6	17		6	35	20	11	8	13	26		
	626			19		6	37	22	11	8	15	28		
	608		8	22		7	40	26	12	9	18	31		
	628			24		8	42	29	13	10	20	33		
	6900		10	22	+0.021 0	6	40	26	11	8	19	31		
	6000			26		8	44	31	13	10	22	35		
	6200			30		9	48	35	14	11	24	39		
	6901		12	24		6	42	28	11	8	21	33		
	6001			28		8	46	33	13	10	24	37		
	6201			32	+0.025 0	10	50	37	15	12	26	41		
	6902		15	28	+0.021 0	7	49	34	12	9	25	39		M6
	6002			32	+0.025 0	9	53	37	14	11	28	43		
	6202			35		11	56	41	17	13	29	46		
	6903		17	30	+0.021 0	7	51	35	12	9	27	41		
	6003			35	+0.025 0	10	56	41	16	12	31	46		
	6203			40		12	61	47	18	14	34	51		
	6904		20	37		9	64	44	15	11	34	45	24	M8
	6004			42		12	69	51	18	14	36	46	32	
	6204			47		14	74	55	20	16	40	50	34	
	6005		25	47		12	80	55	18	14	41	52	36	M10
	6205			52		15	85	61	22	17	45	56	39	
	6006		30	55	+0.030 0	13	88	63	20	15	48	59	40	
	6206			62		16	95	71	23	18	55	65	44	
	6007		35	62		14	95	71	21	16	55	65	44	
	6008		40	68		15	101	79	23	17	60	65	54	

Check for available sizes in the price list.

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

Order Example

Part Number		
Type	Bearings	Seal
BGTCA	6000	ZZ
BGTAB	6902	VV
BGTN	606	DD

Days to Ship

8 Days | Express A | 2,00 EUR/piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

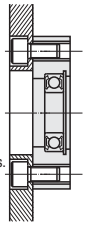
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Alterations

Part Number	-	(NA)
BGTAB6000ZZ	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

Bearings No.	Seal	€ Unit Price					
		BGTAB	BGTCA	SBGTA	BGTNB	BGTN	SBGTN
623	ZZ (x1.0) VV (x1.1) DD (x1.1)						
624							
605							
625							
606							
626							
608							
628							
6900							
6000							
6200							
6901							
6001							
6201							
6902							

Bearings No.	Seal	€ Unit Price					
		BGTAB	BGTCA	SBGTA	BGTNB	BGTN	SBGTN
6002	ZZ (x1.0) VV (x1.1) DD (x1.1)						
6202							
6903							
6003							
6203							
6904							
6004							
6204							
6005							
6205							
6006							
6206							
6007							
6008							

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.) (Ex.) When BGTN606DD, the price in the table is 14,20 EURx1.1=15,62 EUR→15,60 EUR

Bearings with Housings

-With Retaining Rings-

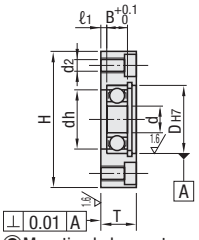


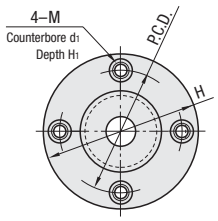
Type			Material		Surface Treatment	Accessory
Round	Square	Compact	Bearings	Housing	Housing	Retaining Ring
BGRAB	BGSAB	BGCAB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGRA	BGSA	BGCA			Electroless Nickel Plating	**1.4301/X5CrNi18-10
BARA	BASA	BACA		EN AW-2017/ AlCu4MgSi	Clear Anodize	1.4301/X5CrNi18-10
SBARA	SBASA	SBACA	Stainless Steel			
SBGRA	SBGSA	SBGCA		1.4301/X5CrNi18-10	-	

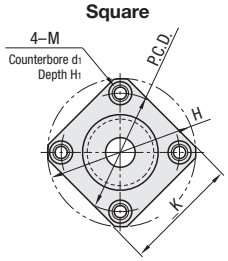
* Bearings with Rubber Seals (V V and DD) are all made of steel.
** When D=68 ~ 90, the retaining ring is Spring Steel + Electroless Nickel Plating.

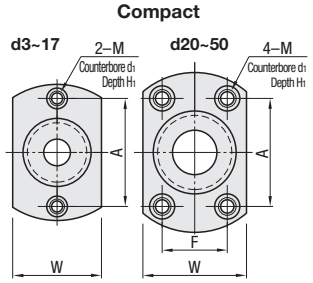
Bearing Accuracy JIS B 1514 Class 0

6.3 (1.6)









Mounting holes are tapped and counterbored so the housing can be mounted from either side.

Part Number			d	DH7	Tol.	B	H	W	T	ℓ1	dh	P.C.D.	K	A	F	M (Coarse) (d2)	d1	H1
Type	Bearing No.	Seal																
	623		3	10	+0.015 0	4	33	16	9		7	24	27	24		M4 (3.3)	6.5	3.4
	624		4	13		5	35	18	10		9	26	28	26				
	605		5	14	+0.018 0	5	36	20	10		10	26	30	26				
	625			16		5	38	22	10		12	28	31	28				
	606		6	17		6	39	23	11		13	29	32	29				
	626			19		6	41	25	11		15	31	34	31				
	698		8	19		6	41	25	11		15	31	34	31				
	608			22		7	45	29	12		18	35	36	35				
	628			24		8	47	32	13		20	37	37	37				
	6800		10	19	+0.021 0	5	41	25	10		15	31	34	31		M5 (4.3)	8	4.4
	6900			22		6	45	29	11		19	35	36	35				
(Round)	6000			26		8	50	34	13		22	40	39	40				
BGRAB	6200			30		9	54	38	14		24	44	42	44	-			
BGRA	6801	ZZ	12	21		5	44	29	10		17	34	35	34				
BARA	6901	(Double		24		6	48	31	11		21	38	38	38				
SBARA	6001	Shielded)		28		8	52	36	13		24	42	40	42				
SBGRA	6201			32	+0.025 0	10	56	40	15		26	46	43	46				
	6802	*VV	15	24	+0.021 0	5	47	32	10	2	20	37	37	37				
(Square)	6902	Noncontact		28		7	57	37	12		25	45	45	45				
BGSAB	6002	(Rubbe		32	+0.025 0	9	60	40	14		28	48	46	48				
BGSA	6202	Sealed)		35		11	64	44	17		29	52	49	52				
BASA	6903		17	30	+0.021 0	7	60	38	12		27	48	46	48		M6 (5.2)	9.5	5.4
SBASA	6003			35		10	66	44	16		31	54	50	54				
SBGSA	6203	DD		40		12	72	50	18		34	60	54	60				
	6804	Contact	20	32	+0.025 0	7	60	40	12		28	48	46	38	29			
(Compact)	6904	(Rubber		37		9	69	47	15		34	56	54	51	24	M8 (6.8)	11	6.5
BGCAB	6004	Sealed)		42		12	77	54	18		36	64	59	56	32			
BGCA	6204			47		14	81	58	20		40	68	62	59	34			
BACA	6805		25	37		7	69	47	13		34	56	54	51	24			
SBACA	6905			42		9	77	54	15		36	64	59	56	32			
SBGCA	6005			47		12	88	58	18		41	72	67	63	36	M10 (8.5)	14	8.6
	6205			52	+0.030 0	15	94	64	22		45	78	72	68	39			
	6806		30	42	+0.025 0	7	77	54	13		36	64	59	56	32	M8 (6.8)	11	6.5
	6906			47		9	88	58	15		41	72	67	63	36	M10 (8.5)	14	8.6
	6006			55		13	96	66	20		48	80	73	70	40			
	6206			62		16	104	74	23		55	88	79	77	44			
	6007		35			14			21					75				
	6207			72	+0.030 0	17	126	88	26	3	64	105	95	92	51	M12 (10.5)	17.5	11
	6008		40	68		15	114	82	23	2	60	96	86	80	54	M10 (8.5)	14	8.6
	6208			80		18	134	96	27	3	74	113	102	98	56	M12 (10.5)	17.5	11
	6010	ZZ	50			16			25				-					
	6210	(Double Shielded)		90	+0.035 0	20	147	110	31	4	83	126	-	104	72			

Check for available sizes in the price list.

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

CAD Data

Order Example

Part Number		
Type	Bearings	Seal
BGRAB	6000	ZZ
BGSA	6900	DD

Days to Ship: 8 Days

⊗Express Serviceis not available for 6207, 6208, 6010 and 6210.

Express A | 2,00 EUR/ piece

P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

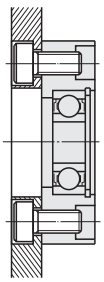
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Bearings No.	Seal	€ Unit Price														
		Round					Square					Compact				
		BGRAB	BGRA	BARA	SBARA	SBGRA	BGSAB	BGSA	BASA	SBASA	SBGSA	BGCAB	BGCA	BACA	SBACA	SBGCA
623	ZZ (x1.0) VV (x1.1) DD (x1.1)															
624																
605																
625																
606																
626																
698																
608																
628																
6800																
6900																
6000																
6200																
6801																
6901																
6001																
6201																
6802																
6902																
6002																
6202																
6903																
6003																
6203																
6804																
6904																
6004																
6204																
6805																
6905																
6005																
6205																
6806																
6906																
6006																
6206																
6007																
6207																
6008																
6208																
6010																
6210																

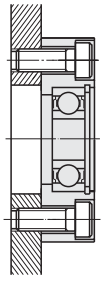
The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGSA6900DD, the price in the table is 16,40 EURx1.1=18,04 EUR→18,00 EUR

Example

- Using Female Thread Holes



- Using Counterbored Holes



Alterations

Part Number	-	(NA)
BGRAB6000VV	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

Bearings with Housings

-Standard with Pilot - Retained-

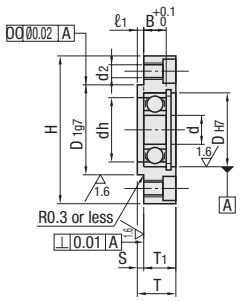


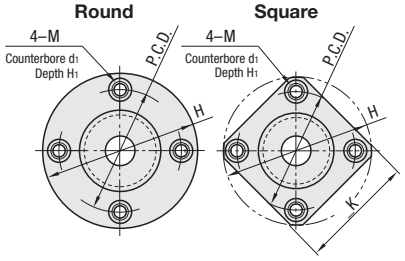
Type			M Material		S Surface Treatment	A Accessory Retaining Ring
Round	Square	Compact	Bearings	Housing	Housing	
BGRRB	BGSRB	BGCRB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGRR	BGSR	BGCR			Electroless Nickel Plating	**1.4301/X5CrNi18-10
BARR	BASR	BACR		EN AW-2017/ AlCu4MgSi	Clear Anodize	1.4301/X5CrNi18-10
SBARR	SBASR	SBACR	Stainless Steel			
SBGRR	SBGSR	SBGCR		1.4301/X5CrNi18-10	-	

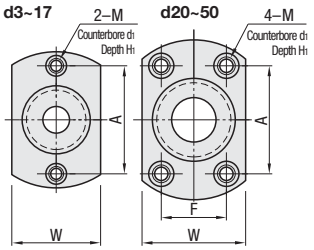
*Bearings with Rubber Seals (V V and DD) are all made of steel.

**When D=68 ~ 90, the retaining ring is Spring Steel + Electroless Nickel Plating.

Bearing Accuracy JIS B 1514 Class 0







Mounting holes are tapped and counterbored so the housing can be mounted from either side.

Part Number Type	Bearing No.	Seal	d	DH7	Tolerance	B	H	W	T	T1	S	ℓ1	dh	D1g7	Tolerance	P.C.D.	K	A	F	M (Coarse) (d2)	d1	H1
	623		3	10	+0.015 0	4	33	16	9	7			7	14	-0.006 -0.024	24	27	24		M4 (3.3)	6.5	3.4
	624		4	13		5	35	18	10	8			9	17		26	28	26				
	605		5	14	+0.018 0	5	36	20	10	8			10	18		26	30	26		M5 (4.3)	8	4.4
	625			16		5	38	22	10	8			12	20	-0.007 -0.028	28	31	28				
	606		6	17		6	39	23	11	9			13	21		29	32	29				
	626		6	19		6	41	25	11	9			15	24		31	34	31				
	698		8	19		6	41	25	11	9			15	24		31	34	31				
	608			22		7	45	29	12	10			18	27		35	36	35				
	628			24		8	47	32	13	11			20	30		37	37	37				
	6800		10	19	+0.021 0	5	41	25	10	8			15	24		31	34	31				
	6900			22		6	45	29	11	9			19	27		35	36	35				
(Round)	6000			26		8	50	34	13	11			22	32	-0.009 -0.034	40	39	40	-			
BGRRB	6200			30		9	54	38	14	12			24	36		44	42	44				
BGRR	6801		12	21		5	44	29	10	8			17	26	-0.007 -0.028	34	35	34				
BARR	6901			24		6	48	31	11	9			21	30		38	38	38				
SBARR	6001	ZZ (Double Shielded)		28		8	52	36	13	11			24	34	-0.009 -0.034	42	40	42				
SBGRR	6201			32	+0.025 0	10	56	40	15	13			26	38		46	43	46				
	6802		15	24	+0.021 0	5	47	32	10	8	2	2	20	30	-0.007 -0.034	37	37	37				
(Square)	6902	*VV (Non-contact Rubber Sealed)		28		7	57	37	12	10			25	35	-0.009 -0.034	45	45	45		M6 (5.2)	9.5	5.4
BGSRB	6002			32	+0.025 0	9	60	40	14	12			28	38		48	46	48				
BGSR	6202			35		11	64	44	17	15			29	42		52	49	52				
BASR	6903	DD (Contact Rubber Sealed)	17	30	+0.021 0	7	60	38	12	10			27	36		48	46	48				
SBASR	6003			35	+0.025 0	10	66	44	16	14			31	42		54	50	54				
SBGSR	6203			40		12	72	50	18	16			34	48		60	54	60				
	6804		20	32		7	60	40	12	10			28	38		48	46	38	29			
(Compact)	6904			37		9	69	47	15	13			34	45		56	54	51	24			
BGCRB	6004			42		12	77	54	18	16			36	50		64	59	56	32			
BGCR	6204			47		14	81	58	20	18			40	54	-0.010 -0.040	68	62	59	34	M8 (6.8)	11	6.5
BACR	6805		25	37		7	69	47	13	11			34	45	-0.009 -0.034	56	54	51	24			
SBACR	6905			42		9	77	54	15	13			36	50		64	59	56	32			
SBGCR	6005			47		12	88	58	18	16			41	54	-0.010 -0.040	72	67	63	36	M10 (8.5)	14	8.6
	6205			52	+0.030 0	15	94	64	22	20			45	60		78	72	68	39			
	6806		30	42	+0.025 0	7	77	54	13	11			36	50	-0.009 -0.034	64	59	56	32	M8 (6.8)	11	6.5
	6906			47		9	88	58	15	13			41	54		72	67	63	36			
	6006			55		13	96	66	20	18			48	62	-0.010 -0.040	80	73	70	40	M10 (8.5)	14	8.6
	6206			62		16	104	74	23	21			55	70		88	79	77	44			
	6007		35			14			21	19								75				
	6207			72	+0.030 0	17	126	88	26	23	3	3	64	84	-0.012 -0.047	105	95	92	51	M12 (10.5)	17.5	11
	6008		40	68		15	114	82	23	21	2		60	78	-0.010 -0.040	96	86	80	54	M10 (8.5)	14	8.6
	6208			80		18	134	96	27	24	3		74	92	-0.012 -0.047	113	102	98	56	M12 (10.5)	17.5	11
	6010	ZZ (Double Shielded)	50			16			25	22							-					
	6210			90	+0.035 0	20	147	110	31	28		4	83	106		126	-	104	72			

Check for available sizes in the price list.

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

CAD Data

Order Example

Part Number		
Type	Bearings	Seal
BGRR	6000	ZZ
BGCR	6903	DD

Days to Ship

8 Days

Express A — 2,00 EUR/ piece — P.88

⊗Express Service is not available for 6207, 6208, 6010 and 6210.

(?)A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount ((?)Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

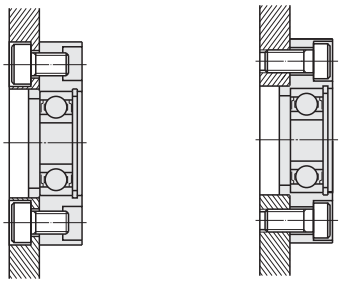
(?)For orders larger than indicated quantity, please request a quotation.

Bearings No.	Seal	€ Unit Price														
		Round					Square					Compact				
		BGRRB	BGRR	BARR	SBARR	SBGRR	BGSRB	BGSR	BASR	SBASR	SBGSR	BGCRB	BGCR	BACR	SBACR	SBGCR
623	ZZ (x1.0)															
624																
605																
625																
606																
626																
698																
608																
628																
6800																
6900																
6000																
6200																
6801																
6901																
6001																
6201																
6802																
6902																
6002																
6202	VV (x1.1)															
6903																
6003																
6203	DD (x1.1)															
6804																
6904																
6004																
6204																
6805																
6905																
6005																
6205																
6806																
6906																
6006																
6206																
6007																
6207																
6008																
6208																
6010																
6210																

(?)The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BACR6903DD, the price in the table is 26,60 EURx1.1=29,26 EUR→29,20 EUR

Example

- Female Thread Holes
- Counterbored Holes



Alterations

Part Number - (NA)

BGRR6000VV - NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

Bearings with Housings

-Non-retained-

RoHS



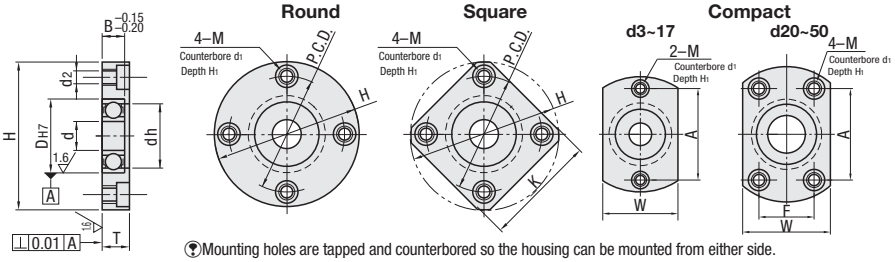
Bearing may protrude 0.1 and 0.2mm due to negative tolerance of B dimension.

Type			Material		Surface Treatment
Round	Square	Compact	Bearings	Housing	Housing
BGRNB	BGSNB	BGCNB	Steel	1.1191/C45E	Black Oxide
BGRN	BGSN	BGCN			Electroless Nickel Plating
BARN	BASN	BACN	Stainless Steel	EN AW-2017/ AlCu4MgSi	Clear Anodize
SBARN	-	SBACN			
SBGRN	SBGSN	SBGCN		1.4301/X5CrNi18-10	-

Bearing Accuracy JIS B 1514 Class 0

6.3 (1.6)

Bearings with Rubber Seals (V V and DD) are all made of steel.



Mounting holes are tapped and counterbored so the housing can be mounted from either side.

Part Number			d	DH7	Tolerance	B	H	W	T	dh	P.C.D.	K	A	F	M (Coarse) (d2)	d1	H1
Type	Bearing No.	Seal															
(Round) BGRNB BGRN BARN SBARN SBGRN (Square) BGSNB BGSN BASN SBGSN (Compact) BGCNB BGCN BACN SBACN SBGCN	623	ZZ (Double Shielded) *VV (Non-contact Rubber Sealed) DD (Contact Rubber Sealed)	3	10	+0 −0.015	4	33	16	6	7	24	27	24	-	M4 (3.3)	6.5	3.4
	624		4	13	+0.018 0	5	35	18	7	9	26	28	26				
	605		5	14		5	36	20	7	10	26	30	26		M5 (4.3)	8	4.4
	625			16		5	38	22	7	12	28	31	28				
	606		6	17		6	39	23	8	13	29	32	29				
	626			19	+0 −0.021	6	41	25	8	15	31	34	31				
	678		8	12	+0 −0.018	3.5	34	18	6	10	25	27	25		M4 (3.3)	6.5	3.4
	698			19	+0.021 0	6	41	25	8	15	31	34	31		M5 (4.3)	8	4.4
	608			22		7	45	29	9	18	35	36	35				
	628			24		8	47	32	10	20	37	37	37				
	6700		10	15	+0 −0.018	4	37	22	7.5	12	27	30	27				
	6800			19	+0.021 0	5	41	25	7.5	15	31	34	31				
	6900			22		6	45	29	8	19	35	36	35				
	6000			26		8	50	34	10	22	40	39	40				
	6200			30		9	54	38	11	24	44	42	44				
	6701		12	18	+0 −0.018	4	40	25	7.5	15	30	31	30				
	6801			21	+0.021 0	5	44	29	7.5	17	34	35	34				
	6901			24		6	48	31	8	21	38	38	38				
	6001			28		8	52	36	10	24	42	40	42				
	6201			32	+0 −0.025	10	56	40	12	26	46	43	46				
	6702		15	21	+0.021 0	4	44	29	7.5	18	34	35	34				
	6802			24		5	47	32	7.5	20	37	37	37				
	6902			28		7	57	37	9	25	45	45	45		M6 (5.2)	9.5	5.4
	6002			32	+0.025 0	9	60	40	11	28	48	46	48				
	6202			35		11	64	44	13	29	52	49	52				
	6803		17	26	+0.021 0	5	50	34	7.5	22	40	39	40		M5 (4.3)	8	4.4
	6903			30		7	60	38	9	27	48	46	48		M6 (5.2)	9.5	5.4
	6003			35	+0.025 0	10	66	44	12	31	54	50	54				
	6203			40		12	72	50	14	34	60	54	60				
	6704		20	27	+0 −0.021	4	51	35	7.5	23	41	39	32	25	M5 (4.3)	8	4.4
	6804			32	+0.025 0	7	60	40	9	28	48	46	38	29	M6 (5.2)	9.5	5.4
	6904			37		9	69	47	11	34	56	54	51	24	M8 (6.8)	11	6.5
	6004			42		12	77	54	14	36	64	59	56	32			
	6204			47		14	81	58	16	40	68	62	59	34			
	6805		25	37		7	69	47	11	34	56	54	51	24			
	6905			42		9	77	54	11	36	64	59	56	32			
	6005			47		12	88	58	14	41	72	67	63	36	M10 (8.5)	14	8.6
	6205			52	+0 −0.030	15	94	64	17	45	78	72	68	39			
	6806		30	42	+0.025 0	7	77	54	11	36	64	59	56	32	M8 (6.8)	11	6.5
	6906			47		9	88	58	13	41	72	67	63	36	M10 (8.5)	14	8.6
	6006			55	+0.030 0	13	96	66	15	48	80	73	70	40			
	6206			62		16	104	74	18	55	88	79	77	44			
	6007		35			14			16				75				
	6207			72		17	126	88	21	64	105	95	92	51	M12 (10.5)	17.5	11
	6008		40	68		15	114	82	17	60	96	86	80	54	M10 (8.5)	14	8.6
	6208			80		18	134	96	22	74	113	102	98	56	M12 (10.5)	17.5	11
	6010	ZZ (Double Shielded)	50			16			20			-					
	6210			90	+0 −0.035	20	147	110	24	83	126	-	104	72			

Check for available sizes in the price list.

* No. 623, 624, 605, 606 and numbers starting with 67 are not available for V V (Non-contact rubber sealed).

CAD Data

Order Example

Part Number		
Type	Bearings	Seal
BGCN	6000	ZZ
BGSN	6203	DD

Days to Ship: 8 Days

⊗Express Service is not available for 6207, 6208, 6010 and 6210.

Express A | 2,00 EUR/piece | P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

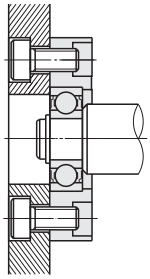
For orders larger than indicated quantity, please request a quotation.

Bearings No.	Seal	€ Unit Price													
		Round					Square				Compact				
		BGRNB	BGRN	BARN	SBARN	SBGRN	BGSNB	BGSN	BASN	SBGSN	BGCNB	BGCN	BACN	SBACN	SBGCN
623	ZZ (x1.0)														
624															
605															
625															
606															
626															
678															
698															
608															
628															
6700															
6800															
6900															
6000															
6200															
6701															
6801															
6901															
6001															
6201															
6702															
6802	VV (x1.1)														
6902															
6002															
6202															
6803	DD (x1.1)														
6903															
6003															
6203															
6704															
6804															
6904															
6004															
6204															
6805															
6905															
6005															
6205															
6806															
6906															
6006															
6206															
6007															
6207															
6008															
6208															
6010															
6210															

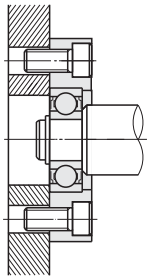
The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGSN6203DD, the price in the table is 19,70 EUR x1.1=21,67 EUR→21,60 EUR

Example

- Female Thread Holes



- Counterbored Holes



Bearings with Housings

-Thrust Bearings-

CAD Data

RoHS

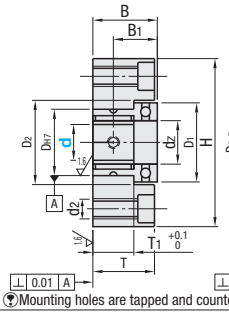


Type		M Material	S Surface Treatment	A Accessory Set Screw
Standard	With Pilot			
BGCSB	BGCTB	1.1191/C45E	Black Oxide	1.7220/34CrMo4 2 pcs.
-	BGCT	1.1191/C45E	Electroless Nickel Plating	1.4301/X5CrNi18-10
SBGCS	-	1.4301/X5CrNi18-10	-	2 pcs.

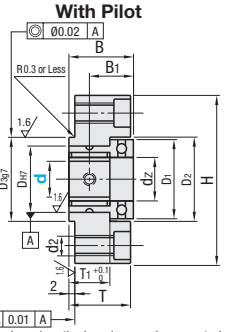
Bearings are secured to Housings with screws. Remove set screws before replenishing lubricant.

6.3 (1.6)

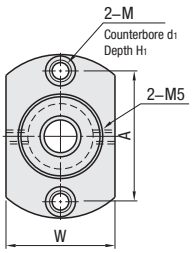
Standard



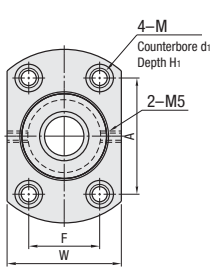
With Pilot



d7~14



d17~30



Mounting holes are tapped and counterbored so the housing can be mounted from either side.

Bearing Accuracy JIS B 1514 Class 0

Part Number Type	d	DH7	Tolerance	B	H	W	T	dz	D1	D2	D3g7	Tolerance	T1	B1	A	F	M (d2)	d1	H1	Bearing Used (P.921)
(Standard) BGCSB SBGCS (With Pilot Type) BGCTB BGCT	7	19	+0.021 0	23	54	38	22	10	25	27	24	-0.007 -0.028	14	15.5	41	-	M8 (6.8)	11	6.5	NKXZ 7
	9	21			56	40		12	27	29	26				43					NKXZ 9
	12	24			60			15	29	31	30				46					NKXZ12
	14	26		25	66	44	24	17	31	33	34	-0.009 -0.034	16	17	52					NKXZ14
(Standard) BGCSB (With Pilot Type) BGCTB BGCT	17	30	+0.025 0	30	77	54	29	20	36	38	36		20	20.5	50	32	M10 (8.5)	14	8.6	NKXZ17
	20	37			88	58		25	43	45	45		19		59	36				NKXZ20
	25	42			94	64		30	48	50	50				64	39				NKXZ25
	30	47			96	66		35	53	55	54	-0.010 -0.040	18	21	66	40				NKXZ30

d	€ Unit Price			
	Standard		With Pilot	
	BGCSB	SBGCS	BGCTB	BGCT
7				
9				
12				
14				
17				
20				
25				
30				

Order Example

Part Number

BGCSB20

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

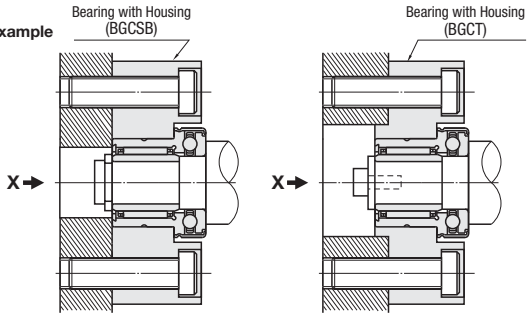
Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Example



The structure is not designed to retain loads in X direction.

Bearings with Housings

-Short Double Bearings - Retained-

CAD Data



Type			Material		Surface Treatment
Round	Square	Compact	Bearings	Housing	Housing
BGREB	BGSEB	BGCEB	Steel	1.1191/C45E	Black Oxide
BGRE	BGSE	BGCE			Electroless Nickel Plating
SBGRE	SBGSE	SBGCE	Stainless Steel	1.4301/X5CrNi18-10	-

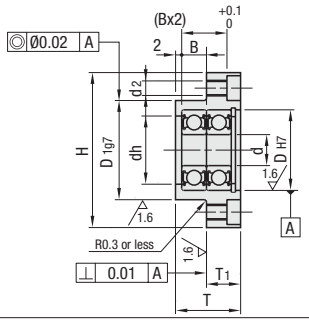
Bearing Accuracy JIS B 1514 Class 0

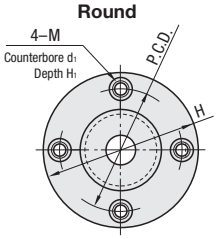
6.3 (1.6)

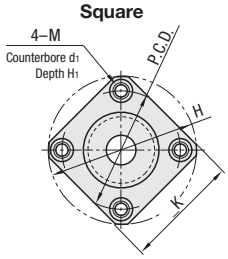
Easier to obtain required radial load ratings when space is limited.

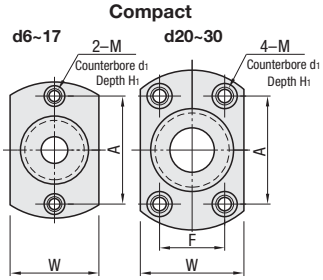
* Bearings with Rubber Seals (VV and DD) are all made of steel.

The "(Bx2)" dimension for "Short Double Bearings, Retained" type indicates the position where the retaining ring groove begins. Please note that considering the groove width tolerance and the retaining ring thickness tolerance, there may be up to max. 0.3mm of axial clearance on the bearings.









Mounting holes are tapped and counterbored so the housing can be mounted from either side.

Part Number			d	DH7	Tolerance	B	H	W	T	T1	dh	D1g7	Tolerance	P.C.D.	K	A	F	M (Coarse) (d2)	d1	H1
Type	Bearing No.	Seal																		
(Round)	606	ZZ (Double Shielded)	6	17	+0.018 0	6	39	23	17	9	13	21	-0.007 -0.028	29	32	29	-	M5 (4.3)	8	4.4
BGREB	608		8	22	+0.021 0	7	45	29	19	12	18	27		35	36	35				
BGRE	6900		10	22		6	45	29	17	11	19	27		35	36	35				
SBGRE	6000			26		8	50	34	21	13	22	32	-0.009 -0.034	40	39	40				
	6901	*VV (Non-contact Rubber Sealed)	12	24		6	48	31	17	11	21	30	-0.007 -0.028	38	38	38				
(Square)	6001			28		8	52	36	21	13	24	34	-0.009 -0.034	42	40	42				
BGSEB	6902		15	28		7	57	37	19	12	25	35		45	45	45		M6 (5.2)	9.5	5.4
BGSE	6002			32	+0.025 0	9	60	40	23	14	28	38		48	46	48				
SBGSE	6903		17	30	+0.021 0	7	60	38	19	12	27	36		48	46	48				
	6003			35	+0.025 0	10	66	44	26	16	31	42		54	50	54				
(Compact)	6904		20	37		9	69	47	24	15	34	45		56	54	51	24	M8 (6.8)	11	6.5
BGCEB	6004			42		12	77	54	30	18	36	50		64	59	56	32			
BGCE	6005		25	47		12	88	58	30	18	41	54	-0.010 -0.040	72	67	63	36	M10 (8.5)	14	8.6
SBGCE	6006		30	55	+0.030 0	13	96	66	33	20	48	62		80	73	70	40			

Check for available sizes in the price list.

* No. 606 is not available for V V (Non-contact rubber sealed)

Order Example

Part Number		
Type	Bearings	Seal
BGRE	6000	ZZ
BGSE	6003	VV

Days to Ship

8 Days | Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Alterations

Part Number	-	(NA)
BGRE6000VV	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembledto the Housing.
Price Adder	Free of Charge

Bearing No.	Seal	€ Unit Price								
		Round			Square			Compact		
		BGREB	BGRE	SBGRE	BGSEB	BGSE	SBGSE	BGCEB	BGCE	SBGCE
606	ZZ (x1.0)									
608										
6900										
6000										
6901										
6001										
6902	VV (x1.1)									
6002										
6903										
6003	DD (x1.1)									
6904										
6004										
6005										
6006										

The price of Sealed VV and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGSE6903VV, the price in the table is 34,80 EUR x1.1=38,28 EUR→38,20 EUR

Bearings with Housings

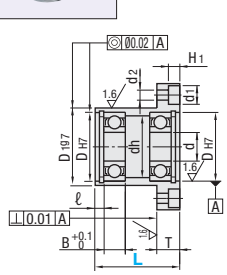
-Standard Length Double Bearings - Retained-



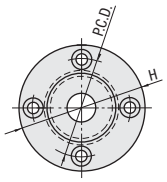
Type			Material		Surface Treatment	Accessory
Round	Square	Compact	Bearings	Housing	Housing	Retaining Ring
BGRBB	BGSBB	BGCBB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGRB	BGSB	BGCB			Electroless Nickel Plating	**1.4301/X5CrNi18-10
BARB	BASB	BACB	Stainless Steel	EN AW-2017/ AlCu4MgSi	Clear Anodize	1.4301/X5CrNi18-10
SBARB	SBASB	SBACB				
SBGRB	SBGSB	SBGCB		1.4301/X5CrNi18-10	-	

* Bearings with Rubber Seals (V V and DD) are all made of steel.
** When D=68 ~ 90, the retaining ring is Spring Steel + Electroless Nickel Plating.

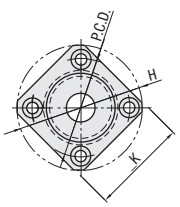
6.3 (1.6)



Round

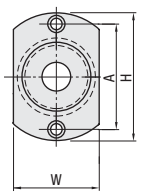


Square

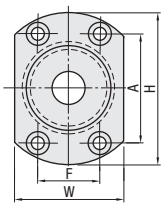


Compact

d3~17



d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number			L	d	D_{H7}	Tolerance	B	ℓ	H	W	T	dh	D_{1g7}	Tol.	P.C.D.	K	A	F	d_1	d_2	H_1
Type	Bearing No.	Seal	Selection																		
	623		20 30	3	10	+0.015 0	4	2.65	33	16	7	7	14	-0.006 -0.024	24	27	24		6.5	3.5	3.1
	624		20 30	4	13		5	2.65	35	18		9	17		26	28	26				
	605		20 30	5	14	+0.018 0	5	2.65	36	20		10	18		26	30	26				
	625		25 30		16		5	2.65	38	22		12	20		28	31	28				
	606		20 35	6	17		6	2.65	39	23		13	21		29	32	29				
	626		25 35		19		6	2.65	41	25		15	24		31	34	31				
	698		25 35	8	19		6	2.65	41	25		15	24	-0.007 -0.028	31	34	31				
	608		25 35		22		7	2.65	45	29		18	27		35	36	35				
	628		25 35		24		8	2.85	47	32		20	30		37	37	37				
	6800		20 30	10	19	+0.021 0	5	2.65	41	25	8	15	24		31	34	31		8	4.5	4.1
	6900		25 40		22		6	2.65	45	29		19	27		35	36	35				
	6000		25 40		26		8	2.85	50	34		22	32	-0.009 -0.034	40	39	40				
	6200		30 40		30		9	2.85	54	38		24	36		44	42	44				
	6801		25 35	12	21		5	2.85	44	29		17	26	-0.007 -0.028	34	35	34	-			
	6901		25 40		24		6	2.85	48	31		21	30		38	38	38				
(Round)	6001		25 40		28		8	2.85	52	36		24	34	-0.009 -0.034	42	40	42				
BGRBB BGRB	6201	ZZ Double (Shielded)	30 40		32	+0.025 0	10	2.85	56	40		26	38		46	43	46				
BARB SBARB	6802		25 35	15	24	+0.021 0	5	2.85	47	32		20	30	-0.007 -0.028	37	37	37				
SBGRB	6902		25 50		28		7	2.85	57	37	10	25	35	-0.009 -0.034	45	45	45		9.5	5.5	5.1
	6002	*VV Non-contact (Rubber Sealed)	30 50		32	+0.025 0	9	2.85	60	40		28	38		48	46	48				
(Square)	6202		35 50		35		11	3.75	64	44		29	42		52	49	52				
BGSBB BGSB	6903		30 40	17	30	+0.021 0	7	2.85	60	38		27	36		48	46	48				
BASB	6003		35 50		35		10	3.75	66	44		31	42		54	50	54				
SBASB	6203	DD Contact (Rubber Sealed)	40 50				12	3.95	72	50		34	48		60	54	60				
SBGSB	6804		35 50	20	32	+0.025 0	7	3.75	60	40		28	38		48	46	38	29			
	6904		35 50		37		9	3.75	69	47	11	34	45		56	54	51	24			
(Compact)	6004		40 50		42		12	3.95	77	54		36	50		64	59	56	32			
BGCBB BGCB	6204		45 50		47		14	3.95	81	58		40	54	-0.010 -0.040	68	62	59	34	11	6.6	6.1
BACB	6805		35 50	25	37		7	3.75	69	47		34	45	-0.009 -0.034	56	54	51	24			
SBACB	6905		35 50		42		9	3.95	77	54		36	50		64	59	56	32			
SBGCB	6005		40 60		47		12	3.95	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6205		45 60		52	+0.030 0	15	4.2	94	64		45	60		78	72	68	39			
	6806		35 50	30	42	+0.025 0	7	3.95	77	54		36	50	-0.009 -0.034	64	59	56	32	11	6.6	6.1
	6906		35 50		47		9	3.95	88	58		41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6006		40 60		55	+0.030 0	13	4.2	96	66		48	62		80	73	70	40			
	6206		50 60		62		16	4.2	104	74		55	70		88	79	77	44			
	6007		50 60	35	62		14	4.2	104	74		55	70		88	79	75	44			
	6207		60 80		72		17	6	126	88	20	64	84	-0.012 -0.047	105	95	92	51	17.5	11	11
	6008		60 70	40	68		15	5.2	114	82	13	60	78	-0.010 -0.040	96	86	80	54	14	9	8.1
	6208		60 80		80		18	6	134	96	20	74	92	-0.012 -0.047	113	102	98	56	17.5	11	11
	6010	ZZ (Double Shielded)	70	50	80		16	6	134	96		74	92		113	-	98	56			
	6210		90		90	+0.035 0	20	7	147	110		83	106		126	-	104	72			

Check for available sizes in the price list.

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

CAD Data

Order Example

Part Number				
Type	Bearings	Seal	-	L
BGRB	6000	ZZ	-	25
BARB	6903	VV	-	30

Days to Ship

8 Days

2 Days

Express Serviceis not available for 6207, 6208, 6010 and 6210.

Express A | 2,00 EUR/ piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bearings No.	Seal	€ Unit Price														
		Round					Square					Compact				
		BGRBB	BGRB	BARB	SBARB	SBGRB	BGSBB	BGSB	BASB	SBASB	SBGSB	BGCBB	BGCB	BACB	SBACB	SBGCB
623	ZZ (x1.0) VV (x1.1) DD (x1.1)															
624																
605																
625																
606																
626																
698																
608																
628																
6800																
6900																
6000																
6200																
6801																
6901																
6001																
6201																
6802																
6902																
6002																
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6804																
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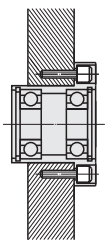
6004																
6204																
6805																
6905																
6005																
6205																
6806																
6906																
6006																
6206																
6007																
6207																
6008																
6208																
6010																
6210																

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BARB6903VV-30, the price in the table is 43,30 EUR x1.1=47,63 EUR → 47,60 EUR

Example



Alterations

Part Number	-	L	-	(NA)
BGRB6000DD	-	25	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

Bearings with Housings

-Configurable Length Double Bearings - Retained-

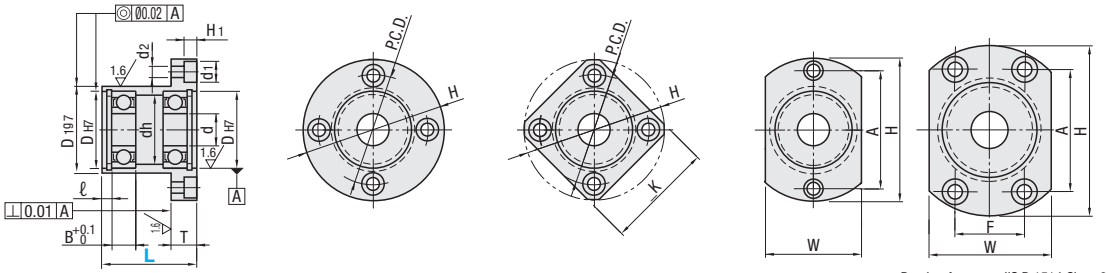


Type			M Material		S Surface Treatment	A Accessory Retaining Ring
Round	Square	Compact	Bearings	Housing	Housing	
BGFRBB	BGFSBB	BGFCBB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGFRB	BGFSB	BGFCB			Electroless Nickel Plating	1.4301/X5CrNi18-10
BAFRB	-	BAFCB		EN AW-2017/ AlCu4MgSi	Clear Anodize	
SBAFRB	-	SBAFCB	Stainless Steel Type			
SBGFRB	SBGFSB	SBGFCB		1.4301/X5CrNi18-10	-	

* Bearings with Rubber Seals (V V and DD) are all made of steel.

6.3 (1.6)

Round **Square** **Compact** d3~17 d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number Type	Bearing No.	Seal	L 1mm Increment	d	DH7	Tolerance	B	ℓ	H	W	T	dh	D1g7	Tolerance	P.C.D.	K	A	F	d1	d2	H1
	623			3	10	+0.015 0	4	2.65	33	16	7	7	14	-0.006 -0.024	24	27	24		6.5	3.5	3.1
	624			4	13		5	2.65	35	18		9	17		26	28	26				
	605		20~40	5	14	+0.018 0	5	2.65	36	20		10	18		26	30	26				
	625				16		5	2.65	38	22		12	20		28	31	28				
	606			6	17		6	2.65	39	23		13	21		29	32	29				
	626		25~50		19	+0.021 0	6	2.65	41	25		15	24		31	34	31				
	698			8	19		6	2.65	41	25		15	24	-0.007 -0.028	31	34	31				
	608		25~50		22		7	2.65	45	29		18	27		35	36	35				
	628				24		8	2.85	47	32		20	30		37	37	37				
	6800		20~40	10	19		5	2.65	41	25	8	15	24		31	34	31		8	4.5	4.1
	6900				22		6	2.65	45	29		19	27		35	36	35				
	6000		25~60		26		8	2.85	50	34		22	32	-0.009 -0.034	40	39	40				
(Round)	6200				30		9	2.85	54	38		24	36		44	42	44	-			
BGFRBB	6801		25~50	12	21		5	2.85	44	29		17	26	-0.007 -0.028	34	35	34				
BGFRB	6901	ZZ (Double Shielded)	25~60		24		6	2.85	48	31		21	30		38	38	38				
BAFRB	6001				28		8	2.85	52	36		24	34	-0.009 -0.034	42	40	42				
SBAFRB	6201		30~70		32	+0.025 0	10	2.85	56	40		26	38		46	43	46				
SBGFRB	6802	*VV (Non-contact Rubber Sealed)	25~60	15	24	+0.021 0	5	2.85	47	32		20	30	-0.007 -0.028	37	37	37				
	6902		30~70		28		7	2.85	57	37		25	35	-0.009 -0.034	45	45	45				
(Square)	6002				32	+0.025 0	9	2.85	60	40		28	38		48	46	48				
BGFSBB	6202		35~70		35		11	3.75	64	44		29	42		52	49	52				
BGFSB	6903	DD (Contact Rubber Sealed)	35~70	17	30	+0.021 0	7	2.85	60	38	10	27	36		48	46	48		9.5	5.5	5.1
SBGFSB	6003				35	+0.025 0	10	3.75	66	44		31	42		54	50	54				
	6203				40		12	3.95	72	50		34	48		60	54	60				
(Compact)	6804		35~70	20	32		7	3.75	60	40		28	38		48	46	38	29			
BGFCBB	6904				37		9	3.75	69	47		34	45		56	54	51	24			
BGFCB	6004		45~80		42		12	3.95	77	54		36	50		64	59	56	32			
BAFCB	6204				47		14	3.95	81	58	11	40	54	-0.010 -0.040	68	62	59	34	11	6.6	6.1
SBAFCB	6805		35~70	25	37		7	3.75	69	47		34	45	-0.009 -0.034	56	54	51	24			
SBGFCB	6905				42		9	3.95	77	54		36	50		64	59	56	32			
	6005		45~80		47		12	3.95	88	58		41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6205				52	+0.030 0	15	4.2	94	64		45	60		78	72	68	39			
	6806		35~70	30	42	+0.025 0	7	3.95	77	54		36	50	-0.009 -0.034	64	59	56	32	11	6.6	6.1
	6906				47		9	3.95	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6006		45~80		55	+0.030 0	13	4.2	96	66		48	62		80	73	70	40			
	6206		50~120		62		16	4.2	104	74		55	70		88	79	77	44			
	6007			35	62		14	4.2	104	74		55	70		88	79	75	44			
	6207		55~120		72		17	6	126	88	20	64	84	-0.012 -0.047	105	95	92	51	17.5	11	11
	6008		50~120	40	68		15	5.2	114	82	13	60	78	-0.010 -0.040	96	86	80	54	14	9	8.1
	6208		60~120		80		18	6	134	96		74	92	-0.012 -0.047	113	102	98	56	17.5	11	11
	6010	ZZ (Double Shielded)		50	80		16	6	134	96	20	74	92		113	-	98	56			
	6210		70~120		90	+0.035 0	20	7	147	110		83	106		126	-	104	72			

Check for available sizes in the price list. *No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

CAD Data

Order Example

Part Number				
Type	Bearings	Seal	-	L
BGFRB	6000	DD	-	25
BAFCB	6901	ZZ	-	52

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~24
Rate	€ Unit Price	5%	10%	15%

Days to Ship

8 Days

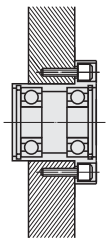
Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Bearings No.	Seal	€ Unit Price												
		Round					Square			Compact				
		BGFRBB	BGFRB	BAFRB	SBAFRB	SBGFRB	BGFSBB	BGFSB	SBGFSB	BGFCBB	BGFCB	BAFCB	SBAFCB	SBGFCB
623	ZZ (x1.0) VV (x1.1) DD (x1.1)													
624														
605														
625														
606														
626														
698														
608														
628														
6800														
6900														
6000														
6200														
6801														
6901														
6001														
6201														
6802														
6902														
6002														
6202														
6903														
6003														
6203														
6804														
6904														
6004														
6204														
6805														
6905														
6005														
6205														
6806														
6906														
6006														
6206														
6007														
6207														
6008														
6208														
6010														
6210														

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BAFCB6901DD-52, the price in the table is 56,10 EURx1.1=61,71 EUR→61,70 EUR

Example



Alterations

Part Number	-	L	-	(NA)
BGFRB6000ZZ	-	25	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

Bearings with Housings

-Double Bearings - Non-retained-

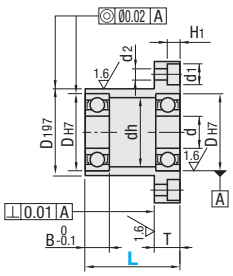


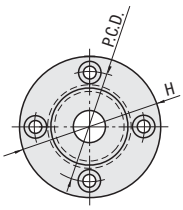
Type			Material		Surface Treatment
Round	Square	Compact	Bearings	Housing	Housing
BGRCB	BGSCB	BGCCB	Steel	1.1191/C45E	Black Oxide
BGRC	BGSC	BGCC			Electroless Nickel Plating
BARC	BASC	BACC		EN AW-2017/ AlCu4MgSi	Clear Anodize
SBARC	SBASC	SBACC	Stainless Steel		
SBGRC	SBGSC	SBGCC		1.4301/X5CrNi18-10	-

* Bearings with Rubber Seals (V V and DD) are all made of steel.

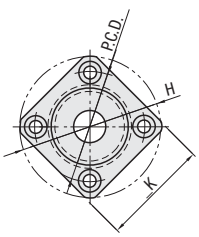
6.3 (1.6)

Round



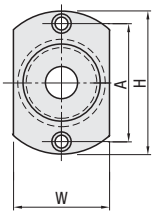


Square

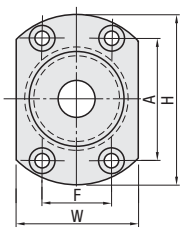


Compact

d3~17



d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number			L	d	D_{H7}	Tolerance	B	H	W	T	dh	D_{1g7}	Tolerance	P.C.D.	K	A	F	d_1	d_2	H_1
Type	Bearing No.	Seal	Selection																	
	623		20 30	3	10	+0.015 0	4	33	16	7	7	14	-0.006 -0.024	24	27	24		6.5	3.5	3.1
	624		20 30	4	13		5	35	18		9	17		26	28	26				
	605		20 30	5	14	+0.018 0	5	36	20	8	10	18		26	30	26		8	4.5	4.1
	625		25 30		16		5	38	22		12	20	-0.007 -0.028	28	31	28				
	606		20 35	6	17		6	39	23		13	21		29	32	29				
	626		25 35		19	+0.021 0	6	41	25		15	24		31	34	31				
	678		20 30	8	12	+0.018 0	3.5	34	18		10	16	-0.006 -0.024	25	27	25		6.5	3.5	3.1
	698		25 35		19	+0.021 0	6	41	25		15	24	-0.007 -0.028	31	34	31		8	4.5	4.1
	608		25 35		22		7	45	29		18	27		35	36	35				
	628		25 35		24		8	47	32		20	30		37	37	37				
	6700		20 30	10	15	+0.018 0	4	37	22		12	19		27	30	27				
	6800		20 30		19	+0.021 0	5	41	25		15	24		31	34	31				
	6900		25 40		22		6	45	29		19	27		35	36	35				
(Round)	6000		25 40		26		8	50	34		22	32	-0.009 -0.034	40	39	40				
BGRCB	6200		30 40		30		9	54	38		24	36		44	42	44	-	8	4.5	4.1
BGRC	6701		20 30	12	18	+0.018 0	4	40	25		15	23	-0.007 -0.028	30	31	30				
BARC	6801		25 35		21	+0.021 0	5	44	29		17	26		34	35	34				
SBARC	6901	ZZ	25 40		24		6	48	31		21	30		38	38	38				
SBGRC	6001	(Double Shielded)	25 40		28		8	52	36		24	34	-0.009 -0.034	42	40	42				
	6201		30 40		32	+0.025 0	10	56	40		26	38		46	43	46				
	6702	*VV	25 35	15	21	+0.021 0	4	44	29		18	26	-0.007 -0.028	34	35	34				
(Square)	6802	(Non-contact Rubber Sealed)	25 35		24		5	47	32		20	30		37	37	37				
BGSCB	6902		25 50		28		7	57	37	10	25	35	-0.009 -0.034	45	45	45		9.5	5.5	5.1
BGSC	6002		30 50		32	+0.025 0	9	60	40		28	38		48	46	48				
BASC	6202	DD	35 50		35		11	64	44		29	42		52	49	52				
SBASC	6803	(Contact Rubber Sealed)	30 40	17	26	+0.021 0	5	50	34		22	32		40	39	40		8	4.5	4.1
SBGSC	6903		30 40		30		7	60	38		27	36		48	46	48		9.5	5.5	5.1
	6003		35 50		35	+0.025 0	10	66	44		31	42		54	50	54				
(Compact)	6203		40 50		40		12	72	50		34	48		60	54	60				
BGCCB	6704		30 40	20	27	+0.021 0	4	51	35		23	33		41	39	32	25	8	4.5	4.1
BGCC	6804		35 50		32	+0.025 0	7	60	40		28	38		48	46	38	29	9.5	5.5	5.1
BACC	6904		35 50		37		9	69	47	11	34	45	-0.010 -0.040	56	54	51	24	11	6.6	6.1
SBACC	6004		40 50		42		12	77	54		36	50		64	59	56	32			
SBGCC	6204		45 50		47		14	81	58		40	54		68	62	59	34			
	6805		35 50	25	37		7	69	47		34	45	-0.009 -0.034	56	54	51	24			
	6905		35 50		42		9	77	54		36	50		64	59	56	32			
	6005		40 60		47		12	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6205		45 60		52	+0.030 0	15	94	64		45	60		78	72	68	39			
	6806		35 50	30	42	+0.025 0	7	77	54		36	50	-0.009 -0.034	64	59	56	32	11	6.6	6.1
	6906		35 50		47		9	88	58		41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6006		40 60		55	+0.030 0	13	96	66		48	62		80	73	70	40			
	6206		50 60		62		16	104	74		55	70		88	79	77	44			
	6007		50 60	35	62		14	104	74		55	70		88	79	75	44			
	6207		60 80		72		17	126	88	20	64	84	-0.012 -0.047	105	95	92	51	17.5	11	11
	6008		60 70	40	68		15	114	82	13	60	78	-0.010 -0.040	96	86	80	54	14	9	8.1
	6208		60 80		80		18	134	96	20	74	92	-0.012 -0.047	113	102	98	56	17.5	11	11
	6010	ZZ	70	50	80		16	134	96		74	92		113	-	98	56			
	6210	(Double Shielded)	90		90	+0.035 0	20	147	110		83	106		126	-	104	72			

Check for available sizes in the price list.

* No. 623, 624, 605, 606 and numbers starting with 67 are not available for V V (Non-contact rubber sealed).

Order Example

Part Number				
Type	Bearings	Seal	-	L
BGCC	6200	VV	-	30
BGRC	6202	ZZ	-	35

Days to Ship

8 Days
2 Days

⊗Express Service is not available for 6207, 6208, 6010 and 6210.

Express A | 2,00 EUR/ piece P.88

ⓅA Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (ⓅRound down to one Cent.) P.87

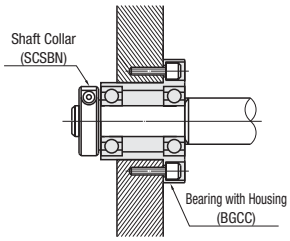
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

ⓅFor orders larger than indicated quantity, please request a quotation.

Bearings No.	Seal	€ Unit Price														
		Round					Square					Compact				
		BGRCB	BGRC	BARC	SBARC	SBGRC	BGSCB	BGSC	BASC	SBASC	SBGSC	BGCCB	BGCC	BACC	SBACC	SBGCC
623	ZZ (x1.0) VV (x1.1) DD (x1.1)															
624																
605																
625																
606																
626																
678																
698																
608																
628																
6700																
6800																
6900																
6000																
6200																
6701																
6801																
6901																
6001																
6201																
6702																
6802																
6902																
6002																
6202																
6803																
6903																
6003																
6203																
6704																
6804																
6904																
6004																
6204																
6805																
6905																
6005																
6205																
6806																
6906																
6006																
6206																
6007																
6207																
6008																
6208																
6010																
6210																

ⓅThe price of Sealed V V and DD are the price shown in the table multiplied by 1.1.
(Ex.) When BGCCB6202VV-35, the price in the table is 30,60 EURx1.1=33,66 EUR→33,60 EUR

Example



Alterations

Part Number	-	L	-	(NA)
SBGCC6200ZZ	-	30	-	NA

Alteration	Bearings not assembled
Code	NA
Spec.	Bearings are not assembled into the Housings.
Price Adder	Free of Charge

Bearings with Housings

-Configurable Length Double Bearings, Non-retained-

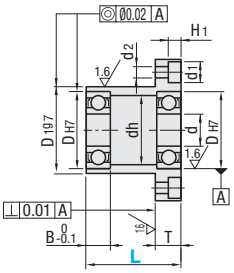


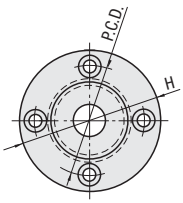
Type			Material		Surface Treatment
Round	Square	Compact	Bearings	Housing	Housing
BGFRCB	BGFSCB	BGFCCB	Steel	1.1191/C45E	Black Oxide
BGFRC	BGFSC	BGFCC			Electroless Nickel Plating
BAFRC	-	BAFCC		EN AW-2017/AlCu4MgSi	Clear Anodize
SBAFRC	-	-	Stainless Steel		
SBGFRC	SBGFSC	SBGFCC		1.4301/X5CrNi18-10	-

* Bearings with Rubber Seals (V V and DD) are all made of steel.

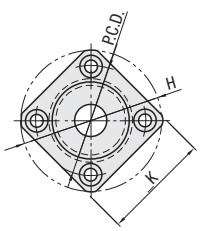
6.3 (1.6)

Round



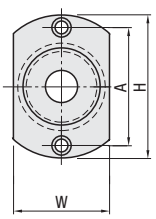


Square

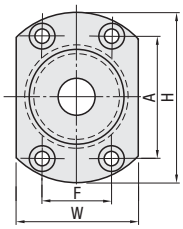


Compact

d3~17



d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number			L 1mm	d	DH7	Tolerance	B	H	W	T	dh	D1g7	Tolerance	P.C.D.	K	A	F	d1	d2	H1
Type	Bearing No.	Seal	Increment																	
	623			3	10	+0.015 0	4	33	16	7	7	14	-0.006 -0.024	24	27	24		6.5	3.5	3.1
	624			4	13		5	35	18		9	17		26	28	26				
	605		20~40	5	14	+0.018 0	5	36	20	8	10	18		26	30	26		8	4.5	4.1
	625				16		5	38	22		12	20	-0.007 -0.028	28	31	28				
	606			6	17		6	39	23		13	21		29	32	29				
	626		25~50		19	+0.021 0	6	41	25		15	24		31	34	31				
	678		20~40	8	12	+0.018 0	3.5	34	18		10	16	-0.006 -0.024	25	27	25		6.5	3.5	3.1
	698		25~50		19	+0.021 0	6	41	25		15	24	-0.007 -0.028	31	34	31		8	4.5	4.1
	608				22		7	45	29		18	27		35	36	35				
	628				24		8	47	32		20	30		37	37	37				
	6700		20~40	10	15	+0.018 0	4	37	22		12	19		27	30	27				
	6800				19	+0.021 0	5	41	25		15	24		31	34	31				
	6900		25~60		22		6	45	29		19	27		35	36	35				
	6000				26		8	50	34		22	32	-0.009 -0.034	40	39	40				
	6200				30		9	54	38		24	36		44	42	44	-			
(Round) BGFRCB BGFRC BAFRC SBAFRC SBGFRC	6701	ZZ (Double Shielded) *VV (Non-contact Rubber Sealed) DD (Contact Rubber Sealed)	20~40	12	18	+0.018 0	4	40	25		15	23	-0.007 -0.028	30	31	30				
	6801		25~50		21	+0.021 0	5	44	29		17	26		34	35	34				
	6901		25~60		24		6	48	31		21	30		38	38	38				
	6001				28		8	52	36		24	34	-0.009 -0.034	42	40	42				
	6201		30~70		32	+0.025 0	10	56	40		26	38		46	43	46				
	6702		25~60	15	21	+0.021 0	4	44	29		18	26	-0.007 -0.028	34	35	34				
	6802				24		5	47	32		20	30		37	37	37				
	6902		30~70		28		7	57	37	10	25	35	-0.009 -0.034	45	45	45		9.5	5.5	5.1
(Square) BGFSCB BGFSC SBGFSC	6002				32	+0.025 0	9	60	40		28	38		48	46	48				
	6202		35~70		35		11	64	44		29	42		52	49	52				
	6803		25~60	17	26	+0.021 0	5	50	34		22	32		40	39	40		8	4.5	4.1
	6903				30		7	60	38		27	36		48	46	48				
	6003		35~70		35	+0.025 0	10	66	44		31	42		54	50	54		9.5	5.5	5.1
	6203				40		12	72	50		34	48		60	54	60				
(Compact) BGFCCB BGFCC BAFCC SBGFCC	6704		30~70	20	27	+0.021 0	4	51	35		23	33		41	39	32	25	8	4.5	4.1
	6804		35~70		32	+0.025 0	7	60	40		28	38		48	46	38	29	9.5	5.5	5.1
	6904				37		9	69	47	11	34	45		56	54	51	24	11	6.6	6.1
	6004		45~80		42		12	77	54		36	50		64	59	56	32			
	6204				47		14	81	58		40	54	-0.010 -0.040	68	62	59	34			
	6805		35~70	25	37	+0.025 0	7	69	47		34	45	-0.009 -0.034	56	54	51	24			
	6905				42		9	77	54		36	50		64	59	56	32			
	6005		45~80		47		12	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6205				52	+0.030 0	15	94	64		45	60		78	72	68	39			
	6806		35~70	30	42	+0.025 0	7	77	54		36	50	-0.009 -0.034	64	59	56	32	11	6.6	6.1
	6906				47		9	88	58		41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6006		45~80		55	+0.030 0	13	96	66		48	62		80	73	70	40			
	6206		50~120		62		16	104	74		55	70		88	79	77	44			
	6007			35	62		14	104	74		55	70		88	79	75	44			
	6207				72		17	126	88	20	64	84	-0.012 -0.047	105	95	92	51	17.5	11	11
	6008			40	68		15	114	82	13	60	78	-0.010 -0.040	96	86	80	54	14	9	8.1
	6208				80		18	134	96	20	74	92	-0.012 -0.047	113	102	98	56	17.5	11	11
	6010	ZZ (Double Shielded)	60~120	50	80	+0.035 0	16	134	96		74	92		113	-	98	56			
	6210				90		20	147	110		83	106		126	-	104	72			

Check for available sizes in the price list. * No. 623 · 624 · 605 · 606 and numbers starting with 67 are not available for V V (Non-contact rubber sealed).

Order Example

Part Number			-	L
Type	Bearings	Seal		
BGFCC	6200	DD	-	30
BAFRC	628	ZZ	-	38

Days to Ship

8 Days

Express A — 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

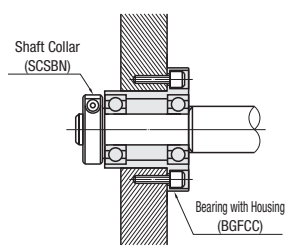
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~24
Rate	€ Unit Price	5%	10%	15%

Bearings No.	Seal	€ Unit Price											
		Round					Square			Compact			
		BGFRCB	BGFRC	BAFRC	SBAFRC	SBGFRC	BGFSCB	BGFSC	SBGFSC	BGFCCB	BGFCC	BAFCC	SBGFCC
623													
624													
605													
625													
606													
626													
678													
698													
608													
628													
6700													
6800													
6900													
6000													
6200													
6701													
6801													
6901													
6001													
6201													
6702	ZZ												
6802	(x1.0)												
6902													
6002	VV												
6202	(x1.1)												
6803													
6903	DD												
6003	(x1.1)												
6203													
6704													
6804													
6904													
6004													
6204													
6805													
6905													
6005													
6205													
6806													
6906													
6006													
6206													
6007													
6207													
6008													
6208													
6010													
6210													

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGFCC6900DD-30, the price in the table is 42,30 EUR x 1.1 = 46,53 EUR → 46,50 EUR

Example



Alterations

Part Number	-	L	-	(NA)
SBGFCC6200ZZ	-	30	-	NA

Alteration	Bearings not assembled
Code	NA
Spec.	Bearings are not assembled into the Housings.
Price Adder	Free of Charge

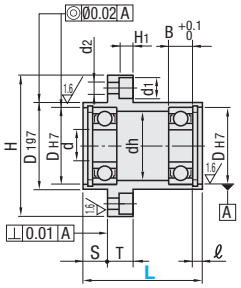
Bearings with Housings

-Standard Length Double Bearings with Pilot - Retained-

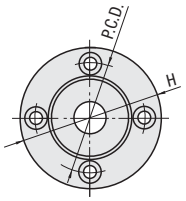


Type			Material		Surface Treatment	Accessory
Round	Square	Compact	Bearings	Housing	Housing	Retaining Ring
BGRZB	BGSZB	BGCZB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGRZ	BGSZ	BGCZ			Electroless Nickel Plating	**1.4301/X5CrNi18-10
BARZ	BASZ	BACZ	Stainless Steel	EN AW-2017/ AlCu4MgSi	Clear Anodize	1.4301/X5CrNi18-10
SBARZ	SBASZ	SBACZ				
SBGRZ	SBGSZ	SBGCZ		1.4301/X5CrNi18-10	-	

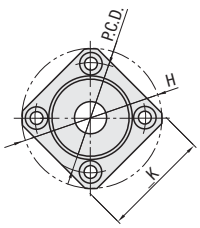
*Bearings with Rubber Seals (V V and DD) are all made of steel.
**When D=68 ~ 90, the retaining ring is Spring Steel + Electroless Nickel Plating.



Round

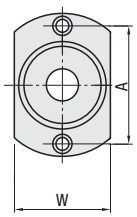


Square

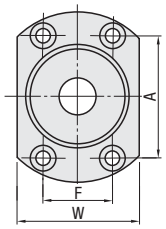


Compact

d3~17



d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number Type	Bearing No.	Seal	L Selection	S	d	D_{H7}	Tolerance	B	ℓ	H	W	T	dh	D_{1g7}	Tolerance	P.C.D.	K	A	F	d_1	d_2	H_1
	623		20 30	5	3	10	+0.015 0	4	2.65	33	16	7	7	14	-0.006 -0.024	24	27	24		6.5	3.5	3.1
	624		20 30	5	4	13		5	2.65	35	18		9	17		26	28	26				
	605		25 35	5	5	14	+0.018 0	5	2.65	38	20		10	18		28	30	28				
	625		35 40	10		16		5	2.65	40	22		12	20		30	31	30				
	606		25 40	5	6	17		6	2.65	41	23		13	21		31	32	31				
	626		35 45	10		19		6	2.65	44	25		15	24		34	34	34				
	698		25 35	5	8	19		6	2.65	44	25		15	24	-0.007 -0.028	34	34	34				
	608		25 35	5		22		7	2.65	47	29		18	27		37	36	37				
	628		35 45	10		24		8	2.85	50	32		20	30		40	37	40				
	6800		20 30	5	10	19	+0.021 0	5	2.65	44	25	8	15	24		34	34	34		8	4.5	4.1
	6900		25 40	5		22		6	2.65	47	29		19	27		37	36	37				
(Round)	6000		35 50	10		26		8	2.85	52	34		22	32	-0.009 -0.034	42	39	42	-			
	6200		45 55	15		30		9	2.85	56	38		24	36		46	42	46				
BGRZB	6801		25 35	5	12	21		5	2.85	47	29		17	26	-0.007 -0.028	37	36	37				
BGRZ	6901	ZZ	35 50	10		24		6	2.85	50	31		21	30		40	38	40				
BARZ	6001	(Double	35 50	10		28		8	2.85	54	36		24	34	-0.009 -0.034	44	40	44				
SBARZ	6201	Shielded)	45 55	15		32	+0.025 0	10	2.85	58	40		26	38		48	43	48				
SBGRZ	6802	*VV	25 35	10	15	24	+0.021 0	5	2.85	50	32		20	30	-0.007 -0.028	40	37	40				
	6902	(Non-	35 60	10		28		7	2.85	59	37		25	35	-0.009 -0.034	47	45	47				
(Square)	6002	contact	45 65	15		32	+0.025 0	9	2.85	62	40		28	38		50	46	50				
BGSZB	6202	Rubber	50 65	15		35		11	3.75	66	44		29	42		54	49	54				
BGSZ	6903	Sealed)	45 55	15	17	30	+0.021 0	7	2.85	60	38	10	27	36		48	46	48		9.5	5.5	5.1
BASZ	6003		50 65	15		35		10	3.75	66	44		31	42		54	50	54				
SBASZ	6203	DD	60 70	20		40		12	3.95	72	50		34	48		60	54	60				
SBGSZ	6804	(Contact	35 50	10	20	32		7	3.75	62	40		28	38		50	46	44	24			
	6904	Rubber	50 65	15		37	+0.025 0	9	3.75	72	47		34	45		59	54	54	24			
(Compact)	6004	Sealed)	60 70	20		42		12	3.95	77	54		36	50		64	59	56	32			
BGCZB	6204		65 70	20		47		14	3.95	81	58	11	40	54	-0.010 -0.040	68	62	59	34	11	6.6	6.1
BGCZ	6805		35 50	15	25	37		7	3.75	72	47		34	45	-0.009 -0.034	59	54	54	24			
BACZ	6905		35 50	15		42		9	3.95	77	54		36	50		64	59	55	32			
SBACZ	6005		60 80	20		47		12	3.95	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
SBGCZ	6205		65 80	20		52	+0.030 0	15	4.2	94	64		45	60		78	72	68	39			
	6806		35 50	15	30	42	+0.025 0	7	3.95	77	54	11	36	50	-0.009 -0.034	64	59	56	32	11	6.6	6.1
	6906		35 50	15		47		9	3.95	88	58	13	41	54	-0.010 -0.040	72	67	62	36	14	9	8.1
	6006		60 80	20		55		13	4.2	96	66		48	62		80	73	70	40			
	6206		70 80	20		62		16	4.2	104	74		55	70		88	79	77	44			
	6007		70 80	20	35	62		14	4.2	104	74		55	70		88	79	75	44			
	6207		70 90	20		72	+0.030 0	17	6	126	88	20	64	84	-0.012 -0.047	105	95	92	51	17.5	11	11
	6008		80 90	25	40	68		15	5.2	114	82	13	60	78	-0.010 -0.040	96	86	80	54	14	9	8.1
	6208		70 90	20		80		18	6	134	96		74	92		113	102	98	56			
	6010	ZZ	80	20	50	80		16	6	134	96	20	74	92	-0.012 -0.047	113	-	98	56	17.5	11	11
	6210	(Double Shielded)	100	20		90	+0.035 0	20	7	147	110		83	106		126	-	104	72			

Check for available sizes in the price list.

*No. 623 · 624 · 605 and 606 are not available for V V (Non-contact rubber seals).

CAD Data

Order Example

Part Number				
Type	Bearings	Seal	-	L
BGRZ	6003	ZZ	-	50
SBASZ	6904	VV	-	65

Days to Ship

8 Days | 2 Days

Express A | 2,00 EUR/ piece

P.88

Express Service is not available for 6207 · 6208 · 6010 and 6210.

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bearings No.	Seal	€ Unit Price														
		Round					Square					Compact				
		BGRZB	BGRZ	BARZ	SBARZ	SBGRZ	BGSZB	BGSZ	BASZ	SBASZ	SBGSZ	BGCZB	BGCZ	BACZ	SBACZ	SBGCZ
623	ZZ (x1.0) VV (x1.1) DD (x1.1)															
624																
605																
625																
606																
626																
698																
608																
628																
6800																
6900																
6000																
6200																
6801																
6901																
6001																
6201																
6802																
6902																
6002																
6202																
6903																
6003																
6203																
6804																
6904																
6004																
6204																
6805																
6905																
6005																
6205																
6806																
6906																
6006																
6206																
6007																
6207																
6008																
6208																
6010																
6210																

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When SBASZ6904VV-65, the price in the table is 68,40 EURx1.1=75,24 EUR→75,20 EUR

Alterations

Part Number	-	L	-	(NA)
BGSZ6000ZZ	-	35	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

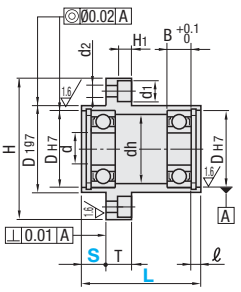
Bearings with Housings

-Configurable Length Double Bearings with Pilot -Retained-

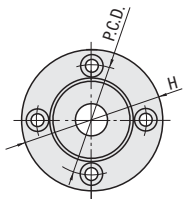


Type			Material		Surface Treatment	Accessory Retaining Ring
Round	Square	Compact	Bearings	Housing	Housing	
BGFRZB	-	BGFCZB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGFRZ	BGFSZ	BGFCZ			Electroless Nickel Plating	1.4301/ X5CrNi18-10
BAFRZ	-	-		EN AW-2017/ AlCu4MgSi	Clear Anodize	
SBAFRZ	-	SBAFCZ	Stainless Steel			

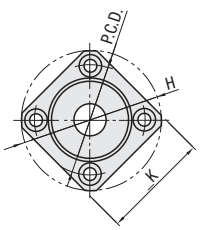
* Bearings with Rubber Seals (V V and DD) are all made of steel.



Round

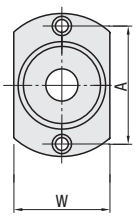


Square

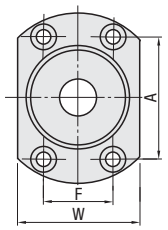


Compact

d3~17



d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number			1mm Increment		d	D_{H7}	Tolerance	B	ℓ	H	W	T	dh	D_{1g7}	Tolerance	P.C.D.	K	A	F	d_1	d_2	H_1
Type	Bearings No.	Seal	L	S																		
(Round) BGFRZB BGFRZ BAFRZ SBAFRZ (Square) BGFSZ (Compact) BGFCZB BGFCZ SBAFCZ	623	ZZ (Double Shielded) *VV (Non-contact Rubber Sealed) DD (Contact Rubber Sealed)	20~40	5~28	3	10	+0.015 0	4	2.65	33	16	7	7	14	-0.006 -0.024	24	27	24	-	6.5	3.5	3.1
	624		20~40	5~28	4	13	+0.018 0	5	2.65	35	18		9	17		26	28	26				
	605		20~40	5~27	5	14		5	2.65	38	20	8	10	18		28	30	28		8	4.5	4.1
	625		30~40	10~22		16		5	2.65	40	22		12	20		30	31	30				
	606		20~40	5~27	6	17		6	2.65	41	23		13	21		31	32	31				
	626		30~50	10~32		19	+0.021 0	6	2.65	44	25		15	24	-0.007 -0.028	34	34	34				
	698		25~50	5~37	8	19		6	2.65	44	25		15	24		34	34	34				
	608		20~50	5~37		22		7	2.65	47	29		18	27		37	36	37				
	628		30~50	10~32		24		8	2.85	50	32		20	30		40	37	40				
	6800		20~40	5~27	10	19		5	2.65	44	25		15	24		34	34	34				
	6900		25~60	5~47		22		6	2.65	47	29		19	27		37	36	37				
	6000		30~60	10~42		26		8	2.85	52	34		22	32	-0.009 -0.034	42	39	42				
	6200		40~60	15~37		30		9	2.85	56	38		24	36		46	42	46				
	6801		25~50	5~37	12	21		5	2.85	47	29		17	26	-0.007 -0.028	37	36	37				
	6901		30~60	10~42		24		6	2.85	50	31		21	30		40	38	40				
	6001		30~60	10~42		28		8	2.85	54	36		24	34	-0.009 -0.034	44	40	44				
	6201		40~70	15~47		32	+0.025 0	10	2.85	58	40		26	38		48	43	48				
	6802		25~60	10~42	15	24	+0.021 0	5	2.85	50	32		20	30	-0.007 -0.028	40	37	40				
	6902		30~70	10~50		28		7	2.85	59	37	10	25	35	-0.009 -0.034	47	45	47		9.5	5.5	5.1
	6002		40~70	15~45		32	+0.025 0	9	2.85	62	40		28	38		50	46	50				
	6202		40~70	15~45		35		11	3.75	66	44		29	42		54	49	54				
	6903		40~70	15~45	17	30	+0.021 0	7	2.85	60	38		27	36		48	46	48				
	6003		40~70	15~45		35	+0.025 0	10	3.75	66	44		31	42		54	50	54				
	6203		50~70	20~40		40		12	3.95	72	50		34	48		60	54	60				
	6804		35~70	10~50	20	32		7	3.75	62	40		28	38		50	46	44	24			
	6904		45~70	15~44		37		9	3.75	72	47	11	34	45		59	54	54	24	11	6.6	6.1
	6004		55~80	20~49		42		12	3.95	77	54		36	50		64	59	56	32			
	6204		55~80	20~49		47		14	3.95	81	58		40	54	-0.010 -0.040	68	62	59	34			
	6805		35~70	15~44	25	37		7	3.75	72	47		34	45	-0.009 -0.034	59	54	54	24			
	6905		35~70	15~44		42		9	3.95	77	54		36	50		64	59	55	32			
	6005		55~80	20~47		47		12	3.95	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6205		55~80	20~47		52	+0.030 0	15	4.2	94	64		45	60		78	72	68	39			
	6806		35~70	15~42	30	42	+0.025 0	7	3.95	77	54	11	36	50	-0.009 -0.034	64	59	56	32	11	6.6	6.1
	6906		35~70	15~42		47		9	3.95	88	58	13	41	54	-0.010 -0.040	72	67	62	36	14	9	8.1
	6006		55~80	20~47		55	+0.030 0	13	4.2	96	66		48	62		80	73	70	40			
	6206		55~120	20~87		62		16	4.2	104	74		55	70		88	79	77	44			
	6007		55~120	20~87	35	62		14	4.2	104	74		55	70		88	79	75	44			
	6207		55~120	20~87		72		17	6	126	88	20	64	84	-0.012 -0.047	105	95	92	51	17.5	11	11
	6008		65~120	25~82	40	68		15	5.2	114	82	13	60	78	-0.010 -0.040	96	86	80	54	14	9	8.1
	6208		65~120	25~82		80		18	6	134	96	20	74	92	-0.012 -0.047	113	102	98	56	17.5	11	11
	6010	ZZ (Double Shielded)	65~120	25~82	50	80		16	6	134	96		74	92		113	-	98	56			
	6210		70~120	25~82		90	+0.035 0	20	7	147	110		83	106		126	-	104	72			

Check for available sizes in the price list.

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

CAD Data

Order Example

Part Number			-	L	-	S
Type	Bearings	Seal				
BGFSZ	6000	ZZ	-	35	-	S12
BGFSZ	6000	VV	-	30		

When S is not specified, S dimension will be the minimum value. In this case, S=10

Days to Ship: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~24
Rate	€ Unit Price	5%	10%	15%

Bearings No.	Seal	€ Unit Price							
		Round				Square	Compact		
		BGFRZB	BGFRZ	BAFRZ	SBAFRZ	BGFSZ	BGFCZB	BGFCZ	SBAFCZ
623	ZZ (x1.0) VV (x1.1) DD (x1.1)								
624									
605									
625									
606									
626									
698									
608									
628									
6800									
6900									
6000									
6200									
6801									
6901									
6001									
6201									
6802									
6902									
6002									
6202									
6903									
6003									
6203									
6804									
6904									
6004									
6204									
6805									
6905									
6005									
6205									
6806									
6906									
6006									
6206									
6007									
6207									
6008									
6208									
6010									
6210									

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGFRZB6000VV-40-S20, the price in the table is 40,60 EURx1.1=44,66 EUR→44,60 EUR

Alterations

Part Number	-	L	-	S	-	(NA)
BGFSZ6000ZZ	-	35			-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

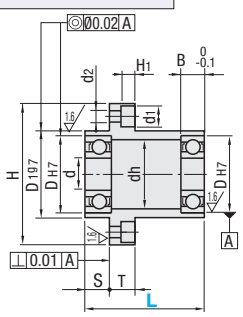
Bearings with Housings

-Standard Length Double Bearings with Pilot - Non-retained-

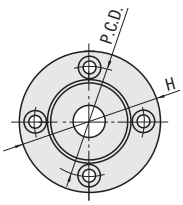


Type			Material		Surface Treatment
Round	Square	Compact	Bearings	Housing	Housing
BGRYB	BGSYB	BGCYB	Steel	1.1191/C45E	Black Oxide
BGRY	BGSY	BGCY			Electroless Nickel Plating
BARY	BASY	BACY		EN AW-2017/ AlCu4MgSi	Clear Anodize
SBARY	SBASY	SBACY	Stainless Steel		
SBGRY	SBGSY	SBGCY		1.4301/X5CrNi18-10	-

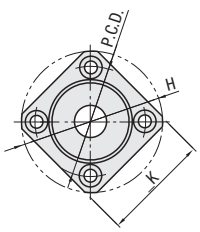
* Bearings with Rubber Seals (V V and DD) are all made of steel.



Round

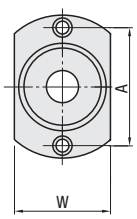


Square

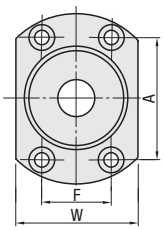


Compact

d3~17



d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number Type	Bearing No.	Seal	L Selection	S	d	D_{H7}	Tolerance	B	H	W	T	dh	D_{1g7}	Tolerance	P.C.D.	K	A	F	d_1	d_2	H_1
	623		20 30	5	3	10	$^{+0.015}_{0}$	4	33	16	7	7	14	-0.006 -0.024	24	27	24		6.5	3.5	3.1
	624		20 30	5	4	13	+0.018 0	5	35	18		9	17		26	28	26				
	605		25 35	5	5	14		5	38	20		10	18		28	30	28				
	625		35 40	10		16		5	40	22		12	20	-0.007 -0.028	30	31	30		8	4.5	4.1
	606		25 40	5	6	17		6	41	23		13	21		31	32	31				
	626		35 45	10		19	$^{+0.021}_{0}$	6	44	25		15	24		34	34	34				
	678		20 30	5		12	$^{+0.018}_{0}$	3.5	35	18		10	16	$^{-0.006}_{-0.024}$	26	28	26		6.5	3.5	3.1
	698		25 35	5	8	19	+0.021 0	6	44	25		15	24	-0.007 -0.028	34	34	34		8	4.5	4.1
	608		25 35	5		22		7	47	29		18	27		37	36	37				
	628		35 45	10		24		8	50	32		20	30		40	37	40				
	6700		20 30	5		15	$^{+0.018}_{0}$	4	40	22		12	19		30	31	30				
	6800		20 30	5		19	+0.021 0	5	44	25	8	15	24		34	34	34				
	6900		25 40	5	10	22		6	47	29		19	27		37	36	37				
(Round)	6000		35 50	10		26		8	52	34		22	32	-0.009 -0.034	42	39	42				
BGRYB	6200		45 55	15		30		9	56	38		24	36		46	42	46	-	8	4.5	4.1
BGRY	6701		20 30	5		18	$^{+0.018}_{0}$	4	44	25		15	23	-0.007 -0.028	34	34	34				
BARY	6801		25 35	5		21	+0.021 0	5	47	29		17	26		37	36	37				
SBARY	6901		35 50	10	12	24		6	50	31		21	30		40	38	40				
SBGRY	6001	ZZ (Double Shielded)	35 50	10		28		8	54	36		24	34	-0.009 -0.034	44	40	44				
	6201		45 55	15		32	$^{+0.025}_{0}$	10	58	40		26	38		48	43	48				
	6702	*VV (Non-contact Rubber Sealed)	25 35	10		21	+0.021 0	4	47	29		18	26	-0.007 -0.028	37	36	37				
(Square)	6802		25 35	10		24		5	50	32		20	30		40	37	40				
BGSYB	6902		35 60	10	15	28		7	59	37		25	35	-0.009 -0.034	47	45	47				
BGSY	6002		45 65	15		32	+0.025 0	9	62	40		28	38		50	46	50		9.5	5.5	5.1
BASY	6202		50 65	15		35		11	66	44		29	42		54	49	54				
SBASY	6803	DD (Contact Rubber Sealed)	30 40	10		26	+0.021 0	5	52	34		22	32		42	39	42		8	4.5	4.1
SBGSY	6903		45 55	15	17	30		7	60	38	10	27	36		48	46	48				
	6003		50 65	15		35	+0.025 0	10	66	44		31	42		54	50	54		9.5	5.5	5.1
(Compact)	6203		60 70	20		40		12	72	50		34	48		60	54	60				
BGCYB	6704		30 40	10		27	$^{+0.021}_{0}$	4	59	35		23	33		47	45	41	23	8	4.5	4.1
BGCY	6804		35 50	10		32	+0.025 0	7	62	40		28	38		50	46	44	24	9.5	5.5	5.1
BACY	6904		50 65	15	20	37		9	72	47		34	45		59	54	54	24			
SBACY	6004		60 70	20		42		12	77	54		36	50		64	59	56	32			
SBGCY	6204		65 70	20		47		14	81	58	11	40	54	$^{-0.010}_{-0.040}$	68	62	59	34	11	6.6	6.1
	6805		35 50	15		37		7	72	47		34	45	-0.009 -0.034	59	54	54	24			
	6905		35 50	15	25	42		9	77	54		36	50		64	59	55	32			
	6005		60 80	20		47		12	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6205		65 80	20		52	$^{+0.030}_{0}$	15	94	64		45	60		78	72	68	39			
	6806		35 50	15		42	+0.025 0	7	77	54	11	36	50	$^{-0.009}_{-0.034}$	64	59	56	32	11	6.6	6.1
	6906		35 50	15	30	47		9	88	58		41	54		72	67	62	36			
	6006		60 80	20		55		13	96	66	13	48	62	-0.010 -0.040	80	73	70	40	14	9	8.1
	6206		70 80	20		62		16	104	74		55	70		88	79	77	44			
	6007		70 80	20	35	62		14	104	74		55	70		88	79	75	44			
	6207		70 90	20		72	+0.030 0	17	126	88	20	64	84	$^{-0.012}_{-0.047}$	105	95	92	51	17.5	11	11
	6008		80 90	25	40	68		15	114	82	13	60	78	$^{-0.010}_{-0.040}$	96	86	80	54	14	9	8.1
	6208		70 90	20		80		18	134	96		74	92	-0.012 -0.047	113	102	98	56			
	6010	ZZ (Double Shielded)	80	20	50	80		16	134	96	20	74	92		113	-	98	56	17.5	11	11
	6210		100	20		90	$^{+0.035}_{0}$	20	147	110		83	106		126	-	104	72			

Check for available sizes in the price list.

* No. 623, 624, 605, 606 and numbers starting with 67 are not available for V V (Non-contact rubber sealed).

CAD Data

Order Example

Part Number				
Type	Bearings	Seal	-	L
BACY	628	ZZ	-	35
BASY	6900	DD	-	25

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days

Express Service is not available for 6207, 6208, 6010 and 6210.

Express A | 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Bearings No.	Seal	€ Unit Price														
		Round					Square					Compact				
		BGRYB	BGRY	BARY	SBARY	SBGRY	BGSYB	BGSY	BASY	SBASY	SBGSY	BGCYB	BGCY	BACY	SBACY	SBGCY
623	ZZ (x1.0)															
624																
605																
625																
606																
626																
678																
698																
608																
628																
6700																
6800																
6900																
6000																
6200																
6701																
6801																
6901																
6001																
6201																
6702																
6802																
6902																
6002	VV (x1.1)															
6202																
6803																
6903	DD (x1.1)															
6003																
6203																
6704																
6804																
6904																
6004																
6204																
6805																
6905																
6005																
6205																
6806																
6906																
6006																
6206																
6007																
6207																
6008																
6208																
6010																
6210																

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGRYB6900DD-25, the price in the table is 30,10 EURx1.1=33,11 EUR→33,10 EUR

Alterations

Part Number	-	L	-	(NA)
BASY6000ZZ	-	35	-	NA

Alteration	Bearings not assembled
Code	NA
Spec.	Bearings are not assembled into the Housings,
Price Adder	Free of Charge

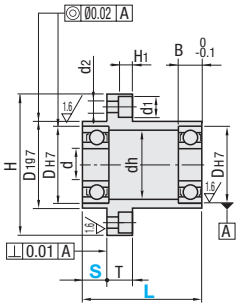
Bearings with Housings

-Configurable Length Double Bearings with Pilot - Non-retained-

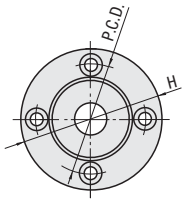


Type			Material		Surface Treatment
Round	Square	Compact	Bearings	Housing	Housing
BGFRYB	BGFSYB	BGFCYB	Steel	1.1191/C45E	Black Oxide
BGFRY	BGFSY	BGFCY			Electroless Nickel Plating
BAFRY	BAFSY	BAFCY		EN AW-2017/AlCuaMgSi	Clear Anodize
SBGFRY	-	-	Stainless Steel	1.4301/X5CrNi18-10	-

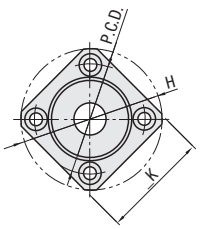
* Bearings with Rubber Seals (V V and DD) are all made of steel.



Round

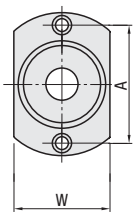


Square

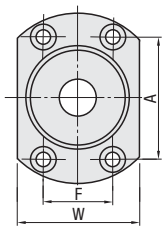


Compact

d3~17



d20~50



Bearing Accuracy JIS B 1514 Class 0

Part Number			1mm Increment		d	DH7	Tolerance	B	H	W	T	dh	D1g7	Tolerance	P.C.D.	K	A	F	d1	d2	H1
Type	Bearing No.	Seal	L	S																	
(Round) BGFRYB BGFRY BAFRY SBGFRY (Square) BGFSYB BGFSY BAFSY (Compact) BGFCYB BGFCY BAFCY	623	ZZ Double Shielded; *VV Non-contact Rubber Sealed; DD Contact Rubber Sealed	20~40	5~28	3	10	+0.015 0	4	33	16	7	7	14	-0.006 -0.024	24	27	24		6.5	3.5	3.1
	624		20~40	5~28	4	13		5	35	18		9	17		26	28	26				
	605		20~40	5~27	5	14	+0.018 0	5	38	20	8	10	18		28	30	28				
	625		30~40	10~22		16		5	40	22		12	20	-0.007 -0.028	30	31	30		8	4.5	4.1
	606		20~40	5~27	6	17		6	41	23		13	21		31	32	31				
	626		30~50	10~32		19	+0.021 0	6	44	25		15	24		34	34	34				
	678		20~40	5~27		12	+0.018 0	3.5	35	18		10	16	-0.006 -0.024	26	28	26		6.5	3.5	3.1
	698		25~50	5~37	8	19		6	44	25		15	24	-0.007 -0.028	34	34	34		8	4.5	4.1
	608		20~50	5~37		22		7	47	29		18	27		37	36	37				
	628		30~50	10~32		24		8	50	32		20	30		40	37	40				
	6700		20~40	5~27	10	15	+0.018 0	4	40	22		12	19		30	31	30				
	6800		20~40	5~27		19		5	44	25		15	24		34	34	34				
	6900		20~60	5~47		22	+0.021 0	6	47	29		19	27		37	36	37				
	6000		30~60	10~42		26		8	52	34		22	32	-0.009 -0.034	42	39	42				
	6200		40~60	15~37		30		9	56	38		24	36		46	42	46	-	8	4.5	4.1
	6701		20~40	5~27	12	18	+0.018 0	4	44	25		15	23	-0.007 -0.028	34	34	34				
	6801		25~50	5~37		21		5	47	29		17	26		37	36	37				
	6901		30~60	10~42		24	+0.021 0	6	50	31		21	30		40	38	40				
	6001		30~60	10~42		28		8	54	36		24	34	-0.009 -0.034	44	40	44				
	6201		40~70	15~47		32	+0.025 0	10	58	40		26	38		48	43	48				
	6702		25~60	10~42	15	21	+0.021 0	4	47	29		18	26	-0.007 -0.028	37	36	37				
	6802		25~60	10~42		24		5	50	32		20	30		40	37	40				
	6902		30~70	10~50		28		7	59	37	10	25	35	-0.009 -0.034	47	45	47		9.5	5.5	5.1
	6002		40~70	15~45		32	+0.025 0	9	62	40		28	38		50	46	50				
	6202		40~70	15~45		35		11	66	44		29	42		54	49	54				
	6803		25~60	10~40	17	26	+0.021 0	5	52	34		22	32		42	39	42		8	4.5	4.1
	6903		40~70	15~45		30		7	60	38		27	36		48	46	48		9.5	5.5	5.1
	6003		40~70	15~45		35	+0.025 0	10	66	44		31	42		54	50	54				
	6203		50~70	20~40		40		12	72	50		34	48		60	54	60				
	6704		30~70	10~50	20	27	+0.021 0	4	59	35		23	33		47	45	41	23	8	4.5	4.1
	6804		35~70	10~50		32		7	62	40		28	38		50	46	44	24	9.5	5.5	5.1
	6904		45~70	15~44		37		9	72	47	11	34	45		59	54	54	24			
	6004		55~80	20~49		42		12	77	54		36	50		64	59	56	32			
	6204		55~80	20~49		47	+0.025 0	14	81	58		40	54	-0.010 -0.040	68	62	59	34	11	6.6	6.1
	6805		35~70	15~44	25	37		7	72	47		34	45	-0.009 -0.034	59	54	54	24			
	6905		35~70	15~44		42		9	77	54		36	50		64	59	55	32			
	6005		55~80	20~47		47		12	88	58	13	41	54	-0.010 -0.040	72	67	63	36	14	9	8.1
	6205		55~80	20~47		52	+0.030 0	15	94	64		45	60		78	72	68	39			
	6806		35~70	15~42	30	42	+0.025 0	7	77	54	11	36	50	-0.009 -0.034	64	59	56	32	11	6.6	6.1
	6906		35~70	15~42		47		9	88	58	13	41	54	-0.010 -0.040	72	67	62	36	14	9	8.1
	6006		55~80	20~47		55	+0.030 0	13	96	66		48	62		80	73	70	40			
	6206		55~120	20~87		62		16	104	74		55	70		88	79	77	44			
	6007		55~120	20~87	35	62		14	104	74		55	70		88	79	75	44			
	6207		55~120	20~87		72		17	126	88	20	64	84	-0.012 -0.047	105	95	92	51	17.5	11	11
	6008		65~120	25~82	40	68		15	114	82	13	60	78	-0.010 -0.040	96	86	80	54	14	9	8.1
	6208		65~120	25~82		80		18	134	96	20	74	92	-0.012 -0.047	113	102	98	56	17.5	11	11
	6010	ZZ (Double Shielded)	65~120	25~82	50	80		16	134	96		74	92		113	-	98	56			
	6210		70~120	25~82		90	+0.035 0	20	147	110		83	106		126	-	104	72			

Check for available sizes in the price list.

* No. 623, 624, 605, 606 and numbers starting with 67 are not available for V V (Non-contact rubber sealed).

CAD Data

Order Example

Part Number			-	L	-	S
Type	Bearings	Seal				
BAFCY	608	ZZ	-	47	-	S18
BGFRY	6200	VV	-	40		

When S is not specified, S dimension will be the minimum value. In this case, S=15

Days to Ship: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~24
Rate	€ Unit Price	5%	10%	15%

Bearings No.	Seal	€ Unit Price									
		Round				Square			Compact		
		BGFRYB	BGFRY	BAFRY	SBGFRY	BGFSYB	BGFSY	BAFSY	BGFCYB	BGFCY	BAFCY
623	ZZ (x1.0)										
624											
605											
625											
606											
626											
678											
698											
608											
628											
6700											
6800											
6900											
6000											
6200											
6701											
6801											
6901											
6001											
6201											
6702											
6802											
6902											
6002	VV (x1.1)										
6202											
6803											
6903	DD (x1.1)										
6003											
6203											
6704											
6804											
6904											
6004											
6204											
6805											
6905											
6005											
6205											
6806											
6906											
6006											
6206											
6007											
6207											
6008											
6208											
6010											
6210											

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to the ten Cent)
(Ex.) When BGFSYB608DD-30-S10, the price in the table is 42,30 EURx1.1=46,53 EUR→46,50 EUR

Alterations

Part Number	-	L	-	S	-	(NA)
BAFSY6000ZZ	-	35			-	NA

Alteration	Bearings not assembled
Code	NA
Spec.	Bearings are not assembled into the Housings
Price Adder	Free of Charge

Bearings with Housings

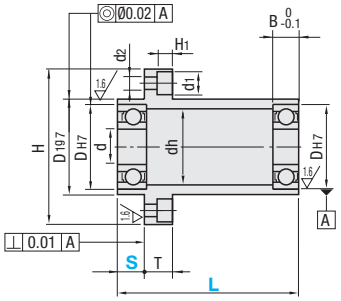
-Configurable Length Long Double Bearings - Non-retained-



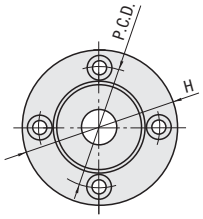
RoHS

Type		Material		Surface Treatment
Round	Square	Bearings	Housing	Housing
BGFRLB	-	Steel	1.1191/C45E	Black Oxide
BGFRL	BGFSL			Electroless Nickel Plating
SBGFRL	-	Stainless Steel	1.4301/X5CrNi18-10	-

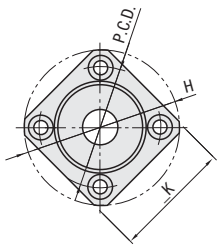
* Bearings with Rubber Seals (V V and DD) are all made of steel.



Round



Square



Bearing Accuracy JIS B 1514 Class 0

Part Number			1mm Increment		d	DH7	Tolerance	B	H	T	dh	D1g7	Tolerance	P.C.D.	K	d1	d2	H1
Type	Bearing No.	Seal	L	S														
(Round) BGFRLB BGFRL SBGFRL (Square) BGFSL	608	ZZ (Double Shielded) VV (Non-contact Rubber Sealed) DD (Contact Rubber Sealed)	51~100	5~85	8	22	+0.021 0	7	47	8	18	27	-0.007 -0.028	37	36	8	4.5	4.1
	628		51~100	10~80		24		8	50		20	30		40	37			
	6900		61~120	5~105	10	22		6	47		19	27		37	36			
	6000		61~120	10~100		26		8	52		22	32	-0.009 -0.034	42	39			
	6200		61~120	15~95		30		9	56		24	36		46	42			
	6901		61~120	10~100	12	24		6	50		21	30	-0.007 -0.028	40	38			
	6001		61~120	10~100		28		8	54		24	34	-0.009 -0.034	44	40			
	6201		71~140	15~115		32	+0.025 0	10	58		26	38		48	43			
	6902		71~140	10~115	15	28	+0.021 0	7	59	10	25	35		47	45	9.5	5.5	5.1
	6002		71~140	15~115		32	+0.025 0	9	62		28	38		50	46			
	6202		71~140	15~115		35		11	66		29	42		54	49			
	6904		71~140	15~110	20	37		9	72	11	34	45		59	54	11	6.6	6.1
	6004		81~160	20~125		42		12	77		36	50		64	59			
	6204		81~160	20~125		47		14	81		40	54	-0.010 -0.040	68	62			
	6905		71~140	20~117	25	42		9	77		36	50	-0.009 -0.034	64	59			
	6005		81~160	20~137		47		12	88	13	41	54	-0.010 -0.040	72	67	14	9	8.1
	6205		81~160	20~137		52	+0.030 0	15	94		45	60		78	72			
	6906		71~140	20~117	30	47	+0.025 0	9	88		41	54		72	67			
	6006		81~160	20~137		55	+0.030 0	13	96		48	62		80	73			
	6206		121~160	20~137		62		16	104		55	70		88	79			
	6007		121~160	20~137	35	62		14	104		55	70		88	79			

Check for available sizes in the price list.

Order Example

Part Number				L		S
Type	Bearings	Seal	-		-	
BGFRLB	608	ZZ	-	70	-	S20
BGFSL	6202	VV	-	80	-	S30

Days to Ship 8 Days

Reduced Delivery Time

CAD Data

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Bearing No.	Seal	€ Unit Price			
		Round			Square
		BGFRLB	BGFRL	SBGFRL	BGFSL
608	ZZ (x1.0)				
628					
6900					
6000					
6200					
6901					
6001					
6201					
6902					
6002					
6202	VV (x1.1)				
6904					
6004	DD (x1.1)				
6204					
6905					
6005					
6205					
6906					
6006					
6206					
6007					

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGFRL6202VV-80-S20, the price in the table is 88,60 EURx1.1=97,46 EUR→97,40 EUR

Alterations

Part Number	-	L	-	S	-	(NA)
BGFRLB6000ZZ	-	80	-	S25	-	NA

Alteration	Bearings not assembled
Code	NA
Spec.	Bearings are not assembled into the Housings.
Price Adder	Free of Charge

Low Particulate Grease Bearings with Housings

-Single Bearings-



RoHS

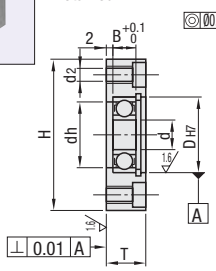
Retained	With Pilot, Retained	Non-retained	M Material		S Surface Treatment
			Bearings	Housing	Housing
S-SBACA	S-SBACR	S-SBACN	Stainless Steel	EN AW-2017/AlCu4MgSi	Clear Anodize
S-SBGCA	S-SBGCR	S-SBGCN		1.4301/X5CrNi18-10	-

For No Retaining Ring Type, bearing may protrude 0.1 ~ 0.2mm due to negative tolerance of B dimension.

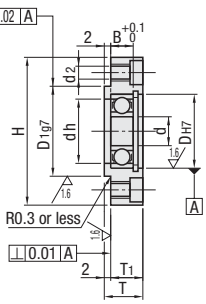
Mounting holes are tapped and counterbored so the housing can be mounted from either side.



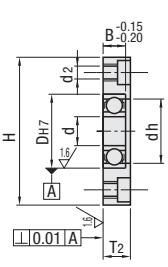
- Retained



- With Pilot, Retained

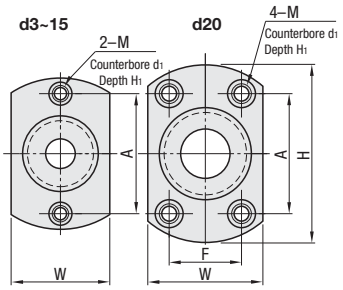


- Non-retained



d3~15

d20



Bearing Accuracy JIS B 1514 Class 0 A Accessory: Retaining Ring (1.4301/X5CrNi18-10)

Part Number Type	Bearing No.	d	D_{H7}	Tolerance	B	H	W	T	T_1	T_2	dh	D_{1g7}	Tolerance	A	F	M (Coarse) (d_2)	d_1	H_1
	623ZZ	3	10	$^{+0.015}_{0}$	4	33	16	9	7	6	7	14	-0.006 -0.024	24		M4 (3.3)	6.5	3.4
	624ZZ	4	13	+0.018 0	5	35	18	10	8	7	9	17		26				
	605ZZ	5	14		5	36	20	10	8	7	10	18		26				
	625ZZ	5	16		5	38	22	10	8	7	12	20	-0.007 -0.028	28				
Retained	606ZZ	6	17		6	39	23	11	9	8	13	21		29				
S-SBACA S-SBGCA	608ZZ	8	22		7	45	29	12	10	9	18	27		35				
	6900ZZ	10	22	+0.021 0	6	45	29	11	9	8	19	27		35		M5 (4.3)	8	4.4
	6000ZZ		26		8	50	34	13	11	10	22	32	-0.009 -0.034	40	-			
With Pilot, Retained	6200ZZ		30		9	54	38	14	12	11	24	36		44				
S-SBACR S-SBGCR	6901ZZ	12	24		6	48	31	11	9	8	21	30	$^{-0.007}_{-0.028}$	38				
	6001ZZ		28		8	52	36	13	11	10	24	34	-0.009 -0.034	42				
	6201ZZ		32	$^{+0.025}_{0}$	10	56	40	15	13	12	26	38		46				
Non-retained	6902ZZ	15	28	$^{+0.021}_{0}$	7	57	37	12	10	9	25	35		45		M6 (5.2)	9.5	5.4
S-SBACN S-SBGCN	6002ZZ		32	+0.025 0	9	60	40	14	12	11	28	38		48				
	6202ZZ		35		11	64	44	17	15	13	29	42		52				
	6904ZZ	20	37		9	69	47	15	13	11	34	45		51	24	M8 (6.8)	11	6.5
	6004ZZ		42		12	77	54	18	16	14	36	50		56	32			
	6204ZZ		47		14	81	58	20	18	16	40	54	$^{-0.010}_{-0.040}$	59	34			

Order Example: Part Number S-SBACA6900ZZ

Days to Ship: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Alterations: Part Number S-SBACA6900ZZ - (NA) - NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.
Price Adder	Free of Charge

- Example P.844

- Low Particulate Generation Bearing P.913

Price

Volume Discount (Round down to one Cent.) P.87

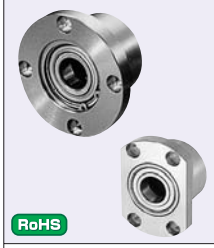
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bearings No.	Retained € Unit Price		With Pilot, Retained € Unit Price		Non-retained € Unit Price	
	S-SBACA	S-SBGCA	S-SBACR	S-SBGCR	S-SBACN	S-SBGCN
623ZZ						
624ZZ						
605ZZ						
625ZZ						
606ZZ						
608ZZ						
6900ZZ						
6000ZZ						
6200ZZ						
6901ZZ						
6001ZZ						
6201ZZ						
6902ZZ						
6002ZZ						
6202ZZ						
6904ZZ						
6004ZZ						
6204ZZ						

Low Particulate Grease Bearings with Housings

-Double Bearings-



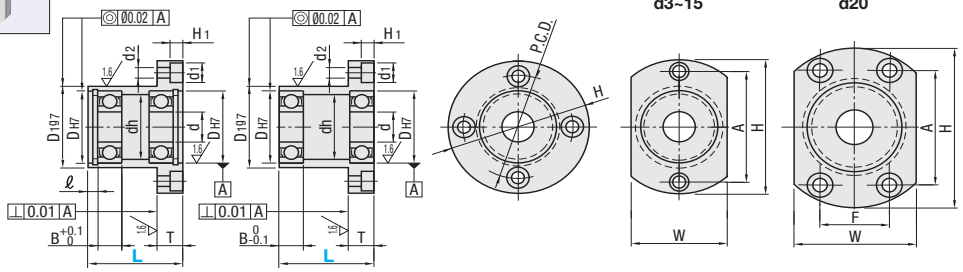
RoHS

Retained		Non-retained	Material		Surface Treatment
Round	Compact	Compact	Bearings	Housing	Housing
S-SBARB	S-SBACB	S-SBACC	Stainless Steel	EN AW-2017/ AlCu4MgSi	Clear Anodize
-	-	S-SBAMCC			Electroless Nickel Plating
S-SBGRB	-	S-SBGCC		1.4301/X5CrNi18-10	-

6.3 (1.6)

- Retained - Non-retained Round Compact

d3~15 d20



Bearing Accuracy JIS B 1514 Class 0

A Accessory: Retaining Ring (1.4301/X5CrNi18-10)

Part Number Type	Bearing No.	L Selection	d	DH7	Tolerance	B	ℓ	H	W	T	dh	D1g7	Tolerance	P.C.D.	A	F	d1	d2	H1
	623ZZ	20 30	3	10	+0.015 0	4	2.65	33	16	7	7	14	-0.006 -0.024	24	24				
	624ZZ	20 30	4	13		5	2.65	35	18		9	17		26	26		6.5	3.5	3.1
	605ZZ	20 30	5	14	+0.018 0	5	2.65	36	20	8	10	18		26	26				
Retained (Round)	625ZZ	25 30	5	16		5	2.65	38	22		12	20		28	28				
	606ZZ	20 35	6	17		6	2.65	39	23		13	21	-0.007	29	29				
S-SBARB S-SBGRB	608ZZ	25 35	8	22		7	2.65	45	29		18	27	-0.028	35	35				
	6900ZZ	25 40	10	22	+0.021 0	6	2.65	45	29		19	27		35	35				
	6000ZZ	25 40		26		8	2.85	50	34		22	32	-0.009	40	40	-	8	4.5	4.1
(Compact) S-SBACB	6200ZZ	30 40		30		9	2.85	54	38		24	36	-0.034	44	44				
	6901ZZ	25 40	12	24		6	2.85	48	31		21	30	-0.007 -0.028	38	38				
Non-retained (Compact)	6001ZZ	25 40		28		8	2.85	52	36		24	34		42	42				
	6201ZZ	30 40		32	+0.025 0	10	2.85	56	40		26	38		46	46				
S-SBACC S-SBAMCC S-SBGCC	6902ZZ	25 50	15	28	+0.021 0	7	2.85	57	37	10	25	35	-0.009 -0.034	45	45		9.5	5.5	5.1
	6002ZZ	30 50		32		9	2.85	60	40		28	38		48	48				
	6202ZZ	35 50		35		11	3.75	64	44		29	42		52	52				
	6904ZZ	35 50	20	37	+0.025 0	9	3.75	69	47	11	34	45		56	51	24	11	6.6	6.1
	6004ZZ	40 50		42		12	3.95	77	54		36	50		64	56	32			
	6204ZZ	45 50		47		14	3.95	81	58		40	54	-0.010 -0.040	68	59	34			

Order Example

Part Number	-	L
S-SBACB6900ZZ	-	25

- Example P.852-856
- Low Particulate Generation Bearing P.913

Alterations

Part Number	-	L	-	(NA)
S-SBACB6900ZZ	-	25	-	NA

Days to Ship

8 Days

Express A 2,00 EUR/ piece

A Express Charge of 5,40 EUR for 3 or more identical pieces.

S-SBAMCC

10 Days

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearing and retaining ring are shipped unassembled to the Housing.
Price Adder	Free of Charge

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bearings No.	€ Unit Price					
	Retained			Non-retained		
	Round		Compact	Compact		
	S-SBARB	S-SBGRB	S-SBACB	S-SBACC	S-SBAMCC	S-SBGCC
623ZZ						
624ZZ						
605ZZ						
625ZZ						
606ZZ						
608ZZ						
6900ZZ						
6000ZZ						
6200ZZ						
6901ZZ						
6001ZZ						
6201ZZ						
6902ZZ						
6002ZZ						
6202ZZ						
6904ZZ						
6004ZZ						
6204ZZ						

Bearings with Housings

-L-Shaped Retained-

CAD Data



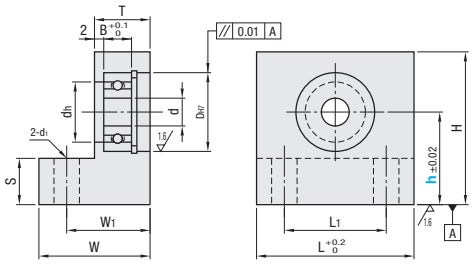
RoHS

Type		Material		Surface Treatment	Accessory
Selectable h	Configurable h	Bearings	Housing	Housing	Retaining Ring
BGLKB	BGLFB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGLK	BGLF			Electroless Nickel Plating	1.4301/ X5CrNi18-10
BGLKA	BGLFA		EN AW-2017/ AlCu4MgSi	Clear Anodize	
BGLKSA	-	Stainless Steel			
BGLKS	BGLFS		1.4301/X5CrNi18-10	-	

Bearing Accuracy JIS B 1514 Class 0

6.3 / (1.6 /)

* Bearings with Rubber Seals (V V and DD) are all made of steel.



Part Number			h		d	D_{H7}	Tol.	dh	B	H	L	L_1	W	W_1	T	S	d_1	€ Unit Price								
Type	Bearings No.	Seal	h Selection	Configurable 1mm Increment															Selectable h					Configurable h			
																			BGLKB	BGLK	BGLKA	BGLKSA	BGLKS	BGLFB	BGLF	BGLFA	BGLFS
Selectable h BGLKB BGLK BGLKA BGLKSA BGLKS	623	ZZ (Double Shielded) (x1.0) *VV Non-contact Rubber Sealed (x1.1)	15 20 25	15~30	3	10	+0.015 0	7	4	h+9	20	10	20	15	10	5	4.5									
	624				4	13		9	5	h+11	22	12	20	15	10											
	605				5	14	+0.018 0	10	5	h+11	24	14	20	15	10											
	625					16		12	5	h+12	28	16	22	16	10											
	606		20 25 30	20~30	6	17		13	6	h+13	34	22	24	18	12		5.5									
	626					19		15	6	h+14	36	24	24	18	12											
	608				8	22		18	7	h+15	38	26	24	18	12											
	628		25 30	25~30		24		20	8	h+16	34	22	27	21	15											
	6900		25 30 40	25~40	10	22	+0.021 0	19	6	h+15	32	20	24	18	12	10										
	6000					26		22	8	h+17	38	26	27	21	15											
	6200					30		24	9	h+19	40	28	27	21	15											
	6901				12	24		21	6	h+16	36	24	24	18	12											
	6001					28		24	8	h+18	40	28	27	21	15											
	6201					32	+0.025 0	26	10	h+20	42	30	28	22	16											
	6902		30 40 50	30~50	15	28	+0.021 0	25	7	h+18	42	30	24	18	12	15										
Configurable h BGLFB BGLF BGLFA BGLFS	6002	DD (Contact Rubber Sealed (x1.1)				32	+0.025 0	28	9	h+20	50	36	29	22	15											
	6202		40 50	40~50		35		29	11	h+22	44	30	31	24	17											
	6903		30 40 50	30~50	17	30	+0.021 0	27	7	h+19	42	30	26	20	13	12.5	6.5									
	6003					35	+0.025 0	31	10	h+22	50	36	31	24	16											
	6203					40		34	12	h+24	48	36	33	26	20											
	6904		40 50 60	40~60	20	37		34	9	h+23	45	31	29	22	15	15										
	6004					42		36	12	h+25	54	38	35	27	19											
	6204					47		40	14	h+28	60	44	36	28	20											
	6005				25	47		41	12	h+28	62	46	35	27	19		9									
	6205		50 80	50~80		52	+0.030 0	45	15	h+31	70	50	42	32	22	20										
	6006				30	55		48	13	h+32	74	54	40	30	20		11									
	6206					62		55	16	h+36	82	62	43	33	23											

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGLK6000DD-30, the price in the table is 23,70 EURx1.1=26,07 EUR→26,00 EUR

Check for available sizes in the price list.
*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

Order Example

Part Number			-	h
Type	Bearings	Seal		
BGLK	6000	DD	-	30
BGLFA	6904	ZZ	-	45

Days to Ship

8 Days

Express A | 8,00 EUR/ piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

-Selectable h

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-Configurable h

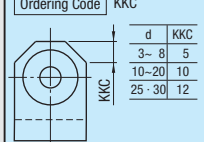
Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	h	-	(KKC · KCC · NA)
BGLF6000ZZ	-	30	-	KKC

KCC and KKC only | 10 | Days

Alterations	C Chamfer	C2 Chamfer	Bearings · Retaining Rings not assembled
Code	KKC	KCC	NA
Specifications	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC  d / KKC: 3~8 / 5; 10~20 / 10; 25 · 30 / 12. Available for Configurable h Type only	C2 chamfered on the top edge surface.	Bearing and retaining ring are shipped unassembled to the Housing.
Price Adder	7,00	2,00	Free of Charge

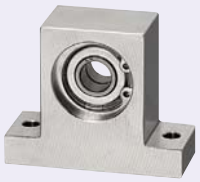
Bearings with Housings

-T-Shaped Short Double Bearings - Retained-

CAD Data

RoHS

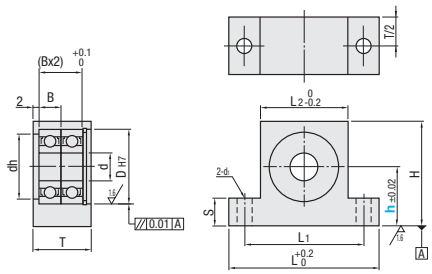




Type	Material		Surface Treatment	Accessory
	Bearings	Housing	Housing	Bearing
BGMWB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGMW			Electroless Nickel Plating	1.4301/ X5CrNi18-10
BGMWS	Stainless Steel	1.4301/X5CrNi18-10	-	

Bearing Accuracy JIS B 1514 Class 0

- Easier to obtain required radial load ratings when space is limited.
- * Bearings with Rubber Seals (V V and DD) are all made of steel.
- The "(Bx2)" dimension for "T-Shaped Short Double Bearings" type indicates the position where the retaining ring groove begins. Please note that considering the groove width tolerance and the retaining ring thickness tolerance, there may be up to max. 0.3mm of axial clearance on the bearings.



Part Number			h Selection	d	D_{H7}	Toler-ance	dh	B	H	L	L_1	L_2	T	S	d_1	€ Unit Price		
Type	Bearings No.	Seal														BGMWB	BGMW	BGMWS
BGMWB BGMW BGMWS	605	ZZ (Double Shielded) (x1.0) *VV (Non-contact Rubber Sealed) (x1.1) DD (Contact Rubber Sealed) (x1.1)	15 20 25	5	14	+0.018 0	10	5	h+11	40	30	20	15	5	4.5			
	606		20 25 30	6	17		13	6	h+13	47	35	23	18	10	5.5			
	608			8	22	+0.021 0	18	7	h+15	53	41	29	19					
	6900			10			19	6					18					
	6000		20 30 40		26		22	8	h+17	58	46	34	23					
	6901			12	24		21	6	h+16	56	44	32	18					
	6001				28		24	8	h+18	60	48	36	23					
	6902		30 40 50	15			25	7	h+18				19	15	6.5			
	6002				32	+0.025 0	28	9	h+20	68	54	40	24					
	6903			17	30	+0.021 0	27	7	h+19	64	52	38	20					
	6003				35		31	10	h+22	70	56	43	26					
	6904		40 50 60	20	37	+0.025 0	34	9	h+23	73	59	45	24					
	6004				42		36	12	h+25	82	66	50	31		9			
	6005			25	47		41		h+28	96	76	56						
	6006		40 50 80	30	55	+0.030 0	48	13	h+32	104	84	64	32	20	11			

- The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
  (Ex.) When BGMW6000VV-30, the price in the table is 30,50 EURx1.1=33,55 EUR → 33,50 EUR
- Check for available sizes in the price list.
- For details of Bearing Standards, please see **P.897,898,905,907~909**
- * No.605 and 606 are not available for V V (Non-contact rubber sealed)

Order Example

Part Number			-	h
Type	Bearings	Seal		
BGMW	6000	ZZ	-	30

Days to Ship

8 Days

Express A | 8,00 EUR/ piece — P. 88

- A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) **P. 87**

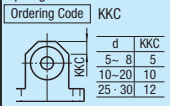
Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

- For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	h	- (KKC · KCC · NA)
BGMW6000VV	-	30	- NA

KCC and KKC only: 10 Days

Alterations	C Chamfer	C2 Chamfer	Bearings · Retaining Rings not assembled
Code	KKC	KCC	NA
Spec.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC 	C2 chamfer is done on the top edge surfaces.	Bearing and retaining ring are shipped unassembled to the Housing.
Price Adder	6,00	2,00	Free of Charge

Bearings with Housings

-L-Shaped Retained-



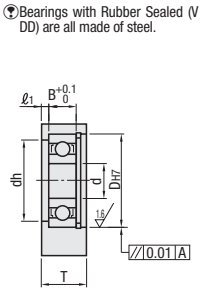


Type			Material		Surface Treatment	Accessory
Selectable h	Configurable h	Configurable h, C Chamfered	Bearings	Housing	Housing	Retaining Ring
BGHKB	BGHFB	BGHFB-C	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGHK	BGHF	BGHF-C			Electroless Nickel Plating	1.4301/ X5CrNi18-10
BGHKA	BGHFA	BGHFA-C		EN AW-2017/ AlCu4MgSi	Clear Anodize	
BGHKSA	BGHFSA	BGHFSA-C	Stainless			
BGHKS	BGHFS	BGHFS-C	Steel	1.4301/X5CrNi18-10	-	

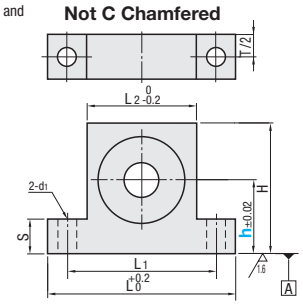
Bearing Accuracy JIS B 1514 Class 0



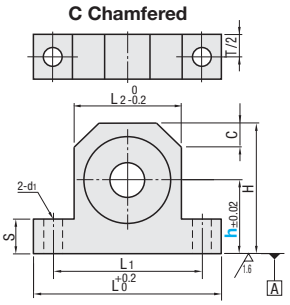
Bearings with Rubber Sealed (V V and DD) are all made of steel.



Not C Chamfered



C Chamfered



C Chamfer on both top edges (45°)

Part Number			h		d	DH7	Tolerance	dh	B	ℓ1	H	L	L1	L2	T	S	C	d1
Type	Bearings No.	Seal	Selection Type	Configurable 1mm Increment														
Selectable h BGHKB BGHK BGHKA BGHKSA BGHKS	623	ZZ (Double Shielded) *VV (Non-contact Rubber Sealed) DD (Contact Rubber Sealed)	15 20 25	10~30	3	10	+0.015 0	7	4	2	h+9	36	26	16	10	5	5	4.5
	624				4	13	+0.018 0	9	5		h+11	38	28	18				
	605				5	14		10				40	30	20				
	625		20 25 30	15~30		16		12			h+12	46	34	22		10		
	606				6	17		13	6		h+13	47	35	23	12		5	
	626					19	+0.021 0	15			h+14	49	37	25				
	698				8	19	+0.021 0	16	6		h+14	49	37	25	11			
	608					22		18	7		h+15	53	41	29	12			
	628					24		20	8		h+16	56	44	32	15			
	6800				10	19	+0.021 0	16	5		h+14	50	38	26	10			
	6900			15~40		22		19	6		h+15	53	41	29	12			
	6000		20 30 40	20~40		26		22	8		h+17	58	46	34	15			5.5
	6200					30		24	9		h+19	62	50	38				
	6801				12	21	+0.021 0	18	5		h+15	53	41	29	10			
	6901					24		21	6		h+16	56	44	32	12			
	6001					28		24	8		h+18	60	48	36	15			
	6201					32	+0.025 0	26	10		h+20	64	52	40	16			
Configurable h BGHFB BGHF BGHFA BGHFSA BGHFS	6802		30 40 50		15	24	+0.021 0	21	5		h+16	56	44	32	10	10	10	
	6902			20~50		28		25	7		h+18	60	48	36	12			
	6002			25~50		32	+0.025 0	28	9		h+20	68	54	40	15			6.5
	6202					35		29	11		h+22	72	58	44	16			
	6903				17	30	+0.021 0	27	7		h+19	64	52	38	13			
	6003					35	+0.025 0	31	10		h+22	70	56	43	16			
	6203					40		34	12		h+24	76	62	49	19			
Configurable h C Chamfered BGHFB-C BGHF-C BGHFA-C BGHFSA-C BGHFS-C	6804				20	32	+0.025 0	29	7		h+20	68	53.5	40	13	15		
	6904					37		34	9		h+23	73	59	45	15			
	6004		40 50 60	30~60		42		36	12		h+25	82	66	50	19			9
	6204					47		40	14		h+28	88	72	56				
	6805				25	37		34	7		h+23	82	64	46	13			
	6905					42		39	9		h+25	91	69	51	15			
	6005					47		41	12		h+28	96	76	56	19		12	
	6205					52	+0.030 0	45	15		h+31	102	82	62	22			
	6806		40 50 80	40~80	30	42	+0.025 0	39	7		h+25	91	71	51	14	20		11
	6906					47		44	9		h+28	96	76	56	16			
	6006					55		48	13		h+32	104	84	64	19			
	6206					62		55	16		h+36	112	92	72	22			
	6007		50 90	40~90	35	62	+0.030 0	55	14		h+36	112	92	72	21	20	12	11
	6207					72		64	17		h+44	148	118	88	26	25	15	13
	6008		60 100	50~100	40	68		60	15	3	h+41	122	102	82	24	20	12	11
	6208					80		74	18		h+50	160	130	100	27	25	15	13

Check for available sizes in the price list.

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

For details of Bearing Standards, please see **P.897, 898, 905 and 907~909**

Order Example

Part Number				h
Type	Bearings	Seal		
BGHK	6000	ZZ	-	30
BGHF	6901	VV	-	23

Days to Ship

8 Days

2 Days

Express A 8,00 EUR/ piece

P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

-Selectable h

Price

-Configurable h

-Configurable h, C Chamfered

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Bearings No.	Seal	€ Unit Price														
		Selectable h					Configurable h					Configurable h, C Chamfered				
		BGHKB	BGHK	BGHKA	BGHKSA	BGHKS	BGHFB	BGHF	BGHFA	BGHFSA	BGHFS	BGHFB-C	BGHF-C	BGHFA-C	BGHFSA-C	BGHFS-C
623	ZZ (Double Shielded) (x1.0) *VV (Non-contact Rubber ealed) (x1.1) DD (Contact Rubber ealed) (x1.1)															
624																
605																
625																
606																
626																
698																
608																
628																
6800																
6900																
6000																
6200																
6801																
6901																
6001																
6201																
6802																
6902																
6002																
6202																
6903																
6003																
6203																
6804																
6904																
6004																
6204																
6805																
6905																
6005																
6205																
6806																
6906																
6006																
6206																
6007																
6207																
6008																
6208																

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGHF6901V V-23, the price in the table is 37,10 EURx1.1=40,81 EUR→40,80 EUR

Alterations

Part Number - h - (NA / KCC)

BGHK6000ZZ - 30 - NA

KCC Only 10 Days

Alterations	Bearings and retaining rings not assembled	C2 Chamfer
Code	NA	KCC
Spec.	Bearing and retaining ring are shipped unassembled to the Housing.	C2 chamfered on the top edge surface. ⊗Not available for C Chamfered Type.
Price Adder	Free of Charge	2,00

Bearings with Housings

-T-Shaped Double Bearings-

RoHS

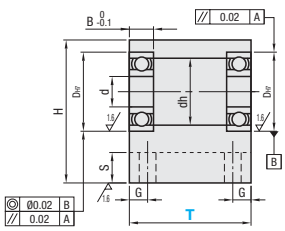


Type				Material		Surface Treatment
Selectable T, h	Selectable T, Configurable h	Configurable T, h	Selectable T, Configurable h , C Chamfered	Bearings	Housing	Housing
BGHWB	BGHWFB	BGHWTB	BGHWFB-C	Steel	1.1191/C45E	Black Oxide
BGHW	BGHWF	BGHWT	BGHWF-C			Electroless Nickel Plating
BGHWA	BGHWFA	BGHWTA	BGHWFA-C		EN AW-2017/ AlCu4MgSi	Clear Anodize
BGHWSA	BGHWFSA	-	BGHWFSA-C	Stainless Steel	1.4301/X5CrNi18-10	-
BGHWS	BGHWFS	BGHWTS	BGHWFS-C			

Bearing Accuracy JIS B 1514 Class 0

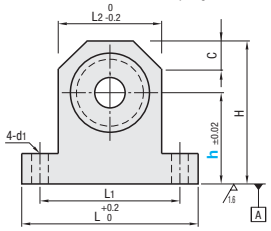
* Bearings with Rubber Seals (V V and DD) are all made of steel.

Not C Chamfered



C Chamfered

C chamfer (45°) is done on the both top edges.



Part Number			T			h		d	DH7	Tolerance	dh	B	H	L	L1	L2	G	S	C	d1
Type	Bearings No.	Seal	Selection Type	1mm Increment Range(1)	1mm Increment Range(2)	Selection Type	Configurable 1mm Increment													
Selectable T, h BGHWB BGHW BGHWA BGHWSA BGHWS	623	ZZ (Double Shielded) *VV (Non-contact Rubber ealed) DD Contact Rubber Sealed)	20 30	-	-	15 20 25	-	3	10	+0.015 0	7	4	h+9	36	26	16	6	10	5	4.5
	624		20 30					4	13	+0.018 0	9	5	h+11	38	28	18				
	605		20 30					5	14		10			40	30	20				
	625		25 30			20 25 30	15~30		16		12		h+12	46	34	22				
	606		25 35	22~34	36~50			6	17		13	6	h+13	47	35	23				5.5
	626		25 35					8	19	+0.021 0	15		h+14	49	37	25				
	608		25 35						22		18	7	h+15	53	41	29				
	628		25 35						24		20	8	h+16	56	44	32				
Selectable T, Configurable h BGHWFB BGHWF BGHWFA BGHWFSA BGHWFS	6900		25 40	22~39	41~50	20 30 40	15~40	10	22		19	6	h+15	53	41	29	6	10	10	
	6000		25 40				20~40		26		22	8	h+17	58	46	34				
	6200		30 40						30		24	9	h+19	62	50	38				
	6901		25 40					12	24		21	6	h+16	56	44	32				
	6001		25 40						28		24	8	h+18	60	48	36				
	6201		30 40	22~39	41~60				32	+0.025 0	26	10	h+20	64	52	40				
	6902		25 50	25~49	51~60	30 40 50	20~50	15	28	+0.021 0	25	7	h+18	60	48	36	7	15		6.5
Selectable T, Configurable h ,C Chamfered BGHWFB-C BGHWF-C BGHWFA-C BGHWFSA-C BGHWFS-C	6002		30 50				25~50		32	+0.025 0	28	9	h+20	68	54	40				
	6202		35 50						35		29	11	h+22	72	58	44				
	6903		25 50					17	30	+0.021 0	27	7	h+19	64	52	38				
	6003		30 50						35	+0.025 0	31	10	h+22	70	56	43				
	6203		35 50	25~49	51~70				40		34	12	h+24	76	62	49				
	6904		35 50			40 50 60	30~60	20	37		34	9	h+23	73	59	45	8			9
	6004		40 50	30~49	51~80				42		36	12	h+25	82	66	50				
	6204		45 50						47		40	14	h+28	88	72	56				
Configurable T, h BGHWTB BGHWT BGHWTA	6005		40 60	34~59	61~80	40 50 80	40~80	25	47		41	12		96	76	56	10	15	12	
	6205		45 60	37~59	61~90				52	+0.030 0	45	15	h+31	102	82	62	10	20	12	11
	6006		40 60					30	55		48	13	h+32	104	84	64				
	6206		50 60	37~59	61~100				62		55	16	h+36	112	92	72				
BGHWTS	6007		50 60	37~65	66~100	50 90	40~90	35	62		55	14	h+36	112	92	72	10	20	12	11
	6207		60 70	45~74	75~100				72		64	17	h+44	148	118	88	15	25	15	13
	6008		50 70	42~69	71~100	60 100	50~100	40	68		60	15	h+41	122	102	82	10	20	12	11
	6208		60 80	50~79	81~100				80		74	18	h+50	160	130	100	15	25	15	13

Check for available sizes in the price list. *No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).
C chamfer cannot be specified for h Selectable Type.

Order Example

Part Number			-	T	-	h
Type	Bearings	Seal				
BGHW	6000	ZZ	-	40	-	30
BGHWFB-C	6901	VV	-	40	-	35
BGHWFSA-	6000	ZZ	-	30	-	30

(For BGHWFSA, add a dash before bearing number, as shown above.)

Days to Ship 8 Days

Express A 8,00 EUR/ piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

-Configurable T, Configurable h

8 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) For BGHWFB-C6901VV-40-3,
Table listed price 91,30 EURx1.1=100,43 EUR→100,40 EUR

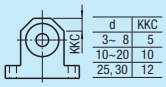
Bearings No.	Seal	Selectable T, h € Unit Price					Selectable T, Configurable h € Unit Price					Configurable T, h € Unit Price							
												BGHWTB		BGHWT		BGHWTA		BGHWTS	
		BGHWB	BGHW	BGHWA	BGHWSA	BGHWS	BGHWFB	BGHWF	BGHWFA	BGHWFSA	BGHWFS	Range (1)	Range (2)	Range (1)	Range (2)	Range (1)	Range (2)	Range (1)	Range (2)
623	ZZ (x1.0)																		
624																			
605																			
625																			
606																			
626																			
608																			
628																			
6900																			
6000																			
6200																			
6901																			
6001																			
6201																			
6902	VV (x1.1)																		
6002																			
6202																			
6903																			
6003	DD (x1.1)																		
6203																			
6904																			
6004																			
6204																			
6005																			
6205																			
6006																			
6206																			
6007																			
6207																			
6008																			
6208																			

Bearings No.	Seal	Selectable T, Configurable h, C Chamfered € Unit Price				
		BGHWFB-C	BGHWF-C	BGHWFA-C	BGHWFSA-C	BGHWFS-C
606	ZZ (x1.0)					
626						
608						
628						
6900						
6000						
6200						
6901						
6001						
6201						
6902	VV (x1.1)					
6002						
6202						
6903						
6003	DD (x1.1)					
6203						
6904						
6004						
6204						
6005						
6205						
6006						
6206						
6007						
6207						
6008						
6208						

Alterations

Part Number - T - h - (KKC · KCC · NA)
BGHWT6000DD - 30 - 35 - KKC

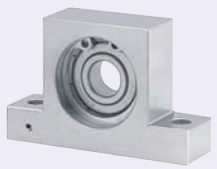
KCC and KKC only: 10 Days

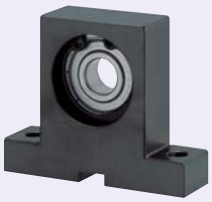
Alterations	C Chamfer	C2 Chamfer	Bearings not assembled
Code	KKC	KCC	NA
Spec.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC  d / KKC: 3~ 8 / 5; 10~20 / 10; 25, 30 / 12. Available for Configurable T, h Type only	C2 chamfered on the top edge surface.	Bearings are shipped unassembled to the Housing.
Price Adder	15,00	2,00	Free of Charge

Bearings with Housings

-L-Shaped Retained-

CAD Data





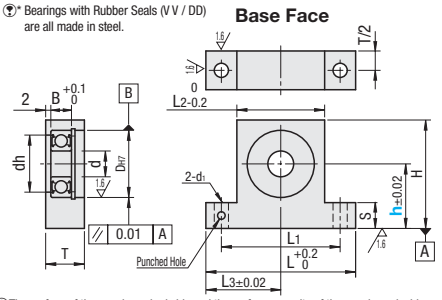
Type				Material		Surface Treatment	Accessory Retaining Ring
Base Face		Key Groove					
Selectable h	Configurable h	Selectable h	Configurable h	Bearings	Housing	Housing	
BSHKB	BSHFB	BKHKB	-	Steel	1.1191	Black Oxide	Spring Steel
BSHK	BSHF	BKHK	BKHF			Electroless Nickel Plating	
BSHKA	-	BKHKA	-		EN AW-2017/ AlCu4MgSi	Clear Anodize	1.4301/ X5CrNi18-10
BSHKSA	-	-	-	Stainless Steel	1.4301	-	
-	-	BKHKS	-				

Bearing Accuracy JIS B 1514 Class 0

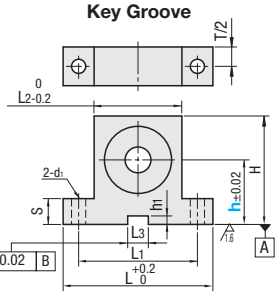
6.3 ▽ (1.6 ▽)

*Bearings with Rubber Seals (V V / DD) are all made in steel.

Base Face



Key Groove



The surface of the punch marked side and the surface opposite of the punch mark side are the datums. (See app. example)

Perpendicularity of the punch marked surface and the bottom surface is 0.02.

Base Face

Part Number			h		d	DH7	Tolerance	dh	B	H	L	L1	L2	L3	T	S	d1	€ Unit Price					
Type	Bearings No.	Seal	Height Select Type	Configurable 1mm Increment															Selectable h				Configurable h	
																			BSHKB	BSHK	BSHKA	BSHKSA	BSHFB	BSHF
Selectable h BSHKB BSHK BSHKA BSHKSA	623	ZZ (Double Shielded) (x1.0) *VV (Non-contact Rubber Sealed) (x1.1) DD (Contact Rubber Sealed) (x1.1)	15 20 25	10~30	3	10	+0.015 0	7	4	h+9	36	26	16	18	10	5	4.5						
	624				4	13	+0.018 0	9	5	h+11	38	28	18	19										
	605				5	14		10			40	30	20	20										
	606		20 25 30	15~30	6	17		13	6	h+13	47	35	23	23.5	12	10	5.5							
	608				8	22		18	7	h+15	53	41	29	26.5										
	6900		20 30 40	15~40	10	22		19	6															
	6000			20~40		26	+0.021 0	22	8	h+17	58	46	34	29	15									
	6901				12	24		21	6	h+16	56	44	32	28	12									
	6001					28		24	8	h+18	60	48	36	30	15									
	6902		30 40 50	20~50	15	28		25	7						12	15	6.5							
	6002			25~50		32	+0.025 0	28	9	h+20	68	54	40	34	15									
Configurable h BSHFB BSHF	6903				17	30	+0.021 0	27	7	h+19	64	52	38	32	13									
	6003					35		31	10	h+22	70	56	43	35	16									
	6904		40 50 60	30~60	20	37	+0.025 0	34	9	h+23	73	59	45	36.5	15									
	6004					42		36	12	h+25	82	66	50	41										
	6005				25	47		41		h+28	96	76	56	48	19		9							
	6006		40 50 80	40~80	30	55	+0.030 0	48	13	h+32	104	84	64	52		20	11							

Key Groove

Part Number			h		d	DH7	Tolerance	dh	B	H	L	L1	L2	L3	Tolerance	h1	Tolerance	T	S	d1	€ Unit Price				
Type	Bearings No.	Seal	Height Select Type	Configurable 1mm Increment																	Selectable h				Configurable h
																					BKHKB	BKHK	BKHKA	BKHKS	BKHF
Selectable h BKHKB BKHK BKHKA BKHKS	623	ZZ (Double Shielded) (x1.0) *VV (Non-contact Rubber Sealed) (x1.1) DD (Contact Rubber Sealed) (x1.1)	15 20 25	15~30	3	10	+0.015 0	7	4	h+9	36	26	16	3	±0.0125	1.4	+0.1 0	10	5	4.5					
	624				4	13	+0.018 0	9	5	h+11	38	28	18												
	605				5	14		10			40	30	20												
	606		20 25 30		6	17		13	6	h+13	47	35	23	4	±0.0150	1.8		12	10	5.5					
	608				8	22		18	7	h+15	53	41	29	6		2.8									
	6900		20 30 40	20~40	10	22		19	6																
	6000					26	+0.021 0	22	8	h+17	58	46	34	8	+0.0180	3.3	+0.2 0	15							
	6901				12	24		21	6	h+16	56	44	32					12							
	6001					28		24	8	h+18	60	48	36					15							
	6902		30 40 50	25~50	15	28		25	7									12	15	6.5					
	6002					32	+0.025 0	28	9	h+20	68	54	40					15							
Configurable h BKHF	6903				17	30	+0.021 0	27	7	h+19	64	52	38	10				13							
	6003					35		31	10	h+22	70	56	43					16	15						
	6904		40 50 60	35~60	20	37	+0.025 0	34	9	h+23	73	59	45					15							
	6004					42		36	12	h+25	82	66	50												
	6005				25	47		41		h+28	96	76	56	12	+0.0215			19		9					
	6006		40 50 80	40~80	30	55	+0.030 0	48	13	h+32	104	84	64					20	11						

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BKHF6002VV-28, the price in the table is 46,40 EURx1.1=51,04 EUR→51,00 EUR

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

Order Example

Part Number				
Type	Bearings	Seal	-	h
BSHK	6000	ZZ	-	30
BKHF	6002	VV	-	28

Days to Ship

8 Days

Express A 8,00 EUR/ piece P88

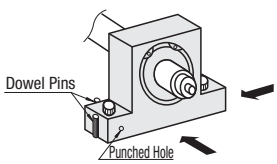
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Example Base Face Example



Alterations

Part Number - h - (NA · KCC · KKC)
BSHF6000ZZ - 35 - KKC

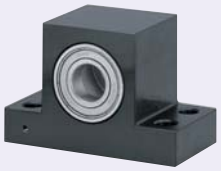
KCC and KKC only 10 Days

Alterations	Bearings · Retaining Rings not assembled	C2 Chamfer	C Chamfer
Code	NA	KCC	KKC
Spec.	Bearings and Retaining Rings are shipped unassembled to the Housing.	C2 chamfer is done on the top edge surfaces.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC  d / KKC: 3~ 8 / 5; 10~20 / 10; 25, 30 / 12 Available for Configurable h Type only
Price Adder	Free of Charge	2,00	6,00

Bearings with Housings

-T-Shaped Double Bearings-

CAD Data





Type				M Material		S Surface Treatment
Base Face		Key Groove				
Selectable h	Configurable h	Selectable h	Configurable h	Bearings	Housing	Housing
BSHWB	BSHWFB	BKHWB	BKHWFB	Steel	1.1191/C45E	Black Oxide
BSHW	BSHWF	BKHW	-			Electroless Nickel Plating
BSHWA	-	BKHWA	-	Stainless	EN AW-2017/ AlCu4MgSi	Clear Anodize
BSHWSA	-	-	-	Steel	1.4301/X5CrNi18-10	-
BSHWS	-	BKHWS	-			

Bearing Accuracy JIS B 1514 Class 0

6.3 (1.6)

RoHS

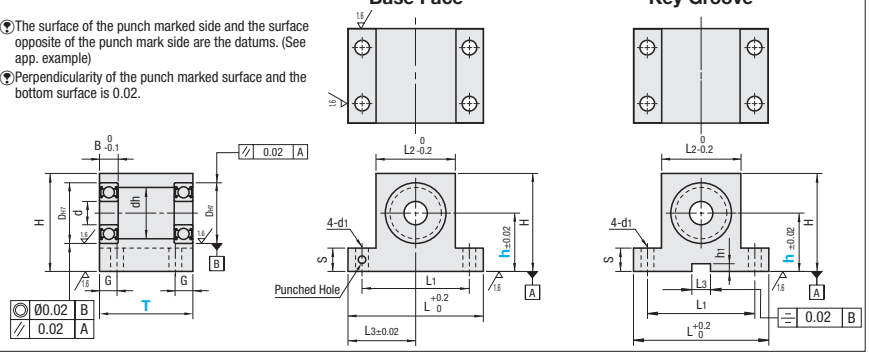
* Bearings with Rubber Seals (V V / DD) are all made in steel.

The surface of the punch marked side and the surface opposite of the punch mark side are the datums. (See app. example)

Perpendicularity of the punch marked surface and the bottom surface is 0.02.

Base Face

Key Groove



Base Face

Part Number Type	Bearings No.	Seal	T Selection	h Height Select Type	h Configurable 1mm Increment	d	DH7	Tolerance	dh	B	H	L	L1	L2	L3	G	S	d1	€ Unit Price Selectable h BSHWB	BSHW	BSHWA	BSHWSA	BSHWS	Configurable h BSHWFB	BSHWF
Selectable h BSHWB BSHW BSHWA BSHWSA BSHWS / Configurable h BSHWFB BSHWF	623	ZZ (Double Shielded) (x1.0) / *VV (Non-contact Rubber Sealed) (x1.1) / DD (Contact Rubber Sealed) (x1.1)	20 30	15 20 25	-	3	10	+0.015 0	7	4	h+9	36	26	16	18	5	5	4.5							
	624					4	13	+0.018 0	9	5	h+11	38	28	18	19										
	605					5	14		10			40	30	20	20										
	606		25 35	20 25 30	15~30	6	17		13	6	h+13	47	35	23	23.5	6	10	5.5							
	608					8	22		18	7	h+15	53	41	29	26.5										
	6900		25 40	20 30 40	15~40	10			19	6															
	6000				20~40		26	+0.021 0	22	8	h+17	58	46	34	29										
	6901					12	24		21	6	h+16	56	44	32	28										
	6001						28		24	8	h+18	60	48	36	30										
	6902		25 50	30 40 50	20~50	15	32	+0.025 0	25	7	h+20	68	54	40	34	7	15	6.5							
	6002		30 50		25~50	17	30	+0.021 0	28	9	h+19	64	52	38	32										
	6903		25 50				35		27	7	h+22	70	56	43	35										
	6003		30 50				37	+0.025 0	31	10	h+23	73	59	45	36.5										
	6904		35 50			20	42		34	9	h+25	82	66	50	41	8		9							
	6004		40 50	40 50 60	30~60		47		36	12	h+28	96	76	56	48	10	20	11							
	6005		40 60	40 50 80	40~80	25	52	+0.030 0	41	13	h+32	104	84	64	52										
	6006					30	55		48																

Key Groove

Part Number Type	Bearings No.	Seal	T Selection	h Height Select Type	h Configurable 1mm Increment	d	DH7	Tolerance	dh	B	H	L	L1	L2	L3	Tolerance	h1	Tolerance	G	S	d1	Applicable Key Nominal Dimensions	€ Unit Price Selectable h BKHWB	BKHW	BKHWA	BKHWS	Configurable h BKHWFB
Selectable h BKHWB BKHW BKHWA BKHWS / Configurable h BKHWFB	623	ZZ (Double Shielded) (x1.0) / *VV (Non-contact Rubber Sealed) (x1.1) / DD (Contact Rubber Sealed) (x1.1)	20 30	15 20 25	-	3	10	+0.015 0	7	4	h+9	36	26	16	3	±0.0125	1.4	+0.1 0	5	5	4.5	3x3					
	624					4	13	+0.018 0	9	5	h+11	38	28	18													
	605					5	14		10			40	30	20	4	±0.0150	1.8					4x4					
	606		25 35	20 25 30	10~30	6	17		13	6	h+13	47	35	23					6	10	5.5						
	608					8	22		18	7	h+15	53	41	29	6		2.8					6x6					
	6900		25 40	20 30 40	20~40	10			19	6																	
	6000						26	+0.021 0	22	8	h+17	58	46	34	8		3.3	+0.2 0									
	6901					12	24		21	6	h+16	56	44	32								8x7					
	6001						28		24	8	h+18	60	48	36													
	6902		25 50	30 40 50	25~50	15	32	+0.025 0	25	7	h+20	68	54	40	10	±0.0180			7	15	6.5						
	6002		30 50			17	30	+0.021 0	28	9	h+19	64	52	38													
	6903		25 50				35		27	7	h+22	70	56	43													
	6003		30 50				37	+0.025 0	31	10	h+23	73	59	45								10x8					
	6904		35 50			20	42		34	9	h+25	82	66	50													
	6004		40 50	40 50 60	35~60		47		36	12	h+28	96	76	56					8		9						
	6005		40 60	40 50 80	40~80	25	52	+0.030 0	41	13	h+32	104	84	64	12	±0.0215			10	20	11	12x8					
	6006					30	55		48																		

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BSHWFB6900VV-25-25, the price in the table is 88,50 EURx1.1=97,35 EUR→97,30 EUR

*No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

Order Example

Part Number			-	T	-	h
Type	Bearings	Seal				
BSHW	6000	ZZ	-	25	-	30
BSHWFB	6900	VV	-	25	-	25

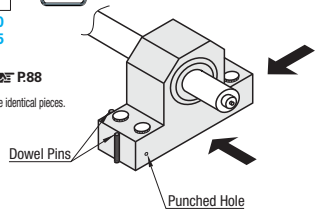
Days to Ship 8 Days — Express A 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price — Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Example Base Face Example



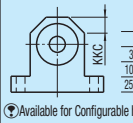
Alterations

Part Number - T - h - (NA · KCC · KKC)

BSHWF6000ZZ - 25 - 35 - KKC

KCC and KKC only 10 Days

Alterations	Bearings not assembled	C2 Chamfer	C Chamfer
Code	NA	KCC	KKC
Spec.	Bearings are shipped unassembled to the Housing.	C2 chamfer is done on the top edges.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC
Price Adder	Free of Charge	2,00	15,00



d	KKC
3~8	5
10~20	10
25·30	12

Available for Configurable h Type only

Low Particulate Grease Bearings with Housings

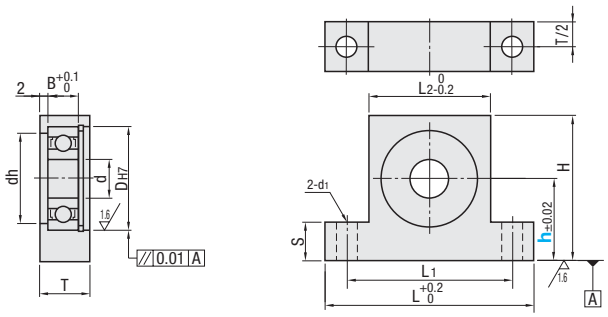
-L-Shaped Retained-

RoHS



Type		Material		Surface Treatment	Accessory
Selectable h	Configurable h	Bearings	Housing	Housing	Retaining Ring
S-BGHKSA	S-BGHFSA	Stainless Steel	EN AW-2017/AlCu4MgSi	Clear Anodize	1.4301/ X5CrNi18-10
S-BGHKS	S-BGHFS		1.4301/X5CrNi18-10	-	

Bearing Accuracy JIS B 1514 Class 0



Part Number		h		d	D_{H7}	Tolerance	dh	B	H	L	L_1	L_2	T	S	d_1	€ Unit Price			
Type	Bearing No.	Selection Type	Configurable 1mm Increment													Selectable h		Configurable h	
																S-BGHKSA	S-BGHKS	S-BGHFSA	S-BGHFS
Selectable h S-BGHKSA S-BGHKS	606ZZ	20 25 30	15~30	6	17	+0.018 0	13	6	h+13	47	35	23	12	10	5.5				
	626ZZ				19	+0.021 0	15		h+14	49	37	25							
	608ZZ			8	22		18	7	h+15	53	41	29							
	628ZZ				24		20	8	h+16	56	44	32	15						
	6900ZZ	20 30 40	15~40	10	22		19	6	h+15	53	41	29	12						
	6000ZZ		20~40		26		22	8	h+17	58	46	34	15						
	6200ZZ				30		24	9	h+19	62	50	38							
	6901ZZ			12	24		21	6	h+16	56	44	32	12						
	6001ZZ				28		24	8	h+18	60	48	36	15						
	6201ZZ				32	+0.025 0	26	10	h+20	64	52	40	16						
Configurable h S-BGHFSA S-BGHFS	6902ZZ	30 40 50	20~50	15	28	+0.021 0	25	7	h+18	60	48	36	12	15	6.5				
	6002ZZ		25~50		32	+0.025 0	28	9	h+20	68	54	40	15						
	6202ZZ				35		29	11	h+22	72	58	44	16						
	6903ZZ			17	30	+0.021 0	27	7	h+19	64	52	38	13						
	6003ZZ				35	+0.025 0	31	10	h+22	70	56	43	16						
	6203ZZ				40		34	12	h+24	76	62	49	19						
	6904ZZ	40 50 60	30~60	20	37			9	h+23	73	59	45	15		9				
	6004ZZ				42		36	12	h+25	82	66	50	19						
	6204ZZ				47		40	14	h+28	88	72	56							

Order Example

Part Number	-	h
S-BGHKSA6200ZZ	-	30
S-BGHFSA6902ZZ	-	37

Days to Ship

8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

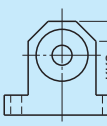
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Alterations

Part Number	-	h	-	(NA · KCC · KKC)
S-BGHFS6000ZZ	-	30	-	KKC

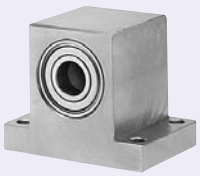
KCC and KKC only 10 Days

Alterations	Bearings · Retaining Rings not assembled	C2 Chamfer	C Chamfer
Code	NA	KCC	KKC
Spec.	Bearing and retaining ring are shipped unassembled to the Housing.	C2 chamfered on the top edge surface.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC  d · KKC: 6 · 8 — 5; 10~20 — 10. Available for Configurable h Type only
Price Adder	Free of Charge	2,00	6,00

Low Particulate Generation Bearing P.913

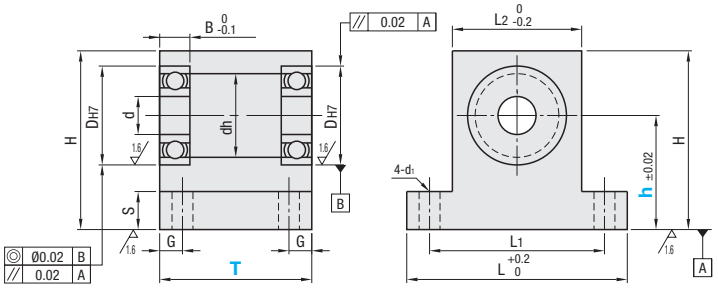
Low Particulate Grease Bearings with Housings

-T-Shaped Double Bearings-



Type		Material		Surface Treatment
Selectable h	Configurable h	Bearings	Housing	Housing
S-BGHWSA	S-BGHWFSA	Stainless Steel Type	EN AW-2017/AlCu4MgSi	Clear Anodize
S-BGHWS	-		1.4301/X5CrNi18-10	-

Bearing Accuracy JIS B 1514 Class 0



Part Number		T Selection	h		d	DH7		dh	B	H	L	L1	L2	G	S	d1	€ Unit Price		
Type	Bearing No.		Height Select Type	Configurable 1mm Increment			Tolerance										Selectable h		Configurable h
																	S-BGHWSA	S-BGHWS	S-BGHWFSA
	606ZZ	25 35	20 25 30	15~30	6	17	+0.018 0	13	6	h+13	47	35	23	6	10	5.5			
	626ZZ	25 35				19	+0.021 0	15		h+14	49	37	25						
	608ZZ	25 35			8	22		18	7	h+15	53	41	29						
	628ZZ	25 35				24		20	8	h+16	56	44	32						
	6900ZZ	25 40	20 30 40	15~40	10	22		19	6	h+15	53	41	29						
	6000ZZ	25 40		20~40		26		22	8	h+17	58	46	34						
	6200ZZ	30 40				30		24	9	h+19	62	50	38						
Selectable h S-BGHWSA S-BGHWS	6901ZZ	25 40			12	24		21	6	h+16	56	44	32						
	6001ZZ	25 40				28		24	8	h+18	60	48	36						
	6201ZZ	30 40				32	+0.025 0	26	10	h+20	64	52	40						
Configurable h S-BGHWFSA	6902ZZ	25 50	30 40 50	20~50	15	28	+0.021 0	25	7	h+18	60	48	36	7	15	6.5			
	6002ZZ	30 50		25~50		32	+0.025 0	28	9	h+20	68	54	40						
	6202ZZ	35 50				35		29	11	h+22	72	58	44						
	6903ZZ	25 50			17	30	+0.021 0	27	7	h+19	64	52	38						
	6003ZZ	30 50				35	+0.025 0	31	10	h+22	70	56	43						
	6203ZZ	35 50				40		34	12	h+24	76	62	49						
	6904ZZ	35 50	40 50 60	30~60	20	37		34	9	h+23	73	59	45						
	6004ZZ	40 50				42		36	12	h+25	82	66	50	8		9			
	6204ZZ	45 50				47		40	14	h+28	88	72	56						

Order Example

Part Number	-	T	-	h
S-BGHWS6901ZZ	-	40	-	30
S-BGHWFSA-6000ZZ	-	25	-	35

(For S-BGHWFSA, add a dash before bearing number, as shown above.)

Days to Ship

8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

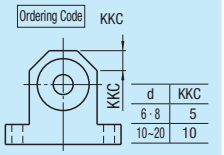
Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Alterations

Part Number - T - h - (NA · KCC · KKC)

S-BGHWFSA-6902ZZ - 50 - 30 - KKC

KCC and KKC only 10 Days

Alterations Code	Bearings not assembled NA	C2 Chamfer KCC	C Chamfer KKC
Spec.	Bearings are shipped unassembled to the Housing.	C2 chamfered on the top edge surface.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC  d / KKC: 6 · 8 / 5; 10~20 / 10. Available for Configurable h Type only
Price Adder	Free of Charge	2,00	15,00

Low Particulate Generation Bearing P.913

Bearings with Housings

-Block - Retained-

CAD Data

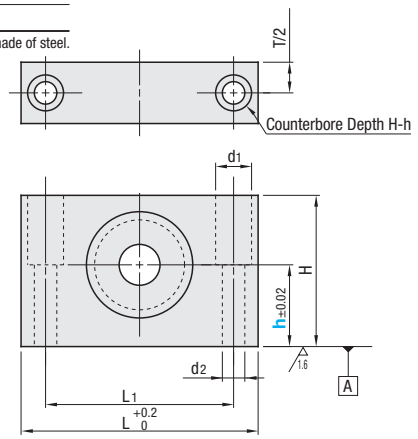




Type	Material		Surface Treatment
	Bearings	Housing	Housing
BGTKB	Steel	1.1191/C45E	Black Oxide
BGTK			Electroless Nickel Plating
SBGTK	Stainless Steel	1.4301/X5CrNi18-10	-

* Bearings with Rubber Seals (V V and DD) are all made of steel.

Bearing Accuracy JIS B 1514 Class 0



Part Number			h Selection	d	DH7	Tolerance	dh	B	H	L	L1	T	d1	d2	€ Unit Price		
Type	Bearing No.	Seal													BGTKB	BGTK	SBGTK
BGTKB BGTK SBGTK	608	ZZ (Double Shielded) (x1.0) VV (Non-contact Rubber Sealed) (x1.1) DD (Contact Rubber Sealed) (x1.1)	15 20	8	22	+0.021 0	18	7	h+15	53	41	12	9.5	5.5			
	628		15 20		24		20	8	h+16	56	44	15					
	6900		20 25	10	22		19	6	h+15	53	41	12					
	6000		20 25		26		22	8	h+17	58	46	15					
	6200		20 25		30		24	9	h+19	62	50						
	6901		20 25	12	24		21	6	h+16	56	44	12					
	6001		20 25		28		24	8	h+18	60	48	15					
	6201		20 25		32	+0.025 0	26	10	h+20	64	52	16					
	6902		20 25	15	28	+0.021 0	25	7	h+18	60	48	12					
	6002		20 25		32	+0.025 0	28	9	h+20	68	54	15	11	6.5			
	6202		25 30		35		29	11	h+22	72	58	16					
	6903		20 25	17	30	+0.021 0	27	7	h+19	64	52	13					
	6003		25 30		35	+0.025 0	31	10	h+22	70	56	16					
	6203		25 30		40		34	12	h+24	76	62	19					
	6904		25 30	20	37		34	9	h+23	73	59	15					
	6004		25 30		42		36	12	h+25	82	66	19	14	9			
	6204		30 35		47		40	14	h+28	88	72						

The price of Sealed VV and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGTK6002VV-20, the price in the table is 22,90 EURx1.1=25,19 EUR→25,10 EUR

Order Example

Part Number				
Type	Bearings	Seal	-	h
BGTKB	6900	ZZ	-	25
BGTK	6002	VV	-	20

Days to Ship

8 Days | Express A | 8,00 EUR/ piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number	-	h	-	(NA)
BGTK6903ZZ	-	25	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearing and retaining ring are shipped unassembled to the Housing.
Price Adder	Free of Charge

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Bearings with Housings

-Block Double Bearings - Non-retained-

CAD Data

RoHS

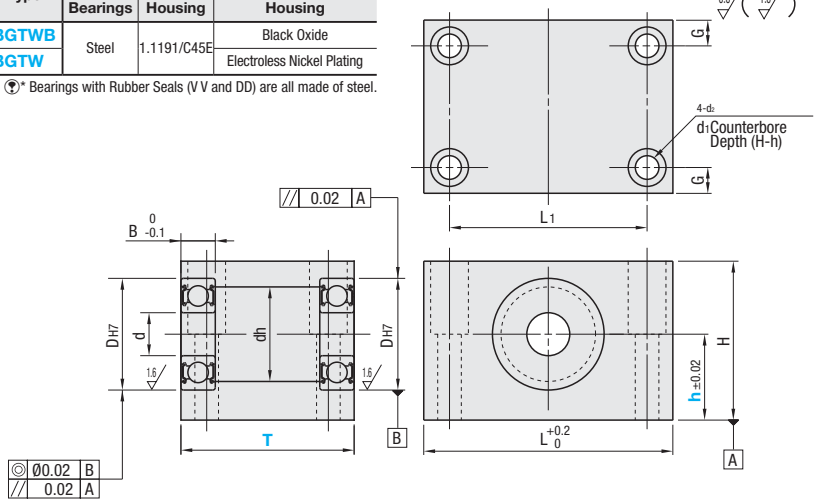




Type	Material		Surface Treatment
	Bearings	Housing	Housing
BGTWB	Steel	1.1191/C45E	Black Oxide
BGTW			Electroless Nickel Plating

* Bearings with Rubber Seals (V V and DD) are all made of steel.

Bearing Accuracy JIS B 1514 Class 0



Part Number			T Selection	h Selection	d	DH7	Tolerance	dh	B	H	L	L1	G	d1	d2	€ Unit Price	
Type	Bearing No.	Seal														BGTWB	BGTW
BGTWB BGTW	608	ZZ (Double Shielded) (x1.0) VV (Non-contact Rubber Sealed) (x1.1) DD (Contact Rubber Sealed) (x1.1)	25 35	15 20	8	22	+0.021 0	18	7	h+15	53	41	6	9.5	5.5		
	628		25 35	15 20		24		20	8	h+16	56	44					
	6900		25 40	20 25	10	22		19	6	h+15	53	41					
	6000		25 40	20 25		26		22	8	h+17	58	46					
	6200		30 40	20 25		30		24	9	h+19	62	50					
	6901		25 40	20 25	12	24		21	6	h+16	56	44					
	6001		25 40	20 25		28		24	8	h+18	60	48					
	6201		30 40	20 25		32	+0.025 0	26	10	h+20	64	52					
	6902		25 50	20 25	15	28	+0.021 0	25	7	h+18	60	48					
	6002		30 50	20 25		32	+0.025 0	28	9	h+20	68	54	7	11	6.5		
	6202		35 50	25 30		35		29	11	h+22	72	58					
	6903		25 50	20 25	17	30	+0.021 0	27	7	h+19	64	52					
	6003		30 50	25 30		35	+0.025 0	31	10	h+22	70	56					
	6203		35 50	25 30		40		34	12	h+24	76	62					
	6904		35 50	25 30	20	37		34	9	h+23	73	59					
	6004		40 50	25 30		42		36	12	h+25	82	66	8	14	9		
	6204		45 50	30 35		47		40	14	h+28	88	72					

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGTWB6000DD-25-20, the price in the table is 40,90 EURx1.1=44,99 EUR→44,90 EUR

Order Example

Part Number						
Type	Bearings	Seal	-	T	-	h
BGTW	6201	VV	-	30	-	20
BGTWB	6000	DD	-	25	-	20

Days to Ship

8 Days | Express A | 8,00 EUR/ piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Alterations

Part Number	-	T	-	h	-	(NA)
BGTW608VV	-	25	-	20	-	NA

Alteration Code	Bearings not assembled
	NA
Spec.	Bearings are shipped unassembled to the Housing.
Price Adder	Free of Charge

Bearings with Housings

-Bottom Mount - Retained-

CAD Data

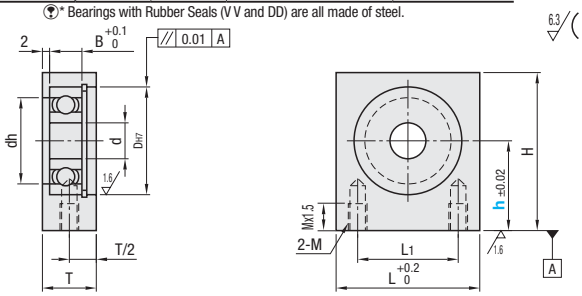




Type		Material		Surface Treatment	Accessory
Selectable h	Configurable h	Bearings	Housing	Housing	Retaining Ring
BGBKB	BGBFB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGBK	BGBF			Electroless Nickel Plating	
BGBKA	BGBFA		EN AW-2017/ AlCu4MgSi	Clear Anodize	1.4301/X5CrNi18-10
BGBKSA	BGBFSA	Stainless Steel			
BGBKS	BGBFS		1.4301	-	

Bearing Accuracy JIS B 1514 Class 0

* Bearings with Rubber Seals (V V and DD) are all made of steel.



Part Number			h		d	D H7		dh	B	H	L	L1	T	M (Coarse Thread)	€ Unit Price									
Type	Bearings No.	Seal	h Selection	Configurable 1mm Increment			Tolerance								Selectable h					Configurable h				
															BGBKB	BGBK	BGBKA	BGBKSA	BGBKS	BGBFB	BGBF	BGBFA	BGBFSA	BGBFS
	623		15 20 25	15~30	3	10	+0.015 0	7	4	h+9	20	10	10	M4										
	624				4	13		9	5	h+11	22	14	10											
	605				5	14	+0.018 0	10	5	h+11	24	16	10											
	625					16		12	5	h+12	28	16	10											
	606		20 25 30	20~30	6	17		13	6	h+13	34	22	12	M5										
	626					19		15	6	h+14	36	24	12											
Selectable h	608				8	22		18	7	h+15	38	26	12											
BGBKB	628	ZZ	25 30	25~30		24		20	8	h+16	34	22	15											
BGBK	6900	Double Shielded (x1.0)	25 30 40	25~40	10	22	+0.021 0	19	6	h+15	32	20	12											
BGBKA	6000					26		22	8	h+17	38	26	15											
BGBKSA	6200					30		24	9	h+19	40	28	15											
BGBKS	6901	*VV Non-contact Rubber Sealed (x1.1)			12	24		21	6	h+16	36	24	12											
	6001					28		24	8	h+18	40	28	15											
	6201					32	+0.025 0	26	10	h+20	42	30	16											
	6902		30 40 50	30~50	15	28	+0.021 0	25	7	h+18	42	30	12											
	6002					32	+0.025 0	28	9	h+20	50	36	15											
Configurable h	6202	DD (Contact Rubber Sealed (x1.1)				35		29	11	h+22	44	30	17											
BGBFB	6903				17	30	+0.021 0	27	7	h+19	42	30	13	M6										
BGBF	6003					35		31	10	h+22	50	36	16											
BGBFA	6203					40		34	12	h+24	48	36	20											
BGBFSA	6904		40 50 60	40~60	20	37	+0.025 0	34	9	h+23	45	31	15											
BGBFS	6004					42		36	12	h+25	54	38	19											
	6204					47		40	14	h+28	60	44	20	M8										
	6005				25	47		41	12	h+28	62	46	19											
	6205					52		45	15	h+31	70	50	22											
	6006		50 80	50~80	30	55	+0.030 0	48	13	h+32	74	54	20	M10										
	6206					62		55	16	h+36	82	62	23											

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGBK6000VV-30, the price in the table is 19,70 EURx1.1=21,67 EUR→21,60 EUR

Check for available sizes in the price list. *No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

Order Example

Part Number				h
Type	Bearings	Seal	-	
BGBK	6000	VV	-	30
BGBFS	6204	ZZ	-	55

Days to Ship

8 Days | 2 Days

Express A | 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Selectable h

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Configurable h

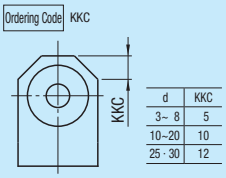
Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number		h		(KKC · NA · KCC)
BGBF6000ZZ	-	35	-	KKC

KCC and KKC only | 10 Days

Alterations	C Chamfer	Bearings · Retaining Rings not assembled	C2 Chamfer
Code	KKC	NA	KCC
Spec.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC  d / KKC: 3~8 / 5; 10~20 / 10; 25·30 / 12. Available for Configurable h Type only	Bearing and retaining ring are shipped unassembled to the Housing.	C2 chamfered on the top edge surface.
Price Adder	6,00	Free of Charge	2,00

Bearings with Housings

-Bottom Mount Double Bearings - Non-retained-

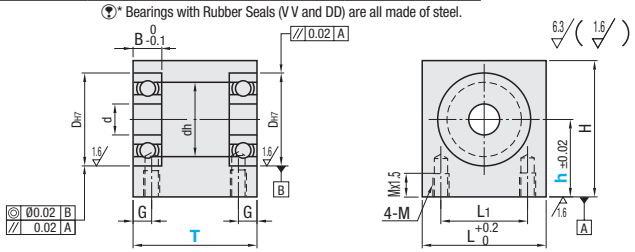
CAD Data



Type			Material		Surface Treatment
Selectable h	Configurable h	Configurable T, h	Bearings	Housing	Housing
BGBWB	BGBWFB	BGBWTB	Steel	1.1191/C45E	Black Oxide
BGBW	BGBWF	BGBWT			Electroless Nickel Plating
BGBWA	-	BGBWTA		EN AW-2017/ AlCu4MgSi	Clear Anodize
BGBWSA	-	-	Stainless Steel	1.4301	-
BGBWS	-	BGBWTS			

Bearing Accuracy JIS B 1514 Class 0

*Bearings with Rubber Seals (V V and DD) are all made of steel.



Part Number			T			h		d	D h7	Tolerance	dh	B	H	L	L1	G	M (Coarse Thread)
Type	Bearing No.	Seal	Selection	1mm Increment Range(1)	Range(2)	Selection	Configurable 1mm Increment										
Selectable h	623	ZZ Double Shielded	20 30	19~29	31~40	15 20 25	15~30	3	10	+0.015 0	7	4	h+9	20	10	5	M4
	624		20 30					4	13		9	5	h+11	22	14		
	605		20 30					5	14	+0.018 0	10	5	h+11	24	16		
BGBWB	625		25 30	19~29	31~50	20 25 30	20~30		16		12	5	h+12	28	16		
BGBW	606		25 35	23~34	36~50			6	17		13	6	h+13	34	22		M5
BGBWA	626		25 35						19		15	6	h+14	36	24		
BGBWSA	608		25 35					8	22		18	7	h+15	38	26		
BGBWS	628		25 35			25 30	25~30		24		20	8	h+16	34	22		
	6900		25 40	23~39	41~50	25 30 40	25~40	10	22	+0.021 0	19	6	h+15	32	20	6	
	6000		25 40						26		22	8	h+17	38	26		
	6200		30 40						30		24	9	h+19	40	28		
Configurable h	6901	*VV Non-contact Rubber Sealed	25 40					12	24		21	6	h+16	36	24		
BGBWFB	6001		25 40						28		24	8	h+18	40	28		
BGBWF	6201		30 40	23~39	41~60				32	+0.025 0	26	10	h+20	42	30		
	6902		25 50	23~49	51~60	30 40 50	30~50	15	28	+0.021 0	25	7	h+18	42	30		
	6002	DD (Contact) Rubber Sealed	30 50	26~49	51~60				32	+0.025 0	28	9	h+20	50	36	7	M6
	6202		35 50						35		29	11	h+22	44	30		
	6903		25 50						30	+0.021 0	27	7	h+19	42	30		
	6003		30 50					17	35	+0.025 0	31	10	h+22	50	36		
Configurable T, h	6203		35 50						40		34	12	h+24	48	36		
	6904		35 50	26~49	51~70	40 50 60	40~60	20	37		34	9	h+23	45	31		
BGBWTB	6004		40 50	31~49	51~80				42		36	12	h+25	54	38		M8
BGBWT	6204		45 50						47		40	14	h+28	60	44	8	
BGBWTA	6005		40 60	31~59	61~80			25	47		41	12	h+28	62	46		
BGBWTS	6205		45 60	39~59	61~90	50 80	50~80		52		45	15	h+31	70	50		M10
	6006		40 60					30	55	+0.030 0	48	13	h+32	74	54	10	
	6206		50 60	39~59	61~100				62		55	16	h+36	82	62		

Check for available sizes in the price list. *No. 623, 624, 605 and 606 are not available for V V (Non-contact rubber seals).

Order Example

Part Number						
Type	Bearings	Seal	-	T	-	h
BGBW	6000	ZZ	-	25	-	30

Days to Ship

8 Days — Express A — 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

•Configurable T and h Type

10 Days — Express B — 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number - T - h - (KKC · NA · KCC)

BGBWF6000ZZ - 25 - 35 - NA

KCC and KKC only — 10 Days

Alterations	C Chamfer	Bearings not assembled	C2 Chamfer
Code	KKC	NA	KCC
Spec.	Adds C chamfer (45°) on both top edge corners. Ordering Code KKC	Bearings are shipped unassembled to the Housing.	C2 chamfer is done on the top edges.
	Available for Configurable h Type only		
Price Adder	15,00	Free of Charge	2,00

d	KKC
3~ 8	5
10~20	10
25 · 30	12

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

The price of Sealed W and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) For BGBWF6000DD-25-3, table listed price 74,20 EURx1.1=81,62 EUR→81,60 EUR

Bearings No.	Seal	Selectable h € Unit Price					Configurable h € Unit Price		Configurable T, h € Unit Price							
		BGBWB	BGBW	BGBWA	BGBWSA	BGBWS	BGBWFB	BGBWF	BGBWTB		BGBWT		BGBWTA		BGBWTS	
									Range(1)	Range(2)	Range(1)	Range(2)	Range(1)	Range(2)	Range(1)	Range(2)
623	ZZ (x1.0) VV (x1.1) DD (x1.1)															
624																
605																
625																
606																
626																
608																
628																
6900																
6000																
6200																
6901																
6001																
6201																
6902																
6002																
6202																
6903																
6003																
6203																
6904																
6004																
6204																
6005																
6205																
6006																
6206																

Bearings with Housings
-Front Mount Type-

Reduced Delivery Time

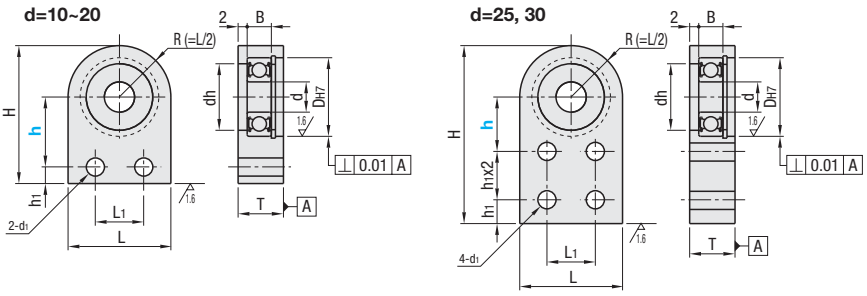
CAD Data

Features: For limited installation spaces.



Type	Material		Surface Treatment	Accessory
	Bearings	Housing	Housing	Retaining Ring
BGSMAB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGSMA			Electroless Nickel Plating	1.4301/ X5CrNi18-10
SBGSMA	Stainless Steel	1.4301/X5CrNi18-10	-	

* Bearings with Rubber Seals (V V and DD) are all made of steel.



Part Number			h	d	DH7	Tolerance	dh	B	H	h1	L	L1	T	d1	€ Unit Price		
Type	Bearing No.	Seal	Selection												BGSMAB	BGSMA	SBGSMA
BGSMAB BGSMA SBGSMA	6900	ZZ (Double Shielded) (x1.0) VV (Non-contact Rubber Seal) (x1.1) DD (Contact Rubber Seal) (x1.1)	20 25 30	10	22	+0.021 0	19	6	h+24	7	34	14	12	6			
	6000				26		22	8			34		15				
	6200				30		24	9	h+26		38						
	6901		25 30 35	12	24		21	6	h+23		32		12				
	6001				28		24	8	h+25		36		15				
	6201				32	+0.025 0	26	10	h+27		40		16				
	6902		25 30 40	15	28	+0.021 0	25	7	h+29	9	40	18	12	8			
	6002				32	+0.025 0	28	9			40		15				
	6202				35		29	11	h+31.5		45		16				
	6904		35 45 55	20	37		34	9	h+36	11	50	22	15	10			
	6004				42		36	12			50		19				
	6204				47		40	14	h+39		56						
	6905			25	42		39	9	h+67	13	56	26	15	12			
	6005				47		41	12			56		19				
	6906		40 45 55	30	47	+0.030 0	44	9			56		16				
	6006				55		48	13	h+71.5		65		19				

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGSMA6002VV-30, the price in the table is 25,40 EURx1.1=27,94 EUR→27,90 EUR

Order Example

Part Number			-	h
Type	Bearings	Seal		
BGSMA	6000	VV	-	20
BGSMAB	6204	ZZ	-	35

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	h	-	(NA)
BGSMA6000ZZ	-	20	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearing and retaining ring are shipped unassembled to the Housing.
Price Adder	Free of Charge

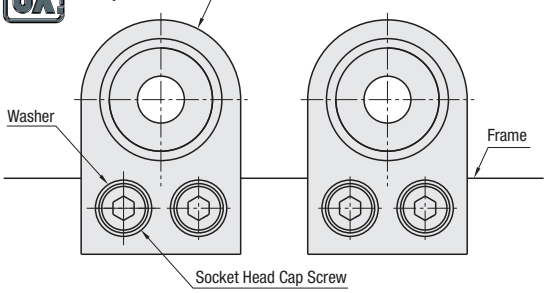
Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Example



NEW

Bearings with Housings

-Front Mount Shouldered Type-

Reduced Delivery Time

CAD Data

Features: Improved installation height accuracy with built-in shoulders.

RoHS

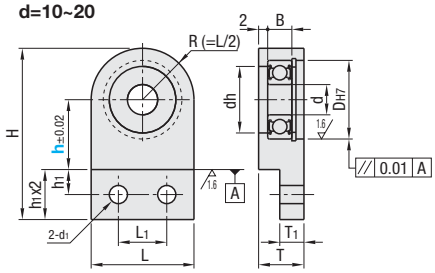


Type	Material		Surface Treatment	Accessory
	Bearings	Housing	Housing	Bearing
BGSNAB	Steel	1.1191/C45E	Black Oxide	Spring Steel
BGSNA			Electroless Nickel Plating	1.4301/ X5CrNi18-10
SBGSNA	Stainless Steel	1.4301/X5CrNi18-10	-	

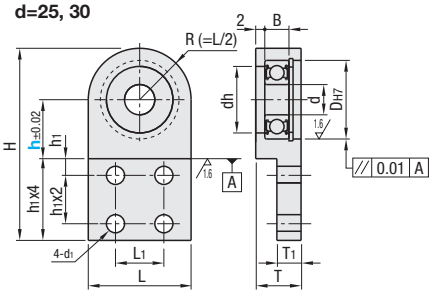
* Bearings with Rubber Seals (W and DD) are all made of steel.

6.3 (1.6)

d=10~20



d=25, 30



Part Number			h	d	DH7		dh	B	H	h1	L	L1	T	T1	d1	€ Unit Price		
Type	Bearing No.	Seal	Selection			Tolerance										BGSNAB	BGSNA	SBGSNA
BGSNAB BGSNA SBGSNA	6900	ZZ (Double Shielded) (x1.0) VV (Non-contact Rubber Seal) (x1.1) DD (Contact Rubber Seal) (x1.1)	20 25 30	10	22	+0.021 0	19	6	h+31	7	34	14	12	8	6			
	6000				26		22	8			34		15	10				
	6200				30		24	9	h+33		38							
	6901		25 30 35	12	24		21	6	h+30		32		12	8				
	6001				28		24	8	h+32		36		15	10				
	6201				32	+0.025 0	26	10	h+34		40		16	11				
	6902		25 30 40	15	28	+0.021 0	25	7	h+38	9	40	18	12	8	8			
	6002				32	+0.025 0	28	9			40		15	10				
	6202				35		29	11	h+40.5		45		16	11				
	6904		30 40 50	20	37		34	9	h+47	11	50	22	15	10	10			
	6004				42		36	12			50		19	13				
	6204				47		40	14	h+50		56							
	6905			25	42		39	9	h+80	13	56	26	15	10	12			
	6005				47		41	12			56		19	13				
	6906		35 45 50	30	47	+0.030 0	44	9			56		16	11				
	6006				55		48	13	h+84.5		65		19	13				

The price of Sealed V V and DD are the price shown in the table multiplied by 1.1. (Round down to ten Cent.)
(Ex.) When BGSNA6000VV-30, the price in the table is 23,30 EURx1.1=25,63 EUR→25,60 EUR

Order Example

Part Number				h
Type	Bearings	Seal	-	
BGSNA	6200	VV	-	30
BGSNAB	6000	ZZ	-	30

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	h	-	(NA)
BGSNA6000ZZ	-	25	-	NA

Alteration	Bearings and retaining rings not assembled
Code	NA
Spec.	Bearing and retaining ring are shipped unassembled to the Housing.
Price Adder	Free of Charge

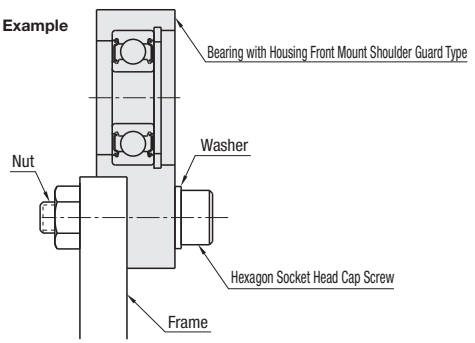
Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Example



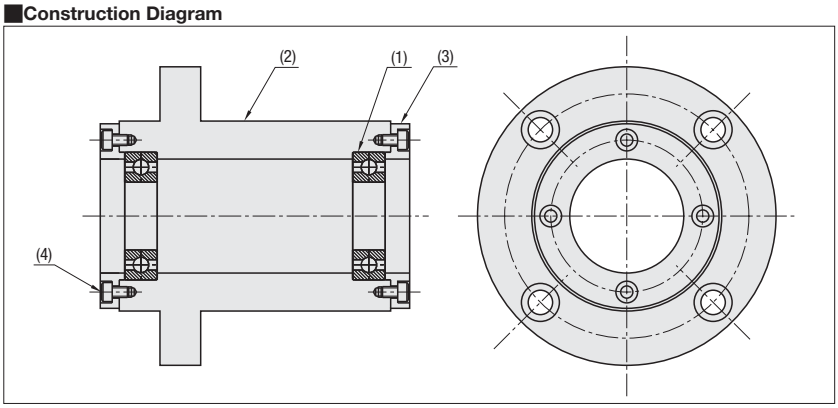
Bearings with Housings, Outer Ring Captured -Overview-

Bearings with Housings, Outer Ring Captured

■Features

-Bearings with Housings Outer Ring Captured have outer ring covers as standard features, which prevents the bearing outer rings from moving in thrust directions.

■Construction Diagram



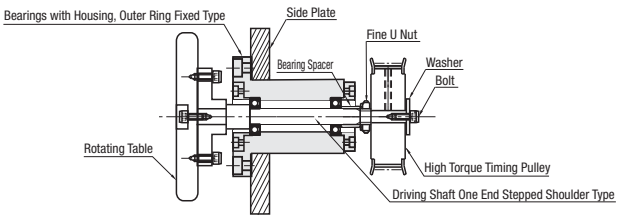
(1) Deep Groove Ball Bearings
(2) Housing Body
(3) Outer Ring Covers (2 pcs)
(4) Outer Ring Cover Mounting Screws (8 pcs)

■Usage

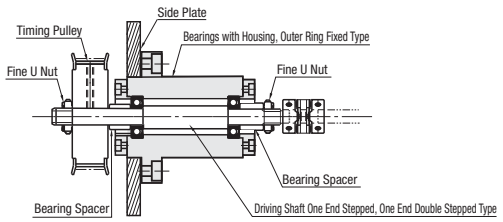
- Suitable for relatively high-loading uses such as heavy load / high-speed applications.
(When used to support thrust loads, please consider Angular Contact Bearings with Housings **P.891~896**

■Example

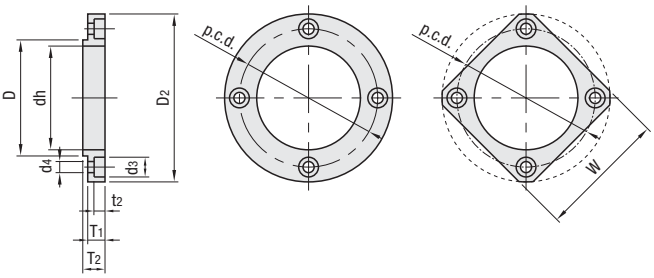
Example (1) (Standard Type)



Example (2) (With Pilot Type)



■Detailed Diagram for Outer Ring Cover



Bearings No.	(3) Outer Ring Cover										(4) screws
	D	D_2	dh	T_1	T_2	p.c.d.	d_3	d_4	t_2	w	
6902ZZ	28	43	25	6	8	35	6.5	3.5	3.1	34	M3-8
6002ZZ	32	48	28			40	6.5	3.5	3.1	38	
6903ZZ	30	43	27			35	6.5	3.5	3.1	36	
6003ZZ	35	48	31			40	6.5	3.5	3.1	42	
6904ZZ	37	53	34	7	9	43	8	4.5	4.1	44	M4-10
6004ZZ	42	58	36			48	8	4.5	4.1	48	
6005ZZ	47	63	41	8	10	53	8	4.5	4.1	54	M4-10
6006ZZ	55	78	48			64	9.5	5.5	5.1	62	M5-12
6007ZZ	62	84	55			72	9.5	5.5	5.1	-	
6008ZZ	68	92	60	9	11	78	11	6.6	6.1		M6-12

Bearings with Housings
-Outer Ring Captured-

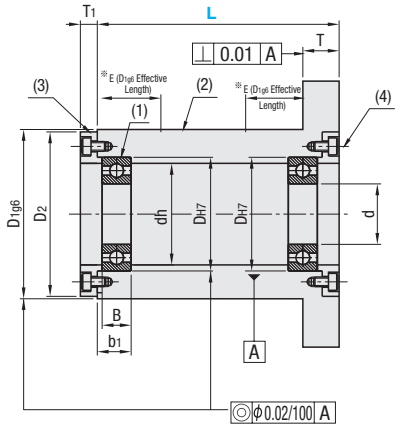
CAD Data

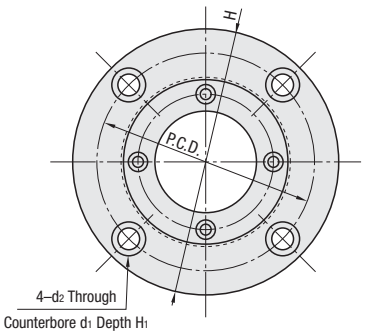
RoHS





Type	(1) Bearing	(2) Housing (3) Outer Ring Cover		(4) Outer Ring Cover Mounting Screws	
	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
GBGCB	1.3505/100Cr6	1.1191/C45E	Black Oxide	1.7220/34CrMo4	Black Oxide
GBGC			Electroless Nickel Plating	1.4301/X5CrNi18-10	-





※For marked* L dimensions in Standards Table, a relief is added on the pilot outer diameter, and D1g6 effective length only applies to E dimensions.

Bearing Accuracy JIS B 1514 Class 0

Part Number Type	Bearings No.	L Selection	d	DH7	Tol.	B	b1	H	D2	T	dh	*E	D1g6	Tol.	P.C.D.	d1	d2	H1	T1
GBGCB (Black Oxide) / GBGC (Electroless Nickel Plating)	6902ZZ	30 50 70	15	28	+0.021 0	7	9	70	43	12	25	-	45	-0.009 -0.025	57	11	6.6	6.5	6
	6002ZZ	40 60 *80		32	+0.025 0	9	11	75	48		28	18	50		62				
	6903ZZ	40 60 *80	17	30	+0.021 0	7	9	70	43		27		45		57				
	6003ZZ	40 60 *80		35	+0.025 0	10	12	75	48		31		50		62				
	6904ZZ	40 60 80	20	37		9	11	87	53	15	34	-	55	-0.010 -0.029	70	14	9	8.5	7
	6004ZZ	50 70 *90		42		12	14	92	58		36	22	60		75				
	6005ZZ	50 80 *100	25	47				98	63		41		65		80				8
	6006ZZ	50 80 *100	30	55	+0.030 0	13	15	120	78	18	48	27	80		100	17.5	11	10.5	
	6007ZZ	70 *100	35	62		14	16	126	84		55		86	-0.012 -0.034	106				9
	6008ZZ	70 100	40	68		15	17	140	92	20	60	-	95		116				

Order Example

Part Number			-	L
Type		Bearings		
GBGCB		6903ZZ	-	40

Days to Ship

- 6902ZZ ~ 6005ZZ: 10 Days
- 6006ZZ ~ 6008ZZ: 12 Days

Price

Bearing No.	L	GBGCB € Unit Price 1 pc.	GBGCB Volume Discount Qty. 2 ~ 4	GBGC € Unit Price 1 pc.	GBGC Volume Discount Qty. 2 ~ 4
6902ZZ	30				
	50				
	70				
6002ZZ	40				
	60				
	80				
6903ZZ	40				
	60				
	80				
6003ZZ	40				
	60				
	80				
6904ZZ	40				
	60				
	80				

Bearing No.	L	GBGCB € Unit Price 1 pc.	GBGCB Volume Discount Qty. 2 ~ 4	GBGC € Unit Price 1 pc.	GBGC Volume Discount Qty. 2 ~ 4
6004ZZ	50				
	70				
	90				
6005ZZ	50				
	80				
	100				
6006ZZ	50				
	80				
	100				
6007ZZ	70				
	100				
6008ZZ	70				
	100				

※For orders larger than indicated quantity, please request a quotation.

Bearings with Housings

-Outer Ring Captured - with Pilot-

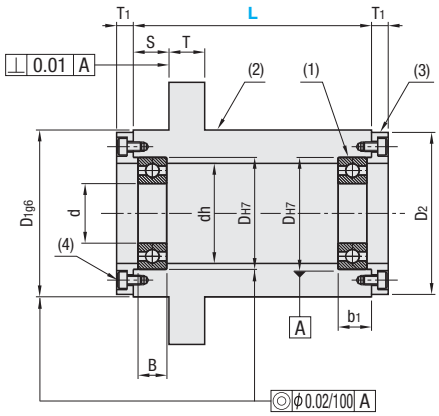
CAD Data

RoHS





Type	(1) Bearing	(2) Housing (3) Outer Ring Cover		(4) Outer Ring Cover Mounting Screws	
	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
GBGYB	1.3505/100Cr6	1.1191/C45E	Black Oxide	1.7220/34CrMo4	Black Oxide
GBGY			Electroless Nickel Plating	1.4301/X5CrNi18-10	-



Bearing Accuracy JIS B 1514 Class 0

Part Number Type	Bearing No.	L Selection	S	d	DH7	Tolerance	B	b1	H	D2	T	dh	D1g6	Tolerance	P.C.D.	d1	d2	H1	T1
GBGYB (Black Oxide) GBGY (Electroless Nickel Plating)	6902ZZ	40 60 80	10	15	28	+0.021 0	7	9	70	43	12	25	45	-0.009 -0.025	57	11	6.6	6.5	6
	6002ZZ	50 70 90			32	+0.025 0	9	11	75	48		28	50		62				
	6903ZZ	50 70 90		17	30	+0.021 0	7	9	70	43		27	45		57				
	6003ZZ	60 80 100			35	+0.025 0	10	12	75	48		31	50		62				
	6904ZZ	60 80 100	15	20	37		9	11	87	53	15	34	55	-0.010 -0.029	70	14	9	8.5	7
	6004ZZ	70 100			42		12	14	92	58		36	60		75				
	6005ZZ	70 100		25	47				98	63		41	65		80				8
	6006ZZ	70 100		30	55	+0.030 0	13	15	120	78	18	48	80		100	17.5	11	10.5	
	6007ZZ	80 100		35	62		14	16	126	84		55	86	-0.012 -0.034	106				9
	6008ZZ	80 100	20	40	68		15	17	140	92	20	60	95		116				

Order Example

Part Number		-	L
Type	Bearings		
GBGYB	6005ZZ	-	70

Days to Ship

- 6902ZZ ~ 6005ZZ: 10 Days
- 6006ZZ ~ 6008ZZ: 12 Days

Price

Bearing No.	L	GBGYB € Unit Price 1 pc.	GBGYB Volume Discount Qty. 2 ~ 4	GBGY € Unit Price 1 pc.	GBGY Volume Discount Qty. 2 ~ 4
6902ZZ	40				
	60				
	80				
6002ZZ	50				
	70				
	90				
6903ZZ	50				
	70				
	90				
6003ZZ	60				
	80				
	100				
6904ZZ	60				
	80				
	100				

Bearing No.	L	GBGYB € Unit Price 1 pc.	GBGYB Volume Discount Qty. 2 ~ 4	GBGY € Unit Price 1 pc.	GBGY Volume Discount Qty. 2 ~ 4
6004ZZ	70				
	100				
6005ZZ	70				
	100				
6006ZZ	70				
	100				
6007ZZ	80				
	100				
6008ZZ	80				
	100				

For orders larger than indicated quantity, please request a quotation.

Bearings with Housings

-Outer Ring Captured - T-Shaped-

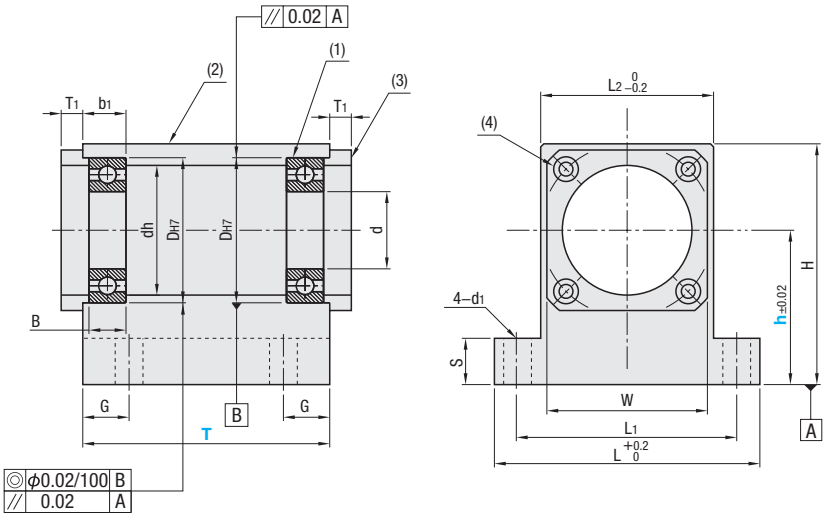
CAD Data

RoHS





Type	(1) Bearing	(2) Main Housing (3) Outer Ring Cover		(4) Outer Ring Cover Mounting Screws	
	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
GBGWB	1.3505/100Cr6	1.1191/C45E	Black Oxide	1.7220/34CrMo4	Black Oxide
GBGW			Electroless Nickel Plating	1.4301/X5CrNi18-10	-



Bearing Accuracy JIS B 1514 Class 0

Part Number Type	Bearing No.	T Selection	h Selection	d	DH7	Tolerance	B	b1	H	dh	L	L1	L2	S	G	W	d1	T1
GBGWB (Black Oxide)	6902ZZ	30 50	30 40 50	15	28	+0.021 0	7	9	h+18	25	60	48	36	12	7.5	34	6.6	6
	6002ZZ	40 60	30 40 50		32	+0.025 0	9	11	h+20	28	64	52	40			38		
	6903ZZ	40 60	30 40 50	17	30	+0.021 0	7	9	h+19	27	62	50	38			36		
	6003ZZ	40 60	30 40 50		35	+0.025 0	10	12	h+22	31	68	56	44			42		
GBGW (Electroless Nickel Plating)	6904ZZ	40 60	40 50 60	20	37		9	11	h+23	34	76	61	46	15	10	44	9	7
	6004ZZ	50 80	40 50 60		42		12	14	h+25	36	80	65	50			48		
	6005ZZ	50 80	50 60	25	47				h+28	41	86	71	56			54		8
	6006ZZ	50 80	50 60	30	55	+0.030 0	13	15	h+32	48	104	84	64	18	15	62	9	

Order Example

Part Number					
Type	Bearings	-	T	-	h
GBGWB	6903ZZ	-	40	-	40

Days to Ship: 10 Days

Price

Bearing No.	T	GBGWB € Unit Price 1 pc.	GBGWB Volume Discount Qty. 2 ~ 4	GBGW € Unit Price 1 pc.	GBGW Volume Discount Qty. 2 ~ 4
6902ZZ	30				
	50				
6002ZZ	40				
	60				
6903ZZ	40				
	60				
6003ZZ	40				
	60				
6904ZZ	40				
	60				
6004ZZ	50				
	80				
6005ZZ	50				
	80				
6006ZZ	50				
	80				

For orders larger than indicated quantity, please request a quotation.

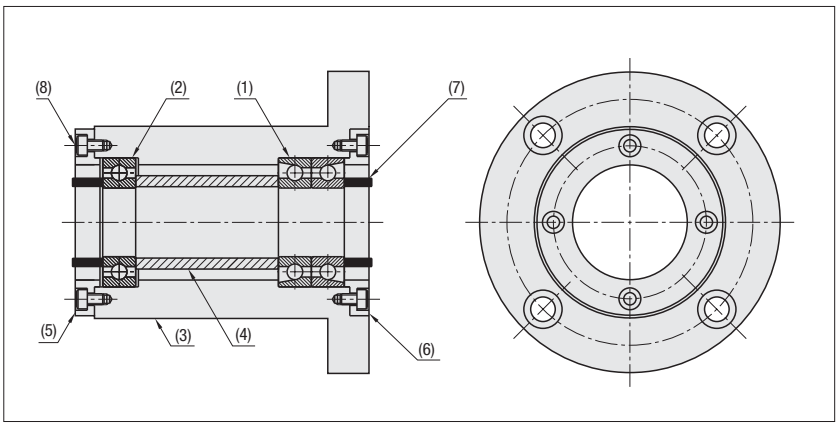
Angular Contact Bearings with Housing Sets
-Overview-

Angular Contact Bearings with Housing Sets

■Features
The angular contact bearings with housing set is a unit holder which concludes Back-to-Back bearings.

■Usage
Suitable for high loading applications with both radial and axial loading components.

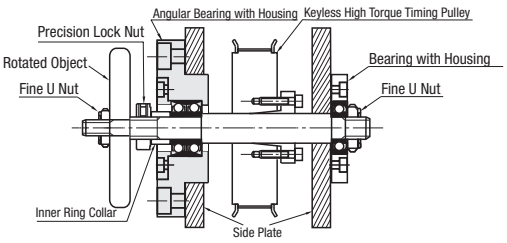
■Construction Diagram



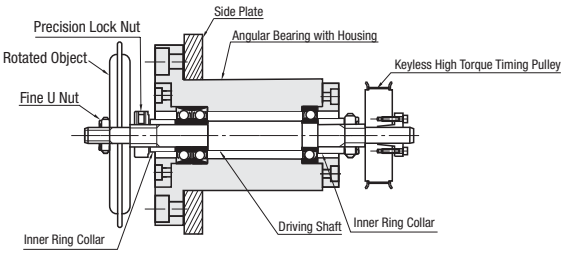
(1) Back-to-Back Combination
(2) Deep Groove Ball Bearing
(3) Holder Body
(4) Spacer for Inner Ring
(5) Standard Cover
(6) Standard Cover [N]
Cover for Oil Seal [S]
Cover for O-Ring [R] Selection
(7) Collars for Inner Ring (2 pcs.)
(8) Screws for Covers (8 pcs.)

■Product Lineup and Example of Use
- 2 New types, the flanged type and the pilot type, have been added to back-to-back combination and deep groove type.
- A compact back-to-back combination type that can be combined with other bearing housings has also been newly added.

Example(1) (Back-to-Back Combination type)



Example(2) (Back-to-Back Combination + Deep Groove type)



■Cautions on Angular Contact Bearings with Housing selections

- MISUMI angular contact bearings are designed for grease lubrication.
- Angular contact bearings are not pre-greased at the time of shipment. Please apply grease before use.
- An outer ring cover for grease splash prevention is included with the angular contact bearings.
- For grease splash prevention, an outer ring fixing cover can be selected from type S (for oil seal) and type R (for O-ring). An oil seal and O-ring are included as standard.
- An inner ring collar is included for use with bearing lock nuts. (The collar is not necessary on stepped shafts)

~For back-to-back Combination type (ABGEB, ABGE)~

- When the rotary shaft is long, it can be used in combination with the regular bearing with housings for deep groove ball bearings. (Refer to the example of use (1))

~For back-to-back Combination + Deep Groove type (ABGCB, ABGC, ABGYB, ABGY) ~

- A normal cover for outer ring fixing is included with the radial bearing.
- Outer ring of the radial bearing is not fixed in thrust direction.
- A spacer for inner rings is included as an accessory that can be used to axially tie the inner rings of the angular contact bearings and deep groove ball bearing together.

■Mounting Procedures for Angular Contact Bearings with Housing

1. Apply grease on an angular contact bearings.
2. Put the bearings together in a back-to-back relationship.
3. Insert the rotary shaft into the Angular Contact Bearings set.
4. Insert the shaft into the inner ring spacer.
5. Insert the angular contact bearings into the holder.
6. Install the deep groove ball bearing on the shaft, and then into the holder.
7. Mount the outer ring cover with the screws by tightening them evenly.
8. Install the inner ring collar on the shaft with a bearing nut.
9. Verify whether the shaft rotates smoothly.

Angular Contact Bearings with Housing Sets

-Flanged – Angular Contact Back-to-Back Combination-

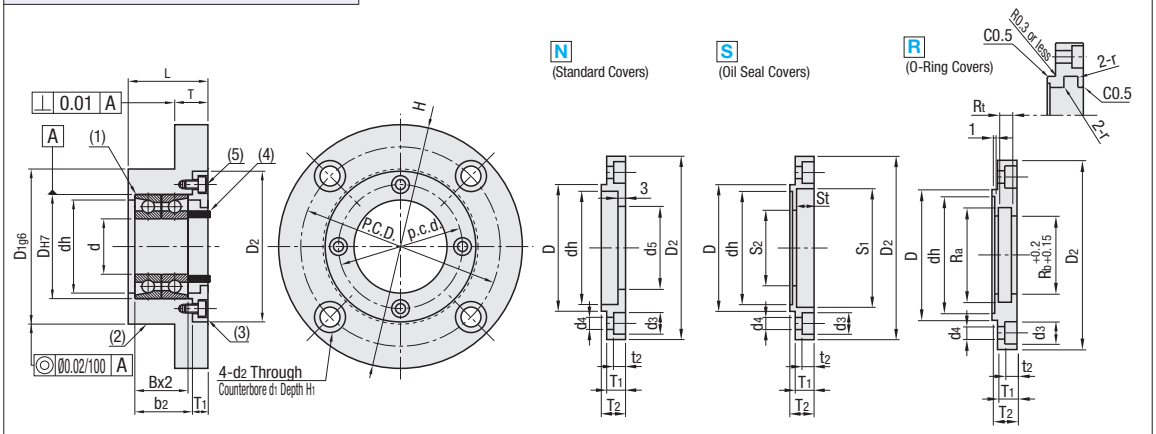
CAD Data



Type	(1) Angular Contact Bearings (Back-to-back Combination)	(2) Housings (4) Inner Ring Collars (3) Standard / Oil Seal / O-Ring Covers		(5) Cover Mounting Screws	
	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
ABGEB	1.3505/100Cr6	1.1191/C45E	Black Oxide	1.7220/34CrMo4	Black Oxide
ABGE			Electroless Nickel Plating	1.4301/X5CrNi18-10	-

Bearing Accuracy (Angular Contact Bearings) JIS B 1514Class 4* Contact Angle 15°

- The Angular Contact Bearings with Housing is delivered with the parts unassembled to the holder body.
- Be sure that bearing outer race rings and inner rings are firmly captured by the covers and bearing lock nuts before use.
- Collar (4) is not included with Cover for Oil Seal and O-Ring.
- Contact with O-Ring may generate some torque load.



A Accessories: Included Oil Seal (JIS G D Nitrile Rubber) A Accessories: ORing (JIS P Nitrile Rubber)

Part Number Type	Bearing No.	(3) Cover Types Selection	L	d	D_{H7}	Tolerance	B	b_2	H	D_2	T	dh	D_{1g6}	Tolerance	P.C.D.	d_1	d_2	H_1
ABGEB (Black Oxide)	7002	N Standard Cover	29	15	32	+0.025 0	9	20	75	48	12	28	50	-0.009 -0.025	62	11	6.6	6.5
	7003		31	17	35		10	22				31						
	7004		36	20	42		12	26	92	58	15	36	60	-0.010 -0.029	75	14	9	8.5
	7005		38	25	47				98	63		41	65		80			
ABGE (Electroless Nickel Plating)	7006	S Oil Seal	40	30	55	+0.030 0	13	28	120	78	18	48	80		98	17.5	11	10.5
	7007		43	35	62		14	30	126	84		55	86	-0.012 -0.034	106			
	7008	R O-Ring	46	40	68		15	32	140	92	20	60	95		116			
	7009		48	45	75		16	34	145	98		69	100		122			
	7010		50	50	80				147	101		74	105		124			

No.	(3) Cover Details																	(5) Cover Mounting Screws	(4) Collar Details		
	D	D_2	dh	T_1	T_2	p.c.d.	d_3	d_4	t_2	N Standard Cover d_5	S Oil Seal Covers S_1	S_2	St	Accessory Oil Seal	R O-Ring Covers Ra	Rb	Rt	r	Accessory O-Ring		Outer Diameter	Inner Diameter	Thickness
7002	32	48	28	6	8	40	6.5	3.5	3.1	21	32	22	5	G20325	24	20	3.2	0.4	P20	M3-8	20	15	8.5
7003	35		31																			17	
7004	42	58	36	7	9	48	8	4.5	4.1	26	35	27	6	D25356	31	25	4.7	0.7	P25	M4-10	25	20	9.5
7005	47	63	41	8	10	53				31	40	32	7	D30407	36	30			P30		30	25	10.5
7006	55	78	48			64	9.5	5.5	5.1	41	50	42	6.5	D40506.5	41	35			P35	M5-12	40	30	
7007	62	84	55			72				46	60	47	9	D45609	46	40			P40		45	35	
7008	68	92	60	9	11	78	11	6.6	6.1	51	65	52		D50659	51	45			P45	M6-12	50	40	11.5
7009	75	98	69			85				56	70	57		D55709	56	50			P50		55	45	
7010	80	101	74	11	13	88				61	75	62		D60759	70	60	7.5	0.8	P60	M6-15	60	50	13.5

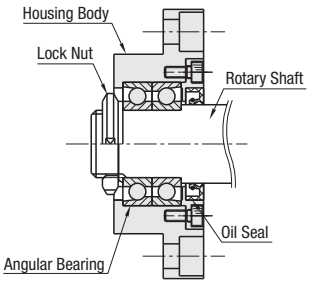
Order Example

Part Number Type	Part Number Bearings	-	Cover
ABGE	7003	-	S

Days to Ship

- 7002 ~ 7005: 10 Days
- 7006 ~ 7010: 12 Days

Example



Price

No.	ABGEB Covers N € Unit Price (1 pc.)	ABGEB Covers N Volume Discount Qty. 2 ~ 4	ABGEB Covers S € Unit Price (1 pc.)	ABGEB Covers S Vol. Qty. 2 ~ 4	ABGEB Covers R € Unit Price (1 pc.)	ABGEB Covers R Vol. Qty. 2 ~ 4	ABGE Covers N € Unit Price (1 pc.)	ABGE Covers N Vol. Qty. 2 ~ 4	ABGE Covers S € Unit Price (1 pc.)	ABGE Covers S Vol. Qty. 2 ~ 4	ABGE Covers R € Unit Price (1 pc.)	ABGE Covers R Vol. Qty. 2 ~ 4
7002												
7003												
7004												
7005												
7006												
7007												
7008												
7009												
7010												

For orders larger than indicated quantity, please request a quotation.

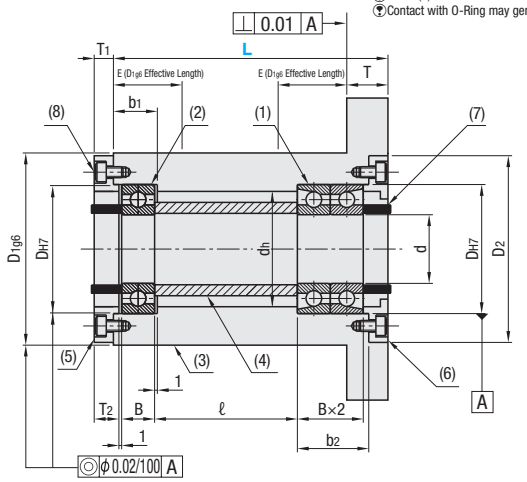
Angular Contact Bearings with Housing Sets

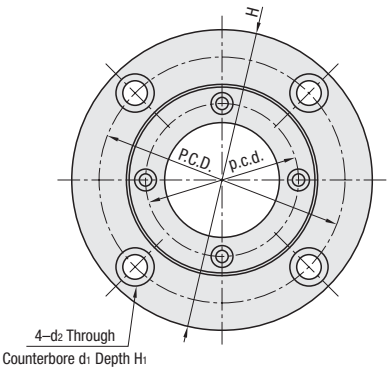
-Angular Contact Bearings Back-to-Back Combination + Deep Groove Ball Bearing -Flanged-



Type	(1) Angular Contact Bearings (back to back) (2) Deep Groove Ball Bearing	(3) Housings (4) Inner Ring Spacers (5) Standard Covers (6) Standard / Oil Seal / O-Ring Covers (7) Inner Ring Covers		(8) Cover Mounting Screws	
	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
ABGCB	1.3505/100Cr6	1.1191/C45E	Black Oxide	1.7220/34CrMo4	Black Oxide
ABGC			Electroless Nickel Plating	1.4301/X5CrNi18-10	-

- The Angular Contact Bearings with Housing is delivered with the parts unassembled to the holder body.
- Be sure that bearing outer race rings and inner rings are firmly captured by the covers and bearing lock nuts before use. 1mm axial clearance is designed on each side of the deep groove bearing outer ring where the inner ring can be tighten upon without adjusting the length of the inner ring spacer.
- A normal cover is included with Deep Groove Ball Bearing side (5) as a standard accessory. For Angular Contact Bearings (6), please select **N** Standard Covers, **S** Oil Seal Covers or **R** O-Ring Covers.
- Collar (4) is not included with Cover for Oil Seal and O-Ring.
- Contact with O-Ring may generate some torque load.



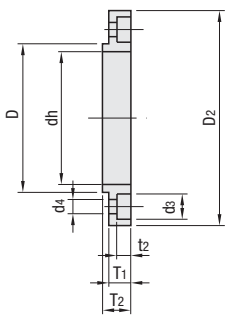


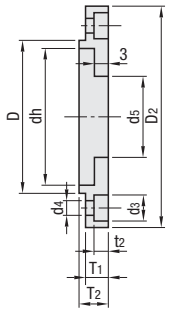
Bearing Accuracy((1) Angular Contact Bearings) JIS B 1514 Class 4 * Contact Angle 15°
((2) Deep Groove Ball Bearing) JIS B 1514 Class 0

(5) Standard Cover (Included)

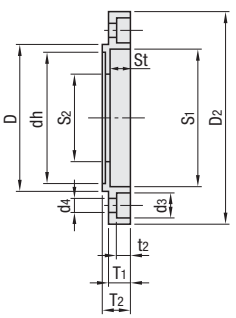
(6) Selection

Standard Cover — N



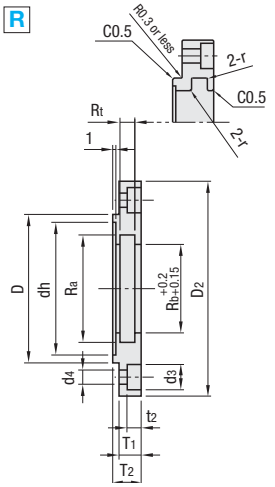


Cover for Oil Seal — S



A Accessories: Oil Seal (JIS G D Nitrile Rubber)

Cover for O-Ring — R



A Accessories: ORing (JIS P Nitrile Rubber)

Part Number Type	Part Number Bearing No.	(6) Cover Selection	L	d	DH7	Tolerance	B	b1	b2	Deep Groove Ball Bearing No.	H	D2	T	dh	E	D1g6	Tolerance	P.C.D.	d1	d2	H1
ABGCB (Black Oxide)	7002	N Standard Cover	60 75	15	32	+0.025 0	9	13	20	6002ZZ	75	48	12	28	18	50	-0.009 -0.025	62	11	6.6	6.5
	7003		70 85	17	35		10	14	22	6003ZZ				31							
	7004		80 100	20	42		12	16	26	6004ZZ	92	58	15	36	22	60	-0.010 -0.029	75	14	9	8.5
	7005		100 125	25	47					6005ZZ	98	63		41		65		80			
ABGC (Electroless Nickel Plating)	7006	S Oil Seal	120 150	30	55	+0.030 0	13	17	28	6006ZZ	120	78	18	48	27	80		98	17.5	11	10.5
	7007		140 175	35	62		14	18	30	6007ZZ	126	84		55		86	-0.012 -0.034	106			
	7008	R O-Ring	160 200	40	68		15	19	32	6008ZZ	140	92	20	60	30	95		116			
	7009		180 225	45	75		16	20	34	6009ZZ	145	98		69		100		122			
	7010		200 250	50	80					6010ZZ	147	101		74		105		124			

CAD Data

No.	(5) (6) Cover Details									(6) Cover Details										(8) Cover Mounting Screws
	D	D_2	dh	T_1	T_2	p.c.d.	d_3	d_4	t_2	N Standard Cover	S Oil Seal Covers				R O-Ring Covers					
										d_5	S_1	S_2	St	Accessory Oil Seal	Ra	Rb	Rt	r	Accessory O-Ring	
7002	32	48	28	6	8	40	6.5	3.5	3.1	21	32	22	5	G20325	24	20	3.2	0.4	P20	M3-8
7003	35		31																	
7004	42	58	36	7	9	48	8	4.5	4.1	26	35	27	6	D25356	31	25			P25	M4-10
7005	47	63	41	8	10	53				31	40	32	7	D30407	36	30			P30	
7006	55	78	48			64	9.5	5.5	5.1	41	50	42	6.5	D40506.5	41	35	4.7	0.7	P35	M5-12
7007	62	84	55	9	11	72				46	60	47	9	D45609	46	40			P40	
7008	68	92	60			78	11	6.6	6.1	51	65	52		D50659	51	45			P45	M6-12
7009	75	98	69			85				56	70	57		D55709	56	50			P50	
7010	80	101	74	11	13	88				61	75	62		D60759	70	60	7.5	0.8	P60	M6-15

No.	(7) Collar Details			(4) Inner Ring Spacer Details		
	Outer Ø	Inner Ø	Thickness	Outer Ø	Inner Ø	Thickness (ℓ)
7002	20	15	8.5	20	15	L-38
7003		17			17	L-41
7004	25	20	9.5	25	20	L-48
7005	30	25	10.5	30	25	L-49
7006	40	30		40	30	L-52
7007	45	35		45	35	L-56
7008	50	40	11.5	50	40	L-59
7009	55	45		55	45	L-62
7010	60	50	13.5	60	50	L-64

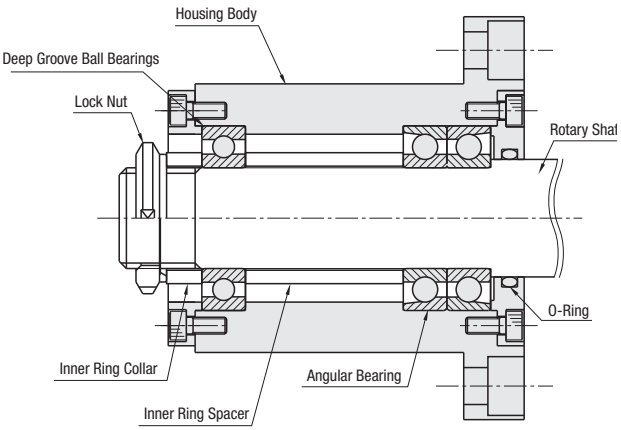
Order Example

Part Number			-	Cover	-	L
Type	Bearings					
ABGC	7005		-	R	-	100

Days to Ship

- 7002 ~ 7005: 10 Days
- 7006 ~ 7010: 12 Days

Example



Price

Bearings No.	L	ABGCB						ABGC					
		Covers N		Covers S		Covers R		Covers N		Covers S		Covers R	
		€ Unit Price	Volume Discount	€ Unit Price	Vol. Discount	€ Unit Price	Vol. Discount	€ Unit Price	Vol. Discount	€ Unit Price	Vol. Discount	€ Unit Price	Vol. Discount
		1 pc.	Qty. 2 ~ 4	1 pc.	Qty. 2 ~ 4	1 pc.	Qty. 2 ~ 4	1 pc.	Qty. 2 ~ 4	1 pc.	Qty. 2 ~ 4	1 pc.	Qty. 2 ~ 4
7002	60												
	75												
7003	70												
	85												
7004	80												
	100												
7005	100												
	125												
7006	120												
	150												
7007	140												
	175												
7008	160												
	200												
7009	180												
	225												
7010	200												
	250												

For orders larger than indicated quantity, please request a quotation.

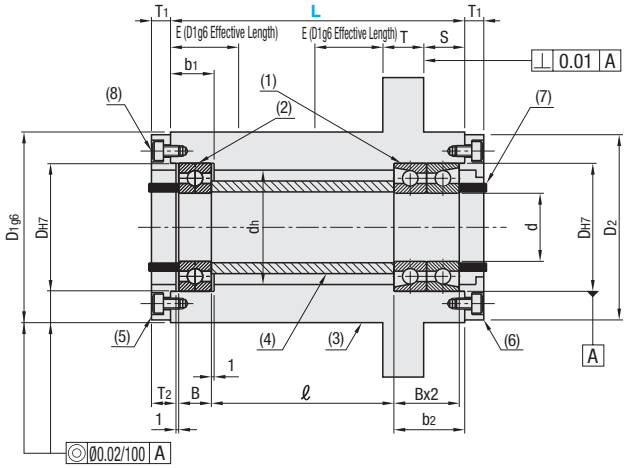
Angular Contact Bearings with Housing Sets

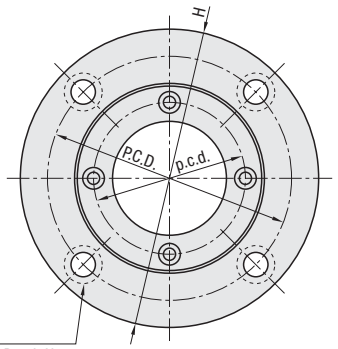
-Angular Contact Bearings Back-to-Back Combination + Deep Groove Ball Bearings -With Pilot-



Type	(1) Angular Contact Bearings (back to back) (2) Deep Groove Ball Bearing	(3) Housings (4) Inner Ring Spacers (5) Standard Covers (6) Standard / Oil Seal / O-Ring Covers (7) Inner Ring Collars		(8) Cover Mounting Screws	
	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
ABGYB	1.3505/100Cr6	1.1191/C45E	Black Oxide	1.7220/34CrMo4	Black Oxide
ABGY			Electroless Nickel Plating	1.4301/X5CrNi18-10	-

- The Angular Contact Bearings with Housing is delivered with the parts unassembled to the holder body.
- Be sure that bearing outer race rings and inner rings are firmly captured by the covers and bearing lock nuts before use. 1mm axial clearance is designed on each side of the deep groove bearing outer ring where the inner ring can be tighten upon without adjusting the length of the inner ring spacer.
- A normal cover is included with Deep Groove Ball Bearing side (5) as a standard accessory. For Angular Contact Bearings (6), please select **N** Standard Covers, **S** Oil Seal Covers or **R** O-Ring Covers.
- Collar (4) is not included with Cover for Oil Seal and O-Ring.
- Contact with O-Ring may generate some torque load.



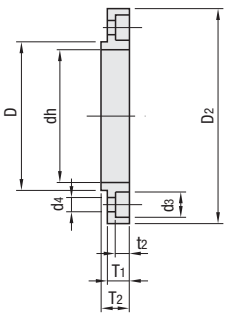


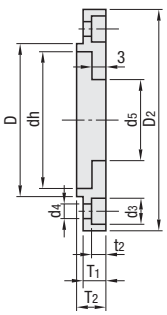
Bearing Accuracy (1) Angular Contact Bearings) JIS B 1514 Class 4
(2) Deep Groove Ball Bearing) JIS B 1514 Class 0
* Contact Angle 15°

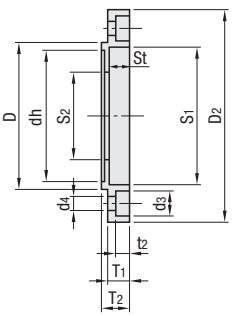
(5) Standard Cover (Included)

(6) Selection

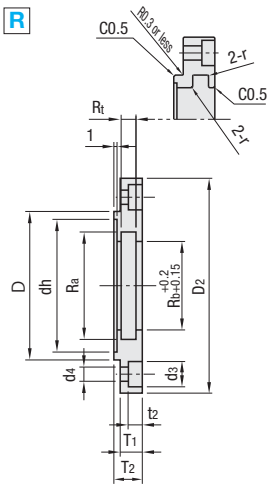
Standard Cover	Cover for Oil Seal	Cover for O-Ring
N	S	R







A Accessories: Oil Seal (JIS G D Nitrile Rubber)



A Accessories: O Ring (JIS P Nitrile Rubber)

Part Number Type	Bearing No.	(6) Cover Selection	L	S	d	DH7	Tolerance	B	b1	b2	Deep Groove Ball Bearing No.	H	D2	T	dh	E	D1g6	Tolerance	P.C.D.	d1	d2	H1
ABGYB (Black Oxide)	7002	N Standard Cover	60 75	10	15	32	+0.025 0	9	13	20	6002ZZ	75	48	12	28	18	50	-0.009 -0.025	62	11	6.6	6.5
	7003		70 85		17	35		10	14	22	6003ZZ				31							
	7004		80 100	15	20	42		12	16	26	6004ZZ	92	58	15	36	22	60	-0.010 -0.029	75	14	9	8.5
	7005		100 125		25	47					6005ZZ	98	63		41		65		80			
ABGY (Electroless Nickel Plating)	7006	S Oil Seal	120 150		30	55	+0.030 0	13	17	28	6006ZZ	120	78	18	48	27	80		98	17.5	11	10.5
	7007		140 175		35	62		14	18	30	6007ZZ	126	84		55		86	-0.012 -0.034	106			
	7008	R O-Ring	160 200		40	68		15	19	32	6008ZZ	140	92		60		95		116			
	7009		180 225	20	45	75		16	20	34	6009ZZ	145	98	20	69	30	100		122			
	7010		200 250		50	80					6010ZZ	147	101		74		105		124			

CAD Data

No.	(5) (6) Cover Details									(6) Cover Details										(8) Cover Mounting Screws
	D	D_2	dh	T_1	T_2	p.c.d.	d_3	d_4	t_2	N Standard Cover d_5	S Oil Seal Covers S_1	S_2	St	Accessory Oil Seal	R O-Ring Covers Ra	Rb	Rt	r	Accessory O-Ring	
7002	32	48	28	6	8	40	6.5	3.5	3.1	21	32	22	5	G20325	24	20	3.2	0.4	P20	M3-8
7003	35		31																	
7004	42	58	36	7	9	48	8	4.5	4.1	26	35	27	6	D25356	31	25	4.7	0.7	P25	M4-10
7005	47	63	41	8	10	53				31	40	32	7	D30407	36	30			P30	
7006	55	78	48			64	9.5	5.5	5.1	41	50	42	6.5	D40506.5	41	35			P35	M5-12
7007	62	84	55	9	11	72				46	60	47	9	D45609	46	40			P40	
7008	68	92	60			78	11	6.6	6.1	51	65	52		D50659	51	45			P45	M6-12
7009	75	98	69			85				56	70	57		D55709	56	50			P50	
7010	80	101	74	11	13	88				61	75	62		D60759	70	60	7.5	0.8	P60	M6-15

No.	(7) Collar Details			(4) Inner Ring Spacer Details		
	Outer Diameter	Inner Diameter	Thick-ness	Outer Diameter	Inner Diameter	Thick-ness (ℓ)
7002	20	15	8.5	20	15	L-32
7003		17			17	L-35
7004	25	20	9.5	25	20	L-41
7005	30	25	10.5	30	25	L-41
7006	40	30		40	30	L-44
7007	45	35		45	35	L-47
7008	50	40	11.5	50	40	L-50
7009	55	45		55	45	L-53
7010	60	50	13.5	60	50	L-54

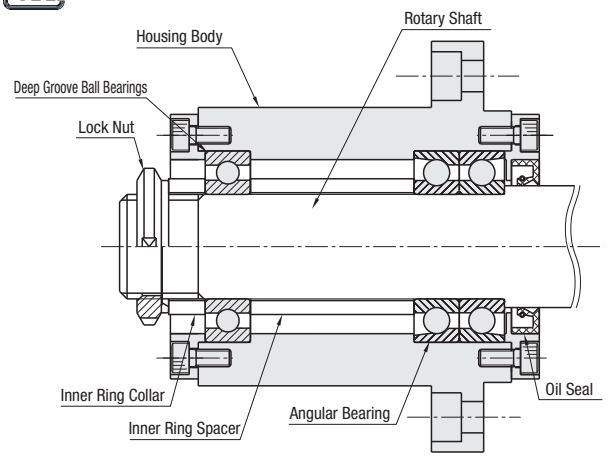
Order Example

Part Number				
Type	Bearings	- Cover -	L	
ABGY	7004	- R -	100	

Days to Ship

- 7002 ~ 7005: 10 Days
- 7006 ~ 7010: 12 Days

Example



Price

Bearings No.	L	ABGYB Covers N € Unit Price 1 pc.	ABGYB Covers N Volume Discount Qty. 2 ~ 4	ABGYB Covers S € Unit Price 1 pc.	ABGYB Covers S Volume Discount Qty. 2 ~ 4	ABGYB Covers R € Unit Price 1 pc.	ABGYB Covers R Volume Discount Qty. 2 ~ 4	ABGY Covers N € Unit Price 1 pc.	ABGY Covers N Volume Discount Qty. 2 ~ 4	ABGY Covers S € Unit Price 1 pc.	ABGY Covers S Volume Discount Qty. 2 ~ 4	ABGY Covers R € Unit Price 1 pc.	ABGY Covers R Volume Discount Qty. 2 ~ 4
7002	60												
	75												
7003	70												
	85												
7004	80												
	100												
7005	100												
	125												
7006	120												
	150												
7007	140												
	175												
7008	160												
	200												
7009	180												
	225												
7010	200												
	250												

For orders larger than indicated quantity, please request a quotation.

Deep Groove Ball Bearings
-Double Shielded-

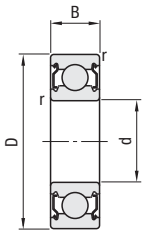
Price Reduction
Up to 42%

CAD Data

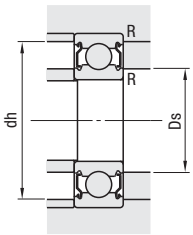
RoHS

B6_ _ _ZZ





(Installation Diagram)



M Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
B6700ZZ	10	15	4	0.2	0.85	0.43	15000	10.4	11.21	14.2	0.2	2	
B6800ZZ		19	5	0.3	1.83	0.925	34000	12	12.5	17	0.3	5	
B6900ZZ		22	6		2.70	1.27	32000		13	20		9	
B6000ZZ		26	8		4.55	1.96	30000	12	13.5	24		19	
B6200ZZ		30	9	0.6	5.10	2.39	24000	14	16	26	0.6	32	
B6300ZZ		35	11		8.1	3.45	21000	14	16.5	31		52	
B6701ZZ	12	18	4	0.2	0.92	0.53	13000	12.4	13.86	16.7	0.2	3	
B6801ZZ		21	5	0.3	1.92	1.04	32000	14	14.5	19	0.3	6	
B6901ZZ		24	6		2.89	1.46	30000		15	22		11	
B6001ZZ		28	8		5.10	2.39	27000	14	16	26		21	
B6201ZZ		32	10	0.6	6.10	2.75	22000	16	17	28	0.6	37	
B6301ZZ		37	12	1	9.7	4.2	19000	17	18	32	1.0	60	
B6702ZZ	15	21	4	0.2	0.93	0.58	11000	15.4	16.86	19.7	0.2	4	
B6802ZZ		24	5	0.3	2.08	1.26	27000	17	17.5	22	0.3	7	
B6902ZZ		28	7		3.65	2.00	26000			26		16	
B6002ZZ		32	9		5.60	2.83	23000	17	19	30		30	
B6202ZZ		35	11	0.6	7.75	3.60	19000	19	20	31	0.6	45	
B6302ZZ		42	13	1	11.4	5.45	17000	20	22.5	37	1.0	83	
B6703ZZ	17	23	4	0.2	1.0	0.65	9500	17.4	18.86	21.1	0.2	4	
B6803ZZ		26	5	0.3	2.23	1.46	25000	19	19.5	24	0.3	8	
B6903ZZ		30	7		4.65	2.58	23000		20	28		18	
B6003ZZ		35	10	0.3	6.80	3.35	20000	19	21	33	0.3	39	
B6203ZZ		40	12	0.6	9.60	4.60	17000	21	23	36	0.6	66	
B6303ZZ		47	14	1	13.6	6.65	15000	22	25.5	42	1.0	113	
B6704ZZ	20	27	4	0.2	1.40	0.72	8500	20.4	22.36	25.5	0.2	6	
B6804ZZ		32	7	0.3	4.00	2.47	20000	22	22.5	30	0.3	19	
B6904ZZ		37	9		6.40	3.70	19000		24	35		36	
B6004ZZ		42	12	0.6	9.40	5.05	17000	24	26	38	0.6	69	
B6204ZZ		47	14	1.0	12.80	6.65	14000	25	28	42	1.0	106	
B6304ZZ		52	15	1.1	15.9	7.9	13000	26.5	28	45.5		145	
B6805ZZ	25	37	7	0.3	4.30	2.95	18000	27	28	35	0.3	22	
B6905ZZ		42	9		7.05	4.55	16000		29	40		42	
B6005ZZ		47	12	0.6	10.10	5.85	15000	29	30.5	43	0.6	80	
B6205ZZ		52	15	1.0	14.00	7.85	12000	30	32	47	1.0	128	
B6305ZZ		62	17	1.1	20.6	11.2	11000	31.5	36	55.5		235	
B6806ZZ	30	42	7	0.3	4.70	3.65	15000	32	33	40	0.3	26	
B6906ZZ		47	9		7.25	5.00	14000		34	45		48	
B6006ZZ		55	13	1.0	13.20	8.30	12000	35	37	50	1.0	116	
B6206ZZ		62	16		19.50	11.30	10000	35	39	57		199	
B6306ZZ		72	19	1.1	26.7	15	9200	36.5	42.5	65.5		345	
B6807ZZ	35	47	7	0.3	4.90	4.05	13000	37	38	45	0.3	29	
B6907ZZ		55	10	0.6	9.55	6.85	12000	39	40	51	0.6	74	
B6007ZZ		62	14	1.0	16.00	10.30	11000	40	42	57	1.0	155	
B6207ZZ		72	17	1.1	25.70	15.30	9000	41.5	45	65.5	1.0	288	
B6307ZZ		80	21	1.5	33.5	19.2	8400	43	47	72	1.5	469	
B6808ZZ	40	52	7	0.3	5.10	4.40	12000	42	43	50	0.3	33	
B6908ZZ		62	12	0.6	12.20	8.90	11000	44	45	58	0.6	110	
B6008ZZ		68	15	1.0	16.80	11.50	9500	45	47	63	1.0	190	
B6208ZZ		80	18	1.1	29.10	17.80	8200	46.5	51	73.5	1.0	366	
B6308ZZ		90	23	1.5	40.5	24	7500	48	53	82	1.5	636	
B6809ZZ	45	58	7	0.3	6.18	5.38	11000	47	47.5	56	0.3	38	
B6909ZZ		68	12	0.6	14.1	10.8	9500	49	50	64	0.6	126	
B6009ZZ		75	16	1	20.9	15.2	8800	50	53.5	70	1.0	241	
B6209ZZ		85	19	1.1	31.5	20.4	7500	51.5	55.5	78.5		420	
B6309ZZ		100	25	1.5	53	32	6700	53	61.5	92	1.5	829	
B6810ZZ	50	65	7	0.3	6.6	6.09	9500	52	52.5	63	0.3	50	
B6910ZZ		72	12	0.6	14.5	11.7	9000	54	55	68	0.6	135	
B6010ZZ		80	16	1.0	21.80	16.60	8300	55.0	57.5	75.0	1.0	261	
B6210ZZ		90	20	1.1	35.00	23.20	7000	56.5	60.0	83.5		454	
B6310ZZ		110	27	2	62.0	38	6000	59	68	101	2	1006	

kgf=Nx0.101972

Order Example

Part Number
B6702ZZ

Days to Ship
6 Days
2 Days
P.87

Price

Volume Discount (Round off to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Stainless Steel Deep Groove Ball Bearings
-Double Shielded-

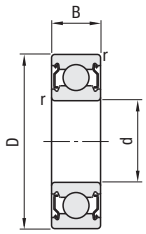
Price Reduction
Up to 46%

CAD Data

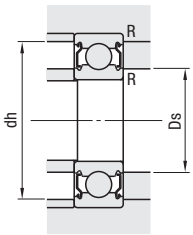
RoHS

SB6_ _ _ZZ





(Installation Diagram)



M Material: 1.4125/X105CrMo17
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
SB6700ZZ	10	15	4	0.2	0.68	0.34	15000	10.4	11.21	14.2	0.2	2	
SB6800ZZ		19	5	0.3	1.46	0.67	34000	12	12.5	17	0.3	5	
SB6900ZZ		22	6		2.29	1.02	32000		13	20		9	
SB6000ZZ		26	8		3.87	1.58	30000	12	13.5	24		19	
SB6200ZZ		30	9	0.6	4.35	1.91	24000	14	16	26	0.6	32	
SB6300ZZ		35	11		6.87	2.75	21000	14	16.5	31		52	
SB6701ZZ	12	18	4	0.2	0.73	0.42	13000	12.4	13.86	16.7	0.2	3	
SB6801ZZ		21	5	0.3	1.63	0.83	32000	14	14.5	19	0.3	6	
SB6901ZZ		24	6		2.45	1.18	30000		15	22		11	
SB6001ZZ		28	8		4.35	1.91	27000	14	16	26		21	
SB6201ZZ		32	10	0.6	5.78	2.44	22000	16	17	28	0.6	37	
SB6301ZZ		37	12	1	8.24	3.36	19000	17	18	32	1.0	60	
SB6702ZZ	15	21	4	0.2	0.74	0.46	11000	15.4	16.86	19.7	0.2	4	
SB6802ZZ		24	5	0.3	1.76	1.00	27000	17	17.5	22	0.3	7	
SB6902ZZ		28	7		3.67	1.81	26000			26		16	
SB6002ZZ		32	9		4.76	2.27	23000	17	19	30		30	
SB6202ZZ		35	11	0.6	6.50	2.96	19000	19	20	31	0.6	45	
SB6302ZZ		42	13	1	9.71	4.37	17000	20	22.5	37	1.0	83	
SB6703ZZ	17	23	4	0.2	0.85	0.52	9500	17.4	18.86	21.1	0.2	4	
SB6803ZZ		26	5	0.3	1.90	1.16	25000	19	19.5	24	0.3	8	
SB6903ZZ		30	7		3.90	2.05	23000		20	28		18	
SB6003ZZ		35	10	0.3	5.09	2.63	20000	19	21	33	0.3	39	
SB6203ZZ		40	12	0.6	8.13	3.85	17000	21	23	36	0.6	66	
SB6303ZZ		47	14	1	11.5	5.33	15000	22	25.5	42	1.0	113	
SB6704ZZ	20	27	4	0.2	1.12	0.57	8500	20.4	22.36	25.5	0.2	6	
SB6804ZZ		32	7	0.3	3.41	1.97	20000	22	22.5	30	0.3	19	
SB6904ZZ		37	9		5.42	2.95	19000		24	35		36	
SB6004ZZ		42	12	0.6	7.99	4.00	17000	24	26	38	0.6	69	
SB6204ZZ		47	14	1.0	10.88	5.28	14000	25	28	42	1.0	106	
SB6304ZZ		52	15	1.1	13.49	6.31	13000	26.5	28	45.5		145	
SB6805ZZ	25	37	7	0.3	3.66	2.35	18000	27	28	35	0.3	22	
SB6905ZZ		42	9		5.60	3.63	16000		29	40		42	
SB6005ZZ		47	12	0.6	8.59	4.68	15000	29	30.5	43	0.6	80	
SB6205ZZ		52	15	1.0	11.90	6.32	12000	30	32	47	1.0	128	
SB6305ZZ		62	17	1.1	17.49	9.06	11000	31.5	36	55.5		235	
SB6806ZZ	30	42	7	0.3	3.86	2.72	15000	32	33	40	0.3	26	
SB6906ZZ		47	9		6.15	4.01	14000		34	45		48	
SB6006ZZ		55	13	1.0	11.20	6.64	12000	35	37	50	1.0	116	
SB6206ZZ		62	16		16.60	9.04	10000	35	39	57		199	
SB6306ZZ		72	19	1.1	22.63	12.08	9200	36.5	42.5	65.5		345	
SB6807ZZ	35	47	7	0.3	4.02	3.06	13000	37	38	45	0.3	29	
SB6907ZZ		55	10	0.6	9.27	6.25	12000	39	40	51	0.6	74	
SB6007ZZ		62	14	1.0	13.56	8.25	11000	40	42	57	1.0	155	
SB6207ZZ		72	17	1.1	21.81	12.36	9000	41.5	45	65.5	1.0	288	
SB6808ZZ	40	52	7	0.3	4.18	3.34	12000	42	43	50	0.3	33	
SB6908ZZ		62	12	0.6	11.63	7.97	11000	44	45	58	0.6	110	
SB6008ZZ		68	15	1.0	14.25	9.22	9500	45	47	63	1.0	190	
SB6208ZZ		80	18	1.1	24.73	14.33	8200	46.5	51	73.5	1.0	366	
SB6809ZZ	45	58	7	0.3	5.20	4.30	11000	47	47.5	56	0.3	38	
SB6909ZZ		68	12	0.6	11.98	8.66	9500	49	50	64	0.6	126	
SB6009ZZ		75	16	1	15.15	9.6	8800	50	53.5	70	1.0	241	
SB6209ZZ		85	19	1.1	27.79	16.3	7500	51.5	55.5	78.5		420	
SB6810ZZ	50	65	7	0.3	5.61	4.80	9500	52	52.5	63	0.3	50	
SB6910ZZ		72	12	0.6	12.35	9.35	9000	54	55	68	0.6	135	
SB6010ZZ		80	16	1.0	18.50	14.10	8300	55.0	57.5	75.0	1.0	261	
SB6210ZZ		90	20	1.1	29.80	19.70	7000	56.5	60.0	83.5		454	

kgf=Nx0.101972

Order Example — Part Number: SB6303ZZ

Days to Ship: 6 Days (P.87) / 2 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Deep Groove Ball Bearings (Economy Type)

-Double Shielded-

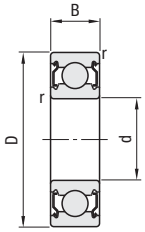
CAD Data

Features: Major overseas manufacturers' Inexpensive Deep Groove Ball Bearings. Please use for sizeable loads transfer.

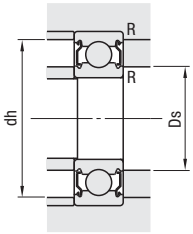
RoHS

C6__ZZ





(Installation Diagram)



M Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions				Mass (g) (Reference)	€ Unit Price
					Cr (Dynamic) kN	Cor (Static) kN		Ds (min)	Ds (max.)	dh (max.)	R (max.)		
C6900ZZ	10	22	6	0.3	2.7	1.27	30000	12	13	20	0.3	9	
C6000ZZ		26	8		4.55	1.97	29000	12	13.5	24		18	
C6200ZZ		30	9	0.6	5.1	2.39	25000	14	16	26	0.6	32	
C6300ZZ		35	11		8.2	3.5	23000	14	17	31		53	
C6901ZZ	12	24	6	0.3	2.89	1.46	27000	14	15	22	0.3	11	
C6001ZZ		28	8		5.1	2.39	26000	14	16	26		22	
C6201ZZ		32	10	0.6	6.8	3.05	22000	16	17	28	0.6	37	
C6301ZZ		37	12	1	9.7	4.2	20000	17	18.5	32	1	60	
C6902ZZ	15	28	7	0.3	3.65	2	24000	17	17.5	26	0.3	16	
C6002ZZ		32	9		5.6	2.83	22000	17	19	30		30	
C6202ZZ		35	11	0.6	7.75	3.6	19000	19	20	31	0.6	45	
C6302ZZ		42	13	1	11.4	5.45	17000	20	23	37	1	82	
C6903ZZ	17	30	7	0.3	4.65	2.58	22000	19	20	28	0.3	18	
C6003ZZ		35	10		6.8	3.35	20000	19	21	33		39	
C6203ZZ		40	12	0.6	9.6	4.6	18000	21	23	36	0.6	66	
C6303ZZ		47	14	1	13.5	6.55	16000	22	25	42	1	115	
C6904ZZ	20	37	9	0.3	6.4	3.7	19000	22	24	35	0.3	36	
C6004ZZ		42	12	0.6	9.4	5.05	18000	24	26	38	0.6	69	
C6204ZZ		47	14	1	12.8	6.6	16000	25	26	42	1	106	
C6304ZZ		52	15	1.1	15.9	7.9	14000	26.5	28.5	45.5		144	
C6905ZZ	25	42	9	0.3	7.05	4.55	16000	27	29	40	0.3	42	
C6005ZZ		47	12	0.6	10.1	5.85	15000	29	30	43	0.6	80	
C6205ZZ		52	15	1	14	7.85	13900	30	32	47	1	128	
C6305ZZ		62	17	1.1	21.2	10.9	12000	31.5	35	55.5		232	
C6906ZZ	30	47	9	0.3	7.25	5	14000	32	34	45	0.3	48	
C6006ZZ		55	13	1	13.2	8.3	13000	35	37	50	1	116	
C6206ZZ		62	16		19.5	11.3	11000	35	39	57		199	
C6306ZZ		72	19	1.1	26.7	15	10000	36.5	43	65.5		360	

kgf=Nx0.101972

Order Example — Part Number: C6202ZZ

Days to Ship: 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~29	30~100
Applicable Price	€ Unit Price	Volume Discount
	Price List	10%

For ordering up to 14 pcs (green cells) from 1 pc, "€ Unit Price + Small Order Charge (0,70 EUR/pc)" is applied.
[Calculation Example] When ordering 2 pcs of C6002ZZ, (€ Unit Price 0,70 EUR + Small Order Charge 1,10 EUR) x 2 pcs.=3,60 EUR
For orders larger than indicated quantity, please request a quotation.

Deep Groove Ball Bearings
-Open-

Reduced Delivery Time

Price Reduction Average 27%

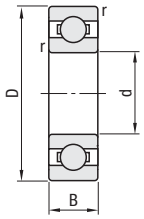
CAD Data

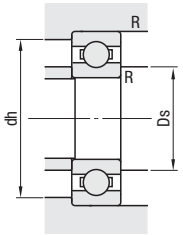
RoHS



Steel Type

B6_ _ _





Shipped with no grease applied. Please apply grease when using.

Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
B6700	10	15	3	0.2	0.85	0.43	15000	10.4	11.21	14.2	0.2	2	
B6800		19	5	0.3	1.83	0.925	34000	12	12.5	17	0.3	5	
B6900		22	6		2.70	1.27	32000		13	20		9	
B6000		26	8		4.55	1.96	30000	12	13.5	24		19	
B6200		30	9	0.6	5.10	2.39	24000	14	16	26	0.6	32	
B6701	12	18	4	0.2	0.92	0.53	13000	12.4	13.86	16.7	0.2	3	
B6801		21	5	0.3	1.92	1.04	32000	14	14.5	19	0.3	6	
B6901		24	6		2.89	1.46	30000		15	22		11	
B6001		28	8		5.10	2.39	28000	14	16	26		21	
B6201		32	10	0.6	6.10	2.75	22000	16	17	28	0.6	37	
B6702	15	21	4	0.2	0.93	0.58	11000	15.4	16.86	19.7	0.2	4	
B6802		24	5	0.3	2.08	1.26	28000	17	17.5	22	0.3	7	
B6902		28	7		3.65	2.00	26000			26		16	
B6002		32	9		5.60	2.83	24000	17	19	30		30	
B6202		35	11	0.6	7.75	3.60	20000	19	20	31	0.6	45	
B6803	17	26	5	0.3	2.23	1.46	26000	19	19.5	24	0.3	8	
B6903		30	7		4.65	2.58	24000		20	28		18	
B6003		35	10	0.3	6.80	3.35	22000	19	21	33	0.3	39	
B6203		40	12	0.6	9.60	4.60	17000	21	23	36	0.6	66	
B6704	20	27	4	0.2	1.40	0.72	8500	20.4	22.36	25.5	0.2	6	
B6804		32	7	0.3	4.00	2.47	22000	22	22.5	30	0.3	19	
B6904		37	9		6.40	3.70	19000		24	35		36	
B6004		42	12	0.6	9.40	5.05	18000	24	26	38	0.6	69	
B6204		47	14	1.0	12.80	6.65	15000	25	28	42	1.0	106	
B6805	25	37	7	0.3	4.30	2.95	18000	27		35	0.3	22	
B6905		42	9		7.05	4.55	16000		29	40		42	
B6005		47	12	0.6	10.10	5.85	15000	29	30.5	43	0.6	80	
B6205		52	15	1.0	14.00	7.85	13000	30	32	47	1.0	128	
B6806	30	42	7	0.3	4.70	3.65	15000	32	33	40	0.3	26	
B6906		47	9		7.25	5.00	14000		34	45		48	
B6006		55	13	1.0	13.20	8.30	13000	35	37	50	1.0	116	
B6206		62	16		19.50	11.30	11000	35	39	57		199	
B6807	35	47	7	0.3	4.90	4.05	14000	37	38	45	0.3	29	
B6907		55	10	0.6	9.55	6.85	12000	39	40	51	0.6	74	
B6007		62	14	1.0	16.00	10.30	11000	40	42	57	1.0	155	
B6207		72	17	1.1	25.70	15.30	9500	41.5	45	65.5	1.0	288	
B6808	40	52	7	0.3	5.10	4.40	12000	42	43	50	0.3	33	
B6908		62	12	0.6	12.20	8.90	11000	44	45	58	0.6	110	
B6008		68	15	1.0	16.80	11.50	10000	45	47	63	1.0	190	
B6208	80		18	1.1	29.10	17.80	8500	46.5	51	73.5	1.0	366	
B6010	50		16	1.0	21.80	16.60	8500	55.0	57.5	75.0		261	
B6210		90	20	1.1	35.00	23.20	7100	56.5	60.0	83.5		454	

kgf=Nx0.101972

Order Example — Part Number: B6200

Days to Ship: 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

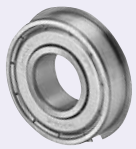
For orders larger than indicated quantity, please request a quotation.

Deep Groove Ball Bearings
-Double Shielded-

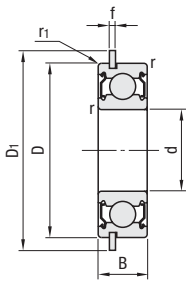
Price Reduction
Average 19%

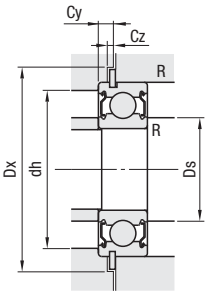
CAD Data

RoHS



Steel Type
B6_ _ _ZZNR





Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	r1 (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Retaining Ring Dim. D1 (max.)	Retaining Ring Dim. f (max.)	Relative Dimensions Ds (min)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Relative Dimensions Dx (min)	Relative Dimensions Cy (max.)	Relative Dimensions Cz (min)	Mass (g) (Reference)	€ Unit Price
B6900ZZNR	10	22	6	0.3	0.3	2.7	1.27	31000	24.8	0.7	12	13	20	0.3	25.5	1.5	0.7	10	
B6000ZZNR		26	8		0.3	4.55	1.96	28000	28.7	0.84	12	13.5	24		29.4	1.9	0.9	19	
B6200ZZNR		30	9	0.6	0.6	5.1	2.39	24000	34.7	1.12	14	16	26	0.6	35.5	2.9	1.2	32	
B6300ZZNR		35	11	0.6	0.5	8.1	3.45	22000	39.7	1.12	14	16.5	31	0.6	40.5	2.9	1.2	52	
B6901ZZNR	12	24	6	0.3	0.3	2.89	1.46	28000	26.8	0.7	14	15	22	0.3	27.5	1.5	0.7	11	
B6001ZZNR		28	8		0.3	5.1	2.37	24000	30.7	0.84	14	16	26		31.5	1.9	0.9	21	
B6201ZZNR		32	10	0.6	0.6	6.8	3.05	22000	36.7	1.12	16	17	28	0.6	37.5	2.9	1.2	37	
B6301ZZNR		37	12	1	0.5	9.7	4.2	20000	41.3	1.12	17	18	32	1	42	2.9	1.2	60	
B6902ZZNR	15	28	7	0.3	0.3	4.35	2.26	23000	30.8	0.85	17	18	26	0.3	31.5	1.9	0.9	16	
B6002ZZNR		32	9		0.3	5.6	2.83	21000	36.7	1.12	17	19	30		37.5	2.9	1.2	31	
B6202ZZNR		35	11	0.6	0.6	7.65	3.75	20000	39.7	1.12	19	20	31	0.6	40.5	2.9	1.2	45	
B6302ZZNR		42	13	1	0.5	11.4	5.45	17000	46.3	1.12	20	22.5	37	1	47	2.9	1.2	83	
B6903ZZNR	17	30	7	0.3	0.3	4.6	2.55	21000	32.8	0.85	19	20	28	0.3	33.5	1.9	0.9	17	
B6003ZZNR		35	10	0.3	0.3	6	3.25	19000	39.7	1.12	19	21	33	0.3	40.5	2.9	1.2	41	
B6203ZZNR		40	12	0.6	0.6	9.55	4.8	17000	44.6	1.12	21	22	36	0.6	45.5	2.9	1.2	65	
B6303ZZNR		47	14	1	0.5	13.6	6.65	15000	52.7	1.12	22	25.5	42	1	53.5	3.3	1.2	113	
B6904ZZNR	20	37	9	0.3	0.3	6.4	3.7	18000	39.8	0.85	22	24	35	0.3	40.5	2.3	0.9	38	
B6004ZZNR		42	12	0.6	0.6	9.4	5	16000	46.3	1.12	24	25	38	0.6	47	2.9	1.2	67	
B6204ZZNR		47	14	1	1	12.8	6.6	14000	52.7	1.12	25	27	42	1	53.5	3.3	1.2	104	
B6304ZZNR		52	15	1.1	0.5	15.9	7.9	14000	57.9	1.12	26.5	28	45.5	1	58.5	3.3	1.2	145	
B6905ZZNR	25	42	9	0.3	0.3	7.05	4.55	15000	44.8	0.85	27	29	40	0.3	45.5	2.3	0.9	44	
B6005ZZNR		47	12	0.6	0.6	10.1	5.85	14000	52.7	1.12	29	30	43	0.6	53.5	2.9	1.2	80	
B6205ZZNR		52	15	1	1	14	7.85	13000	57.9	1.12	30	32	47	1	58.5	3.3	1.2	133	
B6305ZZNR		62	17	1.1	0.5	20.6	11.2	11000	67.7	1.7	31.5	36	55.5	1	68.5	4.6	1.7	235	
B6906ZZNR	30	47	9	0.3	0.3	7.25	5	14000	49.8	0.85	32	34	45	0.3	50.5	2.3	0.9	52	
B6006ZZNR		55	13	1	1	13.2	8.3	12000	60.7	1.12	35	37	50	1	61.5	2.9	1.2	116	
B6206ZZNR		62	16		1	19.5	11.3	11000	67.7	1.7	35	39	57		68.5	4.6	1.7	199	
B6306ZZNR		72	19	1.1	0.5	26.7	15	9500	78.6	1.7	36.5	42.5	65.5	1	80	4.6	1.7	345	
B6907ZZNR	35	55	10	0.6	0.5	10.6	7.25	12000	57.8	0.85	39	39	51	0.6	58.5	2.3	0.9	75	
B6007ZZNR		62	14	1	0.5	16	10.3	10000	67.7	1.7	40	41.5	57	1	68.5	3.4	1.7	151	
B6207ZZNR		72	17	1.1	0.5	25.7	15.3	9500	78.6	1.7	41.5	44.5	65.5	1	80	4.6	1.7	284	
B6908ZZNR	40	62	12	0.6	0.5	13.7	10	11000	64.8	0.85	44	46	58	0.6	65.5	2.3	0.9	112	
B6008ZZNR		68	15	1	0.5	16.8	11.5	9200	74.6	1.7	45	47.5	63	1	76	3.8	1.7	190	
B6208ZZNR		80	18	1.1	0.5	29.1	17.9	8500	86.6	1.7	46.5	50.5	73.5	1	88	4.6	1.7	366	
B6009ZZNR	45	75	16	1	0.5	20.9	15.2	9000	81.6	1.7	50	53.5	70	1	83	3.8	1.7	241	
B6209ZZNR		85	19	1.1	0.5	31.5	20.4	7500	91.6	1.7	51.5	55.5	78.5	1	93	4.6	1.7	420	
B6010ZZNR	50	80	16	1	0.5	21.8	16.6	8500	86.6	1.7	55	58.5	75	1	88	3.8	1.7	261	
B6210ZZNR		90	20	1.1	0.5	35	23.2	7100	96.5	2.46	56.5	60	83.5	1	98	5.4	2.5	459	

kgf=Nx0.101972

Order Example — Part Number: B6900ZZNR

Days to Ship: 6 Days / 2 Days

P87

Price

Volume Discount (Round down to one Cent.) P87

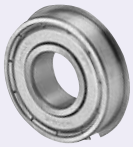
Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Stainless Steel Deep Groove Ball Bearings

-Double Shielded-

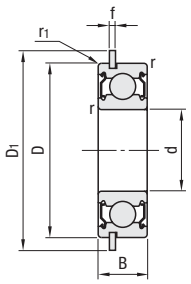
CAD Data

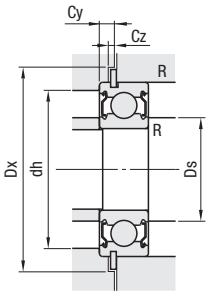


RoHS

Stainless Steel Type

SB6_ _ _ZZNR





M Material: 1.4125/X105CrMo17
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	r1 (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Retaining Ring Dim. D1 (max.)	Retaining Ring Dim. f (max.)	Relative Dimensions Ds (min)	Ds (max.)	dh (max.)	R (max.)	Dx (min)	Cy (max.)	Cz (min)	Mass (g) (Reference)	€ Unit Price
SB6900ZZNR		22	6	0.3	0.3	2.7	1.27	31000	24.8	0.7	12	13	20	0.3	25.5	1.5	0.7	10	
SB6000ZZNR	10	26	8		0.3	4.55	1.96	28000	28.7	0.84	12	13.5	24		29.4	1.9	0.9	19	
SB6200ZZNR		30	9	0.6	0.6	5.1	2.39	24000	34.7	1.12	14	16	26	0.6	35.5	2.9	1.2	32	
SB6901ZZNR		24	6	0.3	0.3	2.89	1.46	28000	26.8	0.7	14	15	22	0.3	27.5	1.5	0.7	11	
SB6001ZZNR	12	28	8		0.3	5.1	2.39	24000	30.7	0.84	14	16	26		31.5	1.9	0.9	21	
SB6201ZZNR		32	10	0.6	0.6	6.8	3.05	22000	36.7	1.12	16	17	28	0.6	37.5	2.9	1.2	37	
SB6902ZZNR		28	7	0.3	0.3	4.3	2.25	23000	30.8	0.85	17	18	26	0.3	31.5	1.9	0.9	16	
SB6002ZZNR	15	32	9		0.3	5.6	2.84	21000	36.7	1.12	17	19	30		37.5	2.9	1.2	31	
SB6202ZZNR		35	11	0.6	0.6	7.65	3.75	20000	39.7	1.12	19	20	31	0.6	40.5	2.9	1.2	45	
SB6903ZZNR		30	7	0.3	0.3	4.6	2.56	21000	32.8	0.85	19	20	28	0.3	33.5	1.9	0.9	17	
SB6003ZZNR	17	35	10	0.3	0.3	6	3.25	19000	39.7	1.12	19	21	33	0.3	40.5	2.9	1.2	41	
SB6203ZZNR		40	12	0.6	0.6	9.6	4.8	17000	44.6	1.12	21	22	36	0.6	45.5	2.9	1.2	65	
SB6904ZZNR		37	9	0.3	0.3	6.4	3.7	18000	39.8	0.85	22	24	35	0.3	40.5	2.3	0.9	38	
SB6004ZZNR	20	42	12	0.6	0.6	9.4	5.05	16000	46.3	1.12	24	25	38	0.6	47	2.9	1.2	67	
SB6204ZZNR		47	14	1	1	12.8	6.65	14000	52.7	1.12	25	27	42	1	53.5	3.3	1.2	104	
SB6905ZZNR		42	9	0.3	0.3	7	4.55	15000	44.8	0.85	27	29	40	0.3	45.5	2.3	0.9	44	
SB6005ZZNR	25	47	12	0.6	0.6	10.1	5.85	14000	52.7	1.12	29	30	43	0.6	53.5	2.9	1.2	80	
SB6205ZZNR		52	15	1	1	14	7.9	13000	57.9	1.12	30	32	47	1	58.5	3.3	1.2	133	
SB6006ZZNR	30	55	13	1	1	13.2	8.3	12000	60.7	1.12	35	37	50	1	61.5	2.9	1.2	116	
SB6206ZZNR		62	16		1	19.5	11.3	11000	67.7	1.7	35	39	57		68.5	4.6	1.7	199	
SB6007ZZNR	35	62	14	1	0.5	16	10.3	10000	67.7	1.7	40	41.5	57	1	68.5	3.4	1.7	151	
SB6008ZZNR	40	68	15	1	0.5	16.8	11.6	9200	74.6	1.7	45	47.5	63	1	76	3.8	1.7	190	

kgf=Nx0.101972

Order Example — Part Number: SB6200ZZNR

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

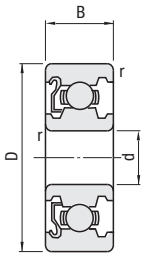
Deep Groove Ball Bearings
-Single Shielded-

CAD Data

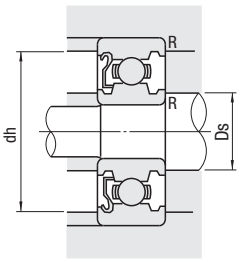


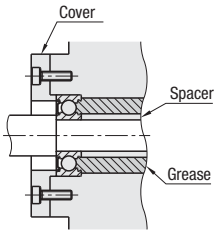
RoHS

B6___Z



(Installation Diagram)





Shipped with no grease applied.
Please apply grease when using.

M Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
B6000Z	10	26	8	0.3	4.55	1.97	30000	12	13	24	0.3	18	
B6200Z		30	9	0.6	5.1	2.39	24000	14	16	26	0.6	32	
B6300Z		35	11	0.6	8.1	3.45	22000	14	16.5	31	0.6	52	
B6001Z	12	28	8	0.3	5.1	2.37	28000	14	15.5	26	0.3	22	
B6201Z		32	10	0.6	6.8	3.05	22000	16	17	28	0.6	37	
B6301Z		37	12	1	9.7	4.2	20000	17	18	32	1	60	
B6002Z	15	32	9	0.3	5.6	2.83	24000	17	19	30	0.3	31	
B6202Z		35	11	0.6	7.65	3.75	20000	19	20.5	31	0.6	45	
B6302Z		42	13	1	11.4	5.45	17000	20	22.5	37	1	83	
B6003Z	17	35	10	0.3	6	3.25	22000	19	21.5	33	0.3	41	
B6203Z		40	12	0.6	9.55	4.8	17000	21	23.5	36	0.6	67	
B6303Z		47	14	1	13.6	6.65	15000	22	25.5	42	1	113	
B6004Z	20	42	12	0.6	9.4	5	18000	24	25.5	38	0.6	68	
B6204Z		47	14	1	12.8	6.6	15000	25	26.5	42	1	107	
B6304Z		52	15	1.1	15.9	7.9	14000	26.5	28	45.5	1	145	
B6005Z	25	47	12	0.6	10.1	5.85	15000	29	30	43	0.6	79	
B6205Z		52	15	1	14	7.85	13000	30	32	47	1	129	
B6305Z		62	17	1.1	20.6	11.2	11000	31.5	36	55.5	1	235	
B6006Z	30	55	13	1	13.2	8.3	13000	35	36.5	50	1	116	
B6206Z		62	16	1	19.5	11.3	11000	35	38.5	57	1	199	
B6306Z		72	19	1.1	26.7	15	9500	36.5	42.5	65.5	1	345	
B6007Z	35	62	14	1	16	10.3	11000	40	41.5	57	1	151	
B6207Z		72	17	1.1	25.7	15.3	9500	41.5	44.5	65.5	1	284	
B6307Z		80	21	1.5	33.5	19.2	8500	43	47	72	1.5	464	
B6008Z	40	68	15	1	16.8	11.5	10000	45	47.5	63	1	190	
B6208Z		80	18	1.1	29.1	17.9	8500	46.5	50.5	73.5	1	366	
B6308Z		90	23	1.5	40.5	24	7500	48	53	82	1.5	636	
B6009Z	45	75	16	1	20.9	15.2	9000	50	53.5	70	1	241	
B6209Z		85	19	1.1	31.5	20.4	7500	51.5	55.5	78.5	1	420	
B6309Z		100	25	1.5	53	32	6700	53	61.5	92	1.5	829	
B6010Z	50	80	16	1	21.8	16.6	8500	55	58.5	75	1	261	
B6210Z		90	20	1.1	35	23.2	7100	56.5	60	83.5	1	459	
B6310Z		110	27	2	62	38.5	6000	59	68	101	2	1060	

kgf=Nx0.101972

Order Example — Part Number: B6003Z

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Deep Groove Ball Bearings
-Double Shielded with C3 Clearance-

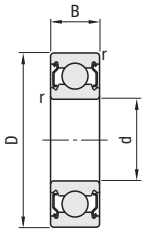
CAD Data

Features: Radial clearance is larger than standard products. Specially use for tight joining-fit and potential temperature difference between outer and inner rings.

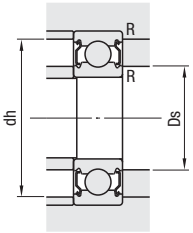
RoHS

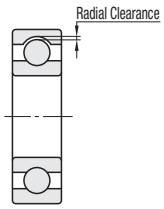


B6___ZZC3



(Installation Diagram)





- Radial Clearance

Bearing Inner Diameter d (mm)		CN		C3	
Over	Equal to or less than	Min.	MAX	Min.	MAX
Only 10		2	13	8	23
10	18	3	18	11	25
18	24	5	20	13	28
24	30	5	20	13	28
30	40	6	20	15	33
40	50	6	23	18	36

M Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
B6000ZZC3	10	26	8	0.3	4.55	1.97	30000	12	13	24	0.3	18	
B6200ZZC3		30	9	0.6	5.1	2.39	24000	14	16	26	0.6	32	
B6300ZZC3		35	11	0.6	8.1	3.45	22000	14	16.5	31	0.6	52	
B6001ZZC3	12	28	8	0.3	5.1	2.37	28000	14	15.5	26	0.3	22	
B6201ZZC3		32	10	0.6	6.8	3.05	22000	16	17	28	0.6	37	
B6301ZZC3		37	12	1	9.7	4.2	20000	17	18	32	1	60	
B6002ZZC3	15	32	9	0.3	5.6	2.83	24000	17	19	30	0.3	31	
B6202ZZC3		35	11	0.6	7.65	3.75	20000	19	20.5	31	0.6	45	
B6302ZZC3		42	13	1	11.4	5.45	17000	20	22.5	37	1	83	
B6003ZZC3	17	35	10	0.3	6	3.25	22000	19	21.5	33	0.3	41	
B6203ZZC3		40	12	0.6	9.55	4.8	17000	21	23.5	36	0.6	67	
B6303ZZC3		47	14	1	13.6	6.65	15000	22	25.5	42	1	113	
B6004ZZC3	20	42	12	0.6	9.4	5	18000	24	25.5	38	0.6	68	
B6204ZZC3		47	14	1	12.8	6.6	15000	25	26.5	42	1	107	
B6304ZZC3		52	15	1.1	15.9	7.9	14000	26.5	28	45.5	1	145	
B6005ZZC3	25	47	12	0.6	10.1	5.85	15000	29	30	43	0.6	79	
B6205ZZC3		52	15	1	14	7.85	13000	30	32	47	1	129	
B6305ZZC3		62	17	1.1	20.6	11.2	11000	31.5	36	55.5	1	235	
B6006ZZC3	30	55	13	1	13.2	8.3	13000	35	36.5	50	1	116	
B6206ZZC3		62	16	1	19.5	11.3	11000	35	38.5	57	1	199	
B6306ZZC3		72	19	1.1	26.7	15	9500	36.5	42.5	65.5	1	345	
B6007ZZC3	35	62	14	1	16	10.3	11000	40	41.5	57	1	151	
B6207ZZC3		72	17	1.1	25.7	15.3	9500	41.5	44.5	65.5	1	284	
B6307ZZC3		80	21	1.5	33.5	19.2	8500	43	47	72	1.5	464	
B6008ZZC3	40	68	15	1	16.8	11.5	10000	45	47.5	63	1	190	
B6208ZZC3		80	18	1.1	29.1	17.9	8500	46.5	50.5	73.5	1	366	
B6308ZZC3		90	23	1.5	40.5	24	7500	48	53	82	1.5	636	
B6009ZZC3	45	75	16	1	20.9	15.2	9000	50	53.5	70	1	241	
B6209ZZC3		85	19	1.1	31.5	20.4	7500	51.5	55.5	78.5	1	420	
B6309ZZC3		100	25	1.5	53	32	6700	53	61.5	92	1.5	829	
B6010ZZC3	50	80	16	1	21.8	16.6	8500	55	58.5	75	1	261	
B6210ZZC3		90	20	1.1	35	23.2	7100	56.5	60	83.5	1	459	
B6310ZZC3		110	27	2	62	38.5	6000	59	68	101	2	1060	

kgf=Nx0.101972

Order Example

Part Number
B6004ZZC3

Days to Ship

6 Days

P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Deep Groove Ball Bearings

-Non-contact Sealed / Contact Sealed-

Reduced Delivery Time

Price Reduction Average 33%

CAD Data

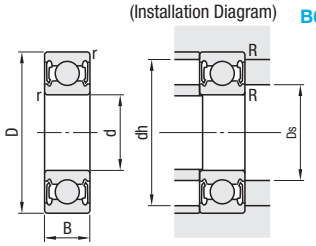


RoHS

Non-contact Sealed

B6_ _ _VV

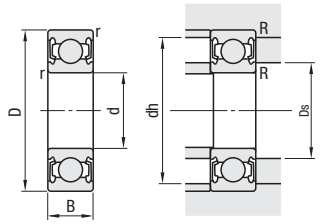
(Installation Diagram)



Contact Sealed

B6_ _ _DDU

(Installation Diagram)



M Material: 1.3505/100Cr6 *The material of rubber seal is NBR (Nitrile Rubber). Bearing Accuracy JIS B 1514 Class 0

Part Number		d	D	B	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions				Mass (g) (Reference)	€ Unit Price
Non-contact Rubber Sealed	Contact Rubber Sealed					Cr (Dynamic) kN	Cor (Static) kN		Ds (min)	Ds (max.)	dh (max.)	R (max.)		
B6800VV	B6800DDU	10	19	5	0.3	1.72	0.84	24000	12	12	17	0.3	5	
B6900VV	B6900DDU		22	6	0.3	2.7	1.27	22000	12	12.5	20	0.3	9	
B6000VV	B6000DDU		26	8		4.55	1.96	22000	12	12.5	24	0.3	18	
B6200VV	B6200DDU		30	9	0.6	5.1	2.39	18000	14	16	26	0.6	32	
B6300VV	B6300DDU		35	11	0.6	8.1	3.45	17000	14	16.5	31	0.6	52	
B6801VV	B6801DDU	12	21	5	0.3	1.92	1.04	20000	14	14	19	0.3	6	
B6901VV	B6901DDU		24	6	0.3	2.89	1.46	20000	14	14.5	22	0.3	10	
B6001VV	B6001DDU		28	8		5.1	2.37	18000	14	15.5	26	0.3	22	
B6201VV	B6201DDU		32	10	0.6	6.1	2.75	17000	16	17	28	0.6	37	
B6301VV	B6301DDU		37	12	1	9.7	4.2	16000	17	18	32	1	60	
B6802VV	B6802DDU	15	24	5	0.3	2.07	1.26	17000	17	17	22	0.3	7	
B6902VV	B6902DDU		28	7	0.3	3.65	2	17000	17	17	26	0.3	15	
B6002VV	B6002DDU		32	9		5.6	2.83	15000	17	19	30	0.3	31	
B6202VV	B6202DDU		35	11	0.6	7.65	3.6	14000	19	20.5	31	0.6	45	
B6302VV	B6302DDU		42	13	1	11.4	5.45	13000	20	22.5	37	1	83	
B6803VV	B6803DDU	17	26	5	0.3	2.63	1.57	15000	19	19	24	0.3	7	
B6903VV	B6903DDU		30	7	0.3	4.6	2.55	15000	19	19.5	28	0.3	19	
B6003VV	B6003DDU		35	10		6	3.25	13000	19	21.5	33	0.3	41	
B6203VV	B6203DDU		40	12	0.6	9.55	4.6	12000	21	23.5	36	0.6	67	
B6303VV	B6303DDU		47	14	1	13.6	6.65	11000	22	25.5	42	1	113	
B6804VV	B6804DDU	20	32	7	0.3	4	2.47	13000	22	22	30	0.3	17	
B6904VV	B6904DDU		37	9	0.3	6.4	3.7	12000	22	24	35	0.3	37	
B6004VV	B6004DDU		42	12	0.6	9.4	5	11000	24	25.5	38	0.6	68	
B6204VV	B6204DDU		47	14	1	12.8	6.6	11000	25	26.5	42	1	107	
B6304VV	B6304DDU		52	15	1.1	15.9	7.9	10000	26.5	28	45.5	1	145	
B6805VV	B6805DDU	25	37	7	0.3	4.5	3.15	10000	27	27	35	0.3	21	
B6905VV	B6905DDU		42	9	0.3	7.05	4.55	10000	27	28.5	40	0.3	42	
B6005VV	B6005DDU		47	12	0.6	10.1	5.85	9500	29	30	43	0.6	79	
B6205VV	B6205DDU		52	15	1	14	7.85	9000	30	32	47	1	129	
B6305VV	B6305DDU		62	17	1.1	20.6	11.2	8000	31.5	36	55.5	1	235	
B6806VV	B6806DDU	30	42	7	0.3	4.7	3.65	9000	32	32	40	0.3	24	
B6906VV	B6906DDU		47	9	0.3	7.25	5	8500	32	34	45	0.3	52	
B6006VV	B6006DDU		55	13	1	13.2	8.3	8000	35	36.5	50	1	116	
B6206VV	B6206DDU		62	16		19.5	11.3	7500	35	38.5	57	1	199	
B6907VV	B6907DDU	35	55	10	0.6	10.6	7.25	7500	39	39	51	0.6	75	
B6007VV	B6007DDU		62	14	1	16	10.3	6700	40	41.5	57	1	151	
B6207VV	B6207DDU		72	17	1.1	25.7	15.3	6300	41.5	44.5	65.5	1	284	
B6307VV	B6307DDU		80	21	1.5	33.5	19.2	6000	43	47	72	1.5	464	
B6908VV	B6908DDU	40	62	12	0.6	13.7	10	6300	44	46	58	0.6	112	
B6008VV	B6008DDU		68	15	1	16.8	11.5	6000	45	47.5	63	1	190	
B6208VV	B6208DDU		80	18	1.1	29.1	17.9	5600	46.5	50.5	73.5	1	366	
B6909VV	B6909DDU	45	68	12	0.6	14.1	10.9	5600	49	50	64	0.6	126	
B6009VV	B6009DDU		75	16	1	20.9	15.2	5300	50	53.5	70	1	241	
B6209VV	B6209DDU		85	19	1.1	31.5	20.4	5300	51.5	55.5	78.5	1	420	
B6910VV	B6910DDU	50	72	12	0.6	14.5	11.7	5300	54	55	68	0.6	135	
B6010VV	B6010DDU		80	16	1	21.8	16.6	4800	55	58.5	75	1	261	
B6210VV	B6210DDU		90	20	1.1	35	23.2	4800	56.5	60	83.5	1	459	

kgf=Nx0.101972

Order Example

Part Number

B6002VV
B6902DDU

Days to Ship

6 Days

P.87

Price

Volume Discount (Round off less than one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Stainless Steel Deep Groove Ball Bearings
-Contact Sealed-

CAD Data

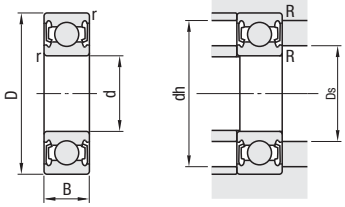


RoHS

Contact Sealed

SB6___DDU

(Installation Diagram)



M Material: 1.4125/X105CrMo17 equivalent * Rubber seals are NBR (Nitrile Rubber).

Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions				Mass (g) (Reference)	€ Unit Price
					Cr (Dynamic) kN	Co (Static) kN		Ds (min)	Ds (max.)	dh (max.)	R (max.)		
SB6000DDU	10	26	8	0.3	3.9	1.58	22000	12	13	24	0.3	18	
SB6200DDU		30	9	0.6	4.35	1.91	18000	14	16	26	0.6	32	
SB6001DDU	12	28	8	0.3	4.35	1.89	18000	14	15.5	26	0.3	22	
SB6201DDU		32	10	0.6	5.8	2.44	17000	16	17	28	0.6	37	
SB6002DDU	15	32	9	0.3	4.75	2.27	15000	17	19	30	0.3	31	
SB6202DDU		335	11	0.6	6.5	2.98	14000	19	20.5	31	0.6	45	
SB6003DDU	17	35	10	0.3	5.1	2.6	13000	19	21.5	33	0.3	41	
SB6203DDU		40	12	0.6	8.15	3.85	12000	21	23.5	36	0.6	67	
SB6004DDU	20	42	12	0.6	7.95	4	11000	24	25.5	38	0.6	68	
SB6204DDU		47	14	1	10.9	5.25	11000	25	26.5	42	1	107	
SB6005DDU	25	47	12	0.6	8.55	4.65	9500	29	30	43	0.6	79	
SB6205DDU		52	15	1	11.9	6.3	9000	30	32	47	1	129	
SB6006DDU	30	55	13	1	11.3	6.6	8000	35	36.5	50	1	116	
SB6206DDU		62	16	1	16.5	9.05	7500	35	38.5	57	1	199	
SB6007DDU	35	62	14	1	13.6	8.2	6700	40	41.5	57	1	151	
SB6207DDU		72	17	1.1	21.8	12.2	6300	41.5	44.5	65.5	1	284	
SB6008DDU	40	68	15	1	14.2	9.25	6000	45	47.5	63	1	190	
SB6208DDU		80	18	1.1	24.8	14.3	5600	46.5	50.5	73.5	1	366	

kgf=Nx0.101972

Order Example

Part Number

SB6004DDU

Days to Ship

8 Days

Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round off less than one yen.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

■Structure and Features of Ball Bearings

Type	Open Type	Double Shielded	Non-contact Sealed	Contact Sealed
Friction Torque	Low	Low	Low	Large Due to seal contact
High Speed	○	○	○	Δ
Dust Resistance	X	Δ	○	◎
Water Resistance	X	X	X	○ Usable in the conditions of exposure to water splashes
Operation Temperature	-10 ~ +100°C	-10 ~ +110°C		-10 ~ +100°C

The table above is for reference to compare the four shapes.
◎: Excellent ○: Good Δ:Questionable X:Poor

Small Deep Groove Ball Bearings

-Double Shielded-

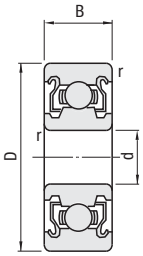
Price Reduction
Average 21%

CAD Data

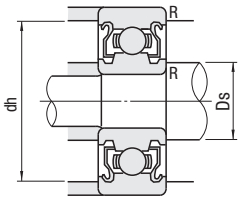


RoHS

B6_ _ZZ
B6_ _AZZ
BR_ _ZZ
BR_ _ _ZZ



(Installation Diagram)



Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
B682ZZ	2	5	2.3	0.08	169	50	85000	2.7	3.9	0.08	0.17	
B692ZZ		6	3.0	0.15	330	98	75000	3.0	4.8	0.15	0.38	
B602ZZ		7	3.5		385	127	60000	3.2	5.8	0.15	0.58	
B682AZZ	2.5	6	2.6	0.08	208	74	71000	3.7	4.9	0.08	0.29	
B692AZZ		7	3.5	0.15	385	127	63000	3.85	5.65	0.15	0.55	
B673ZZ	3	6	2.5	0.1	208	74	71000	3.6	5.4	0.08	0.2	
B683ZZ		7	3	0.1	390	130	63000	3.9	5.8	0.1	0.45	
B693ZZ		8	4	0.15	560	179	60000	4.2	6.8	0.15	0.83	
B603ZZ		9	5	0.15	570	187	56000		7.8	0.15	1.45	
B623ZZ		10	4		630	218	50000		8.8	0.15	1.66	
B633ZZ		13	5	0.2	1300	485	40000	4.6	11.4	0.2	3.33	
B674ZZ	4	7	2.5	0.1	222	88	60000	4.6	6.4	0.08	0.29	
B684ZZ		9	4	0.1	640	224	53000	5.0	7.8	0.1	1.01	
B694ZZ		11		0.15	715	276	48000	5.2	9.8	0.15	1.75	
B604ZZ		12		0.2	957	350	48000	5.6	10.4	0.2	2.29	
B624ZZ		13	5		1300	485	40000	5.6	11.4	0.2	3.04	
B634ZZ		16		0.3	1340	523	36000	6	14	0.3	5.21	
B675ZZ	5	8	2.5	0.1	218	131	53000	5.8	7.4	0.1	0.34	
B685ZZ		11	5	0.15	715	281	45000	6.2	9.8	0.2	1.96	
B695ZZ		13	4	0.2	1080	430	43000	6.6	11.4		2.5	
B605ZZ		14	5		1330	505	40000		12.4		3.48	
B625ZZ		16		0.3	1730	670	36000	7	14	0.3	4.86	
B635ZZ		19	6		2336	835	32000	7	17		8.34	
B676ZZ	6	10	3	0.1	495	218	45000	7.04	9.3	0.1	0.68	
B686ZZ		13	5	0.15	1080	440	40000	7.0	11.8	0.2	2.69	
B696ZZ		15		0.2	1350	530	40000	7.6	13.4		3.72	
B606ZZ		17	6	0.3	2190	835	38000	8	15	0.3	6.08	
B626ZZ		19			2340	885	32000		17		7.94	
B636ZZ		22	7		3333	1423	30000	8	20		14.5	
B678ZZ	8	12	3.5	0.1	543	274	40000	9.05	11.33	0.1	0.97	
B688ZZ		16	5	0.2	1610	710	36000	9.6	14.4	0.2	4.02	
B698ZZ		19	6	0.3	1990	865	36000	10	17	0.3	7.18	
B608ZZ		22	7		3350	1400	34000		20		12	
B628ZZ		24	8		4000	1590	28000		22		17	
B638ZZ		28	9		4563	1983	28000	10	26		30.3	

Semi-standard Size

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
BR52ZZ	2	5	2.5	0.1	169	50	85000	2.7	4.4	0.1	0.23	
BR62ZZ		6	2.5	0.15	330	98	75000	3	5.4	0.15	0.29	
BR72ZZ		7	3.0	0.15	385	127	63000	3.15	6.2	0.15	0.49	
BR93ZZ	3	9	4	0.15	570	187	56000	4.35	7.9	0.15	1.18	
BR84ZZ	4	8	3	0.1	395	139	56000	5	7.4	0.15	0.56	
BR104ZZ		10	4	0.15	710	270	48000	5.9	8.8	0.2	1.42	
BR95ZZ	5	9	3	0.15	430	168	50000	6	8.4	0.15	0.58	
BR105ZZ		10	4	0.15	430	168	50000	6	8.4	0.15	1.29	
BR115ZZ		11	4	0.15	715	276	45000	6.81	9.9	0.15	1.5	
BR126ZZ	6	12	4	0.15	715	292	43000	7.2	10.9	0.2	1.74	
BR148ZZ	8	14	4	0.15	817	386	38000	9.26	12.8	0.15	2.16	

kgf=Nx0.101972

Order Example — Part Number: B626ZZ

Days to Ship: 6 Days / 2 Days

P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Small Stainless Steel Deep Groove Ball Bearings
-Double Shielded-

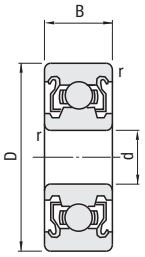
Price Reduction
Average 37%

CAD Data

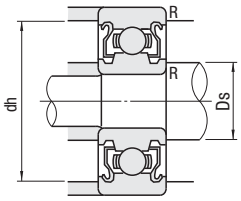


RoHS

SB6_ _ZZ
SB6_ _AZZ
SBR_ _ZZ
SBR_ _ _ZZ



(Installation Diagram)



M Material: 1.4125/X105CrMo17
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
SB682ZZ	2	5	2.3	0.08	143	40	85000	2.7	3.9	0.08	0.17	
SB692ZZ		6	3.0	0.15	281	79	75000	3.0	4.8	0.15	0.38	
SB602ZZ		7	3.5		328	102	60000	3.2	5.8		0.58	
SB682AZZ	2.5	6	2.6	0.08	178	59	71000	3.7	4.9	0.08	0.29	
SB692AZZ		7	3.5	0.15	328	102	63000	3.85	5.65	0.15	0.55	
SB673ZZ	3	6	2.5	0.1	178	59	71000	3.6	5.4	0.08	0.2	
SB683ZZ		7	3	0.1	331	104	63000	3.9	5.8	0.1	0.45	
SB693ZZ		8	4	0.15	474	144	60000	4.2	6.8	0.15	0.83	
SB603ZZ		9	5	0.15	485	151	56000	4.2	7.8	0.15	1.45	
SB623ZZ		10	4	0.15	536	175	50000		8.8		1.66	
SB633ZZ		13	5	0.2	1105	388	40000	4.6	11.4	0.2	3.33	
SB674ZZ	4	7	2.5	0.1	217	86	60000	4.6	6.4	0.08	0.28	
SB684ZZ		9	4	0.1	544	179	53000	5.0	7.8	0.1	1.01	
SB694ZZ		11		0.15	607	220	48000	5.2	9.8	0.15	1.75	
SB604ZZ		12	5	0.2	813	276	48000	5.6	10.4	0.2	2.29	
SB624ZZ		13			1105	386	40000	5.6	11.4	0.2	3.04	
SB634ZZ		16		0.3	1139	418	36000	6	14	0.3	5.21	
SB675ZZ	5	8	2.5	0.1	174	72	53000	5.8	7.4	0.1	0.34	
SB685ZZ		11	5	0.15	607	225	45000	6.2	9.8	0.2	1.96	
SB695ZZ		13	4	0.2	915	344	43000	6.6	11.4		2.5	
SB605ZZ		14	5		1105	404	40000		12.4		3.48	
SB625ZZ		16		0.3	1470	536	36000	7	14	0.3	4.86	
SB635ZZ		19	6		1986	708	32000	7	17		8.34	
SB676ZZ	6	10	3	0.1	396	174	45000	7.04	9.3	0.1	0.68	
SB686ZZ		13	5	0.15	918	352	40000	7.0	11.8	0.2	2.69	
SB696ZZ		15		0.2	1139	418	40000	7.6	13.4		3.72	
SB606ZZ		17	6	0.3	1921	668	38000	8	15	0.3	6.08	
SB626ZZ		19			1986	708	32000		17		7.94	
SB636ZZ		22	7		2833	1138	30000	8	20		14.5	
SB678ZZ	8	12	3.5	0.1	434	219	40000	9.05	11.33	0.1	0.97	
SB688ZZ		16	5	0.2	1368	568	36000	9.6	14.4	0.2	4.02	
SB698ZZ		19	6	0.3	1901	728	36000	10	17	0.3	7.18	
SB608ZZ		22	7		2799	1103	34000		20		12	
SB628ZZ		24	8		2833	1138	28000		22		17	
SB638ZZ		28	9		3879	1586	28000	10	26		30.3	

Semi-standard Size

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
SBR52ZZ	2	5	2.5	0.1	144	40	85000	2.7	4.4	0.1	0.23	
SBR62ZZ		6		0.15	281	79	75000	3	5.4	0.15	0.29	
SBR72ZZ		7	3	0.15	328	102	63000	3.15	6.2	0.15	0.49	
SBR93ZZ	3	9	4	0.15	485	150	56000	4.35	7.9	0.15	1.18	
SBR84ZZ	4	8	3	0.1	336	111	56000	5	7.4	0.15	0.56	
SBR104ZZ		10	4	0.15	604	216	48000	5.9	8.8	0.2	1.42	
SBR95ZZ	5	9	3	0.15	366	135	50000	6	8.4	0.15	0.58	
SBR105ZZ		10	4	0.15	366	135	50000	6	8.4	0.15	1.29	
SBR115ZZ		11		0.15	608	221	45000	6.81	9.9	0.15	1.5	
SBR126ZZ	6	12		0.15	608	234	43000	7.2	10.9	0.2	1.74	
SBR148ZZ	8	14		0.15	694	308	38000	9.26	12.8	0.15	2.16	

kgf=Nx0.101972

Order Example — Part Number: SB636ZZ

Days to Ship: 6 Days / 2 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

NEW

Small Deep Groove Ball Bearings

-Economy Type Double Shielded / Non-contact Sealed / Contact Sealed-

Reduced Delivery Time

Price Reduction
Average 34%

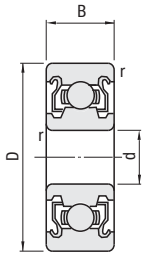
CAD Data

Features: Major overseas manufacturers' inexpensive Deep Groove Ball Bearings. Please use for sizeable loads transfer.

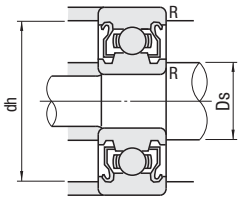
Economy Type Double Shielded RoHS



C6__ZZ



(Installation Diagram)



M Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
C693ZZ	3	8	4	0.15	560	180	54000	4.2	6.8	0.15	0.61	
C694ZZ	4	11	4	0.15	715	276	45000	5.2	9.8	0.15	2	
C624ZZ		13	5	0.2	1310	490	42000	5.6	11.4	0.2	3.5	
C685ZZ	5	11	5	0.15	715	282	43000	6.2	9.8	0.15	1.1	
C695ZZ		13	4	0.2	1080	430	40000	6.6	11.4	0.2	2.4	
C625ZZ		16	5	0.3	1760	680	37000	7	14	0.3	4.8	
C686ZZ	6	13	5	0.15	1080	440	39000	7	11.8	0.15	1.9	
C696ZZ		15		0.2	1350	530	37000	7.6	13.4	0.2	3.8	
C606ZZ		17	6	0.3	2190	865	35000	8	15	0.3	6	
C626ZZ		19			2340	885	34000		17		8.1	
C688ZZ	8	16	5	0.2	1610	715	35000	9.6	14.4	0.2	3.1	
C698ZZ		19	6	0.3	1990	865	33000	10	17	0.3	7.3	
C608ZZ		22	7		3300	1370	32000		20		12	
C628ZZ		24	8		4000	1590	31000		22		17	

kgf=Nx0.101972

Order Example: Part Number C608ZZ

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

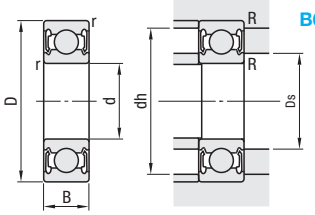
Quantity	1~29	30~100
Applicable Price	€ Unit Price	Volume Discount
	Price List	10%

For ordering up to 14 pcs (green cells) from 1 pc, "€ Unit Price + Small Order Charge (0,60 EUR/pc)" is applied.
[Calculation Example] When ordering 2 pcs of C6002ZZ, (€ Unit Price 0,60 EUR + Small Order Charge 0,80 EUR) x 2 pcs.=2,80 EUR
For orders larger than indicated quantity, please request a quotation.

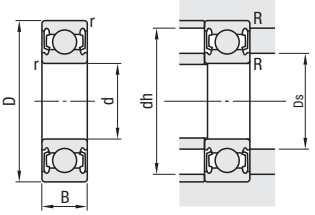
Non-contact Sealed RoHS
Contact Sealed



Non-contact Sealed
B6__VV



Contact Sealed
B6__DDU



M Material: 1.3505/100Cr6 *The material of rubber seal is NBR (Nitrile Rubber). Bearing Accuracy JIS B 1514 Class 0

Part Number: Non-contact Rubber Sealed	Part Number: Contact Rubber Sealed	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price: Non-contact Rubber Sealed	€ Unit Price: Contact Rubber Sealed
-	B693DDU	3	8	4	0.15	560	179	30000	4.20	6.8	0.15	0.83		
-	B623DDU		10			630	210	25000		8.8		1.66		
-	B694DDU	4	11	4	0.15	960	345	24000	5.20	9.8	0.15	1.75		
-	B604DDU		12	4	0.2	957	345	24000	5.60	10.4	0.20	2.29		
B624VV	B624DDU		13	5	0.2	1300	485	20000	5.60	11.4	0.20	3.04		
-	B695DDU	5	13	4	0.2	1080	430	40000	6.60	11.4	0.20	2.5		
-	B605DDU		14	5		1330	505	38000		12.4		3.48		
B625VV	B625DDU		16		0.3	1730	670	32000	7.00	14.0	0.30	4.86		
B696VV	B696DDU	6	15	5	0.2	1350	530	36000	7.60	13.4	0.20	3.72		
-	B606DDU		17	6	0.3	2260	835	34000	8.00	15.0	0.30	6.08		
B626VV	B626DDU		19			2340	885	30000		17.0		7.94		
B698VV	B698DDU	8	19	6	0.3	1990	865	30000	10.00	17.0	0.30	7.18		
B608VV	B608DDU		22	7		3530	1400	17000		20.0		12		
B628VV	B628DDU		24	8		4000	1590	14000		22.0		17		

kgf=Nx0.101972

Order Example: Part Number B624DDU

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

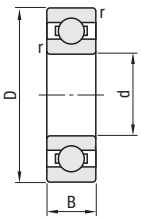
Small Deep Groove Ball Bearings
-Open-

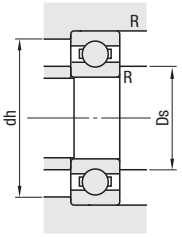
CAD Data

■Open Type RoHS



B6__
BR__
BR__





Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Shipped with no grease applied. Please apply grease when using.

Part Number	d	D	B	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions			Mass (g) (Reference)	€ Unit Price
					Cr (Dynamic) N	Co (Static) N		Ds (min)	dh (max.)	R (max.)		
B683	3	7	2	0.1	311	112	63000	3.85	6.35	0.1	0.32	
B603		9	3	0.15	571	189	56000	4.35	7.9	0.15	0.84	
B623		10	4	0.15	631	219	50000	4.35	7.98	0.15	1.45	
B634	4	16	5	0.3	1340	523	36000	6.7	13	0.3	5.24	
B605	5	14	5	0.2	1329	507	40000	6.9	12.2	0.2	3.46	
B625		16	5	0.3	1729	675	36000	7.5	13.8	0.3	4.95	
B606	6	17	6	0.3	2263	846	38000	8.2	14.8	0.3	5.94	
B626		19	6	0.3	2336	896	32000	8.5	16.5	0.3	8.12	
B608	8	22	7	0.3	3293	1379	34000	10.5	19.03	0.3	11.8	
B628		24	8	0.3	3333	1423	28000	11.9	19.9	0.3	17.1	

Part Number	d	D	B	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions			Mass (g) (Reference)	€ Unit Price
					Cr (Dynamic) N	Co (Static) N		Ds (min)	dh (max.)	R (max.)		
BR63	3	6	2	0.1	209	74	71000	3.7	4.9	0.1	0.2	
BR74	4	7	2	0.1	311	115	60000	4.75	6.25	0.1	0.23	
BR84		8	2	0.15	395	141	56000	5	6.8	0.1	0.39	
BR104		10	3	0.2	711	272	48000	6.15	8.35	0.15	0.96	
BR85	5	8	2	0.1	308	120	53000	5.75	7.25	0.1	0.25	
BR95		9	2.5	0.15	431	169	50000	6	7.8	0.15	0.54	
BR105		10	3	0.15	431	169	50000	6	0.78	0.15	0.91	
BR106	6	10	2.5	0.15	496	218	45000	7.04	8.9	0.1	0.55	
BR126		12	3	0.2	714	295	43000	7.73	10.19	0.15	1.25	
BR128	8	12	2.5	0.15	543	274	40000	9.05	10.9	0.1	0.7	
BR148		14	3.5	0.2	817	386	38000	9.86	12.19	0.15	1.9	

kgf=Nx0.101972

Order Example

Part Number
B605
BR126

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

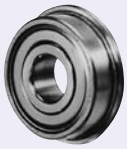
Small Deep Groove Ball Bearings with Flange

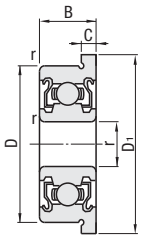
-Double Shielded-

CAD Data

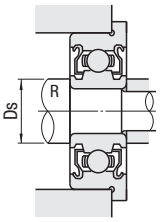
RoHS

FL6_ _ZZ
FL6_ _AZZ
MFL1_ _ZZ





(Installation Diagram)



M Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	D1	C	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions		Mass (g) (Reference)	€ Unit Price
							Cr (Dynamic) N	Cor (Static) N		Ds (min)	R (max.)		
FL682ZZ	2	5	2.3	6.1	0.6	0.08	169	50	85000	2.7	0.08	0.22	
FL692ZZ		6	3.0	7.5	0.8	0.15	330	98	75000	3.0	0.15	0.48	
FL682AZZ	2.5	6	2.6	7.1	0.8	0.15	208	74	71000	3.7	0.08	0.36	
FL692AZZ		7	3.5	8.5	0.9	0.08	385	127	63000	3.85	0.15	0.68	
FL673ZZ	3	6	2.5	7.2	0.6	0.1	208	74	71000	3.6	0.08	0.33	
FL683ZZ		7	3	8.1	0.8	0.1	390	130	63000	3.9	0.1	0.53	
FL693ZZ		8	4	9.5	0.9	0.15	560	179	60000	4.2	0.15	0.97	
FL603ZZ		9	5	10.5	1		570	187	56000			1.63	
FL623ZZ		10	4	11.5	1	0.15	630	218	50000			1.86	
FL674ZZ	4	7	2.5	8.2	0.6	0.1	222	88	60000	4.6	0.08	0.35	
FL684ZZ		9	4	10.3	1	0.1	640	224	53000	5.0	0.1	1.14	
FL694ZZ		11		12.5	1	0.15	715	276	48000	5.2	0.15	1.96	
FL604ZZ		12		13.5		0.2	957	345	48000	5.6	0.2	2.53	
FL624ZZ		13	5	15			1300	485	40000		0.2	3.53	
FL675ZZ	5	8	2.5	9.2	0.6	0.1	217	91	53000		0.08	0.41	
FL685ZZ		11	5	12.5	1	0.15	715	281	45000	6.2	0.15	2.18	
FL695ZZ		13	4	15		0.2	1080	430	43000	6.6	0.2	2.84	
FL605ZZ		14	5	16			1330	505	40000			3.85	
FL625ZZ		16	5	18		0.3	1729	670	36000	7.7	0.3	5.3	
FL676ZZ	6	10	3	11.2	0.6	0.1	465	196	45000	6.6	0.1	0.77	
FL686ZZ		13	5	15	1.1	0.15	1080	440	40000	7.0	0.15	3.04	
FL696ZZ		15		17	1.2	0.2	1350	530	40000	7.6	0.2	4.26	
FL606ZZ		17	6	19		0.3	2190	835	38000	8	0.3	6.61	
FL626ZZ		19	6	22	1.5		2336	885	32000	8		9.09	
FL678ZZ	8	12	3.5	13.6	0.8	0.1	515	252	40000	8.8	0.1	1.15	
FL688ZZ		16	5	18	1.1	0.2	1610	710	36000	9.6	0.2	4.47	
FL698ZZ		19	6	22	1.5	0.3	1990	865	36000	10	0.3	8.3	
FL608ZZ		22	7	25			3350	1400	34000			13	
FL6700ZZ	10	15	4	16.5	0.8	0.15	855	435	15000	10.3	0.15	2.1	
FL6800ZZ		19	5	21	1	0.3	1716	840	37000	12	0.3	6.1	
FL6900ZZ		22	6	25	1.5		2695	1273	34000	13.2		11.1	
FL6701ZZ	12	18	4	19.5	0.8	0.2	926	530	13000	12.4	0.2	3.4	
FL6801ZZ		21	5	23	1.1	0.3	1915	1041	33000	14	0.3	7.1	
FL6901ZZ		24	6	26.5	1.5		2886	1466	31000	14		13.2	
FL6702ZZ	15	21	4	22.5	0.8	0.2	937	582	11000	15.4	0.2	3.9	
FL6802ZZ		24	5	26	1.1	0.3	2073	1253	28000	17	0.3	8.3	
FL6902ZZ		28	7	30.5	1.5		4321	2259	26000	17		19.9	
FL6703ZZ	17	23	4	24.5	0.8	0.2	1000	658	9500	17.4	0.2	4.4	
FL6803ZZ		26	5	28	1.1	0.3	2233	1456	26000	19	0.3	8.9	
FL6903ZZ		30	7	32.5	1.5		4588	2565	23000	19		21.4	
FL6704ZZ	20	27	4	28.5	0.8	0.2	1041	729	8500	20.4	0.2	6.3	
FL6804ZZ		32	7	35	1.5	0.3	4015	2462	21000	22	0.3	19.8	
FL6904ZZ		37	9	40	2		6381	3682	19000	22		42.8	
FL6805ZZ	25	37	7	40	1.5	0.3	4303	2932	18000	27	0.3	26.1	
FL6905ZZ		42	9	45	2		7001	4540	16000	27		50.2	

■Semi-standard Size

Part Number	d	D	B	D1	C	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions		Mass (g) (Reference)	€ Unit Price
							Cr (Dynamic) N	Cor (Static) N		Ds (min)	R (max.)		
MFL104ZZ	4	10	4	11.6	0.8	0.15	710	270	48000	5.9	0.2	1.5	
MFL105ZZ	5	10	4	11.6	0.8	0.15	430	168	50000	6	0.15	1.38	
MFL126ZZ	6	12	4	13.6	0.8	0.15	715	292	43000	7.2	0.15	1.86	
MFL148ZZ	8	14	4	15.6	0.8	0.15	817	385	38000	9.26	0.15	2.42	

kgf=Nx0.101972

Order Example

Part Number
FL606ZZ
FL6702ZZ

Days to Ship

6 Days
2 Days

P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Small Stainless Steel Deep Groove Ball Bearings with Flange -Double Shielded-

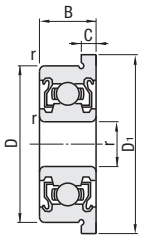
Price Reduction
Up to 41%

CAD Data

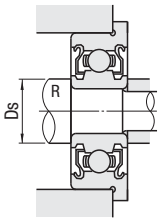


RoHS

SFL6_ _ZZ
SMFL1_ _ZZ



(Installation Diagram)



Material: 1.4125/X105CrMo17
Bearing Accuracy JIS B 1514 Class 0

Part Number	d	D	B	D1	C	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
SFL682ZZ	2	5	2.3	6.1	0.6	0.08	143	40	85000	2.7	0.08	0.22	
SFL692ZZ		6	3.0	7.5	0.8	0.15	281	79	75000	3.0	0.15	0.48	
SFL602ZZ		7	3.5	8.5	0.9		328	102	60000	3.2	0.15	0.71	
SFL682AZZ	2.5	6	2.6	7.1	0.8	0.08	178	59	71000	3.7	0.08	0.36	
SFL692AZZ		7	3.5	8.5	0.9	0.15	328	102	63000	3.85	0.15	0.68	
SFL673ZZ	3	6	2.5	7.2	0.6	0.1	177	59	71000	3.6	0.08	0.33	
SFL683ZZ		7	3	8.1	0.8	0.1	331	104	63000	3.9	0.1	0.53	
SFL693ZZ		8	4	9.5	0.9	0.15	474	144	60000	4.2	0.15	0.97	
SFL603ZZ		9	5	10.5	1		485	151	56000			1.63	
SFL623ZZ		10	4	11.5	1	0.15	536	175	50000			1.86	
SFL674ZZ	4	7	2.5	8.2	0.6	0.1	217	86	60000	4.6	0.08	0.35	
SFL684ZZ		9	4	10.3	1	0.1	544	179	53000	5.0	0.1	1.14	
SFL694ZZ		11		12.5		0.15	545	182	48000	5.2	0.15	1.96	
SFL604ZZ		12		13.5	1	0.2	813	276	48000	5.6	0.2	2.53	
SFL624ZZ		13	5	15			1105	388	40000		0.2	3.53	
SFL675ZZ	5	8	2.5	9.2	0.6	0.08	185	72	53000		0.08	0.41	
SFL685ZZ		11	5	12.5	1	0.15	607	225	45000	6.2	0.15	2.18	
SFL695ZZ		13	4	15		0.2	915	344	43000	6.6	0.2	2.84	
SFL605ZZ		14	5	16			1105	404	40000			3.85	
SFL625ZZ		16	5	18		0.3	1469	536	36000	7.7	0.3	5.3	
SFL676ZZ	6	10	3	11.2	0.6	0.1	421	174	45000	6.6	0.1	0.77	
SFL686ZZ		13	5	15	1.1	0.15	918	352	40000	7.0	0.15	3.04	
SFL696ZZ		15		17	1.2	0.2	1139	418	40000	7.6	0.2	4.26	
SFL606ZZ		17	6	19		0.3	1921	668	38000	8	0.3	6.61	
SFL626ZZ		19	6	22	1.5		1985	708	32000	8		9.09	
SFL678ZZ	8	12	3.5	13.6	0.8	0.1	462	219	40000	8.8	0.1	1.15	
SFL688ZZ		16	5	18	1.1	0.2	1368	568	36000	9.6	0.2	4.47	
SFL698ZZ		19	6	22	1.5	0.3	1901	728	36000	10	0.3	8.3	
SFL608ZZ		22	7	25			2799	1103	34000			13	
SFL6700ZZ	10	15	4	16.5	0.8	0.15	684	348	15000	10.3	0.15	2.1	
SFL6800ZZ		19	5	21	1	0.3	1459	672	37000	12	0.3	6.1	
SFL6900ZZ		22	6	25	1.5		2156	1018	34000	13.2		11.1	
SFL6701ZZ	12	18	4	19.5	0.8	0.2	787	424	13000	12.4	0.2	3.4	
SFL6901ZZ		24	6	26.5	1.5	0.3	2453	1173	31000	14	0.3	13.2	
SFL6702ZZ	15	21	4	22.5	0.8	0.2	796	466	11000	15.4	0.2	3.9	
SFL6802ZZ		24	5	26	1.1	0.3	1762	1002	28000	17	0.3	8.3	
SFL6902ZZ		28	7	30.5	1.5		3672	1807	26000	17		19.9	

■Semi-standard Size

Part Number	d	D	B	D1	C	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
SMFL104ZZ	4	10	4	11.6	0.8	0.15	604	216	50000	5.9	0.2	1.5	
SMFL105ZZ	5	10	4	11.6	0.8	0.15	366	135	50000	6	0.15	1.38	
SMFL126ZZ	6	12	4	13.6	0.8	0.15	608	234	43000	7.2	0.15	1.86	
SMFL148ZZ	8	14	4	15.6	0.8	0.15	694	308	38000	9.26	0.15	2.42	

kgf=Nx0.101972

Order Example

Part Number
SFL606ZZ
SFL6702ZZ

Days to Ship
6 Days
2 Days

P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

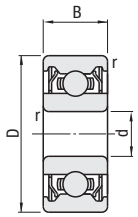
Low Particulate Grease Bearings

CAD Data

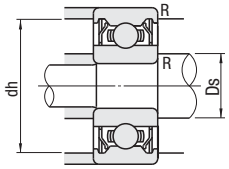
RoHS

SBC6_ _ZZ
SBC6_ _ _ZZ





(Installation Diagram)



Inner and Outer Ring		Shield	Rolling Element	Retainer
M Material	H Hardness	M Material	M Material	M Material
1.4125/X105CrMo17	57~63HRC	1.4301/X5CrNi18-10	1.4125/X105CrMo17	*1.4301/X5CrNi18-10

Bearing Accuracy JIS B 1514 Class 0

* For SBC673, 674, 675 and 676, Retainer material is 1.4301/X5CrNi18-10 or 1.4031/X38Cr13.

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Ref.)	€ Unit Price
SBC673ZZ	3	6	2.5	0.08	177	59	71000	3.6	5.4	0.08	0.27	
SBC683ZZ		7	3	0.1	331	104	63000	3.9	5.8	0.1	0.45	
SBC693ZZ		8	4	0.15	476	144	60000	4.2	6.8	0.15	0.83	
SBC623ZZ		10			536	175	50000		8.8		1.66	
SBC674ZZ	4	7	2.5	0.08	217	86	60000	4.6	6.4	0.08	0.29	
SBC684ZZ		9	4	0.15	544	179	53000	5	7.8	0.1	1.01	
SBC694ZZ		11			545	182	48000	5.2	9.8	0.15	1.75	
SBC624ZZ		13	5	0.2	1105	388	40000	5.6	11.4	0.2	3.04	
SBC675ZZ	5	8	2.5	0.08	185	72	53000	5.6	7	0.08	0.34	
SBC685ZZ		11	5	0.15	607	225	45000	6.2	9.8	0.15	1.96	
SBC695ZZ		13	4	0.2	915	344	43000	6.6	11.4	0.2	2.5	
SBC605ZZ		14	5		1105	404	40000		12.4		3.48	
SBC625ZZ		16		0.3	1470	536	36000	7	14	0.3	4.86	
SBC676ZZ	6	10	3	0.1	421	174	45000	6.6	8.9	0.1	0.68	
SBC686ZZ		13	5	0.15	918	352	40000	7	11.8	0.15	2.69	
SBC696ZZ		15		0.2	1139	418	40000	7.6	13.4	0.2	3.72	
SBC606ZZ		17	6	0.3	1921	668	38000	8	15	0.3	6.08	
SBC626ZZ		19			1986	708	32000		17		7.94	
SBC678ZZ	8	12	3.5	0.1	462	219	40000	8.8	10.9	0.1	0.97	
SBC688ZZ		16	5	0.2	1368	568	36000	9.6	14.4	0.2	4.02	
SBC698ZZ		19	6	0.3	1901	728	36000	10	17	0.3	7.18	
SBC608ZZ		22	7		2799	1103	34000		20		12	
SBC628ZZ		24	8		2833	1138	28000		22		17	

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Co (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Ref.)	€ Unit Price
SBC6900ZZ	10	22	6	0.3	2.7	1.25	34000	12	12.5	20	0.3	10	
SBC6000ZZ		26	8		4.55	1.95	31000	12	13	24		19	
SBC6200ZZ		30	9	0.6	5.1	2.4	24000	14	15	26	0.6	32	
SBC6901ZZ	12	24	6	0.3	2.9	1.45	31000	14	14	22	0.3	11	
SBC6001ZZ		28	8		5.1	2.4	27000	14	15	26		22	
SBC6201ZZ		32	10	0.6	6.8	3.05	22000	16	16.5	28	0.6	37	
SBC6902ZZ	15	28	7	0.3	4.3	2.25	26000	17	18	26	0.3	17	
SBC6002ZZ		32	9		5.6	2.85	23000	17	18.5	30		30	
SBC6202ZZ		35	11	0.6	7.65	3.75	20000	19	19.5	31	0.6	45	
SBC6903ZZ	17	30	7	0.3	4.6	2.55	23000	19	19.5	28	0.3	18	
SBC6003ZZ		35	10		6	3.25	21000	19	21	33		39	
SBC6203ZZ		40	12	0.5	9.55	4.8	17000	21	22	36	0.6	65	
SBC6904ZZ	20	37	9	0.3	6.35	3.7	19000	22	23.5	35	0.3	36	
SBC6004ZZ		42	12	0.6	9.4	5.05	17000	24	25	38	0.6	69	
SBC6204ZZ		47	14	1	12.8	6.65	15000	25	26.5	42	1	106	

kgf=Nx0.101972

Order Example

Part Number
SBC684ZZ
SBC6202ZZ

Days to Ship

6 Days
2 Days

P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~30	31~80
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Low Particulate Grease Bearings with Flange

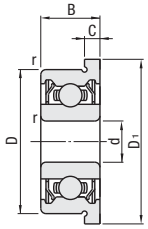
Reduced Delivery Time

CAD Data

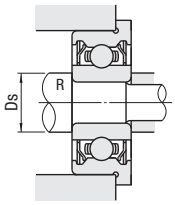
RoHS

SFLC6_ _ZZ





(Installation Diagram)



Inner and Outer Ring		Shield	Rolling Element	Retainer
M Material	H Hardness	M Material	M Material	M Material
1.4125/X105CrMo17	57~63HRC	1.4301/X5CrNi18-10	1.4125/X105CrMo17	*1.4301/X5CrNi18-10

Bearing Accuracy JIS B 1514 Class 0

* For SFLCC673, 674, 675 and 676, Retainer material is 1.4301/X5CrNi18-10 or 1.4031/X38Cr13.

Part Number	d	D	B	D1	C	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions R (max.)	Mass (g) (Ref.)	€ Unit Price
SFLC673ZZ	3	6	2.5	7.2	0.6	0.1	177	59	71000	3.6	0.08	0.33	
SFLC683ZZ		7	3	8.1	0.8	0.1	331	104	63000	3.9	0.1	0.53	
SFLC693ZZ		8	4	9.5	0.9	0.15	474	144	60000	4.2	0.15	0.97	
SFLC623ZZ		10		11.5	1		536	175	50000			1.86	
SFLC674ZZ	4	7	2.5	8.2	0.6	0.1	217	86	60000	4.6	0.08	0.35	
SFLC684ZZ		9	4	10.3	1	0.1	544	179	53000	5	0.1	1.14	
SFLC694ZZ		11		12.5		0.15	545	182	48000	5.2	0.15	1.96	
SFLC624ZZ		13	5	15		0.2	1105	388	40000	5.6	0.2	3.53	
SFLC675ZZ	5	8	2.5	9.2	0.6	0.1	185	72	53000	5.6	0.08	0.41	
SFLC685ZZ		11	5	12.5	1	0.15	607	225	45000	6.2	0.15	2.18	
SFLC695ZZ		13	4	15		0.2	915	344	43000	6.6	0.2	2.84	
SFLC605ZZ		14	5	16			1105	404	40000			3.85	
SFLC625ZZ		16		18		0.3	1470	536	36000	7	0.3	5.3	
SFLC676ZZ	6	10	3	11.2	0.6	0.1	421	174	45000	6.6	0.1	0.77	
SFLC686ZZ		13	5	15	1.1	0.15	918	352	40000	7	0.15	3.04	
SFLC696ZZ		15		17	1.2	0.2	1139	418	40000	7.6	0.2	4.26	
SFLC606ZZ		17	6	19		0.3	1921	668	38000	8	0.3	6.61	
SFLC626ZZ		19		22	1.5		1986	708	32000			9.09	
SFLC678ZZ	8	12	3.5	13.6	0.8	0.1	462	219	40000	8.8	0.1	1.15	
SFLC688ZZ		16	5	18	1.1	0.2	1368	568	36000	9.6	0.2	4.47	
SFLC698ZZ		19	6	22	1.5	0.3	1901	728	36000	10	0.3	8.3	
SFLC608ZZ		22	7	25			2799	1103	34000			13	

kgf=Nx0.101972

Order Example

Part Number

SFLC623ZZ

Days to Ship

6 Days

P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~30	31~80
Rate	€ Unit Price	5%	10%

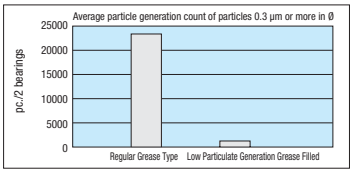
For orders larger than indicated quantity, please request a quotation.

Comparison of Low Particulate Characteristics of Ball Bearings (1) Grease Performance and Operating Environment

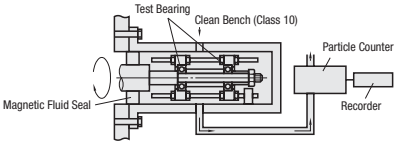
		Regular Grease B6_ _ _ZZ SB6_ _ _ZZ	Low Particulate Generation Grease Filled SBC6_ _ZZ SFLC6_ _ZZ	Low Particulate Generation Grease Filled SBC6_ _ _ZZ
Grease Performance	Thickener	Lithium Soap	Lithium Soap	Lithium Soap
	Base Oil	Mineral Oil	Synthetic Oil	Poly α-Olefin
	Base Oil Dynamic Viscosity (40°C, mm²/s)	26	100	25
	Worked Penetration	270	315	181
	Dropping Point (°C)	170~190	216	203
	Evaporation (wt%)	0.32 (99°C x 22h)	0.43 (99°C x 22h)	0.14 (99°C x 22h)
	Separation (100°C x 24h, wt%)	2.9	0.57	0.1
Operation Temp. (°C)	In air	-25~+120	-10~+80	-10~+80
	In Vacuum	Unsuitable	Unsuitable	Unsuitable

(2) Comparison of Particulate Generation Characteristics

*Data below are for reference, not guaranteed.



Evaluation Conditions
Bearings 6205 Open
5 to 10% of dynamic load rating
Rotational Speed: 450rpm
Environment: In air
Inside a clean bench (Class 10)
Temp.: Room temperature
* Test Equipment Overview



1.4301/X5CrNi18-10, Non-grease, Non-oil Ball Bearings for Special Environment

CAD Data File Name: UB_ _ _ _ZZ.dxf
Part Number without S

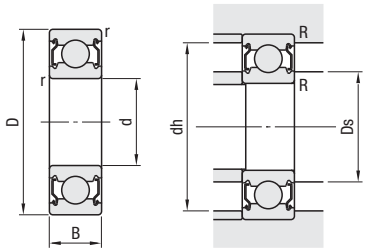
■1.4301/X5CrNi18-10 Ball Bearings
(Water Resistant – Heat Resistant Type)

RoHS



SUB6_ _ _ZZ

(Installation Diagram)



Operation Temperature: -40 ~ +150°C
1.4301/X5CrNi18-10 may be magnetized by machining.

Components	Material
Inner · Outer Ring, Shield Retainer, Ball	1.4301/X5CrNi18-10

Part Number	d	Tolerance	D	Tolerance	B	Tolerance	r (min)	Basic Load Rating Cr (Dynamic) N	Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Ds (max.)	dh (max.)	R (max.)	Mass(g) (Reference)	€ Unit Price
SUB626ZZ	6	+0.05 0	19	0 -0.03	6	0 -0.12	0.3	52	32	2100	8	10	17	0.3	8.2	
SUB608ZZ	8		22		7			66	41	2000	10	11.5	20		12	
SUB628ZZ			24		8			67	42	1900		12	22		18	
SUB6000ZZ	10		26					91	59	1800	12	13.5	24		19	
SUB6200ZZ			30		9		0.6	102	72	1500	14	16	26	0.6	32	
SUB6001ZZ	12		28		8		0.3			1500				0.3	21	
SUB6201ZZ			32	0 -0.035	10		0.6	136	92	1500	16	17	28	0.6	37	
SUB6002ZZ	15				9		0.3	112	85	1300	17	19	30		30	
SUB6202ZZ			35		11		0.6	153	113	1300	19	20	31		46	
SUB6003ZZ	17				10		0.3	120	98	1200		21	33		41	
SUB6203ZZ			40		12		0.6	192	144	1100	21	22	36		66	
SUB6004ZZ	20		42		12			188	152	1000	24	25	38		68	
SUB6204ZZ			47		14		1.0	256	200	900	25	27	42	1.0	105	

kgf=Nx0.101972

■Non-grease Non-oil Ball Bearings

RoHS



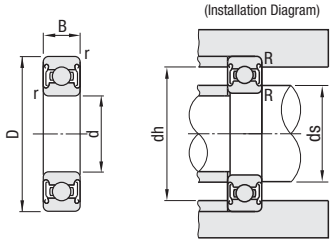


Clean Type
SE6_ _ZZPR
SE600_ZZPR
SE620_ZZPR

Vacuum Type
3NC600_ZZST

Highly Corrosion Resistant Type
3NC600_ZZMD

(Installation Diagram)



Bearing Accuracy JIS B 1514 Class 0
Bearing Internal Clearance C3
Operation Temperature -100 ~ +200°C
Operating Vacuum Level 10^{-5}Pa

Type	Inner and Outer Ring Material	Inner and Outer Ring Hardness	Shield Material	Rolling Element Material	Retainer Material
SE ZZPR	1.4125/X105CrMo17 (Special Fluoro Macromolecule Coating)	60HRC	1.4301/X5CrNi18-10	1.4125/X105CrMo17 (Special Fluoro Macromolecule Coating)	1.4301/X5CrNi18-10 (Special Fluoro Macromolecule Coating)
3NC ZZST	1.4125/X105CrMo17			Ceramics (Si3N4/Siliziumnitrid)	Fluoropolymer
3NC ZZMD	1.4542/X5CrNiCuNb16-4	40HRC			

Part Number: Clean Type	Vacuum Type	Highly Corrosion Resistant Type	d	D	B	r (min)	Allowable Radial Load N: SE6 Type	3NC Type	Allowable Rotational Speed rpm (Reference)	Relative Dimensions: Ds (min.)	Ds (max.)	dh (max.)	R (max.)	Mass(g): SE_ZZPR	3NC_ZZST	3NC_ZZMD	€ Unit Price: SE_ZZPR	3NC_ZZST	3NC_ZZMD
SE624ZZPR	-	-	4	13	5	0.2	40	-	1000	5.6	6.9	11.4	0.2	2.93	-	-			
SE626ZZPR	-	-	6	19	6	0.3	80	-	1000	8	10.6	17	0.3	7.90	-	-			
SE608ZZPR	-	-	8	22	7	0.3	100	-	1000	10	12.4	20	0.3	11.81	-	-			
SE6000ZZPR	3NC6000ZZST	3NC6000ZZMD	10	26	8	0.3	135	35	1000	12	13	24	0.3	19	16	17			
SE6200ZZPR	-	-		30	9	0.6	155	50	860	14	15	26	0.6	32	-	-			
SE6001ZZPR	3NC6001ZZST	3NC6001ZZMD	12	28	8	0.3	155	40	830	14	15	26	0.3	20	17	18			
SE6201ZZPR	-	-		32	10	0.6	205	70	770	16	16.5	28	0.6	36	-	-			
SE6002ZZPR	3NC6002ZZST	3NC6002ZZMD	15	32	9	0.3	170	45	660	17	18.5	30	0.3	30	26	27			
SE6202ZZPR	-	-		35	11	0.6	230	75	610	19	19.5	31	0.6	44	38	-			
SE6004ZZPR	3NC6004ZZST	-	20	42	12	0.6	280	70	500	24	25	38	0.3	63	56	-			
SE6204ZZPR	-	-		47	14	1.0	385	130	450	25	26.5	42	0.6	105	92	-			

Priority is given to the life of solid lubricant (Fluoro Plastic Retainer). Use within the allowable load range.
Allowable Rotational Speed is based on 1/2 of Allowable Load.
kgf=Nx0.101972

Order Example
Part Number
SUB6000ZZ
3NC6000ZZST

Days to Ship
• 1.4301/X5CrNi18-10 Ball Bearings: 8 Days
• Non-grease, Non-oil Ball Bearings: 6 Days P.87

Express A 2,00 EUR0/ piece P.87
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~30
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

■Performance Comparison of Bearings for Special Environments

Part Number	Inner · Outer Ring	Shield	Rolling Element	Retainer	Low Particulate Generation	Abrasion Resistance	Corrosion Resistance and Chemical Resistance: Acid: Hydrochloric Acid	Acid: Sulfuric Acid	Acid: Nitric Acid	Alkali	Solvent	Seawater	Water	Heat Resistance	Vacuum	Insulation	Non-magnetic	High Load	High Speed
SE6_ _ZZPR	1.4125/X105CrMo17 (Special Fluoro Macromolecule Coating)	1.4301/X5CrNi18-10	1.4125/X105CrMo17 (Special Fluoro Macromolecule Coating)	1.4301/X5CrNi18-10 (Special Fluoro Macromolecule Coating)	◎	×	×	×	×	×	×	×	×	00 (-100°C ~ 200°C)	◎	×	×	△	×
3NC6_ _ZZST	1.4125/X105CrMo17	1.4301/X5CrNi18-10	Ceramics	Fluoropolymer	○	×	△	○	○	○	○	○	◎	00 (-100°C ~ 200°C)	◎	◎	×	×	×
3NC6_ _ZZMD	1.4542/X5CrNiCuNb16-4	1.4301/X5CrNi18-10	Ceramics	Fluoropolymer	○	×	○	◎	◎	◎	◎	◎	◎	00 (-100°C ~ 200°C)	◎	◎	△	×	×
SUB6_ _ZZ	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	×	△	○	◎	◎	◎	◎	◎	◎	(-40 ~ 150°C)	×	×	○	×	×

Some bearings may not be suitable for a certain concentration, temperature or application variables.
(◎: Excellent ○: Good △: Questionable ×:Poor)

Plastic Bearings

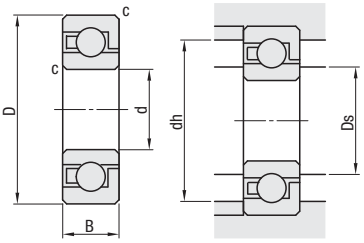
CAD Data File Name: KB_ _ _ ZZ.dxf
Part Number without U

■Plastic Bearings
(Water resistant / Nonmagnetic Type) RoHS



Type	Material			Operating Temp
	Main Body	Retainer	Rolling Element	
UKB6 _ _ _ZZ	Ultra High-Molecular-Weight Polyethylene		Soda-lime Glass	-50°C ~ +60°C
PTN6 _ _ _ZZ	PTFE		Alumina Ceramics	-40°C ~ +150°C
PKB6 _ _ _ZZ	PEEK			-50°C ~ +180°C

(Installation Diagram)



Part Number Type	Bearing No.	d	Tolerance	D	Tolerance	B	Tolerance	c	Relative Dimensions Ds (min)	Ds (max.)	dh (max.)	Allowable Load (kgf/1 pc.) UKB	PTN	PKB	Allowable Rotational Speed (rpm)Underwater values in ( ) UKB	PTN	PKB	Mass (g) (Reference) UKB	PTN	PKB	€ Unit Price UKB	PTN	PKB
	624ZZ	4		13					5	6	12	0.29	-	-	1120 (3140)	-	-	0.55	-	-			
	625ZZ	5		16		5			6	7.4	14	0.6	0.4	1.5	900 (2540)	540	1800	0.9	1.9	1.3			
	605ZZ			14					6	6.8	13	0.4	-	-	1000 (2800)	-	-	0.65	-	-			
	626ZZ	6		19		6			7	9	17	0.7	0.5	1.5	760 (2140)	450	1500	1.5	3.1	2.0			
	606ZZ			17					7	8.4	16	0.7	-	-	830 (2320)	-	-	1.2	-	-			
	696ZZ			16	+0.08 0	5			7	7.8	14	0.5	-	-	900 (2540)	-	-	0.75	-	-			
UKB Ultra High-Molecular-Weight Polyethylene Water resistant, Nonmagnetic	628ZZ	8		24		8			9	12	22	1.3	0.8	2.8	600 (1670)	350	1200	3.2	6.7	4.4			
	608ZZ			22		7			9	10.7	20	1.3	-	-	630 (1780)	-	-	2.4	-	-			
	698ZZ			19		6			9	10.6	18	0.6	-	-	700 (1980)	-	-	1.3	-	-			
	6200ZZ		±0.03	30		9			12	15.3	28	2.2	-	-	460 (1300)	-	-	5.6	-	-			
	6000ZZ	10		26		8			12	13.8	24	1.3	0.8	3.0	520 (1470)	310	1000	3.5	7.7	5.1			
PTN PTFE Heat Resistant, Chemical Resistant	6900ZZ			22		6		0.3	12	12.6	21	1.3	-	-	590 (1670)	-	-	1.9	-	-			
	6201ZZ	12		32	+0.1 0	10	±0.1		14	16.3	30	2.5	-	-	430 (1210)	-	-	7	-	-			
	6001ZZ			28	+0.08 0	8			14	15.5	26	1.6	1	4.0	470 (1330)	280	950	4	8.5	5.6			
	6901ZZ			24		6			14	14.8	21	1.2	-	-	530 (1480)	-	-	1.9	-	-			
PKB PEEK Heat Resistant, Chemical Resistant	6202ZZ	15		35	+0.1 0	11			17	19.4	33	3	-	-	380 (1070)	-	-	8.8	-	-			
	6002ZZ			32		9			17	18.6	30	2.5	1.5	5.5	400 (1140)	240	810	5.7	11.0	7.8			
	6902ZZ			28	+0.08 0	7			17	18.2	26	1.6	-	-	440 (1240)	-	-	3	-	-			
	6203ZZ	17	±0.04	40	+0.12 0	12			19	22.6	38	4	-	-	330 (930)	-	-	12.8	-	-			
	6003ZZ			35	+0.1 0	10			19	21	33	3	1.8	6.5	360 (1000)	220	730	7.3	14.2	9.4			
	6903ZZ			30	+0.08 0	7			19	20	28	2	-	-	400 (1130)	-	-	3.3	-	-			
	6204ZZ	20		47	+0.12 0	14			22	26.5	43	5	-	-	280 (790)	-	-	20	-	-			
	6004ZZ			42		12		0.5	22	25	38	3.6	2.3	8.0	300 (860)	180	610	12.6	24.6	16.2			
	6904ZZ			37	+0.1 0	9		0.3	22	23.6	35	3.3	-	-	330 (930)	-	-	6.8	-	-			

(?)Sizes without € Unit Price shown are not available. (?)The tolerance above is the dimension at standard temperature 24°C±1°C at the time of manufacture. (?)kgf=Nx0.101972
(?)The allowable values are for reference, not guaranteed. (?)Soda-lime glass may be broken when temperature changes rapidly. (?)PEEK is available only in Japan.

Order Example Part Number UKB6002ZZ

Days to Ship 8 Days

Express A 2,00 EUR/ piece ☞P.88

(?)A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (?)Round down to one Cent. P.87

Quantity	1~14	15~30
Rate	€ Unit Price	5%

(?)For orders larger than indicated quantity, please request a quotation.

■Characteristic Values of Plastic Bearing Material

Item	Ultra High-Molecular-Weight Polyethylene	PEEK	PTFE	Soda-lime Glass	Alumina Ceramics
Specific Gravity	0.94	1.32	2.14~2.20	2.5	3.9
Tension Strength (kgf/cm²)	460	1000	210~350	600	-
Elongation (%)	400	20	200~400	-	-
Compression Strength (kgf/cm²)	-	1210	120	9000	25000
Compression Elasticity Modulus (kgf/cm²)	9170	42000	4200	-	-
Bending Strength (kgf/cm²)	250	1730	-	-	-
Izod Impact Strength Test	Does not break	20	15.8	-	-
Hardness	R Scale 56	R Scale 120	Durometer D 50~55	Mohs Hardness 6.5	Vickers Hardness 1800 (kgf/mm2)
Deflection Temperature Under Load (°C) 0.45MPa	80 (0.45MPa)	155 (1.82Mpa)	-	-	-
Thermal Linear Expansion Coefficient	$1.7x10^{-4}$	$5.0x10^{-5}$	$12.4x10^{-5}$	-	$7.8x10^{-6}$
Heat Resistance Temperature (°C)	-100~80	-50~250	-40~260	-50~60	-50~1600

(?)Listed values represent reference values, not guaranteed.

■Performance Comparison of Bearings for Special Environments

Part Number	Inner · Outer Ring	Shield	Rolling Element	Retainer	Low Particulate Generation	Abrasion Resistance	Corrosion Resistance and Chemical Resistance: Acid: Hydrochloric Acid	Acid: Sulfuric Acid	Acid: Nitric Acid	Alkali	Solvent	Seawater	Water	Heat Resistance	Vacuum	Insulation	Non-magnetic	High Load	High Speed
UKB6_ _ _ZZ	Ultra High-Molecular-Weight Polyethylene	-	Soda-lime Glass	Ultra High-Molecular-Weight Polyethylene	○	○	△	△	△	×	◎	◎	◎	X (-50~60°C)	×	◎	◎	×	×
PKB6_ _ _ZZ	PEEK	-	Alumina Ceramics	PEEK	○	○	○	○	○	◎	◎	◎	◎	0 (-30 ~ 180°C)	×	◎	◎	×	×
PTN6_ _ _ZZ	PTFE	-	Alumina Ceramics	PTFE	△	△	◎	◎	◎	◎	◎	◎	◎	0 (-50 ~ 150°C)	×	◎	◎	×	×

(?)Some bearings may not be suitable for a certain concentration, temperature or application variables.

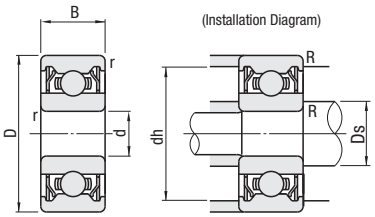
(◎: Excellent ○: Good △: Questionable ×:Poor)

Heat-Resistant Grease Filled Ball Bearings-Max Operation Temperature 160°C-

■Heat-Resistant Grease Filled Ball Bearings-Max Operation Temperature 160°C- RoHS



HHB6_ _ZZ
HHB6_ _ _ZZ



Bearing Accuracy JIS B 1514 Class 0
Operation Temperature: 0 ~ +160°C

Type	Inner and Outer Ring		Shield	Rolling Element	Retainer
	M Material	H Hardness	M Material	M Material	M Material
HHB ZZ	1.4125/ X105CrMo17	57~63HRC	1.4301/ X5CrNi18-10	1.4125/X105CrMo17	1.4301/X5CrNi18-10

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Cor (Static) N	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
HHB695ZZ	5	13	4	0.2	915	346	43000	6.6	11.4	0.2	2.4	
HHB605ZZ		14	5		1130	406	40000		12.4		3.5	
HHB625ZZ		16		0.3	1470	540	36000	7	14	0.3	4.8	
HHB696ZZ	6	15	5	0.2	1139	418	40000	7.6	13.4	0.2	3.8	
HHB606ZZ		17	6	0.3	1924	677	38000	8	15	0.3	6.0	
HHB626ZZ		19			1986	717	32000		17		8.1	
HHB698ZZ	8	19	6	0.3	1901	734	36000	10	17	0.3	7.3	
HHB608ZZ		22	7		2799	1103	34000		20		12	
HHB628ZZ		24	8		2833	1138	28000		22		17	

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min.)	Relative Dimensions Ds (max.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass(g) (Reference)	€ Unit Price
HHB6900ZZ	10	22	6	0.3	2.29	1.01	34000	12	12.5	20	0.3	10	
HHB6000ZZ		26	8		3.90	1.57	31000	12	13	24		19	
HHB6200ZZ		30	9	0.6	4.35	1.91	24000	14	16	26	0.6	32	
HHB6901ZZ	12	24	6	0.3	2.45	1.16	31000	14	14.5	22	0.3	11	
HHB6001ZZ		28	8		4.35	1.89	27000	14	15.5	26		22	
HHB6201ZZ		32	10	0.6	5.80	2.44	22000	16	17	28	0.6	37	
HHB6902ZZ	15	28	7	0.3	3.70	1.80	26000	17	17	26	0.3	17	
HHB6002ZZ		32	9		4.75	2.26	23000	17	19	30		30	
HHB6202ZZ		35	11	0.6	6.50	3.00	20000	19	20.5	31	0.6	45	
HHB6903ZZ	17	30	7	0.3	3.90	2.04	23000	19	19.5	28	0.3	18	
HHB6003ZZ		35	10		5.10	2.60	21000	19	21.5	33		39	
HHB6203ZZ		40	12	0.6	8.15	3.84	17000	21	23.5	36	0.6	65	
HHB6904ZZ	20	37	9	0.3	5.40	2.96	19000	22	24	35	0.3	36	
HHB6004ZZ		42	12	0.6	7.95	4.00	17000	24	25.5	38	0.6	69	
HHB6204ZZ		47	14	1.0	10.90	5.28	15000	25	26.5	42	1.0	106	

kgf=Nx0.101972

Order Example

Part Number
HHB696ZZ
HHB6003ZZ

Days to Ship

8 Days

Express A | 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round off to one Cent..) P. 87

Quantity	1~14	15~30
Rate	€ Unit Price	5%

■Grease Performance and Operating Environment

		Regular Grease B6_ _ _ZZ SB6_ _ _ZZ	Heat-Resistant Grease Filled HHB6_ _ZZ HHB6_ _ _ZZ
Grease Performance	Thickener	Lithium Soap	Diurea
	Base Oil	Mineral Oil	Mineral Oil
	Base Oil Dynamic Viscosity (40°C, mm²/s)	26	88
	Worked Penetration	270	260
	Dropping Point (°C)	170~190	253
	Evaporation (wt%)	0.32 (99°C x 22h)	0.3 (99°C x 22h)
	Separation (100°C x 24h, wt%)	2.9	1.5
Operation Temperature (°C)	In air	-25~+120	-25~+120
	In Vacuum	Unsuitable	Unsuitable

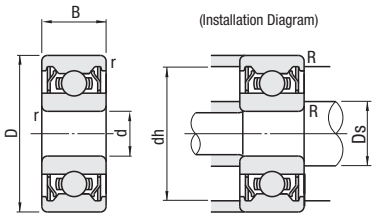
Heat-Resistant Grease Filled Ball Bearings / Bearings with Set Screws

CAD Data

■Heat-Resistant Grease Filled Ball Bearings-Max Operation Temperature 230°C- RoHS



KB6_ _ _ZZ



Bearing Accuracy JIS B 1514 Class 0
Operation Temperature: 0 ~ +230°C

Type	Inner and Outer Ring		Shield	Rolling Element	Retainer
	M Material	H Hardness	M Material	M Material	M Material
KB ZZ	1.4125/X105CrMo17	57~63HRC	1.4301/X5CrNi18-10	1.4125/X105CrMo17	1.4301/X5CrNi18-10

Part Number	d	D	B	r (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min.)	Ds (max.)	dh (max.)	R (max.)	Mass(g) (Reference)	€ Unit Price
KB6900ZZ	10	22	6	0.3	2.29	1.01	3100	12	12.5	20	0.3	10	
KB6000ZZ		26	8		3.90	1.57	2700	12	13	24		19	
KB6200ZZ		30	9	0.6	4.35	1.91	2500	14	16	26	0.6	32	
KB6901ZZ	12	24	6	0.3	2.45	1.16	2700	14	14.5	22	0.3	11	
KB6001ZZ		28	8		4.35	1.89	2500	14	15.5	26		22	
KB6201ZZ		32	10	0.6	5.80	2.44	2200	16	17	28	0.6	37	
KB6902ZZ	15	28	7	0.3	3.70	1.80	2300	17	17	26	0.3	17	
KB6002ZZ		32	9		4.75	2.26	2100	17	19	30		30	
KB6202ZZ		35	11	0.6	6.50	3.00	2000	19	20.5	31	0.6	45	
KB6903ZZ	17	30	7	0.3	3.90	2.04	2100	19	19.5	28	0.3	18	
KB6003ZZ		35	10		5.10	2.60	1900	19	21.5	33		39	
KB6203ZZ		40	12	0.6	8.15	3.84	1700	21	23.5	36	0.6	65	
KB6904ZZ	20	37	9	0.3	5.40	2.96		22	24	35	0.3	36	
KB6004ZZ		42	12	0.6	7.95	4.00	1600	24	25.5	38	0.6	69	
KB6204ZZ		47	14	1.0	10.90	5.28	1400	25	26.5	42	1.0	106	
KB6905ZZ	25	42	9	0.3	5.95	3.60		27	28.5	40	0.3	38	
KB6005ZZ		47	12	0.6	8.55	4.65	1300	29	30	43	0.6	74	
KB6205ZZ		52	15	1.0	11.9	6.30	1200	30	32	47	1.0	120	
KB6906ZZ	30	47	9	0.3	6.15	4.00		32	34	45	0.3	50	
KB6006ZZ		55	13	1.0	11.3	6.60	1100	35	36.5	50	1.0	107	
KB6206ZZ		62	16	1.0	16.5	9.05	1000	35	38.5	57	1.0	184	

■Grease Performance and Operating Environment

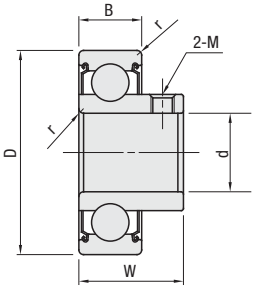
		Standard Grease Filled B6_ _ _ZZ SB6_ _ _ZZ	Heat-Resistant Grease Filled KB6_ _ _ZZ
Grease Performance	Thickener	Lithium Soap	PTFE
	Base Oil	Mineral Oil	Fluorinated Oil
	Base Oil Dynamic Viscosity (40°C, mm²/s)	26	420
	Worked Penetration	270	280
	Dropping Point (°C)	170~190	260
	Evaporation (wt%)	0.32 (99°C x 22h)	0.1 (99°C x 22h)
	Separation (100°C x 24h, wt%)	2.9	4.5
Operation Temperature (°C)	In air	-25~+120	-20~+230
	In Vacuum	Unsuitable	Unsuitable

kgf=Nx0.101972

■Bearings with Set Screw Shaft Sleeve RoHS



TB6_ _ _ZZ



■Features
- Set screw fastens the inner race to the shaft, eliminating the need for a bearing lock nut.

Bearing Accuracy JIS B 1514 Class 0
* Except Inner Diameter
Operation Temperature: -40 ~ +120°C

Type	M Material		
	Inner / Outer Ring, Rolling Element	Retainer / Shield	Set Screw
TB ZZ	1.4125/X105CrMo17	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10

Part Number	d	Tolerance	D	W	B	M (Coarse Thread)	r (min)	Allowable Rotational Speed rpm (Reference)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Mass(g) (Reference)	€ Unit Price
TB6900ZZ	10	+0.015 0	22	13	6	M3	0.3	9100	2.70	1.27	13	
TB6000ZZ			26	15	8			7800	4.55	1.96	24	
TB6200ZZ			30	17	9	M4	0.6	6800	5.10	2.39	41	
TB6901ZZ	12		24	13	6	M3	0.3	5200	2.89	1.46	15	
TB6001ZZ			28	15	8			7800	5.10	2.39	27	
TB6201ZZ			32	19	10	M4	0.6	7500	6.80	3.05	47	
TB6902ZZ	15		28	14	7	M3	0.3	6500	4.30	2.25	22	
TB6002ZZ			32	16.5	9			4500	5.60	2.84	40	
TB6202ZZ			35	20	11	M4	0.6	10000	7.65	3.75	59	
TB6904ZZ	20	+0.018 0	37	18	9		0.3	9100	6.40	3.70	51	
TB6004ZZ			42	21	12	M5	0.6	7500	9.40	5.05	87	
TB6204ZZ			47	23	14		1.0	5800	12.80	6.65	132	

kgf=Nx0.101972

Order Example

Part Number
KB6003ZZ
TB6201ZZ

Days to Ship: 8 Days

Express A 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~30
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Thrust Bearings

Reduced Delivery Time

Price Reduction Average 38%

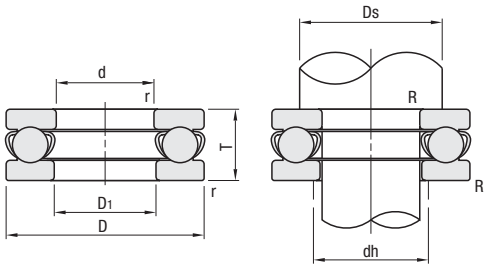
CAD Data

Thrust Bearings

RoHS

B511_ _ SB511__
B512_ _





The raceway plates and the retainer comes apart easily.
Take care when opening the product package.

Material: Steel Type 1.3505/100Cr6
Stainless Steel Type 1.4125/X105CrMo17
Bearing Accuracy JIS B 1514 Class 0

Part Number		d		D		D_1 (min)	T		r (min)	Basic Load Rating				Allowable Rotational Speed rpm (Ref.)	Relative Dimensions			Mass (g) (Reference)		€ Unit Price	
										Steel Type		Stainless Steel Type									
Steel Type	Stainless Steel Type		Tol.		Tol.			Tol.		Ca (Dynamic) kN	Coa (Static) kN	Ca (Dynamic) kN	Coa (Static) kN		Ds (min)	dh (max.)	R (max.)	Steel Type	Stainless Steel Type	Steel Type	Stainless Steel Type
B51100	SB51100	10	0 -0.008	24	0 -0.013	11	9	0 -0.075	0.3	10.1	14	5	6.96	6700	18	16	0.3	19	21		
B51200	-			26		12	11		0.6	12.8	17.1	-	-	6000	20	16	0.6	28	-		
B51101	SB51101	12		26		13	9		0.3	10.4	15.4	5.15	7.7	6700	20	18	0.3	21	23		
B51201	-			28		14	11		0.6	13.3	19	-	-	5600	22	18	0.6	31	-		
B51102	SB51102	15		28		16	9		0.3	10.6	16.8	5.25	8.38	6300	23	20	0.3	23	24		
B51202	-			32	0 -0.016	17	12		0.6	16.7	24.8	-	-	5000	25	22	0.6	43	-		
B51103	SB51103	17		30		18	9		0.3	11.4	19.5	5.39	9.07	6000	25	22	0.3	25	26		
B51203	-			35		19	12		0.6	17.3	27.3	-	-	4800	28	24	0.6	50	-		
B51104	SB51104	20	0 -0.010	35		21	10		0.3	15.1	26.6	7.11	12.36	5300	29	26	0.3	37	40		
B51204	-			40		22	14		0.6	22.5	37.5	-	-	4300	32	28	0.6	77	-		
B51105	SB51105	25		42		26	11		0.6	19.7	37	9.76	18.63	4800	35	32	0.6	56	60		
B51205	-			47		27	15		0.6	28	50.5	-	-	3800	38	34	0.6	111	-		
B51106	SB51106	30		47		32	11		0.6	20.6	42	10.2	21.08	4300	40	37	0.6	64	69		
B51206	-			52	0 -0.019	32	16		0.6	29.5	58	-	-	3400	43	39	0.6	137	-		

kgf=Nx0.101972

Order Example

Part Number
B51200
SB51100

Days to Ship: 6 Days P. 87

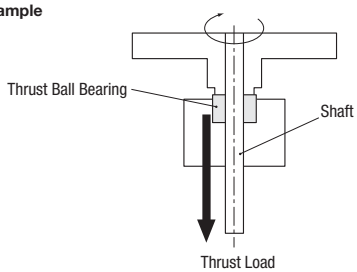
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



Thrust Needle Roller Bearings

Reduced Delivery Time

Price Reduction Average 31%

CAD Data

■Thrust Needle Roller Bearings

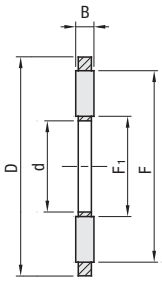
RoHS



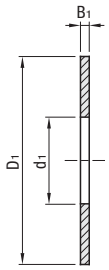
BA_ _ _ _

*Thrust washer may have a slight distortion when delivered, but it becomes flat when axial load of at least 200N is applied concentrically.

Thrust Needle Roller with Retainer



Thrust Washer



M Material: 1.3505/100Cr6

Bearing Accuracy: In accordance with JIS B 1514 Class 0

Part Number	Thrust Needle Roller with Retainer								Thrust Washer x 2						Allowable Rotational Speed rpm (Reference)	Mass (g) (Reference)	Basic Dynamic Load Rating Ca kN	Basic Static Load Rating Coa kN	€ Unit Price
	d	Tol.	D	Tol.	B	Tol.	F	F_1	d_1	Tol.	D_1	Tol.	B_1	Tol.					
BA0414	4	+0.140 +0.020	14	-0.095 -0.365	2	0 -0.01	13	5	4	+0.200 +0.020	14	-0.032 -0.302	1	+0.05 -0.05	5200	2.7	4.4	8	
BA0515	5		15				14	6	5		15				5200	2.8	4.75	9.2	
BA0619	6		19	-0.110 -0.440			18	7	6		19	-0.040 -0.370			4700	5	6.8	15.5	
BA0821	8	+0.175 +0.025	21				20	9	8	+0.245 +0.025	21				4500	6	7.8	19.4	
BA1024	10		24				23	12	10		24				4200	9	9.2	25.5	
BA1226	12	+0.212 +0.032	26	-0.110 -0.440			25	14	12	+0.302 +0.032	26				3700		9.9	29.0	
BA1528	15		28				27	17	15		28				3200	10	11.3	36.0	
BA1730	17		30				29	19	17		30				3000	12	11.9	39.5	
BA2035	20	+0.250 +0.004	35	-0.120 -0.510			34	22	20	+0.370 +0.040	35	-0.050 -0.440			2500	15	13.1	46.5	
BA2542	25		42	-0.130 -0.520			41	29	25		42				2100	21	14.7	58.0	
BA3047	30		47				46	34	30		47				1800	24	16.3	70.0	

kgf=Nx0.101972

Order Example: Part Number BA0515

Days to Ship: 6 Days P. 87

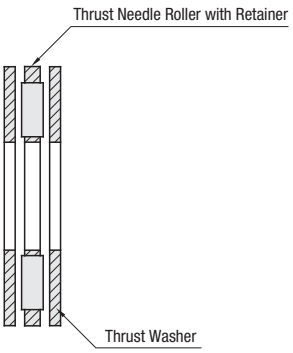
Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



Needle Roller Bearings with Thrust Ball Bearings · Needle Roller Bearings with Thrust Roller Bearings

-With Inner Ring- -With Inner Ring-

Reduced Delivery Time

Price Reduction Up to 10%

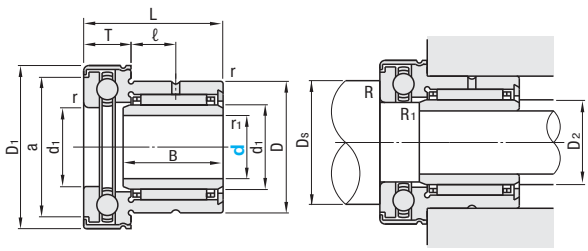
CAD Data

■Needle Roller Bearings RoHS

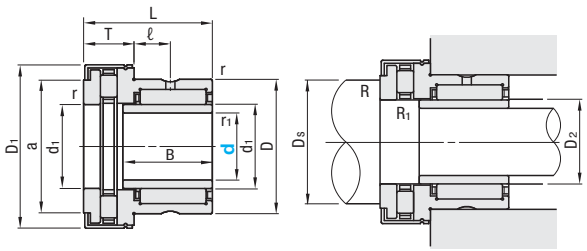




NKXZ (With Thrust Ball Bearings)



NKXRZ (With Thrust Roller Bearings)



■Features

-Dust cover is provided on the thrust bearing side to prevent intrusion of dirt and lubricant leakage.

-With its ability to sustain radial and axial load simultaneously, NKZX is suitable for the compact design to use on fixed shaft ends. The NKXRZ has better performance against Axial loads.

■Recommended Fits

Shaft	Housing
k6	K6

M Material: 1.3505/100Cr6

A Accessories: Cover

Bearing Accuracy: In accordance with JIS B 1514 Class 0

Part Number Type	d	D	B	L	T	r (min)	r1 (min)	d1	D1	ℓ	a	Radial Basic Dynamic Load Rating CrkN	Radial Basic Static Load Rating CorkN	Axial Basic Dynamic Load Rating CakN	Axial Basic Static Load Rating CpakN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions D2 (min)	Relative Dimensions R (max.)	Relative Dimensions R1 (max.)	Mass (g) (Reference)	€ Unit Price
NKXZ	7	19	16	23	9	0.3	0.3	10	25.2	6.5	19.7	6.2	7.8	10.0	14.0	7200	18	9	0.3	0.3	40.9	
	9	21						12	27.2		21.7	9	11	10.3	15.4	6600	20	11			46	
	12	24						15	29.2		23.7	10.7	12.7	10.5	16.8	5700	23	14			54.6	
	14	26	17	25				17	31.2	8.0	25.7	11.9	15	10.8	18.2	5100	25	16			64.5	
	17	30	20	30	10			20	36.2	10.5	30.7	16.4	23.8	14.3	24.7	4500	29	19			103.5	
	20	37			11			25	43.2	9.5	37.7	18.8	30.5	19.6	37.5	3600	35	22			159.5	
	25	42						30	48.2		42.7	22.6	36	20.4	42.0	3000	40	27			180.8	
	30	47			12	0.6		35	53.2	9.0	47.7	24.3	41.5	21.2	47.0	2700	45	32	0.6		207	
	35	52		32	13			40	61.2	10	55.7	26	47	27	63	2400	52	37			252.2	
	40	58			14			45	66.5	9	60.5	27.5	53	28	69	2100	57	42			315.8	
	45	62	25	35			0.6	50	71.5	10	65.5	38	74	29	75	1900	62	48		0.6	370.8	
	50	72		40	17	1	1	60	86.5	12	80.5	42	90	41.5	113	1600	75	55	1	1	542	

kgf=Nx0.101972

Part Number Type	d	D	B	L	T	r (min)	r1 (min)	d1	D1	ℓ	a	Radial Basic Dynamic Load Rating CrkN	Radial Basic Static Load Rating CorkN	Axial Basic Dynamic Load Rating CakN	Axial Basic Static Load Rating CpakN	Allowable Rotational Speed rpm (Reference)	Relative Dimensions Ds (min)	Relative Dimensions D2 (min)	Relative Dimensions R (max.)	Relative Dimensions R1 (max.)	Mass (g) (Reference)	€ Unit Price
NKXRZ	12	24	16	23	9	0.3	0.3	15	29.2	6.5	23.7	10.7	12.7	14.4	28.5	7800	25	14	0.3	0.3	52.6	
	14	26	17	25				17	31.2	8	25.7	11.9	15	15.9	33.5	7200	27	16			62.5	
	17	30	20	30	10			20	36.2	10.5	30.7	16.4	23.8	24.9	53	6000	32	19			97.5	
	20	37			11			25	43.2	9.5	37.7	18.8	30.5	33.5	76	5100	39	22			152.5	
	25	42						30	48.2		42.7	22.6	36	35.5	86	4500	44	27			173.8	
	30	47			12	0.6		35	53.2	9	47.7	24.3	41.5	39	101	3900	49	32	0.6		204	
	35	52		32	13			40	61.2	10	55.7	26	47	56	148	3600	56	37			258.2	
	40	58			14			45	66.5	9	60.6	27.5	53	59	163	3000	61	42			310.8	
	45	62	25	35			0.6	50	71.5	10	65.5	38	74	61	177	2800	66	48		0.6	358.8	

kgf=Nx0.101972

Order Example

Part Number

NKXRZ17

NKXZ20

Days to Ship

6 Days

2 Days

P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~100
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

One-way Clutches

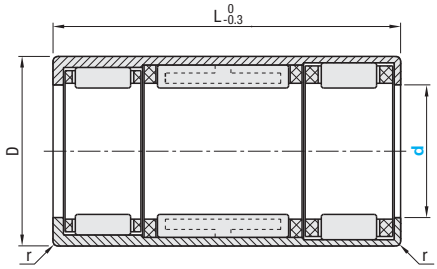
CAD Data

Features: Bearings are on both ends of the clutch to support radial loads. Usable with the unit alone.

RoHS

BHFL





One-way Clutch Structure

During lock-up



Shaft torque is transmitted to the Housing during lock-up.

During Free Running



Shaft torque is not transmitted to the Housing during free running.

Recommended Fits

Shaft	Housing	
	Steel	Light Metal
h5 (h6)	N6 (N7)	R6 (R7)

*When applied torque is smaller than half the allowable torque, tolerance in () can be applied.

Note the mounting direction as the clutch will lock in one direction and free-spin in the other.

Material: 1.0330/DC01

Part Number		D	L	r (min)	Allowable Torque Nm	Allowable Rotational Speed		Mass (g)	€ Unit Price
Type	d					During shaft rotation rpm	During outer race rotation rpm		
BHFL	6	10	15	0.3	1.76	23000	13000	4	
	8	12	22		3.15	17000	12000	7	
	10	14	22		5.3	14000	11000	8	
	12	18	26		12.2	11000	8000	18	
	14	20	26		17.3	9500	8000	20	
	16	22	26		20.5	8500	7500	22	
	18	24	26		24.1	7500	7500	25	
	20	26	26		28.5	7000	6500	27	
	25	32	30		66	5500	5500	44	
	30	37	30		90	4500	4500	51	
	35	42	30		121	3900	3900	58	

kgf=Nx0.101972

Order Example

Part Number: BHFL10

Days to Ship: 6 Days P.87

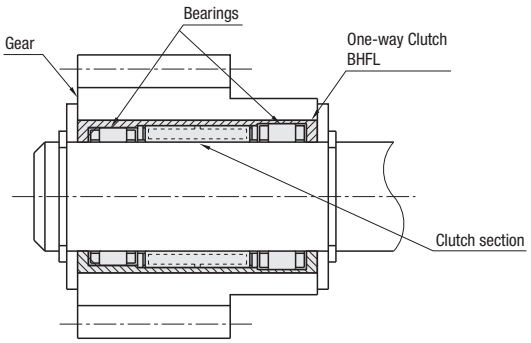
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



Angular Contact Bearings

-Single / Double-Row Combination (Standard Class)-

Reduced Delivery Time

Price Reduction Up to 21%

CAD Data

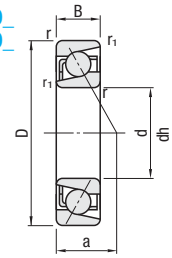
Angular Contact Bearings RoHS

Single · Double Row Combination (Standard Class)

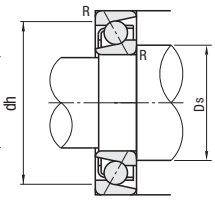


Single Row

B700_
B720_

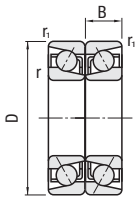


(Installation Diagram)



Double Row Combination

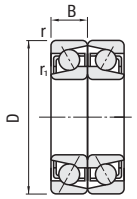
B700_-DB
B720_-DB



Double Row Combination

B700_-DF
B720_-DF

* Contact Angle 30°



Shipped with no grease applied. Please apply grease when using.

Material: 1.3505/100Cr6

Bearing Accuracy JIS B 1514 Class 0

Single Row

Part Number	d	D	B	r (min)	r1 (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Pressure Cone Apex a	Relative Dimensions Ds (min.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass (g) (Reference)	€ Unit Price
B7000	10	26	8	0.3	0.15	5.35	2.6	23200	9.2	12.5	23.5	0.3	23	
B7200		30	9	0.6	0.3	5.4	2.71	22400	10.3	15	25	0.6	29	
B7001	12	28	8	0.3	0.15	5.8	2.98	20800	9.8	14.5	25.5	0.3	25	
B7201		32	10	0.6	0.3	8	4.05	20000	11.4	17	27	0.6	37	
B7002	15		9	0.3	0.15	6.1	3.45	18400	11.3	17.5	29.5	0.3	35	
B7202		35	11	0.6	0.3	8.65	4.65	17600	12.7	20	30	0.6	46	
B7003	17		10	0.3	0.15	6.4	3.8	16800	12.5	19.5	32.5	0.3	46	
B7203		40	12	0.6	0.3	10.8	6	15200	14.2	22	35	0.6	67	
B7004	20	42				10.8	6.6	14400	14.9	25	37		80	
B7204		47	14	1	0.6	14.5	8.3	13600	16.7	26	41	1.0	109	
B7005	25		12	0.6	0.3	11.3	7.4	12800	16.4	30	42	0.6	93	
B7205		52	15	1	0.6	16.2	10.3	11200	18.6	31	46	1.0	130	
B7006	30	55	13			14.5	10.1	10400	18.8	36	49		135	
B7206		62	16			22.5	14.8	9600	21.3	36	56		197	
B7207	35	72	17	1.1		29.7	20.1	8000	23.9	42	65		287	
B7208	40	80	18			35.5	25.1	7600	26.3	47	73		375	
B7209	45	85	19			39.5	28.7	6800	28.3	52	78		411	
B7210	50	90	20			41.5	31.5	6320	30.2	57	83		466	

Double Row Combination

kgf=Nx0.101972

Part Number Bearing No.	Part Number Double Row Combination	d	D	B	r (min)	r1 (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Pressure Cone Apex a DB	Pressure Cone Apex a DF	Relative Dimensions DB Ds (min.)	Relative Dimensions DB dh (max.)	Relative Dimensions DB R (max.)	Relative Dimensions DF Ds (min.)	Relative Dimensions DF dh (max.)	Relative Dimensions DF R (max.)	Mass (g) (Reference)	€ Unit Price DB (Back)	€ Unit Price DF (Front)
B7000		10	26	8	0.3	0.15	8.75	5.2	18400	18.4	2.4	12.5	24.8	0.3	11.2	23.5	0.15	46		
B7200			30	9	0.6	0.3	8.8	5.4	17600	20.5	2.5	15	27.5	0.6	12.5	25	0.3	58		
B7001		12	28	8	0.3	0.15	9.4	5.95	16800	19.5	3.5	14.5	26.8	0.3	13.2	25.5	0.15	50		
B7201			32	10	0.6	0.3	13	8.05	16000	22.7	2.7	17	29.5	0.6	14.5	27	0.3	74		
B7002		15		9	0.3	0.15	9.95	6.85	14400	22.6	4.6	17.5	30.8	0.3	16.2	29.5	0.15	70		
B7202	DB (Back)		35	11	0.6	0.3	14	9.3	13600	25.4	3.4	20	32.5	0.6	17.5	30	0.3	92		
B7003		17		10	0.3	0.15	10.4	7.65	13600	25	5	19.5	33.8	0.3	18.2	32.5	0.15	92		
B7203	DF (Front)		40	12	0.6	0.3	17.6	12	12000	28.5	4.5	22	37.5	0.6	19.5	35	0.3	134		
B7004		20	42				17.6	13.2	12000	29.9	5.9	25	39.5	0.6	22.5	37	0.3	160		
B7204			47	14	1	0.6	23.5	16.6	10400	33.3	5.3	26	42	1	25	41	0.6	218		
B7005		25		12	0.6	0.3	18.3	14.8	9600	32.8	8.8	30	44.5	0.6	27.5	42	0.3	186		
B7205			52	15	1	0.6	26.3	20.5	8800	37.2	7.2	31	47	1	30	46	0.6	260		
B7006		30	55	13			23.6	20.2	8800	37.5	11.5	6	50	1	35	49	0.6	270		
B7206			62	16			36.5	29.5	7840	42.6	10.6	36	57	1	35	56	0.6	394		
B7207		35	72	17	1.1	0.6	48.5	40	6800	47.9	-	42	67	1	-	-	-	574		
B7208	DB (Back)	40	80	18			57.5	50.5	6000	52.6	-	47	75	1	-	-	-	750		
B7209		45	85	19			64.5	57.5	5520	56.5	-	52	80	1	-	-	-	822		
B7210		50	90	20			67	63	5040	60.4	-	57	85	1	-	-	-	932		

kgf=Nx0.101972

Order Example

Part Number	-	Double Row Combination
(Single Row) B7000		
(Double Row Combination) B7004	-	DB

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

6 Days P.87 2 Days

Angular Contact Ball Bearings / Grease Seal Rings
-Universal Combination (Precision Grade)-

Reduced Delivery Time

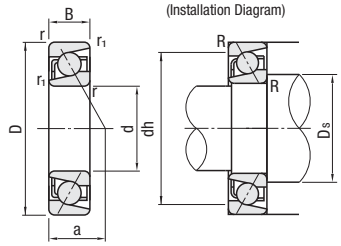
CAD Data

■Angular Contact Bearings
Universal Combination
(Precision Class)
RoHS



B70_ _SU

(Installation Diagram)

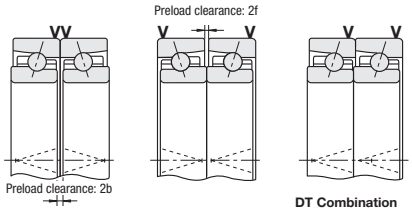


* Contact Angle 15°

Shipped with no grease applied.
Please apply grease when using.

M Material: 1.3505/100Cr6
Bearing Accuracy JIS B 1514 4 Class

■Features The width differences of front and back side are controlled so that designated preload can be obtained no matter how the same model bearings are combined. Outer ring is marked with a V mark to help obtain correct combination.



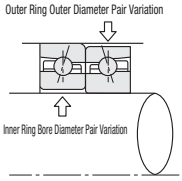
DB Combination
Back side width difference x 2 = 2b(= 2f), and the designed preload is obtained.

DF Combination
Front side width difference x 2 = 2f(= 2b), and the designed preload is obtained.

DT Combination
Because of front side width difference f = back side difference b, DT clearance does not occur similar with the normal DT combination.

Part Number	d	D	B	r (min)	r1 (min)	Basic Load Rating Cr (Dynamic) kN	Basic Load Rating Cor (Static) kN	Allowable Rotational Speed rpm (Reference)	Pressure Cone Apex a	Relative Dimensions Ds (min.)	Relative Dimensions dh (max.)	Relative Dimensions R (max.)	Mass(g) (Reference)	€ Unit Price
B7000SU	10	26	8	0.3	0.15	5.30	2.49	63900	6.4	12.5	23.5	0.3	19	
B7001SU	12	28	8	0.3	0.15	5.80	2.90	57500	6.7	14.5	25.5	0.3	21	
B7002SU	15	32	9	0.3	0.15	6.25	3.40	49000	7.6	17.5	29.5	0.3	30	
B7003SU	17	35	10	0.3	0.15	6.60	3.80	44300	8.5	19.5	32.5	0.3	39	
B7004SU	20	42	12	0.6	0.3	11.10	6.55	37100	10.1	25	37	0.6	67	
B7005SU	25	47	12	0.6	0.3	11.70	7.40	32000	10.8	30	42	0.6	78	
B7006SU	30	55	13	1.0		15.10	10.30	27100	12.2	36	49		114	
B7007SU	35	62	14	1		19.10	13.70	23800	13.5	41	56		151	
B7008SU	40	68	15	1	0.6	20.60	15.90	21300	14.7	46	62	1.0	189	
B7009SU	45	75	16	1		24.40	19.30	19200	16.0	51	69		238	
B7010SU	50	80	16	1		26.00	21.90	17700	16.7	56	74		259	

Outer Ring Outer Diameter Pair Variation



Inner and Outer Diameter Special Level Regulation (P4)
Inner Ring Bore Diameter Variation Unit: µm

Bearing Inner Width (mm) More than	Bearing Inner Width (mm) Equal or less than	P4 Over	P4 Under
10	30	0	-6

Outer Ring Outer Diameter DifferenceUnit: µm

Bearing Inner Width (mm) More than	Bearing Inner Width (mm) Equal or less than	P4 Over	P4 Under
26	62	0	-7

In case of making up random matching combinations, it is recommended to observe the mutual diametral variations.

kgf=Nx0.101972

Order Example | Part Number | B7001SU

Days to Ship | 6 Days | P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

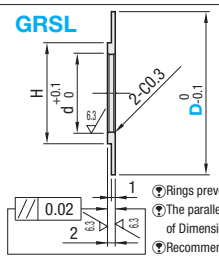
For orders larger than indicated quantity, please request a quotation.

Sold by each.
When using multi-row combination, it is recommended to match inner and outer diameter variations of each row.

■Grease Seal Rings
RoHS



GRSL

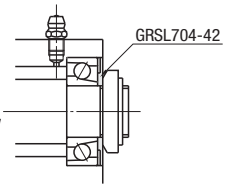


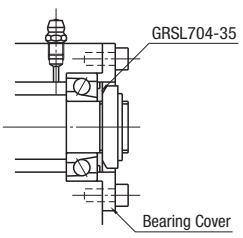
25/ (6.3/)

M Material: 1.0038/S235JR
S Surface Treatment: Black Oxide

Rings prevent grease splash but have no sealing ability
The parallelism is guaranteed within the range of Dimension H.
Recommended for use at 5000 rpm or less.

Example





Part Number Type	Part Number No.	D	d	H	Applicable Angular Contact Bearings	€ Unit Price
GRSL	700	26	10	13	B7000	
		21				
	720	30		15	B7200	
		25				
	701	28	12		B7001	
		23				
	721	32		17	B7201	
		26				
	702	32	15	19	B7002	
		26				
	722	35		21	B7202	
		30				
	703	35	17		B7003	
		30				

Part Number Type	Part Number No.	D	d	H	Applicable Angular Contact Bearings	€ Unit Price
GRSL	723	40	17	23	B7203	
		32				
	704	42	20	26	B7004	
		35				
	724	47		27	B7204	
		40				
	705	47	25	31	B7005	
		40				
	725	52		32	B7205	
		46				
	706	55	30	37	B7006	
		47				
	726	62			B7206	
		56				

Order Example | Part Number | GRSL720 - 25

Days to Ship | 8 Days

Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~14	15~29	30~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Self-aligning Ball Bearings

NEW

Reduced Delivery Time

Price Reduction Average 20%

CAD Data

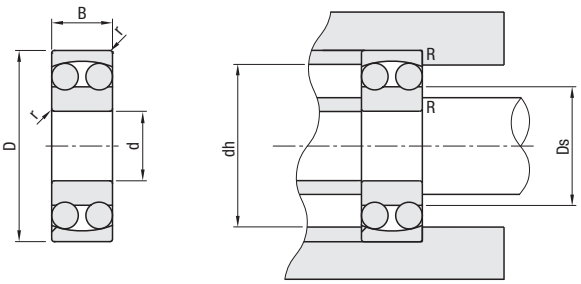
Features : The self-aligning ability enables to tolerate mounting misalignment and deflection during rotation. Suitable to use with power transmission shafts that may sustain deflection.

RoHS



B1_ _ _

(Installation Diagram)



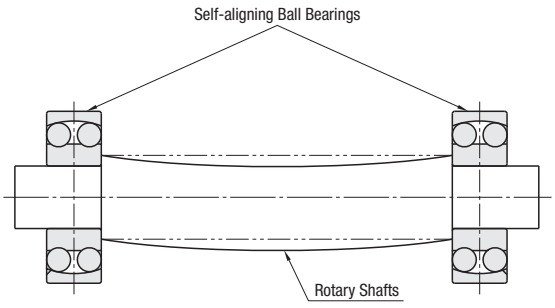
Material: 1.3505/100Cr6
Accuracy Class JIS B 1514 Class 0

Part Number	d	D	B	r (min)	Basic Load Rating		Allowable Rotational Speed rpm (Reference)	Relative Dimensions			Weight (g) (Reference)	€ Unit Price
					Cr (Dynamic) N	Cor (Static) N		Ds (min)	dh (max.)	R (max.)		
B1200	10	30	9	0.6	5.55	1.19	22000	14.0	26.0	0.6	33	
B1300		35	11	0.6	7.35	1.62	20000	14.0	31.0		57	
B1201	12	32	10	0.6	5.70	1.27	22000	16.0	28.0		39	
B1301		37	12	1	9.65	2.16	18000	17.0	32.0	1	66	
B1202	15	35	11	0.6	7.6	1.75	18000	19.0	31.0	0.6	51	
B1302		42	13	1	9.7	2.29	16000	20.0	37.0	1	93	
B1203	17	40	12	0.6	8.00	2.01	16000	21.0	36.0	0.6	72	
B1303		47	14	1	12.7	3.20	14000	22.0	42.0	1	130	
B1204	20	47	14	1	10.0	2.61	14000	25.0	42.0		120	
B1304		52	15	1.1	12.6	3.35	12000	26.5	45.5		165	

kgf=Nx0.101972

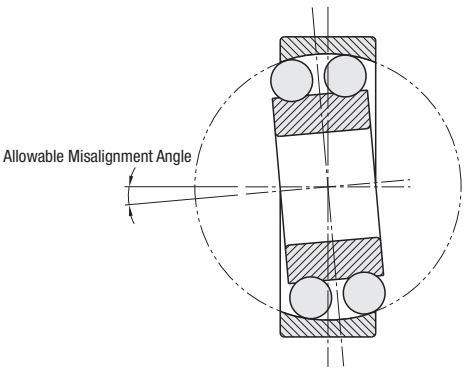
Design and Features

The outer ring raceway forms a spherical surface, whose center of curvature is common to the bearing center. Thus the inner ring, balls and cage are capable of freely revolving around the bearing center with self-aligning ability. Suitable to use with drive shafts, which tend to undergo deflection. This is also fit to use in a situation that alignment of a shaft and housing is difficult.



Allowable misalignment angle

Note : Allowable misalignment angle of self-aligning ball bearings is approx 0.07 ~ 0.12 radian (4° ~ 7°) at normal load condition, however this degree of allowable misalignment may be limited by the abutment and fillet dimensions around the bearing.



Order Example — Part Number: B1300, B1303

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~30
Rate	€ Unit Price	5%	10%

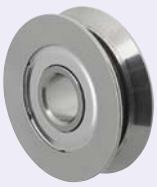
For orders larger than indicated quantity, please request a quotation.

Days to Ship: 6 Days P. 87

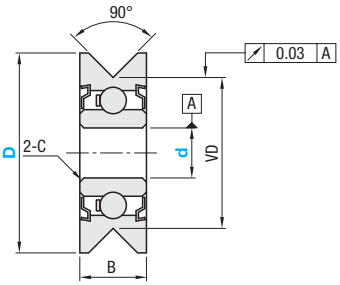
Stainless Steel Deep Groove Bearings

CAD Data

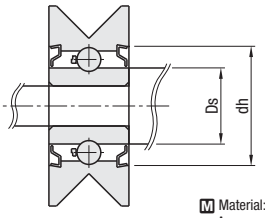
Features : The outer diameter is decreased by directly machining a V groove on the outer ring of the bearing.



SZV



(Installation Diagram)

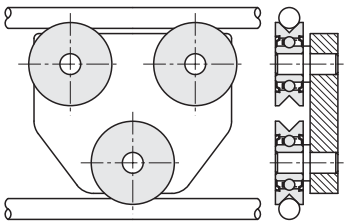


M Material: 1.4125/X105CrMo17
Accuracy Grade JIS B 1514 Class 0

Part Number Type	d	D	B	VD	C Chamfer	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Co (Static) N	Relative Dimensions Ds (min)	Relative Dimensions dh (max.)	Weight (g) (Ref.)	€ Unit Price
SZV	3	12	4	9.06	(0.25)	542	186	4.5	7.5	1.3	
	3	14		11.06		542	186	4.5		1.9	
	4	12		9.06		542	186	5.5		1.2	
	4	14		11.06		542	186	5.5		1.8	
	6	16		13.06		235	650	7.5	10	2.1	

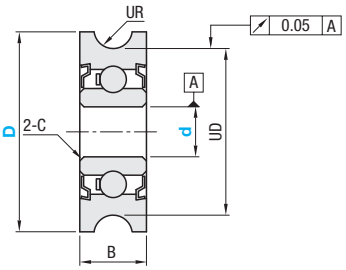
V Groove valley radii is R0.2.

kgf=Nx0.101972

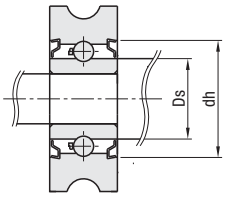




SZU



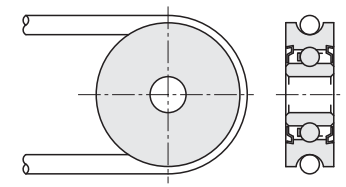
(Installation Diagram)



M Material: 1.4125/X105CrMo17
Accuracy Grade JIS B 1514 Class 0

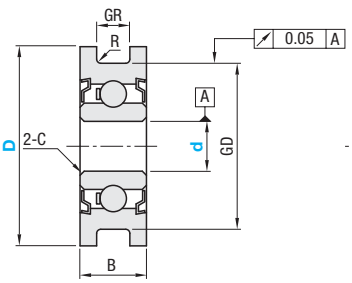
Part Number Type	d	D	B	UD	UR (Groove Radius)	C Chamfer	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Co (Static) N	Relative Dim. Ds (min)	Relative Dim. dh (max.)	Weight (g) (Ref.)	€ Unit Price
SZU	3	12	4	10	1.15	(0.25)	542	186	4.5	7.5	1.2	
	3	14		12			542	186	4.5		1.8	
	4	12		10			542	186	5.5		1.1	
	4	14		12			542	186	5.5		1.8	
	6	16		14			235	650	7.5	10	2.1	

kgf=Nx0.101972

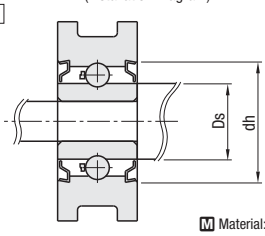




SZG



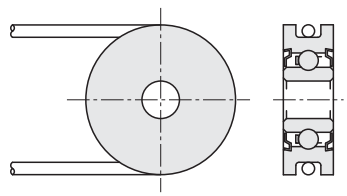
(Installation Diagram)



M Material: 1.4125/X105CrMo17
Accuracy Grade JIS B 1514 Class 0

Part Number Type	d	D	B	GD	GR (Slot Width)	C Chamfer	R (Corner R)	Basic Load Rating Cr (Dynamic) N	Basic Load Rating Co (Static) N	Relative Dim. Ds (min)	Relative Dim. dh (max.)	Weight (g) (Ref.)	€ Unit Price
SZG	3	12	4	10	2	(0.25)	0.25	542	186	4.5	7.5	1.3	
	3	14		12				542	186	4.5		1.8	
	4	12		10				542	186	5.5		1.2	
	4	14		12				542	186	5.5		1.8	
	6	16		14				235	650	7.5	10	2.1	

kgf=Nx0.101972



Order Example

Part Number		D
SZV3	-	12
SZU3	-	12

6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~30
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Housing Units

-Cast Housing Units · Diamond Shape Flanged-

Reduced Delivery Time

Price Revision

: New Price

CAD Data

RoHS



■Pillow Type

Set Screw Type

PBT (Steel)

Eccentric Ring Type

PBR (Steel)

PBRS(with Stainless Steel Bearing)

PBRSX(Stainless Steel)

■Diamond Shape Flange Type

Set Screw Type

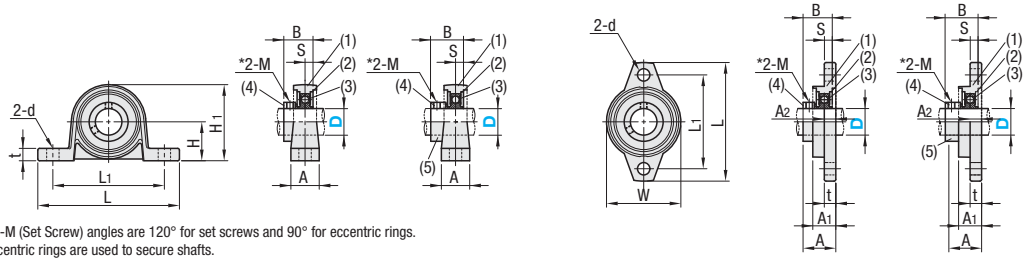
HBT (Steel)

Eccentric Ring Type

HBR (Steel)

HBRS(with Stainless Steel Bearing)

HBRSX(Stainless Steel)



*2-M (Set Screw) angles are 120° for set screws and 90° for eccentric rings.

Eccentric rings are used to secure shafts.

Ball bearing moves slightly due to self-aligning function.

To maintain transition fit, the fit between the body and the bearing is designed slightly tight. (Except casting) If the bearing is inclined when delivered, insert the shaft into the bearing to adjust the inclination.

Type	Housing Units	Diamond Shape Flange	Components Ⓜ Material (1) Housing	(2) Bearing	(3) Rubber Seal	(4) Set Screw	(5) Eccentric Ring
Set Screw	PBT	HBT	Zinc Alloy Die Cast (ZDC)	1.3505/100Cr6	Nitrile Rubber (NBR)	1.7220/34CrMo4	-
Eccentric Ring	PBR	HBR	Zinc Alloy Die Cast (ZDC)	1.3505/100Cr6	Nitrile Rubber (NBR)	1.7220/34CrMo4	1.1151/C22E
	PBRS	HBRS	Zinc Alloy Die Cast (ZDC) + Nickel Chrome Plating	1.4125/ X105CrMo17	Nitrile Rubber (NBR)	1.4301/ X5CrNi18-10	1.1151/C22E + Nickel Chrome Plating
	PBRSX	HBRSX	Stainless Steel Cast (1.4308/G-X6CrNi18-9)	1.4125/ X105CrMo17	Nitrile Rubber (NBR)	1.4301/ X5CrNi18-10	1.4301/X5CrNi18-10

Accuracy: JIS B 1558, JIS B 1559

Bearing seat diameter accuracy: H7 (Clearance Fit)

Operation Temperature: -10°C ~ +80°C

Part Number Type	D	H	L	L1	A	d	t PBT PBR PBRS	t PBRSX	H1 PBT PBR PBRS	H1 PBRSX	B PBT	B PBR PBRS PBRSX	S	Weight (g) PBT	Weight (g) PBR PBRS	Weight (g) PBRSX	€ Unit Price PBT PBR	€ Unit Price PBRS	€ Unit Price PBRSX
PBT PBR PBRS PBRSX(D10 ~ 25)	10	18	67	53	16	7	6	5	35	34	14	17.5	4	70	77	79			
	12	19	71	56				6	38	37	14.5			80	91	98			
	15	22	80	63			7	6	43	42	16.5	18.5	4.5	120	125	129			
	17	24	85	67	18			7	47	46	17.5	20.5	5	140	156	170			
	20	28	100	80	20	10	9	8	55	53.5	21	24.5	6	210	230	258			
	25	32	112	90			10	9	62	60.5	22.5	25.5		270	294	333			
	30	36	132	106	26	13	11	-	70	-	24.5	26.5	6.5	410	454	-			

kgf=Nx0.101972

Part Number Type	D	L	L1	t	A2	A1	d	W	A HBT	A HBR HBRS HBRSX	B HBT	B HBR HBRS HBRSX	S	Weight (g) HBT	Weight (g) HBR HBRS	Weight (g) HBRSX	€ Unit Price HBT HBR	€ Unit Price HBRS	€ Unit Price HBRSX
HBR(D = 8 is for HBR only)	8	48	37	4	4.5	8.5	4.8	27	-	16	-	15	3.5	-	30	-			
HBT HBR HBRS HBRSX(D10 ~ 25)	10	60	45	5.5	5.5	11.5	7	36	15.5	19	14	17.5	4	50	60	77			
	12	63	48					38	16		14.5			70	76	87			
	15	67	53	6.5	6.5	13		42	18.5	20.5	16.5	18.5	4.5	90	100	115			
	17	71	56	7	7	14		46	19.5	22.5	17.5	20.5	5	115	129	146			
	20	90	71	8	8	16	10	55	23	26.5	21	24.5	6	190	205	253			
	25	95	75					60	24.5	27.5	22.5	25.5		220	244	298			
	30	112	85	9	9	18	13	70	27	29	24.5	26.5	6.5	340	354	-			

kgf=Nx0.101972

■Basic Load Rating

D	Basic Load Rating Cr (Dynamic) N PBT PBR HBT HBR	Cr (Dynamic) N PBRS PBRSX HBRS HBRSX	Cor (Static) N PBT PBR HBT HBR	Cor (Static) N PBRS PBRSX HBRS HBRSX
8	3300	-	1260	-
10	4600	3900	2000	1550
12	5100	4300	2400	1900
15	5600	4750	2800	2250
17	6000	5100	3300	2650
20	9350	7900	5100	4000
25	10100	8600	5800	4650
30	13200	11300	8300	6600

■Set Screw Detailed Dimensions

D	M PBT HBT	M PBR · PBRS · PBRSX HBR · HBRS · HBRSX	Tightening Torque (Nm) PBT HBT	Tightening Torque (Nm) PBR · PBRS · PBRSX HBR · HBRS · HBRSX	Axial Load Capacity (kN) PBT HBT	Axial Load Capacity (kN) PBR · PBRS · PBRSX HBR · HBRS · HBRSX
8	-	M3x0.5	-	0.59	-	0.39
10	M3x0.35	M4x0.7	0.59	1.5	0.35	0.88
12						
15	M4x0.5		1.47		0.43	
17						
20	M5x0.5	M5x0.8	2.94	2.9	0.72	1.76
25						
30						

Order Example — Part Number: PBR15, HBT15

Days to Ship: 6 Days, 2 Days P.87

Price

■Volume Discount

Round down to one Cent. P.87

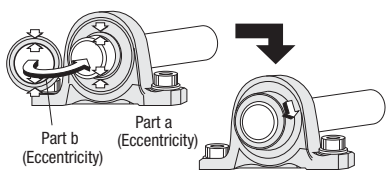
Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

■How to Secure the Shaft

Set Screw Fixed	- There are two set screws at the end face of the bearing inner ring (at 120°). The shaft is connected by tightening the set screws.
Eccentric Ring Fixed	- Dissociate the centers of the convex outer surface at the end of the bearing inner race (part a) and the concave inner surface of the eccentric ring (part b), connect the shaft and the inner ring by forming a wedge on the circumference (Refer to Figure 1) - Also, there is a set screw and a hole each (at the angle of 90°) on the end face of eccentric ring, which helps to prevent loosening by using the set screw as well as tightening as described above. - The D hole is for inserting a small diameter rod when loosening the connection.

Fig.1 How to Tighten Eccentric Ring Type



Housing Units

-Cast Housing Units · Bottom Mount-

Reduced Delivery Time

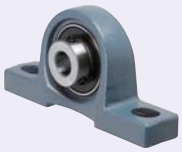
Price Revision

: New Price

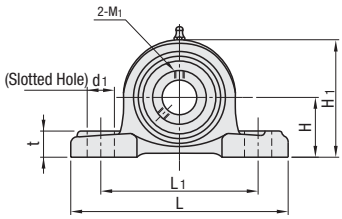
CAD Data

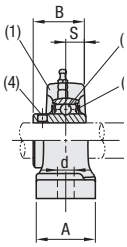
RoHS



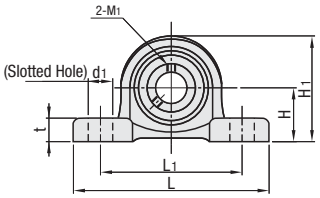


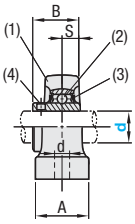
PDR(Pillow Type)



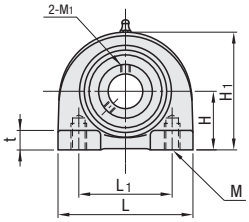


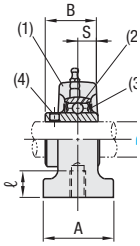
PDRCP(Compact Pillow Type)





PDB(Bottom Mount Type)





Accuracy:JIS B 1558
JIS B 1514
JIS B 1559
Bearing seat diameter accuracy: H7 (Clearance Fit)
Operation Temperature: -15 ~ +100°C

Components	Material
(1) Housing	Material EN-JL 1030/EN-GJL-200
(2) Bearing	Material 1.3505/100Cr6
(3) Rubber Seal	Material Nitrile Rubber (NBR)
(4) Set Screw	Material 1.7220/34CrMo4

Part Number Type	D	JIS Nominal PDR	H PDR	H PDB	L PDR	L PDB	L1 PDR	L1 PDB	A	d1	d	M	ℓ	t PDR	t PDB	H1 PDR	H1 PDB	B	S	Basic Load Rating (kN) Cr (Dynamic)	Basic Load Rating (kN) Cor (Static)	Set Screw M1	Set Screw Tightening Torque (N-cm)	Set Screw Axial Load Capacity (N)	Weight (g) PDR	Weight (g) PDB	€ Unit Price PDR	€ Unit Price PDB
	12	UCP201	30.2	30.2	127	76	95	52	38	19	13	M10x1.5	12	15	8	62	62	31.0	12.7	12.8	6.6	M6x0.75	392	640	650	550		
	15	UCP202																								630	530		
	17	UCP203																								620	520		
	20	UCP204	33.3													65							490	1280	650	500		
PDR	25	UCP205	36.5	36.5	140	84	105	56		16			15	16	10	70	72	34.1	14.3	14.0	7.9			1400	790	720		
PDB	30	UCP206	42.9	42.9	165	94	121	66	48	21	17	M14x2.0	18	18		83	84	38.1	15.9	19.6	11.3			1960	1260	1020		
	35	UCP207	47.6	47.6	167	110	127	80					20	19	12	94	95	42.9	17.5	25.9	15.4	M8x1	1180	2590	1590	1580		
	40	UCP208	49.2	49.2	184	116	137	84	54	25				100	100	49.2	19	29.3	17.9			2930	1920	1840				
	45	UCP209	54.0	54.2	190	120	146	90		22	20	M16x2.0	25	20		108	108			33.0	20.5			3300	2190	2060		
	50	UCP210	57.2	57.2	206	130	159	94	60	25				22	14	114	116	51.6		35.5	23.2	M10x1.25	2350	3550	2590	2440		

kgf=Nx0.101972

Part Number Type	D	H	L	L1	A	d1	d	t	H1	B	S	Basic Load Rating (kN) Cr (Dynamic)	Basic Load Rating (kN) Cor (Static)	Set Screw M1	Set Screw Tightening Torque (N-cm)	Set Screw Axial Load Capacity (N)	Weight (g)	€ Unit Price
	12	30.2	114	87	25	16	12	12	57	22.0	6	9.55	4.8	M5x0.8	240	476	390	
	15																380	
	17																360	
PDRCP	20	33.3	125	97	27			13	64	24.7	7	12.8	6.6		250	1280	480	
	25	36.5	130	100	29				70	27.0	7.5	14.0	7.9	M6x0.75	490	1400	590	
	30	42.9	156	120	33	21	14	15	83	30.3	8	19.6	11.3			1960	700	

kgf=Nx0.101972

Order Example

Part Number
PDR15
PDRCP12

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

6 Days
2 Days

P.87

Housing Units
-Cast Iron Housings Flanged-

Reduced Delivery Time

Price Revision

: New Price

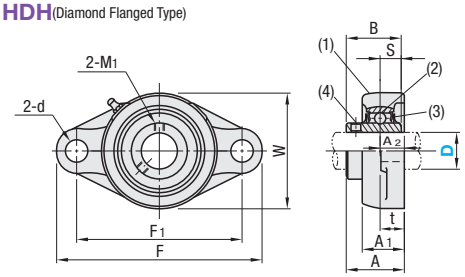
CAD Data

RoHS

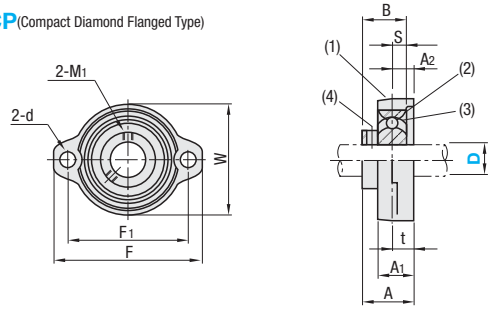




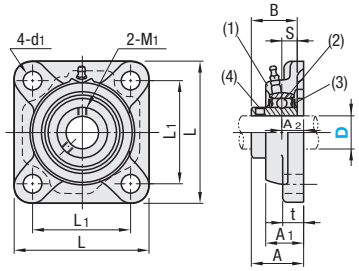
HDH (Diamond Flanged Type)



HDHCP (Compact Diamond Flanged Type)



HDF (Square Flanged Type)



Accuracy: JIS B 1558
JIS B 1514
JIS B 1559
Bearing seat diameter accuracy: H7 (Clearance Fit)
Operation Temperature: -15 ~ +100°C

Components	Material
(1) Housing	EN-JL 1030/EN-GJL-200
(2) Bearing	1.3505/100Cr6
(3) Rubber Seal	Nitrile Rubber (NBR)
(4) Set Screw	1.7220/34CrMo4

Part Number		JIS Nominal		F	F1	W	L	L1	t	A	A1	A2	d	d1	B	S	Basic Load Rating (kN)		Set Screw			Weight (g)		€ Unit Price	
Type	D	HDH	HDF														Cr (Dynamic)	Cor (Static)	M1	Tightening Torque (N-cm)	Axial Load Capacity (N)	HDH	HDF	HDH	HDF
HDH HDF	12	UCFL201	UCF201	113	90	60	86	64	12	33.3	25.5	15	12	12	31.0	12.7	12.8	6.6	M6x0.75	392	640	470	630		
	15	UCFL202	UCF202																			450	610		
	17	UCFL203	UCF203																			440	600		
	20	UCFL204	UCF204																	490	1280	420	580		
	25	UCFL205	UCF205	130	99	68	95	70	14	35.8	27.0	16	16		34.1	14.3	14.0	7.9			1400	590	720		
	30	UCFL206	UCF206	148	117	80	108	83		40.2	31.0	18			38.1	15.9	19.6	11.3			1960	900	1010		
	35	UCFL207	UCF207	161	130	90	117	92	16	44.4	34	19		14	42.9	17.5	25.9	15.4	M8x1	1180	2590	1200	1380		
	40	UCFL208	UCF208	175	144	100	130	102		51.2	36	21		16	49.2	19	29.3	17.9			2930	1510	1770		
	45	UCFL209	UCF209	188	148	108	137	105	18	52.2	38	22	19				33.0	20.5			3300	1900	2070		
	50	UCFL210	UCF210	197	157	115	143	111		54.6	40				51.6		35.5	23.2	M10x1.25	2350	3550	2200	2360		

kgf=Nx0.101972

Part Number		F	F1	W	t	A	A1	A2	d	B	S	Basic Load Rating (kN)		Set Screw			Weight (g)	€ Unit Price
Type	D											Cr (Dynamic)	Cor (Static)	M1	Tightening Torque (N-cm)	Axial Load Capacity (N)		
HDHCP	12	81	63.5	56	9.5	25.5	18	9.5	7	22	6	9.55	4.8	M5x0.8	250	476	280	
	15																270	
	17																250	
	20	90	71.5	63	11	28.7	20	11	10	24.7	7	12.8	6.6			1280	300	
	25	95	76	69	11	30.5	20.0	11	10	27	7.5	14.0	7.9	M6x0.75	490	1400	400	
	30	113	90.5	79	12	34.3	22.5	12	12	30.3	8	19.6	11.3			1960	580	

kgf=Nx0.101972

Order Example

Part Number
HDH20
HDF25
HDHCP25

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

6 Days

2 Days

P. 87

Housing Units

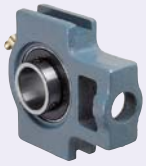
-Cast Iron Housings with Pilot · Take-ups-

Reduced Delivery Time

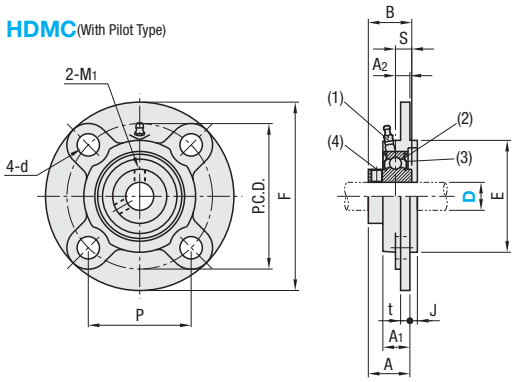
CAD Data

RoHS

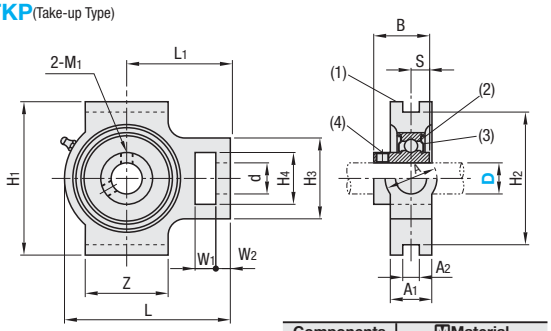




HDMC (With Pilot Type)



HDTKP (Take-up Type)



Accuracy: JIS B 1558
JIS B 1514
JIS B 1559
Bearing seat diameter accuracy: H7 (Clearance Fit)
Operation Temperature: -15 ~ +100°C

Components	Material
(1) Housing	EN-JL 1030/EN-GJL-200
(2) Bearing	1.3505/100Cr6
(3) Rubber Seal	Nitrile Rubber (NBR)
(4) Set Screw	1.7220/34CrMo4

Part Number Type	D	JIS Nominal HDMC	F	P	P.C.D.	t	A	A1	A2	J	E	d	B	S	Basic Load Rating (kN) Cr (Dynamic)	Cor (Static)	Set Screw M1	Tightening Torque (N-cm)	Axial Load Capacity (N)	Weight (g)	€ Unit Price
HDMC	12	UCFC201	100	55.1	78	7	28.3	20.5	10	5	62	12	31.0	12.7	12.8	6.6	M6x0.75	392	640	890	
	15	UCFC202																		870	
	17	UCFC203																		860	
	20	UCFC204																490	1280	840	
	25	UCFC205	115	63.6	90	7	29.8	21	10	6	70	12	34.1	14.3	14.0	7.9			1400	970	
	30	UCFC206	125	70.7	100	8	32.2	23		8	80		38.1	15.9	19.6	11.3			1960	1180	
	35	UCFC207	135	77.8	110	9	36.4	26	11	8	90	14	42.9	17.5	25.9	15.4	M8x1	1180	2590	1550	
	40	UCFC208	145	84.8	120		41.2			10	100		49.2	19	29.3	17.9			2930	1850	
	45	UCFC209	160	93.3	132	14	40.2	26	10	12	105	16			33.0	20.5			3300	2420	
	50	UCFC210	165	97.6	138		42.6	28			110		51.6		35.5	23.2	M10x1.25	2350	3550	2710	

kgf=Nx0.101972

Part Number Type	D	JIS Nominal HDTKP	H1	H2	H3	H4	L	L1	A	A1	A2	W1	W2	Z	d	B	S	Basic Load Rating (kN) Cr (Dynamic)	Cor (Static)	Set Screw M1	Tightening Torque (N-cm)	Axial Load Capacity (N)	Weight (g)	€ Unit Price
HDTKP	12	UCT201	89	76	51	32	94	61	32	21	12	16	10	51	19	31.0	12.7	12.8	6.6	M6x0.75	392	640	790	
	15	UCT202																					770	
	17	UCT203																					760	
	20	UCT204																			490	1280	740	
	25	UCT205					97	62	32	24						34.1	14.3	14.0	7.9			1400	820	
	30	UCT206	102	89	56	37	113	70	37	28				57	22	38.1	15.9	19.6	11.3			1960	1300	
	35	UCT207			64		129	78		30			13	64		42.9	17.5	25.9	15.4			2590	1600	
	40	UCT208	114	102	83	49	144	88	49	33	16	19	16	83	29	49.2	19	29.3	17.9	M8x1	1180	2930	2400	
	45	UCT209	117					87		35								33.0	20.5			3300	2400	
	50	UCT210					149	90		37				86		51.6		35.5	23.2	M10x1.25	2350	3550	2500	

kgf=Nx0.101972

Order Example — Part Number: HDMC20, HDTKP15

Days to Ship: 6 Days P. 87

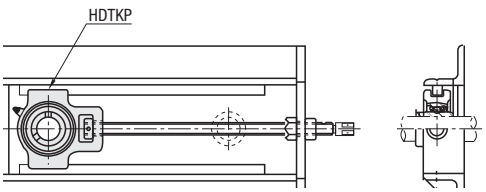
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



-HDMC

With the pilot (dia. E part) on the plate mounting side, the ball bearing misalignment can be prevented even if the mounting screws become loose after installation.

- HDTKP

Tension can be adjusted by sliding the guide groove A2. Suitable for adjusting the tension of a belt conveyor, etc.

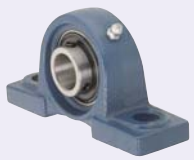
Deep Groove Ball Bearing Units (Economy Type)

-Cast Housing Units-

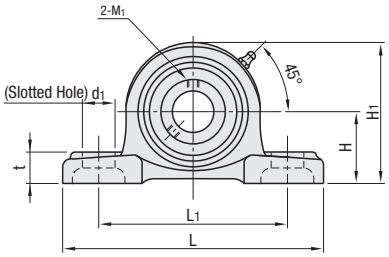
CAD Data

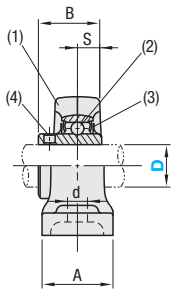
Features: Major overseas manufacturers' economical Deep Groove Ball Bearing units. Please use for sizeable loads transfer.

RoHS



CPDR (Pillow Type)





Accuracy: JIS B 1558
JIS B 1514
JIS B 1559
Bearing Housing Spherical Bearing Seat Diameter Precision: J7*
Operation Temperature: -15 ~ +100°C
*J7 tolerance constitutes a tight fit (transition fit) and does not allow aligning adjustments before mounting a shaft. Please make adjustments after mounting a shaft.

Components	Material
(1) Housing	EN-JL 1030/EN-GJL-200 equivalent
(2) Bearing	1.3505/100Cr6
(3) Rubber Seal	Nitrile Rubber (NBR)
(4) Set Screw	1.7220/34CrMo4 equivalent

Part Number		H	L	L1	A	d1	d	t	H1	B	S	Basic Load Rating (kN)		Set Screw			Weight (g)	€ Unit Price
Type	D											Cr (Dynamic)	Cor (Static)	M1	Tightening Torque (N-cm)	Axial Load Capacity (N)		
CPDR	20	33.3	127	95	38	16	13	14	65	31	12.7	12.8	6.6	M6x1	490	1360	650	
	25	36.5	140	105				15	71	34	14.3	14.0	7.9		490	1360	790	
	30	42.9	165	121	48	20	17	17	83	38.1	15.9	19.5	11.3		490	1360	790	
	35	47.6	167	127				18	93	42.9	17.5	25.7	15.3	M8x1	800	2980	1600	
	40	49.2	184	137	54	20			98	49.2	19	29.5	18.1		800	2980	2000	

kgf=Nx0.101972

Order Example — Part Number: CPDR20

Days to Ship: 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Deep Groove Ball Bearing Units (Economy Type)

-Cast Iron Housings Flanged-

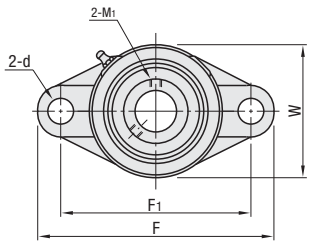
CAD Data

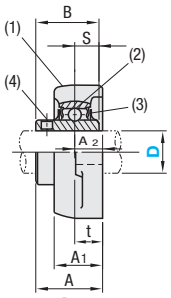
Features: Major overseas manufacturers' economical Deep Groove Ball Bearing units. Please use for sizeable loads transfer.

RoHS

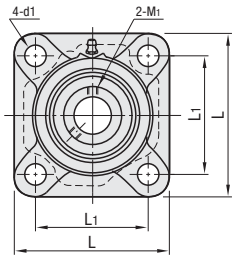


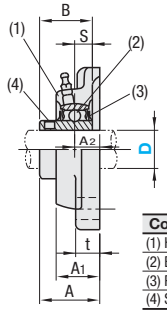
CHDH (Diamond Flanged Type)





CHDF (Square Flanged Type)





Accuracy: JIS B 1558
JIS B 1514
JIS B 1559
Bearing Housing Spherical Bearing Seat Diameter Precision: J7*
Operation Temperature: -15 ~ +100°C
*J7 tolerance constitutes a tight fit (transition fit) and does not allow aligning adjustments before mounting a shaft. Please make adjustments after mounting a shaft.

Components	Material
(1) Housing	EN-JL 1030/EN-GJL-200 equivalent
(2) Bearing	1.3505/100Cr6
(3) Rubber Seal	Nitrile Rubber (NBR)
(4) Set Screw	1.7220/34CrMo4 equivalent

Part Number														Basic Load Rating (kN)		Set Screw			Weight (g)		€ Unit Price	
Type	D	F	F1	W	L	L1	t	A	A1	A2	d	d1	B	S	Cr (Dynamic)	Cor (Static)	M1	Tightening Torque (N-cm)	Axial Load Capacity (N)	CHDH	CHDF	CHDH	CHDF
CHDH CHDF	20	113	90	60	86	64	12	33.3	25.5	15	12		31	12.7	12.8	6.6		490	1360	490	630		
	25	130	99	68	95	70	14	35.7	27	16		12	34	14.3	14.0	7.9	M6x1	490	1360	630	820		
	30	148	117	80	108	83		40.2	31	18			38.1	15.9	19.5	11.3		490	1360	940	1100		
	35	161	130	90	117	92	16	44.4	34	19	16	14	42.9	17.5	25.7	15.3	M8x1	800	2980	1200	1500		
	40	175	144	100	130	102		51.2	36	21		16	49.2	19	29.5	18.1		800	2980	1600	1900		

kgf=Nx0.101972

Order Example

Part Number
CHDH25
CHDF35

Days to Ship 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Steel Plate Ball Bearing Units / Shaft End Caps
-Flange Type-

Reduced Delivery Time

CAD Data

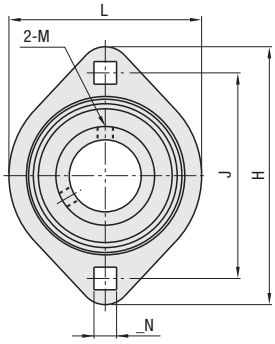
Features: Inexpensive Bearing Units with pressed steel plates.

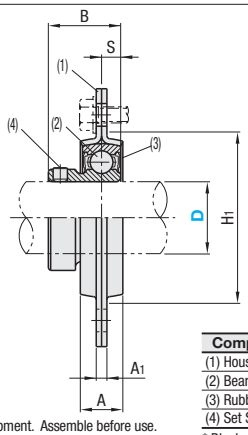
Steel Plate Ball Bearing Units -Flange Type-



RoHS

HBTP





Accuracy: JIS B 1558
JIS B 1514
JIS B 1559
Operation Temperature: -15 ~ +100°C

Components	Material
(1) Housing	1.0330/DC01
(2) Bearing	1.3505/100Cr6
(3) Rubber Seal	Nitrile Rubber (NBR)
(4) Set Screw	1.7220/34CrMo4

* Black oxide treatment is applied on the housing.

Bearing and steel plate are not assembled at the time of shipment. Assemble before use.
An angle of 2 - M (set screw) is 120°.

Part Number Type	D	L	H	A	J	N	A_1	H_1 Min.	B	S	Mounting Screws Nominal	Allowable Load (N) Radial	Allowable Load (N) Axial	Bearing Basic Load Ratings (N) Cr (Dynamic)	Bearing Basic Load Ratings (N) Co (Static)	Set Screw M	Set Screw Tightening Torque (N-cm)	Set Screw Axial Load Capacity (N)	Weight (g)	€ Unit Price
HBTP	12	59	81	14	63.5	7	4	49	22	6	M6	2650	640	9550	4800	M5x0.8	240	478	250	
	15	59	81	14	63.5	7	4	49	22	6	M6	2650	640	9550	4800		240	478	240	
	20	67	90	16	71.5	9	4	56	24.7	7	M8	3100	740	12800	6600		250	1280	290	
	25	71	95	18	76	9	4	60	27	7.5	M8	3530	900	14000	7900	M6x0.75	490	1400	360	
	30	84	113	18	90.5	11	5.2	71	30.3	8	M10	4900	1220	19600	11300		490	1960	560	

kgf=Nx0.101972

Order Example

Part Number
HBTP12

Days to Ship

6 Days P. 87

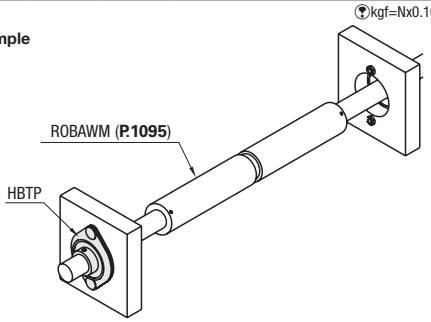
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



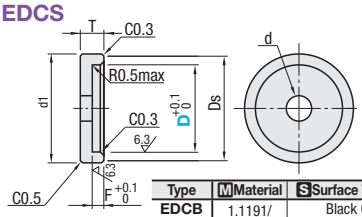
Shaft End Caps



RoHS

EDCB EDCM EDCS

25 (6.3)



Type	Material	Surface Treatment
EDCB	1.1191/ C45E	Black Oxide
EDCM		Electroless Nickel Plating
EDCS	1.4301/ X5CrNi18-10	-

Part Number Type	D	D_1	Ds	T	F	d	€ Unit Price EDCB	EDCM	EDCS
EDCB EDCM EDCS	10	14	13.4	5	2	4.5			
	12	16	15.4			5.5			
	15	19	18.4						
	17	21	20.4	7	3	6.6			
	20	26	25.4						
	25	31	30.4						
	30	37	36.4	8		9			
	35	42	41.4	10	4	11			
	40	47	46.4			14			

Order Example

Part Number
EDCB20

Days to Ship

6 Days P. 87 2 Days

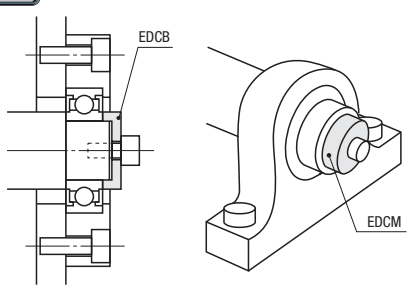
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Steel Plate Ball Bearing Units
-Housing Units-

Reduced Delivery Time

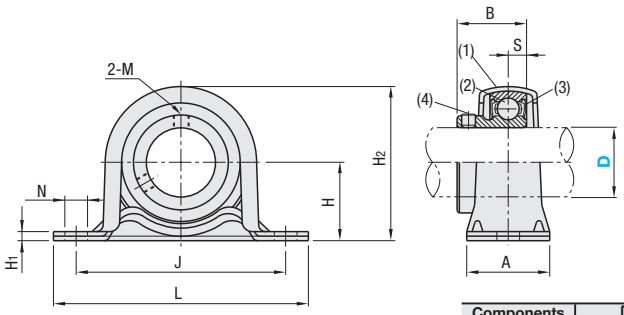
CAD Data

Features: Inexpensive Pillow Type Bearing Units with pressed steel plates.



RoHS

PBTP



Components	Material
(1) Housing	1.0330/DC01
(2) Bearing	1.3505/100Cr6
(3) Rubber Seal	Nitrile Rubber (NBR)
(4) Set Screw	1.7220/34CrMo4

* Black oxide treatment is applied on the housing.

Bearing and steel plate are not assembled at the time of shipment. Assemble before use.
An angle of 2 - M (set screw) is 120°.

Accuracy:JIS B 1558
JIS B 1514
JIS B 1559
Operation Temperature: -15 ~ +100°C

Part Number Type	D	L	H	A	J	N	H_1	H_2	B	S	Mounting Screws Nominal	Allowable Load (N) Radial	Allowable Load (N) Axial	Bearing Basic Load Ratings (N) Cr (Dynamic)	Bearing Basic Load Ratings (N) Co (Static)	Set Screw M	Set Screw Tightening Torque (N-cm)	Set Screw Axial Load Capacity (N)	Weight (g)	€ Unit Price
PBTP	12	86	22.2	25	68	9.5	3.2	44	22	6	M8	2150	830	9550	4800	M5x0.8	240	478	160	
	15	86	22.2	25	68	9.5	3.2	44	22	6	M8	2150	830	9550	4800		240	478	150	
	20	98	25.4	32	76	9.5	3.2	50	24.7	7	M8	2650	1030	12800	6600		250	1280	210	
	25	108	28.6	32	86	11.5	4	56	27	7.5	M10	3700	1470	14000	7900	M6x0.75	490	1400	290	
	30	117	33.3	38	95	11.5	4	66	30.3	8	M10	4400	1670	19600	11300		490	1960	420	

kgf=Nx0.101972

Order Example

Part Number
PBTP12

Days to Ship

6 Days P. 87

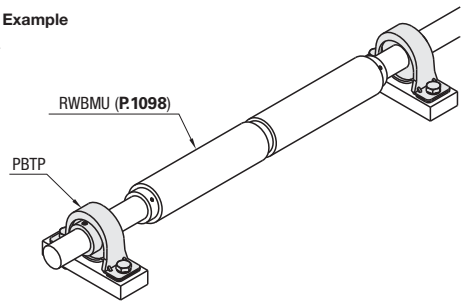
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~50
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

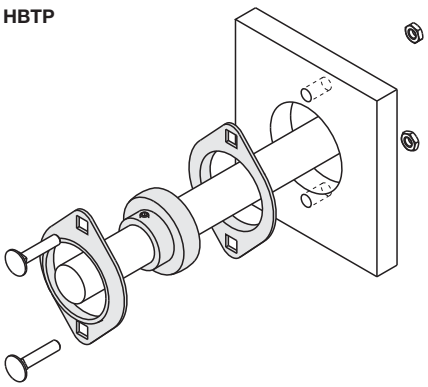
Example



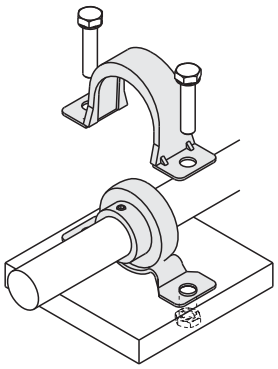
Mounting steps

1. Insert the shaft into the bearing and locate it to the predetermined position.
2. Sandwich the bearing between the housings (2 steel plates) and secure them with screws (the bearing is fixed after the assembly).
3. Decide the position of the shaft and secure it with a set screw.

HBTP



PBTP

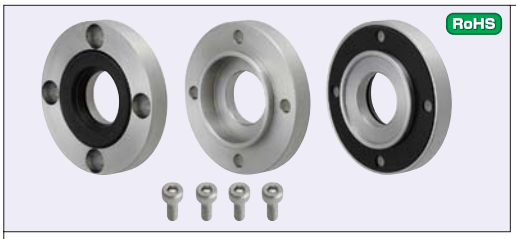


NEW

Bearing Cover Plates

-Standard Bearing Covers / Bearing Covers with Seals-

CAD Data



RoHS

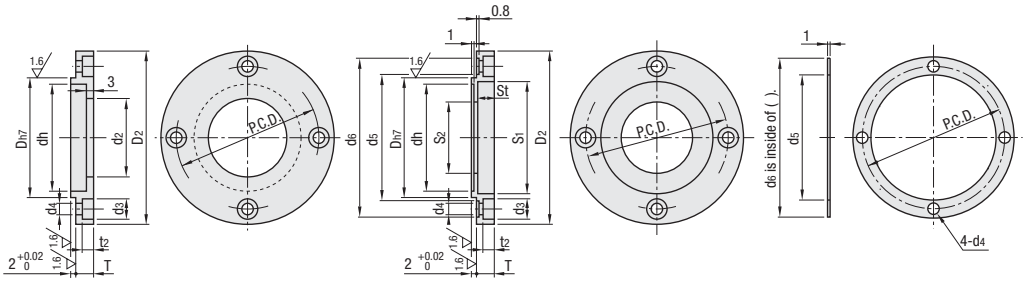
Type		M Material	S Surface Treatment	A Accessory		
Standard	With Seal			Oil Seal Type G/Type D	Packing	Mounting Screws
BVFCC	BVFPC	1.1191/C45E	Black Oxide	Nitrile Rubber		1.7220/34CrMo4 (Black Oxide Finish)
BVFCCM	BVFPCM		Electroless Nickel Plating			1.4567/ X3CrNiCu18-9-4
BVFCCS	BVFPCS	1.4301/ X5CrNi18-10	-			

Oil seal and gasket are not included with Standard Type.

Standard
-Please use for holding Bearing Outer Rings in place

With Seal
-Suitable for dust-resistant and water-resistant applications.

Included Gasket 6.3 (1.6)



Included Oil seal is not installed at the time of shipment. Install before use.

Part Number Type	No.	Applicable Bearings	Dh7	Tol.	D2	dh	T	P.C.D.	d2	d3	d4	t2	S1	S2	St	Applicable Oil Seal Inner Ø	Incl. Oil Seal	Gasket Groove Packing d5	Gasket Groove Packing d6	Mounting Screws (Accessories)
(Standard Type) BVFCC BVFCCM BVFCCS (With Seals) BVFPC BVFPCM BVFPCS	10	6000 7000	26	0 -0.021	41	23	6	33	16	6.5	3.5	3.1	25	17	4	15	G15254	26	38.5 (38)	M3x8
	12	6001 7001	28		43	25	6	35										28	40.5 (40)	
	15	6002 7002	32	0 -0.025	48	28	6	40	21				32	22	5	20	G20325	34	45.5 (45)	
	17	6003 7003	35		48	31												35		
	20	6004 7004	42		58	36	7	48	26	8	4.5	4.1	35	27	6	25	D25356	42	54.5 (54)	M4x10
	25	6005 7005	47		63	41	8	53	31				40	32	7	30	D30407	47	59.5 (59)	
	30	6006 7006	55	0 -0.030	78	48		64	41	9.5	5.5	5.1	50	42	6.5	40	D40506.5	55	74.5 (74)	M5x12

d5 dimensions are inner diameters and d6 ( ) dimensions are outer diameters of included gasket.

Order Example

Part Number
BVFCC10
BVFPC20

Days to Ship

8 Days

Price

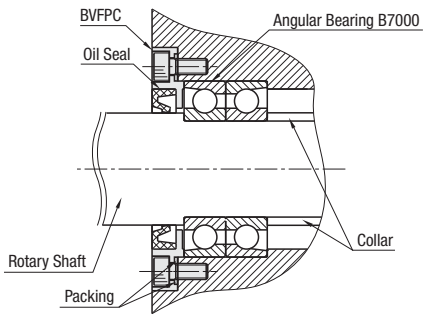
Volume Discount (Round down to one Cent.) P. 87

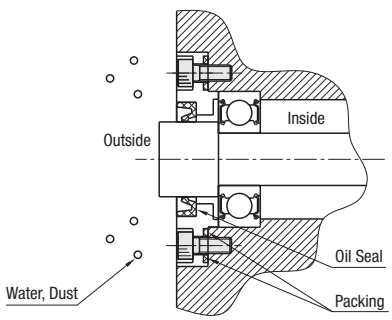
Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

No.	€ Unit Price					
	Standard			With Seal		
	BVFCC	BVFCCM	BVFCCS	BVFPC	BVFPCM	BVFPCS
10						
12						
15						
17						
20						
25						
30						

Example





Bearing Cover Plates
-Standard Type-

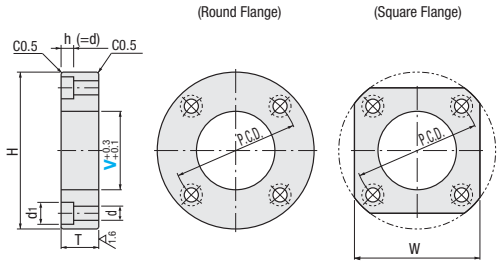
CAD Data



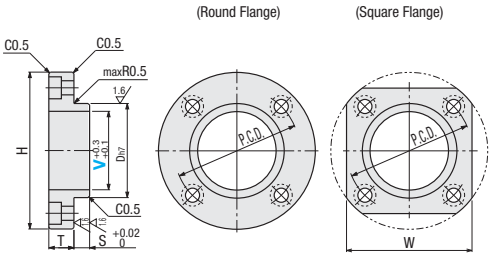
Flat		With Pilot		Material	Surface Treatment
Round Flange	Square Flange	Round Flange	Square Flange		
-	BVFS	-	BVIS	1.1191/C45E	-
BVFCM	BVFSM	BVICM	BVISM	1.1191/C45E	Electroless Nickel Plating
-	-	BVICA	BVISA	EN AW-5052/ AlMg2,5	Clear Anodize
BVFCS	-	-	-	1.4301/ X5CrNi18-10	-

6.3 (1.6)

Flat



With Pilot



Part No. Type	V	Applicable Bearings	Applicable	H	P.C.D.	W	T	d	d1	D	S
Flat (Round Flange) BVFCM BVFCS	4	673	M3	26	16	21	5	3.5	6.5	6	1.5
	5	674								7	
	6	693								8	
	8	623·694		29	19	23				10	2.0
	10	624·695	M4	35	24	28	6	4.5	8.0	13	
	11	605·696								14	
(Square Flange) BVFS BVFSM	12	625		39	28	31				16	
	13	606								17	
	15	626·698								19	
	18	608·6900		46	35	36				22	
	20	628·6901								24	
With Pilot (Round Flange) BVICM BVICA	21	6000								26	
	23	6001·6902	M5	51	38	41	7	5.5	9.5	28	
	25	6200·6903		58	45	45				30	
	26	6201·6002								32	
	30	6202·6003								35	
	32	6904·6203		63	50	48				37	
(Square Flange) BVIS BVISM BVISA	35	6004·6905		70	57	54				42	
	40	6204·6005·6906								47	
	46	6205	M6	89	75	68	8	6.5	11.0	52	
	47	6006·6907								55	
	56	6206·6007·6908								62	
	64	6008·6207·6208		107	93	81				68	

€ Unit Price

Flat				With Pilot				
Round Flange		Square Flange		Round Flange		Square Flange		
BVFCM	BVFCS	BVFS	BVFSM	BVICM	BVICA	BVIS	BVISM	BVISA

Order Example

Part Number: BVFS10

Days to Ship

8 Days

Price

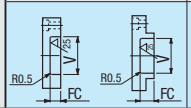
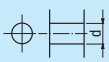
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - (FC / MXC / NC)
BVFCM10 - FC3-NC
10 Days

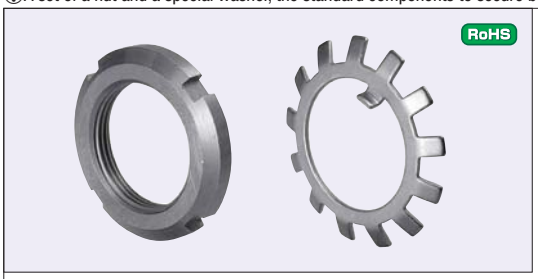
Alterations	Blind Hole	No. of Mounting Holes	Mounting Hole Type
			
Code	FC	MXC	NC
Spec.	Changes V hole to blind hole. FC=1 mm Increment 3≤FC≤T-1 Ordering Code FC4	The number of mounting holes is changed from 4 to 6. Available for Round Flange Type only. Ordering Code MXC	Changes mounting holes to through holes. Hole Dia. = d (Specification Table) Ordering Code NC
Price Adder	Free of Charge	3,50	Free of Charge

Lock Nuts and Toothed Lock Washers for Bearings

Price Reduction
Up to 68%

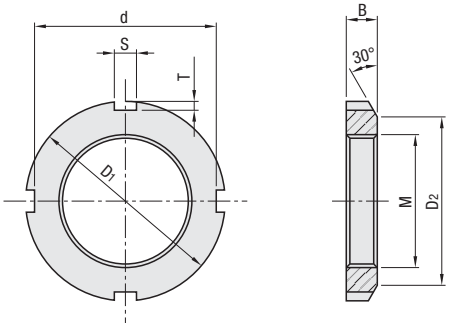
CAD Data

A set of a nut and a special washer, the standard components to secure bearings.

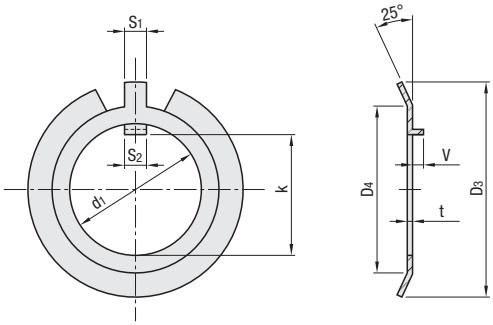


Type			(1) Bearing Nut	(2) Tooth Lock Washer for Bearing
Type	((1)+(2)) set	(1) Only	Material	Material
Steel	JLNK	JLN	1.0038/S235JR	1.0330/DC01
Stainless Steel	JLNSK	JLNS	No.10~201.4305/X10CrNiS18-9 No.25~50 1.4301/X5CrNi18-10	1.4301/X5CrNi18-10

(1) Bearing Nut



(2) Tooth Lock Washer for Bearing

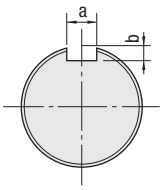


Screw Precision JIS B 0211 6H (Class 2)

Part Number		(1) Bearing Nut							Reference Weight (g)				JLNK JLNSK JLN JLNS			
									per set ((1)+(2))		per 1 pcs. ((1) Only)		((1)+(2) set)		((1) only)	
Type	No.	MxPitch (Fine Thread)	D1	D2	B	d	S	T	JLNK	JLNSK	JLN	JLNS	€ Unit Price			
((1)+(2)) set	10	10x0.75	18	13	4	14	3	2	5.0	5.3	3.7	4.1				
(Steel)	12	12x1.0	22	17		18			8.3	8.2	6.4	6.6				
JLNK	15	15x1.0	25	21	5	21	4		12.5	12.7	10	10.3				
(Stainless Steel)	17	17x1.0	28	24		24			15.5	16.3	12.4	13				
JLNSK	20	20x1.0	32	26	6	28			21.5	22.8	19	19.5				
	25	25x1.5	38	32	7	34	5		31.4	36.6	25	31.2				
(1) Only	30	30x1.5	45	38		41			47.8	48.3	40	41.1				
(Steel)	35	35x1.5	52	44	8	48			63.4	73.7	53	64.3				
JLN	40	40x1.5	58	50	9	53	6	2.5	97.3	97.7	85	86.5				
(Stainless Steel)	45	45x1.5	65	56	10	60			134.2	135	119	121				
JLNS	50	50x1.5	70	61	11	65			162.5	161.5	146.5	147				

For orders larger than indicated quantity, please request a quotation.

No.	(2) Tooth Lock Washer for Bearing									Dim. of Tooth Lock Washer Mounting Groove (Reference)	
	d1	k	S1	S2	t	V	D3	D4	No. of Teeth	Slot Width a	Groove Depth b
10	10	8.5	3	3	1.0	2	21	13	9	4	2
12	12	10.5					25	17			
15	15	13.5	4	4		2.5	28	21	13	5	
17	17	15.5					32	24			
20	20	18.5					36	26			
25	25	23	5	5	1.2		42	32		7	2.5
30	30	27.5					49	38			3
35	35	32.5	6	6			57	44	15		
40	40	37.5					62	50			
45	45	42.5					69	56	17		
50	50	47.5					74	61			



Order Example

Part Number
((1)+(2)) set
JLNK
(1) Only
JLN

Days to Ship 6 Days P. 87

Price

- JLNSK / JLNS

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~49	50~99
Rate	€ Unit Price	10%

For orders larger than indicated quantity, please request a quotation.
Volume discount rate have be changed.
No volume discount rate is set for JLNK and JLN. RFQ for ordering more than 100 pcs.

Bearing Nuts and Tooth Lock Washers

-These 2 items are common parts for securing bearings.
-Nut loosening can be prevented by machining a vertical groove (Keyway) on the thread of a rotary shaft, and by tightening the nut and the shaft with the tooth lock washer.

[Mounting Procedure]

(1) Assemble a bearing onto a rotary shaft.
(2)Fit the tooth lock washer tab (S2) in the groove of the rotary shaft (a).
(3) Tighten the bearing nut.
(4)Fold the tooth lock washer tab (S1) to fit the groove of the rotary shaft (S).

Hard Locking Bearing Nuts / Fine U Nuts®

Price Reduction
Up to 45%

CAD Data

Hard Locking Bearing Nuts

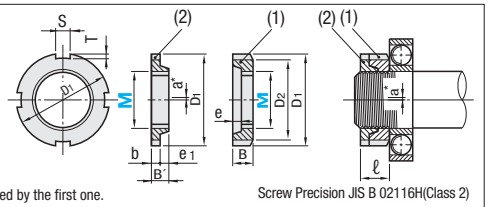
RoHS



Type		M Material	H Hardness	S Surface Treatment
Standard Type	Thin Type			
HLB	-	1.4125/ X105CrMo17	-	Parker
HLBM	-			Electroless Nickel Plating
HLBC	HLBU	1.1191/C45E Thermal Refined	22~28HRC	Parker
HLBS	-	1.4301/ X5CrNi18-10	-	-

*Designed Offset (a) is provided between No.2 Nut boss.

For Thin Type (HLBU), please mount the second nut (upper nut) first, followed by the first one.



Screw Precision JIS B 02116H(Class 2)

Part Number Type	M	MxPitch (Fine Thread)	(1) No.1 Nut (Lower Nut) D1	D2	B Standard	B Thin	e Standard	e Thin	(2) No.2 Nut (Upper Nut) D1	B' Standard	B' Thin	e1 Standard	e1 Thin	b Standard	b Thin	Common for No.1 and 2 S	T	Setting Height ℓ Standard Min	Standard Max	Thin Min	Thin Max	Perpendicularity of the end surface (max.)	Weight per Set (g) Standard	Thin
	10	10x0.75	18	13	6	-	2.7	-	18	6	-	2.5	-	3.5	-	3	2.0	9.5	10.5	-	-	0.05	15	-
<Standard Type>	12	12x1.0	22	17					22														17	
HLB (M10 ~ 50)	15	15x1.0	25	21	7				25	7				4.5		4		11.5	12.5				23	
HLBM (M12 ~ 50)	17	17x1.0	28	24					28														29	
HLBC (M10 ~ 50)	20	20x1.0	32	26	8				32	8				5.5				13.5	14.5				43	
HLBS (M12 ~ 50)	25	25x1.5	38	32	10	7	4.2	3.7	38	10	7	4.0	4	6	3	5		16.0	17.5	10	11.5		72	45
	30	30x1.5	45	38					45														103	63
	35	35x1.5	52	44	11	8		4.2	52	11	8		4.0	7	4			18.0	19.5	12	13.5		150	100
<Thin Type>	40	40x1.5	58	50	12	9			58	9	9			5	5			17.0	18.5	14	15.5		170	140
HLBU (M25 ~ 50)	45	45x1.5	65	56	13	10			65	10	10			6	6	6	2.5	19.0	20.5	16	17.5		240	201
	50	50x1.5	70	61	14	11			70	11	11			7	7			21.0	22.5	18	19.5		285	250

Order Example: Part Number HLB35

Days to Ship: 6 Days P. 87

Cautions for Use

Machine chamfering (C = 1 pitch or equivalent) on the tip of male thread, whose precision grade is JIS 6g (Class 2).

Price

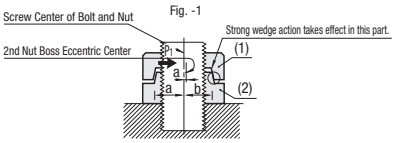
Volume Discount (Round down to one Cent.) P. 87

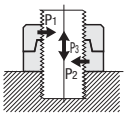
Quantity	1~34	35~49	50~99
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

M	€ Unit Price HLB	HLBM	HLBC	HLBS	HLBU
10					
12					
15					
17					
20					
25					
30					
35					
40					
45					
50					

Structure and Function of Hard Lock Nut



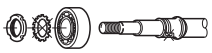


Wedge action does not change even when nuts are installed upside down of the figure on left.

Fig.-1 When upper nut is tightened, stress is automatically applied in P1 arrow direction. Horizontal stress continues to increase with tightening until upper nut closely contacts lower nut as shown in Fig.-2. The nuts are fully locked by the wedge effect.

Fig.-2 After nuts are tightened, internal stress remains distributed as composite stress of P1 + P2 + P3 to resist external impact.

Comparison with Conventional Products



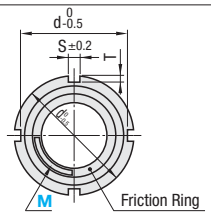
Unlike standard bearing nut sets, no keyway machining is required for toothed washers and shafts.

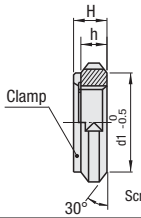
Fine U Nuts®

RoHS



Type	M Material Main Body	Friction Ring
FUNT	1.4125/X105CrMo17	1.4319/X3CrNiN17-8
FUNTC	1.1191/C45E Thermal Refined (22 ~ 28HRC)	
FUNTS	1.4301/X5CrNi18-10	





Screw Accuracy JIS 6H (Class 2)

Part Number Type	M	MxPitch (Fine Thread)	D	D1	d	T	S	H		h	Perpendicularity of End Face (max.)	€ Unit Price FUNT	FUNTC	FUNTS
	8	8x0.75	16	12	13	1.5	3	5.3		4.3				
	10	10x0.75	18	13.5	14.4	1.8	3	5.2	±0.3	4				
	12	12x1.0	22	17	18.4	1.8	3	5.4		4				
	15	15x1.0	25	21	21.4	1.8	4	6.5		5				
FUNT	17	17x1.0	28	24	24.2	1.9	4	6.4	±0.5	5				
FUNTC	20	20x1.0	32	26	28.4	1.8	4	7.7		6				
FUNTS	25	25x1.5	38	32	34	2	5	9.1		7	0.05			
	30	30x1.5	45	38	41	2	5	9.1		7				
	35	35x1.5	52	44	48	2	5	10.2	±0.8	8				
	40	40x1.5	58	50	53	2.5	6	11.2		9				
	45	45x1.5	65	56	60	2.5	6	12.5	±1.0	10				
	50	50x1.5	70	61	65	2.5	6	13.5		11				

Order Example: Part Number FUNT10

Days to Ship: 6 Days P. 87

2 Days

Price

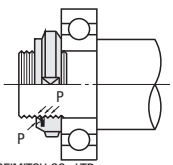
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Hard Lock Structure

As shown in the figure, stress P is caused by the spring effect when Friction Ring contacts the thread. The reaction force P' together with P presses hard upon the threads, which creates friction torque (preventing torque) to prevent any free motion.



Cautions for Use

Mating thread should be made to JIS6g (Class 2) accuracy with a C = 1 tread pitch equivalent chamfer on the starting tip.
- Use lubricant when threading in and out. (Use extra high performance lubricant when shaft hardness is low.)
- For optimal performance, ensure that the complete thread portion is to extrude by 2 pitches or more from function ring side.
- The perpendicularity of the plane end in the above table is effective only when tightened with twice or more the preventing torque.
- Not usable with high speed impact wrenches.
- Not usable on machined thread portion of shafts (keyway, etc.)
- Screwing in from the friction ring side is impossible.
- Do not use when the deflection of Friction Rings or Clamp Part occurs.

Fine U Nut® is a registered trademark of FUJISEIMITSU CO., LTD.

Precision Lock Nuts / Hook Spanners for Bearing Lock Nuts

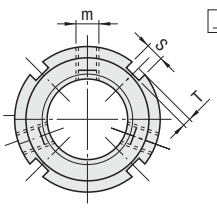
Price Reduction
Average 25%

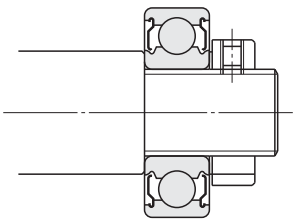
CAD Data

Precision Lock Nuts

RoHS







Type	
PLNY(Standard)	⊥ 0.005 A
PLN(High-Grade)	⊥ 0.002 A

Components	M Material	H Hardness	S Surface Treatment
Main Body	1.7220/34CrMo4	28~32HRC	Black Oxide
Set Screw	1.7220/34CrMo4	35~40HRC	
Locking Metal (*)	Phosphor Bronze	-	-

* Locking metal is the metal at the tip portion of set screw.

Screw Accuracy ISO Class 4H

Part Number Type	M	MxPitch (Fine Thread)	D	d	B	S	T	m	Perpendicularity of End Face (max.)	Max. Tightening Torque (Nm) Set Screw	€ Unit Price PLNY	€ Unit Price PLN
(Standard) PLNY / (High-Grade) PLN	8	8x0.75	16	11	8	3	2	2xM4	- PLNY 0.005 - PLN 0.002	3.5		
	10	10x1.0	18	13								
	12	12x1.0	20	16								
	15	15x1.0	25	21								
	17	17x1.0	28	23	10	4		2xM5		4.5		
	20	20x1.0	32	27				3xM5				
	25	25x1.5	38	33	12	5		3xM6		8.0		
	30	30x1.5	45	40								
	35	35x1.5	52	47								
	40	40x1.5	58	52	14	6	2.5					
	45	45x1.5	65	59								
	50	50x1.5	70	64				3xM8		18.0		
	55	55x2.0	75	68	16	7	3					
	60	60x2.0	80	73								

Order Example — Part Number: PLNY8

Days to Ship: 6 Days / 2 Days P.87

Price

Volume Discount

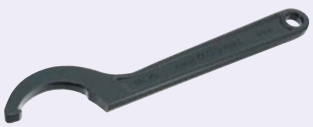
(Round down to one Cent.) P.87

Quantity	1~19	20~29	30~49
Rate	€ Unit Price	5%	10%

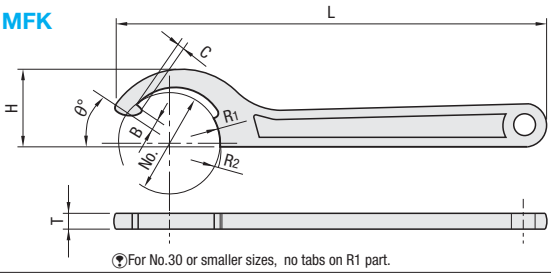
For orders larger than indicated quantity, please request a quotation.

Hook Spanners for Bearing Lock Nuts

RoHS



MFK



For No.30 or smaller sizes, no tabs on R1 part.

M Material: Chrome Vanadium Steel

S Surface Treatment: Cathodic Electrodeposition Coating

Part Number Type	No.	R1	R2	B	C		T	H	L	Shaft Dia.	Round Nut Bearing Nut	€ Unit Price Qty. 1 ~ 9	Volume Discount 10 ~ 49pcs.
MFK	16	8	10	1.5	2	30°	4	11	108	Ø16 / Ø18	M8 / M10		
	20	10	11							Ø20 / Ø22	M12		
	25	12.5	14	2	2.3		5	20	136	Ø25 / Ø28	M15 / M17		
	30	15	16							Ø30 / Ø32	M20		
	34	17	19	2.5	2.5	35°	6	28	160	Ø34 / Ø38	M25		
	45	22.5	24				7	36	196	Ø45 / Ø48	M30		
	52	26	27.5				6.5	41	208	Ø52 / Ø55	M35		
	58	29	32.5	3.5	3		8.5	46	232	Ø58 / Ø65	M40 / M45		
	65	32.5	35							Ø65 / Ø70	M45 / M50		
	70	35	37.5		3.5			52	247	Ø70 / Ø75	M50 / M55		

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: MFK25

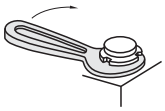
Days to Ship: 8 Days

Express A: 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Example

- Use a wrench matching the diameter of the nut.
- Do not hit the stem with a hammer etc.
- Do not insert a pipe when using.



Bearing Lock Nuts

-Square · Hexagon-

CAD Data

■Square

RoHS

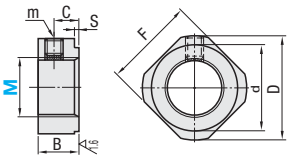


Type		Material	Hardness	Surface Treatment	Accessory	
Coarse	Fine					
BNG	BNR	1.0038/S235JR	-	Black Oxide	Set Piece (Copper Alloy)	Set Screw (1.7220/34CrMo4)
BNGC	BNRC	1.1191/C45E Thermal Refined	22~28HRC			
BNGS	BNRS	1.4301/X5CrNi18-10	-	-		Set Screw (1.4301/X5CrNi18-10)

BNGC and BNRC has identification mark (C) on the side of nut.

6.3 ▽ (1.6 ▽)

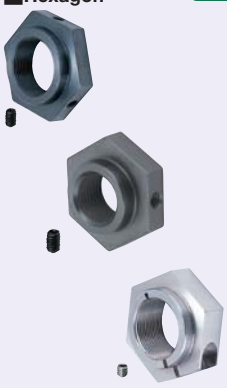
Tighten the set screw after inserting the set piece.
For Set Piece Specifications, refer to P.2-206
1.1191/C45E Thermal Refined excels in durability.



Part Number Type	M	MxPitch Coarse	MxPitch Fine	D	d	F	B	C	S	m	Coarse Thread € Unit Price BNG	BNGC	BNGS	Fine Thread € Unit Price BNR	BNRC	BNRS
	3	M3x0.5	M3x0.35	11.5	4	10	5.5	3	0.5	M3 (With set piece)						
	4	M4x0.7	M4x0.5		5											
	5	M5x0.8	M5x0.5	13.5	9	11										
	6	M6x1.0	M6x0.75	14.5	10	12										
(Coarse Thread)	8	M8x1.25	M8x1.0	17	13	14	6.5	4								
BNG	10	M10x1.5	M10x1.0	20	16	17	8	5	1	M4 (With set piece)						
BNGC	12	M12x1.75	M12x1.0	22	17	19										
BNGS	15	-	M15x1.0	25	21	22	10	6								
	16	M16x2.0	-													
(Fine Thread)	17	-	M17x1.0													
BNR	20	M20x2.5	M20x1.0	35	26	30	13	8								
BNRC	24	M24x3.0	-	43	33	35	15	10	2	M5 (With set piece)						
BNRS	25	-	M25x1.5													
	30	M30x3.5	M30x1.5	48	39	40	20	14		M6 (With set piece)						
	35	-	M35x1.5		43	45										
	40		M40x1.5	53	48	49	25	16								
	50		M50x1.5	66	61	63										

■Hexagon

RoHS

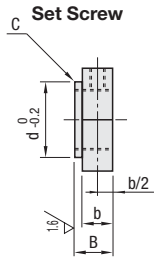


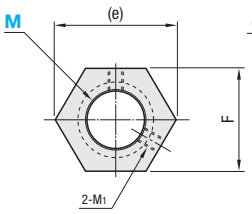
Type		Coarse	Fine	Material	Hardness	Surface Treatment	Accessory	
Set Screw Type	BNCM	-	BNSC	1.0038/S235JR	-	Black Oxide	Set Piece (Copper Alloy)	Set Screw (1.7220/34CrMo4)
		-	BNSCC	1.1191/C45E Thermal Refined	20~24HRC			
	BNCMS		BNSCS	1.4305/X10CrNiS18-9	-	-		Set Screw (1.4301/X5CrNi18-10)
Screw Type	BNBM	-	BNBS	1.0038/S235JR	-	Black Oxide	Hexagon Socket Bolt (1.7220/34CrMo4)	
			BNBSC	1.1191/C45E Thermal Refined	20~24HRC			
	BNBMS		BNBSS	1.4305/X10CrNiS18-9	-	-	Hexagon Socket Bolt (1.4301/X5CrNi18-10)	

BNSCC, BNBMC and BNBSC have a round identification groove in front.
1.1191/C45E Thermal Refined excels in durability.

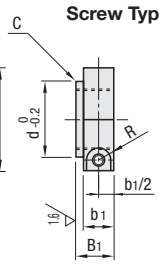
6.3 ▽ (1.6 ▽)

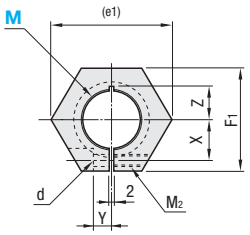
Set Screw





Screw Type





Part Number Type	M	MxPitch Coarse	MxPitch Fine	D	C	Set Screw (e)	F	B	b	M1	Screw Type (e1)	F1	B1	b1	M2	X	Y	Z	d	R	€ Unit Price BNCM BNSC	BNSCC	BNCMS BNSCS	BNBM BNBS	BNBSC	BNBMS BNBSS
(Coarse Set Screw)	*5	M5x0.8	M5x0.5	9	0.2	19.6	17	9	5	M3	-	-	-	-	-	-	-	-	-	-						
BNCM	*6	M6x1.0	M6x0.75	10																						
BNCMS	8	M8x1.25	M8x1.0	13		21.9	19				27.7	24	13	9	M4	7	4	7 (8.5)	4.5	3.75						
(Coarse Screw)	10	M10x1.5	M10x1.0	16		25.4	22	10			31.2	27				9		7 (10)								
BNBM	12	M12x1.75	M12x1.0	17		27.7	24		6	M4	34.6	30	16	12	M5	9.5	4.5	9 (11)	5.5	4.5						
BNBMS	15	-	M15x1.0	21		31.2	27	11			41.6	36	19	14	M6	12.5	5	9.5 (11)	7	5.5						
(Fine Set Screw)	16	M16x2.0	-															9.5 (12)								
BNSC	20	M20x2.5	M20x1.0	26		37.0	32				47.3	41				15	6.5	12 (15)								
BNSCC	24	M24x3.0	-	33		47.3	41	13	8	M5	53.1	46				17	7.5	15								
BNSCS	25	-	M25x1.5																							
(Fine Screw)	30	M30x3.5	M30x1.5	39	0.5	57.7	50	16	10	M6	57.7	50	20			19.5	8.5	18								
BNBS																										
BNBSC																										
BNBSS																										

* End Face M5 and M6 is available for Set Screw only. Z dimensions in ( ) are for Stainless Steel Type.

Order Example — Part Number: BNR12, BNSC12

Days to Ship: 6 Days / 2 Days — P.87

Price — Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~199
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bearing Spacers

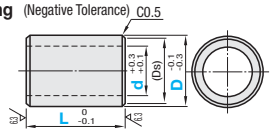
-Bearing Inner · Outer Rings-



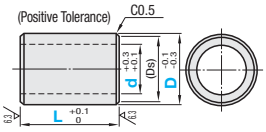
Applicable	L Dimension Tolerance		Material	Surface Treatment
	Negative Tolerance	Positive Tolerance		
Inner Ring	CLBU	CLBP	EN AW-5052	-
	CLBUB	CLBPB	1.0038	Black Oxide
	CLBUM	CLBPM		Electroless Nickel Plating
	CLBUS	CLBPS	1.4301	-

Applicable	L Dimension Tolerance		Material	Surface Treatment
	Negative Tolerance	Positive Tolerance		
Outer Ring	CLBS	CLBT	EN AW-5052	-
	CLBSB	CLBTB	1.0038	Black Oxide
	CLBSM	CLBTM		Electroless Nickel Plating
	CLBSS	CLBTS	1.4301	-

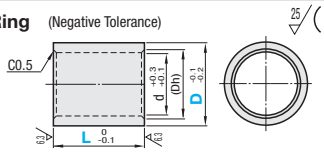
■Inner Ring (Negative Tolerance)



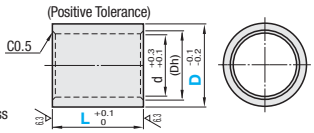
(Positive Tolerance)



■Outer Ring (Negative Tolerance)



(Positive Tolerance)



* L= Less than 3 C0.2 or less

Part Number Type	d	D	L 0.1mm Increment	Ds	Applicable Bearing	€ Unit Price CLBU · CLBP L1.0~25.0	CLBU · CLBP 25.1~50.0	CLBU · CLBP 50.1~100.0	CLBUB · CLBPB L1.0~25.0	CLBUB · CLBPB 25.1~50.0	CLBUB · CLBPB 50.1~100.0	CLBUM · CLBPM L1.0~25.0	CLBUM · CLBPM 25.1~50.0	CLBUM · CLBPM 50.1~100.0	CLBUS · CLBPS L1.0~25.0	CLBUS · CLBPS 25.1~50.0	CLBUS · CLBPS 50.1~100.0
Inner Ring (Negative Tolerance) CLBU CLBUB CLBUM CLBUS (Positive Tolerance) CLBP CLBPB CLBPM CLBPS	3	5	1.0~50.0	4	673ZZ · 693ZZ · 623ZZ			✕			✕			✕			✕
	4	7		6	674ZZ* · 694ZZ · 624ZZ			✕			✕			✕			✕
	5	8		7	675ZZ* · 695ZZ · 605ZZ · 625ZZ			✕			✕			✕			✕
	6	9		8	676ZZ · 696ZZ · 606ZZ · 626ZZ			✕			✕			✕			✕
	8	10		9	678ZZ	✕	✕	✕			✕			✕	✕	✕	✕
		11		10	678ZZ · 698ZZ · 608ZZ · 628ZZ			✕			✕			✕			✕
	10	12		11	6700ZZ	✕	✕	✕			✕			✕	✕	✕	✕
		13	1.0~100.0	12	6800ZZ												
		14		13	6900ZZ · 6000ZZ												
		17	2.0~100.0	16	6200ZZ · 6300ZZ												
	12	15	1.0~100.0	14	6701ZZ · 6801ZZ												
		16		15	6901ZZ · 6001ZZ												
		18	2.0~100.0	17	6201ZZ · 6301ZZ												
	15	18		17	6702ZZ · 6802ZZ												
		19		18	6902ZZ · 6002ZZ												
		21		20	6202ZZ												
		23		22	6302ZZ	✕	✕	✕							✕	✕	✕
	17	20		19	6803ZZ												
		22		21	6903ZZ · 6003ZZ												
		24		23	6203ZZ												
		26		25	6303ZZ	✕	✕	✕							✕	✕	✕
	20	23		22	6804ZZ												
		25		24	6904ZZ												
		27		26	6004ZZ · 6204ZZ												
		29		28	6304ZZ	✕	✕	✕							✕	✕	✕
	25	28		27	6805ZZ												
		29		28	6905ZZ												
		31		30	6005ZZ												
		33		32	6205ZZ												
		36		35	6305ZZ	✕	✕	✕							✕	✕	✕
	30	33		32	6806ZZ												
		35		34	6906ZZ												
		38		37	6006ZZ												
		40		39	6206ZZ												
		43		42	6306ZZ	✕	✕	✕							✕	✕	✕
	35	38	3.0~100.0	37	6807ZZ												
		42		41	6907ZZ												
		44		43	6007ZZ · 6207ZZ												
		46		45	6207ZZ	✕	✕	✕							✕	✕	✕
		48		47	6307ZZ	✕	✕	✕							✕	✕	✕
	40	43		42	6808ZZ												
		46		45	6908ZZ												
		49		48	6008ZZ · 6208ZZ												
		52		51	6208ZZ	✕	✕	✕							✕	✕	✕
		54		53	6308ZZ	✕	✕	✕							✕	✕	✕
	45	53		52	6009ZZ	✕	✕	✕							✕	✕	✕
		55		54	6209ZZ	✕	✕	✕							✕	✕	✕
	50	56		55	6010ZZ	✕	✕	✕							✕	✕	✕
		60		59	6210ZZ	✕	✕	✕							✕	✕	✕

When L=less than 3, *marked Bearings cannot be used.

CAD Data

Part Number Type	D	L 0.1mm Increment	d	Dh	Applicable Bearing	€ Unit Price CLBS · CLBT L1.0~25.0	CLBS · CLBT 25.1~50.0	CLBS · CLBT 50.1~100.0	CLBSB · CLBTB L1.0~25.0	CLBSB · CLBTB 25.1~50.0	CLBSB · CLBTB 50.1~100.0	CLBSM · CLBTB L1.0~25.0	CLBSM · CLBTB 25.1~50.0	CLBSM · CLBTB 50.1~100.0	CLBSS · CLBTS L1.0~25.0	CLBSS · CLBTS 25.1~50.0	CLBSS · CLBTS 50.1~100.0
Outer Ring (Negative Tolerance) CLBS CLBSB CLBSM CLBSS (Positive Tolerance) CLBT CLBTB CLBTM CLBTS	6	1.0~50.0	4	5	673ZZ												
	7		5	6	674ZZ												
	8		5	6	693ZZ												
	10		7	8	623ZZ												
	11		7	8	694ZZ												
	13		9	10	624ZZ · 695ZZ												
	14		10	11	605ZZ												
	15		10	11	696ZZ												
	16		11	12	625ZZ												
	17	3.0~50.0	12	13	606ZZ												
	19		14	15	626ZZ · 698ZZ												
	19A	3.0~100.0	16	17	6800ZZ												
	21		18	19	6801ZZ												
	22		17	18	608ZZ · 6900ZZ												
	24		19	20	628ZZ · 6901ZZ												
	24A		21	22	6802ZZ												
	26		20	21	6000ZZ												
	26A		23	24	6803ZZ												
	28		22	23	6001ZZ · 6902ZZ												
	30		24	25	6200ZZ												
	32		25	26	6201ZZ · 6002ZZ												
	32A		29	30	6804ZZ												
	35		29	30	6202ZZ												
	37		31	32	6904ZZ												
	37A		34	35	6805ZZ												
	42		34	35	6004ZZ · 6905ZZ												
	42A		39	40	6806ZZ												
	47		39	40	6204ZZ · 6005ZZ · 6906ZZ												
	47A		44	45	6807ZZ												
	52		45	46	6205ZZ												
	52A		49	50	6808ZZ												
	55		46	47	6006ZZ												
	62		55	56	6206ZZ · 6007ZZ · 6908ZZ												
	70		63	64	6207ZZ												

Order Example

Part Number	-	D	-	L
CLBU10	-	17	-	33.5
CLBS19			-	25.4
			-	80.0

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~29	30~99
Rate	€ Unit Price	10%	20%	25%

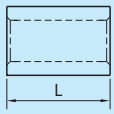
Days to Ship

8 Days | Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Alterations

Part Number	-	D	-	L	- (LKC · UKC)
CLBU10	-	17	-	26.3	- LKC
CLBS19			-	25.4	- LKC

Alterations	Code	Spec.	Price Adder
	LKC (Negative Tolerance)	Overall Length Tolerance L 0 -0.1 ···› 0 -0.02	2,00
	UKC (Positive Tolerance)	Overall Length Tolerance L +0.1 0 ···› +0.02 0	

Bearing Shaft Screws

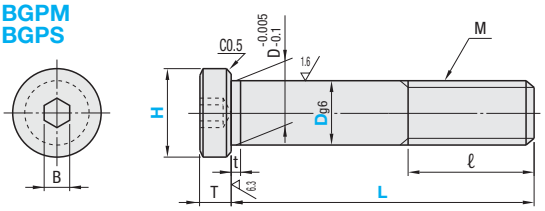
CAD Data

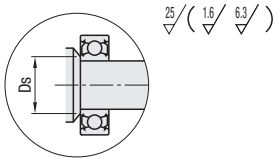
■Selectable L

RoHS



BGP
BGPM
BGPS





Type	Material	Surface Treatment
BGP	1.1191/C45E	Black Oxide
BGPM		Electroless Nickel Plating
BGPS	1.4301/X5CrNi18-10	-

Part Number Type	D	H Selection	L Selection	T	B	M (Coarse Thread)	ℓ	t	Ds	Applicable Bearing				€ Unit Price BGP	BGPM	BGPS
BGP BGPM BGPS	4	7	15 20 25	2	2	M4	6	0.7	6	674	694	624				
	5	8	15 20 25		2.5	M5			7	695	605	625	675			
	6	9	20 25 30		3	M6	9		8	696	606	626	676			
	8	11	20 25 30	3	4	M8			10	698	608	628	678			
	10	13	20 25 30		5	M10	12		12	6800						
		14	20 25 30						13	6900	6000					
		17	25 30 40						16	6200						
	12	15	20 25 30		6	M12	16		14	6801						
		16	25 30 40						15	6901	6001					
		18	30 40 50						17	6201						
	15	18	30 40 50						17	6802						
		19	40 50 60						18	6902	6002					
		21	40 50 60						20	6202						
	17	20	30 40 50	4	8	M16	20	1.0	19	6803						
		22	40 50 60						21	6903	6003					
		24	40 50 60						23	6203						
	20	23	30 40 50		10	M20			22	6804						
		25	40 50 60						24	6904	6004					
		27	40 50 60						26	6204						
	25	28	30 40 50	5	12	M24			27	6805						
		29	40 50 60						28	6905						
		31	40 50 60						30	6005						
		33	40 50 60						32	6205						
	30	33	30 40 50		14	M30			32	6806						
		35	40 50 60						34	6906						
		38	40 50 60						37	6006	6206					

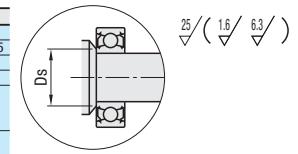
■Configurable L

RoHS

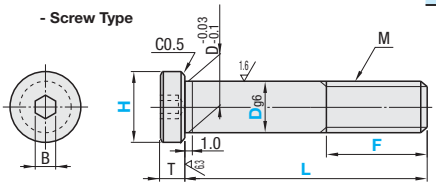


Type		Material	Surface Treatment
Screw Type	Flanged		
BGPL	BGSP	1.1191/C45E	Black Oxide
BGPML	BGSPM		Electroless Nickel Plating
BGPSL	BGSPS	1.4301/X5CrNi18-10	-

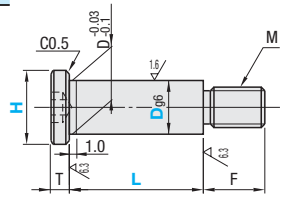
D	H	Ds	T	B
4	7	6	2	2
5	8	7		2.5
6	9	8		3
8	11	10	3	4
10	13	12		5
	14	13		
	17	16		
12	15	14		6
	16	15		
	18	17		



- Screw Type



- Flanged



■Screw Type

Part Number Type	D	H Selection	1mm Increment L	F	M (Coarse Thread)	€ Unit Price BGPL	BGPML	BGPSL
BGPL BGPML BGPSL	4	7	15~25	M≤F≤L-3	M4			
	5	8			M5			
	6	9	20~30	M≤F≤L-4	M6			
	8	11			M8			
	10	13		M≤F≤L-5	M10			
		14						
		17	25~40					
	12	15	20~30		M12			
		16	25~40					
		18	30~50					

■Flanged

Part Number Type	D	H Selection	L 0.1mm Increment	M (Coarse Thread)	F	€ Unit Price BGSP	BGSPM	BGSPS
BGSP BGSPM BGSPS	4	7	3.0~20.0	M2.5	5			
	5	8		M3	6			
	6	9	4.0~20.0	M4	7			
	8	11	5.0~20.0	M6	9			
	10	13		M8	12			
		14						
		17						
	12	15	6.0~20.0	M8	12			
		16						
		18						

Order Example

Part Number	-	H	-	L	-	F
BGP10	-	14	-	L30		
BGPL10	-	14	-	L30	-	F10
BGSP4	-	7	-	L10		

■Volume Discount (Round down to one Cent.) P.87

BGP · BGPM · BGPS (Selectable L)

Quantity	1~49	50~74	75~99	100~199
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

BGPL · BGPML · BGPSL · BGSP · BGSPM · BGSPS (Configurable L)

Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

Days to Ship: 8 Days

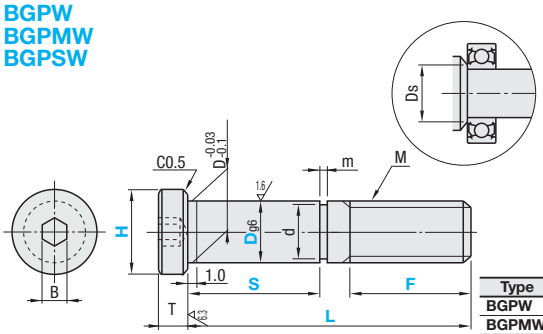
Bearing Shaft Screws w / Retaining Rings

CAD Data

■Screw Type RoHS



BGPW
BGPMW
BGPSW



25 (1.6 6.3)

When F≥L-S-α, Retaining Ring grooves are machined into incomplete threads. Please select carefully.

M	α
M 4	2.1
M 5	2.3
M 6	2.7
M 8	3.4
M10	4.15
M12	4.65

Type	M Material	S Surface Treatment	A Accessory
BGPW	1.1191/C45E	Black Oxide	1 Retaining Ring (1.4301/ X5CrNi18-10)
BGPMW		Electroless Nickel Plating	
BGPSW	1.4301/X5CrNi18-10	-	

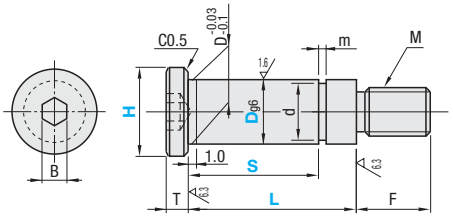
Part Number Type	D	H Selection	L 1mm Increment	S Selection	F 1mm Increment	T	B	M (Coarse Thread)	m	Tolerance	d	Tolerance	Ds	Applicable Bearing	Included Retaining Ring Shape	JIS Nominal	€ Unit Price BGPW	BGPMW	BGPSW
BGPW BGPMW BGPSW	4	7	15~25	5 1015	F≥M F≤L-S-2	2	2	M4	0.7	+0.1 0	3	+0.06 0	6	674 694 624	E Type	No. 3			
	5	8	15~25	5 1015			2.5	M5			4	+0.075 0	7	695 605 625 675		No. 4			
	6	9	20~30	101520			3	M6			5		8	696 606 626 676		No. 5			
	8	11	20~30	101520	F≥M F≤L-S-3	3	4	M8	0.9		7	+0.09 0	10	698 608 628 678		No. 7			
	10	13	20~30	101520			5	M10	1.15	+0.14 0	9.6	0 -0.09	12	6800	C Type	No.10			
		14	20~30	101520									13	6900 6000					
		17	25~40	152025									16	6200					
	12	15	20~30	101520			6	M12			11.5	0 -0.11	14	6801		No.12			
		16	25~40	101520									15	6901 6001					
		18	30~50	152025									17	6201					

* For details or E and C Type Retaining Rings, please see **P.1964 P.1965**

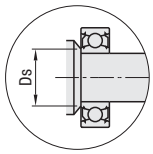
■Flanged RoHS



BGSPW
BGSPMW
BGSPSW



L≥S+m+2



25 (1.6 6.3)

Type	M Material	S Surface Treatment	A Accessory
BGSPW	1.1191/C45E	Black Oxide	1 Retaining Ring (1.4301/ X5CrNi18-10)
BGSPMW		Electroless Nickel Plating	
BGSPSW	1.4301/X5CrNi18-10	-	

Part Number Type	D	H Selection	L 0.1mm Increment	S 1mm Increment	F	T	B	M (Coarse Thread)	m	Tolerance	d	Tolerance	Ds	Applicable Bearing	Included Retaining Ring Shape	JIS Nominal	€ Unit Price BGSPW	BGSPMW	BGSPSW
BGSPW BGSPMW BGSPSW	4	7	15~25	5~15	5	2	2	M2.5	0.7	+0.1 0	3	+0.06 0	6	674 694 624	E Type	No. 3			
	5	8	15~25	5~15	6		2.5	M3			4	+0.075 0	7	695 605 625 675		No. 4			
	6	9	20~30	10~20	7		3	M4			5		8	696 606 626 676		No. 5			
	8	11	20~30	10~20	9		4	M6	0.9		7	+0.09 0	10	698 608 628 678		No. 7			
	10	13	20~30	10~20	12	3	5	M8	1.15	+0.14 0	9.6	0 -0.09	12	6800	C Type	No.10			
		14	20~30	10~20									13	6900 6000					
		17	25~40	15~25									16	6200					
	12	15	20~30	10~20			6				11.5	0 -0.11	14	6801		No.12			
		16	25~40	10~20									15	6901 6001					
		18	30~50	15~25									17	6201					

* For details or E and C Type Retaining Rings, please see **P.1964 P.1965**

Order Example

Part Number	-	H	-	L	-	S	-	F
BGPMW5	-	8	-	L25	-	S15	-	F8
BGSPW8	-	11	-	L27	-	S10		

Days to Ship 8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

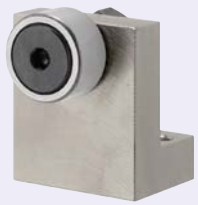
Cam Followers with Brackets

-L-Shaped Retained-

CAD Data

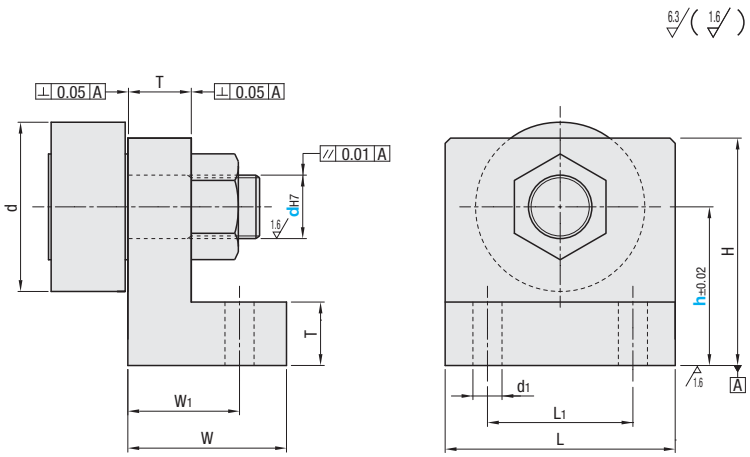
Features: All-in-one unit. Cumbersome ordering steps are eliminated. Economical priced.

RoHS





Type	Brackets		Cam Follower Shapes		A Included Cam Followers
	M Material	S Surface Treatment	Shape	M Material	
CMFLBF	1.1191/C45E	Black Oxide	Flat	1.3505/100Cr6	CFFA
CMFLF		Electroless Nickel Plating			CFFA
CMFLSF	1.4301/X5CrNi18-10	-		1.4125/X105CrMo17	CFFAS
CMFLBU	1.1191/C45E	Black Oxide	Crown	1.3505/100Cr6	CFUA
CMFLU		Electroless Nickel Plating			CFUA
CMFLSU	1.4301/X5CrNi18-10	-		1.4125/X105CrMo17	CFUAS



For Brackets and Cam Followers alone, please see **P.956** and **P.949** respectively.

Part Number Type	d	h 1mm Increment	D	H	T	L1	L	W	W1	d1	€ Unit Price CMFLBF	CMFLF	CMFLSF	CMFLBU	CMFLU	CMFLSU
CMFLBF	5	17~28	13	h+4.5	8	16	26	20	13	5.5						
CMFLF	6	17~32	16	h+6		19	29	22	15							
CMFLSF	8	20~38	19	h+7	10	22	32	24	17							
CMFLBU	10	25~52	26	h+10	12	29	42	28	20	6.5						
CMFLU	12	28~64	32	h+11		31	47	28	20							
CMFLSU																

Order Example

Part Number	-	h
CMFLF10	-	40
CMFLU10	-	50

Example

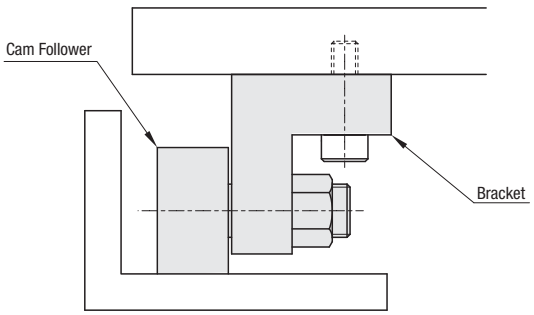
Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.



Cam Followers with Brackets
-Blocks Retained-

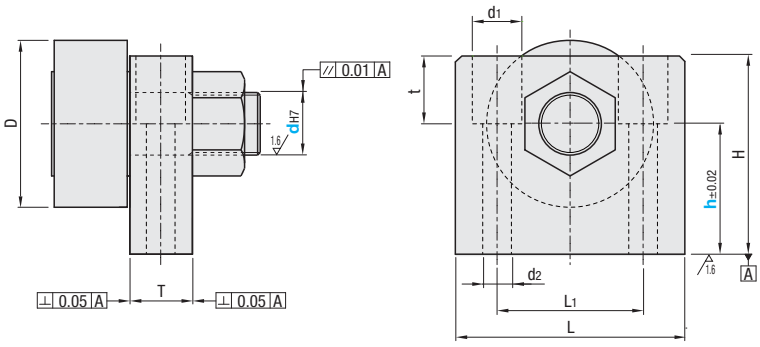
CAD Data

Features: All-in-one unit. Cumbersome ordering steps are eliminated. Economically priced.





Type	Brackets		Cam Follower Shapes		A
	M Material	S Surface Treatment	Shape	M Material	Included Cam Followers
CMFBF	1.1191/C45E	Black Oxide	Flat	1.3505/100Cr6	CFFA
CMFF		Electroless Nickel Plating			CFFA
CMFSF	1.4301/X5CrNi18-10	-		1.4125/X105CrMo17	CFFAS
CMFBU	1.1191/C45E	Black Oxide	Crown	1.3505/100Cr6	CFUA
CMFU		Electroless Nickel Plating			CFUA
CMFSU	1.4301/X5CrNi18-10	-		1.4125/X105CrMo17	CFUAS



For Brackets and Cam Followers alone, please see **P.956** and **P.949** respectively.

Part Number Type	d	h 1mm Increment	D	H	T	L1	L	d1	d2	t	€ Unit Price CMFBF	CMFF	CMFSF	CMFBU	CMFU	CMFSU
CMFBF CMFF CMFSF CMFBU CMFU CMFSU	6	12~25	16	h+6	10	24	38	7.5	4.5	5						
	8	15~30	19	h+7	12			9.5	5.5	6.5						
	10	20~35	26	h+10		26	42	11	6.5	10						
	12	20~40	32	h+11		28	44			11						

Order Example

Part Number	-	h
CMFBF6	-	20
CMFBU8	-	25

Example

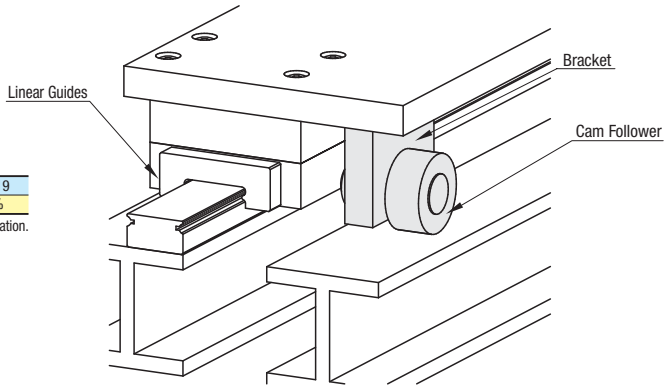
Days to Ship 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.



Cam Followers
-Standard Type-

CAD Data

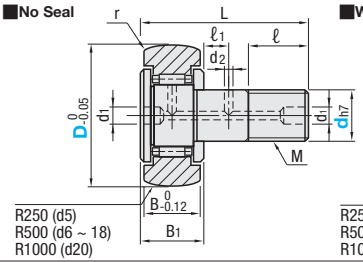
■Crown

RoHS

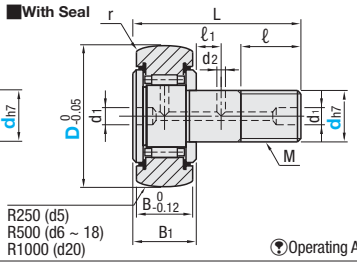


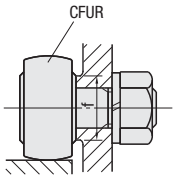
Grease	Type		Material	Accessory
	No Seal	With Seal		
Regular	CFU	CFUR	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
	CFUS	CFURS	1.4125/ X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)
Low Particulate Generation	-	CFURC		

■No Seal



■With Seal





Operating Ambient Temperature 80°C or Less

Part Number Type	dh7	Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	r	f (Min.)	€ Unit Price CFU	CFUS	CFUR	CFURS	CFURC
(No Seal) CFU CFUS (With Seal) CFUR CFURS CFURC	5	0 -0.012	13	5x0.8	7.5	9	10	23	3.1	-	-	0.5	9.7					
	6		16	6x1.0	9	11	12	28	4*				11					
	8	0 -0.015	19	8x1.25	11			32					13					
	10		22	10x1.25	13	12	13	36				1.0	15					
			26															
	12	0 -0.018	30	12x1.5	14	14	15	40	6	3	6	1.5	20					
			32															
	16		35	16x1.5	18	18	19.5	52			8		24					
	18		40	18x1.5	20	20	21.5	58					26					
	20	0 -0.021	52	20x1.5	22	24	25.5	66	8	4	9		36					

* Grease replenishing hole is provided on the head only. For d5, there is no grease replenishment hole.

■Flat

RoHS

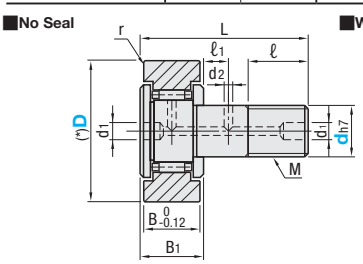


Grease	Type		Material	Accessory
	No Seal	With Seal		
Regular	CFR	CFFR	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
	CFRS	CFFRS	1.4125/ X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)
Low Particulate Generation	-	CFFRC		

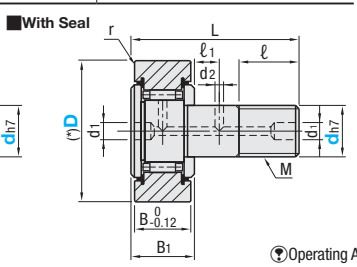
*

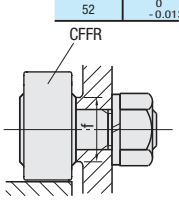
D	Tolerance
13, 16	0 -0.008
19~30	0 -0.009
32~40	0 -0.011
52	0 -0.013

■No Seal



■With Seal





Operating Ambient Temperature 80°C or Less

Part Number Type	dh7	Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	r	f (Min.)	€ Unit Price CFR	CFRS	CFFR	CFFRS	CFFRC
(No Seal) CFR CFRS (With Seal) CFFR CFFRS CFFRC	5	0 -0.012	13	5x0.8	7.5	9	10	23	3.1	-	-	0.5	9.7					
	6		16	6x1.0	9	11	12	28	4*				11					
	8	0 -0.015	19	8x1.25	11			32					13					
	10		22	10x1.25	13	12	13	36				1.0	15					
			26															
	12	0 -0.018	30	12x1.5	14	14	15	40	6	3	6	1.5	20					
			32															
	16		35	16x1.5	18	18	19.5	52			8		24					
	18		40	18x1.5	20	20	21.5	58					26					
	20	0 -0.021	52	20x1.5	22	24	25.5	66	8	4	9		36					

* Grease replenishing hole is provided on the head only. For d5, there is no grease replenishment hole.

■Table 1: Reference Data of Cam Followers (Standard / Hexagon Hole)

d-D	Regular								Heavy Load						
	Basic Dynamic Load Rating C (kN)	Basic Static Load Rating Cor (kN)	Max. Allowable Load (kN)	Track Load Capacity (kN) Crown	Track Load Capacity (kN) Flat	Rotational Speed Limit (rpm) With Seal	Rotational Speed Limit (rpm) No Seal	Mass (g)	Basic Dynamic Load Rating C (kN)	Basic Static Load Rating Cor (kN)	Max. Allowable Load (kN)	Track Load Capacity (kN) Crown	Track Load Capacity (kN) Flat	Rotational Speed Limit (rpm)	Mass (g)
3-10	1.47	1.18	0.36	0.37	1.37	32900	47000	4.5	-	-	-	-	-	-	-
4-12	2.06	2.05	0.78	0.47	1.76	25900	37000	7.5	-	-	-	-	-	-	-
5-13	3.14	2.77	1.42	0.53	2.25	20300	29000	10.5	-	-	-	-	-	-	-
6-16	3.59	3.58	2.11	1.08	3.43	17500	25000	18.5	6.94	8.50	2.11	1.08	3.43	4400	19
8-19	4.17	4.65	4.73	1.37	4.02	14000	20000	28.5	8.13	11.20	4.73	1.37	4.02	3480	29
10-22	5.33	6.78	5.81	1.67	4.70	11900	17000	45	9.42	14.30	5.81	1.67	4.70	2880	46
10-26				2.06	5.49			60	9.42	14.30	5.81	2.06	5.49		61
12-30	7.87	9.79	9.37	2.45	7.06	9800	14000	95	13.40	19.80	9.37	2.45	7.06	2320	97
12-32				2.74	7.45			105	13.40	19.80	9.37	2.74	7.45		107
16-35	12.0	18.30	17.30	3.14	11.2	7000	10000	170	20.60	37.60	17.30	3.14	11.20	1800	173
18-40	14.7	25.2	26.1	3.72	14.4	5950	8500	250	-	-	-	-	-	-	-
20-52	20.7	34.8	32.1	8.23	23.2	4900	7000	460	-	-	-	-	-	-	-

kgf=Nx0.101972

Order Example: Part Number - D
CFUR10 - 22
CFFRC12 - 30

Days to Ship: 6 Days / 2 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Cam Followers
-With Female Thread Hole for Grease Fitting-

CAD Data

Features: Mounting taps for grease fittings are provided. Suitable to use when you need to constantly feed oil, for you can easily attach grease fittings.

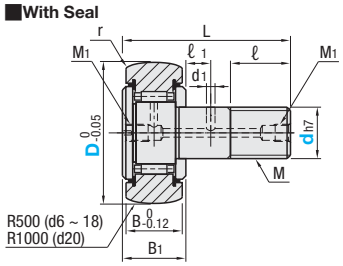
Crown

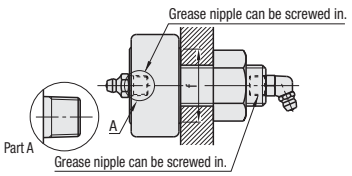
RoHS



Type	Material	Accessory
CFURT	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)

With Seal





Operating Ambient Temperature 80°C or Less

Part Number Type	dh7 Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	M1 (For Grease Fitting)	d1	ℓ1	r	f (Min.)	€ Unit Price
CFURT	6 0 -0.012	16	6x1.0	9	11	12	28	M6x0.75	-	-	0.5	11	
	8	19	8x1.25	11			32					13	
	10 0 -0.015	22	10x1.25	13	12	13	36				1.0	15	
		26											
	12	30	12x1.5	14	14	15	40		3	6	1.5	20	
		32											
	16 0 -0.018	35	16x1.5	18	18	19.5	52	PT1/8		8		24	
	18	40	18x1.5	20	20	21.5	58					26	
	20 0 -0.021	52	20x1.5	22	24	25.5	66		4	9		36	

(*) For d10 or less, tapped holes for grease fittings are machined only on the head part.

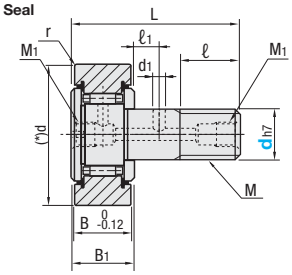
Flat

RoHS



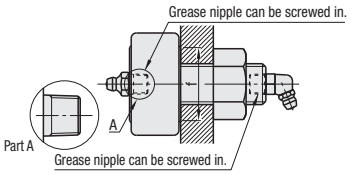
Type	Material	Accessory
CFFRT	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)

With Seal



*

D	Tolerance
16	0 -0.008
19~30	0 -0.009
32~40	0 -0.011
52	0 -0.013



Operating Ambient Temperature 80°C or Less

Part Number Type	dh7 Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	M1 (For Grease Fitting)	d1	ℓ1	r	f (Min.)	€ Unit Price
CFFRT	6 0 -0.012	16	6x1.0	9	11	12	28	M6x0.75	-	-	0.5	11	
	8	19	8x1.25	11			32					13	
	10 0 -0.015	22	10x1.25	13	12	13	36				1.0	15	
		26											
	12	30	12x1.5	14	14	15	40		3	6	1.5	20	
		32											
	16 0 -0.018	35	16x1.5	18	18	19.5	52	PT1/8		8		24	
	18	40	18x1.5	20	20	21.5	58					26	
	20 0 -0.021	52	20x1.5	22	24	25.5	66		4	9		36	

(*) For d10 or less, tapped holes for grease fittings are machined only on the head part.

Order Example

Part Number	-	D
CFURT12	-	30

Days to Ship

8 Days

Express A — 2,00 EUR/ piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	D	-	(GA · GB · GC)
CFURT12	-	30	-	GA

Alterations

Grease Fitting

	* Fig.1	67.5°	90°
Code	GA(1 pc.) GA2(2 pcs.)	GB(1 pc.) GB2(2 pcs.)	GC(1 pc.) GC2(2 pcs.)
Spec.	Applicable grease fitting is included. Ordering Code GA	Applicable grease fitting is included. Ordering Code GB	Applicable grease fitting is included. Ordering Code GC

M1 (d)	H	L	B
M6x0.75	13.5	5	7
PT1/8	20	9	10

*Drawing 1 shows the shape of thread part for PT1/8.

M1 (d)	H	L	B
M6x0.75	16.5	5	8
PT1/8	21.5	8	10

M1 (d)	H	L	B
M6x0.75	17.5	5	8
PT1/8	21.5	8	10

M Material: Free-Cutting Brass (CW614N/CuZn39Pb3) S Surface Treatment: Nickel Plating

Price Adder	GA: 2,00 / GA2: 3,00	GB: 2,00 / GB2: 3,00	GC: 2,00 / GC2: 3,00

Cam Followers
-With Hexagon Socket-

Price Reduction

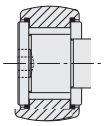
CAD Data

■Crown

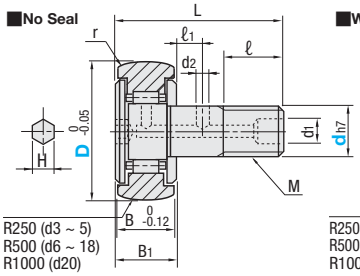
RoHS



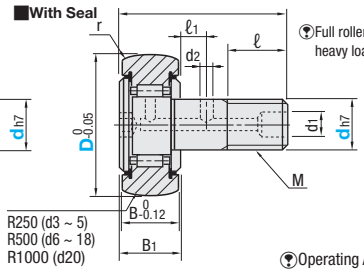
Type			Material	Accessory
Usage	No Seal	With Seal		
Regular	CUA	CFUA	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
Regular	CUAS	CFUAS	1.4125/ X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)
Low Particulate Generation	-	CFUAC		
Heavy Load	-	CFUAG	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)



■No Seal

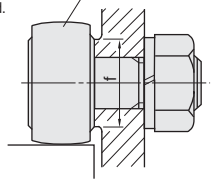


■With Seal



Full roller for heavy load.

CFUA



Operating Ambient Temperature 80°C or Less

For d12 and larger sizes, there are both hexagonal hole and driver groove. For d10 and smaller sizes, there is no grease replenishing hole.

Part Number Type	dh7 Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	H	r	f (Min.)	€ Unit Price CUA	CUAS	CFUA	CFUAS	CFUAC	CFUAG
	3	0 -0.010	10	3x0.5	5	7	8	17				2 (1.5)	0.3	6.8						
	4	0 -0.012	12	4x0.7	6	8	9	20				2.5 (2)		8.6						
(No Seal)	5		13	5x0.8	7.5	9	10	23				3 (2.5)	0.5	9.7						
CUA	6		16	6x1.0	9	11	12	28	-	-	-	3		11						
CUAS	8	0 -0.015	19	8x1.25	11			32				4		13						
(With Seal)	10		22	10x1.25	13	12	13	36				5	1.0	15						
CFUA			26																	
CFUAS	12		30	12x1.5	14	14	15	40			6			20						
CFUAC			32						6	3		6								
CFUAG	16	0 -0.018	35	16x1.5	18	18	19.5	52			8		1.5	24						
	18		40	18x1.5	20	20	21.5	58						26						
	20	0 -0.021	52	20x1.5	22	24	25.5	66	8	4	9	8		36						

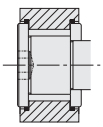
Dimensions in ( ) are for Stainless Steel Type.

■Flat

RoHS



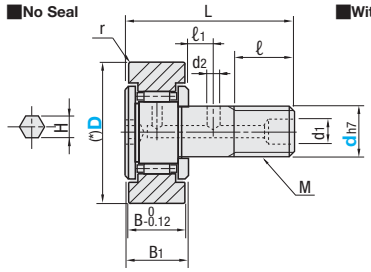
Type			Material	Accessory
Usage	No Seal	With Seal		
Regular	CFA	CFFA	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
Regular	CFAS	CFFAS	1.4125/ X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)
Low Particulate Generation	-	CFFAC		
Heavy Load	-	CFFAG	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)



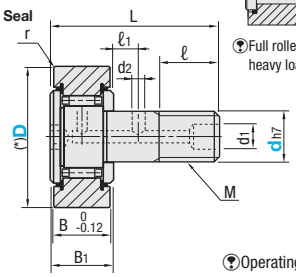
*

D	Tolerance
10~16	0 -0.008
19~30	0 -0.009
32~40	0 -0.011
52	0 -0.013

■No Seal

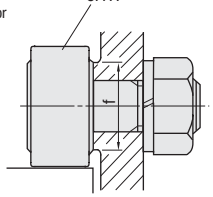


■With Seal



Full roller for heavy load.

CFFA



Operating Ambient Temperature 80°C or Less

For d12 and larger sizes, there are both hexagonal hole and driver groove. For d10 and smaller sizes, there is no grease replenishing hole.

Part Number Type	dh7 Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	H	r	f (Min.)	€ Unit Price CFA	CFAS	CFFA	CFFAS	CFFAC	CFFAG
	3	0 -0.010	10	3x0.5	5	7	8	17				2 (1.5)	0.3	6.8						
	4	0 -0.012	12	4x0.7	6	8	9	20				2.5 (2)		8.6						
(No Seal)	5		13	5x0.8	7.5	9	10	23				3 (2.5)	0.5	9.7						
CFA	6		16	6x1.0	9	11	12	28	-	-	-	3		11						
CFAS	8	0 -0.015	19	8x1.25	11			32				4		13						
(With Seal)	10		22	10x1.25	13	12	13	36				5	1.0	15						
CFFA			26																	
CFFAS	12		30	12x1.5	14	14	15	40			6			20						
CFFAC			32						6	3		6								
CFFAG	16	0 -0.018	35	16x1.5	18	18	19.5	52			8		1.5	24						
	18		40	18x1.5	20	20	21.5	58						26						
	20	0 -0.021	52	20x1.5	22	24	25.5	66	8	4	9	8		36						

Dimensions in ( ) are for Stainless Steel Type.

Order Example

Part Number	-	D
CFUAS10	-	22
CFFA12	-	32

Days to Ship

6 Days P. 87 2 Days

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

■Grease Performance and Operation Temperature of Cam Followers and Roller Followers

		Regular Grease (AFB-LF Grease)	Low Particulate Grease Filled (AFE-CE Grease)
Grease Performance	Thickener	Lithium Soap	Urea Inductor
	Base Oil	Refined Mineral Oil	Synthetic Oil
	Base Oil Dynamic Viscosity (40°C, mm2/S)	170	100
	Worked Penetration (25°C, 60W)	275	260
	Dropping Point (°C)	193	258
	Evaporation: wt%(99°C, 22h)	0.36	0.1
	Oil Separation: wt%(100°C, 24h)	0.6	0.8
Operation Temperature (°C)	In air	-15~+100	-40~+160
	In Vacuum	Unsuitable	Unsuitable

Cam Followers
-Hexagon Socket on Screw-

CAD Data

Features: Can be attached with a wrench and a HEX key wrench on the thread side. Suitable when there is no space on bearing side.

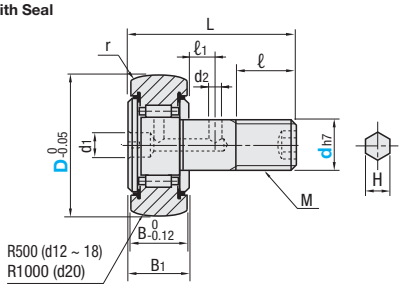
Crown

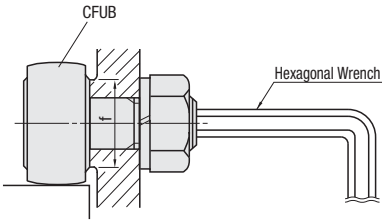
RoHS



Type	Material	Accessory
CFUB	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)

With Seal





Operating Ambient Temperature 80°C or Less

Part Number Type	dh7	Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	H	r	f (Min.)	€ Unit Price
CFUB	12	0 -0.018	30	12x1.5	14	14	15	40	6	3	6	6	1.5	20	
			32												
	16		35	16x1.5	18	18	19.5	52			8			24	
	18		40	18x1.5	20	20	21.5	58						26	
	20	0 -0.021	52	20x1.5	22	24	25.5	66	8	4	9	8		36	

Flat

RoHS

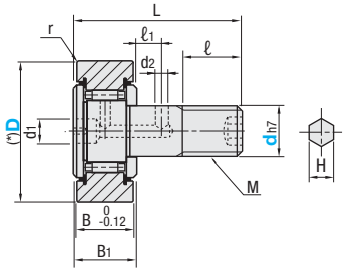


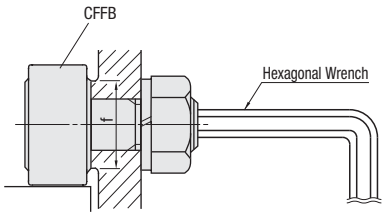
Type	Material	Accessory
CFFB	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)

*

D	Tolerance
30	0 -0.009
32~40	0 -0.011
52	0 -0.013

With Seal





Operating Ambient Temperature 80°C or Less

Part Number Type	dh7	Tolerance	D (Selectable)	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	H	r	f (Min.)	€ Unit Price
CFFB	12	0 -0.018	30	12x1.5	14	14	15	40	6	3	6	6	1.5	20	
			32												
	16		35	16x1.5	18	18	19.5	52			8			24	
	18		40	18x1.5	20	20	21.5	58						26	
	20	0 -0.021	52	20x1.5	22	24	25.5	66	8	4	9	8		36	

Order Example

Part Number	-	D
CFUB12	-	30

Days to Ship

8 Days

Express A | 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

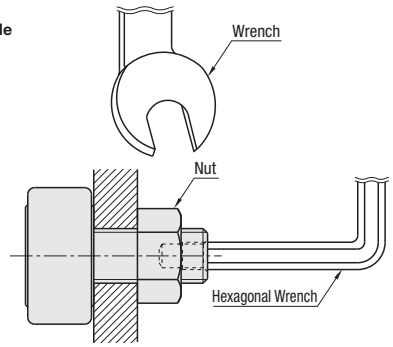
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



Guide Followers / Solid Eccentric Cam Followers

Price Reduction

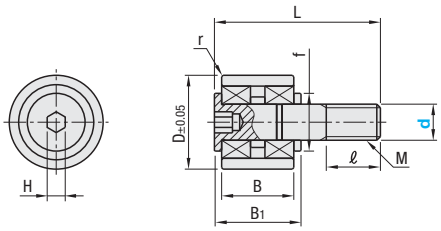
CAD Data

Features: Ball Bearing-combined products used for transfers and guiding.

Guide Followers RoHS



Type	Material		Accessory
	External parts	Internal parts (Bearing)	
GFR	1.4028/X30Cr13	1.3505/100Cr6	1 Hexagon Nut (1.4301/X5CrNi18-10)



Part Number Type	d Tolerance	D	Mx Pitch	ℓ	B	B1	L	H	r	f (Min.)	Basic Load Rating Dynamic Cr (Dynamic)N	Basic Load Rating Static Cor (Dynamic)N	Allowable Speed rpm	€ Unit Price
GFR	3	10	3x0.5	5	8.5	9.5	17	1.5	0.2	6.8	840	268	60000	
	4	12	4x0.7	6	9	11	20	2	0.4	7.8	1065	405	50000	
	5 (-0.007 -0.015)	13	5x0.8	7.5	10	12	23	2.5			1072	414	48000	
	6	16	6x1.0	9	12	14	28	3	0.2	10.8	1620	660	40000	
	8	19	8x1.25	11		16	32	4		13.8	2415	1065	36000	

kgf=Nx0.101972

Order Example Part Number: GFR6

Days to Ship 6 Days P. 87

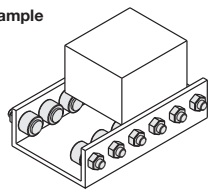
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



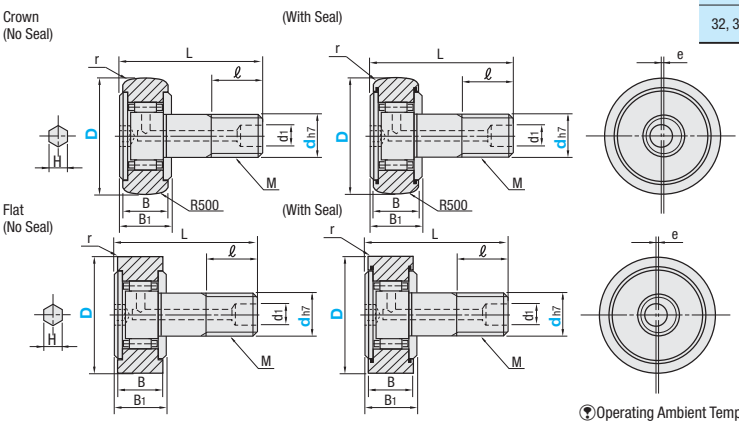
Solid Eccentric Cam Followers -With Hexagon Socket- RoHS



As the stud (d_{h7}) is eccentric to the center of the cam follower, it is possible to finely adjust the position by turning the stud when mounting.

Shape	Type No Seal	Type	Material	Accessory
Crown	CUAP	CFUAP	1.3505/ 100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
Flat	CFAP	CFFAP		

D	Tolerance
16	0 -0.008
19~30	0 -0.009
32, 35	0 -0.011



Operating Ambient Temperature 80°C or Less

Part Number Type	d_{h7} Tolerance	D Selection	MxPitch	ℓ	B	B1	L	d1	r	e	H	€ Unit Price CUAP	CFAP	CFUAP	CFFAP
(No Seal) CUAP CFAP (With Seal) CFUAP CFFAP	6 (0 -0.012)	16	6x1.0	9	11	12	28	-*	0.5	0.25	3				
	8	19	8x1.25	11			32				4				
	10 (0 -0.015)	22	10x1.25	13	12	13	36		1	0.3	5				
		26	10x1.25												
	12	30	12x1.5	14	14	15	40	6	1.5	0.4	6				
		32													
	16 (0 -0.018)	35	16x1.5	18	18	19.5	52			0.5					

* For d10 and smaller sizes, there is no grease replenishing hole. For load rating and rotational speed limits, P.947

Order Example Part No. CUAP8 - D 19

Days to Ship 8 Days / 2 Days — Express A 2,00 EUR/ piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Miniature Cam Followers

CAD Data

Miniature Cam Followers

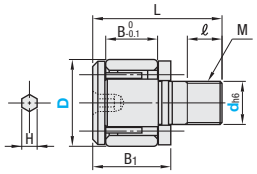
RoHS



Usage	Type	Material	Accessory
General (Steel)	CFFAN	1.3505/100Cr6 (Stud: 1.7242/16CrMo4 Alloy Steel)	1 Hexagon Nut (1.1191/C45E, Black Oxide)
Regular	CFFAM	1.4125/X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)
Low Particulate Generation	CFFAMC		
Heavy Load	CFFANG	1.3505/100Cr6 (Stud: 1.7242/16CrMo4 Alloy Steel)	1 Hexagon Nut (1.1191/C45E, Black Oxide)
	CFFAMG	1.4125/X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)

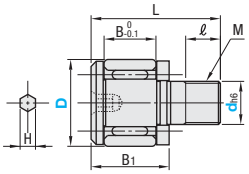
Operating Ambient Temperature 80°C or Less

Regular, Low Dust



Heavy Load

Full roller for heavy load.



<Note>
The thread diameter of a miniature cam follower is small.
To prevent damage, please be sure to use torque wrench and tighten with the force below the maximum tightening torque.
(Please note that the maximum tightening torque for a miniature cam follower is about one fourth of that of the conventional equivalents.)

Regular, Low Dust

Part Number Type	dh6 Tolerance	D Selection	Mx Pitch	ℓ	B	B1	L	H Steel	H Stainl. Steel	Basic Load Rating Cr (Dynamic) N Steel	Cr (Dynamic) N Stainl. Steel	Cor (Static) N Steel	Cor (Static) N Stainl. Steel	MAX Allowable Load (N)	Track Load Capacity (N)	Limits Rotational Speed (rpm)	Mass (g)	Tightening Torque (N-cm) (Max.)	€ Unit Price CFFAN	CFFAM	CFFAMC
CFFAN (General / Steel) CFFAM (Regular) CFFAMC (Low Particulate Generation)	2.5	0 -0.006	5	2.5x 0.45	2.5	3	4.5	9.5	0.9	0.9	410	350	335	285	285	285	3360	1	16			
	3		6	3x0.5	3	4	5.5	11.5	1.5	1.3	630	565	610	525	525	470	2800	2	28			
	4	0 -0.008	8	4x0.7	4	5	7	15	2	1.5	1080	915	1080	915	915	795	2100	4	64			
	5		10	5x0.8	5	6	8	18	2.5	2	1570	1340	1860	1400	1400	1210	1680	7	125			
	6		12	6x1.0	6	7	9.5	21.5	3	2.5	2060	1880	2160	2040	2040	1700	1400	13	226			

kgf=Nx0.101972

Heavy Load (Full Rollers)

Part Number Type	dh6 Tolerance	D Selection	Mx Pitch	ℓ	B	B1	L	H Steel	H Stainl. Steel	Basic Dyn. Load Rating Cr (Dynamic) N Steel	Cr (Dynamic) N Stainl. Steel	Cor (Static) N Steel	Cor (Static) N Stainl. Steel	Max. Allowable Load (N) Steel	Max. Allowable Load (N) Stainl. Steel	Track Load Capacity (N) Steel	Track Load Capacity (N) Stainl. Steel	Limits Rotational Speed (rpm)	Mass (g)	Tightening Torque (N-cm) (Max.)	€ Unit Price CFFANG	CFFAMG
CFFANG CFFAMG (Heavy Load)	2.5	0 -0.006	5	2.5x 0.45	2.5	3	4.5	9.5	0.9	0.9	1000	665	1080	410	260	410	300	285	2000	1	16		
	3		6	3x0.5	3	4	5.5	11.5	1.5	1.3	1370	1020	1770	590	360	590	480	470	1680	2	28		
	4	0 -0.008	8	4x0.7	4	5	7	15	2	1.5	2350	1680	3040	1050	780	1050	770	795	1260	4	64		
	5		10	5x0.8	5	6	8	18	2.5	2	3140	2520	4710	1640	1420	1640	1180	1210	1000	7	125		
	6		12	6x1.0	6	7	9.5	21.5	3	2.5	4610	3400	6270	2360	2110	2360	1540	1700	840	13	226		

kgf=Nx0.101972

Order Example

Part Number	-	D
CFFAM2.5	-	5

Days to Ship

8 Days — Express A 2,00 EUR/ piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

2 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Note

Miniature Cam Follower thread diameter is small.
To prevent damage, please use a torque wrench to secure within the maximum tightening torque.
* Please note that the maximum tightening torque is about one fourth of general-purpose bolt torque.

Resin Cam Followers

■Standard Type

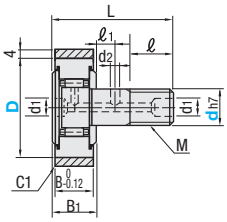
RoHS



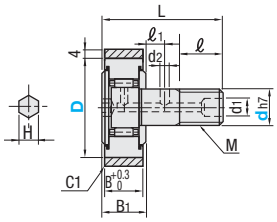
Type			Material		Accessory
Flat		R	Resin	Cam Followers	
Standard (With Seal)	Hexagon Socket (With Seal)				
CFFRUC	CFFRUCS	CFFRUDS	MC Nylon	1.3505	1 Hexagon Nut (1.1191/C45E, Black Oxide)
-	CFFRUCSS	CFFRUDSS		1.4125	1 Hexagon Nut (1.4301/X5CrNi18-10)

Operating Ambient Temperature 80°C or Less
Plastic is pressed onto the outer ring of the cam follower.

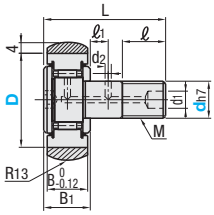
■Standard Flat



■Hexagon Socket Flat



■Hexagon Socket R



Part Number Type	dh7 Tolerance		D Selection	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	H	Allowable Load (N)	Allowable Rotational Speed (rpm)	Mass (g)	€ Unit Price CFFRUC	CFFRUCS	CFFRUCSS	CFFRUDS	CFFRUDSS
(Standard Flat) (Hexagon Socket Hexagon Socket Flat) CFFRUC CFFRUCS CFFRUCSS (Hexagon Socket R) CFFRUDS CFFRUDSS	5	0 -0.012	13	5x0.8	7.5	9	10	23	3.1*	-	-	3	88	2520	13					
	6		16	6x1.0	9	11	12	28	4*				112	2210	22					
	8	0 -0.015	19	8x1.25	11			32				4	122	1960	33					
	10		22	10x1.25	13	12	13	36				5	120	1760	50					
			26										130	1560	66					
	12	0 -0.018	30	12x1.5	14	14	15	40	6	3	6	6	156	1390	95					
			32										150	1320	113					
	16		35	16x1.5	18	18	19.5	52			8		192	1230	181					

Values of allowable load are values when speed = 10km/H.
kgf=Nx0.101972
For standard type, grease replenishing hole is provided on the head only. For d5, there is no grease replenishment hole.
For d12 and larger sizes of Hexagon Socket Type, there are both hexagonal hole and driver groove. For d10 and smaller sizes, there is no grease replenishing hole.

Order Example: Part Number CFFRUCS12 - D 32

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

■Features : Excellent load capacities, and for unbalanced loads.

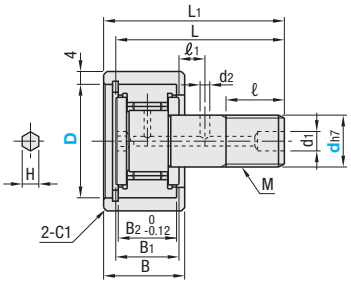
■Retaining Ring

RoHS

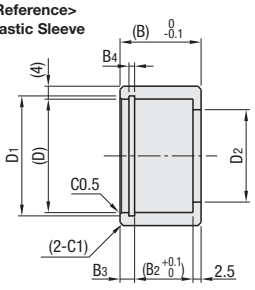


Type	Material Resin	Material Cam Followers	Accessory
CFFRUCT	MC Nylon	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
CFFRUCTS		1.4125/X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)

Operating Ambient Temperature 80°C or Less
After plastic is press-fit into the outer ring of cam follower, the sleeve is retained by retaining ring.



<Reference> Plastic Sleeve



Part Number Type	dh7 Tolerance		D Selection	MxPitch	ℓ	B	B1	B2	B3	B4	Tolerance	D1	Tolerance	D2	L	L1	d1	d2	ℓ1	H	Allowable Load (N)	Allowable Rotational Speed (rpm)	Mass (g)	€ Unit Price CFFRUCT	CFFRUCTS
CFFRUCT CFFRUCTS	8	0 -0.015	19	8x1.25	11	17	12	11	3.5	1.1	+0.08 0	20	+0.15 0	16	32	35	4*	-	-	4	518	1960	35		
	10		22	10x1.25	13	18	13	12	3.5			23		18	36	39				5	594	1760	53		
			26									27.2	+0.20 0								637	1560	71		
	12	0 -0.018	30	12x1.5	14	21	15	14	4.5	1.3		31.4	+0.25 0	23.5	40	44	6	3	6	6	499	1390	100		
			32									33.7									513	1320	119		
	16		35	16x1.5	18	26	19.5	18	5.5	1.6	+0.10 0	37		28.5	52	56.75			8		686	1230	187		

For d12 and larger sizes, there are both hexagonal hole and driver groove. For d10 and smaller sizes, there is no grease replenishing hole.
Values of allowable load are values when speed = 10km/H.
kgf=Nx0.101972

Order Example: Part Number CFFRUCT12 - D 32

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Load beyond limit, rotary speed and unbalanced load may cause a plastic sleeve to come off.
Data below are for reference, not guaranteed.

Plastic Sleeve Retention Test

Test data when a load is applied from the upper part of the cam follower at a constant speed.
Loads when the plastic sleeves came off more than 0.5mm are shown. Travel distance is (speed ≤ 4.5km) = 1km, (speed > 4.5km) 2km.

Room Temperature 21°C x=0°, y=0°

■ Standard Type (Plastic Press-Fit)

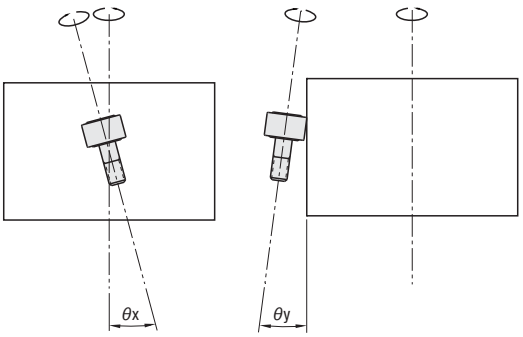
Unit : (N)

Type	d	D	ℓ	Speed km/H					
				1.8	3.6	4.5	5	6	10
CFFRUC CFFRUCS CFFRUCSS CFFRUDS CFFRUDSS	5	13	9	250	250	225	190	125	125
	6	16	11.5	300	300	250	220	180	160
	8	19	11.7	330	310	275	240	180	175
	10	22	14	350	325	300	265	195	185
		26		400	380	350	300	210	193
	12	30	17.8	450	420	350	320	260	240
		32		470	450	400	350	280	250
	16	35	20.5	625	600	550	480	350	320

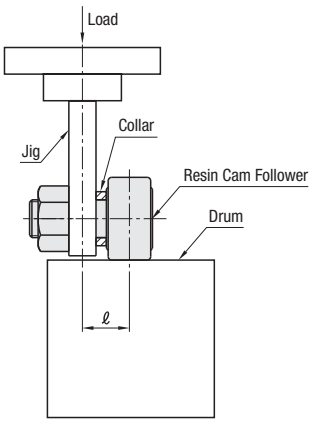
■ Retaining Ring

Unit : (N)

Type	d	D	ℓ	Speed km/H
				10
CFFRUCT CFFRUCTS	8	19	14.2	576
	10	22	16.5	660
		26		708
	12	30	20.3	588
		32		604
	16	35	23	808



Test Method



-Inclination of Resin Cam Followers should be 0. If there is inclination, please use the retaining ring type to prevent plastic sleeves from falling off.

[Material Properties]

Item	Urethane	MC Nylon
Allowable Load	Δ	○
Abrasion Resistance	○	Δ
Mechanical Strength	○	◎
Heat Resistance	X	Δ
Chemical Resistance	X	○

*With Urethane ☞P.955

Cam Followers Urethane Type

CAD Data File Name: FR_____.dxf
Type except "CF" dh7 D

■Standard Type RoHS

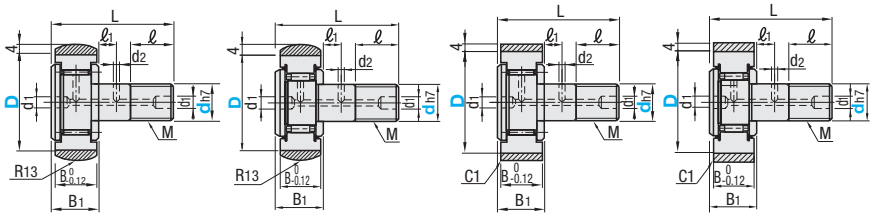


R		Flat		Material		Accessory
No Seal	With Seal	No Seal	With Seal	Urethane	Cam Followers	
CFFRR	CFFRRZ	CFFRU	CFFRUZ	Shore A90	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
CFFRRS	CFFRRZS	-	CFFRUZS		1.4125/X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)

Operating Ambient Temperature 80°C or Less
Urethane is baked on the outer rings of the cam followers.

■R ■Flat

(No Seal) (With Seal) (No Seal) (With Seal)



Part Number Type	dh7	Tolerance	D Selection	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	Allowable Load (N)	Allowable Rotational Speed (rpm)	Mass (g)	€ Unit Price CFFRR	CFFRRS	CFFRRZ	CFFRRZS	CFFRU	CFFRUZ	CFFRUZS
(R, No Seal) (Flat, No Seal) CFFRR CFFRRS (R, With Seal) (Flat, With Seal) CFFRRZ CFFRUZ CFFRRZS CFFRUZS	5	0 -0.012	13	5x0.8	7.5	9	10	23	3.1*	-	-	68	1500	13							
	6		16	6x1.0	9	11	12	28	4*			90	1300	22							■
	8	0 -0.015	19	8x1.25	11			32				96	1180	33							
	10		22	10x1.25	13	12	13	36				110	1060	50	■						
			26									118	930	66		■					
	12	0 -0.018	30	12x1.5	14	14	15	40	6	3	6	147	830	103		■					■
			32									151	800	113			■				
	16		35	16x1.5	18	18	19.5	52			8	202	740	181		■					■

* For standard type, grease replenishing hole is provided on the head only. For d5, there is no grease replenishment hole.

kgf=Nx0.101972

■Hexagon Socket RoHS

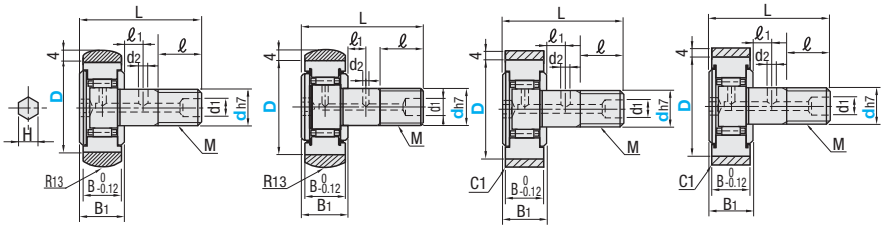


R		Flat		Material		Accessory
No Seal	With Seal	No Seal	With Seal	Urethane	Cam Followers	
CFFRRU	CFFRRA	CFFRUU	CFFRUA	Shore A90	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)
-	CFFRRAS	-	CFFRUAS		1.4125/X105CrMo17	1 Hexagon Nut (1.4301/X5CrNi18-10)
-	-	-	CFFRUAG	Shore A50	1.3505/100Cr6	1 Hexagon Nut (1.1191/C45E, Black Oxide)

Operating Ambient Temperature 80°C or Less
Urethane is baked on the outer rings of the cam followers.

■R ■Flat

(No Seal) (With Seal) (No Seal) (With Seal)



Part Number Type	dh7	Tolerance	D Selection	MxPitch	ℓ	B	B1	L	d1	d2	ℓ1	H	Allowable Load (N)	Allowable Rotational Speed (rpm) Shore A90	Allowable Rotational Speed (rpm) Shore A50	Mass (g)	€ Unit Price CFFRRU	CFFRRA	CFFRRAS	CFFRUU	CFFRUA	CFFRUAS	CFFRUAG
(R, No Seal) (Flat, No Seal) CFFRRU CFFRUU (R, With Seal) (Flat, With Seal) CFFRRA CFFRUA CFFRRAS CFFRUAS CFFRUAG	5	0 -0.012	13	5x0.8	7.5	9	10	23	-	-	-	3	68	1500	250	13							
	6		16	6x1.0	9	11	12	28				4	90	1300	220	22							
	8	0 -0.015	19	8x1.25	11			32					96	1180	190	33							
	10		22	10x1.25	13	12	13	36				5	110	1060	170	50							
			26										118	930	150	66							
	12	0 -0.018	30	12x1.5	14	14	15	40	6	3	6	6	147	830	140	103							
			32										151	800	130	113							
	16		35	16x1.5	18	18	19.5	52			8		202	740	120	181							

For d12 and larger sizes, there are both hexagonal hole and driver groove. For d10 and smaller sizes, there is no grease replenishing hole.

kgf=Nx0.101972

Order Example

Part Number	-	D
CFFRUZ10	-	22
CFFRUU12	-	32

Days to Ship

6 Days P.87

2 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

[Material Properties]

Item	Urethane	MC Nylon
Allowable Load	△	○
Abrasion Resistance	○	△
Mechanical Strength	○	◎
Heat Resistance	X	△
Chemical Resistance	X	○

For MC Nylon P.953

Brackets for Cam Followers

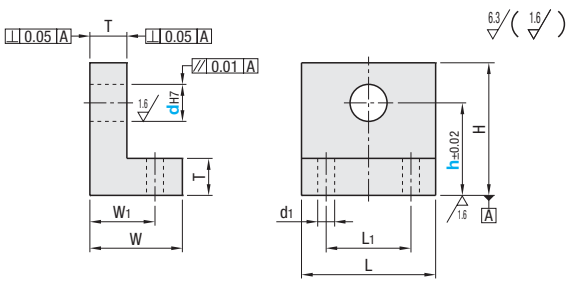
CAD Data

Features: Desired Cam Followers with resin or urethane components. d H7 is made to Cam Follower's shaft diameter.

Brackets for Cam Followers -L-Shaped- RoHS



Type	Material	Surface Treatment
CMFLB	1.1191/C45E	Black Oxide
CMFL		Electroless Nickel Plating
CMFLS	1.4301/X5CrNi18-10	-



Part Number Type	d	h 1mm Increment	H	T	L1	L	W	W1	d1	€ Unit Price CMFLB	CMFL	CMFLS
CMFLB CMFL CMFLS	5	17~28	h+4.5	8	16	26	20	13	5.5			
	6	17~32	h+6		19	29	22	15				
	8	20~38	h+7	10	22	32	24	17				
	10	25~52	h+10	12	29	42	28	20	6.5			
	12	28~64	h+11		31	47	28	20				

Order Example: Part Number CMFLB8 - h 30

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent..) P87

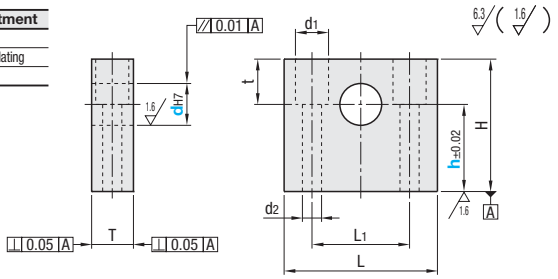
Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Brackets for Cam Followers -Blocks- RoHS



Type	Material	Surface Treatment
CMFB	1.1191/C45E	Black Oxide
CMF		Electroless Nickel Plating
CMFS	1.4301/X5CrNi18-10	-



Part Number Type	d	h 1mm Increment	H	T	L1	L	d1	d2	t	€ Unit Price CMFB	CMF	CMFS
CMFB CMF CMFS	6	12~25	h+6	10	24	38	7.5	4.5	5			
	8	15~30	h+7	12			9.5	5.5	6.5			
	10	20~35	h+10		26	42	11	6.5	10			
	12	20~40	h+11		28	44			11			

Order Example: Part Number CMFB8 - h 25

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent..) P87

Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

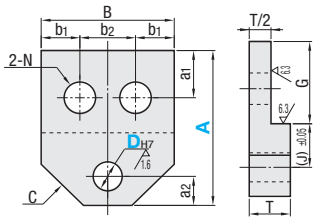
For orders larger than indicated quantity, please request a quotation.

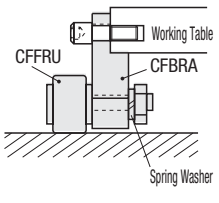
Brackets for Cam Followers RoHS



CFBRA

Example





M Material: EN AW-5052/AlMg2,5

S Surface Treatment: Clear Anodize

Part Number Type	DH7		A 1mm Increment	a1	a2	B	b1	b2	G	N	T	Mounting Screws Sizes	C	(J)	€ Unit Price
CFBRA	5	+0.012	27~50	8	4.5	24	6	12	15	6	7	M5	8	(J)=A-G-a2	
	6	0	31~60	9	6	27	6.5	14	16	7	8	M6	8.5		
	8	+0.015	40~80	11.5	7.5	34	8.5	17	21	9.5	10	M8	12		
	10	0	49~100	14	8	44	11	22	26	11.5	12	M10	16		
	12	+0.018	58~120	17	12	48	12	24	32	13.5	12	M12	17		
	16	0	79~160	21	14.5	66	17	32	41	17.5	15	M16	25		

Order Example: Part Number CFBRA5 - A 37

Days to Ship: 10 Days

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Roller Followers-Separate / Solid-

-Separate · Solid-

CAD Data

■Separate

RoHS



Grease	No Seal		With Seal		Material
	Crown	Flat	Crown	Flat	
Regular	NASTR	NASTF	NASTZ	NASTFZ	1.3505/100Cr6
	-	NASTFS	NASTZS	NASTFZS	1.4125/X105CrMo17
Low Particulate Generation	-	-	-	NASTFZC	

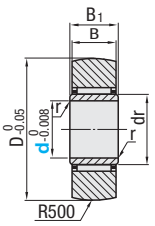
*

D	Tolerance
19~30	$^{0}_{-0.009}$
32	$^{0}_{-0.011}$

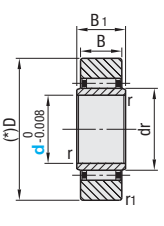
Operating Ambient Temperature 80°C or Less

■No Seal

Crown

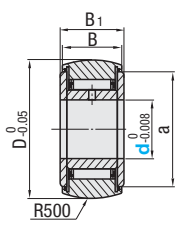


Flat

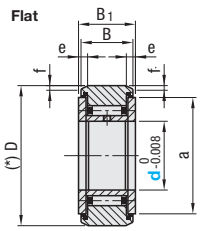


■With Seal

Crown



Flat



■No Seal

Part Number Type	d	D	dr	B	B1	r	r1	Basic Dynamic Load Rating C (kN)	Basic Static Load Rating Co (kN)	Track Load Capacity (kN) NASTR_	Track Load Capacity (kN) NASTF_	Rotational Speed Limit (rpm)	Mass (g)	€ Unit Price NASTR	NASTF	NASTFS
(Crown) NASTR (Flat) NASTF NASTFS	6	19	10	9.8	10	0.5	0.5	4.12	4.55	1.37	3.53	20000	17.8			
	8	24	12				1.0	5.68	5.89	1.86	4.02	17000	28			
	10	30	14	11.8	12		1.5	9.70	9.67	2.45	5.59	15000	50			
	12	32	16				1.5	10.4	10.9	2.74	5.98	13000	58			
	15	35	20					12.3	14.3	3.14		10000	62			
	17	40	22	15.8	16		-	17.4	20.9	3.72	-	9500	110			
	20	47	25					19.2	24.5	4.61		8500	155			

Apply ample grease before use.

kgf=Nx0.101972

■With Seal

Part Number Type	d	D	a	B	B1	e	f	Basic Dynamic Load Rating C (kN)	Basic Static Load Rating Co (kN)	Track Load Capacity (kN) NASTZ_	Track Load Capacity (kN) NASTFZ_	Rotational Speed Limit (rpm)	Mass (g)	€ Unit Price NASTZ	NASTZS	NASTFZ	NASTFZS	NASTFZC
(Crown) NASTZ NASTZS NASTZC (Flat) NASTFZ NASTFZS NASTFZC	6	19	14	13.8	14	2.5	0.8	4.12	4.55	1.37	3.53	8000	24.5					
	8	24	17.5					5.68	5.89	1.86	4.51	6800	39					
	10	30	23.5					9.70	9.67	2.45	6.86	6000	65					
	12	32	25.5	15.8	16			10.4	10.9	2.74	7.35	5200	75					
	15	35	29.0					12.3	14.3	-	8.04	4000	83					
	17	40	32.5	19.8	20	3	1	17.4	20.9	-	11.8	3800	135					
	20	47	38.0					19.2	24.5	-	13.8	3400	195					

kgf=Nx0.101972

■Solid

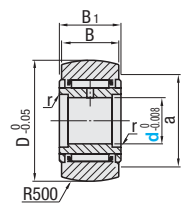
RoHS



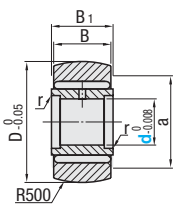
Grease	No Seal		With Seal		Material
	Crown	High Load Crowned	Crown	High Load Crowned	
Regular	NARTR	NARTRV	NARTU	NARTV	1.3505/100Cr6
	NARTRS	-	NARTUS	NARTVS	1.4125/X105CrMo17
Low Particulate Generation	-	-	NARTUC	-	

■No Seal

Crown

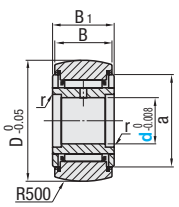


High Load Crowned

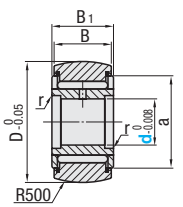


■With Seal

Crown



High Load Crowned



■No Seal

Part Number Type	d	D	a	B	B1	r	Basic Dynamic Load Rating NARTR_	Basic Dynamic Load Rating NARTRV_	Basic Static Load Rating NARTR_	Basic Static Load Rating NARTRV_	Track Load Capacity (kN)	Rotational Speed Limit (rpm) NARTR_	Rotational Speed Limit (rpm) NARTRV_	Mass (g)	€ Unit Price NARTR	NARTRS	NARTRV
(Crowned) NARTR NARTRS (High Load Crowned) NARTRV	5	16	12	11	12	0.5	2.84	6.46	2.65	7.81	1.08	25000	10500	15			
	6	19	14				3.33	7.58	3.35	10.2	1.37	20000	8700	21			
	8	24	17.5	14	15		5.68	11.7	5.89	15.6	1.86	17000	7000	42			
	10	30	23.5				7.94	15.8	7.59	18.5	2.45	15000	5700	66			
	12	32	25.5				8.53	17.0	8.44	21.0	2.74	13000	5200	73			

■With Seal

Part Number Type	d	D	a	B	B1	r	Basic Dynamic Load Rating NARTU_	Basic Dynamic Load Rating NARTV_	Basic Static Load Rating NARTU_	Basic Static Load Rating NARTV_	Track Load Capacity (kN)	Rotational Speed Limit (rpm) NARTU_	Rotational Speed Limit (rpm) NARTV_	Mass(g) NARTU_	Mass(g) NARTV_	€ Unit Price NARTU	NARTUS	NARTUC	NARTV	NARTVS
(Crowned) NARTU NARTUS NARTUC (High Load Crowned) NARTV NARTVS	5	16	12	11	12	0.5	2.84	6.46	2.65	7.81	1.08	10000	4200	14.5	15.1					
	6	19	14				3.33	7.58	3.35	10.2	1.37	8000	3480	20.5	21.5					
	8	24	17.5	14	15		5.68	11.7	5.89	15.6	1.86	6800	2800	41.5	42.5					
	10	30	23.5				7.94	15.8	7.59	18.5	2.45	6000	2280	64.5	66.5					
	12	32	25.5				8.53	17.0	8.44	21.0	2.74	5200	2080	71	73					
	15	35	29.0	18.0	19		13.7	25.3	16.4	36.9	3.14	4000	1720	102	106					
	17	40	32.5	20.0	21		17.4	32.0	19.3	46.6	3.72	3800	1560	149	155					
	20	47	38.0	24.0	25		22.9	41.7	30.6	67.7	7.15	3200	1360	250	255					

kgf=Nx0.101972

Order Example — Part Number: NASTR8

Days to Ship: 6 Days (P87) / 2 Days

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Roller Followers Urethane Type / Roller Follower Pins

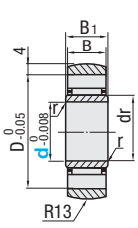
CAD Data

■With Urethane Roller Followers- Separate / Solid- RoHS

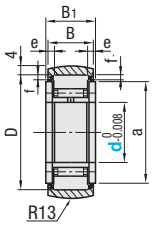


■Separate, R

(No Seal) NAUTRR

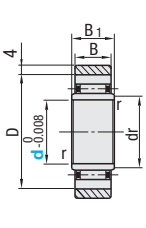


(With Seal) NAUTR

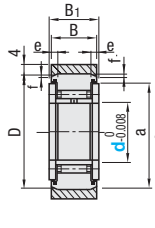


■Separate, Flat

(No Seal) NAUTFR

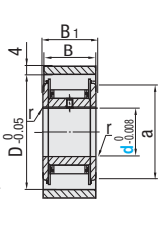


(With Seal) NAUTF

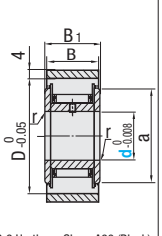


■Solid, Flat

(No Seal) NAUGFR



(With Seal) NAUGF



Operating Ambient Temperature 80°C or Less Urethane is baked on the outer rings of the cam followers.

M Material: Body 1.3505/100Cr6 Urethane Shore A90 (Black)

■Separate - No Seal (Common for R, Flat)

Part Number Type	d	D	dr	B	B1	r	Allowable Load (N)	Rotational Speed Limit (rpm)	Mass (g)	€ Unit Price NAUTRR	€ Unit Price NAUTFR
NAUTRR NAUTFR	6	19	10	9.8	10	0.5	96	4900	22.3		
	8	24	12				115	4150	33.5		
	10	30	14	11.8	12		147	3475	58		
	12	32	16				151	3300	66		

kgf=Nx0.101972

■Separate - With Seal (Common for R, Flat)

Part Number Type	d	D	a	B	B1	e	f	Allowable Load (N)	Rotational Speed Limit (rpm)	Mass (g)	€ Unit Price NAUTR	€ Unit Price NAUTF
NAUTR NAUTF	6	19	14	13.8	14	2.5	0.8	96	1960	29		
	8	24	17.5					115	1660	44.5		
	10	30	23.5	15.8	16			147	1390	73		
	12	32	25.5					151	1320	83		

kgf=Nx0.101972

■Solid - Flat

Part Number Type	d	D	a	B	B1	r	Allowable Load (N)	Rotational Speed Limit (rpm)	Mass (g)	€ Unit Price NAUGFR	€ Unit Price NAUGF
NAUGFR NAUGF	5	16	12	11	12	0.5	100	6525	19.5		
	6	19	14				125	5220	26.5		
	8	24	17.5	14	15		150	5910	50		
	10	30	23.5				190	4785	74		
	12	32	25.5				196	5055	81		

kgf=Nx0.101972

Order Example: Part Number NAUTF6

Days to Ship: 6 Days / 2 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

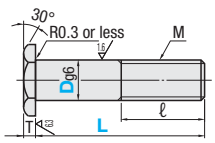
For orders larger than indicated quantity, please request a quotation.

■Roller Follower Pins Male Thread RoHS

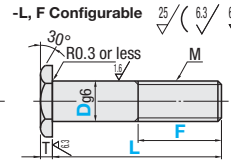


Type L Selectable	Type L, F Configurable	M Material	S Surface Treatment
RFN	FRFN	1.1191/C45E	Black Oxide
-	FSRFN	1.4301/X5CrNi18-10	-

-L Selectable

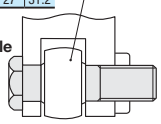


-L, F Configurable



D	M (Coarse)	ℓ	T	B	(C)
5	M 5	14	2	8	9.2
6	M 6			10	11.5
8	M 8	16	3	13	15.0
10	M10	19		17	19.6
12	M12	22	4	19	21.9
15		25		24	27.7
17	M16	28			
20	M20	31	5	27	31.2

Example



Part Number Type	Dg6		L Selection	ℓ	€ Unit Price
RFN	5	-0.004 -0.012	20 25 30	14	
	6		30 32 34 36		
	8	-0.005 -0.014	30 32 34 36 38	16	
	10		36 38 42	19	
	12	-0.006 -0.017	38 42 46	22	
	15		38 42 46 50	25	
	17			28	
	20	-0.007 -0.020	38 42 46 50 54	31	

Part Number Type	Dg6		L 1mm Increment	F 1mm Increment	€ Unit Price FRFN	€ Unit Price FSRFN
FRFN FSRFN	5	-0.004 -0.012	20~30	M≤F≤L-10		
	6		20~36			
	8	-0.005 -0.014	20~38			
	10		20~42			
	12	-0.006 -0.017	25~46			
	15		25~50			
	17		25~50			
	20	-0.007 -0.020	25~54			

Order Example: Part Number - L - F

RFN6 - 30

FRFN6 - 35 - F10

Price

- RFN

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~124	125~199	200~299
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

- FRFN-FSRFN

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

- RFN: 6 Days / 2 Days P.87

- FRFN-FSRFN: 8 Days Express A 2,00 EUR/ piece P.88

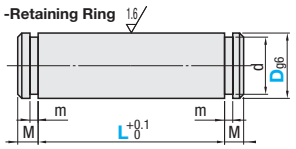
A Express Charge of 5,40 EUR for 3 or more identical pieces.

■Roller Follower Pins Retaining Ring RoHS

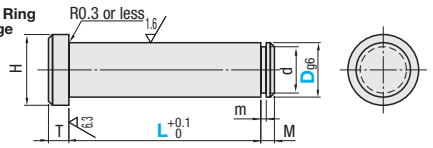


Type Retaining Ring	Type Retaining Ring with Flange	M Material	S Surface Treatment
RFC	RFS	1.1191/C45E	Black Oxide
RFCS	RFSS	1.4301/X5CrNi18-10	-

-Retaining Ring



-Retaining Ring with Flange



Part Number Type		Dg6		L 1mm Increment	d	Tolerance	m	Tolerance	M	T	H	€ Unit Price RFC · RFS	€ Unit Price RFCS · RFSS
(Retaining Ring) RFC RFCS	(Retaining Ring with Flange) RFS RFSS	5	-0.004 -0.012	20~44	4	+0.075 0	0.7	+0.1 0	2	2	10		
		6		22~46	5						11		
		8	-0.005 -0.014	22~47	7	+0.09 0	0.9		3	3	13		
		10		25~48	9.6	0 -0.09	1.15	+0.14 0			15		
		12			11.5					4	17		
		15	-0.006 -0.017	25~52	14.3	0 -0.11			4	4	20		
		17		25~58	16.2						23		
		20	-0.007 -0.020	25~68	19	0 -0.21	1.35		5	5	27		

Order Example: Part Number - L

RFC5 - 40

RFSS5 - 22

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~34	35~39	40~49
Rate	€ Unit Price	5%	10%	18%

Days to Ship: 8 Days Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Couplings · Motors

Couplings Motors







Product Name	-High Positioning Accuracy Disc Clamping-	-High Rigidity Disc Clamping-
Page	963	963








-Ultra High Torque Disc Clamping-	-Disc Clamping-	-Disc Clamping-	-High Rigidity Disc Both Sides Keyless Clamping-
964	965	965	966-968-970









-High Rigidity Disc - Both Sides Keywayed-	-High Rigidity Disc - One Side Keyless Clamp - One Side Keywayed-	-High Rigidity Disc/Both Sides Clamping-	-High Rigidity Disc - One Side Clamping - One Side Keywayed Bore-
966 · 967 · 969	966 · 968 · 970	967-969	967



-Standard Torque Disc - Set Screw-	-Standard Torque Disc - Clamping-	-High Torque Disc - Set Screw-	-High Torque Disc - Clamping-
971	972	973	974



-Oldham, Set Screw-	-High Rigidity Oldham, Set Screw-	-Oldham, Clamping-	Spacers (for MCO_ · MCOC_)	-High Rigidity Oldham, Clamping-
975	976	977	975	978



-Oldham, Large Shaft Diameter, Set Screw-	-Oldham Large Shaft Diameter, Clamping-	Spacers (for MFJ_ · MFJC_)	-High Rigidity Oldham, Set Screw, Large Shaft Diameter-
979	979	979	980



-High Rigidity Oldham, Large Shaft Diameter Clamping-	-Super Short Oldham, Clamping-	-Oldham, Blue, Set Screw-	-Oldham, Blue, Clamping-	-Oldham Green, Short, Clamping-	Spacers (for CPO, CPOC, CPOCG)
980	981	982	982	982	981



Price Reduction
Max. 23%











N Couplings	Chain Couplings	-Jaw, Set Screw-	-Jaw, Clamping-	-Jaw Set Screw-	-Jaw Clamping-
983	983	984	984	985	986

For Servo Motors











Price Reduction
Max. 5%



-Sleeved Set Screw-	- Jaw & Spider Type - Set Screw	-Extra Super Duralumin Set Screw · Clamping-	-Set Screw-	-Short Set Screw-
987	987	988	989	989



Price Reduction
Max. 11%











-Slit Clamping-	-Short Slit Clamping-	-Rigid Set Screw-	-Rigid Clamping-	-Rigid Split-	-Rigid Clamping Long-
990	990	991	991	992	992













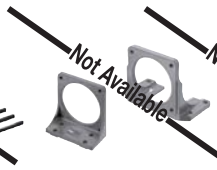
- Bellows Type - Set Screw / Clamping	- Resin Type - Short Resin Type	Universal Joints - Set Pin-	Universal Joints - Keyway / Tapped-
993	994	995	996



Price Reduction









- Induction Motors · Reversible Motors · Gear Heads	- Variable Speed Motor Units · Gear Heads	- Motors w/Electromagnetic Brakes · Gear Heads	Compact Geared Motor Brackets (Alteration)	Medium Geared Motors
999	1001	1005	1007	1008

■About High Rigidity Keyless Clamp Couplings (P.966~970)

-Features

- Eliminates the need for shaft machining (keyway, tec.)
- Shaft strength not compromised since no machining.
- Easy angular position adjustments.
- Zero backlash.

- Installation

(1) Wipe the shaft surface clean and apply a thin layer of oil or grease.
(Do not use oils or greases containing Molybdenum friction reducer additives)
(2)Wipe clean the contacting inner bores of the coupling, as well as the seating surfaces of the locking screws.
(3) Insert the shaft into the coupling.
(Please do not tighten Keyless Clamping flange to the bolt before inserting the shaft.)
(4)After locating, tighten the locking screws using a torque wrench in the diagonal order, beginning lightly (approx. 1/4 of the predetermined tightening torque).
(5) Tighten the screws to higher torque (Approx. 1/2 of specified max.)
(6) Tighten the screws to the prescribed max. torque.
(7) Finally, tighten the screws in a circumferential order.

- Cautions on Installations

- Do not tighten the locking screws before inserting shafts into couplings.
(Tightening the lock screws with empty bores will cause bushing distortion.)
- Use a torque wrench to tighten the locking screws.
- Never use screws other than included for the locking screws.

- Removal

- Ensure that the machine has completely stopped before starting work.
- Loosen the locking screws sequentially in a circular order.
- Insert screws into removal screws holes and tighten evenly.
- Repeat the installation procedure for re-installation.

Couplings
-Overview-

How to Select a Coupling

Operating Temperature (ºC)	Temperature Correction Factor
-20~30	1.00
30~40	0.80
40~60	0.70
60~100	0.55

· Couplings are machine components designed to connect two separate rotating bodies and transmit a torque between them. They allow various misalignments (Lateral/Angular/Axial) of the rotating bodies by absorbing, and alleviate installation and adjustment work loads. Furthermore, they protect expensive inter-connected machine components from sudden and unexpected excess loads by breaking and disconnecting. Please select a coupling type from the provided chart based on your application specific needs.
· For applications with frequent direction reversals, choose a coupling with max. torque capacity 2~5x of the motor's peak torque.
· For servo motor applications, choose a servo motor compatible product with max. torque capacity 5~10x of the servo motor's peak torque.
· Ensure that the specification parameters such as Allowable Torque, Max. Speed, and Dimensions published in this catalog are properly applicable to your application.
· Resin spacer couplings such as Oldham and Jaw types have allowable torque values that are variable based on operation temperatures. Select couplings by multiplying couplings allowable torque max. speed, etc with correction coefficient value.

Precautions for Use

· Make sure to keep misalignment within the allowable range and avoid excessive torque. Otherwise the coupling's service life will be shortened considerably due to plastic deformation.
· For your safety, enclose the revolving parts of equipment with a protective cover.
· If the coupling item generates abnormal metallic noises, immediately turn off the equipment and identify the cause, such noises may be an indication of improper alignment, shaft interference or a loose screw.
· For applications with a large load fluctuation, apply an adhesive agent on the coupling's screws to prevent them from loosening, alternatively select 1 size larger couplings.

Disc Couplings Zero backlash, and best suited for high torque servo motor applications.

· Characteristics
· Designed to absorb misalignments by disc flexures.
· Zero backlash nature provides high angular accuracy, suitable for applications requiring high positioning accuracies.
· The High Rigidity Type couplings have largely improved torsional rigidity over the Standard Types due to screw-coupled discs instead of the swage-coupled discs of the Standard.

* Products in RED frame are servo motor compatible.

Page		P.963	P.966	P.966 · 968	P.967~970	P.964	P.965	P.965	P.971 · 972	P.973 · 974
Type		SCXW SCXWK SCPW SCPS	CPSWS_ _CPSW_ _ CPSHS_ _CPSH_ _	CPAWS CPAWN CPAHS CPAHN	CPSW_CPSW_ _ CPSW_CPSW_ _	MCSLC_ _ MCSSC_ _	CPDW CPDT	CPDD CPDS	MCGL_ _MCGS_ _ MCGL_ _MCGS_ _	MCKL_ _MCKS_ _ MCKLC_ _MCKSC_ _
Shaft Bore D.I.A.mm)		3~25	10~16	10~35	15~45	4~24	4~25	6~25	2~25	2~25
Torque (N-m)		1~25	8	6~40	60~250	0.9~16	0.7~9.0	2~10	0.15~7.0	0.25~11.0
External Appearance		High Rigidity Type For Servo Motors	High Rigidity Type For Servo Motors	High Rigidity Type For Servo Motors	High Rigidity Type For Servo Motors	For Servo Motors	For Servo Motors			
Zero Backlash		○	○	○	○	○	○	○	○	○
High Torsional Rigidity		◎	◎	◎	◎	○	△	△	×	○
High Torque		◎	○	○	◎	○	△	△	△	○
Allowable Angular Misalignment	Double	○	△	△	△	◎	○	◎	◎	◎
	Single	○	△	△	△	△	△	△	◎	△
Allowable Lateral Misalignment	Double	○	△	△	△	△	△	△	○	○
	Single	×	×	×	×	×	×	×	△	△
Moment of Inertia		○	△	○	△	○	○	◎	○	○
Electrical Insulation		×	×	×	×	×	×	×	○	×

Oldham Couplings Easy to install with large angular · lateral misalignment allowances

· Characteristics
· The spacers are designed to flex and slide to allow misalignments.
· Larger misalignment allowance ranges compared to the other types, making for easy to adjust for installing.
· The high rigidity type has bronze spacer material instead of resin, and has torque capacity 2x of the conventional type.
· The Space Saving Type are up to 17% shorter in length contributing to space saving machine deigns.

Page	P.975 · 977	P.976 · 978	P.979	P.980	P.981	P.982	P.982
Type	MCO_ _ MCOC_ _	MCOG_ _ MCOCG_ _	MFJ_ _ MFJC_ _	MFJG_ _ MFJCG_ _	SCOC	CPO CPOC	CPOCG
Shaft Bore D.I.A.mm)	1~20	4~20	14~38	15~35	3~10	3~16	3~14
Torque (N-m)	0.3~28	3~50	26~80	50~160	0.3~1.6	0.7~9	0.2~2.8
External Appearance		High Rigidity Type		High Rigidity Type	For Space Savings		
Zero Backlash	△	×	×	×	△	×	×
High Torsional Rigidity	△	◎	△	◎	×	×	×
High Torque	◎	◎	○	◎	△	△	△
Allowable Angular Misalignment	◎	◎	◎	△	◎	◎	◎
Allowable Lateral Misalignment	◎	◎	◎	○	◎	◎	◎
Moment of Inertia	○	○	○	△	◎	◎	◎
Electrical Insulation	×	×	○	×	○	○	○

* If used with the lateral misalignment less than 0.1mm, the backlash amount will practically be zero.

Slit Couplings Unitized construction with no backlash

· **Characteristics** · Slits are designed to allow misalignments.
· Suitable for applications requiring high positioning accuracies due to zero backlash nature.
· Please consider the Disc Types if higher torque transmission capability is needed.

* Products in RED frame are servo motor compatible.

Page	P.988	P.989 · 990	P.989 · 990	P.989 · 990	P.989 · 990
Type	CPSX CPCX	CPL CPLCN	CPLS CPLSC	CPS CPSCN	CPSS CPSSC
Shaft Bore D.I.A.(mm)	5~16	2~18	2~18	2~14	2~14
Torque (N-m)	0.5~3	0.1~8	0.2~8	0.1~4	0.2~3.5
External Appearance	 For Servo Motors				
Zero Backlash	○	○	○	○	○
High Torsional Rigidity	△	×	×	△	△
High Torque	△	△	△	△	△
Allowable Angular Misalignment	×	◎	◎	△	△
Allowable Lateral Misalignment	△	△	△	×	×
Moment of Inertia	◎	◎	○	◎	○
Electrical Insulation	×	×	×	×	×

Couplings (Others)

Series	Jaw Type			Sleeved	N Couplings	Chain Couplings	Rigid		Bellows Type	Resin Type
Page	P.984	P.985 · 986	P.987	P.987	P.983	P.983	P.991	P.992	P.993	P.994
Type	MMJ_ _	CPJ CPJ_ _	CPJL	CPF	CPN	CPC	CPR CPRC CPRS CPRSC	CPSR CPND CPSRS CPNDS	CPB CPBC CPBS CPBSC	MCJN MCJSN
Shaft Bore D.I.A.mm	15~40	3~16	5~28	3~14	6~35	14~55	3~24	5~14	3~14	1.5~12
Torque (N-m)	20~180	0.7~17	0.3~13.1	0.5~3	7.8~206	-	0.3~6	0.3~2	0.3~3	0.05~0.8
External Appearance										
Zero Backlash	△	×	×	×	○	×	○		○	○
High Torsional Rigidity	△	×	×	×	◎	△	◎		×	×
High Torque	○	○	×	△	◎	○	×		△	×
Allowable Angular Misalignment	◎	△	△	◎	×	△	×		◎	◎
Allowable Lateral Misalignment	○	△	○	△	×	△	×		△	△
Moment of Inertia	○	◎	△	○	◎	×	◎		○	◎
Electrical Insulation	○	○	○	○	×	×	×		×	○

Alignment adjustment

Couplings are designed to transmit angular motion and torque while being able to absorb some misalignments. However, if the allowable maximum values are exceeded, the coupling's service life may dramatically be shortened, or cause vibrations.

· Types misalignments are: Angular Misalignment (Fig.1); Lateral Misalignment (Fig.2); and Axial Misalignment (Fig.3). Be sure to perform thorough alignment procedures, using tools such as dial indicators and the like, in order to reduce any misalignments below the value indicated in the specification chart.
· The allowable misalignment values shown in the specification chart assume that only one of: Lateral; Angular; or Axial Misalignment is occurring at a given time.
When multiple misalignments are simultaneously, the allowable maximum value will be reduced to 1/2 each.
It is recommended that each misalignment is to be kept below 1/3 of the allowed maximum value in order to prolong the service life of couplings.

Fig. 1 Declination (Parallelism Error between Two Shaft Centers)

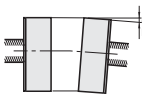


Fig. 2 Eccentricity (Angle Error between Two Shaft Centers)

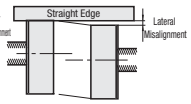
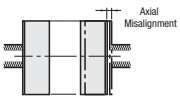


Fig. 3 End Play (Shaft's Shift in the Axial Direction)



Simple Method To Confirm the Alignment of Disc Type Coupling

[Before Installing]
· Confirm that the clamping screws are loosened, and wipe clean the inner bore and shaft surfaces of dust and oils.
· Insert the shaft into the coupling while taking care not to apply undue compressive/tensile forces on the disc section.
[Quick Lateral Misalignment Check]
· With all the locking screws loose, slide the coupling axially over both shafts (Fig.4) to ensure smooth sliding movements.
If not smooth, perform the lateral alignment procedure again.
[Quick Angular Misalignment Check]
· Rotate the coupling/shaft and visually check for smooth and even movement.
If not smooth, perform the lateral alignment procedure again.
[Final Assembly]
· With a torque wrench, tighten the screws on both the motor and driven shafts to the prescribed torques.
[Verify Operations]
· Check for tightening torques after approximately 30min. of continuous operation to account for any initial self-loosening of the screws.

Fig. 4 Quick Lateral Misalignment Check

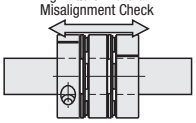
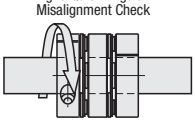


Fig. 5 Quick Angular Misalignment Check



Servo-Fine couplings

-High Positioning Accuracy Disc Clamping Type / Keywayed Bore Type / High Rigidity Disc Clamping Type- For Servo Motors

The stainless discs of this product have sharp edges that may cause injuries. Use of thick protective gloves is recommended.

CAD Data

■Features:Torsional rigidity is improved over the conventional type (SCPW) (maximum approx 26%). Excellent for applications requiring high accuracy positioning at high speeds. All the screws are Trivalent Chromate treated and reliable to use in clean environments.

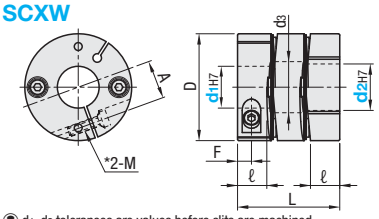
■For Servo Motors (High Positioning Accuracy Type)



RoHS

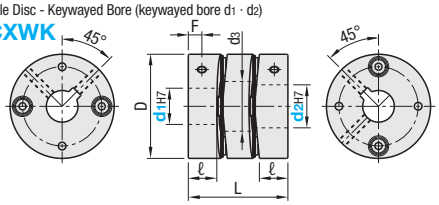
Double Disc Type

SCXW



Double Disc - Keywayed Bore (keywayed bore d1 · d2)

SCXWK



(1) d1, d2 tolerances are values before slits are machined.
(2) The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
(3) For the selection criteria and alignment procedures, see **P.961**

* Tapped holes for clamping screws may go through for some sizes.

Type	Material			Surface Treatment			Accessory
	Body	Disc	Screw	Body	Disc	Screw	
SCXW SCXWK	Aluminum Alloy	Stainless Steel	1.7220/ 34CrMo4	Anodizing Treatment	-	Trivalent Chromate	Hexagon Socket Head Cap Screw Set Screw

Part Number Type	No.	d1, d2 select (must be d1≤d2) (1) Only the dimensions in ( ) are selectable for keyawed bore type.	D	d3	L	ℓ	F SCXW	F SCXWK	A	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price SCXW	€ Unit Price SCXWK
Double Disc Type	21	4 5 6 (8)	21	9.5	24.5	7	3.5	3	7	M2.6	1.2		
SCXW	28	5 6 (8) (10)	28	12	32	9	4	4	9.5	M3	1.5		
Double Disc - Keywayed Bore	34	6 (8) (10) (12) (14)	34	17	35	9.8	5	4.5	12	M3	1.5		
SCXWK	46	8 (10) (12) (14) 15 17 19	46	22	44	12.6	6	6	16.5	M4	3.5		
	55	12 14 15 17 19 20 22 24 25	54.5	26	55	16	7	-	20.5	M5	7		

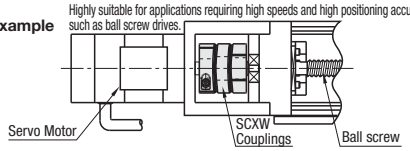
■Double Discs Type (High Positioning Accuracy Type)

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment (mm)	Mass (g)
SCXW SCXWK	21	1.2	1.0	0.10	900	10000	1.20×10^{-6}	±0.20	18
	28	1.6	1.2	0.15	3600		4.68×10^{-6}		42
	34	4.0	1.5	0.20	5700		1.10×10^{-5}		65
	46	10.0		0.25	14500		4.70×10^{-5}	±0.30	151
	55	25.0			23000		1.19×10^{-4}		260

(1) Static torsional spring constant, inertia moment, and mass values are for cases of maximum shaft diameter.

Example

Highly suitable for applications requiring high speeds and high positioning accuracies, such as ball screw drives.



■For Servo Motors (High Rigidity Type)



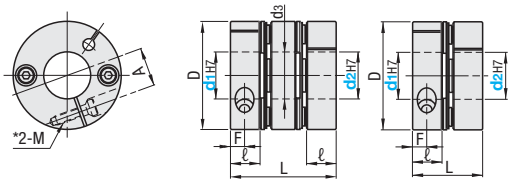
RoHS

Double Disc Type

SCPW

Single Disc Type

SCPS



(1) d1, d2 tolerances are values before slits are machined.
(2) The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
(3) For the selection criteria and alignment procedures, see **P.961**
*Tapped hole for clamp screw might go through.

Type	Material			Surface Treatment			Accessory
	Body	Disc	Screw	Body	Disc	Screw	
SCPW SCPS	Aluminum Alloy	Stainless Steel	1.7220/ 34CrMo4	Anodizing Treatment	-	Black Oxide	Hexagon Socket Screw

Part Number Type	No.	d1, d2 select (must be d1≤d2)	D	d3	L SCPW	L SCPS	ℓ	F	A	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price SCPW	€ Unit Price SCPS
Double Disc Type	16	*3 4 5 6	16.6	6.5	23	16.6	7.2	3	5.3	M2.6	1.0		
	21	4 5 6 8 9	21	9.5	24.5	16.7	7	3.5	7	M2.6	1.2		
SCPW	28	5 6 8 9 10	28	12	32.2	21.5	9	4	9.5	M3	1.5		
Single Disc Type	34	6 8 9 10 11 12 14	34	15	35	23.3	9.8	5	12	M3	1.5		
SCPS	46	8 9 10 11 12 14 15 17 19	46	22	44	29.8	12.6	6	16.5	M4	3.5		
	55	12 14 15 17 19 20 22 24 25	54.5	26	55	37.2	16	7	20.5	M5	6.0		

When d1, d2 is *, use with the load torque 60% or less than shown in the table to prevent slipping.

■Double Discs Type (High Rigidity Type)

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment (mm)	Mass (g)
SCPW	16	1.0	1.0	0.10	500	10000	4.22×10^{-7}	±0.20	11
	21	1.2			800		1.11×10^{-6}		17
	28	1.6	1.2	0.15	3000		4.68×10^{-6}		42
	34	4.0	1.5	0.20	4800		1.10×10^{-5}		65
	46	10.0		0.25	11500		4.70×10^{-5}	±0.30	151
	55	25.0			19000		1.19×10^{-4}		260

(1) Static torsional spring constant, inertia moment, and mass values are for cases of maximum shaft diameter.

■Single Disc Type (High Rigidity Type)

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment (mm)	Mass (g)
SCPS	16	1.0	1.0	1000	10000	3.16×10^{-7}	±0.10	8
	21	1.2		1700		7.90×10^{-7}		12
	28	1.6	1.2	6000		3.24×10^{-6}		30
	34	4.0	1.5	8000		7.60×10^{-6}		45
	46	10.0		20000		3.23×10^{-5}	±0.15	105
	55	25.0		33000		8.19×10^{-5}		180

(1) Single disc type cannot tolerate lateral misalignment.

Order Example

Part Number	-	Shaft Bore Ø d1	-	Shaft Bore Ø d2
SCXW46	-	10	-	14
SCXWK46	-	12	-	14
SCPW34	-	8	-	12

Days to Ship: 8 Days — Express A — 2,00 EUR/ piece — P.88

(1) A Express Charge of 5,40 EUR for 3 or more identical pieces.

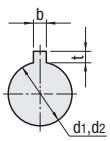
Price

■Volume Discount (1) Round down to one Cent.) P87

5~9	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

(1) For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension



Shaft Bore Dia. d1 · d2	b Standard Dimension	b Tolerance	t Standard Dimension	t Tolerance	Key Nominal Dims. bxh	Set Screw Size	Set Screw Tightening Torque (Nm)
8 · 10	3	±0.0125	1.4	+0.1 0	3x3	M2	0.3
12	4	±0.0150	1.8		4x4	M3	0.7
14	5		2.3		5x5	M4	1.7

Couplings
-Ultra High Torque Disc Clamping-

For Servo Motors

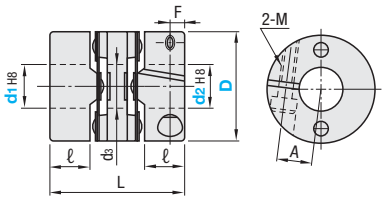
CAD Data

■For Servo Motors (High Torque)

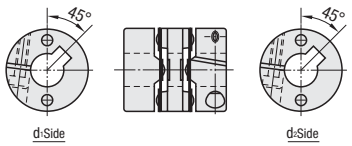


Double Disc Type

MCSLC (Standard Bore)

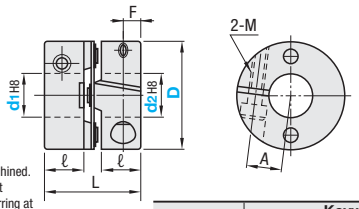


MCSLCLK (Keywayed Bore d1)
MCSLCRK (Keywayed Bore d2)
MCSLCWK (Keywayed Bore d1 · d2)

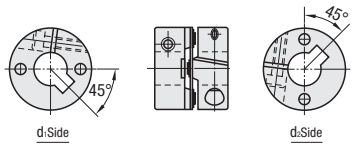


Single Disc Type

MCSSC (Standard Bore)



MCSSCWK (Keywayed Bore d1 · d2)



(?) d1, d2 tolerances are values before slits are machined.
(?) The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
(?) For the selection criteria and alignment procedures, see P.961

(?) For Keyway dimension, refer to the following.

Standard Bore	Keywayed Bore			M Material		S Surface Treatment	A Accessory
	d1 (One Side)	d2 (One Side)	d1 · d2 (Both sides)	Body	Disc	Body	
MCSLC	MCSLCLK	MCSLCRK	MCSLCWK	Aluminum Diecast	Stainless Steel	Electroless Nickel Plating	Hexagon Socket Head Cap Screw
MCSSC	-	-	MCSSCWK				

Part Number Type	D	d1, d2 select (must be d1≤d2) (?) Keywayed bore type is selectable in diameter 6 or larger.	d3	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCSLC	MCSLCLK MCSLCRK	MCSLCWK
Double Disc Type	16	*4 5 6	6.8	23.2	7	5	3	M2.5	1			
MCSLC	20	*4 5 6 6.35 7 8	8.1	26	7.5	6.5	3.7					
MCSLCLK	25	*5 6 6.35 7 8 9.53 10	10.4	30.2	9	8.5	4	M3	1.7			
MCSLCRK	32	8 9.53 10 11 12 14	15	41	12.4	10	6	M4	2.5			
MCSLCWK	40	8 9.53 10 11 12 14 15 16 18	19.5	47	15.5	13.1	7.8	M5	7			
	50	14 15 16 18 20 22 24	25	53	18	16.7	9	M6	12			

Part Number Type	D	d1, d2 select (must be d1≤d2) (?) Keywayed bore type is selectable in diameter 6 or larger.	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCSSC	MCSSCWK
Single Disc Type	16	*4 5 6	16.5	7	5	3	M2.5	1		
	20	*4 5 6 6.35 7 8	18.4	7.5	6.5	3.7				
MCSSC	25	*5 6 6.35 7 8 9.53 10	21.6	9	8.5	4	M3	1.7		
MCSSCWK	32	8 9.53 10 11 12 14	29	12.4	10	6	M4	2.5		
	40	8 9.53 10 11 12 14 15 16 18	35	15.5	13.1	7.8	M5	7		
	50	14 15 16 18 20 22 24	41	18	16.7	9	M6	12		

(?) When d1, d2 is *4, *5, use with the load torque 50% or less than shown in the table to prevent slipping.

■Double Discs Type (High Torque Type)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MCSLC	16	0.9	2	0.15	450	6000	$2.7x10^{-7}$	±0.2	10
MCSLCLK	20	1.3			700	5500	$8.0x10^{-7}$		16
MCSLCRK	25	2.8			950	5000	$2.5x10^{-6}$	±0.3	30
MCSLCWK	32	5			1100	4000	$6.6x10^{-6}$	±0.4	62
	40	9		0.2	2800	3800	$1.9x10^{-5}$	±0.5	110
	50	16			3400	3500	$5.0x10^{-5}$	±0.6	220

■Single Disc Type (High Torque Type)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
	16	0.9	1	-	650	6000	$2.2x10^{-7}$	±0.1	8
	20	1.3			950	5500	$7.0x10^{-7}$		13
MCSSC	25	2.8			1300	5000	$2.2x10^{-6}$		24
MCSSCWK	32	5			1400	4000	$5.6x10^{-6}$	±0.2	53
	40	9			3300	3800	$1.5x10^{-5}$		90
	50	16			4000	3500	$3.9x10^{-5}$	±0.3	180

(?) Single disc type cannot tolerate lateral misalignment.

Part Number - Shaft Bore Dia. d1 - Shaft Bore Dia. d2
MCSLC40 - 10 - 15
MCSLCWK40 - 10 - 12

- Standard Bore: 8 Days
- Keywayed Bore: 8 Days

Express A 2,00 EUR/ piece P.88
⊗Express Serviceis not available.
(?) A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (?) Round down to one Cent) P.87

5~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

(?) For orders larger than indicated quantity, please request a quotation.

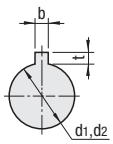
Alterations

Part Number - Shaft Bore Dia. d1 (LDC) - Shaft Bore Dia. d2 (RDC) - (KLH · KRL · LK · RK)
MCSLC40 - LDC9.5 - RDC10.5
MCSLCWK40 - 8 - 10 - KRH4

8 Days ⊗Express Serviceis not available.

Alterations	Shaft Bore Dia.	Keyway Width	Keyway
Spec.	LDC H8, RDC H8 0.1mm Increment Ordering Code LDC7.8 RDC9.3 D / LDC · RDC: 16 4~6 20 4~8 25 5~10 32 6~14 40 8~18 50 14~24	Keyway Width (b) is changed as table below. Ordering Code KLH4 KRH4 Shaft Bore Ø d1 · d2 / KLH · KRH (b) Reference Dia. / Tolerance / t Reference Dia. / Tolerance: 8 2 ±0.0125 1.0 +0.1 0 10 4 ±0.0150 1.8 12 5 2.3 22 8 ±0.0180 3.3 +0.2 0 ⊗Cannot be combined with shaft bore changes (LDC, wRDC) alterations (?) Applicable to Keyawed Bores only	45°, A Shaft D.I.A. d1 · d2 / LK · RK: 6~8 2 8~10 3 10~12 4 12~17 5 17~22 6 22~24 8 Ordering Code LK3 RK4 (?) Keyway machining available for Ø6~ (?) See right for keyway dimensions
Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)	LK (Left Shaft)	RK (Right Shaft)
Price Adder	5,00	5,00	Free of Charge		6,00	6,00

■Keyway Dimension



Shaft Bore Dia. d1 · d2	b Standard Dim.	b Tolerance	t Standard Dim.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4	±0.0150	1.8		4x4
12.1~17	5		2.3		5x5
17.1~22	6		2.8		6x6
22.1~24	8	±0.0180	3.3	+0.2 0	8x7

Couplings
-Disc Clamping-

For Servo Motors
(CPDW · CPDT only)

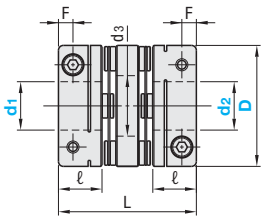
CAD Data

For more compact and rigid alternatives, see Servo-Fine couplings at P.963

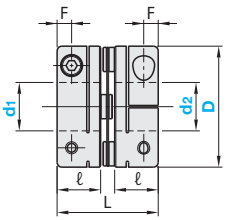
For Servo Motors (Standard)

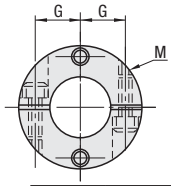


CPDW (Double Discs Type)



CPDT (Single Disc Type)





- CPDS cannot tolerate lateral misalignment.
- The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
- For the selection criteria and alignment procedures, see P.961

Parts	Material	Surface Treatment	Accessory
Body	Aluminum Alloy	Anodizing	Hexagon Socket Screw
Disc · Pins	Stainless Steel	-	

Part Number Type	D	d1, d2 select (must be d1≤d2)	L CPDW	L CPDT	ℓ	d3	F	G	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price CPDW	€ Unit Price CPDT
CPDW CPDT	19	4 5 6 7 8	27	20	8	8.5	2.5	6.5	M2	0.5		
	25	6 6.35 8 10 11 12	31	24	10	12.5	3.5	9	M2.5	1		
	32	8 10 11 12 14 15	40	29	12	16	4	11	M3	1.5		
	40	8 10 11 12 14 15 16 17 18 19 20	44	33	14	21	5	15	M4	2.5		
	50	14 15 16 17 18 19 20 22 24 25	57	42	18	26	6	18	M5	7		

Double Disc Type (Standard)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPDW	19	0.7	1.5	0.12	200	33000	8.7×10^{-7}	±0.5	18
	25	1			450	25000	2.7×10^{-6}		25
	32	2.5		0.15	1100	19000	9.6×10^{-6}		60
	40	3.5			1400	15000	1.9×10^{-5}		100
	50	9			2200	12000	8.1×10^{-5}		210

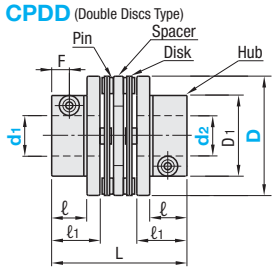
Single Disc Type (Standard)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPDT	19	0.7	0.7	280	33000	6.3×10^{-7}	±0.2	9
	25	1		630	25000	2.1×10^{-6}		19
	32	2.5		1600	19000	7.2×10^{-6}		41
	40	3.5		2600	15000	1.3×10^{-5}		68
	50	9		3100	12000	6.1×10^{-5}		140

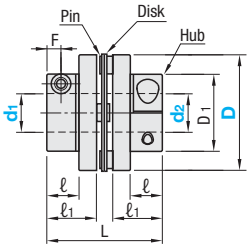
Single disc type cannot tolerate lateral misalignment.

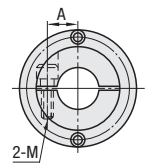


CPDD (Double Discs Type)



CPDS (Single Disc Type)





- CPDS cannot tolerate lateral misalignment
- The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
- For the selection criteria and alignment procedures, see P.961

Parts	Material	Surface Treatment	Accessory
Body	Aluminum Alloy	Anodizing	Hexagon Socket Screw
Disc, Pins	Stainless Steel	-	

Part Number Type	D	d1, d2 select (must be d1≤d2)	L CPDD	L CPDS	ℓ	ℓ1	D1	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	A	F	€ Unit Price CPDD	€ Unit Price CPDS
CPDD CPDS	32	6 8 10	40	32	9	13.7	22	M3	1.5	8	4		
	40	8 10 11 12 14	46	38	12	16.5	28	M4	2.5	10.5	6		
	50	12 14 15 16 18 19 20	52	44	15	19.4	39	M5	7	14.8	7		
	63	15 16 18 19 20 25	58	50	18	22.3	45	M6	12	17	8		

Double Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPDD	32	2	2	0.15	1000	19000	6.2×10^{-6}	±0.4	48
	40	4		0.2	1500	15000	1.6×10^{-5}	±0.5	81
	50	7.5			2000	12000	4.6×10^{-5}	±0.6	150
	63	10		0.3	2500	10000	1.1×10^{-4}	±0.8	230

Single Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPDS	32	2	1	1300	19000	4.5×10^{-6}	±0.2	38
	40	4		2800	15000	1.2×10^{-5}		66
	50	7.5		3700	12000	3.7×10^{-5}		120
	63	10		5000	10000	8.4×10^{-5}		190

Single disc type cannot tolerate lateral misalignment.

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPDW40	-	12	-	14

Alterations

Part Number	-	Shaft Bore Dia. d1 (LDC)	-	Shaft Bore Dia. d2 (RDC)	-	(LK · RK)
CPDD40	-	LDC8.5	-	14	-	RK5

Days to Ship

8 Days

Express A | 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

8 Days ⊗Express Serviceis not available.

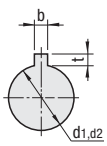
Price

Volume Discount (Round down to one Cent.) P.87

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Keyway Dimension

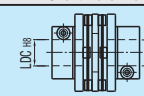


Shaft Bore Dia. d1 · d2	LK · RK	b Reference Ø	b Tolerance	t Reference Ø	t Tolerance	Keyway Dims. bxh
8~10	3	3	±0.0125	1.4	+0.1 0	3x3
10~12	4	4		1.8		4x4
12~17	5	5	±0.0150	2.3		5x5
17~22	6	6		2.8		6x6
22~25	8	8	±0.0180	3.3	+0.2 0	8x7

Alterations

Spec.

Shaft Bore Dia.



0.1mm Increment

Ordering Code

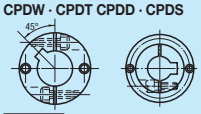
LDC 15.2 RDC 21.7
CPDW · CPDT CPDD · CPDS

D	LDC · RDC
19	4~8
25	6~12
32	8~15
40	8~20
50	14~25

D	LDC · RDC
32	6~10
40	8~14
50	10~20
63	15~25

Keyway

CPDW · CPDT CPDD · CPDS



Ordering Code: LK4, RK4

Shaft D.I.A. d1 · d2	LK · RK
8, 10	3
10~12	4
12~17	5
17~22	6
22~25	8

Keywayed bores are available from Ø8~
⊗Cannot be combined with shaft bore changes (LDC · RDC) alterations
See left for Keyway Dimensions

Code	LDC (Left Shaft)	RDC (Right Shaft)	LK (Left Shaft)	RK (Right Shaft)
Price Adder	15,00	15,00	CPDW · CPDT 15,00 CPDD · CPDS 7,00	CPDW · CPDT 15,00 CPDD · CPDS 7,00

Couplings

-High Rigidity Disc (Outer Dia. 40) Keyless Clamping/Keyway- For Servo Motors

⚠ The stainless discs of this product have sharp edges that may cause injuries. Use of thick protective gloves is recommended.

CAD Data

■Features: Compact and highly rigid couplings for servo motors selectable in keyless clamping and keywayed bores.

■For Servo Motors



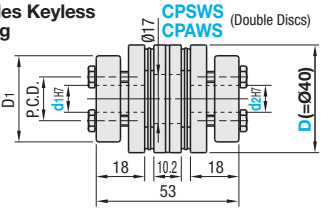




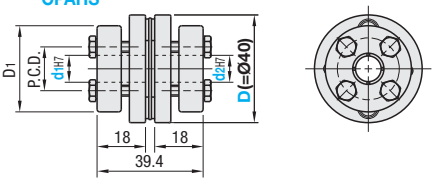
RoHS

■Both Sides Keyless Clamping

CPSWS CPAWS (Double Discs)

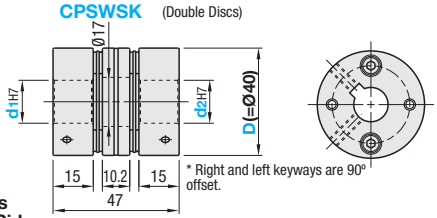


CPSHS CPAHS (Single Disc)



■Both Sides Keywayed Type

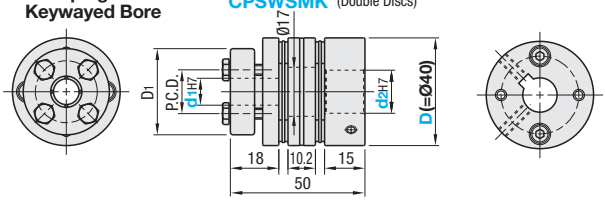
CPSWSK (Double Discs)



* Right and left keyways are 90° offset.

■One Side Keyless Clamping · One Side Keywayed Bore

CPSWSMK (Double Discs)



The allowable lateral · angular · axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.

Shipped after center-aligned and assembled.

For the selection criteria and alignment procedures, see P.961

Camping keyless flange has two screw holes for removal.

For installation and removal of Keyless Clamping Type couplings, see P.960

Type			Disc Type	Body		Disc	
Both Sides Keyless Clamping	Both Sides Keywayed	One Side Keyless Clamping · One Side Keywayed Bore		M Material	S Surface Treatment	M Material	A Accessory
CPSWS	CPSWSK	CPSWSMK	Double	1.1191/C45E	-	1.4319/ X3CrNiN17-8	Locking Screws Set Screw
CPSHS	-	-	Single				
CPAWS	-	-	Double	Aluminum	Anodizing		
CPAHS	-	-	Single				

Part Number Type	D	d1, d2	d1,d2	D1	P.C.D.	Locking Screws (Keyless Clamping) Size	Tightening Torque (Nm)	€ Unit Price Both Sides Keyless Clamping CPSWS	CPAWS	Both Sides Keywayed CPSWSK	One Side Keyless Clamping / One Side Keywayed Bore CPSWSMK
Double Disc Type											
Both Sides Keyless Clamping CPSWS (1.1191)	40	10 12 14 15 16	10,12	32	23	M4x18	3.5				
CPAWS (Aluminum)			14,15	38	27						
Both Sides Keywayed CPSWSK (1.1191)			16	39	28						
One Side Keyless Clamping · One Side Keywayed Bore CPSWSMK (1.1191)											

Part Number Type	D	d1, d2	d1,d2	D1	P.C.D.	Locking Screws (Keyless Clamping) Size	Tightening Torque (Nm)	€ Unit Price Both Sides Keyless Clamping CPSHS	CPAHS
Single Disc Type									
Both Sides Keyless Clamping CPSHS (1.1191/C45E)	40	10 12 14 15 16	10,12	32	23	M4x18	3.5		
CPAHS (Aluminum)			14,15	38	27				
			16	39	28				

■Double Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPSWS	40	8	1	0.2	6300	10000	7.43×10^{-5}	±0.5	329
CPAWS		6					2.65×10^{-5}		117
CPSWSK		8					7.73×10^{-5}		332
CPSWSMK							7.58×10^{-5}		331

Static torsional spring constant, inertia moment, and mass values are for cases of maximum shaft diameter.

■Single Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPSHS	40	8	1	15000	10000	5.48×10^{-5}	±0.25	246
CPAHS		6				1.96×10^{-5}		88

Single disc type cannot tolerate lateral misalignment.

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPSWSK40	-	10	-	16

Days to Ship: 8 Days

Express A: 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

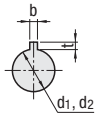
Price

■Volume Discount (Round down to one Cent.) P.87

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension



Shaft Bore Dia. d1 · d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh	Set Screw Size	Set Screw Tightening Torque (Nm)
10	3	±0.0125	1.4	+0.1 0	3x3	M2	0.3
12	4	±0.0150	1.8		4x4	M3	0.7
14, 15, 16	5		2.3		5x5	M4	1.7

Couplings

-High Rigidity Disc (Outer Dia. 65) Keyway / Clamping-

⚠ The stainless discs of this product have sharp edges that may cause injuries. Use of thick protective gloves is recommended.

For Servo Motors

CAD Data

■Features: Max high torque capacity up to 60Nm, and shaft connection methods are freely selectable for each half.

■**For Servo Motors**



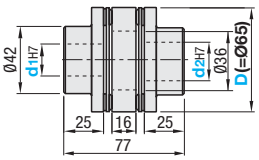




RoHS

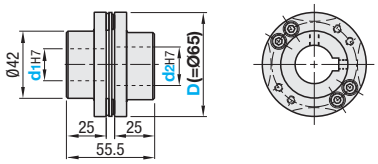
■**Both Sides Keywayed Type**

CPSWWK (Double Discs)



* The keyways on right and left sides are 90º offset.

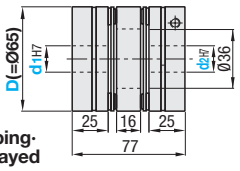
CPSHWK (Single Disc)



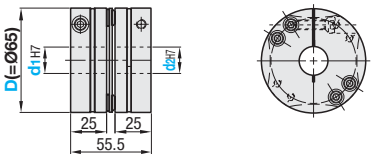
* The keyways on right and left sides face the same direction.

■**Both sides Clamping type**

CPSWC (Double Discs)

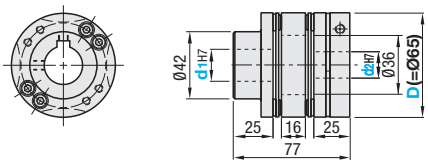


CPSHC (Single Disc)

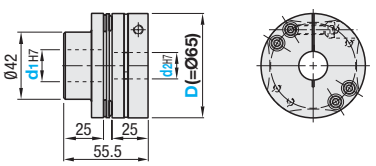


■**One side Clamping· One Side Keywayed Bore**

CPSWCK (Double Discs)



CPSHCK (Single Disc)



(?) d1, d2 tolerances are values before slits are machined.
(?) The lateral · angular and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
(?) Shipped after center-aligned and assembled.
(?) For the selection criteria and alignment procedures, see **P.961**

Type			Disc Type	Body		Disc	Accessory
Both Sides Keywayed	Both Sides Clamping	One Side Clamping-One Side Keywayed Bore		M Material	S Surface Treatment	M Material	A Accessory
CPSWWK	CPSWC	CPSWCK	Double	1.1191/ C45E	-	1.4319/ X3CrNiN17-8	Clamp Screw Set Screw
CPSHWK	CPSHC	CPSHCK	Single				

Part Number Type		D	d1, d2 (Keywayed bores available up to Ø25)	Clamp Screw Size	Clamp Screw Tightening Torque (Nm)	€ Unit Price Both Sides Keywayed	Both Sides Clamping	One Side Clamping · One Side Keywayed Bore
						CPSWWK	CPSWC	CPSWCK
Double Disc Type								
Both Sides Keywayed	CPSWWK	65	15 16 17 18 19 20 22 24 25 30	M6x20	15.7			
Both Sides Clamping	CPSWC							
One Side Clamping - One Side Keywayed Bore	CPSWCK							

Part Number Type		D	d1, d2 (Keywayed bores available up to Ø25)	Clamp Screw Size	Clamp Screw Tightening Torque (Nm)	€ Unit Price Both Sides Keywayed	Both Sides Clamping	One Side Clamping · One Side Keywayed Bore
						CPSHWK	CPSHC	CPSHCK
Single Disc Type								
Both Sides Keywayed	CPSHWK	65	15 1617 18 19 20 22 24 25 30	M6x20	15.7			
Both Sides Clamping	CPSHC							
One Side Clamping - One Side Keywayed Bore	CPSHCK							

■**Double Disc Type**

Part Number Type	D	d1,d2	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPSWWK	65	15~25	60	0.6	0.2	58000	8000	4.87×10^{-4}	±0.6	884
CPSWC		15~30						8.29×10^{-4}		1275
CPSWCK		15~30						6.58×10^{-4}		1080

(?) Static torsional spring constant, inertia moment, and mass values are for cases of maximum shaft diameter.

■**Single Disc Type**

Part Number Type	D	d1,d2	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment (Kg·m²)	Allowable Axial Misalignment	Mass (g)
CPSHWK	65	15~25	60	0.6	120000	8000	2.87×10^{-4}	±0.3	595
CPSHC		15~30					6.30×10^{-4}		985
CPSHCK		15~30					4.59×10^{-4}		790

(?) Single disc type cannot tolerate lateral misalignment.

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPSWC65	-	20	-	30

Days to Ship

8 **Days**

Express **A** 2,00 EUR/ piece P. 88

(?) A Express Charge of 5,40 EUR for 3 or more identical pieces.

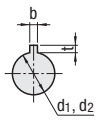
Price

■**Volume Discount** ((?) Round down to one Cent.) P. 87

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

(?) For orders larger than indicated quantity, please request a quotation.

■**Keyway Dimension**



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh	Set Screw Size	Set Screw Tightening Torque (Nm)
15, 16, 17	5	±0.015	2.3	+0.1 0	5x5	M4	1.7
18, 19, 20, 22	6	±0.015	2.8		6x6	M5	4
24, 25	8	±0.018	3.3	+0.2 0	8x7	M6	7

Couplings

-High Rigidity Disc (Outer Dia. 65) Keyless Clamping-

The stainless discs of this product have sharp edges that may cause injuries. Use of thick protective gloves is recommended.

For Servo Motors

CAD Data

■Features: The keyless clamping type are available up to high torque of 80Nm max.

■For Servo Motors

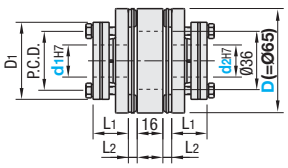




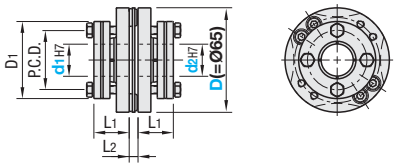
RoHS

■Both Sides Keyless Clamping

CPSWN **CPAWN** (Double Discs)

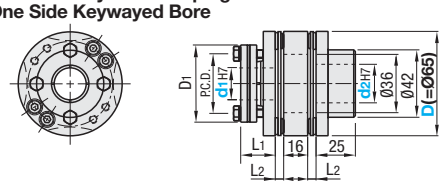


CPSHN **CPAHN** (Single Disc)

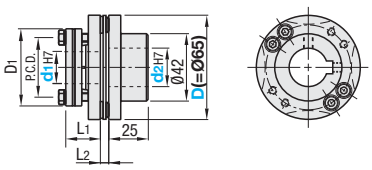


■One Side Keyless Clamping · One Side Keywayed Bore

CPSWMK (Double Discs)



CPSHMK (Single Disc)



- The coupling with Ø35mm bore diameter conforms to servo motor shaft tolerance of Ø35 $^{+0.01}_{0}$
- d1, d2 tolerances are values before slits are machined.
- The lateral · angular and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
- Shipped after center-aligned and assembled.
- For the selection criteria and alignment procedures, see **P.961**
- Keyless Clamping flange has two screw holes for removal. Couplings with Ø20 or larger bores, the locking screw holes have integrated removal screw holes. Use M6 screws into the screw holes for removal. For installation and removal of Keyless Clamping Type couplings, see **P.960**

Type		Disc Type	Body		Disc	Accessory
Both Sides Keyless Clamping	One Side Keyless Clamping / One Side Keywayed Bore		M Material	S Surface Treatment	M Material	
CPSWN	CPSWMK	Double	1.1191/ C45E	-	1.4319/ X3CrNiN17-8	Locking Screws Set Screw
CPSHN	CPSHMK	Single				
CPAWN	-	Double	Aluminum	Anodizing		
CPAHN	-	Single				

Part Number Type	D	d1,d2 (Keywayed bores available up to Ø25)	d1,d2	L1	L2	D1	P.C.D.	Locking Screws (Keyless Clamping) Size	Tightening Torque (Nm)	€ Unit Price Both Sides Keyless Clamping CPSWN	CPAWN	One Side Keyless Clamping · One Side Keywayed Bore CPSWMK
Double Disc Type Both Sides Keyless Clamping CPSWN (1.1191/C45E) CPAWN (Aluminum)	65	15 16*17 18*19 20 22 24 25 30 35 (For CPAWN * is not available)	15	26.5	5.5 (1.1191/ C45E)	41	29	M5x25	6			
			16				30					
			17				32					
			18, 19			44	35					
One Side Keyless Clamping · One Side Keywayed Bore CPSWMK			20, 22	22	5.0 (Aluminum)	48	37	M5x22				
			24, 25			53	42					
			30			58	45					
			35			63	51					

Part Number Type	D	d1,d2 (Keywayed bores available up to Ø25)	d1,d2	L1	L2	D1	P.C.D.	Locking Screws (Keyless Clamping) Size	Tightening Torque (Nm)	€ Unit Price Both Sides Keyless Clamping CPSHN	CPAHN	One Side Keyless Clamping · One Side Keywayed Bore CPSHMK
Single Disc Type Both Sides Keyless Clamping CPSHN (1.1191/C45E) CPAHN (Aluminum)	65	15 16*17 18*19 20 22 24 25 30 35 (For CPAHN * is not available)	15	26.5	5.5 (1.1191/ C45E)	41	29	M5x25	6			
			16				30					
			17				32					
			18, 19			44	35					
One Side Keyless Clamping · One Side Keywayed Bore CPSHMK			20, 22	22	5.0 (Aluminum)	48	37	M5x22				
			24, 25			53	42					
			30			58	45					
			35			63	51					

■Double Disc Type

Part Number Type	D	d1,d2	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment (Kg-m²)	Allowable Axial Misalignment	Mass (g)
CPSWN	65	15~19	60	0.6	0.2	58000	8000	6.53×10^{-4}	±0.6	984
		20~35	80							
CPAWN		15, 16, 18	20			47000		2.33×10^{-4}		351
		20~35	40							
CPSWMK		15~35	60			58000		5.70×10^{-4}		934

(Static torsional spring constant, inertia moment, and mass values are for cases of maximum shaft diameter.

■Single Disc Type

Part Number Type	D	d1,d2	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment (Kg-m²)	Allowable Axial Misalignment	Mass (g)
CPSHN	65	15~19	60	0.6	120000	8000	4.53×10^{-4}	±0.3	695
		20~35	80						
CPAHN		15, 16, 18	20		98000		1.61×10^{-4}		248
		20~35	40						
CPSHMK		15~35	60		120000		3.70×10^{-4}		645

(Single disc type cannot tolerate lateral misalignment.

Order Example Part Number - Shaft Bore Dia. d1 - Shaft Bore Dia. d2

CPSWN65 - 35 - 20

Days to Ship 8 Days — Express A 2,00 EUR/ piece — P. 88

(A Express Charge of 5,40 EUR for 3 or more identical pieces.

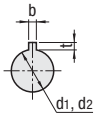
Price

■Volume Discount (Round down to one Cent) P. 87

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

(For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh	Set Screw Size	Set Screw Tightening Torque (Nm)
15, 16, 17	5	±0.015	2.3	+0.1 0	5x5	M4	1.7
18,19,20,22	6	±0.015	2.8		6x6	M5	4
24, 25	8	±0.018	3.3	+0.2 0	8x7	M6	7

Couplings

-High Rigidity Disc (O.D. 87) Keywayed Bore / Clamping-

⚠ The stainless discs of this product have sharp edges that may cause injuries. Use of thick protective gloves is recommended.

For Servo Motors

CAD Data

■Features: The keywayed bore type are available up to high torque of 180Nm max.

■For Servo Motors

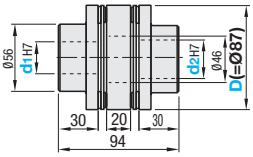




RoHS

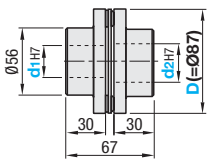
■Both Sides Keywayed Bores

CPSWWK (Double Discs)



* The keyways on right and left sides are 90° offset.

CPSHWK (Single Disc)

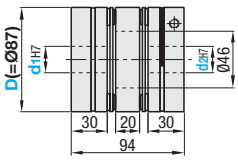




* The keyways on right and left sides face the same direction.

■Both Sides Clamping Type

CPSWC (Double Discs)





Ⓟ The coupling with Ø35mm bore diameter conforms to servo motor shaft tolerance of $Ø35^{+0.01}_{0}$
Ⓟ d_1, d_2 tolerances are values before slits are machined.
Ⓟ The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
Ⓟ Shipped after center-aligned and assembled.
Ⓟ For the selection criteria and alignment procedures, see **P.961**

Type		Disc Type	Body		Disc	Ⓐ Accessory
Both Sides Keywayed Bore	Both Sides Clamping		Ⓜ Material	Ⓢ Surface Treatment	Ⓜ Material	
CPSWWK	CPSWC	Double	1.1191/ C45E	-	1.4319	Clamp Screw Set Screw
CPSHWK	-	Single				

Part Number Type	D	d_1, d_2	Clamp Screw Size	Clamp Screw Tightening Torque (Nm)	€ Unit Price Both Sides Keywayed Bore CPSWWK	€ Unit Price Both Sides Clamping CPSWC
Double Disc Type Both Sides Keywayed Bore **CPSWWK** Both Sides Clamping **CPSWC**	87	20 22 24 25 30 35	M8x25	28		

Part Number Type	D	d_1, d_2	Clamp Screw Size	Clamp Screw Tightening Torque (Nm)	€ Unit Price Both Sides Keywayed Bore CPSHWK
Single Disc Type Both Sides Keywayed Bore **CPSHWK**	87	20 22 24 25 30 35	M8x25	28	

■Double Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment ($Kg\text{-}m^2$)	Allowable Axial Misalignment	Mass (Kg)
CPSWWK	87	180	0.6	0.2	140000	6000	$1.94x10^{-3}$	±1.0	1.9
CPSWC		100					$3.40x10^{-3}$		3.0

Ⓟ Static torsional spring constant, inertia moment, and mass values are for cases of maximum shaft diameter.

■Single Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment ($Kg\text{-}m^2$)	Allowable Axial Misalignment	Mass (Kg)
CPSHWK	87	180	0.6	330000	6000	$1.11x10^{-3}$	±0.5	1.3

Ⓟ Single disc type cannot tolerate lateral misalignment.

Order Example

Part Number	-	Shaft Bore Dia. d_1	-	Shaft Bore Dia. d_2
CPSWWK87	-	20	-	35

Days to Ship

8 Days

Express A | 8,00 EUR/ piece P.88

Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces.

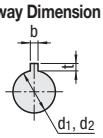
Price

■Volume Discount (Ⓟ Round down to one Cent.) P.87

5~9	1~4	5~9
Rate	€ Unit Price	5%

Ⓟ For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension



Shaft Bore Dia. d_1, d_2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh	Set Screw Size	Set Screw Tightening Torque (Nm)
20, 22	6	±0.015	2.8	+0.1 0	6x6	M5	4
24, 25, 30	8	±0.018	3.3	+0.2 0	8x7	M6	7
35	10	±0.018	3.3		10x8	M8	15

Couplings

-High Rigidity Disc (Outer Dia. 87) Keyless Clamping-

The stainless discs of this product have sharp edges that may cause injuries.
Use of thick protective gloves is recommended.

For Servo Motors

CAD Data

■Features: The keyless clamping type are available up to high torque of 250Nm max.

■For Servo Motors

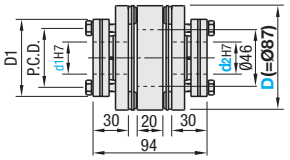




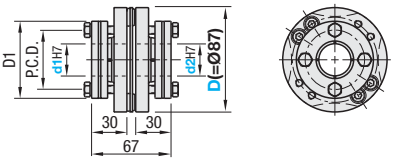
RoHS

■Both Sides Keyless Clamping

CPSWN (Double Discs)

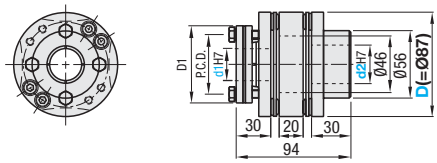


CPSHN (Single Disc)

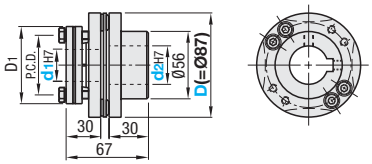


■One Side Keyless Clamping · One Side Keywayed Bore

CPSWMK (Double Discs)



CPSHMK (Single Disc)



① The coupling with Ø35mm bore diameter conforms to servo motor shaft tolerance of $\varnothing 35^{+0.01}_{0}$
② d1, d2 tolerances are values before slits are machined.
③ The allowable lateral·angular·axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
④ Shipped after center-aligned and assembled.
⑤ For the selection criteria and alignment procedures, see **P.961**
⑥ Screw holes for removal are integrated into locking screw holes on Keyless Clamping flange.
Use M8 screws into the screw holes for removal.
For installation and removal of Keyless Clamping Type couplings, see **P.960**

Type		Disc Type	Body		Disc	A Accessory
Both Sides Keyless Clamping	One Side Keyless Clamping · One Side Keywayed Bore		M Material	S Surface Treatment	M Material	
CPSWN	CPSWMK	Double	1.1191/ C45E	-	1.4319	Locking Screws Set Screw
CPSHN	CPSHMK	Single				

Part Number Type	D	d1, d2 (Keyless Clamping)	d2 (w/Keywayed Bore)	d1,d2	D1	P.C.D.	Locking Screws Size	Locking Screws Tightening torque (Nm)	€ Unit Price Both Sides Keyless Clamping CPSWN	€ Unit Price One Side Keyless Clamping One Side Keywayed Bore CPSWMK
Double Disc Type Both Sides Keyless Clamping **CPSWN** One Side Keyless Clamping - One Side Keywayed Bore **CPSWMK**	87	25 30 35 38 40 45	20 22 24 25 30 35	25	62	50	M6x30	13.7		
				30	66	54				
				35	68	54				
				38~45	78	64				

Part Number Type	D	d1, d2 (Keyless Clamping)	d2 (w/Keywayed Bore)	d1,d2	D1	P.C.D.	Locking Screws Size	Locking Screws Tightening torque (Nm)	€ Unit Price Both Sides Keyless Clamping CPSHN	€ Unit Price One Side Keyless Clamping One Side Keywayed Bore CPSHMK
Double Disc Type Both Sides Keyless Clamping **CPSWN** One Side Keyless Clamping - One Side Keywayed Bore **CPSWMK**	87	25 30 35 38 40 45	20 22 24 25 30 35	25	62	50	M6x30	13.7		
				30	66	54				
				35	68	54				
				38~45	78	64				

■Double Disc Type

Part Number Type	D	d1,d2	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment (Kg·m²)	Allowable Axial Misalignment	Mass (Kg)
CPSWN	87	25	200	0.6	0.2	140000	6000	2.49×10^{-3}	±1.0	2.3
		30 · 35 · 38 40 · 45	250							
CPSWMK		20~45	180					2.22×10^{-3}		2.1

①Static torsional spring constant, inertia moment, and mass values are for cases of maximum shaft diameter.

■Single Disc Type

Part Number Type	D	d1,d2	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment (Kg·m²)	Allowable Axial Misalignment	Mass (Kg)
CPSHN	87	25	200	0.6	330000	6000	1.68×10^{-3}	±0.5	1.6
		30 · 35 · 38 40 · 45	250						
CPSHMK		20~45	180				1.40×10^{-3}		1.5

①Single disc type cannot tolerate lateral misalignment.

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPSWMK87	-	25	-	35

Price

■Volume Discount (①Round down to one Cent.) P.87

5~9	1~4	5~9
Rate	€ Unit Price	5%

①For orders larger than indicated quantity, please request a quotation.

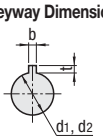
Days to Ship

8 Days

Express A 8,00 EUR/ piece P.88

①A Express Charge of 21,60 EUR for 3 or more identical pieces.

■Keyway Dimension



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh	Set Screw Size	Set Screw Tightening Torque (Nm)
20 · 22	6	±0.015	2.8	+0.1 0	6x6	M5	4
24 · 25 · 30	8	±0.018	3.3	+0.2 0	8x7	M6	7
35	10	±0.018	3.3		10x8	M8	15

Couplings
-Standard Torque Disc · Set Screw-

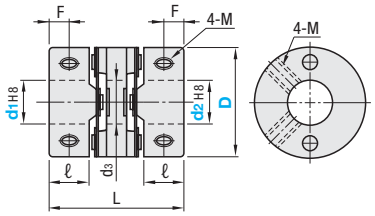
CAD Data

■Features: Couplings with polyimide discs highly tolerant on lateral and angular misalignments.

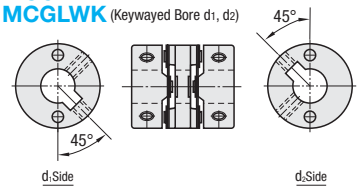


Double Disc Type

MCGL (Standard Bore)

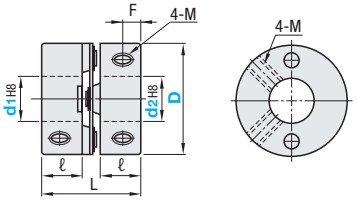


MCGLLK (Keyway Bore d_1)
MCGLRK (Keyway Bore d_2)
MCGLWK (Keyway Bore d_1, d_2)

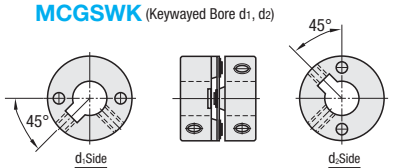


Single Disc Type

MCGS (Standard Bore)



MCGSRK (Keyway Bore d_2)
MCGSWK (Keyway Bore d_1, d_2)



Standard Bores	Keyway Bore			M Material		S Surface Treatment	A Accessory
	d_1 (One Side)	d_2 (One Side)	d_1, d_2 (Both sides)	Body	Disc	Body	
MCGL	MCGLLK	MCGLRK	MCGLWK	Aluminum Diecast	Polyimide	Electroless Nickel Plating	Set Screw
MCGS	-	MCGSRK	MCGSWK				

The allowable lateral · angular · axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
For the selection criteria and alignment procedures, see **P.961**

Part Number Type	D	d_1, d_2 select (must be $d_1 \leq d_2$) Diameter 6 or larger is applicable to keyawyed bore type (D=13 is not available)	d_3	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price MCGL	€ Unit Price MCGLLK MCGLRK	€ Unit Price MCGLWK
Double Disc Type MCGL MCGLLK MCGLRK MCGLWK	10	2 3 4	4.1	15	4.2	2	M2	0.3			
	13	3 4 5 6	5.5	19	5.5	2.5					
	16	4 5 6 6.35 7 8	6.8	23.2	7	3	M3	0.7			
	20	4 5 6 6.35 7 8 10	8.1	26	7.5	3.7					
	25	5 6 6.35 7 8 9.53 10 11 12	10.4	30.2	9	4	M4	1.7			
	32	6 6.35 7 8 9.53 10 11 12 14 15 16	15	41	12.4	6					
	40	8 9.53 10 11 12 14 15 16 18 20	19.5	47	15.5	7.8	M5	4			
	50	14 15 16 18 20 22 24 25	25	53	18	9	M6	7			

Part Number Type	D	d_1, d_2 select (must be $d_1 \leq d_2$) Diameter 6 or larger is applicable to keyawyed bore type (D=13 is not available)	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price MCGS	€ Unit Price MCGSRK	€ Unit Price MCGSWK
Single Disc Type MCGS MCGSRK MCGSWK	10	2 3 4	10.5	4.2	2	M2	0.3			
	13	3 4 5 6	13.5	5.5	3					
	16	4 5 6 6.35 7 8	16.5	7	3	M3	0.7			
	20	4 5 6 6.35 7 8 10	18.4	7.5	4					
	25	5 6 6.35 7 8 9.53 10 11 12	21.6	9	4	M4	1.7			
	32	6 6.35 7 8 9.53 10 11 12 14 15 16	29	12.4	6					
	40	8 9.53 10 11 12 14 15 16 18 20	35	15.5	7.8	M5	4			
	50	14 15 16 18 20 22 24 25	41	18	9	M6	7			

■Double Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
MCGL MCGLLK MCGLRK MCGLWK	10	0.15	3.5	0.3	21	26000	4.6×10^{-8}	±0.2	3
	13	0.25			44	20000	8.0×10^{-8}		5
	16	0.4			70	19000	2.4×10^{-7}	±0.3	9
	20	0.6			130	18000	7.2×10^{-7}	±0.4	14
	25	1.4			240	16000	2.2×10^{-6}	±0.5	27
	32	2.6			560	12000	6.0×10^{-6}		60
	40	4.4		0.4	980	8000	1.7×10^{-5}	±0.6	104
	50	7.0			1100	6000	4.6×10^{-5}		210

■Single Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
MCGS MCGSRK MCGSWK	10	0.15	2	0.1	27	26000	4.0×10^{-8}		2
	13	0.25			60	20000	7.0×10^{-8}	±0.1	4
	16	0.4			90	19000	2.0×10^{-7}		7
	20	0.6			170	18000	6.0×10^{-7}	±0.2	11
	25	1.4			300	16000	1.8×10^{-6}		22
	32	2.6			700	12000	5.2×10^{-6}		50
	40	4.4		0.15	1200	8000	1.3×10^{-5}	±0.3	85
	50	7.0			1450	6000	3.6×10^{-5}		170

Order Example

Part Number	-	Shaft Bore Dia. d_1	-	Shaft Bore Dia. d_2
MCGL20	-	5	-	10
MCGLRK25	-	8	-	12

Alterations

Part Number	-	Shaft Bore Dia. d_1 (LDC)	-	Shaft Bore Dia. d_2 (RDC)	-	(KLH · KRH)
MCGL20	-	LDC6.5	-	RDC9		
MCGLWK32	-	8	-	10	-	KRH4

8 Days ⊗Express Serviceis not available.

Days to Ship

- Standard Bore: 8 Days
- Keyawyed Bore: 8 Days

Express A 2,00 EUR/ piece P.87

⊗Express Serviceis not available.

A Express Charge of 5,40 EUR for 3 or more identical pieces.

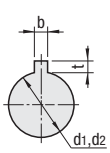
Price

■Volume Discount (Round down to one Cent) P. 87

5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension



Shaft Bore Dia. d_1, d_2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4	±0.0150	1.8		4x4
12.1~17	5		2.3		5x5
17.1~22	6		2.8		6x6
22.1~25	8	±0.0180	3.3	+0.2 0	8x7

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 0.1mm Increment. Ordering Code: LDC7.8, RDC9.3	D: 10 2~4; 13 2~6; 16 4~8; 20 4~10; 25 5~12; 32 6~16; 40 8~20; 50 14~25 (LDC, RDC)
		Keyway Width (b) is changed as table below. Ordering Code: KLH4 KRH4

Shaft Bore Dia. d_1 · d_2	KLH · KRH (b) Reference Dia.	KLH · KRH (b) Tolerance	t Reference Dia.	t Tolerance
8	2	±0.0125	1.0	+0.1 0
10	4	±0.0150	1.8	
12	5		2.3	
22	8	±0.0180	3.3	+0.2 0



⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration.
Applicable to Keyawyed Bores only

Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)
Price Adder	5,00	5,00	Free of Charge	

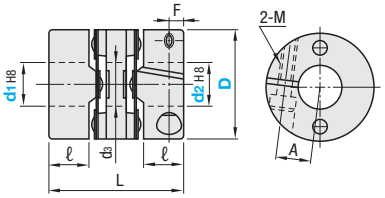
Couplings
-Standard Torque Disc · Clamping-

CAD Data

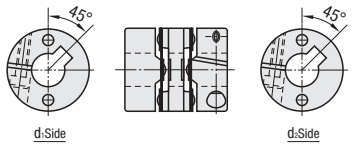
■Features: Couplings with polyimide discs highly tolerant on lateral and angular misalignments.



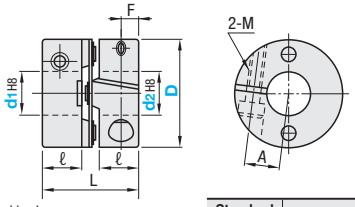
Double Disc Type
MCGLC (Standard Bore)



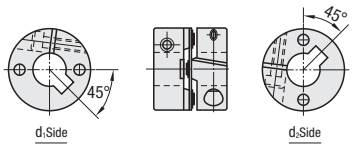
MCGLCLK (Keywayed Bore d1)
MCGLCRK (Keywayed Bore d2)
MCGLCWK (Keywayed Bore d1, d2)



Single Disc Type
MCGSC (Standard Bore)



MCGSCRK (Keywayed Bore d2)
MCGSCWK (Keywayed Bore d1, d2)



(P) d1, d2 tolerances are values before slits are machined.
(P) The allowable lateral · angular · axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
(P) For the selection criteria and alignment procedures, see **P.961**

Standard Bores	Keywayed Bore			Material		Surface Treatment	Accessory
	d1 (One Side)	d2 (One Side)	d1 · d2 (Both sides)	Body	Disc	Body	
MCGLC	MCGLCLK	MCGLCRK	MCGLCWK	Aluminum Diecast	Polyimide	Electroless Nickel Plating	Hexagon Socket Head Cap Screw
MCGSC	-	MCGSCRK	MCGSCWK				

Part Number Type	D	d1, d2 select (must be d1≤d2) (P)Keywayed bore type is selectable in diameter 6 or larger.	d3	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCGLC	€ Unit Price MCGLCLK MCGLCRK	€ Unit Price MCGLCWK
Double Disc Type MCGLC MCGLCLK MCGLCRK MCGLCWK	13	*3 4 5	5.5	19	5.5	4.1	2.5	M2	0.42			
	16	*4 5 6	6.8	23.2	7	5	3	M2.5	1			
	20	*4 5 6 6.35 7 8	8.1	26	7.5	6.5	3.7					
	25	*5 6 6.35 7 8 9.53 10	10.4	30.2	9	8.5	4	M3	1.7			
	32	8 9.53 10 11 12 14	15	41	12.4	10	6	M4	2.5			
	40	8 9.53 10 11 12 14 15 16 18	19.5	47	15.5	13.1	7.8	M5	7			
	50	14 15 16 18 20 22 24	25	53	18	16.7	9	M6	12			

Part Number Type	D	d1, d2 select (must be d1≤d2) (P)Keywayed bore type is selectable in diameter 6 or larger.	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCGSC	€ Unit Price MCGSCRK	€ Unit Price MCGSCWK
Single Disc Type MCGSC MCGSCRK MCGSCWK	13	*3 4 5	13.5	5.5	4.1	2.5	M2	0.42			
	16	*4 5 6	16.5	7	5	3	M2.5	1			
	20	*4 5 6 6.35 7 8	18.4	7.5	6.5	3.7					
	25	*5 6 6.35 7 8 9.53 10	21.6	9	8.5	4	M3	1.7			
	32	8 9.53 10 11 12 14	29	12.4	10	6	M4	2.5			
	40	8 9.53 10 11 12 14 15 16 18	35	15.5	13.1	7.8	M5	7			
	50	14 15 16 18 20 22 24	41	18	16.7	9	M6	12			

(P) When d1, d2 is *3, *4, *5, use with the load torque 50% or less than shown in the table to prevent slipping.

■Double Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
MCGLC MCGLCLK MCGLCRK MCGLCWK	13	0.25	3.5	0.3	44	12000	8.0×10^{-8}	±0.2	5
	16	0.4			70	9000	2.4×10^{-7}	±0.3	9
	20	0.6			130	7600	7.2×10^{-7}	±0.4	14
	25	1.4			240	6000	2.2×10^{-6}	±0.5	27
	32	2.6			560	4800	6.0×10^{-6}		60
	40	4.4		0.4	980	4000	1.7×10^{-5}	±0.6	104
	50	7.0			1100	3500	4.6×10^{-5}		210

■Single Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
MCGSC MCGSCRK MCGSCWK	13	0.25	2	0.1	60	12000	7.0×10^{-8}	±0.1	4
	16	0.4			90	9000	2.0×10^{-7}		7
	20	0.6			170	7600	6.0×10^{-7}		11
	25	1.4			300	6000	1.8×10^{-6}	±0.2	22
	32	2.6			700	4800	5.2×10^{-6}	±0.3	50
	40	4.4		0.15	1200	4000	1.3×10^{-5}		85
	50	7.0			1450	3500	3.6×10^{-5}		170

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
MCGLC16	-	5	-	6
MCGLCWK20	-	6	-	8

Alterations

Part Number	-	Shaft Bore Dia. d1 (LDC)	-	Shaft Bore Dia. d2 (RDC)	-	(KLH · KRH)
MCGLC20	-	LDC6.5	-	RDC6.9		
MCGLCWK32	-	10	-	10	-	KLH4

Days to Ship
- Standard Bore: 8 Days
- Keywayed Bore: 8 Days

ExpressA 2,00 EUR/ piece **P.88**

⊗Express Serviceis not available.

(P) A Express Charge of 5,40 EUR for 3 or more identical pieces.

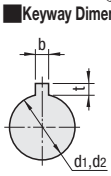
Price

■Volume Discount (P)Round down to one Cent) **P.87**

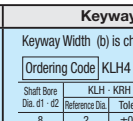
5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

(P) For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension

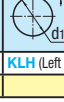


Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4		1.8		4x4
12.1~17	5	±0.0150	2.3		5x5
17.1~22	6		2.8		6x6
22.1~24	8	±0.0180	3.3	+0.2 0	8x7

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 0.1mm Increment Ordering Code: LDC7.8, RDC9.3	Keyway Width (b) is changed as table below. Ordering Code: KLH4 KRH4

D	LDC · RDC
13	2~5
16	4~6
20	4~8
25	5~10
32	6~14
40	8~18
50	14~24

Shaft Bore Dia. d1 · d2	KLH · KRH (b) Reference Dia.	KLH · KRH (b) Tolerance	t Reference Dia.	t Tolerance
8	2	±0.0125	1.0	+0.1 0
10	4	±0.0150	1.8	
12	5		2.3	
22	8	±0.0180	3.3	+0.2 0



⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration.
(P) Applicable to Keyweyed Bores only

Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)
Price Adder	5,00	5,00	Free of Charge	

Couplings
-High Torque Disc · Set Screw-

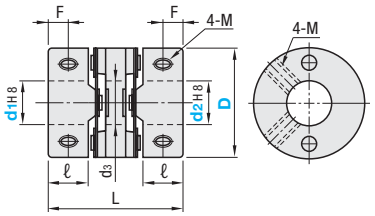
CAD Data

■Features: Couplings with carbon fiber discs have higher torque ratings than the polyimide discs, and are more lateral/angular misalignment tolerant than stainless steel.

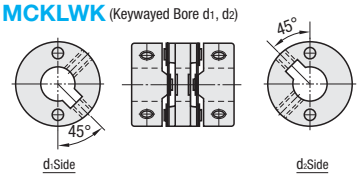


RoHS

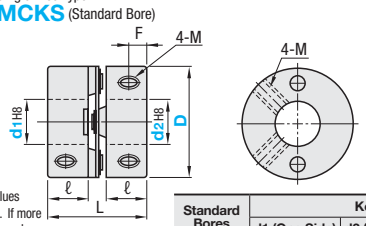
Double Disc Type
MCKL (Standard Bore)



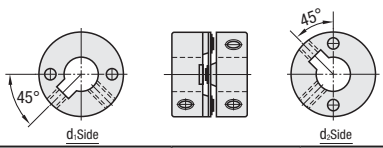
MCKLLK (Keyawed Bore d1)
MCKLRK (Keyawed Bore d2)
MCKLWK (Keyawed Bore d1, d2)



Single Disc Type
MCKS (Standard Bore)



MCKSRK (Keyawed Bore d2)
MCKSWK (Keyawed Bore d1, d2)



The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
For the selection criteria and alignment procedures, see P.961

Standard Bores	Keyawed Bore			M Material		S Surface Treatment	A Accessory
	d1 (One Side)	d2 (One Side)	d1, d2 (Both sides)	Body	Disc	Body	
MCKL	MCKLLK	MCKLRK	MCKLWK	Aluminum Diecast	Carbon Fiber	Electroless Nickel Plating	Set Screw
MCKS	-	MCKSRK	MCKSWK				

Part Number Type	D	d1, d2 select (must be d1≤d2) ◉Diameter 6 or larger is applicable to keyawed bore type (D=13 is not available)	d3	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price MCKL	MCKLLK MCKLRK	MCKLWK
Double Disc Type MCKL MCKLLK MCKLRK MCKLWK	10	2 3 4	4.1	15	4.2	2	M2	0.3			
	13	3 4 5 6	5.5	19	5.5	2.5					
	16	4 5 6 6.35 7 8	6.8	23.2	7	3	M3	0.7			
	20	4 5 6 6.35 7 8 10	8.1	26	7.5	3.7					
	25	5 6 6.35 7 8 9.53 10 11 12	10.4	30.2	9	4	M4	1.7			
	32	6 6.35 7 8 9.53 10 11 12 14 15 16	15	41	12.4	6					
	40	8 9.53 10 11 12 14 15 16 18 20	19.5	47	15.5	7.8	M5	4			
	50	14 15 16 18 20 22 24 25	25	53	18	9	M6	7			

Part Number Type	D	d1, d2 select (must be d1≤d2) ◉Diameter 6 or larger is applicable to keyawed bore type (D=13 is not available)	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price MCKS	MCKSRK	MCKSWK
Single Disc Type MCKS MCKSRK MCKSWK	10	2 3 4	10.5	4.2	2	M2	0.3			
	13	3 4 5 6	13.5	5.5	3					
	16	4 5 6 6.35 7 8	16.5	7	3	M3	0.7			
	20	4 5 6 6.35 7 8 10	18.4	7.5	4					
	25	5 6 6.35 7 8 9.53 10 11 12	21.6	9	4	M4	1.7			
	32	6 6.35 7 8 9.53 10 11 12 14 15 16	29	12.4	6					
	40	8 9.53 10 11 12 14 15 16 18 20	35	15.5	7.8	M5	4			
	50	14 15 16 18 20 22 24 25	41	18	9	M6	7			

■Double Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MCKL MCKLLK MCKLRK MCKLWK	10	0.25	2.5	0.2	31	32000	4.6×10^{-8}	±0.2	3
	13	0.35			80	24000	8.0×10^{-8}		5
	16	0.6			130	23000	2.4×10^{-7}	±0.3	9
	20	1.0			220	22000	7.2×10^{-7}		14
	25	2.2			440	19000	2.2×10^{-6}	±0.4	27
	32	3.8			960	15000	6.0×10^{-6}		60
	40	6.8		0.3	1900	10000	1.7×10^{-5}	±0.5	104
	50	11.0			2250	8000	4.6×10^{-5}		210

■Single Disc Type

Part Number Type	D	Allowable Torque (Nm))	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MCKS MCKSRK MCKSWK	10	0.25	1	0.05	40	32000	4.0×10^{-8}	±0.1	2
	13	0.35			100	24000	7.0×10^{-8}		4
	16	0.6			160	23000	2.0×10^{-7}		7
	20	1.0			290	22000	6.0×10^{-7}		11
	25	2.2			550	19000	1.8×10^{-6}	±0.2	22
	32	3.8			1200	15000	5.2×10^{-6}		50
	40	6.8		0.1	2200	10000	1.3×10^{-5}		85
	50	11.0			2600	8000	3.6×10^{-5}		170

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
MCKL20	-	5	-	10
MCKLWK25	-	10	-	12

Alterations

Order Example

Part Number	-	Shaft Bore Dia. d1 (LDC)	-	Shaft Bore Dia. d2 (RDC)	- (KLH · KRH)
MCKL20	-	LDC6.5	-	RDC9	
MCKLWK32	-	8	-	10	- KRH4

Days to Ship

- Standard Bore: **8 Days**
  Express A 2,00 EUR/piece P.88
  ◉A Express Charge of 5,40 EUR for 3 or more identical pieces.
- Keyawed Bore: **8 Days**
  ⊗Express Serviceis not available.

8 Days
⊗Express Serviceis not available.

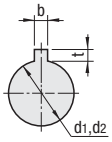
Price

■Volume Discount (◉Round down to one Cent) P.87

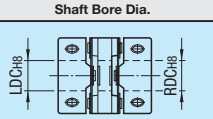
5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

◉For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4	±0.0150	1.8		4x4
12.1~17	5		2.3		5x5
17.1~22	6		2.8		6x6
22.1~25	8	±0.0180	3.3	+0.2 0	8x7

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 0.1mm Increment Ordering Code LDC7.8 RDC9.3	Keyway Width (b) is changed as table below. Ordering Code KLH4 KRH4

D	LDC · RDC
10	2~4
13	2~6
16	4~8
20	4~10
25	5~12
32	6~16
40	8~20
50	14~25

Shaft Bore Dia. d1 · d2	KLH · KRH (b) Reference Dia.	KLH · KRH (b) Tolerance	t Reference Dia.	t Tolerance
8	2	±0.0125	1.0	+0.1 0
10	4	±0.0150	1.8	
12	5		2.3	
22	8	±0.0180	3.3	+0.2 0



⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration.
◉Applicable to Keyawed Bores only

Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)
Price Adder	5,00	5,00	Free of Charge	

Couplings
-High Torque Disc · Clamping-

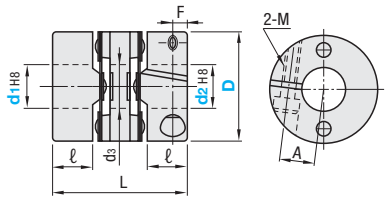
CAD Data

■Features: Couplings with carbon fiber discs have higher torque ratings than the polyimide discs, and are more lateral · angular misalignment tolerant than stainless steel.

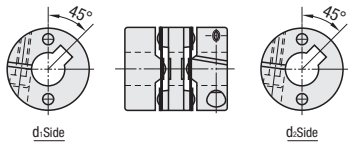


RoHS

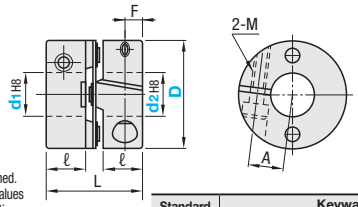
Double Disc Type
MCKLC (Standard Bore)



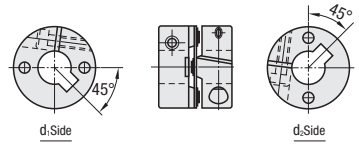
MCKLCLK (Keyawed Bore d_1)
MCKLCRK (Keyawed Bore d_2)
MCKLCWK (Keyawed Bore d_1, d_2)



Single Disc Type
MCKSC (Standard Bore)



MCKSCWK (Keyawed Bore d_1, d_2)



For keyway dimensions, see **P.973**

d1, d2 tolerances are values before slits are machined.
The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
For the selection criteria and alignment procedures, see **P.961**

Standard Bores	Keyawed Bore			Material		Surface Treatment	Accessory
	d1 (One Side)	d2 (One Side)	d1, d2 (Both sides)	Body	Disc	Body	
MCKLC	MCKLCLK	MCKLCRK	MCKLCWK	Aluminum Diecast	Carbon Fiber	Electroless Nickel Plating	Hexagon Socket Head Cap Screw
MCKSC	-	-	MCKSCWK				

Part Number Type	D	d1, d2 select (must be d1≤d2) Keyawed bore type is selectable in diameter 6 or larger.	d3	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCKLC	€ Unit Price MCKLCLK MCKLCRK	€ Unit Price MCKLCWK
Double Disc Type MCKLC MCKLCLK MCKLCRK MCKLCWK	13	*3 4 5	5.5	19	5.5	4.1	2.5	M2	0.42			
	16	*4 5 6	6.8	23.2	7	5	3	M2.5	1			
	20	*4 5 6 6.35 7 8	8.1	26	7.5	6.5	3.7					
	25	*5 6 6.35 7 8 9.53 10	10.4	30.2	9	8.5	4	M3	1.7			
	32	8 9.53 10 11 12 14	15	41	12.4	10	6	M4	2.5			
	40	8 9.53 10 11 12 14 15 16 18	19.5	47	15.5	13.1	7.8	M5	7			
	50	14 15 16 18 20 22 24	25	53	18	16.7	9	M6	12			

Part Number Type	D	d1, d2 select (must be d1≤d2) Keyawed bore type is selectable in diameter 6 or larger.	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCKSC	€ Unit Price MCKSCWK
Single Disc Type MCKSC MCKSCWK	13	*3 4 5	13.5	5.5	4.1	2.5	M2	0.42		
	16	*4 5 6	16.5	7	5	3	M2.5	1		
	20	*4 5 6 6.35 7 8	18.4	7.5	6.5	3.7				
	25	*5 6 6.35 7 8 9.53 10	21.6	9	8.5	4	M3	1.7		
	32	8 9.53 10 11 12 14	29	12.4	10	6	M4	2.5		
	40	8 9.53 10 11 12 14 15 16 18	35	15.5	13.1	7.8	M5	7		
	50	14 15 16 18 20 22 24	41	18	16.7	9	M6	12		

When d_1, d_2 is *3, *4, *5, use with the load torque 50% or less than shown in the table to prevent slipping.

■Double Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MCKLC MCKLCLK MCKLCRK MCKLCWK	13	0.35	2.5	0.2	80	12000	8.0×10^{-8}	±0.2	5
	16	0.6			130	9000	2.4×10^{-7}	±0.3	9
	20	0.9			220	7600	7.2×10^{-7}		14
	25	2.2			440	6000	2.2×10^{-6}	±0.4	27
	32	3.8			960	4800	6.0×10^{-6}		60
	40	6.8		0.3	1900	4000	1.7×10^{-5}	±0.5	104
	50	11.0			2250	3500	4.6×10^{-5}		210

■Single Disc Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MCKSC MCKSCWK	13	0.35	1	0.05	100	12000	7.0×10^{-8}	±0.1	4
	16	0.6			160	9000	2.0×10^{-7}		7
	20	0.9			290	7600	6.0×10^{-7}		11
	25	2.2			550	6000	1.8×10^{-6}	±0.2	22
	32	3.8			1200	4800	5.2×10^{-6}		50
	40	6.8		0.1	2200	4000	1.3×10^{-5}		85
	50	11.0			2600	3500	3.6×10^{-5}		170

Part Number - Shaft Bore Dia. d_1 - Shaft Bore Dia. d_2
MCKLC16 - 5 - 6
MCKLCWK40 - 12 - 15

- Standard Bore: 8 Days
- Keyawed Bore: 8 Days
Express A: 2,00 EUR/piece **P.88**
Express Serviceis not available.
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent) **P.87**

5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Order Example

Part Number - Shaft Bore Dia. d_1 (LDC) - Shaft Bore Dia. d_2 (RDC) - (KLH · KRL · LK · RK)
MCKLC20 - LDC6.2 - RDC6.9
MCKLCWK32 - 10 - 10 - KLH4 - KRH4

8 Days — Express Serviceis not available.

Alterations	Shaft Bore Dia.		Keyway Width		Keyway machining	
Spec.	LDC H8 / RDC H8 0.1mm Increment Ordering Code LDC7.8 RDC9.3 D: 13 (2~5), 16 (4~6), 20 (4~8), 25 (5~10), 32 (6~14), 40 (8~18), 50 (14~24)		Keyway Width (b) is changed as the table below. Ordering Code: KLH4 KRH4 b, d1,d2 Shaft Bore Dia. d1 · d2: 8 (2, ±0.0125, 1.0), 10 (4, ±0.0150, 1.8), 12 (5, 2.3), 22 (8, ±0.0180, 3.3) KLH · KRH (b) Reference Dia. / Tolerance; t Reference Dia. / Tolerance: +0.1 0, +0.2 0 Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration. Applicable to Keyawed Bores only		45° A Shaft D.I.A. d1 · d2: 6~8 (2), 8~10 (3), 10~12 (4), 12~17 (5), 17~22 (6), 22~24 (8) LK · RK Ordering Code: LK3 RK4 Keyway machining available for Ø6~ For keyway width dimensions, see **P.973**	
Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)	LK (Left Shaft)	RK (Right Shaft)
Price Adder	5,00	5,00	Free of Charge		6,00	6,00

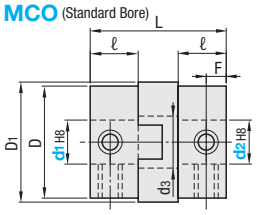
Couplings
-Oldham, Set Screw/Spacers-

CAD Data

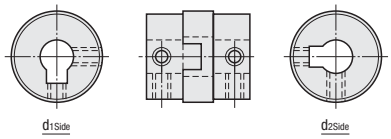
■Features: Hub and spacer can be separated, and assembly is easy. For Clamping Type, see P.977



MCO (Standard Bore)



MCOLK (Keywayed Bore d1)
MCORK (Keywayed Bore d2)
MCOWK (Keywayed Bore d1, d2)



* One set screw ;location for D6 and D8
Operating Temperature -40ºC~90ºC
The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
For the selection criteria and alignment procedures, see P.961

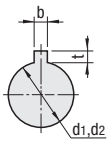
Standard Bores	Keywayed Bore			Material		Accessory
	d1 (One Side)	d2 (One Side)	d1, d2 (Both sides)	Hub	Spacers	
MCO	MCOLK	MCORK	MCOWK	1.4301/X5CrNi18-10 Sintered Alloy	Carbon reinforced resin	Set Screw

Part Number Type	No.	d1, d2 select (must be d1≤d2) Keywayed bore type is selectable in diameter 6 or larger.	D	D1	d3	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price MCO	MCOLK MCORK	MCOWK
MCO MCOLK MCORK MCOWK	6	1 1.5 2	6	6.2	2.4	8.4	3	1.5	M1.6	0.15			
	8	1 2 3	8	8.2	3.4	9.6	3.5	1.7					
	10	2 3 4	10	10.2	4.4	10.2	3.7	1.8	M2	0.3			
	12	3 4 5	12	12.5	4.0	14.2	5.2	2.5	M3	0.7			
	15	4 5 6 6.35 7 8	14.5	15	5.0	16	5.4	2.6					
	17	5 6 6.35 7 8	16.8	17.5	7.2	19.8	6.7	3.2					
	20	6 6.35 7 8 9.53 10 11 12	20	21	8.2	21.4	7	3.4	M4	1.7			
	26	6 6.35 7 8 9.53 10 11 12 14	26	27	12.0	25.6	9	4					
	30	8 10 12 14	30	31	13.0	33	12	6					
	34	10 11 12 14 15 16	34	35	13.0	34	13	5.5	M5	4.0			
	38	10 12 14 15 16 18 20	38	41	16.0	40	15	7					

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MCO MCOLK MCORK MCOWK	6	0.3	3	0.3	9	12000	1.5x10⁻⁸	±0.25	1.5
	8	0.5		0.4	13		2.2x10⁻⁸	±0.3	2.5
	10	0.8		0.4	21		3.6x10⁻⁸	±0.32	4
	12	1		0.5	44		1.6x10⁻⁷	±0.35	8
	15	1.6		0.8	90	10000	3.5x10⁻⁷	±0.45	11
	17	2.2		1	250		7.8x10⁻⁷	±0.55	18
	20	3.2		1.5	340	8000	1.7x10⁻⁶	±0.6	29
	26	6		2	420	6500	6.2x10⁻⁶		65
	30	15		2	1200	6200	2x10⁻⁵		100
	34	16		2.5	2400	6000	2.5x10⁻⁵		155
	38	28		2.5	3500	5800	8x10⁻⁵		240

The allowable torque will change according to temperature. P.961

■Keyway Dimension



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4	±0.0150	1.8		4x4
12.1~17	5		2.3		5x5
17.1~20	6		2.8		6x6

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
MCO20	-	6	-	6
MCOLK20	-	8	-	12
MCOWK20	-	10	-	12

Days to Ship

- Standard Bore: 8 Days
- Keyway Bore: 8 Days ⊗Express Serviceis not available.

Express A 2,00 EUR/ piece P. 88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

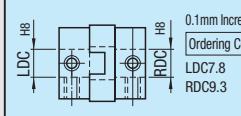
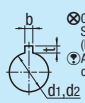
5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Shaft Bore Dia. d1(LDC)	-	Shaft Bore Dia. d2(RDC)	-	(KLH · KRL)
MCO20	-	LDC6.5	-	RDC9		
MCOWK30	-	8	-	10	-	KRH4

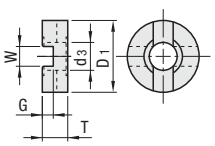
8 Days ⊗Express Serviceis not available.

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 0.1mm Increment Ordering Code LDC7.8 RDC9.3	Keyway Width (b) is changed as table below. Ordering Code KLH4 KRH4
	No. D LDC, RDC: 6 6 1~2; 8 8 1~3; 10 10 2~4; 12 12 4~6; 15 14.5 4~8; 17 16.8 5~ 8; 20 20 6~12; 26 26 6~15; 30 30 8~14; 34 34 10~16; 38 38 10~20	Shaft Bore Dia. d1 · d2: 8 2 ±0.0125 1.0; 10 4 ±0.0150 1.8; 12 5 2.3; t: +0.1 0
		⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration. Applicable to Keywayed Bores only 
Code	LDC (Left Shaft)	RDC (Right Shaft)
Price Adder	5,00	5,00

■Spacers (For: MCO_ _, MCOC_ _) P.977



MCOS



As W dimension is made close, fitting adjustments are required.
M Material: Carbon Reinforced Resin

Part Number Type	No.	D1	T	d3	W	G	Applicable Couplings	€ Unit Price
MCOS	6	6.2	2.2	2.4	1.3	1.3	MCO__6	
	8	8.2	2.4	3.4	1.6	1.5	MCO__8	
	10	10.2	2.6	4.4		1.6	MCO__10	
	12	12.5	3.8	4.0	3	1.8	MCO__12	
	15	15	4.8	5.0	3.4	2.3	MCO__15MCOC__15	
	17	17.5	6	7.2	4.6	2.9	MCO__17MCOC__17	
	20	21	6.6	8.2	5.8	3.2	MCO__20MCOC__20	
	26	27	7.2	12.0	7	4	MCO__26MCOC__26	
	30	31	8.5	13.0			MCO__30MCOC__30	
	34	35	7.2				MCO__34MCOC__34	
	38	41	9.5	16.0			MCO__38MCOC__38	

Order Example Part Number MCOS15 — 8 Days — Express A 2,00 EUR/ piece P. 88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

■Volume Discount (Round down to one Cent.) P. 87

5~9	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Couplings
-High Rigidity Oldham, Set Screw-

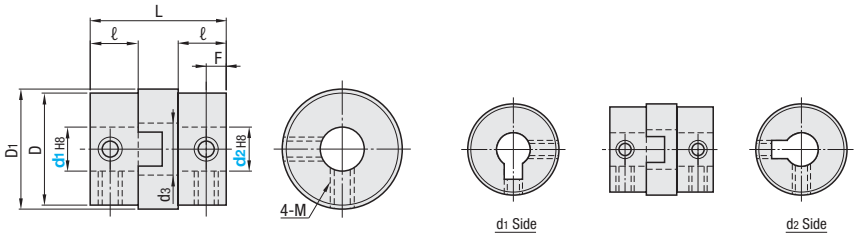
CAD Data

■Features: Aluminum bronze is used for spacer and it has allowable torque twice as much as resin type. For Clamping Type, see P.978



MCOG (Standard Bore)

MCOGRK (Keywayed Bore d_2)
MCOGWK (Keywayed Bore d_1, d_2)



The allowable lateral · angular · axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
For the selection criteria and alignment procedures, see P.961

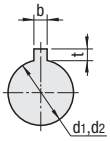
Standard Bores	Keywayed Bore		Material		Accessory
	d_2 (One Side)	d_1, d_2 (Both sides)	Hub	Spacers	
MCOG	MCOGRK	MCOGWK	1.4301/X5CrNi18-10 Sintered Alloy	Aluminum Bronze (Sold Lubricant Embedded)	Set Screw

RoHS

Part Number Type	No.	d_1, d_2 select (must be $d_1 \leq d_2$) Keywayed bore type is selectable in diameter 6 or larger.	D	D_1	d_3	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price MCOG	MCOGRK	MCOGWK
	15	4 5 6 6.35 7 8	14.5	15	7.2	16	5.4	2.6	M3	0.7			
	17	5 6 6.35 7 8	16.8	17.5	8.2	19.8	6.7	3.2	M4	1.7			
MCOG	20	6 6.35 7 8 9.53 10 11 12	20	21	9	21.4	7	3.4					
MCOGRK	26	6 6.35 7 8 9.53 10 11 12 14	26	27	12	25.6	9	4					
MCOGWK	30	8 10 12 14	30	31	14	33	12	6					
	34	10 11 12 14 15 16	34	35	14	34	13	5.5	M5	4.0			
	38	10 12 14 15 16 18 20	38	41	17	39.5	15	7					

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
	15	3	1.5	0.5	800	8000	4 x10^{-8}	±0.1	15
	17	5		0.5	1000	7000	1 x10^{-7}	±0.1	25
MCOG	20	7		0.5	2200	6000	2 x10^{-6}	±0.1	37
MCOGRK	26	10		0.8	4000	5000	6 x10^{-6}	±0.2	79
MCOGWK	30	30		1	5500	5000	2.5x10^{-5}	±0.3	120
	34	32		1	8000	4000	4 x10^{-5}	±0.2	180
	38	50		1	11000	4000	1x10^{-4}	±0.3	256

■Keyway Dimension



Shaft Bore Dia. d_1, d_2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4		1.8		4x4
12.1~17	5	±0.0150	2.3		5x5
17.1~20	6		2.8		6x6

Excellent in high torque and speed applications.
When lateral misalignment is more than 0.1, spacer wear will be in proportion to the amount of: load torque, lateral misalignment, and the number of revolutions.

Order Example

Part Number	-	Shaft Bore Dia. d_1	-	Shaft Bore Dia. d_2
MCOG20	-	6	-	6
MCOGRK20	-	8	-	12
MCOGWK20	-	10	-	12

Days to Ship

- Standard Bore: 8 Days

Express A | 2,00 EUR/ piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

- Keywayed Bore: 8 Days ⊗Express Serviceis not available.

Price

■Volume Discount (Round down to one Cent.) P. 87

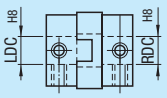
5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Shaft Bore Dia. d_1[LDC]	-	Shaft Bore Dia. d_2[RDC]	-	(KLH · KRL)
MCOG20	-	LDC6.5	-	RDC9		
MCOGWK30	-	8	-	10	-	KRH4

8 Days ⊗Express Serviceis not available.

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 0.1mm Increment / Ordering Code / LDC7.8 / RDC9.3	Keyway Width (b) is changed as table below. Ordering Code KLH4 KRH4
Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)
Price Adder	5,00	5,00	Free of Charge	

No.	LDC · RDC
15	4~ 8
17	5~ 8
20	6~12
26	6~15
30	8~14
34	10~16
38	10~20

Shaft Bore D.I.A. d_1 · d_2	KLH · KRH (b) Reference Dia.	KLH · KRH (b) Tolerance	t Reference Dia.	t Tolerance
8	2	±0.0125	1.0	+0.1 0
10	4	±0.0150	1.8	
12	5		2.3	



⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration.
Applicable to Keywayed Bores only

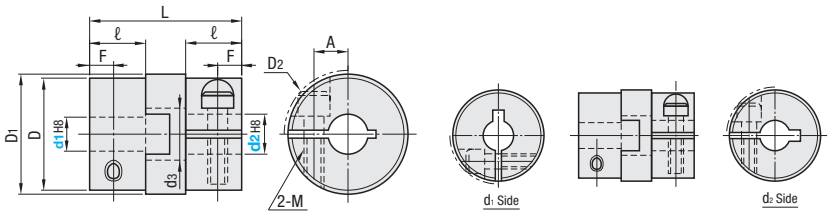
Couplings
-Oldham, Clamping-

CAD Data

■Features: Hub and spacer can be separated, and assembly is easy. ⓟFor Set Screw Type AND Spacers, see ☞P.975



MCOC (Standard Bore)
MCOCLK (Keyway Bore d1)
MCOCRK (Keyway Bore d2)
MCOCWK (Keyway Bore d1, d2)



ⓟOperating Temperature -40ºC~90ºC
ⓟd1, d2 tolerances are values before slits are machined.
ⓟThe lateral · angular and axial misalignment values shown are for each occurring separately alone.
If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
ⓟFor the selection criteria and alignment procedures, see **P.961**

Standard Bores	Keywayed Bore			Material		Accessory
	d1 (One Side)	d2 (One Side)	d1, d2 (Both sides)	Hub	Spacers	
MCOC	MCOCLK	MCOCRK	MCOCWK	1.4301/X5CrNi18-10 Sintered Alloy	Carbon reinforced resin	Hexagon Socket Head Cap Screw

RoHS

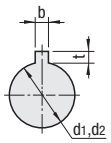
Part Number Type	No.	d1, d2 select (must be d1≤d2) ⓟKeywayed bore type is selectable in diameter 6 or larger.	D	D1	D2	d3	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCOC	MCOCLK MCOCRK	MCOCWK
MCOC MCOCLK MCOCRK MCOCWK	15	4 5 6	14.5	15	16	5.0	18.4	6.6	4.5	3.2	M2.5	1.0			
	17	5 6 6.35	16.8	17.5	19	7.2	24.4	9	5	4	M3	1.8			
	20	6 6.35 7 8 9.53 10	20	21	23	8.2	27.2	10	7	4.5					
	26	6 6.35 7 8 9.53 10 11 12	26	27	29	12.0	30.4	11.5	8.4	5	M4	3.0			
	30	8 10 12 14	30	31	32	13.0	33	12	8.5	6	M5	8.0			
									9		M4	4.5			
	34	10 11 12 14 15 16	34	35	37	13.0	34	13	11	6	M5	8.0*			
	38	10 12 14 15 16 18 20	38	41	41	16.0	40	15	11.5 13.7	7	M5	8.0			

ⓟClamping screw tightening torque for shaft diameter 16mm (d1, d2) MCOCG is 5.4 (Nm).

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MCOC MCOCLK MCOCRK MCOCWK	15	1.6	3	0.8	90	10000	5.0x10⁻⁷	±0.45	15
	17	2.2		1	250		1.0x10⁻⁶	±0.55	28
	20	3.2		1.5	340	8000	2.4x10⁻⁶	±0.6	40
	26	6		2	420	6500	8.0x10⁻⁶		85
	30	15		2	1200	6200	2.0x10⁻⁵		100
	34	16		2.5	2400	6000	2.5x10⁻⁵		155
	38	28		2.5	3500	5800	8.0x10⁻⁵		240

ⓟThe allowable torque will change according to temperature. See **P.961**

■Keyway Dimension



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4		1.8		4x4
12.1~17	5	±0.0150	2.3		5x5
17.1~20	6		2.8		6x6

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
MCOC20	-	6	-	6
MCOCLK20	-	6	-	8
MCOCWK20	-	8	-	10

Days to Ship

- Standard Bore: 8 Days
- Express A: 2,00 EUR/ piece ☞P.88
ⓟA Express Charge of 5,40 EUR for 3 or more identical pieces.
- Keywayed Bore: 8 Days ⊗Express Serviceis not available.

Price

■Volume Discount (ⓟRound down to one Cent.) **P.87**

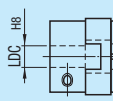
5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

ⓟFor orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Shaft Bore Dia. d1 (LDC)	·	Shaft Bore Dia. d2 (RDC)	-	(KLH · KRH)
MCOC20	-	LDC6.5	-	RDC9		
MCOCWK30	-	8	-	10	-	KRH4

8 Days ⊗Express Serviceis not available.

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 0.1mm Increment. Ordering Code: LDC7.8, RDC9.3	No. D LDC, RDC: 15 14.5 4~ 6; 17 16.8 5~ 7; 20 20 6~10; 26 26 6~12; 30 30 8~14; 34 34 10~16; 38 38 10~20	Keyway Width (b) is changed as table below. Ordering Code KLH4 KRH4

Shaft Bore Dia. d1· d2	KLH, KRH (b) Reference Dia.	KLH, KRH (b) Tolerance	t Reference Dia.	t Tolerance
8	2	±0.0125	1.0	+0.1 0
10	4	±0.0150	1.8	
12	5		2.3	



⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC, RDC) alteration.
ⓟApplicable to Keywayed Bores only

Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)
Price Adder	5,00	5,00	Free of Charge	

Couplings
-High Rigidity Oldham, Clamping-

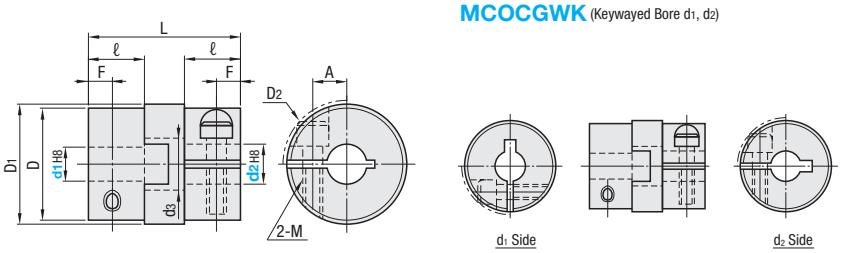
CAD Data

■Features: Aluminum bronze is used for spacer and it has allowable torque twice as much as Resin Type. For Set Screw Type, See P.976



MCOCG (Standard Bore)

MCOCGLK (Keyway Bore d_1)
MCOCGRK (Keyway Bore d_2)
MCOCGWK (Keyway Bore d_1, d_2)



d1, d2 tolerances are values before slits are machined.
The allowable lateral · angular · axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
For the selection criteria and alignment procedures, see P.961

Standard Bores	Keyway Bore			Material		Accessory
	d_1 (One Side)	d_2 (One Side)	d_1, d_2 (Both sides)	Hub	Spacers	
MCOCG	MCOCGLK	MCOCGRK	MCOCGWK	1.4301/X5CrNi18-10 Sintered Alloy	Aluminum Bronze (Sold Lubricant Embedded)	Hexagon Socket Head Cap Screw

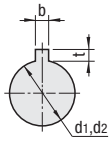
RoHS

Part Number Type	No.	d_1, d_2 select (must be $d_1 \le d_2$) Keyway bore type is selectable in diameter 6 or larger.	D	D_1	D_2	d_3	L	ℓ	A	F	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price MCOCG	€ Unit Price MCOCGLK MCOCGRK	€ Unit Price MCOCGWK
MCOCG MCOCGLK MCOCGRK MCOCGWK	15	4 5 6	14.5	15	16	7.2	18.4	6.6	4.5	3.2	M2.5	1.0			
	17	5 6 6.35	16.8	17.5	19	8.2	24.4	9	5	4	M3	1.8			
	20	6 6.35 7 8 9.53 10	20	21	23	9	27.2	10	7	4.5					
	26	6 6.35 7 8 9.53 10 11 12	26	27	29	12	30.4	11.5	8.4	5	M4	3.0			
	30	8 10	30	31	32	13	33	12	8.5	6	M5	8.0			
		12 14							9		M4	4.5			
	34	10 11 12 14 15 16	34	35	37	14	34	13	11		M5	8.0*			
	38	10 12 14 15 16 18 20	38	41	41	17	39.5	15	11.5 13.7	7	M5	8.0			

Clamping screw tightening torque for shaft diameter 16mm (d_1, d_2) MCOCG is 5.4 (Nm).

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
MCOCG MCOCGLK MCOCGRK MCOCGWK	15	3	1.5	0.5	800	8000	6 x10^{-7}	±0.1	17
	17	5		0.5	1000	7000	1.2x10^{-6}	±0.1	30
	20	7		0.5	2200	6000	3 x10^{-6}	±0.1	48
	26	10		0.8	4000	5000	1 x10^{-5}	±0.2	90
	30	30		1	5500	5000	2.5x10^{-5}	±0.3	120
	34	32		1	8000	4000	4 x10^{-5}	±0.2	172
	38	50		1	11000	4000	1x10^{-4}	±0.3	246

■Keyway Dimension



Shaft Bore Dia. d_1, d_2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
6~7.9	2	±0.0125	1.0	+0.1 0	2x2
8~10	3		1.4		3x3
10.1~12	4	±0.0150	1.8		4x4
12.1~17	5		2.3		5x5
17.1~20	6		2.8		6x6

Excellent in high torque and speed applications.
When lateral misalignment is more than 0.1, spacer wear will be in proportion to the amount of: load torque, lateral misalignment, and the number of revolutions.

Order Example

Part Number	-	Shaft Bore Dia. d_1	-	Shaft Bore Dia. d_2
MCOCG20	-	6	-	6
MCOCGLK30	-	8	-	12
MCOCGWK38	-	10	-	12

Days to Ship

- Standard Bore: 8 Days

Express A | 2,00 EUR/ piece P.88

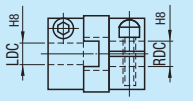
A Express Charge of 5,40 EUR for 3 or more identical pieces.

- Keyway Bore: 8 Days ⊗Express Serviceis not available.

Alterations

Part Number	-	Shaft Bore Dia. d_1 (LDC)	·	Shaft Bore Dia. d_2 (RDC)	-	(KLH · KRH)
MCOCG20	-	LDC6.5	-	RDC9		
MCOCGWK30	-	8	-	10	-	KRH4

8 Days ⊗Express Serviceis not available.

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 0.1mm Increment. Ordering Code: LDC7.8, RDC9.3	Keyway Width (b) is changed as table below. Ordering Code: KLH4 KRH4
Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft)	KRH (Right Shaft)
Price Adder	5,00	5,00	Free of Charge	

Shaft Bore Dia. d_1 · d_2	KLH · KRH (b) Reference Dia.	KLH · KRH (b) Tolerance	t Reference Dia.	t Tolerance
8	2	±0.0125	1.0	+0.1 0
10	4	±0.0150	1.8	
12	5		2.3	

No.	LDC · RDC
15	4~ 6
17	5~ 7
20	6~10
26	6~12
30	8~14
34	10~16
38	10~20



⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration.
Applicable to Keyweyed Bores only

Price

■Volume Discount (Round down to one Cent.) P.87

5~9	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Couplings
-Oldham, Large Shaft Dia., Set Screw, Clamping/Spacers-

CAD Data

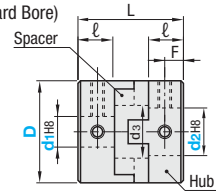
■Features: Large tolerance for lateral and angular misalignments, available up to Ø38 max. shafts.

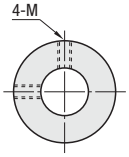


RoHS

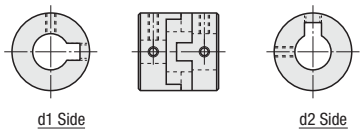
■Set Screw Type

MFJ (Standard Bore)



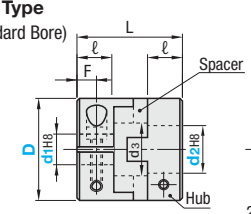


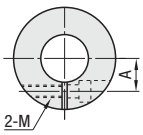
MFJWK (Keywayed Bore d1 · d2)



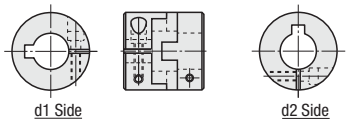
■Clamping Type

MFJC (Standard Bore)





MFJCLK (Keywayed Bore d1)
MFJCRK (Keywayed Bore d2)
MFJCWK (Keywayed Bore d1 · d2)



Operating Temperature -20ºC~80ºC
d1, d2 tolerance are values before slit machining.
The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
For the selection criteria and alignment procedures, see **P.961**

For keyway dimensions, see **P.980**

Shapes	Standard Bores	Keywayed Bore			Material		A
		d1 (One Side)	d2 (One Side)	d1 · d2 (Both sides)	Hub	Spacers	
Set Screw	MFJ	-	-	MFJWK	Aluminum Alloy	Polyacetal	Set Screw
Clamping	MFJC	MFJCLK	MFJCRK	MFJCWK			Hexagon Socket Head Cap Screw

■Set Screw Type

Part Number Type	D	d1, d2 select (must be d1≤d2)	d3	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Prix unitaire MFJ	€ Prix unitaire MFJWK
MFJ MFJWK	44	14 15 16 18 20 22	22.5	46	15	7.5	M 6	7.0		
	55	18 20 22 25 26	28	57	19	9.5	M 8	15.0		
	70	22 25 28 30 35 38	39	77	25	12.5	M10	30.0		

■Clamping type

Part Number Type	D	d1, d2 select (must be d1≤d2)	d3	L	ℓ	F	A	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Prix unitaire MFJC	€ Prix unitaire MFJCLK MFJCRK	€ Prix unitaire MFJCWK
MFJC MFJCLK MFJCRK MFJCWK	44	14 15 16 18 20	22.5	46	15	7.5	14.5	M5	*8.4			
	55	18 20 22 25	28	57	19	9.5	17	M6	*14.4			
	70	22 25 28 30 35	39	77	25	12.5	24	M8	*30.0			

* When the shaft diameter is small, clamp screw tightening torque should be higher than the prescribed value to prevent shaft slippages. The above tightening torque is for reference.

Part Number Type		D	Allowable Torque (Nm) Set Screw	Allowable Torque (Nm) Clamping	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
Set Screw MFJ MFJWK	Clamping MFJC MFJCLK MFJCRK MFJCWK	44	30	26	2	1	1500	12000	4 x10⁻⁵	±0.5	140
		55	45	40		1.5	2800	10000	11 x10⁻⁵	±0.6	260
		70	80	72		2	4800	8000	40 x10⁻⁵	±0.8	450

The allowable torque will change according to temperature. **P.961**

Order Example
Part Number - (Shaft Bore Dia. d1) - (Shaft Bore Dia. d2)
MFJ44 - 15 - 20
MFJCWK70 - 22 - 35

Days to Ship
-Standard Bores: 8 Days — Express A — 2,00 EUR/ piece — P.88
A Express Charge of 5,40 EUR for 3 or more identical pieces.
-Keywayed Bore: 8 Days
Express Serviceis not available.

Price

■Volume Discount (Round down to one Cent.) **P.87**

5~9	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - (Shaft Bore Dia. d1 (LDC)) · (Shaft Bore Dia. d2 (RDC)) - (KLH, KRL, LK, RK)
MFJ55 - LDC19.5 - RDC21
MFJCWK70 - 22 - 35 - KLH8

8 Days — Express Serviceis not available.

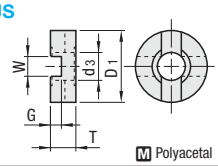
Alterations	Shaft Bore Dia.	Keyway Width	Keyway
Spec.	LDC H8 / RDC H8; 0.1mm Increment; Ordering Code LDC19.5 RDC21; D: LDC, RDC — 44: 14~22 (20); 55: 18~26 (25); 70: 22~38 (35); Values in ( ) are for Clamping Type	Keyway Width (b) is changed as table below. Ordering Code KLH8 KRH8	MFJ 45° AFJC; Ordering Code LK5 RK8
		Shaft Bore Dia.d1,d2: 22, 30 — KLH, KRH (b) Reference Dia.: 8, 10 — Tolerance: ±0.0180 — t Reference Dia.: 3.3 — Tolerance: +0.2 0	Shaft D.I.A. d1, d2: 14~17 LK 5; 17~22 6; 22~30 8; 30~38 10
		Cannot be combined with shaft bore changes (LDC, RDC) alterations. Applicable to Keyweyed Bores only	For keyway width dimensions, see **P.980**
Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft) / KRH (Right Shaft)	LK (Left Shaft) / RK (Right Shaft)
Price Adder	9,00	9,00	Free of Charge	10,00 / 10,00

■Spacers (for MFJ_ _, MFJC_ _)

RoHS



MFJS



M Polyacetal

Part Number Type	No.	D1	T	d3	W	G	Applicable Couplings	€ Unit Price
MFJS	44	44.3	14	22.5	10.4	9	MFJ_ _44 / MFJC_ _44	
	55	55	17	28	13	11	MFJ_ _55 / MFJC_ _55	
	70	69	25	39	15	16.5	MFJ_ _70 / MFJC_ _70	

Order Example Part Number: MFJS70

Days to Ship 8 Days — Express A — 2,00 EUR/ piece — P.88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) **P.87**

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For prices over the indicated quantities, please request for a quotation.

Couplings

-High Rigid Oldham, Set Screw, Large Shaft Diameter, Clamping-

CAD Data

■Features: Aluminum bronze is used for spacer and it has allowable torque twice as much as Resin Type (MFJ Series).

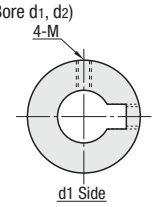




RoHS

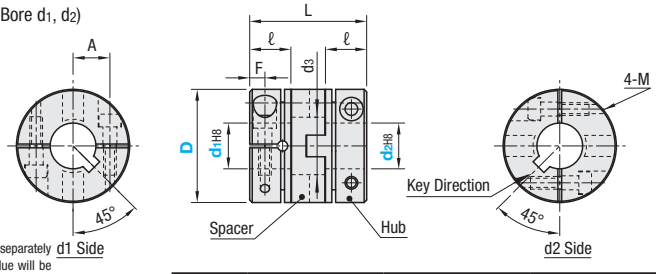
■Set Screw Type

MFJGWK (Keywayed Bore d_1, d_2)



■Clamping type

MFJCGWK (Keywayed Bore d_1, d_2)



Operating Temperature -20ºC~80ºC

d_1, d_2 tolerance are values before slit machining.

The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.

For the selection criteria and alignment procedures, see P961

When lateral/angular misalignments and the speed are over 50% of the allowed values, apply grease with molybdenum disulfide added periodically.

Shapes	Keywayed Bore d_1, d_2 (Both sides)	Material Hub	Material Spacers	Accessory
Set Screw	MFJGWK	Stainless Steel	Aluminum Bronze	Set Screw
Clamping	MFJCGWK			Hexagon Socket Head Cap Screw

■Set Screw Type

Part Number Type	D	d_1, d_2 select (must be $d_1 \le d_2$)	d_3	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price 1~9 pcs.
MFJGWK	45	15 16 18 20	22.5	43.6	15	7.5	M 5	3.6	
	55	20 22 24 25	29	49.4	17	8.5	M 6	6.0	
	70	25 28 30 35	36	57.0	20	10	M 8	14.0	

■Clamping type

For orders larger than indicated quantity, please request a quotation.

Part Number Type	D	d_1, d_2 select (must be $d_1 \le d_2$)	d_3	L	ℓ	F	A	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price 1~4 pcs.
MFJCGWK	45	15 16 18 20	22.5	46	16.2	6	14.5	M5	*10	
	55	20 22 24 25	29	57	20.8	7	18.5	M6	*15	

* When the shaft diameter is small, clamp screw tightening torque should be higher than the prescribed value to prevent shaft slippages. The above tightening torque is for reference.

For orders larger than indicated quantity, please request a quotation.

■Set Screw Type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
MFJGWK	45	60	1	1	65000	10000	1.7 x10^{-4}	±0.3	400
	55	90		1.2	100000		3.3 x10^{-4}	±0.5	700
	70	160		1.6	180000		11 x10^{-4}	±0.6	1300

■Clamping type

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
MFJCGWK	45	50	1	0.8	35000	5000	1.8 x10^{-4}	±0.3	450
	55	75		1.0	52000		3.3 x10^{-4}	±0.5	800

Order Example

Part Number	-	Shaft Bore Dia. d_1	-	Shaft Bore Dia. d_2
MFJGWK45	-	15	-	20
MFJCGWK55	-	22	-	25

Days to Ship 10 Days

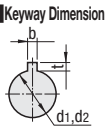
Alterations

Part Number	-	Shaft Bore Dia. d_1 (LDC)	-	Shaft Bore Dia. d_2 (RDC)	-	(KLH, KRH)
MFJGWK45	-	LDC19	-	RDC19		
MFJCGWK55	-	22	-	25	-	KLH8

10 Days

Alterations	Shaft Bore Dia.	Keyway Width
Spec.	 1mm Increment. Ordering Code: LDC19, RDC21. D: 45 → LDC, RDC 15~20; 55 → 20~25; 70 → 25~35	Keyway Width (b) is changed as table below. Ordering Code: KLH8 KRH8. Shaft Bore Dia. d_1, d_2: 22, 30. KLH, KRH (b) Reference Dia.: 8, 10. KLH, KRH (b) Tolerance: ±0.0180. t Reference Dia.: 3.3. t Tolerance: +0.2 0.  ⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC, RDC) alteration.
Code	LDC (Left Shaft)	RDC (Right Shaft)	KLH (Left Shaft) / KRH (Right Shaft)
Price Adder	25,00	25,00	Free of Charge

■Keyway Dimension



Shaft Bore Dia. d_1, d_2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
14~17	5	±0.0150	2.3	+0.1 0	5x5
17.1~22	6		2.8		6x6
22.1~30	8	±0.0180	3.3	+0.2 0	8x7
30.1~38	10				10x8

Couplings
-Super Short Oldham Clamping Type / Spacers-

Price Reduction
Max.14%

CAD Data

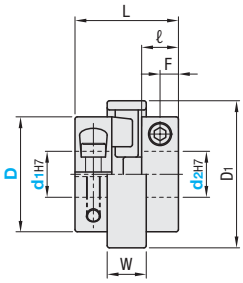
■Features: Clamping Type with an advantage of not damaging the shaft remains, and the full length is shortened max. 4.7mm (17%) than the conventional type. It contributes to limited space of the devices.

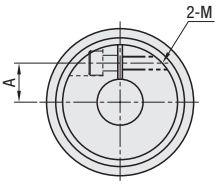
■Super Short Oldham Clamping type



RoHS

SCOC





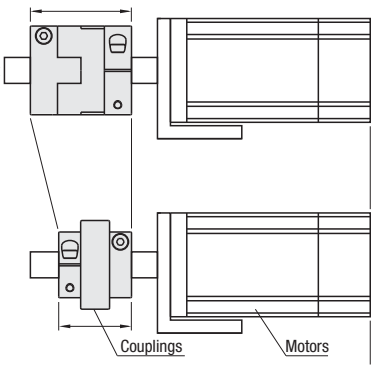
- Operating Temperature -20ºC~80ºC
- d1, d2 tolerances are values before slits are machined.
- The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
- For the selection criteria and alignment procedures, see **P.961**
- For installing, use Coupling O.A.L. $L^{+0.2}_{-0.1}$ as a reference.

Parts	M Material	S Surfacee Treatment	A Accessories
Hub	Aluminum Alloy	Anodizing	Hexagon Socket Screw
Spacers	Polyacetal	-	

Part Number Type	D	d1, d2 select (must be d1≤d2)	L	D1	W	ℓ	F	A	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price
SCOC	12	3 4 5	13.5	16	5.5	5	2.5	4	2	0.5	
	16	3 4 5 6	18	21.5	8	6.5	3.25	5.5	2.5	1.0	
	20	5 6 6.35 7 8	19	27	8.8	6.8	3.4	6.5			
	25	6 6.35 7 8 10	22.5	33.5	10.5	8	4	8.5	3	1.5	

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Mass (g)
SCOC	12	0.3	1.5	0.3	18	12000	0.1x10-6	4
	16	0.8		0.5	55	9000	0.42x10-6	9
	20	1.0		1.0	95	6000	1.05x10-6	15
	25	1.6		1.2	162	5000	3.04x10-6	28

Example



SCOC type are up to 17% shorter in length compared to the conventional products, and can contribute to equipment size reducing designs.

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
SCOC25	-	8	-	10

Days to Ship

8 Days

Express A 2,00 EUR/ piece **P.88**

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) **P.87**

5~9	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

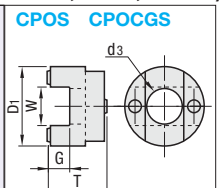
For orders larger than indicated quantity, please request a quotation.

■Spacers (For: CPO, CPOC, CPOCG) **P.982**



RoHS

CPOS CPOCGS



M Polyacetal

Part Number Type	No.	D1	T	d3	W	G	Applicable Couplings	€ Unit Price
CPOS	16	16	12	7	8	4.5	CPO16, CPOC16	
	20	20	15	9	10	5.5	CPO20, CPOC20	
	25	25	18	11	12	6.5	CPO25, CPOC25	
	32	32	21	14.5	15	7.5	CPO32, CPOC32	
	40	40	18	17	19		CPO40, CPOC40	
CPOCGS	12	12	4.88	6	3.95	2.44	CPOCG12	
	16	16	6.96	8	4.95	3.48	CPOCG16	
	20	20	8.06	10	6.95	4.03	CPOCG20	
	25	25	11.18	14	8.95	5.59	CPOCG25	
	32	32	13.34	18	9.95	6.67	CPOCG32	

Order Example

Part Number CPOS20 (No. 40 spacers are black.)

Days to Ship

8 Days

Express A 2,00 EUR/ piece **P.88**

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent) **P.87**

5~9	1~9	10~12	13,14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Couplings

-Oldham - Blue Set Screw / Clamping / Green Short Clamping-

Price Reduction
Max.14%

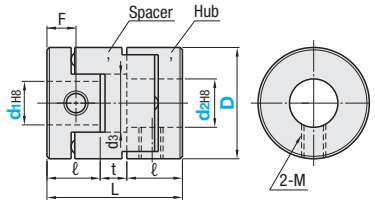
CAD Data

■Set Screw



RoHS

CPO



Operating Temperature -20℃~80℃
The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
For the selection criteria and alignment procedures, see **P.961**

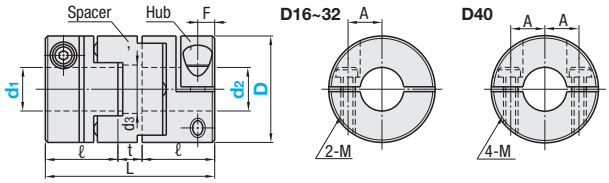
Parts	Material	Surfacee Treatment	Accessories
Hub	Aluminum Alloy	Anodizing	Set Screw
Spacers	Polyacetal	-	

■Clamping type



RoHS

CPOC



Operating Temperature -20℃~80℃
The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
For the selection criteria and alignment procedures, see **P.961**

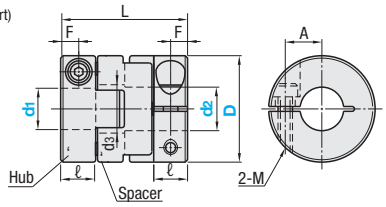
Parts	Material	Surfacee Treatment	Accessories
Hub	Aluminum Alloy	Anodizing	Hexagon Socket Screw
Spacers	Polyacetal	-	

■Short Clamping



RoHS

CPOCG (Short)



Operating Temperature -20℃~80℃
The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.
For the selection criteria and alignment procedures, see **P.961**

Parts	Material	Surfacee Treatment	Accessories
Hub	Aluminum Alloy	Anodizing	Hexagon Socket Screw
Spacers	Polyacetal	-	

Part Number Type	D	d1, d2 select (must be d1≤d2)	d3	L	ℓ	t	F	A	Set Screw / Clamp Screw M	Tightening Torque (Nm)	€ Unit Price
CPO	16	3 4 5 6 6.35	7	18	7	4	3.5	-	M3	0.7	
	20	4 5 6 6.35 8	9	23	9	5	4.5		M4	1.7	
	25	5 6 6.35 8 9.525 10	11	28	11	6	5.5		M5	4	
	32	8 10 12 14	14.5	33	13	7	6.5		M6	7	
	*40	10 12 14 15 16	17	32	14	4	7				
CPOC	16	5 6	7	29	12.5	4	3	5	M2.5	1	
	20	6 6.35 8	9	33	14	5		6.5			
	25	6.35 8 10	11	39	16.5	6	3.8	9	M3	1.5	
	32	8 10 11 12 14	14.5	45	19	7	4.5	11	M4	2.5	
	*40	12 14 15 16	17	50	23	4	7	13	M5	4	
CPOCG	12	3 4 5	6	14.9	5	-	2.5	4	M2	0.5	
	16	3 4 5 6	8	21	7		3.5	5	M2.5	1	
	20	5 6 6.35 7 8	10	22.1				6.5			
	25	6.35 7 8 10	14	27.2	8		4	9	M3	1.5	
	32	8 10 11 12 14	18	33.3	10		5	11	M4	2.5	

* The spacer of D40 is black.

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Mass (g)
CPO	16	0.7	3	1.0	31	39000	3.2×10^{-7}	7
	20	1.2		1.5	60	31000	1.0×10^{-6}	14
	25	2		2.0	140	25000	3.0×10^{-6}	27
	32	4.5		2.5	280	19000	9.5×10^{-6}	50
	40	9		3.0	540	15000	2.3×10^{-5}	80
CPOC	16	0.7	3	1.0	31	39000	5.8×10^{-7}	12
	20	1.2		1.5	60	31000	1.5×10^{-6}	19
	25	2		2.0	140	25000	4.4×10^{-6}	36
	32	4.5		2.5	280	19000	1.4×10^{-5}	69
	40	9		3.0	540	15000	4.1×10^{-5}	130
CPOCG	12	0.2	2	0.6	9	52000	7.1×10^{-8}	3
	16	0.4		1	30	39000	3×10^{-7}	8
	20	0.7		1.3	47	31000	7.4×10^{-7}	13
	25	1.2		1.5	85	25000	2.2×10^{-6}	24
	32	2.8		2	190	19000	7.3×10^{-6}	48

The allowable torque will change according to temperature. See **P.961**

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPO25	-	8	-	10
CPOC20	-	6	-	8
CPOCG16	-	3	-	5

Days to Ship: 8 Days — Express A: 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent) P.87

5~9	10~12	13, 14	15~19
€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Spacers are available separately P.981

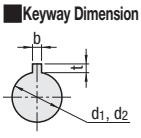
Alterations

Part Number	-	Shaft Bore Dia. d1 (LDC)	-	Shaft Bore Dia. d2 (RDC)	-	(LK, RK)
CPO16	-	LDC4.5	-	RDC5.5		
CPOC25	-	6	-	10	-	RK3

8 Days — Express Serviceis not available.

Alterations	Shaft Bore Dia.	Keyway
Spec.	0.1mm Increment Ordering Code: LDC 5.6 RDC 10.2 CPO, CPOC: D 16 20 25 32 40 / LDC, RDC 4~ 6 / 5~ 8 / 5~10 / 8~14 / 12~16 CPOCG: D 12 16 20 25 32 / LDC, RDC 3 ~ 5 / 3 ~ 6 / 5 ~ 8 / 6.35~10 / 7 ~14	CPO / CPOC / CPOCG Ordering Code: LK4, RK5 / Shaft D.I.A. d1, d2: 8, 10 / 10~12 / 12~16 / LK, RK: 3 / 4 / 5 Keyawyed bores are available from Ø8~ Cannot be combined with shaft bore changes (LDC, RDC) For Keyway dimension, refer to the following.
Code	LDC (Left Shaft)	RDC (Right Shaft)	LK (Left Shaft)	RK (Right Shaft)
Price Adder	15,00	15,00	7,00	7,00

Keyway Dimension



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
8, 10	3	±0.0125	1.4	+0.1 0	3x3
11, 12	4	±0.0150	1.8		4x4
14, 15, 16	5		2.3		5x5

N Coupling / Chain Coupling

Price Reduction
Max. 23%

CAD Data

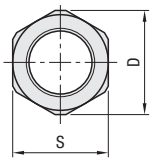
■Features: Easy to tighten the shaft by nut alone, and able to handle thrust load.

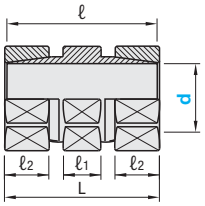
■N Couplings



RoHS

CPN





M Material: 1.1191/C45E
S Surface Treatment: Manganese Phosphate Coating

Part Number Type	d	S	D	ℓ	ℓ1	ℓ2	L	Tightening Torque (Nm)	Moment of Inertia GD2 (Kg-m²)	Allowable Torque (Nm)	Max. Allowable Thrust (N)	Mass (g)	€ Unit Price
CPN	6	12	13	20.5	5.5	5.5	21.5	11.8	4.24×10^{-8}	7.8	833	13	
	7	14	15	20.5	5.5	5.5	21.9	12.7	5.25×10^{-7}	8.8	981	17.5	
	8	14	15	21	6	6	23	13.7	8.25×10^{-7}	9.8	1128	18	
	9	17	18.5	23.5	6.5	7	25.5	15.7	1.98×10^{-6}	11.8	1520	30	
	10	17	18.5	25.4	7	7.5	27.4	19.6	2.08×10^{-6}	15.7	1804	30	
	11	19	21	29	8	9	31	24.5	3.75×10^{-6}	19.6	1912	43	
	12	19	21	30	8	9	32	29.4	3.75×10^{-6}	37.3	2010	41	
	14	22	24.6	34	9	10	36	34.3	7.50×10^{-6}	41.2	2442	60	
	15	23	25	37.5	9.5	11.5	39.5	39.2	1.00×10^{-5}	49.0	2942	75	
	16	24	26	39	10	12	41	49.0	1.45×10^{-5}	54.9	3275	100	
	17	26	28.5	41	11	12.5	43	53.9	1.93×10^{-5}	60.8	3687	115	
	18	27	30	43	12	12.5	45	58.8	2.48×10^{-5}	68.6	3942	130	
	19	29	32	45	12	13.5	47	63.7	3.25×10^{-5}	75.5	4364	150	
	20	30	32.5	48	13	14.5	50	68.6	3.50×10^{-5}	88.2	4952	160	
	22	32	35	50	14	15	52	78.4	5.00×10^{-5}	103	5491	190	
	24	35	38.5	52	14	16	54	83.3	7.25×10^{-5}	123	6080	230	
	25	36	40	55	15	17	57	88.2	9.00×10^{-5}	157	7159	260	
	30	41	45	63	17	17	65	127	8.75×10^{-5}	177	11768	350	
	35	46	51	69	19	19	71	167	1.55×10^{-4}	206	11768	480	

■Details of the product

- Keyless locking by friction:
  Allows high-accuracy mounting with no backlash.
  Easy phase matching.
  No machining for keyway contributes to total cost saving.
- High torque transmission / High Thrust Load Capacity:
  Allows combined load of torque and thrust.
- Easy locking with a nut:
  It is easy to mount where a space is limited. Requires no space in axial direction.
- Keywayed shafts can be used. (15~20% less allowable torque)

■Cautions

- Tightening torque control is required. (A torque wrench is recommended.)
- Replace the Teflon tape on the threads for reuse.
- Use shafts with h7 tolerance and 8S or better surface roughness.

Order Example — Part Number: CPN10

Days to Ship: 8 Days

Express A — 2,00 EUR/piece — P88

(?)A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount ((?)Round down to one Cent) P87

5~9	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

■Features: Dual row roller chains and sprockets construction has excellent torque transmission efficiency.

■Chain Couplings

RoHS



(1) Chain + (3) Main Body

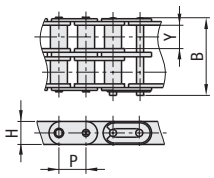


(2) Case

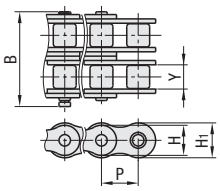
(?) Operating Temperature -10ºC~60ºC

Name	Type	M Material (1) Chain	(2) Case	(3) Main Body	A Accessory
Set ((1)+(2)+(3))	CPC	Steel	Aluminum Diecast	1.1191/C45E (Spurs are induction hardened)	Set Screw
Chain (1)	CHE	Steel	-	-	-
Case (2)	BHE	-	Aluminum Diecast	-	Set Screw

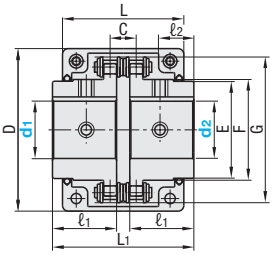
Chain (1)
(No. = 3512)



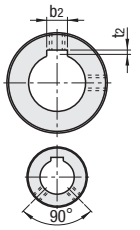
(No. 4012~6022)



Set ((1)+(2)+(3))



■Shaft Bore Specifications
(New JIS Key + Tap)



For shaft bores marked with *, the set screw locations are as shown.

■Set

Part Number Type	No.	d1, d2 (Must be d1≤d2)	Mass (Kg)	D	E	F	G	L1	ℓ1	ℓ2	C	Maximum Rotational Speed (r/min)	less than 50rpm Allowable Torque (Nm)	€ Unit Price
CPC ((1)+(2)+(3))	3012	14* 16*	0.6	69	25	26.5	45	64.8	29.8	16	10.2	250	100	
	4012	14 15 16 17 18 19 20 22*	0.9	77	33	36	62	79.4	36	17	14.4	250	218	
	4014	17 18 19 20 22 24 25 28* 30*	1.2	84	43	45	69	79.4	36	17	14.4	200	296	
	4016	19 20 22 24 25 28 30 32	1.7	92	48	51	77	87.4	40	23	14.4	200	386	
	5014	20 22 24 25 28 30 32 35	2.3	101	53	56	86	99.7	45	24	18.1	150	563	
	5016	22 24 25 28 30 32 35 38 40	3.1	111	60	63	96	99.7	45	24	18.1	150	735	
	5018	30 32 35 38 40 42 45	3.8	122	70	73	106	99.7	45	24	18.1	150	931	
	6018	40 42 45 48 50 55	7.0	142	85	88	127	123.5	56	28	22.8	100	1,754	
	6022	48 50 55	11.7	168	110	115	152	123.5	56	28	22.8	100	2,372	

Order Example

Part Number	Shaft Bore Dia. d1	Shaft Bore Dia. d2
((1)(2)(3) set) CPC4012	14	16
((1) Chain Only) CHE3512		
((2) Case Only) BHE6022		

Days to Ship: 8 Days

Price

■Volume Discount
(?)Round down to one Cent.) P87

5~9	1~9	10~19
Rate	€ Unit Price	5%

(?)For orders larger than indicated quantity, please request a quotation.

■Separate Items

Part Number Type	No.	Chain Only # of Links	P	H	H1	B	Y	Mass (Kg)	€ Unit Price
CHE ((1) Chain Only)	3012	12	9.525	8.1	8.1	23.85	5.72	0.1	
	4012	12	12.70	10.41	12.06	32.78	7.90	0.2	
	4014	14	12.70	10.41	12.06	32.78	7.90	0.2	
	4016	16	12.70	10.41	12.06	32.78	7.90	0.3	
	5014	14	15.875	13.01	15.08	41.45	9.54	0.4	
	5016	16	15.875	13.01	15.08	41.45	9.54	0.5	
	5018	18	15.875	13.01	15.08	41.45	9.54	0.6	
	6018	18	19.05	15.64	18.09	52.30	12.7	1.0	
	6022	22	19.05	15.64	18.09	52.30	12.7	1.3	

Part Number Type	No.	Case Only D	L	Mass (Kg)	€ Unit Price
BHE ((1) Case Only)	3012	69	63	0.3	
	4012	77	72	0.3	
	4014	84	75	0.4	
	4016	92	75	0.4	
	5014	101	85	0.5	
	5016	111	85	0.6	
	5018	122	85	0.8	
	6018	142	106	1.2	
	6022	168	117	1.8	

■Keyway Dimensions

Shaft Bore Dia. d1 · d2	Keyway b2xt2	Set Screw M
14~17	5x2.3	6
18~22	6x2.8	6
24~30	8x3.3	8
32~38	10x3.3	8
40~42	12x3.3	8
45~50	14x3.8	10
55	16x4.3	12

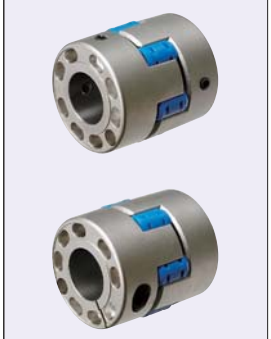
■Tolerable Misalignments

- Angular α=0.5° or less
- Lateral ε= Less than 1% of chain pitch

Couplings
-Jaw Style Set Screw Type / Clamping Type-

CAD Data

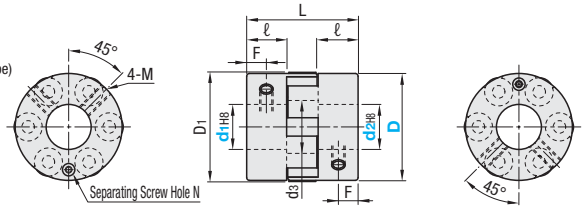
■Features:Deals high torque and has significantly few backlash because the spacer is assembled by press-fitting.
Excellent for carrier device using servo motor, since the full length is short and spacer absorbs the shock at forward reverse action.



RoHS

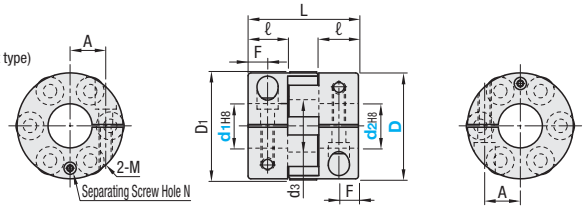
■Set Screw Type

MMJN (High Rigidity Type)
MMJP(Misalignment tolerant type)



■Clamping Type

MMJCN (High Rigidity Type)
MMJCP(Misalignment tolerant type)



Type	Standard Bores	Material		Surface Treatment	Accessory
		Hub	Spacers	Hub	
Set Screw	MMJN	Aluminum Diecast	Polyurethane (Blue)	Electroless Nickel Plating	Set Screw
	MMJP		Nylon (Black)		
Clamping	MMJCN		Polyurethane (Blue)		Hexagon Socket Head Cap Screw
	MMJCP		Nylon (Black)		

(?) Operating Temperature -20ºC~60ºC
(?) d1, d2 tolerance are values before slit machining.
(?) The lateral, angular, and axial misalignment values shown are for each occurring separately alone.
If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
(?) For the selection criteria and alignment procedures, see **P.961**
(?) A separation of hub is possible by fitting commercially available bolt into the separating screw hole.

■Set Screw Type

Part Number Type	D	d1, d2 select (must be d1≤d2)	D1	d3	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	Separating Tap Diameter N	€ Unit Price
MMJN MMJP	55	15 16 18 20 24	56	27	60	21	10.5	M6	8	M4	
	70	18 20 24 28 30 35	72	35	75	26	13	M8	16	M5	
	95	24 28 30 35 40	97	46	100	35.5	17.5	M10	33	M6	

■Clamping Type

Part Number Type	D	d1, d2 select (must be d1≤d2)	D1	d3	L	ℓ	F	A	Clamp Screw M	Clamp Screw Tightening Torque (Nm	Separating Tap Diameter N	€ Unit Price
MMJCN MMJCP	55	15 16 18 20 24	56	27	60	21	10.5	18.5	M6	15	M4	
	70	18 20 24 28 30 35	72	35	75	26	13	24	M8	32	M5	
	95	24 28 30 35 40	97	46	100	35.5	17.5	32	M10	65	M6	

■Set Screw (High Rigidity Type)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MMJN	55	80	1	0.1	8000	11000	$1.0x10^{-4}$	±0.5	300
	70	120			11000	8000	$4.0x10^{-4}$	±0.7	600
	95	180		0.15	20000	6000	$1.0x10^{-3}$	±1.0	1200

■Clamping (High Rigidity Type)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MMJCN	55	80	1	0.1	8000	8000	$1.0x10^{-4}$	±0.5	300
	70	120			11000	6000	$4.0x10^{-4}$	±0.7	600
	95	180		0.15	20000	4000	$1.0x10^{-3}$	±1.0	1200

(?) The allowable torque will change according to temperature. See **P.961**

(Misalignment tolerant type)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MMJP	55	20	2	0.3	600	11000	$1.0x10^{-4}$	±0.5	300
	70	40			1200	8000	$4.0x10^{-4}$	±0.7	600
	95	80		0.4	4000	6000	$1.0x10^{-3}$	±1.0	1200

(Misalignment tolerant type)

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Allowable Axial Misalignment	Mass (g)
MMJCP	55	20	2	0.3	600	8000	$1.0x10^{-4}$	±0.5	300
	70	40			1200	6000	$4.0x10^{-4}$	±0.7	600
	95	80		0.4	4000	4000	$1.0x10^{-3}$	±1.0	1200

(?) The allowable torque will change according to temperature. See **P.961**

Alterations

Part Number - Shaft Bore Dia. d1 (LDC) - Shaft Bore Dia. d2 (RDC) - (LK, RK, LDC, RDC, KLH, KRH)
MMJN55 - LDC19 - RDC22

10 Days

Alterations	Keyway	Shaft Bore Dia.	Keyway Width
Spec.	MMJN MMJP: 45°; MMJCN MMJCP: 30° Ordering Code LK5 RK5 ⊗Cannot be combined with shaft bore changes (LDC, RDC) alterations (?)See below for key dimensions (?)For D95, additional charge is 15,00 EUR	1mm Increment Ordering Code LDC19 RDC21 (?)For D95, additional charge is 15,00 EUR D: 55 LDC,RDC 15~24; 70 18~35; 95 24~40	Keyway Width (b) is changed as table below. Ordering Code KLH10 KRH10 Shaft Bore Dia. d1,d2: KLH,KRH (b) Reference Dia. 30, Tolerance 10 ±0.0180; t Reference Dia. 3.3, Tolerance +0.2 0 ⊗Cannot be combined with Shaft Bore D.I.A. Change (LDC, RDC) alteration. (?)Applicable to Keyawed Bores only
Code	LK (Left Shaft)	RK (Right Shaft)	LDC (Left Shaft) / RDC (Right Shaft) / KLH (Left Shaft) / KRH (Right Shaft)
Price Adder	9,00 (15,00)	9,00 (15,00)	10,00 (15,00) / 10,00 (15,00) / Free of Charge

Order Example

Part Number - Shaft Bore Dia. d1 - Shaft Bore Dia. d2
MMJN55 - 15 - 18

Days to Ship

10 Days

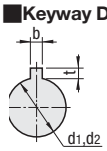
Price

■Volume Discount (?)Round down to one Cent.) **P.87**

5~9	1~9	10~19
Rate	€ Unit Price	5%

(?)For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension

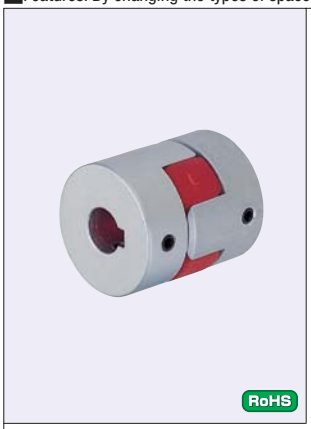


Shaft Bore Dia. d1, d2	LK RK	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
15, 16	5	5	±0.0150	2.3	+0.1 0	5x5
18, 20	6	6		2.8		6x6
24~30	8	8	±0.0180	3.3	+0.2 0	8x7
35	10	10				10x8
40	12	12	±0.0215			12x8

Couplings
-Jaw Set Screw-

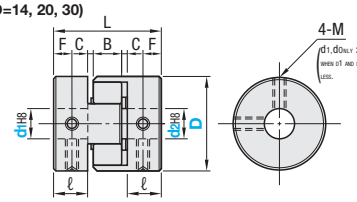
CAD DATA Folder Name : 14_Couplings

■Features: By changing the types of spacer, allowable torque and misalignment allowable value can be selected.

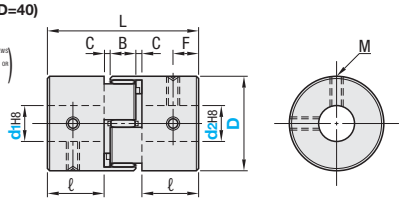


Selectable	Color	Hardness JIS A
BL	Blue	80
WH	White	92
RD	Red	98

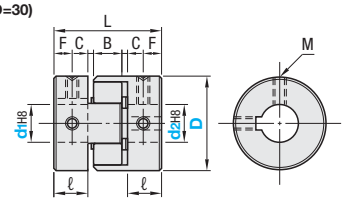
CPJ (Standard Bore)
(D=14, 20, 30)



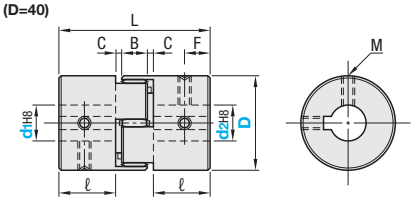
CPJ (Standard Bore)
(D=40)



CPJK (Keywayed Bore d1, d2)
(D=30)



CPJK(Keywayed Bore d1, d2)
(D=40)



Operating Temperature -20ºC~60ºC
The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
For the selection criteria and alignment procedures, see **P.961**

Parts	M Material	S Surface Treatment	A Accessory
Hub	Aluminum Alloy	Anodizing	Set Screw
Spacers	Polyurethane	-	

Part Number Type	D	Spacers (Color)	d1, d2 select (must be d1≤d2)	L	ℓ	B	C	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price
CPJ	14	BL (Blue) WH (White) RD (Red)	3 4 5 6	22	7	6	1	3.5	M3	0.7	
	20		5 6 6.35 7 8 9.525	30	10	8		5			
	30		7 8 9.525 10 11 12 14	35	11	10	1.5	5.5	M4	1.7	
	40		10 11 12 14 15 16	66	25	12	2	12.5	M5	4	

Part Number Type	D	Spacers (Color)	d1, d2 select (must be d1≤d2)	L	ℓ	B	C	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price
CPJK	30	BL (Blue) WH (White) RD (Red)	10 11 12 14	35	11	10	1.5	5.5	M4	1.7	
	40		10 11 12 14 15 16	66	25	12	2	12.5	M5	4	

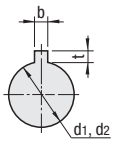
Part Number Type	D	Allowable Torque (Nm) BL	WH	RD	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm) BL	WH	RD	Static Torsional Spring Constant (Nm/rad) BL	WH	RD	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
CPJ	14	0.7	1.2	2	1.0	0.15	0.10	0.10	8	14	22	45000	2.1×10^{-7}	+0.6 0	7.3
	20	1.8	3	5		0.20	0.15		16	29	55	31000	1.0×10^{-6}	+0.8 0	18
	30	4	7.5	12.5		0.20	0.15		46	73	130	21000	5.9×10^{-6}	+1.0 0	46
	40	4.9	10	17		0.15	0.10		380	570	1200	15000	4.0×10^{-5}	+1.2 0	150

The allowable torque will change according to temperature. See **P.961**

Part Number Type	D	Allowable Torque (Nm) BL	WH	RD	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm) BL	WH	RD	Static Torsional Spring Constant (Nm/rad) BL	WH	RD	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
CPJK	30	4	7.5	12.5	1.0	0.20	0.15	0.10	46	73	130	21000	5.8×10^{-6}	+1.0 0	45
	40	4.9	10	17		0.15	0.10		380	570	1200	15000	3.8×10^{-5}	+1.2 0	150

•Spacer is press-fitted into the body.

■Keyway Dimension Applicable to CPJK only.



Shaft Bore Dia. d1,d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Key Nominal Dimension bxh
10, 11, 12	4	±0.0150	1.8	+0.1 0	4x4
14, 15, 16	5		2.3		5x5

Order Example

Part Number	Spacers	Shaft Bore Dia. d1	Shaft Bore Dia. d2
CPJ30	WH	8	10

Days to Ship

8 Days

Express A 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) **P. 87**

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

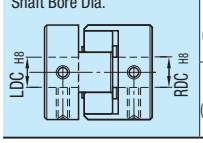
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	Spacers	Shaft Bore Dia. d1 (LDC)	Shaft Bore Dia. d2 (RDC)
CPJ14	WH	LDC3.5	RDC5.5

8 Days ⊗Express Serviceis not available.

Applicable to CPJ only.

Alterations	Code	Spec.	Price Adder
Shaft Bore Dia. 	LDC (Left Shaft)	0.1mm Increment Ordering Code: LDC3.5, RDC5.5 D: 14 3~6; 20 5~9; 30 7~14; 40 10~16 ⊗Not applicable to CPJK.	15,00
	RDC (Right Shaft)		15,00

Couplings
-Jaw Clamping-

CAD Data

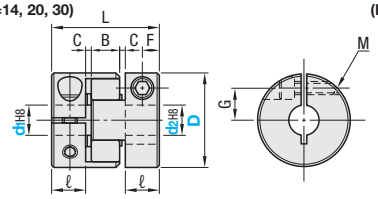
■Features: By changing the types of spacer, allowable torque depending on application and misalignment allowable values can be selected.



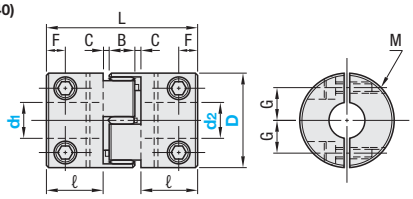
RoHS

Selectable	Color	Hardness JIS A
BL	Blue	80
WH	White	92
RD	Red	98

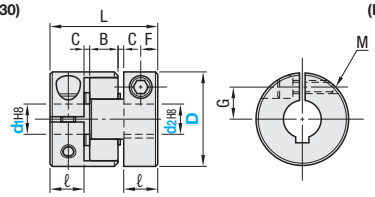
CPJC (Standard Bore)
(D=14, 20, 30)



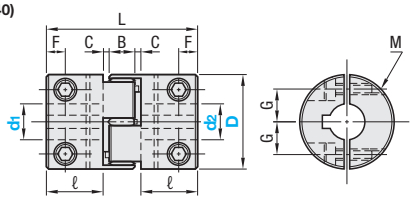
CPJC (Standard Bore)
(D=40)



CPJCK (Keywayed Bore d1, d2)
(D=30)



CPJCK (Keywayed Bore d1, d2)
(D=40)



Parts	M Material	S Surface Treatment	A Accessory
Hub	Aluminum Alloy	Anodizing	Hexagon Socket Head Cap Screw
Spacers	Polyurethane	-	

Operating Temperature -20ºC~60ºC
The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
For the selection criteria and alignment procedures, see P.961

Part Number Type	D	Spacers (Color)	d1, d2 select (must be d1≤d2)	L	ℓ	B	C	F	G	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price
CPJC	14	BL (Blue) WH (White) RD (Red)	3 4 5	22	7	6	1	3.5	4	M2	0.5	
	20		5 6 6.35 7 8	30	10	8		5	6.5	M2.5	1	
	30		7 8 9.525 10 11 12	35	11	10	1.5	5.5	10	M4	2.5	
	40		10 11 12 14 15 16	66	25	12	2	8.5	14	M5	4	

Part Number Type	D	Spacers (Color)	d1, d2 select (must be d1≤d2)	L	ℓ	B	C	F	G	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price
CPJCK	30	BL (Blue) WH (White) RD (Red)	10 11 12	35	11	10	1.5	5.5	10	M4	2.5	
	40		10 11 12 14 15 16	66	25	12	2	8.5	14	M5	4	

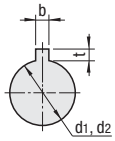
Part Number Type	D	Allowable Torque (Nm) BL	WH	RD	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm) BL	WH	RD	Static Torsional Spring Constant (Nm/rad) BL	WH	RD	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
CPJC	14	0.7	1.2	2	1.0	0.15	0.10	0.10	8	14	22	45000	$1.6x10^{-7}$	+0.6 0	6
	20	1.8	3	5		0.20	0.15		16	29	55	31000	$1.1x10^{-6}$	+0.8 0	19
	30	4	7.5	12.5		0.20	0.15		46	73	130	21000	$6.2x10^{-6}$	+1.0 0	50
	40	4.9	10	17		0.15	0.10		380	570	1200	15000	$3.9x10^{-5}$	+1.2 0	160

Part Number Type	D	Allowable Torque (Nm) BL	WH	RD	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm) BL	WH	RD	Static Torsional Spring Constant (Nm/rad) BL	WH	RD	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
CPJCK	30	4	7.5	12.5	1.0	0.20	0.15	0.10	46	73	130	21000	$4.2x10^{-6}$	+1.0 0	50
	40	4.9	10	17		0.15	0.10		380	570	1200	15000	$3.7x10^{-5}$	+1.2 0	160

-Spacer is press-fitted into the body.

The allowable torque will change according to temperature. See P.961

■Keyway Dimension (Applicable to CPJCK only.



Shaft Bore Dia. d1,d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Key Nominal Dimension bxh
10, 11, 12	4	±0.0150	1.8	+0.1 0	4x4
14, 15, 16	5		2.3		5x5

Order Example

Part Number	-	Spacers	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPJC30	-	BL	-	10	-	11

Days to Ship

8 Days

Express A | 2,00 EUR/piece | P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

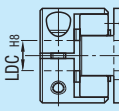
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - Spacers - Shaft Bore Dia. d1 (LDC) - Shaft Bore Dia. d2 (RDC)
CPJC14 - WH - LDC3.5 - RDC4.5

8 Days ⊗Express Serviceis not available.

Applicable to CPJC only.

Alterations	Code	Spec.	Price Adder
Shaft Bore Dia. 	LDC (Left Shaft)	0.1mm Increment Ordering Code: LDC3.5, RDC5.5 D: 14 → LDC, RDC: 3~ 5 D: 20 → LDC, RDC: 5~ 8 D: 30 → LDC, RDC: 7~12 Tolerances for LDC and RDC are for before slitting. ⊗D40 cannot be changed. ⊗Not applicable to CPJCK.	15,00
	RDC (Right Shaft)		15,00

Couplings

-Sleeve Style Set Screw Type / Jaw & Spider Style Set Screw Type-

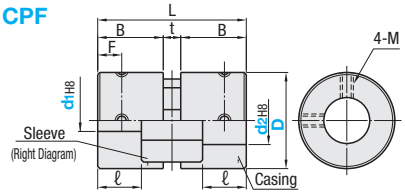
CAD Data

■Sleeved Set Screw

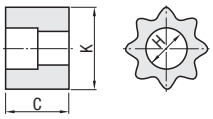


RoHS

CPF



(Only one set screw location when d1 and d2 are less than 4mm.)



Operating Temperature -20ºC~60ºC

Parts	M Material	S Surface Treatment	A Accessory
Sleeves	Zinc Alloy (CPF32 is Sintered Alloy.)	Electrodeposited Coating (Black) (Steam Treatment for CPF32)	Set Screw
	Polyurethane (Orange)	-	

The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.

For the selection criteria and alignment procedures, see P.961

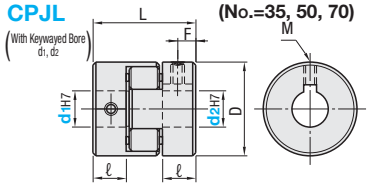
■Jaw & Spider Type Set Screw



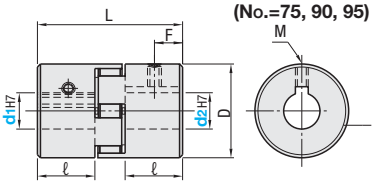
RoHS

CPJL

(No.=35, 50, 70)



(No.=75, 90, 95)



Parts	M Material	S Surface Treatment	A Accessory
Body	Steel Type Sintered Alloy	Steam Treatment	Set Screw
Spider	NBR (Black)	-	

Operating Temperature -40ºC~100ºC

The allowable lateral/angular/axial misalignment values shown are for each to be singularly occurring at a time. If all three are to be occurring simultaneously, allowable max. value of each will be 1/2.

For the selection criteria and alignment procedures, see P.961

Part Number Type	D	d1, d2 select (must be d1≤d2)	L	B	ℓ	t	F	Sleeves C	Sleeves K	Sleeves H	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price
CPF	16	3 4 5 6 6.35 8	27	12	8	3	4	11	14	6/6	M3	0.7	
	20	5 6 6.35 8 10	34	15	10	4	5	14	18	8/8			
	25	6 6.35 8 10 12	41	18	12	5	6	17	22	10/10	M4	1.7	
	32	8 10 12 14	48	21	14	6	7	20	29	12/14			

Part Number Type	No.	d1, d2 select (must be d1≤d2)	D	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price
CPJL	*35	5 6 8	15.9	20.6	6.7	3	M3	0.6	
	50	10 11 12 14 15 16	27.3	43.4	15.6	8	M6	5	
	70	11 12 14 15 16 17 18 19	34.4	50.2	19				
	75	14 15 16 17 18 19 20 22	44.5	54.1	20.7			7	
	90	18 19 20 22 24 25	53.6	54.6	20.7	11.2			
	95	18 19 20 22 24 25 28	53.6	63.8	25.3		M8	10	

*No. 35 has no keyway.

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Mass (g)
CPF	16	0.5	2	0.2	4.4	39000	$9x10^{-7}$	22
	20	1			9.5	31000	$2.7x10^{-6}$	42
	25	1.5			20	25000	$8.1x10^{-6}$	81
	32	3			52	19000	$2.5x10^{-5}$	150

The allowable torque will change according to temperature. See P.961

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment (mm)	Mass (g)
CPJL	*35	0.3	1	0.38	9.38	31000	$8.7x10^{-7}$	+0.7 0	20
	50	2.1			33.4	18000	$1.6x10^{-5}$	+1.0	90
	70	3.6			77.7	14000	$3.3x10^{-5}$	0	200
	75	8.4			241	11000	$1.1x10^{-4}$		360
	90	9.8			317	9000	$2.2x10^{-4}$	+1.1 0	520
	95	13.1			317	9000	$2.6x10^{-4}$		570

The allowable torque will change according to temperature. See P.961

■Features (CPF)

The torque is conveyed by the serrations engagement on the sleeve. A flexible coupling with a simple structure.
Excellent in flexibility with high tolerances to lateral/angular misalignments, and absorbs torsional vibrations.
Serrations engage with high accuracy and has significantly few backlash.
Simple structure, it can be fixed easily with a set screw and centered easily.
Oil resistant and wear resistant.

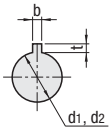
■Features (CPJL)

A flexible coupling with a simple structure by combination of 2 bodies and 1 spider.
Main body and the spider are of smooth blind fit, making for easy installation, removal and maintenance.
(Body and spider are detachable.)

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPF20	-	10	-	10
CPJL50	-	10	-	12

■Keyway Dimension



Shaft Bore Dia. d1, d2	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Keyway Dims. bxh
10	3	±0.0125	1.4		3x3
11, 12	4		1.8	+0.1 0	4x4
14, 15, 16, 17	5	±0.0150	2.3		5x5
18, 19, 20, 22	6		2.8		6x6
24, 25, 28	8	±0.0180	3.3	+0.2 0	8x7

Days to Ship

8 Days

Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

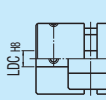
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Shaft Bore Dia. d (LDC)	-	Shaft Bore Dia. d2 (RDC)
CPF25	-	LDC7.6	-	RDC9.1

8 Days

Express Serviceis not available.

Alterations	Code	Spec.	Price Adder
Shaft Bore Dia. 	LDC (Left Shaft)	0.1mm Increment Ordering Code: LDC7.6 RDC9.1	15,00
	RDC (Right Shaft)	D: 16 (LDC, RDC 3~ 8), 20 (5~10), 25 (6~12), 32 (8~14) ⊗Not applicable to CPJL.	15,00

Couplings

-Super Duralumin - With Slit Set Screw / Clamping Type-

For Servo Motors

CAD Data

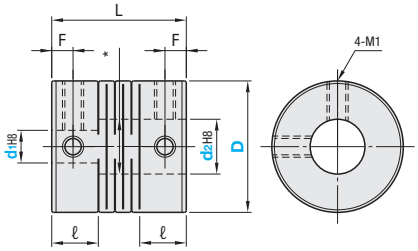
■Features: Due to the use of extra super duralumin, it has high torsional rigidity and compliant to servo motor.
For more misalignment tolerances and higher torque capacities, see the Disc Type. P.963

■For Servo Motors

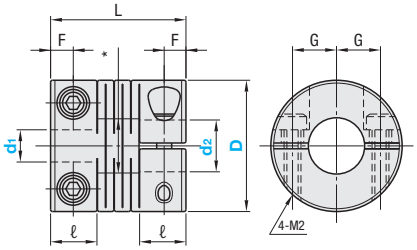


RoHS

CPSX (Set Screw)



CPCX (Clamping)



* When d_1 and d_2 are equal, then d_1+0.5
When d_1 and d_2 are unequal, then large shaft diameter+0.5

The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.

For the selection criteria and alignment procedures, see P.961

Type	M Material	S Surface Treatment	A Accessory
CPSX	Extra Super Duralumin	Anodizing Treatment	Set Screw
CPCX			Hexagon Socket Head Cap Screw

Part Number Type	D	d_1	d_2	L	ℓ	F	M_1	M_2	G	€ Unit Price CPSX	€ Unit Price CPCX
Set Screw type CPSX / Clamping type CPCX	16	5	5 6	17.4	6	3	M3	M2	4.74		
		6	6								
	19	5	5 6 7 8	20	6.8	3.4	M3	M2.5	5.6		
		6	6 6.35 7 8								
		6.35	6.35 8								
		8	8 *10								
		*10	*10								
	24	6	6 8 10	25	8.5	4.25	M4	M3	8		
		6.35	6.35 8 10								
		7	8								
		8	8 9.525 10								
		9.525	10								
		10	10 *11 *12								
		*11	*12								
		*12	*12								
	29	8	8 10 11 12	30	10.2	5.1	M4	M3	9		
		10	10 11 12 *14								
		11	12 *14								
		12	12 *14								
	34	10	14	35	12	6	M5	M3	11		
		11	14								
		12	12 14 16								
		14	14 15 16								
		15	15 16								
		16	16								

CPCX is not available for sizes with *.

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia ($Kg\text{-}m^2$)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPSX	16	0.5	0.5	0.05	200	39000	2.8×10^{-7}	±0.1	0.7	7
	19	1			270	33000	6.2×10^{-7}			10
	24	1.5			790	26000	2.0×10^{-6}		1.7	22
	29	2			1400	21000	5.2×10^{-6}			40
	34	3			2200	18000	1.1×10^{-5}		4	64
CPCX	16	0.5	0.5	0.05	200	39000	2.5×10^{-7}	±0.1	0.5	7
	19	1			270	33000	5.8×10^{-7}		1	12
	24	1.5			790	26000	1.8×10^{-6}		1.5	23
	29	2			1400	21000	4.7×10^{-6}			41
	34	3			2200	18000	1.1×10^{-5}			62

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPSX19	-	5	-	6

Days to Ship

8 Days

Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Couplings

-Slit Set Screw Short / Short / Slit Clamping/ Short-

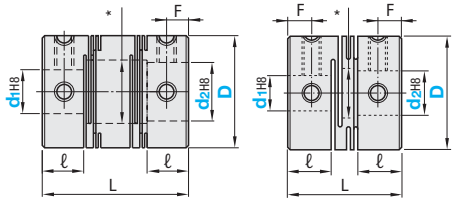
Price Reduction Max. 5%

■Features: Because backlash is 0, it is suitable for applications where rotation accuracy is required.
For higher torque capacities, see Disc Type. P.963-964

■Slit Set Screw Type



CPL (Aluminum - Standard Type)
CPLS (Stainless Steel - Standard Type)
CPS (Aluminum - Short Type)
CPSS (Stainless Steel - Short Type)



*d1, d2 Identical Diameter=d1+0.5
d1, d2 Different Diameters=Large Shaft Diameter+0.5

- When d1 is less than 4mm and d2 is more than 5mm, there are 3 set screws.
- When both d1 and d2 are less than 4mm, there are 2 set screws.

The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
For the selection criteria and alignment procedures, see P.961

Type	M Material	S Surface Treatment	A Accessory
CPL, CPS	Aluminum Alloy	Anodizing	Set Screw
CPLS, CPSS	Stainless Steel	-	

Part Number Type	D	d1	d2	L CPL CPLS	L CPS CPSS	ℓ CPL CPLS	ℓ CPS CPSS	M (Coarse)	F	€ Unit Price CPL	CPLS	CPS	CPSS
CPL (Aluminum) CPLS (Stainless Steel) CPS (Aluminum) CPSS (Stainless Steel)	8	*2	*2 3	14	10	3.5	3.4	M2	1.7				
		*3	*3										
	12	3	3 4	18.5	14	5	5.2	M2.5	2.5				
		*4	*4 *5										
		*5	*5 6										
	16	4	4 5 6	23	18	6.5	6.8	M3	3				
		*5	*5 *6 8										
		*6	*6 6.35 8										
		6.35	8										
	20	*5	5 *6 *8	26	20	7.5	7.65						
		*6	*6 6.35 7 *8 10										
		6.35	8										
		*8	*8 9.525 10										
		10	10										
	25	*5	*6	31	25	8.5	9.6	M4	4				
		*6	*6 6.35 *8 10										
		6.35	8 10										
		*8	*8 9.525 *10 12										
		9.525	10										
		*10	*10 12										
		12	12										
	32	6	8	41	32	12	12.6		6				
		6.35	8										
		*8	*8 *10 12										
		*10	*10 11 *12 14										
		*12	*12 *14										
		14	14 16										
	40	8	9.525	56	-	17	-	M5	8.5				
		10	10										
		12	12										
		14	14 16 18										
		15	15										
		16	16										
		18	18										

CPS and CPSS are available in * marked sizes only.

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Lateral Misalignment (mm)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPL (Aluminum)	8	0.1	78000	1.2×10^{-8}	25	0.10	2	±0.2	0.3	1.4
	12	0.4	52000	8.3×10^{-8}	45			±0.3	0.5	3.7
	16	0.5	39000	3.3×10^{-7}	80			±0.4	0.7	8.1
	20	1	31000	9.0×10^{-7}	170					14
	25	2	25000	2.6×10^{-6}	380	0.15		±0.5	1.7	27
	32	4	19000	9.6×10^{-6}	500					60
	40	8	15000	3.2×10^{-5}	700	0.20			4	130

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Lateral Misalignment (mm)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPLS (Stainless Steel)	8	0.2	78000	3.1×10^{-8}	50	0.10	2	±0.2	0.3	3
	12	0.3	52000	2.1×10^{-7}	64			±0.3	0.5	9.3
	16	0.5	39000	8.4×10^{-7}	85				0.7	21
	20	1	31000	2.4×10^{-6}	250					38
	25	2	25000	6.8×10^{-6}	330	0.15		±0.4	1.7	71
	32	3.5	19000	2.6×10^{-5}	850			±0.5		160
	40	8	15000	8.7×10^{-5}	1000	0.20			4	350

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPS (Aluminum)	8	0.1	78000	1.0×10^{-8}	24	1	±0.1	0.3	1
	12	0.4	52000	7.0×10^{-8}	80			0.5	3.1
	16	0.5	39000	2.8×10^{-7}	180		±0.2	0.7	7.4
	20	1	31000	7.5×10^{-7}	200				12
	25	2	25000	2.3×10^{-6}	780			1.7	24
	32	4	19000	8.0×10^{-6}	1100				50

CPS does not allow eccentricity.

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg·m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPSS (Stainless Steel)	8	0.2	78000	2.4×10^{-8}	49	1	±0.1	0.3	2.7
	12	0.3	52000	1.8×10^{-7}	140			0.5	7.8
	16	0.5	39000	7.2×10^{-7}	240			0.7	18
	20	1	31000	2.0×10^{-6}	330				32
	25	2	25000	6.1×10^{-6}	720		±0.2	1.7	63
	32	3.5	19000	2.1×10^{-5}	1300				130

CPSS does not allow eccentricity.

Price Reduction
Max. 11%

CAD Data

■Features: Because backlash is 0, it is suitable for applications where rotation accuracy is required.
(?)For higher torque capacities, see Disc Type. P.963-964

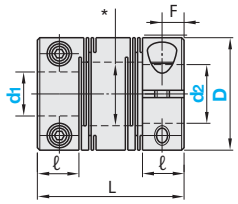
■Slit Clamping Type

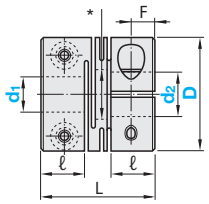


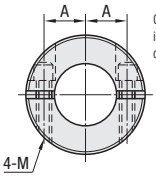
RoHS

CPLCN (Aluminum - Standard Type)
CPLSC (Stainless Steel - Standard Type)
CPSCN (Aluminum - Short Type)
CPSSC (Stainless Steel - Short Type)

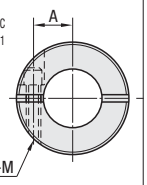
(?)The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
(?)For the selection criteria and alignment procedures, see P.961







CPLSC and CPSSC in D12~13 have 1 clamping screw.



*d1, d2 Identical Diameter=d1+0.5
d1, d2 Different Diameters=Large Shaft Diameter+0.5
(?)d1, d2 tolerances are values before slits are machined.

Type	M Material	S Surface Treatment	A Accessory
CPLCN, CPSCN	Aluminum Alloy	Anodizing	Hexagon Socket Screw
CPLSC, CPSSC	Stainless Steel	-	

Part Number Type	D	d1	d2	L CPLCN CPLSC	L CPSCN CPSSC	ℓ CPLCN CPLSC	ℓ CPSCN CPSSC	M (Coarse)	A	F CPLCN CPLSC	F CPSCN CPSSC	€ Unit Price CPLCN	CPLSC	CPSCN	CPSSC
CPLCN (Aluminum) CPLSC (Stainless Steel) CPSCN (Aluminum) CPSSC (Stainless Steel)	12	*4	*4 *5	18.5	14	5	5.2	M2	4	2.5	2.6				
		*5	*5												
	16	*5	*5 *6	23	18	6.5	6.8	M2.5	5	3.25	3.4				
		*6	*6												
	20	*5	*6 6.35 *8	26	20	7.5	7.65		6.5	3.75	3.8				
		*6	*6 6.35 7 *8												
		6.35	8												
		*8	*8												
	25	*5	*6	31	25	8.5	9.6	M3	9	4.25	4.8				
		*6	*6 6.35 *8 *10												
		6.35	8 10												
		*8	*8 9.525 *10												
		9.525	10												
		*10	*10												
	32	*8	*8 9.525 *10 12	41	32	12	12.6	M4	11	6	6.3				
		9.525	10 12												
		*10	*10 11 *12 14												
		*12	*12 *14												
	40	8	8 10	56	-	17	-	M5	14	8.5	-				
		10	10												
		12	12 14												
		14	14 16												
		15	15												
		16	16												

(?)CPSCN and CPSSC are available in * marked sizes only.

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Lateral Misalignment (mm)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPLCN (Aluminum)	12	0.4	52000	7.8×10^{-8}	45	0.10	2	±0.3	0.5	3.6
	16	0.5	39000	3.4×10^{-7}	80			±0.4	1	9.2
	20	1	31000	9.1×10^{-7}	170					16
	25	2	25000	2.6×10^{-6}	380	0.15			1.5	28
	32	4	19000	9.7×10^{-6}	500			±0.5	2.5	64
	40	8	15000	3.3×10^{-5}	700	0.20			4	140

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPSCN (Aluminum)	12	0.4	52000	6.4×10^{-8}	80	1	±0.1	0.5	3
	16	0.5	39000	2.9×10^{-7}	180		±0.2	1	8
	20	1	31000	7.5×10^{-7}	200				13
	25	2	25000	2.3×10^{-6}	780			1.5	25
	32	4	19000	8.1×10^{-6}	1100			2.5	53

(?)CPSCN does not allow eccentricity.

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Lateral Misalignment (mm)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPLSC (Stainless Steel)	12	0.3	52000	2.2×10^{-7}	64	0.10	2	±0.2	0.5	10
	16	0.5	39000	9.0×10^{-7}	85			±0.3	1	25
	20	1	31000	2.5×10^{-6}	250					43
	25	2	25000	7.1×10^{-6}	330	0.15		±0.4	1.5	78
	32	3.5	19000	2.7×10^{-5}	850			±0.5	2.5	170
	40	8	15000	9.0×10^{-5}	1000	0.20			4	370

Part Number Type	D	Allowable Torque (Nm)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Static Torsional Spring Constant (Nm/rad)	Allowable Angular Misalignment (°)	Allowable Axial Misalignment	Screw Tightening Torque (Nm)	Mass (g)
CPSSC (Stainless Steel)	12	0.3	52000	1.8×10^{-7}	140	1	±0.1	0.5	8.5
	16	0.5	39000	7.8×10^{-7}	240			1	21
	20	1	31000	2.1×10^{-6}	330				38
	25	2	25000	6.3×10^{-6}	720		±0.2	1.5	69
	32	3.5	19000	2.2×10^{-5}	1300			2.5	150

(?)CPSSC does not allow eccentricity.

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPL16	-	5	-	6

Days to Ship

8 Days

Express A | 2,00 EUR/ piece P.88

(?)A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (?)Round down to one Cent. P.87

5~9	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

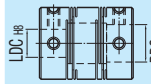
(?)For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Shaft Bore Dia. d1 (LDC)	-	Shaft Bore Dia. d2 (RDC)
CPL25	-	LDC6.5	-	RDC9

8 Days ⊗Express Serviceis not available.

(?)Applicable to both Slit Set Screw Type and Clamping Type.

Alterations	Code	Spec.	Price Adder
Shaft Bore Dia. 	LDC (Left Shaft)	0.1mm Increment. Ordering Code: LDC5.6, RDC10.2. Set Screw: D 8 12 16 20 25 32 40; LDC · RDC 2~ 3 3~ 6 4~ 8 5~10 5~12 6~16 8~18. Clamping type: D 12 16 20 25 32; LDC · RDC 4~ 5 5~ 6 5~ 8 5~10 8~14. ⊗Not applicable to Clamping Type D=40. (?)LDC and RDC tolerance are values before slit machining.	15,00
	RDC (Right Shaft)		15,00

Couplings
-Rigid Set Screw · Clamping-

CAD Data

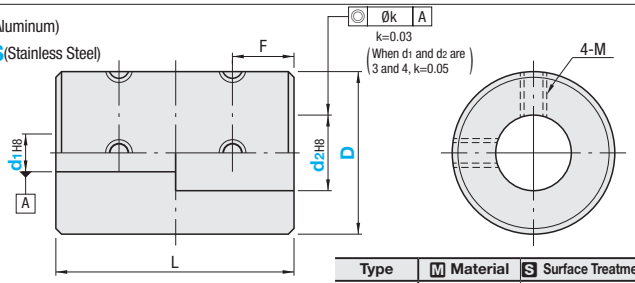
The Rigid Type cannot tolerate any lateral and angular misalignments. Adequate centering is required before use.

■Set Screw



RoHS

CPR(Aluminum)
CPRS(Stainless Steel)



For the selection criteria and alignment procedures, see **P.961**

Type	M Material	S Surface Treatment	A Accessory
CPR	Aluminum Alloy	Anodizing	Set Screw
CPRS	Stainless Steel	-	

Part Number Type	D	d1, d2 select (must be d1≤d2)	L	M (Coarse)	F	€ Unit Price CPR	€ Unit Price CPRS
CPR (Aluminum) CPRS (Stainless Steel)	16	3 4 5 6	24	M3	6		
	20	5 6 8 10	30		7		
	25	8 10 11 12	36	M4	9		
	32	12 14 15 16	41		10		
CPR (Aluminum)	40	15 16 18 20	44	M5	10.5		

Part Number Type	D	Allowable Torque (Nm)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Screw Tightening Torque (Nm)	Mass (g)
CPR (Aluminum)	16	0.3	24000	4.4x10⁻⁷	0.7	11
	20	0.5	19000	1.3x10⁻⁶		20
	25	1	15000	3.9x10⁻⁶	1.7	39
	32	2	12000	1.2x10-5		71
	40	4	4000	1.5x10-5	4	120
CPRS (Stainless Steel)	16	0.3	24000	1.2x10⁻⁶	0.7	28
	20	0.5	19000	3.5x10⁻⁶		54
	25	1	15000	1.0x10⁻⁶	1.7	100
	32	2	12000	3.1x10⁻⁶		190

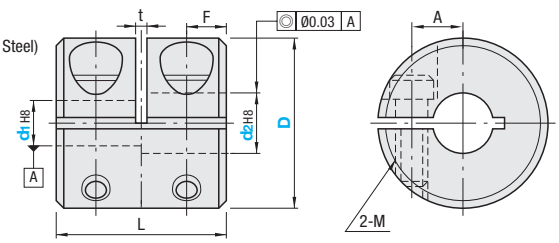
Recommended tolerance of applicable shaft diameter: h6 and h7.

■Clamping Type



RoHS

CPRC(Aluminum)
CPRSC(Stainless Steel)



d1,d2Tolerances for d1 and d2 are before slitting.
For the selection criteria and alignment procedures, see **P.961**

Type	M Material	S Surface Treatment	A Accessory
CPRC	Aluminum Alloy	Anodizing	Hexagon Socket Head Cap Screw
CPRSC	Stainless Steel	-	

Part Number Type	D	d1, d2 select (must be d1≤d2)	L	M (Coarse)	A	t	F	€ Unit Price CPRC	€ Unit Price CPRSC
CPRC (Aluminum) CPRSC (Stainless Steel)	16	5 6	16	M2.5	5	1	3.75		
	20	6 8	20		6.5		4.75		
	25	8 10	25	M3	9		6		
	32	10 12 14	32	M4	11		7.75		
CPRC (Aluminum)	40	14 15 16 18	44	M5	13	1.5	10.5		
	50	18 20 24	55	M6	16	2	13		

Part Number Type	D	Allowable Torque (Nm)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Screw Tightening Torque (Nm)	Mass (g)
CPRC (Aluminum)	16	0.3	9500	3.0x10⁻⁷	1	9
	20	0.5	7600	8.7x10⁻⁷		15
	25	1	6100	2.7x10⁻⁶	1.5	29
	32	2	4800	7.1x10⁻⁶	2.5	61
	40	4	4000	1.5x10⁻⁵	7	120
	50	6	4000	7.0x10⁻⁵	12	240
CPRSC (Stainless Steel)	16	0.3	9500	8.0x10⁻⁷	1	22
	20	0.5	7600	2.4x10⁻⁶		41
	25	1	6100	7.3x10⁻⁶	1.5	80
	32	2	4800	2.5x10⁻⁵	2.5	160

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPRC25	-	8	-	10

Days to Ship: **8 Days**

Express A: 2,00 EUR/ piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

• CPR

5~9	1~4	5~9	10~19	20~49
Rate	€ Unit Price	30%	40%	50%

• CPRS · CPRC · CPRSC

5~9	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

For orders larger than indicated quantity, please request a quotation.

Couplings
-Rigid Separate Type · Clamping Long Type-

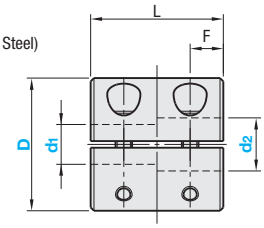
CAD Data

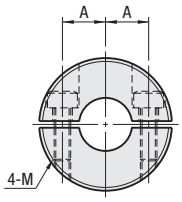
The Rigid Type cannot tolerate any lateral and angular misalignments. Adequate centering is required before use.

■Split



CPSR(Aluminum)
CPSRS(Stainless Steel)





For the selection criteria and alignment procedures, see **P.961**

Type	Material	Surface Treatment	Accessory
CPSR	Aluminum Alloy	Anodizing	Hexagon Socket Head Cap Screw
CPSRS	Stainless Steel	-	

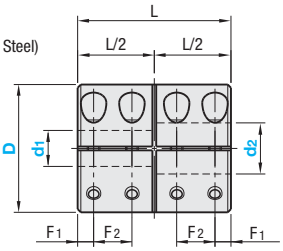
Part Number Type	D	d1, d2 select (must be d1≤d2)	L	F	A	M	€ Unit Price CPSR	€ Unit Price CPSRS
CPSR (Aluminum) / CPSRS (Stainless Steel)	16	5 6	16	3.75	5	M2.5		
	20	6 8	20	4.75	6.5			
	25	8 10	25	6	9	M3		
	32	10 12 14	32	7.75	11	M4		

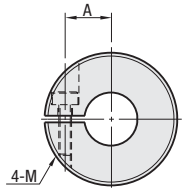
Part Number Type	D	Allowable Torque (Nm)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Thread Tightening Torque (Nm)	Mass (g)
CPSR (Aluminum)	16	0.3	39000	3.2×10^{-7}	1	8.8
	20	0.5	31000	8.7×10^{-7}		15
	25	1	25000	2.7×10^{-6}	1.5	29
	32	2	19000	9.3×10^{-6}	2.5	61
CPSRS (Stainless Steel)	16	0.3	39000	8.2×10^{-7}	1	22
	20	0.5	31000	2.4×10^{-6}		41
	25	1	25000	7.3×10^{-6}	1.5	80
	32	2	19000	2.5×10^{-5}	2.5	160

■Clamping Long



CPND(Aluminum)
CPNDS(Stainless Steel)





For the selection criteria and alignment procedures, see **P.961**

Type	Material	Surface Treatment	Accessory
CPND	Aluminum Alloy	Anodizing	Hexagon Socket Head Cap Screw
CPNDS	Stainless Steel	-	

Part Number Type	D	d1, d2 select (must be d1≤d2)	L	F1	F2	A	M	€ Unit Price CPND	€ Unit Price CPNDS
CPND (Aluminum) / CPNDS (Stainless Steel)	16	5 6	22	2.5	5.5	5	M2		
	20	6 8	24		6	7			
	25	8 10	36	4.5	9	9	M2.5		
	32	10 12 14	40	4	10	11	M3		

Part Number Type	D	Allowable Torque (Nm)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg·m²)	Thread Tightening Torque (Nm)	Mass (g)
CPND (Aluminum)	16	0.3	39000	3.4×10^{-7}	0.5	10
	20	0.5	31000	9.2×10^{-7}		18
	25	1	25000	3.4×10^{-6}	1	38
	32	2	19000	1.0×10^{-5}	1.5	70
CPNDS (Stainless Steel)	16	0.3	39000	8.9×10^{-7}	0.5	25
	20	0.5	31000	2.5×10^{-6}		45
	25	1	25000	9.2×10^{-6}	1	100
	32	2	19000	2.7×10^{-5}	1.5	180

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPSR25	-	8	-	10

Days to Ship: **8 Days**

Express A: 2,00 EUR/ piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) **P. 87**

5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Couplings

-Bellow Set Screw Type / Clamping Type-

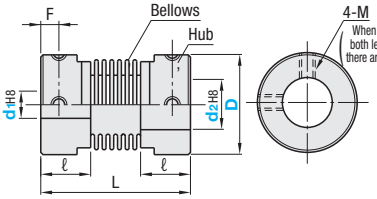
CAD Data

■Features: Suitable for encoders because of its speed constancy even with misalignment. Allowable end play is big and can absorb the shaft length changes caused by temperature changes in the shaft.

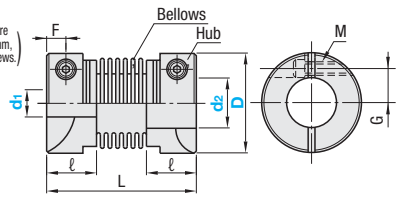


RoHS

Set Screw
CPB (Aluminum)
CPBS (Stainless Steel)



Clamping type
CPBC (Aluminum)
CPBSC (Stainless Steel)



Ⓨd1, d2 tolerance are values before slit machining.
Ⓨ The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
Ⓨ For the selection criteria and alignment procedures, see **P.961**

Parts	Hub		Bellows	Ⓐ Accessory	
	Ⓜ Material	Ⓢ Surface Treatment	Ⓜ Material	CPB, CPBS	CPB, CPBSC
CPB, CPBC	Aluminum Alloy	Anodizing	Phosphor Bronze	Set Screw	Hexagon Socket Head Cap Screw
CPBS, CPBC	Stainless Steel	-	Stainless Steel		

Part Number Type	D	d1, d2 select (must be d1≤d2)	L	ℓ	F	Set Screw M	Set Screw Tightening Torque (Nm)	€ Unit Price CPB	€ Unit Price CPBS
Set Screw CPB CPBS	12	3 4 5 6	23.5	7.5	2.5	M2.5	0.5		
	16	4 5 6 8	26.5	9	3	M3	0.7		
	*20	5 6 8 10	33 (32)	10	3.5				
	25	6 8 10 12	36.5	12	4.5	M4	1.7		
	32	6 8 10 12 14	42	13.5	5.5				

Ⓨ O.A.L. of CPBSC20 is 32.

Part Number Type	D	d1, d2 select (must be d1≤d2)	L	ℓ	F	G	Clamp Screw M	Clamp Screw Tightening Torque (Nm)	€ Unit Price CPBC	€ Unit Price CPBSC
Clamping type CPBC CPBSC	12	4 5	23.5	7.5	2.3	4	M2	0.5		
	16	5 6	26.5	9	3	5	M2.5	1		
	*20	6 8	33 (32)	10	3.5	6.5				
	25	8 10	36.5	12	4.5	9	M3	1.5		
	32	8 10 12 14	42	13.5	5	11	M4	2.5		

Ⓨ *Full length of CPBSC20 is (32).

Part Number Type	D	Allowable Torque (Nm)	Allowable Angular Misalignment (°)	Allowable Lateral Misalignment (mm)	Static Torsional Spring Constant (Nm/rad)	Max Rotational Speed (r/min)	Moment of Inertia (Kg-m²)	Allowable Axial Misalignment	Mass (g)
CPB (Aluminum)	12	0.3	1.5	0.10	82	52000	9.0×10^{-8}	+0.4	4
	16	0.5			110	39000	3.5×10^{-7}	-1.2	9
	20	0.8	2	0.15	180	31000	9.9×10^{-7}	+0.6	16
	25	1.3			240	25000	3.1×10^{-6}	-1.8	32
	32	2		0.20	330	19000	9.2×10^{-6}	~~+2.8~~	57
CPBS (Stainless Steel)	12	0.5	1.5	0.10	100	52000	2.1×10^{-7}	+0.4	9
	16	1			150	39000	8.0×10^{-7}	-1.2	20
	20	1.5	2	0.15	220	31000	2.3×10^{-6}	+0.6	37
	25	2			330	25000	7.0×10^{-6}	-1.8	73
	32	3		0.20	490	19000	2.1×10^{-5}	~~+2.8~~	130
CPBC (Aluminum)	12	0.3	1.5	0.10	82	52000	9.7×10^{-8}	+0.4	4
	16	0.5			110	39000	3.7×10^{-7}	-1.2	10
	20	0.8	2	0.15	180	31000	1.0×10^{-6}	+0.6	16
	25	1.3			240	25000	3.1×10^{-6}	-1.8	32
	32	2		0.20	330	19000	9.6×10^{-6}	~~+2.8~~	58
CPBSC (Stainless Steel)	12	0.5	1.5	0.10	100	52000	2.1×10^{-7}	+0.4	9
	16	1			150	39000	8.1×10^{-7}	-1.2	22
	20	1.5	2	0.15	220	31000	2.3×10^{-6}	+0.6	38
	25	2			330	25000	6.9×10^{-6}	-1.8	74
	32	3		0.20	490	19000	2.1×10^{-5}	~~+2.8~~	130

Alterations

Part Number - Shaft Bore Dia. d1 (LDC) - Shaft Bore Dia. d2 (RDC) - (LK, RK)
CPB16 - LDC5.5 - RDC6.5
CPBSC32 - 10 - 12 - LK4

8 Days ⊗Express Serviceis not available.

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
CPB20	-	6	-	8

Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

Ⓨ A Express Charge of 5,40 EUR for 3 or more identical pieces.

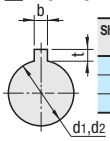
Price

■Volume Discount (Ⓨ Round down to one Cent.) **P.87**

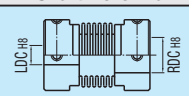
5~9	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

■Keyway Dimension



Shaft Bore Dia. d1, d2	LK, RK	b Reference Dia.	b Tolerance	t Reference Dia.	t Tolerance	Key Nominal Dims. bxh
8, 10	3	3	±0.0125	1.4	+0.1 0	3x3
10~12	4	4	±0.0150	1.8		4x4
12~14	5	5		2.3		5x5

Type	CPB · CPBS	CPB · CPBSC	CPB · CPBS · CPBC · CPBSC
Alterations	Shaft Bore Dia.	Shaft Bore Dia.	Keyway
Spec.	 0.1mm Increment Ordering Code LDC7.5 RDC9.5	D / LDC · RDC: 6 3.0~ 6.0; 8 4.0~ 8.0; 10 5.0~10.0; 12 6.0~12.0; 14 6.0~14.0	 0.1mm Increment Ordering Code LDC7.5 RDC9.5 Ⓨ LDC and RDC tolerance are values before slit machining.	D / LDC · RDC: 12 4.0 ~ 5.0; 16 5.0 ~ 6.3; 20 6.0 ~ 8.0; 25 6.35~10.0; 32 8.0 ~14.0
			CPB, CPBS:  Ordering Code LK5 RK3
			CPB, CPBSC:  Shaft D.I.A. d1 ·d2 / LK · RK: 8, 10 3; 10~12 4; 12~14 5
			Ⓨ Keyway Dimension Refer to the above Ⓨ Keywayed bores are available from Ø8~ ⊗ Cannot be combined with Shaft Bore D.I.A. Change (LDC · RDC) alteration.
Code	LDC (Left Shaft)	RDC (Right Shaft)	LDC (Left Shaft) / RDC (Right Shaft)	LK (Left Shaft)	RK (Right Shaft)
Price Adder	15,00	15,00	15,00 / 15,00	9,00	9,00

Couplings
-Plastic Type / Short Plastic Type-

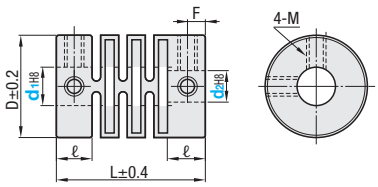
CAD Data

■Features: Economical couplings for low torque applications. Suitable for encoders and potentiometers where little torque is required.

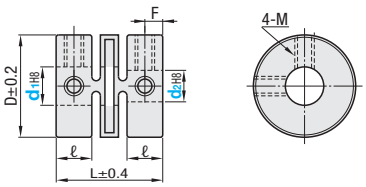


RoHS

MCJN



MCJSN (Short Type)



- Operating Temperature -20ºC~80ºC
- The lateral, angular, and axial misalignment values shown are for each occurring separately alone. If more than one misalignment are occurring simultaneously, allowable value will be reduced to 1/2 each.
- For the selection criteria and alignment procedures, see **P.961**

Type	Material	Accessory
MCJN	Glass Fiber Reinforced PBT Resin	Set Screw
MCJSN	PBT Resin	

Part Number Type	No.	d1	d2	D	L	ℓ	F	Set Screw MxLength	Set Screw Tightening Torque (Nm)	€ Unit Price
MCJN	9	1.5	1.5	9	11.4	3.2	1.6	M2x4	0.08	
		2	2		13.2					
	10	1.5	2.5	10	11.8		1.7			
	12	3	3	12	20	5.1	2.6	M3x4	0.15	
	14	4	2.5 3 3.2 4	13.5	21	5.3	2.7	M3x5	0.2	
	15	5	3 3.2 4 5	15	20.5					
	16	6	3 3.2 4 5 6	16	21	5.5			0.25	
	20	8	4 5 6 8	20	24	6.8	3.5	M4x6	0.4	
	22	10	10	22	25.6	7.1	3.6		0.5	
	28	12	12	28	34.4	7.5	3.9	M4x8	0.8	

Part Number Type	No.	d1	d2	D	L	ℓ	F	Set Screw MxLength	Set Screw Tightening Torque (Nm)	€ Unit Price
MCJSN	8	2	2	8	9	3.2	1.6	M2x3	0.05	
	12	2.5	3	12	14.5	5.3	2.6	M3x4	0.18	
		3.2	3.2		14.2				0.2	
	14	4	4	14	15	5.2				
		5	5							
	15	6	2.4 3.2 4 5 6	15	15.5	5.5	2.8			
	18	8	4 5 6 8	18	17.8		2.6	M3x5	0.25	

Part Number Type	No.	Allowable Torque (Nm)	Allowable Angular Misalign-ment (°)	Allowable Lateral Misalign-ment (mm)	Static Torsional Spring Constant (Nm/rad)	Max. Rotational Speed (r/min)	Inertia Moment of Inertia (Kg-m²)	Allowable Axial Misalign-ment	Mass (g)
MCJN	9	0.05	2	0.15	1.5	4000	$1x10^{-6}$	±0.2	0.9
	10	0.06			2	4000	$1.4x10^{-6}$		1.1
	12	0.08	2.5	0.2	4	4000	$4.5x10^{-6}$	±0.3	2.5
	14	0.1			10	5000	$0.8x10^{-7}$		3.4
	15	0.12			12	5000	$1x10^{-7}$		4
	16	0.15			16	6000	$1.3x10^{-7}$		4.5
	20	0.25			28	8000	$4x10^{-7}$		7.5
	22	0.35			32	10000	$7x10^{-7}$		10
	28	0.8	2		40	12000	$2.1x10^{-6}$		19
MCJSN	8	0.05	2	0.05	1.8	4000	$0.5x10^{-8}$	±0.15	0.7
	12	0.1		0.1	2	4000	$0.4x10^{-7}$	±0.2	2.3
	14	0.15			8	5000	$0.6x10^{-7}$		2.7
	15	0.15			9	6000	$0.8x10^{-7}$		3
	18	0.2		0.15	16	6000	$2.5x10^{-7}$	±0.3	4

Order Example

Part Number	-	Shaft Bore Dia. d1	-	Shaft Bore Dia. d2
MCJN20	-	8	-	6

Days to Ship

8 Days

Express A 2,00 EUR/ piece P.88

- A Express Charge of 5,40 EUR for 3 or more identical pieces.

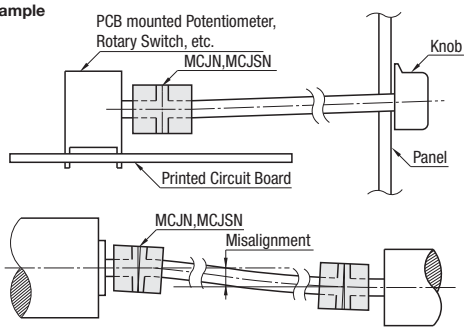
Price

■Volume Discount (Round down to one Cent.) P.87

5~9	1~4	5~9	10~19	20~49
Rate	€ Unit Price	40%	50%	60%

- For orders larger than indicated quantity, please request a quotation.

Example



Cautions

1. Do not handle as if it were of metal. The couplings are high in reliability for light loading applications. They are suitable for volumes and encoders.
2. Do not apply undue bending and torsional forces during installation. Observe the set screw tightening torque limits. (Resin material breaks if the tightening torque exceeds the allowable range)
3. The couplings are proven with heat-run tests to show 10 years of service life and 10^8 revolutions if kept under the allowable torque and misalignment values.

(Note)1. For small misalignment, use one MCJ Series for connection.
2. For big misalignment, use two MCJ Series for connection.

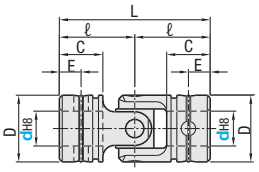
Universal Joints
-Set Pin-

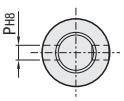
CAD Data



RoHS

UNCA (Single Type)



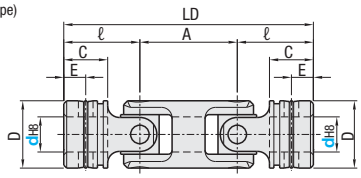


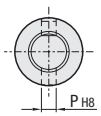
- Rubber Covers

CSC (For Single)



UNCW (Double Type)





JIS B1454 C Type (UNCA)
JIS B1454 CC Type (UNCW)

Type		M Material	S Surface Treatment	A Accessory
Single	UNCA	1.7242/16CrMo4 Alloy Steel (Carburized)	Manganese Phosphate Coating	Strong Set Pin (Tolerance m6) 2 Pcs. Ring Spring 2 Pcs.
Double	UNCW			

- Rubber Covers
M Material: NBR
A Accessories: Ring Spring 2 Pcs.
Operating Temperature -20ºC~100ºC

■Universal Joints

Part Number Type	d	D	Single L	Double LD	Double A	ℓ	C	E	P	€ Unit Price UNCA	€ Unit Price UNCW
UNCA (Single Type) / UNCW (Double Type)	6	12	31	-	-	15.5	9	4.5	3		
	8	15	36			18	10	5	3.5		
	10	20	42	67.5	25.5	21	12	6	4.5		
	12	23	52	83	31	26	15	7.5	5		
	14	26	59	94.5	35.5	29.5	17	8.5	5.8		
	16	30	74	117.5	43.5	37	22	11	6.5		
	18	33	81	-	-	40.5	23.5	11.75	7		
	20	36	87	139	52	43.5	25	12.5	8		
	25	44	105	-	-	52.5	30	15	10		
	30	51	122			61	35	17.5	11.5		

■Rubber Covers

Part Number Type	d	KC	€ Unit Price
CSC (Single Type)	8	25	
	10	32	
	12	35	
	14	40	
	16	46	
	18	52	
	20	58	
	25	68	
	30	82	

* No rubber cover available for d=6.

Part Number Type	d	UNCA, UNCW common: Allowable Condition Variable	Allowable Rotational Speed (r/min)	Allowable Operating Angle (º)	Static Tensile Failure Load (N)	UNCA: Allowable Torque (Nm)	Static Failure Torque (Nm)	GD² (Kg-cm²)	Mass (g)	UNCW: Allowable Torque (Nm)	Static Failure Torque (Nm)	GD² (Kg-cm²)	Mass (g)
UNCA (Single Type) / UNCW (Double Type)	6	28000	1800	30	5300	5.3	16	0.015	15	-	-	-	-
	8	42000	1500		7840	11.6	35	0.044	30				
	10	70000	1300		13000	27.4	83	0.13	55	20.1	61	0.21	95
	12	106000	1100		23000	46	140	0.35	110	33	100	0.55	180
	14	133000	1000		26000	66	200	0.67	155	46	140	1	250
	16	175000	900		39000	102	310	1.5	260	76	230	2.3	410
	18	203000	800		44000	132	400	2.3	345	-	-	-	-
	20	239000	700		52000	175	530	3.6	465	129	390	5.7	690
	25	356000	600		81000	330	1000	9.7	790	-	-	-	-
	30	465000	550		100000	495	1500	20	1160				

Order Example

Part Number
UNCA16
CSC16

Days to Ship

8 Days | Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

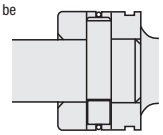
■Volume Discount (Round down to one Cent.) P.87

5~9	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

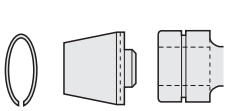
■High Strength Dowel Pins

(1)Material 1.7242/16CrMo4 Alloy Steel is carburized and ground to an m6 tolerance.
(2)Effective section is shouldered as shown and tightly engaged only on one side.
(3)Small misalignment is allowed on the mating side hole, but should be finished to an H8 tolerance.



■How to Handle Ring Spring

(1)Spring may lose its tension if once removed spring is reused.
(2)A jig as show would assist the assembly procedure.
(3)Do not leave the spring on the O.D. section for extended time periods or strike with a hammer and the like.



■Selecting Method

(1) Conditional Variables (Formula)

Calculation Condition Variable = Rotational Speed (r/min) x Angle (º) x Torque (Nm)

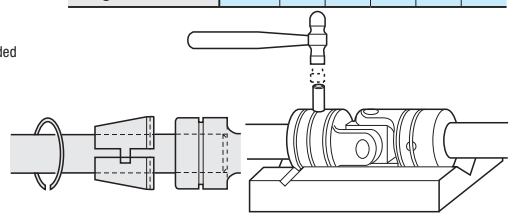
Calculation Condition Variable<Allowable Condition Variable

(2) Rotational Speed (r/min)

Rotational Speed x Angle Factor<Allowable Speed

=Angle Factor Table=

Angle	5° or less	10°	15°	20°	25°	30°
Angle Coefficient	1.00	1.05	1.18	1.43	1.82	2.50



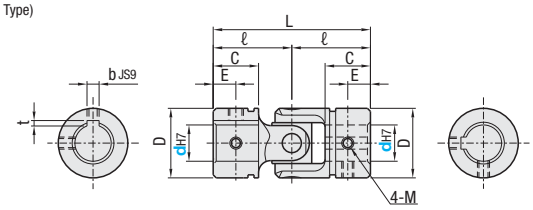
Universal Joints
-Keyway · Tapped Type-

CAD Data

■Features: Shaft does not require pin hole machining, and keyway alone can tighten it.

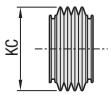


UNKA (Single Type)

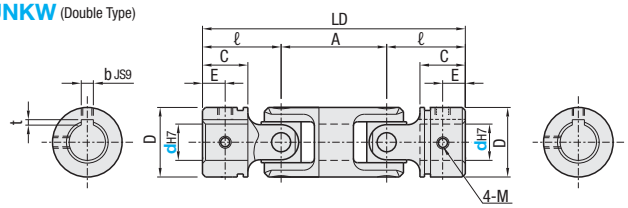


- Rubber Covers

CSC (For Single)



UNKW (Double Type)



JIS B1454 C Type (UNKA)
JIS B1454 CC Type (UNKW)

Type		Material
Single	**UNKA**	1.7242/16CrMo4 Alloy Steel (Carburized)
Double	**UNKW**	

- Rubber Covers
M Material: NBR
A Accessories: Ring Spring 2 Pcs.
Operating Temperature -20ºC~100ºC

RoHS

■Universal Joints

Part Number Type	d	D	Single L	Double LD	Double A	ℓ	C	E	b	t	M (Coarse)	€ Unit Price UNKA	€ Unit Price UNKW
UNKA (Single Type) / **UNKW** (Double Type)	10	19	42	67.5	25.5	21	12	6	3	1.4	M5		
	12	23	52	83	31	26	15	7.5	4	1.8	M5		
	14	26	59	94.5	35.5	29.5	17	8.5	5	2.3	M6		
	16	30	74	117.5	43.5	37	22	11	5	2.3	M6		
	20	36	87	139	52	43.5	25	12.5	6	2.8	M6		

Part Number Type	d	UNKA , UNKW common: Allowable Condition Variable	Allowable Rotational Speed (r/min)	Allowable Operating Angle (º)	Static Tensile Failure Load (N)	UNKA: Allowable Torque (Nm)	Static Failure Torque (Nm)	GD² (Kg-cm²)	Mass (g)	UNKW: Allowable Torque (Nm)	Static Failure Torque (Nm)	GD² (Kg-cm²)	Mass (g)
UNKA (Single Type) / **UNKW** (Double Type)	10	80000	2000	30	13000	27.4	83	0.13	55	20.1	61	0.21	95
	12	121000	1800		23000	46	140	0.35	110	33	100	0.55	180
	14	151000	1600		26000	66	200	0.67	155	46	140	1	250
	16	200000	1400		39000	102	310	1.5	260	76	230	2.3	410
	20	273000	1000		52000	175	530	3.6	465	129	390	5.7	690

■Rubber Covers

Part Number Type	d	KC	€ Unit Price
CSC (Single Type)	10	32	
	12	35	
	14	40	
	16	46	
	20	58	

■Selecting Method

(1) Conditional Variables (Formula)

Calculation Condition Variable = Rotational Speed (r/min) x Angle (º) x Torque (Nm)

Calculation Condition Variable<Allowable Condition Variable

(2) Rotational Speed (r/min)

Rotational Speed x Angle Factor<Allowable Speed

=Angle Factor Table=

Angle	5° or less	10°	15°	20°	25°	30°
Angle Coefficient	1.00	1.05	1.18	1.43	1.82	2.50

Order Example

Part Number
UNKA16
CSC12

Days to Ship: **8 Days**

Express A: 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

5~9	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Compact AC Geared Motors -Guide-

■Motor Selection

1.Determination of the Driving Facility
Specify the driving facility and overall dimensions, then check required conditions for the driving facility, such as the mass and travel speed of the material to be carried.
2.Calculations for rotational speed and loads
Calculate the load torque, loading moment of inertia and rotational speed of the motor driving shaft.
3.Confirmation of Required Specifications
Evaluate the required specifications, position accuracies, position holding, speed ranges, operating environment, and environmental resistance, etc.
4.Motor Model Selection
Select the models most suitable for the specification requirements.
5.Interim Selection of Motor and Gear Head
Select motor and gearhead candidates based on calculated speeds, load torque, and inertia values.
6.Confirming the Selected Motor
Finalize the selection by confirming all the specifications of the motor and the gearhead adequately satisfy the requirements.

■Model Selection Table

	Induction Motor	Reversible Motor	Variable Speed Motor Unit	Motor with Electromagnetic Brake (1-Phase)	Motor with Electromagnetic Brake (3-Phase)
	P.999		P.1001	P.1005	
Type					
Features	Motor suitable for continuous one direction operation	Motor capable of instantaneous rotation reversals	Motor combined with a speed controller, capable of infinitely variable speeds	Motor integrated with a power-OFF electromagnetic brake, capable of braking and position holding.	
Voltage	Single phase 100V · 200V Three phase 200V · 220V	Single phase 100V · 200V	Single phase 100V · 200V	Single phase 100V · 200V	Three phase 200V · 220V
Continuous Operation	Good	x	Good	x	Good
Instantaneous Direction Reversal Operation	x	Good	x	Good	x
Variable Speed	x	x	Good	x	x
Load Holding	x	x	x	Good	Good

■Selection Example of Motors

- Required specifications
Applications: Conveyer, Operation Condition: Continuous, Voltage: 100VAC, Frequency: 60Hz, Rotational Speed: 25r/min

(1) Motor model selection
A single phase induction motor with leads (PACMS) is selected from the type chart above based on purpose, operational condition and environment, and available voltage.

(2) Interim selection of reduction ratio
Based on the target rotational speed of 25r/min, a reduction ratio 60 is selected to obtain 1500~1550r/min (induction motor rated speed in 60Hz region) divided by 25r/min=60.

(3) Calculating required torque
Approximated load is measured with a spring scale, etc. (e.g. 2.65Nm for instance)
By referring to the data for 60:1 ratio gearhead in "Allowable torque for gearheads" on **P.1000.**
a 25W motor (PMCMS80-W25-V100) and a 60:1 ratio gearhead (PMCMGX80-60) with a 200% margin.

(4) Verifying the motor by actual measurement
Usually when the conveyer starts moving the largest torque is required.
Therefore, points below are to be verified by measuring (*) the minimum starting voltage.
a. Motor Starting Torque> Required Torque (=Minimum Starting Torque)
b. Actual Measurement Rotational Speed> Rated Rotational Speed

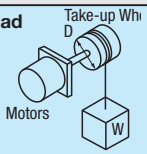
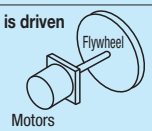
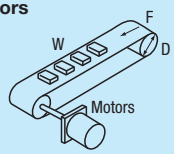
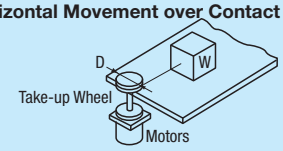
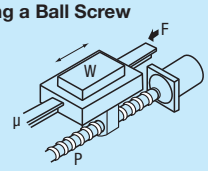
(For example, it is assumed that the actual measurement result of minimum starting voltage is 75V with rotational speed were 1700r/min)
a. About Torque
Starting torque of PACMS80-W25-V100 is 0.16Nm from **P.1000**.
Min. starting torque=Starting torque x (Min. starting voltage/Rated voltage)2=0.16 x (5/100)2=0.09Nm
Starting torque of PACMS80-W25-V100 (0.16Nm) > Min. starting torque (0.09Nm)

b. About Rotational Speed
Rated rotational speed of PACMS80-W25-V100 is 1550rmin from **P.1000**.
Actually Measured Rotational Speed (1700r/min)> Rated Rotational Speed (1550r/min)

From the above, the PACMS80-W25-V100 motor is adequate for the case.

* Measurement method for min. starting voltage
Connect the motor with the load, and connect a variable AC transformer with a voltmeter.
Apply and raise the voltage slowly using a variable AC transformer, and measure the voltage when the equipment starts moving.

■Calculation Formula of Load Torque

	SI Units	Gravitational Metric Units
When lifting a load 	$T=\frac{1}{2}$ D·W[N·m] D : Drum Diameter [m] W : Load [N]	$T=\frac{1}{2}$ D·W[kgf·m] D : Drum Diameter [m] W : Load [N]
When inertial object is driven 	$T=\frac{J}{9.55x10^4}\cdot\frac{N}{t}$ [N-m] N : Rotational Speed [r/min] J : Inertia [kg·cm^2] t : Time [sec.]	$T=\frac{GD^2}{375x104}\cdot\frac{N}{t}$ [kgf·m] N : Rotational Speed [r/min] GD^2: Flywheel Effect [kgf·cm^2] t : Time [sec.]
For Belt Conveyors 	$T=\frac{1}{2}$ D (F+μWg) [N·m] D : Roller Diameter [m] W : Load Mass [kg] g : Gravitational Acceleration [m/s^2] μ : Friction Coefficient F : External Force [N]	$T=\frac{1}{2}$ D (F+μW) [kg·fm] D : Roller Diameter [m] W : Load Weight [kgf] μ : Friction Coefficient F : External Force [kgf]
For Horizontal Movement over Contact Surface 	$T=\frac{1}{2}$ D*μWg [N·m] D : Drum Diameter [m] W : Mass [kg] μ : Friction Coefficient g : Gravitational Acceleration [m/s^2]	$T=\frac{1}{2}$ D*μW[kgf·m] D : Drum Diameter [m] W : Weight [kgf] μ : Friction Coefficient
When Driving a Ball Screw 	$T=\frac{1}{2\pi}$ P (F+μWg) [N˙m] F : External Force [N] W : Work Mass [kg] μ : Friction Coefficient of Sliding Surface [approx. 0.05~0.2] g : Gravitational Acceleration [m/s^2] P : Ball Screw Lead [m]	$T=\frac{1}{2\pi}$ P (F+μW) [kgf·m] F : External Force [N] W : Load Weight [kgf] μ : Friction Coefficient of Sliding Surface [approx. 0.05~0.2] P : Ball Screw Lead [m]

■Allowable Moment of Inertia at Gear Head Output Shaft and Motor Shaft

When a large inertial load is linked to the gear head, a large torque is instantaneously generated when a frequent, intermittent motion starts. When this shock load is too large, the gear head and motor may be damaged.
To select motors, convert inertia of load (JG) applied to gear head output shaft to motor shaft inertia (JM), to be within the values listed below. The inertia varies depending on the type of load. Refer to our website for the inertia of load applied to the gear head output shaft.

- Finding Moment of Inertia Applied to Motor Shaft

$JM=JGx\frac{1}{i^2}$

JG : Gearhead output shaft inertia [kg·cm^2]
JM : Motor shaft inertia [kg·cm^2]
i : Reduction ratio [e.g. i=5 if 1:5]

Part Number Type	A	Output (W)	Allowable Moment of Inertia at Motor Shaft			
			Except Electromagnetic Brake Motor		Motors with Electromagnetic Brake	
			JM (kg-cm2)	GD^{2}M (kgf-cm^2)	JM (kg-cm^2)	GD^{2}M (kgf-cm^2)
	60	6	0.125	0.50	0.08	0.32
	70	15	0.125	0.50	0.158	0.63
	80	25	0.138	0.55	0.178	0.71
	90	40	0.400	1.60	0.735	2.94
	90	60	0.650	2.60	0.875	3.50
		90	0.650	2.60	1.000	4.00

*** The allowable load inertia for the 3-hase motors are for static reversal operation.**

*Inertia moments are expressed with J or GD^2. The J is generally called "inertia" and is equal to physical inertia moments used in SI Units, expressed with the unit kg-m^2. On the other hand, the unit "GD" (gee-dee-square) is typically used in industrial calculations using conventional gravitational units, and is also called a "Flywheel Effects". The units used to express are [kgf-m^2] and/or [kgf-cm^2], and the relationship between "J" and "GD^2" is: J=GD^2/4. The unit for "J" should primarily be expressed with [kg-m^2] from the physics standpoint, but [kg-cm^2] will be used here in order to simplify the calculation steps.

■Allowable Overhanging Load and Allowable Thrust Load on Gear Heads

An overhanging load applied perpendicular to the gearhead output shaft is generated when the gearhead output shaft is linked to the other machine with a chain or belt, but not when it is directly coupled with couplings.
Overhanging loads and thrust loads on output shafts greatly affect the bearing life. Ensure that applied loads do not exceed the allowed values shown below.

Part Number Type	A	Allowable Overhanging Load* N (kgf)	Allowable Thrust Load N (kgf)
(For Motor Output 40W or Less)	60	98 (10)	29 (3)
	70	196 (20)	39 (4)
	80	294 (30)	49 (5)
	90	392 (40)	98 (10)
(For Motor Output 60W or More)	90	588 (60)	147 (15)

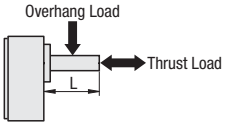
■Service Factor

Generally load is fluctuant. When thinking of service life in such a case, use coefficient called Service Factor according to type of load.
Select Service Factor from the following table, and multiply necessary power to calculate design power.

Load Type	Example of Load	Service Factor		
		5 hours/ day	8 hours/ day	24 hours/ day
Constant Load	Belt Conveyer, Continuous One-way Operation	0.8	1.0	1.5
Light Impacts	Start, Stop, Cam Drive	1.2	1.5	2.0
Moderate Impacts	Instantaneous Direction Reversal, Instantaneous Stop	1.5	2.0	2.5
Heavy Impact	Frequently Occurring Impacts	2.5	3.0	3.5

Refer to our website for technical data on temperature increase of motor.

Overhang Load

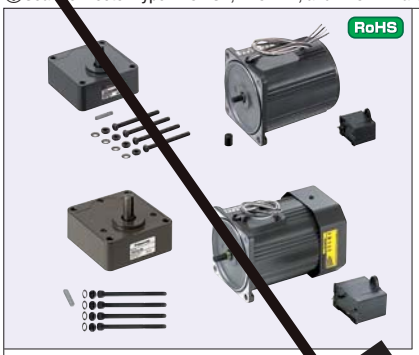


* Applied at L/2 of output shaft

Small Geared Motors / Gearheads

-Induction Motors/Reversible Motors-

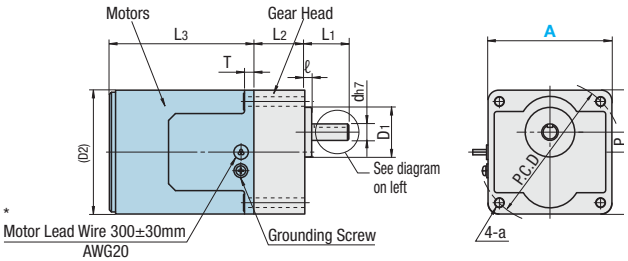
Rated life 10,000hrs. (Induction motors) - 5,000hrs. (Reversible motors) <When used for 8hrs./day in constant load applications such as belt conveyors>
Sealed Connector Type PACMSK, PACMTK, and PACMRK are available on our website. Refer to P.954 for motor brackets. P.1007



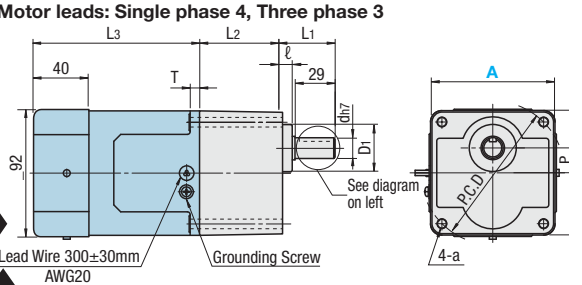
■Induction Motor

(Single-Phase) (Three-Phase)

- 40W or less *Motor leads: Single phase 4, Three phase 3

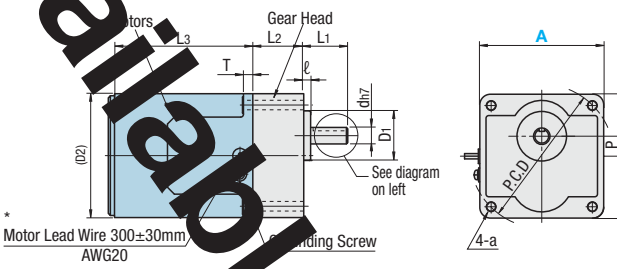


- 60W or less *Motor leads: Single phase 4, Three phase 3

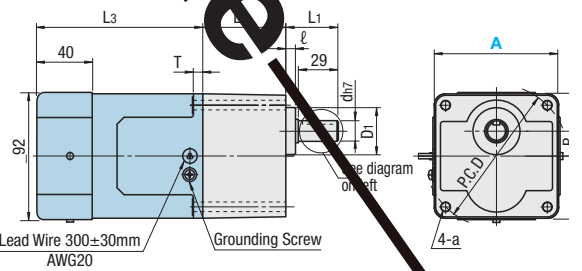


■Reversible Motor

- 40W or less *Motor leads: 3



- 60W or less *Motor leads: 3



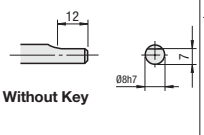
Accessory

Motors	Capacitor (Not for 3-Phase Motor)
Gear Head	Key (Not for A60) Screws, Nuts, Washers (4 each)

■Gear Head

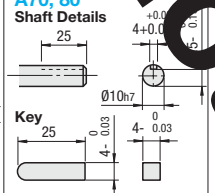
(For Motor Output 40W or Less)
(For Motor Output 60W or More)

A60
Shaft Details

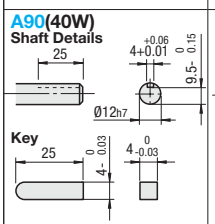


Without Key

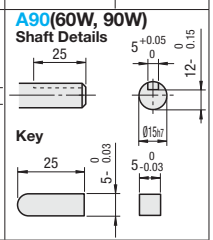
A70, 80
Shaft Details



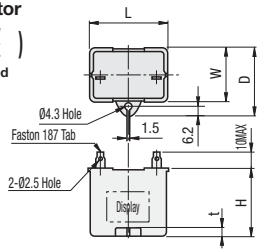
A90(40W)
Shaft Details



A90(60W, 90W)
Shaft Details

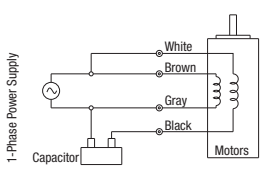
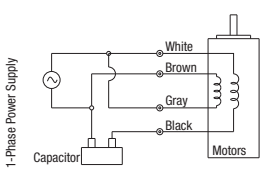
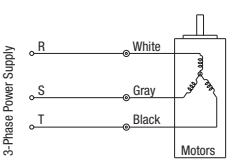
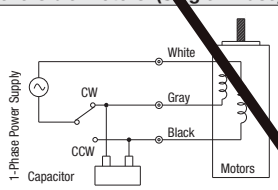


- Capacitor
(Single phase motor Included)



Please read the included manual for transportation, installation, assembly, wiring, operating, and maintenances of motors. Gearhead Lubrication: Apply grease

■Connection Diagram

Induction Motors (Single-Phase)	Induction Motors (Three-Phase)	Reversible Motors (Single-Phase)
 CW (Clockwise)  CCW (Counterclockwise)	 CCW (Counterclockwise) Rotates clockwise if two of the White/ Gray/Black wires are switched.	 CW (Clockwise) Rotates counterclockwise when switched to CCW position.

Not Available

■Features of the Induction Motor
Motor suitable for continuous one direction operations.

■Features of the Reversible Motor
Motor capable of instantaneous rotation reversals.

Price Reduction

CAD Data

■Induction Motors / Reversible Motors

Part Number Type	A	Output (W)	Voltage (V)	d	D_1	L_1	L2**	L_3	ℓ	T	(D_2)	P	a	P.C.D	Mass (kg)** Motors Lead Wire	Motors Connectors	Gear Head	€ Unit Price Induction	Reversible
*	60	6	100	8	25	32	26 (33)	75	6	7	65	10	4.5	70	0.67	-	0.24 (0.3)		
			200																
	70	15	100	10	30		30 (36)	80	5		74	15	5.5	82	1.1	-	0.38 (0.45)		
			200																
	80	25	100				30	85	6		86			94	1.5	1.8	0.6		
			200																
	90	40	100	12	36		37	105	5	7.5	95	18	6.5	104	2.4	2.8	0.8		
			200																
		60	100	15	34	38	60	120	7		-				2.7	3.0	1.4		
			200																
		90	100					135			-				3.2	3.3	1.4		
			200																

*The 3-Phase Motors are also operable in 220 V. ** The values in ( ) are weight and dimensions for gearheads with reduction ratio 30 or higher.

■Induction Motor Specification (Single-Phase) Continuous Rating No. of Poles: 4P

Part Number Type	A	Output (W)	Voltage (V)	50Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	60Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	Capacitor μF
	60	6	100	20	0.21	1250	0.048 (0.4		049 (0.5)	20	0.2	1575	0.038 (0.38)	0.3	0.049 (0.5)	2.5 (200V)
			200	20	0.11	1250	0.048 (0		0.049 (0.5)	20	0.1	1600	0.037 (0.37)	0.15	0.049 (0.5)	0.7 (400V)
	70	15	100	34	0.37	1250	0.11 (1	0.61	7 (0.79)	33	0.33	1575	0.088 (0.89)	0.57	0.077 (0.79)	4 (200V)
			200	33	0.18	1300	0.11 (1.1)	0.3	0.079 (0.79)	34	0.17	1600	0.088 (0.89)	0.29	0.077 (0.79)	1 (400V)
	80	25	100	51	0.55	1250	0.19 (1.9)	3	0.16 (1.6)	49	0.48	1550	0.15 (1.5)	0.94	0.16 (1.6)	6 (200V)
			200	51	0.27	1250	0.19 (1.9)	0	0.16 (1.6)	49	0.24	1575	0.15 (1.5)	0.47	0.16 (1.6)	1.5 (400V)
	90	40	100	78	0.86	1225	0.30 (3.1)	1.5	0.24 (2	76	0.72	1550	0.25 (2.5)	1.5	0.25 (2.5)	10 (200V)
			200	79	0.43	1250	0.30 (3.1)	0.83	0.25	76	0.36	1575	0.24 (2.4)	0.76	0.25 (2.5)	2.5 (400V)
		60	100	118	1.3	1250	0.46 (4.7)	2.2	0.4 (4.2)	117	1.2	1550	0.36 (3.7)	2.2	0.42 (4.3)	15 (210V)
			200	120	0.65	1250	0.46 (4.6)	1.1	0.42 (4.3)	119	0.59	1550	0.36 (3.7)	1.1	0.44 (4.5)	3.8 (400V)
		90	100	153	1.6	1325	0.65 (6.6)	3.3	0.47 (4.8)	160	1.6	1625	0.53 (5.4)	3.0	0.47 (4.8)	25 (200V)
			200	150	0.75	1325	0.62 (6.3)	1.7	0.47 (4.8)	160	0.8	1650	0.51 (5.2)	1.5	0.47 (4.8)	5.8 (400V)

■Capacitor for Motor (Accessory)

<For Induction Motors>

Included with 1-phase motors only.

A	Output (W)	Voltage (V)	L	W	D	H	t
60	6	100	39.5	16	26.5	30.5	4
		200	39.5	16.2	27	27	4
70	15	100	39.5	16	26.5	30.5	4
		200	39.5	16.2	27	27	4
80	25	100	39.5	17.5	28	30.5	4
		200	39.5	22	32.5	32.5	4
90	40	100	39.5	26.7	37	32	4
		200	49.7	24	34.5	34.5	4
	60	100	39.5	26.7	37	41	4
		200	50	26.7	37.5	38	4
	90	100	50.2	31	41	42	5
		200	50	30.5	41	41.5	4

■Induction Motor Specification (Three-Phase) Continuous Rating No. of Poles: 4P

The 3-Phase Motor is also operable in 220 V.

Part Number Type	A	Output (W)	Voltage (V)	Input Voltage (V)	50Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	60Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)
	80	25	200	200	50	0.25	1350	0.18 (1.8)	0.62	0.54 (5.5)	47	0.22	1625	0.15 (1.5)	0.58	0.40 (4.0)
				220	54	0.27	1375	0.18 (1.8)	0.67	0.47 (4.7)	49	0.23	1650	0.15 (1.5)	0.64	0.50 (5.1)
	90	40		200	69	0.31	1350	0.28 (2.9)	0.9	0.72 (7.3)	68	0.29	1625	0.24 (2.4)	0.82	0.51 (5.2)
				220	70	0.32	1375	0.27 (2.8)	1.0	0.72 (7.3)	66	0.28	1675	0.23 (2.3)	0.91	0.63 (6.4)
		60		200	101	0.45	1350	0.42 (4.3)	1.3	1.0 (10)	98	0.4	1625	0.35 (3.6)	1.2	0.69 (7.0)
				220	103	0.46	1375	0.41 (4.2)	1.5	1.2 (12)	98	0.4	1650	0.34 (3.5)	1.3	0.87 (8.8)
		90		200	141	0.62	1350	0.63 (6.4)	2.0	1.6 (16)	137	0.56	1625	0.53 (5.4)	1.8	1.1 (11)
				220	143	0.65	1400	0.62 (6.3)	2.2	2.0 (20)	137	0.57	1650	0.52 (5.3)	2.0	1.4 (14)

*1 Breaking torque values are for reference

*2 "Override" means motor's flywheeling rotation from power-OFF to a stop.

■Reversible Motor Specification (Single-Phase) Rated for 30 minutes No. of Poles: 4P

Part Number Type	A	Output (W)	Voltage (V)	50Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	60Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	Capacitor μF	Braking Torque*1 10^{-2}N·m (kgf-cm)	Override*2 Rotations
	60	6	100	22	0.23	1250	0.047 (0.47)	0.3	0.050 (0.51)	22	0.22	1575	0.037 (0.37)	0.31	0.052 (0.5	5 (2	0.588	5.0
			200	22	0.11	1275	0.045 (0.46)	0.16	0.053 (0.54)	22	0.12	1600	0.036 (0.37)	0.16	0.053 (0.54)	0.5 (400V)	0.588	
	70	15	100	36	0.37	1275	0.11 (1.1)	0.59	0.085 (0.86)	37	0.38	1575	0.088 (0.90)	0.57	0.085 (0.86)	6 (2	1.27	4.5
			200	36	0.19	1275	0.11 (1.1)	0.3	0.078 (0.80)	37	0.19	1575	0.088 (0.90)	0.29	0.078 (0.80)	1.5 (400V)	1.27	
	80	25	100	58	0.59	1275	0.19 (1.9)	1.0	0.17 (1.7)	57	0.59	1575	0.16 (1.6)	1.0	0.17 (1.7)	9.5 (200V)	(0.13	5
			200	57	0.29	1275	0.19 (1.9)	0.52	0.19 (2.0)	57	0.29	1575	0.16 (1.6)	0.50	0.19 (2.0)	2.4 (400V)		
	90	40	100	94	0.96	1200	0.32 (3.3)	1.6	0.27 (2.8)	93	0.93	1525	0.25 (2.6)	1.5	0.26 (2.7)	15 (210V)		
			200	92	0.48	1200	0.32 (3.3)	0.81	0.28 (2.9)	93	0.46	1525	0.25 (2.6)	0.77	0.29 (3.0)	3.8 (400V)		
		60	100	144	1.5	1200	0.46 (4.7)	2.4	0.50 (5.1)	163	1.5	1500	0.39 (4.0)	2.3	0.53 (5.4)	25 (200V)	3.92 (0.40)	6.0
			200	146	0.74	1225	0.46 (4.7)	1.2	0.53 (5.4)	153	0.77	1525	0.39 (4.0)	1.3	0.55 (5.6)	6.2 (375V)		
		90	100	171	1.7	1225	0.70 (7.1)	2.8	0.63 (6.4)	181	1.9	1525	0.56 (5.7)	2.7	0.64 (6.5)	30 (200V)		
			200	184	0.93	1150	0.72 (7.3)	1.4	0.64 (6.5)	170	0.96	1475	0.57 (5.8)	1.4	0.66 (6.7)	7.5 (370V)		

■Capacitor for Motor (Accessory) PACMR

<For Reversible Motors>

A	Output (W)	Voltage (V)	L	W	D	H	t
60	6	100	39.5	16	26.5	30.5	4
		200	39.5	16.2	27	27	4
70	15	100	39.5	17.5	28	30.5	4
		200	39.5	22	32.5	32.5	4
80	25	100	39.5	22	32.5	30.5	4
		200	49.7	24	34.5	34.5	4
90	40	100	39.5	26.7	37	41	4
		200	50	26.7	37.5	38	4
	60	100	50.2	31	41	42	5
		200	50	30.5	41	41.5	4
	90	100	50.2	31	41	42	5
		200	50	34	45	45	6

■Allowable Torque When Gear Head is Mounted

The rotational speeds shown are based on synchronous operation speeds. Generally, the actual speeds may be 2~20% less than indicated depending on load conditions.

Output shaft rotation direction is same as the motor for [ ] cells, others are reverse rotation.

Part Number Type	A	Output (W)	Rotational Speed [r/min] Reduction Ratio		500	300	200	180	150	120	100	90	75	60		50		30	20	15	10
			50Hz		3	5	7.5	-	10	12.5	15	-	20	25	-	30	-	50	75	100	150
			60Hz		3.6	6	9	10	-	15	18	20	-	-	30	-	36	60	90	120	180
	60	6	Allowable Torque Nm (kgf-cm)		0.098 (1.0)	0.16 (1.6)	0.25 (2.5)	0.26 (2.7)	0.33 (3.4)	0.40 (4.1)	0.49 (5.0)	0.53 (5.4)	0.66 (6.7)	0.79 (8.1)	0.79 (8.1)	0.95 (9.7)	0.95 (9.7)	.57 (16)	2.25 (23)	2.45 (25)	2.45 (25)
	70	15			0.24 (2.4)	0.39 (4.0)	0.59 (6.0)	0.66 (6.7)	0.80 (8.2)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.86 (19)	1.86 (19)	2.25 (23)	2.25 (23)	3.8 (39)	4.90 (50)	4.90 (50)	4.90 (50)
	80	25			0.39 (4.0)	0.66 (6.7)	0.98 (10)	1.08 (11)	1.27 (13)	1.57 (16)	1.96 (20)	2.06 (21)	2.55 (26)	3.14 (32)	3.14 (32)	3.82 (39)	3.82 (39)	6.37 (65)	7.84 (80)	7.84 (80)	7.84 (80)
	90	40			0.66 (6.7)	1.08 (11)	1.57 (16)	1.76 (18)	2.25 (23)	2.74 (28)	3.23 (33)	3.53 (36)	4.41 (45)	5.29 (54)	5.29 (54)	6.37 (65)	6.37 (65)	9.80 (100)	9.8 (100)	9.80 (100)	9.80 (100)
		60			0.98 (10)	1.57 (16)	2.35 (24)	2.65 (27)	3.14 (32)	3.92 (40)	4.70 (48)	5.29 (54)	6.27 (64)	7.55 (77)	7.55 (77)	9.11 (93)	9.11 (93)	15.2 (155)	19.6 (200)	19.6 (200)	19.6 (200)
	90	90			1.37 (14)	2.25 (23)	3.43 (35)	3.72 (38)	4.51 (46)	5.68 (58)	6.76 (69)	7.55 (77)	9.02 (92)	10.9 (111)	10.9 (111)	13 (133)	13 (133)	19.6 (200)	19.6 (200)	1 (20	19.6 (200)

■Gear Head (For motor output of 40W or lower)

Part Number Type	A	Reduction Ratio Selectable	€ Unit Price Reduction Ratio 3~18	20~36	50~180
	60	3 3.6 5 6 7.5 9 10 12.5 15 18 20 25 30 36 50 60 75 90 100 120 150 180			
	70				
	80				
	90				

■Gear Head (For motor output of 60W or Higher)

Part Number Type	A	Reduction Ratio Selectable	€ Unit Price Reduction Ratio 3~9	10~18	20~60	75~180
	90	3 3.6 5 6 7.5 9 10 12.5 15 18 20 25 30 36 50 60 75 90 100 120 150 180				

Order Example

- Motor: Part Number - Output (W) - Voltage (V)
  - Output (W): W25, W60
  - Voltage (V): V100, V200
- Gearhead: Part Number - Reduction Ratio
  - Reduction Ratio: 50

Days to Ship 8 Days — Express A 3,00 EUR/piece — P88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Not Available

Compact Geared Motors
-Variable Speed Motor Units-

■Features: Motor speed can be steplessly varied by a speed controller. Suitable when the motor speed must be adjustable. For detailed specifications, see ☞P.1003
Refer to ☞P.1007 for motor brackets. ⓟRated service life 10,000 hours (When used for 8hrs./day at a constant load such as belt conveyor)



■Unit Configuration

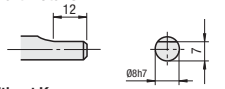
(1) Variable Speed Motor
(2) Speed Controller
(3) Capacitor
(Integrated in the speed controller for 40W or less.)
(4) Motor Extension Cable (1m)

■Gear Head

(For Motor Output 40W or Less)
(For Motor Output 60W or More)

A60

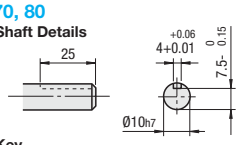
Shaft Details



Without Key

A70, 80

Shaft Details



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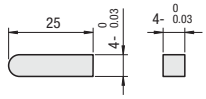
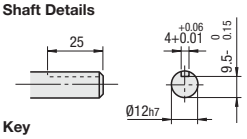


A90(40W)

Shaft Details



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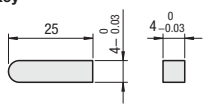
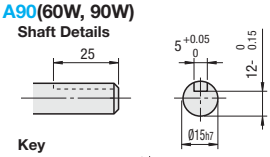


A90(60W, 90W)

Shaft Details



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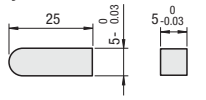
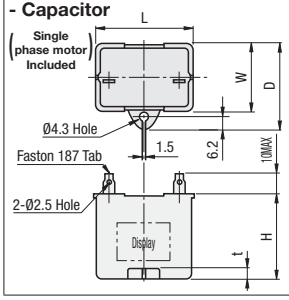


- Capacitor

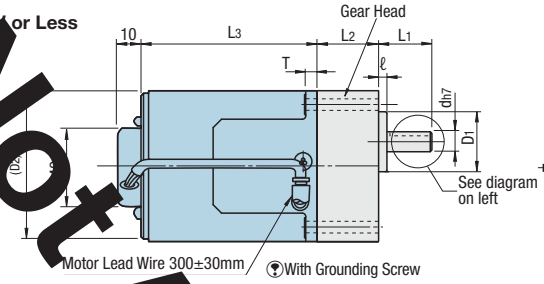


■Variable Speed Motors

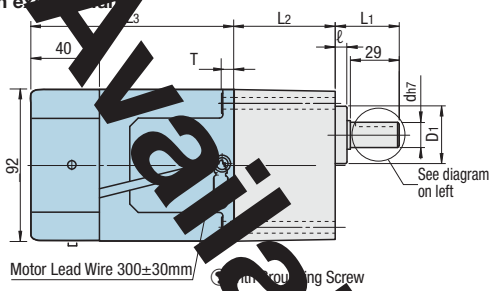
Ⓐ Accessory

Gear Head	Key (Not for A60) Screws, Nuts, Washers (4 each)

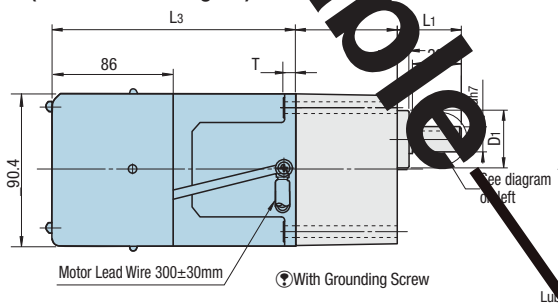
- 40W or Less



- 60W (With ex[illegible])

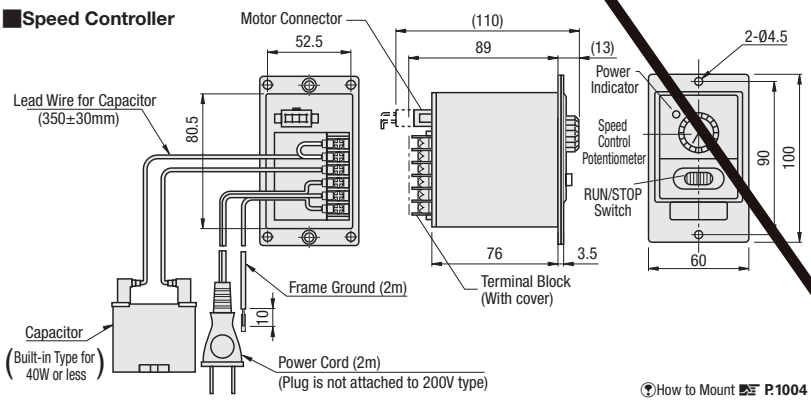


- 90W (With forced cooling fan)



Lubricating Method of Gear Head: Greasing

■Speed Controller



ⓟHow to Mount ☞P.1004

Not Available

Variable Speed Motor Unit

Part Number Type	A	Output (W)	Voltage (V)	d	D_1	L_1	L_2*	L_3	ℓ	T	(D_2)	P	a	P.C.D	Mass (kg)* Motors	Mass (kg)* Gear Head	€ Unit Price
	60	6	100	8	25	32	26 (33)	75	6	7	65	10	4.5	70	0.71	0.24 (0.3)	
			200														
	70	15	100	10	30		30 (36)	80	5		74	15	5.5	82	1.1	0.38 (0.45)	
			200														
	80	25	100				30	85	6		86			94	1.5	0.6	
			200														
	90	40	100	12	36		37	105	5		95	18	6.5	104	2.4	0.8	
			200														
		60	100	15	34	38	60	150	7	7.5	-				2.7	1.4	
			200														
		90	100					172			-				3.5	1.4	
			200														

* The values in ( ) are weight and dimensions for gearheads with reduction ratio 30 or higher.

Variable Speed Motor Unit Specifications Continuous Rating No. of Poles: 4P

Part Number Type	A	Output (W)	Voltage (V)	50Hz Allowable Torque Nm (kgf-cm) When 1200r/min	50Hz Allowable Torque Nm (kgf-cm) When 90r/min	50Hz Starting Current (A)	50Hz Starting Torque Nm (kgf-cm)	60Hz Allowable Torque Nm (kgf-cm) When 1200r/min	60Hz Allowable Torque Nm (kgf-cm) When 90r/min	60Hz Starting Current (A)	60Hz Starting Torque Nm (kgf-cm)	Capacitor μF
	60	6	100	0.032 (0.32)	0.0 (0.1	0.3	0.037 (0.37)	0.032 (0.32)	0.025 (0.25)	0.3	0.037 (0.37)	2.5 (200V)
			200			0.15				0.15		0.6 (400V)
	70	15	100	0.089 (0.90)	(0.29)	0.6	0.068 (0.69)	0.089 (0.90)	0.029 (0.29)	0.56	0.068 (0.69)	5 (200V)
			200			0.3				0.28		1.3 (400V)
	80	25	100	0.14 (1.4)	0.039 (0.39)	1.0	0.16 (1.6)	0.14 (1.4)	0.039 (0.39)	1.0	0.16 (1.6)	8 (200V)
			200			0.5				0.5		2 (400V)
	90	40	100	0.30 (3.0)	0.049 (0	1	0.25 (2.5)	0.24 (2.4)	0.049 (0.5)	1.6	0.25 (2.5)	12 (200V)
			200							0.8		3 (400V)
		60	100	0.43 (4.3)	0.078 (0.79)	2.3	0.46 (4.6)	0.36 (3.6)	0.078 (0.79)	2.4	0.46 (4.6)	20 (200V)
			200			1.2				1.2		5 (400V)
		90	100	0.59 (6.0)	0.25 (2.5)	2.3	0.53 (5.4)	0.54 (5.5)	0.25 (2.5)	2.2	0.56 (5.7)	25 (200V)
			200			1.1	57 (5.8)			1.1	0.59 (6.0)	6.2 (375V)

Capacitor (Included)

A	Output (W)	Voltage (V)	L	W	D	H	
90	60	100	50.2	26.7	37	36	5
		200	50	30.5	41	41.5	
	90	100	50.2	31	41	42	
		200	50	30.5	41	41.5	

Included with 60/90W motors only (Integrated with the speed controllers for 40W or less)

Allowable Torque for Gear Head Mounted (For Variable Speed Motor Unit, available torque is restricted depending on the rotational speed of the motor. For details, P.1003)

Output shaft rotation direction is same as the motor for cells, others are reverse rotation.

Allowable Torque Nm

Part Number Type	A	Output (W)	Rotational Speed (r/min)	Reduction Ratio	3	3.6	5	6	7.5	9	10	12	15	20	25	30	36	50	60	75	90	100	120	150	180
	60	6	1200	50Hz 60Hz	0.077	0.093	0.13	0.15	0.19	0.23	0.25	0.32	0.46	0.64	0.69	0.83	1.16	1.39	1.74	2.09	2.33	2.45	2.45	2.45
			90	50/60Hz	0.06	0.07	0.10	0.12	0.15	0.18	0.20	0.25	0.36	0.50	0.54	0.65	0.90	1.08	1.35	1.62	1.81	2.17	2.45	2.45
	70	15	1200	50Hz 60Hz	0.21	0.25	0.36	0.43	0.54	0.64	0.72	0.86	1.08	1.52	1.92	2.3	3.20	3.84	4.80	4.90	4.90	4.90	4.90	4.90
			90	50/60Hz	0.070	0.084	0.11	0.14	0.17	0.21	0.23	0.28	0.35	0.42	0.58	0.75	1.05	1.26	1.58	1.89	2.11	2.53	3.16	3.79
	80	25	1200	50Hz 60Hz	0.34	0.4	0.56	0.68	0.85	1.02	1.13	1.41	1.7	2.04	2.83	3.4	5.1	6.12	7.65	7.84	7.84	7.84	7.84	7.84
			90	50/60Hz	0.094	0.11	0.15	0.18	0.23	0.28	0.31	0.39	0.47	0.56	0.78	1.01	1.41	1.69	2.12	2.54	2.83	3.39	4.24	5.09
	90	40	1200	50Hz 60Hz	0.72 0.58	0.87 0.69	1.21 0.97	1.45 1.16	1.82 1.45	2.18 1.74	2.43 1.92	3.03 2.42	3.64 2.91	4.37 3.49	6.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80
			90	50/60Hz	0.11	0.14	0.19	0.23	0.29	0.35	0.39	0.49	0.59	0.71	0.99	1.41	2.13	2.67	3.20	3.56	4.27	5.34	6.40	
	90	60	1200	50Hz 60Hz	0.98 0.82	1.17 0.98	1.57 1.31	1.87 1.57	2.35 1.96	2.80 2.35	3.14 2.62	3.92 3.28	4.70 3.92	5.60 4.70	6.27 5.29	7.55 6.32	9.80	12.70	15.20	18.10 15.20	19.60 19.00	19.60	19.60	19.60	19.60	19.60
			90	50/60Hz	0.18	0.22	0.31	0.37	0.47	0.56	0.63	0.70	0.84	1.00	1.12	1.40	1.68	1.81	2.50	3.00	3.75	4.50	5.00	6.00	7.50	9.00
		90	1200	50Hz 60Hz	1.43 1.31	1.71 1.57	2.38 2.18	2.86 2.62	3.57 3.27	4.29 3.93	4.77 4.37	5.36 4.91	6.43 5.89	7.72 7.07	8.58 7.86	10.97 9.82	12.80 11.70	13.70 12.60	19.60 17.60	19.60	19.60	19.60	19.60	19.60	19.60	19.60
			90	50/60Hz	0.60	0.72	1.01	1.21	1.51	1.81	2.02	2.26	2.71	3.25	3.62	4.52	5.43	5.83	8.10	9.72	12.10	14.50	16.20	19.40	19.60	19.60

Gear Head (For motor output of 40W or lower)

Part Number Type	A	Reduction Ratio Selectable	€ Unit Price Reduction Ratio 3~18	20~36	50~180
	60	3 3.6 5 6 7.5 9 10			
	70	12.5 15 18 20 25			
	80	30 36 50 60 75 90			
	90	100 120 150 180			

Gear Head (For motor output of 60W or Higher)

(kgf-cm=Nm x10.1972)

Part Number Type	A	Reduction Ratio Selectable	€ Unit Price Reduction Ratio 3~9	10~18	20~60	75~180
	90	3 3.6 5 6 7.5 9 10 12.5 15 18 20 25 30 36 50 60 75 90 100 120 150 180				

Order Example

- Variable Speed Motor Units: Part Number - Output (W) - Voltage (V) → - W25 - V100
- Gearhead: Part Number - Reduction Ratio → - 50

Days to Ship: 8 Days

Express A 3,00 EUR/piece P.88

A Express Charge of 10 EUR for 3 or more identical pieces

Alterations

Part Number - Output (W) - Output (W) - (MTC) → - W25 - V100 - MTC3

Motor Extension Cable

RoHS



Alteration Code	Length (m)	Price Adder
	2	8,00
	3	9,50
	5	11,50

Please read the included manual for transportation, installation, assembly, wiring, operating, and maintenances of motors.

Not Available

Compact Geared Motors
-Variable Speed Motors Overview - Specifications-

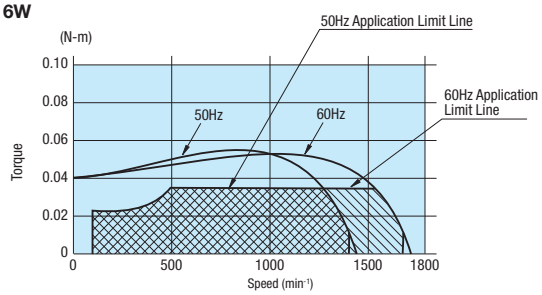
■Overview

Output	6W, 15W, 25W, 40W, 60W, 90W
Rated Voltage	100V, 200V
Operating Voltage Range	±10% (Relative to rated voltage)*
Power Supply Frequency	50Hz/60Hz
Speed Control Range	90~1400min-1 (50Hz) 90~1700min-1 (60Hz)
Speed Fluctuation Rate	5% (Standard Value)
Speed Setting	To be set with a control potentiometer (Analog Setting)
Operating Temp. Range	-10°C~40°C
Storage Temperature Range	-20°C~60°C
Operating Humidity Range	85%RH or less (no condensation)

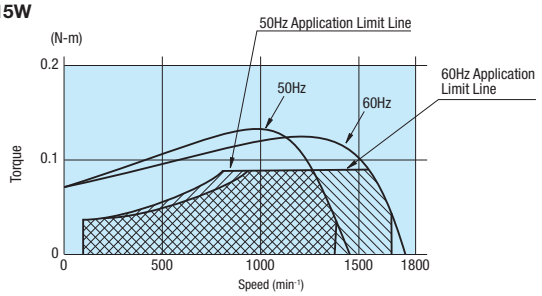
* The voltage ±10% is a range of power fluctuations, and not applicable for continuous usage.

■Speed Torque Curves (Operating Range)

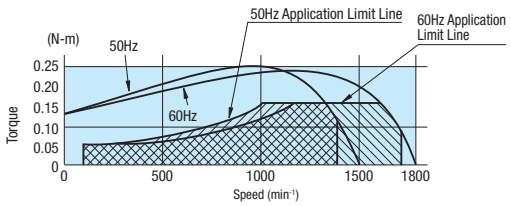
• 6W



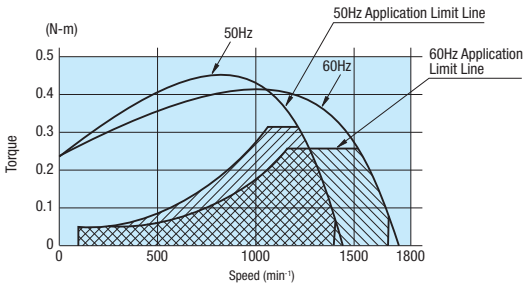
• 15W



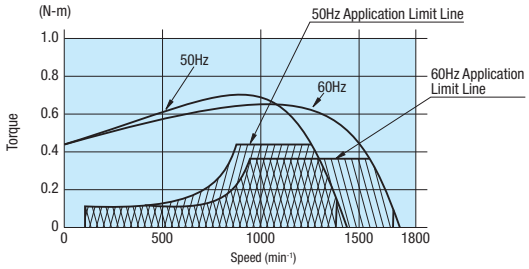
• 25W



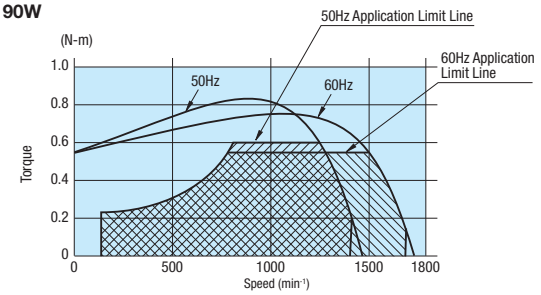
• 40W



• 60W



• 90W



* About "Operational Limit Line"
Indicates the operational limits for Variable Speed Motor Unit. Use Variable Speed Motor Unit within the shaded areas.
If the motor is used beyond the operational limits (unshaded area), temperature may rise causing motor burn-outs.
In addition, the gears may break in gearheads.

■Transmission efficiency of gearheads

Type	Reduction Ratio																				
	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
	81%												75%									
	81%							75%					70%									

■About Allowable Shaft Torque of Gear Head

For Variable Speed Motor Unit, the available torque is restricted, depending on the rotational speed of the motor. (Shaded area of speed torque curves on the left page)
With the following formula, calculate allowable torque of Gear Head when Variable Speed Motor Unit is used, and use within the calculated torque.

$T_P = T_M \times i \times \eta$

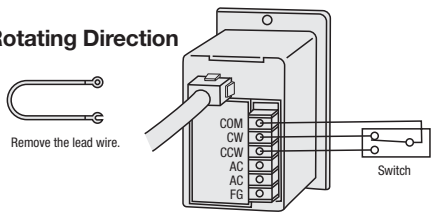
T_P : Allowable shaft torque of gear head to be obtained
T_M : Operation limit of speed vs. torque for Variable Speed Motor Unit
i : Reduction ratio of gear head
η : Transmission efficiency of gearheads (Left Page)

However, the maximum torque is limited to each gearhead's prescribed maximum, ("Allowable Torque for Gear Head Mounted" ☞**P.102**)
and the actual use must be kept below such given maximum values. ☞**P.100**

(Example 1) When using a 90W motor with 50:1 ratio at 500min^{-1}
The TM=0.3Nm as can be observed from the Speed/Torque Graph on the left page, and the transmission efficiency of the gearhead η=70% from the chart.
Therefore, T_P=0.3x50x0.7=10.5Nm

(Example 2) When using a 40W motor with 150:1 ratio at 1000min^{-1} (60Hz)
TM=0.16Nm and η=75%, so TP=0.16x150x0.75=18Nm, but the allowable max. torque for 150:1 ratio gearhead output shaft for 40W motor is 9.80Nm from the table on **P.1002**, so the load torque must be kept under 9.8Nm.
P.1002

■Changing Rotating Direction



Switch Specification
- Single Pole Double Throw (SPDT) ON-OFF-ON - Power source 100V, 5A-200VAC or more - Power source 200V, 3A-400VAC or more

From the view of the motor's output shaft	
Clockwise	Connect "COM" and "CW"
Counterclockwise	Connect "COM" and "CCW"

- Unidirectional operation

Rotation direction is changed by switching the jumper wire connected to the terminal block on the back of the controller.
Connect the COM jumper to either CW or CCW.

Caution

If the motor is combined with the gear head, the rotating direction of the gear head output shaft may be reverse of the motor shaft, depending on the reduction gear ratio.

- Forward/Reverse Operation

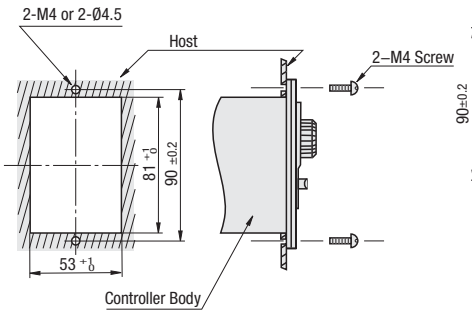
Bidirectional operation can be facilitated by adding a switch between CW and CCW terminals.

Caution

Switch the motor directions after the motor stops. Trouble may arise if switched while the motor is running.

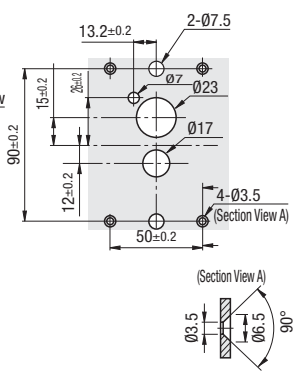
■Installation Method of Speed Controller

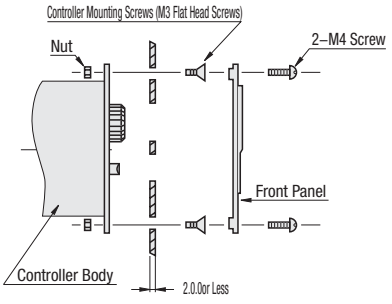
I. Installing on a square opening



(1) Cut a square opening on the install location.
(2) Combine the controller and the front panel, and mount with M4 screws.

II. Installing without a square opening



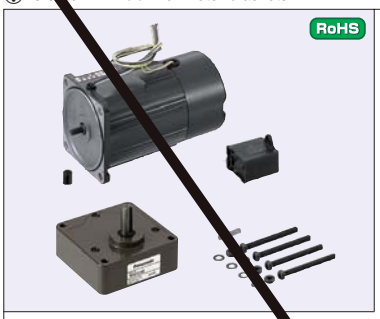


(1) Drill holes on the board.
(2) Remove the front panel from the controller body.
(3) Mount the controller body with M3 flathead screws and nuts.
(4) Mount the front panel with M4 screws and nuts.
The thickness of the board must be 2 mm or less.

Small Geared Motors / Gearheads

-Motors with Electromagnetic Brake-

■Features: Motor with an integrated electromagnetic brake, capable of high braking and position holding abilities.
☞Refer to P.1007 for motor brackets.



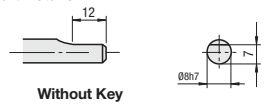
RoHS

■Gear Head

(For Motor Output 40W or Less)
(For Motor Output 60W or More)

A60

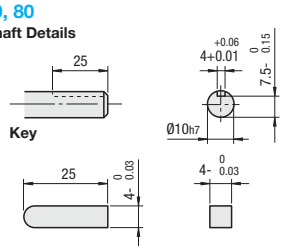
Shaft Details



Without Key

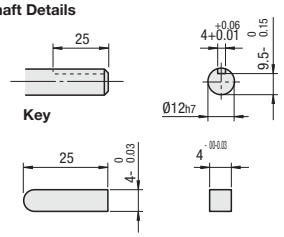
A70, 80

Shaft Details



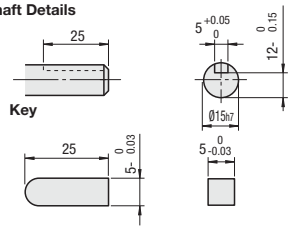
A90 (40W)

Shaft Details



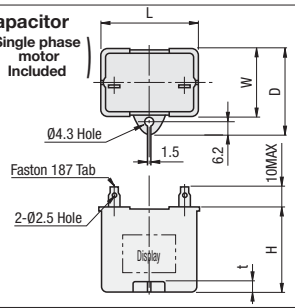
A90 (60W, 90W)

Shaft Details



- Capacitor

(Single phase motor Included)



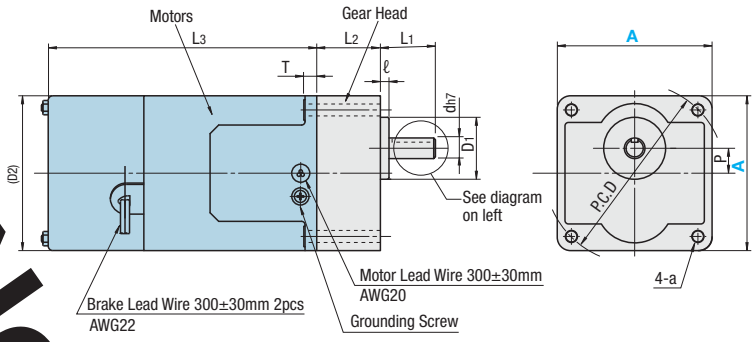
■Motors with Electromagnetic Brake

(Single-Phase) (Three-Phase)

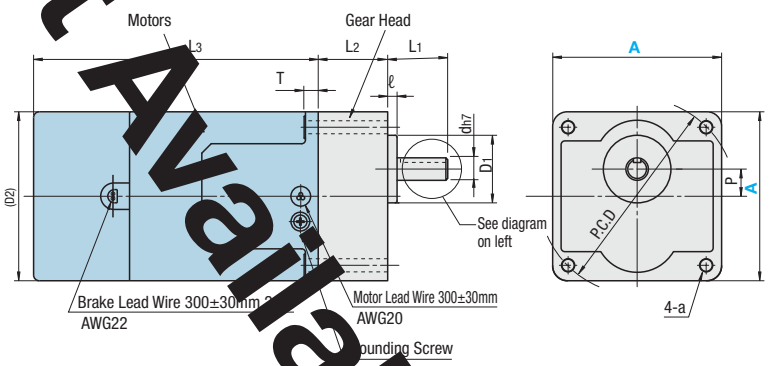
A Accessory

Motors	Capacitor (Not for 3-Phase Motor)
Gear Head	Key (Not for A60) Screws, Nuts, Washers (4 each)

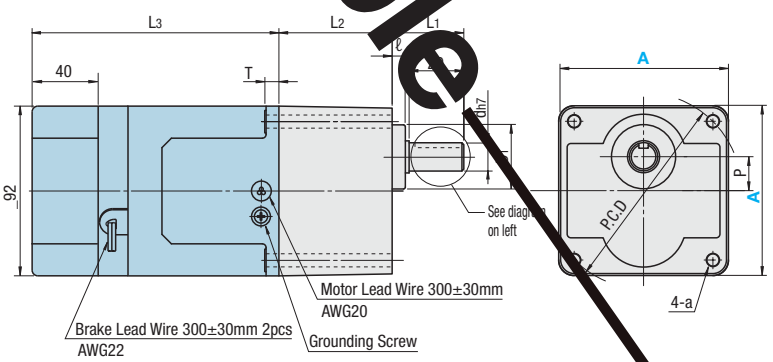
- 15W or less *Motor leads: 3, Brake leads: 2



- 25W / 40W



- 60W or More



Lubricating Method of Gear Head: Greasing

☞Please read the included manual for transportation, installation, assembly, wiring, operating, and maintenances of motors.

Not Available

■Motors with Electromagnetic Brake

Part Number Type	A	Output (W)	Voltage (V)	d	D1	L1	L2**	L3	ℓ	T	(D2)	P	a	P.C.D	Mass (kg)** Motors	Gear Head	€ Unit Price
	60	6	100	8	25	32	26 (33)	114.5	6	7	65	10	4.5	70	0.85	0.24 (0.3)	
			200														
	70	15	100	10	30		30 (36)	119	5		74	15	5.5	82	1.1	0.38 (0.45)	
			200														
	80	25	100				30	128	6		86			94	1.8	0.6	
			200														
*	90	40	100	12	36		37	151	5	7.5	95	18	6.5	104	2.8	0.8	
			200														
		60	100	15	34	38	60	168.5	7		92				3.1	1.4	
			200														
		90	100					183.5			92				3.7	1.4	
			200														

*The 3-Phase Motors are also operable in 220 V.

** The values in ( ) are weight and dimensions for gearheads with reduction ratio 30 or higher.

■Motor with Electromagnetic Brake (1-Phase) Rated for 30 minutes, No. of Poles: 4P

Part Number Type	A	Output (W)	Voltage (V)	50Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	60Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	Braking Input (W)	Braking Current (A)	Braking Static Friction Torque Nm (kgf-cm)	Capacitance µF
	60	6	100	22	0.22	1300	0.044 (0.45)		0.056 (0.57)	22	0.22	1600	0.035 (0.36)	0.32	0.056 (0.57)	4	0.04	0.049 (0.5)	3.5 (200V)
			200	25	0.13	1300	0.044 (0.45)	0.17	0.056 (0.57)	25	0.13	1600	0.035 (0.36)	0.18	0.056 (0.57)	4	0.02	0.049 (0.5)	0.9 (400V)
	70	15	100	36	0.36	1300	0.11 (1.1)	0.5	0.10 (1.0)	38	0.38	1600	0.088 (0.90)	0.57	0.10 (1.0)	4	0.05	0.078 (0.8)	6 (200V)
			200	38	0.18	1300	0.110 (1.10)	0.28	0.10 (1.0)	39	0.19	1600	0.088 (0.90)	0.28	0.10 (1.0)	4	0.03	0.078 (0.8)	1.5 (400V)
	80	25	100	56	0.57	1300	0.19 (1.9)	1.0	0.20 (2.0)	56	0.56	1600	0.16 (1.6)	1.0	0.20 (2.0)	6	0.06	0.10 (1.0)	9.5 (200V)
			200	56	0.29	1300	0.19 (1.9)	0.51	0.20 (2.0)	56	0.28	1600	0.16 (1.6)	0.51	0.20 (2.0)	6	0.03	0.10 (1.0)	2.4 (400V)
	90	40	100	79	0.81	1300	0.29 (3.0)	1.7	0.32 (3.3)	80	0.81	1625	0.24 (2.4)	1.6	0.32 (3.3)	7	0.09	0.20 (2.0)	15 (210V)
			200	79	0.4	1300	0.29 (3.0)	0.85	0.32 (3.3)	80	0.41	1625	0.24 (2.4)	0.78	0.32 (3.3)	7	0.05	0.20 (2.0)	3.8 (400V)
		60	100	127	1.3	1275	0.45 (4.6)	2.4	0.57 (5.8)	133	1.3	1600	0.36 (3.7)	2.4	0.57 (5.8)	7	0.09	0.39 (4.0)	25 (200V)
			200	127	0.65	1275	0.45 (4.6)	1.2	0.57 (5.8)	133	0.65	1600	0.36 (3.7)	1.2	0.57 (5.8)	7	0.05	0.39 (4.0)	6.2 (375V)
		90	100	171	1.7	1225	0.70 (7.1)	2.8	0.68 (6.9)	181	1.69	1525	0.56 (5.7)	2.7	0.70 (7.1)	7	0.09	0.39 (4.0)	30 (200V)
			200	171	0.93	1225	0.70 (7.1)	1.4	0.68 (6.9)	181	0.96	1525	0.56 (5.7)	1.4	0.70 (7.1)	7	0.05	0.39 (4.0)	7.5 (370V)

■Motor with Electromagnetic Brake (3-Phase) Continuous Rating No. of Poles: 4P

The 3-Phase Motor is also operable in 220 V.

Part Number Type	A	Output (W)	Voltage (V)	Input Voltage (V)	50Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	60Hz Ratings Input (W)	Current (A)	Rotational Speed r/min	Torque Nm (kgf-cm)	Starting Current (A)	Starting Torque Nm (kgf-cm)	Braking Input (W)	Braking Current (A)	Braking Static Friction Torque Nm (kgf-cm)
	80	25	200	200	50	0.25	1350	0.18 (1.8)	0.62	0.54 (5.5)	47	0.2	1625	0.15 (1.5)	0.58	0.40 (4.0)	6	0.03	0.10 (1.0)
				220	54	0.27	1375	0.18 (1.8)	0.67	0.66 (6.7)	47	0.2	1650	0.15 (1.5)	0.64	0.50 (5.1)	6	0.03	0.10 (1.0)
	90	40		200	69	0.31	1350	0.28 (2.9)	0.90	0.72 (7.3)	68		1625	0.24 (2.4)	0.82	0.51 (5.2)	7	0.05	0.20 (2.0)
				220	70	0.32	1375	0.27 (2.8)	1.00	0.88 (8.9)	9	28	1675	0.23 (2.3)	0.91	0.63 (6.4)	7	0.05	0.20 (2.0)
		60		200	101	0.45	1350	0.42 (4.3)	1.3	1.0 (10)	96	0.4	1650	0.35 (3.6)	1.2	0.69 (7.0)	7	0.05	0.39 (4.0)
				220	103	0.46	1375	0.41 (4.2)	1.5	1.2 (12)	98	0.5	1650	0.34 (3.5)	1.3	0.87 (8.8)	7	0.05	0.39 (4.0)
		90		200	141	0.62	1350	0.63 (6.4)	2.0	1.6 (16)	137	0.59	1625	0.53 (5.4)	1.8	1.1 (11)	7	0.05	0.39 (4.0)
				220	143	0.65	1400	0.62 (6.3)	2.2	2.0 (20)	137	0.5	1650	0.52 (5.3)	2.0	1.4 (14)	7	0.05	0.39 (4.0)

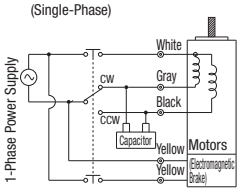
■Capacitor (Included)

Included with 1-phase motors only.

A	Output (W)	Voltage (V)	L	W	D	H	t
60	6	100	39.5	16	26.5	30.5	4
		200	39.5	16.2	27	27	4
70	15	100	39.5	17.5	28	30.5	4
		200	39.5	22	32.5	32.5	4
80	25	100	39.5	22	32.5	30.5	4
		200	49.7	24	34.5	34.5	4
90	40	100	39.5	26.7	37	41	4
		200	50	26.7	37.5	38	4
	60	100	50.2	31	41	42	5
		200	50	30.5	41	41.5	4
	90	100	50.2	31	41	42	5
		200	50	34	45	45	6

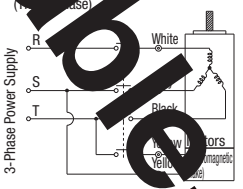
■Connection Diagram

(Single-Phase)



CW (Clockwise)

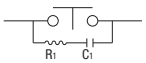
When switched to CCW side, rotates counterclockwise.



CCW (Counterclockwise)

Rotates clockwise if two of the White, Gray/Black wires are switched.

Provide a spark suppression circuit (R_1+C_1) between the contacts.



R_1=10~200Ω (1/4W or more)
C_1=0.1~0.33µF
(AC125V or AC250V)

■Allowable Torque When Gear Head is Mounted

The rotational speeds shown are based on synchronous operation speeds. Generally, the actual speeds may be 2~20% less than indicated depending on load conditions.
Output shaft rotation direction is same as the motor for cells, others are reverse rotation.

Part Number Type	A	Output (W)	Rotational Speed [r/min] Reduction Ratio	50Hz	60Hz	500	300	200	180	150	120	100	90	75	60	50	30	20	15	10
				3	3.6	5	7.5	-	10	12.5	15	-	20	25	-	30	-	50	75	100	150
				3.6	6	9	10	-	15	18	20	-	-	30	-	36	60	90	120	180
	60	6	Allowable Torque Nm (kgf-cm)	0.098 (1.0)	0.16 (1.6)	0.25 (2.5)	0.26 (2.7)	0.33 (3.4)	0.40 (4.1)	0.49 (5.0)	0.53 (5.4)	0.66 (6.7)	0.79 (8.1)	0.79 (8.1)	0.95 (9.7)	0.95 (9.7)	1.57 (16)	2.25 (23)	2.45 (25)	2.45 (25)
	70	15		0.24 (2.4)	0.39 (4.0)	0.59 (6.0)	0.66 (6.7)	0.80 (8.2)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.86 (19)	1.86 (19)	2.25 (23)	2.25 (23)	[illegible]	4.90 (50)	4.90 (50)	4.90 (50)
	80	25		0.39 (4.0)	0.66 (6.7)	0.98 (10)	1.08 (11)	1.27 (13)	1.57 (16)	1.96 (20)	2.06 (21)	2.55 (26)	3.14 (32)	3.14 (32)	3.82 (39)	3.82 (39)	6.37 (65)	7.84 (80)	7.84 (80)	7.84 (80)
	90	40		0.66 (6.7)	1.08 (11)	1.57 (16)	1.76 (18)	2.25 (23)	2.74 (28)	3.23 (33)	3.53 (36)	4.41 (45)	5.29 (54)	5.29 (54)	6.37 (65)	6.37 (65)	9.80 (100)	[illegible]	9.80 (100)	9.80 (100)
		60		0.98 (10)	1.57 (16)	2.35 (24)	2.65 (27)	3.14 (32)	3.92 (40)	4.70 (48)	5.29 (54)	6.27 (64)	7.55 (77)	7.55 (77)	9.11 (93)	9.11 (93)	15.2 (155)	19.6 (200)	19.6 (200)	19.6 (200)
		90		1.37 (14)	2.25 (23)	3.43 (35)	3.72 (38)	4.51 (46)	5.68 (58)	6.76 (69)	7.55 (77)	9.02 (92)	10.9 (111)	10.9 (111)	13 (133)	13 (133)	19.6 (200)	19.6 (200)	[illegible]	19.6 (200)

■Gear Head (For motor output of 40W or lower)

Part Number Type	A	Reduction Ratio Selectable	€ Unit Price Reduction Ratio 3~18	20~36	50~180
	60	3 3.6 5 6 7.5 9 10			
	70	12.5 15 18 20 25			
	80	30 36 50 60 75 90			
	90	100 120 150 180			

■Gear Head (For motor output of 60W or Higher)

Part Number Type	A	Reduction Ratio Selectable	€ Unit Price Reduction Ratio 3~9	10~18	20~60	75~180
	90	3 3.6 5 6 7.5 9 10 12.5 15 18 20 25 30 36 50 60 75 90 100 120 150 180				

Order Example

- Motor with Electromagnetic Brake: Part Number - Output (W) - Voltage (V) — - W25 - V100
- Gearhead: Part Number - Reduction Ratio — - 50

Days to Ship: 8 Days — Express A: 6,00 EUR/piece

P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Not Available

Small Geared Motors / Small Geared Motor Mounting Plates (Alterations)

- Overview of Electromagnetic Brake Motors-

Not Available

■Features

- Power-OFF brake used will positively brake and hold the load even the power supply is turned OFF.
- The override amount for motor alone is 2~4 rotations.
- Simple switching enables up to 6 stops per minute. (Allow 3 seconds or more for each stopped state)
- The brake integrates a rectifier circuit and an AC power can be directly connected as with the motor.
- The life of brake is 1 million cycles at allowed inertia rating.

■Response Characteristics

- Electromagnetic brake motors have response characteristics such as Rise Time · Stopping Time, and Override. All of these parameters are affected by the load inertia.
- Electromagnetic brake motor's response characteristics are affected by the following three points.
  1) Motor's average acceleration torque
  2) Average braking torque
  3) Load torque and inertia
  Careful evaluation is needed on the load inertia since it varies greatly depending on the mating system.

• Characteristic Chart

Part Number		Output (W)	Frequency	Response Characteristic (Motor Unit)			Average Acceleration Torque		Inertia of the Motor		Braking Torque		Allowable Load Inertia	
Type	A			Rise Time (sec)	Stopping Time (sec)	Override (Rotation)	(Nm)	(kgf-cm)	J (kg-cm²)	GD (kgf-cm²)	(Nm)	(kgf-cm)	J (kg-cm²)	GD (kgf-cm²)
	60	6	50Hz	0.07	0.08	1.5	0.0637	0.65	0.201	0.805	0.049	0.5	0.080	0.32
			60Hz	0.09	0.09	1.6	0.0647	0.66						
	70	15	50Hz	0.07	0.05	1.5	0.120	1.22	0.329	1.316	0.078	0.8	0.158	0.63
			60Hz	0.085	0.07	1.5	0.114	1.16						
	80	25	50Hz	0.1	0.13	2.2	0.235	2.40	0.603	2.411	0.10	1.0	0.178	0.71
			60Hz	0.1	0.14	2.3	0.222	2.27						
	90	40	50Hz	0.09	0.14	3	0.439	4.48	1.362	5.446	0.20	2.0	0.735	2.94
			60Hz	0.1	0.15	3.5	0.420	4.29						
		60	50Hz	0.1	0.11	2.5	0.639	6.52	1.862	7.447	0.39	4.0	0.875	3.5
			60Hz	0.1	0.12	2.9	0.615	6.28						
		90	50Hz	0.1	0.13	2.8	0.859	8.77	2.353	9.413	0.39	4.0	1	4
			60Hz	0.075	0.1	3.2	0.804	8.20						
	80	25	50Hz	0.05	0.1	2.2	0.388	3.96	0.603	2.411	0.10	1.0	0.178	0.71
			60Hz	0.06	0.1	2.3	0.306	3.12						
	90	40	50Hz	0.05	0.15	3.5	0.667	6.81	1.362	5.446	0.20	2.0	0.735	2.94
			60Hz	0.06	0.1	4	0.513	5.23						
		60	50Hz	0.06	0.1	3	1.031	10.52	1.862	7.447	0.39	4.0	0.875	3.5
			60Hz	0.065	0.13	3.4	0.767	7.83						
		90	50Hz	0.06	0.14	3.3	1.429	14.58	2.286	9.143	0.39	4.0	1	4
			60Hz	0.065	0.15	3.4	1.065	10.87						

• Calculation for Rise Time

<SI Units>

$$TS=\frac{J_M+J_L}{9.55\times104}\times\frac{n}{T_A-T_L}$$

Ts : Rise Time (sec)
TA : Average Acceleration Torque (Nm)
TL : Load Torque (Nm)
JM : Motor Inertia (kg-cm²)
JL : Load Inertia (kg-cm²)
n : Motor Rotational Speed (r/min)

<Gravitational Metric Units>

$$TS=\frac{GD^2M+GD^2L}{37500}\times\frac{n}{T_A-T_L}$$

Ts : Rise Time (sec)
TA : Average Acceleration Torque (kgf-cm)
TL : Load Torque (kgf-cm)
GD²M: Rotor GD2 (kgf-cm²)
GD²L : Load GD2 (kgf-cm²)
n : Motor Rotational Speed (r/min)

• Calculations for Stopping Time

<SI Units>

Tb=Ta

$$Tb_1=\frac{J_M+J_L}{9.55\times}\times\frac{n}{T_{bB}}$$

Tb : Stop Time (sec.)
Ta : Armature Attraction Time
Independent Off Circuit Approx. 0.02 second
Common Off Circuit Approx. 0.1 second
Tb1 : Braking Time (sec)
TbB : Braking Torque (Nm)

<Gravitational Metric Units>

Tb=Ta+Tb1

$$Tb1=\frac{GD^2M+GD^2L}{37500}\times\frac{n}{T_{bB}}$$

Tb : Stop Time (sec.)
Ta : Armature Attraction Time
Independent Off Circuit Approx. 0.02 second
Common Off Circuit Approx. 0.1 second
Tb1 : Braking Time (sec)
TbB : Braking Torque (kgf-cm)

• Time to stop and "Override"

"Override" is the number of free shaft rotations after a STOP signal is given, and calculated from the equation below considering the response time constant of the brake armature.

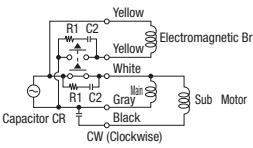
$$nbB=a+\frac{n}{120}\times Tb_1$$

nbB : Override (rotations) for a Motor with Electromagnetic Brake
a : Delay Time Constant
Independent Off Circuit: 0.43 (50Hz), 0.53 (60Hz)
Common Off Circuit: 2.15 (50Hz), 2.65 (60Hz)
n : Motor Rotations
Tb1 : Braking time

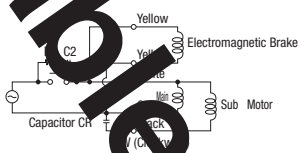
• Independent OFF and Common OFF circuits

Electromagnetic brake motor's stopping time constant will vary depending on where the switch is placed within the circuit.
With the Common OFF circuit, the motor coil and the brake coil form a closed loop circuit, and the residual energy from the motor will affect the brake coil time constant.
As a result, the brake armature release is delayed and the motor will require more time to stop. For applications requiring short stopping performance, use the Independent OFF circuit.

- Independent OFF Circuit



- Common OFF Circuit

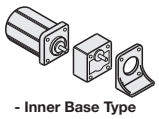


■Alteration Compact Geared Motor Brackets

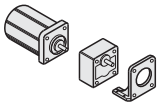


RoHS

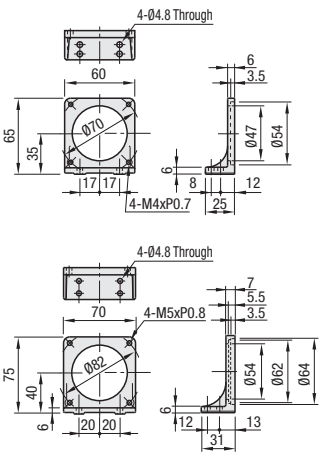
■Example of Installation - Outer Base Type



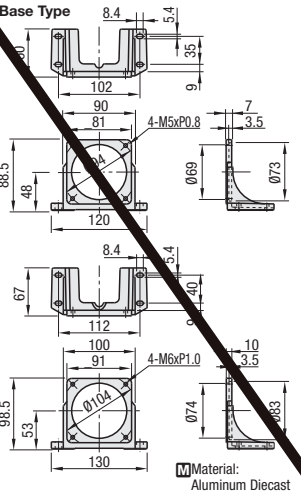
- Inner Base Type



■Outer Base Type



■Inner Base Type



M Material: Aluminum Diecast

Alterations

Part Number - Output (W) - Voltage (V) - (MTB, MTR)
- W25 - V100 - MTB80

8 Days — Express A
- Conforms to Geared Motors · Gearheads

Alteration Code	Price Adder
	8,00
	8,50
	9,00

Alteration Code	Price Adder
	9,50
	9,00
	9,50

Medium Geared Motors

CAD Data

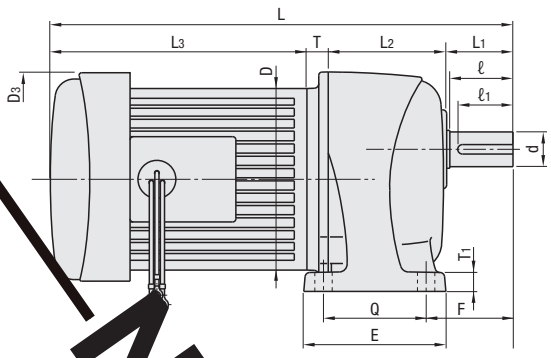
■Features: Long life and low noise with a helical gear design. Maintenance free and mounting orientation free.

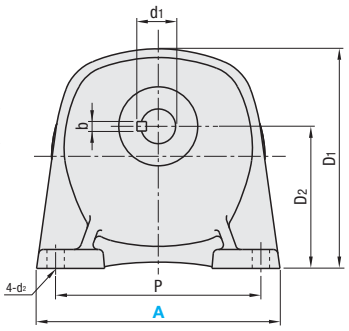
■Medium Geared Motors



RoHS

Terminal box included with 0.75kW motor only.





Part Number Type	A	Output (kW)	Reduction Ratio		Voltage (V)	50Hz Ratings Current (A)	50Hz Ratings Rotational Speed rpm	50Hz Torque Nm (kgf-m)	50Hz Output Shaft Rotational Speed rpm	60Hz Ratings Current (A)	60Hz Ratings Rotational Speed rpm	60Hz Torque Nm (kgf-m)	60Hz Output Shaft Rotational Speed rpm	€ Unit Price 1~3 pcs.
	18	0.1	10	10/1	Three phase 200	0.61	1410	7.2 (0.62)	150	0.54	1700	5 (0.51)	180	
			15	15/1		0.61	1420	11 (0.93)	100	0.54	1700	7.5 (0.77)	120	
			20	20/1		0.61	1420	12 (1.2)	75	0.54	1700	9.8 (1)	90	
			40	40/1		0.61	1420	24 (2.4)	37.5	0.54	1700	19.6 (2)	45	
			50	50/1		0.61	1420	29 (3)	30	0.54	1700	24.5 (2.5)	36	
		0.2	5	5/1		1.1	1420	14.7 (1.5)	300	1.00	1710	5 (0.51)	360	
			10	10/1		1.1	1420	11.2	150	1.00	1710	9.8 (1)	180	
			15	15/1		1.1	1420	18.6	100	1.00	1710	14.7 (1.5)	120	
			20	20/1		1.1	1420	24.5	75	1.00	1710	20.6 (2.1)	90	
	22	0.1	80	80/1		0.61	1420	47 (4.8)	18.8	0.54	1700	39.2 (4)	22.5	
			100	100/1		0.61	1420	59 (6)	15	0.54	1700	49 (5)	18	
		0.2	30	30/1		1.1	1420	36.3 (3.7)	50	1.00	1710	30.4 (3.1)	60	
			40	40/1		1.1	1420	47 (4.8)	37.5	1.00	1710	39.2 (4)	45	
			50	50/1		1.1	1420	58.8 (6)	30	1.00	1710	49 (5)	36	
			80	80/1		1.1	1420	94.1 (9.6)	18.8	1.00	1710	78.4 (8)	22.5	
			100	100/1		1.1	1420	97 (9.9)	15	1.00	1710	80.4 (8.2)	18	
		0.4	5	5/1		2.1	1410	12 (1.2)	300	1.80	1690	10 (1)	360	
			10	10/1		2.1	1410	25 (2.5)	150	1.80	1690	21 (2.1)	180	
			15	15/1		2.1	1410	36 (3.7)	100	1.80	1690	30 (3.1)	120	
			20	20/1		2.1	1410	48 (4.9)	75	1.80	1690	40 (4.1)	90	
	28	0.2	100	100/1		1.1	1420	117 (11.9)	15	1.00	1710	98 (10)	18	
			120	120/1		1.1	1420	140 (14.3)	12.5	1.00	1710	117 (11.9)	15	
			200	200/1		1.1	1420	234 (23.9)	7.5	1.00	1710	195 (19.9)	9	
		0.4	30	30/1		2.1	1410	73 (7.4)	50	1.80	1690	61 (6.2)	60	
			40	40/1		2.1	1410	94 (9.6)	37.5	1.80	1690	78 (8)	45	
			50	50/1		2.1	1410	117 (11.9)	30	1.80	1690	98 (10)	36	
			60	60/1		2.1	1410	140 (14.3)	25	1.80	1690	117 (11.9)	30	
			80	80/1		2.1	1410	187 (19.1)	18.8	1.80	1690	156 (15.9)	22.5	
			100	100/1		2.1	1410	193 (19.7)	15	1.80	1690	161 (16.4)	18	
		*0.75	10	10/1		3.7	1430	45 (4.6)	150	3.30	1720	38 (3.9)	180	
			15	15/1		3.7	1430	68 (6.9)	100	3.30	1720	57 (5.8)	120	
			20	20/1		3.7	1430	91 (9.3)	75	3.30	1720	75 (7.7)	90	
	32	0.4	120	120/1		2.1	1410	281 (28.7)	12.5	1.80	1690	234 (23.9)	15	
			200	200/1		2.1	1410	431 (44)	7.5	1.80	1690	390 (39.8)	9	
		*0.75	30	30/1		3.7	1430	136 (13.9)	50	3.30	1720	114 (11.6)	60	
			40	40/1		3.7	1430	175 (17.9)	37.5	3.30	1720	146 (14.9)	45	
			50	50/1		3.7	1430	220 (22.4)	30	3.30	1720	183 (18.7)	36	
			60	60/1		3.7	1430	264 (26.9)	25	3.30	1720	220 (22.4)	30	
			80	80/1		3.7	1430	351 (35.8)	18.8	3.30	1720	293 (29.9)	22.5	
			100	100/1		3.7	1430	362 (36.9)	15	3.30	1720	302 (30.8)	18	

*Terminal box included with 0.75kW motor only.

For orders larger than indicated quantity, please request a quotation.

Part Number Type	A	Output (kW)	D	D1	D2	D3	d	d1	d2	b	L	L1	L2	L3	ℓ	ℓ1	T	T1	E	F	Q	A	P	Mass (Kg)
	18	0.1	115	131	85	-	18	20.5	9	6	221	32	58	116.5	30	27	14.5	10	64	45	40	134	110	6.0
		0.2	115	136	85	135	18				267	32	58	162.5	30	27	14.5	10	64	45	40	134	110	6.5
	22	0.1	115	139	90	-	22	24.5	11	6	247	42	75	116.5	40	35	13.5	12	90	55	65	154	130	7.0
		0.2	115	139	90	135	22				293	42	75	162.5	40	35	13.5	12	90	55	65	154	130	7.5
		0.4	128	141.5	90	141	22				314	42	75	180.5	40	35	16.5	12	90	55	65	154	130	9.5
	28	0.2	115	167	110	135	28	31	11	8	306	47	89	162.5	45	40	7.5	15	125	65	90	175	140	9.5
		0.4	128	167	110	141	28				330	47	89	180.5	45	40	13.5	15	125	65	90	175	140	11.5
		0.75	160	167.5	110	162	28				350.5	47	89	199.5	45	40	15.0	15	125	65	90	175	140	15.0
	32	0.4	128	198	130	141	32	35	13	10	349	58	100	180.5	55	50	10.5	18	168	70	130	208	170	14.5
		0.75	160	198	130	162	32				379.5	58	100	199.5	55	50	22.0	18	168	70	130	208	170	18.5

Order Example

Part Number - Output (kW) - Reduction Ratio

- 0.1 - 20

Days to Ship: 10 Days

Not Available

Rollers & Conveyor Components

Rollers & Conveyor Components







Product Name	TM Magnetic Transmission Drive (Parts for Non-contact Magnetic Force Transmission)	-Economy Type-	-Straight / Crowned Type-	-Female Thread Straight / Crowned Type-	Vertical Guide Rollers
Page	1012	1012	1013	1015	1016







Price Reduced 10%

Price Reduced UP to 36%

Rollers with Oil Free Bushing	-Bearing Type-	-Urethane Thickness Selectable Type-	Groove Rollers	-Bearing Type-	Plastic Rollers
1016	1017	1019	1020	1020	1021



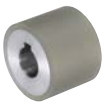


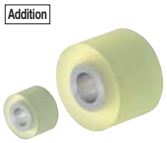

Price Reduced 8%
Addition

Price Reduced 8%
Addition

Price Reduced 8%

-Set Screw Hole Type-	-Press-Fit Straight Type-	-Press-Fit Bearing Type-	Aluminum Rollers	Hollow Rollers-Straight Type-	-Bearing Type-	-Set Screw Type-
1022	1023	1024	1024	1025	1026	1027


Price Reduced 16%
Addition




Long Hollow Rollers	With Keyway	-With Keyway / Female Thread Type-	Hollow Rollers with Shafts	Urethane Rollers with Collars	Knurled Urethane Rollers -Set Screw Hole on One End-	Bearing Type
1028	1029	1029	1030	1031	1031	1032









-Set Screw Type-	Knurled Urethane Rollers	With Shafts	-Both Ends Male Thread Type-	-Urethane Thickness Configurable Type-	Silicon Rubber / Urethane Mold Bearings	-Arc Type-
1032	1032	1033	1033	1034	1035	1036




Addition



Addition

Addition

-Male Thread Flat Type-	-Male Thread R Type-	- Inner Wheel Protruded Type-	Male Thread Bearings	Shafts for Urethane Mold Bearings	Eccentric Bushings	Engineered Plastic Bearings - Antistatic Type-	-Flat Type-
1037	1038	1039	1040	1040	1040	1041	1041

Addition

Engineered Plastic Bearings -R Type-	With Brackets -Flat Type-	-Arc Type-	Engineered Plastic Bearings -U Groove Type-	-V Groove Type-	-One Side Flanged Type-
1041	1042	1042	1042	1042	1042










Guide Rollers -V Groove 60° Type / V Groove 90° Type / Sheaves (For Wire Cables) / Flat Type / Double Flanged Type-	Motor Rollers	Conveyor Rollers	Conveyor Rollers -Sprockets Attached Type-	Plastic Conveyor Rollers
1043/ 1044	1046	1047	1048	1048



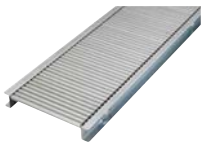
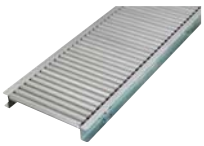









Conveyer Roller Shafts	Mini-Rollers for Conveyors	Conveyor Wheels	Rubber Lined Conveyor Wheels	Roller Carriers -Roller Width 7 ~ 9 / 15 / 25mm Type Milled / Pressed-	-With Brackets-
1049	1049	1050	1050	1051~1053	1051~1054




-Roller Width 50mm Type-	Roller Conveyors -Roller Dia. 19mm Type-	-Roller Dia. 28mm Type-	-Roller Dia. 38mm Type-	Ball Roller -Hexagon Bolt Type-	-Press-Fit Type-
1054	1056	1057	1058	1059	1059









-Insertion / Adhesion Type-	Plunger-equipped Ball Roller -Press-Fit Type-	-Male Thread Type-	Ball Roller Lock Nut -Flanged Type-	-Set Screw Type-	-Round Bolt Type-	Ball Roller Units
1059	1059	1059	1060	1060	1060	1061





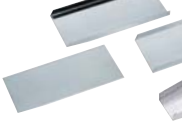




-Ball Roller - Milled Steel Type-	-Steel Press Formed Type-	Abrasion Resisting Polymer Guide Rails
1062	1062	1063







Abrasion Resisting Polymer Guide Rails	Slide Tapes / High Bond Double -Sided Tapes	Guide Rails	Stainless Steel Sliding Plates	Product Chute Thin Plates
1065	1066	1066	1067	1067

TM Magnetic Transmission Drive (Parts for Non-contact Magnetic Force Transmission)
-Overview-

■Overview
Force is transmitted non-contact by the principal of attractive force of magnetism.

■Features
- Particle generation can dramatically be reduced.
- Ultra quiet operation
- Can be used semi-permanently within the allowed range of use, due to its permanents.
- When extraordinary load is applied, two magnets turn separately and work as a torque limiter.
- No backlash.
- Possible to use in water.

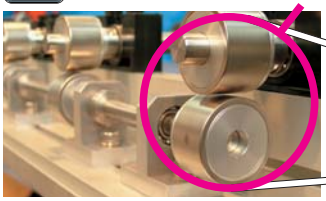


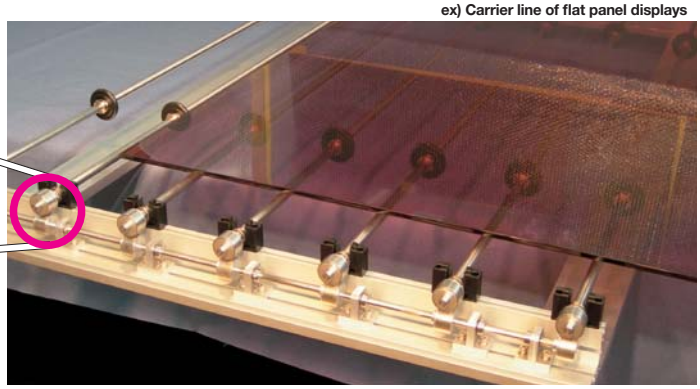
■Selection Steps
(1) According to transmission direction, select orthogonal type or parallel type.
(2) Calculate the required quantity from the size and the distance of the work to be carried.
(3) Calculate the required torque from the weight and quantity of the work to be carried.
(4) Select the matching product from the right page.

ex) Carrier line of flat panel displays

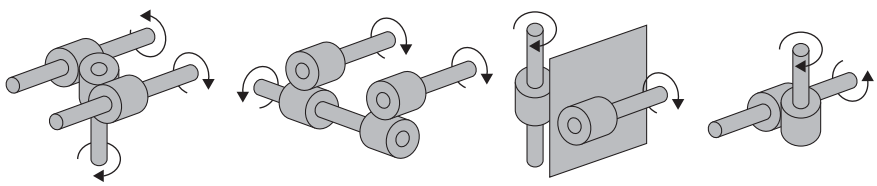
ex Example

When perpendicular type is used

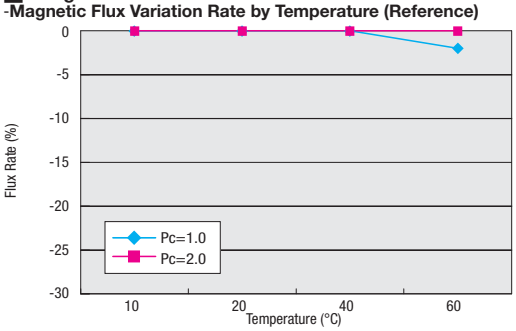




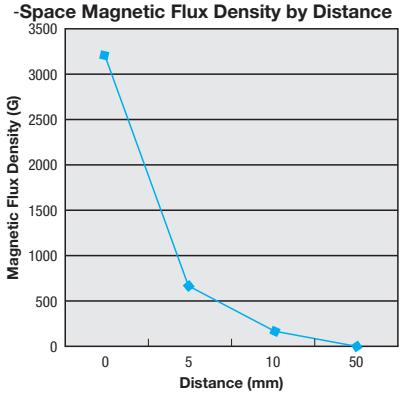
■Example of Use
·Two Rotary Shafts ·Conveyance Transmission ·Bulkhead Transmission ·Angle Change



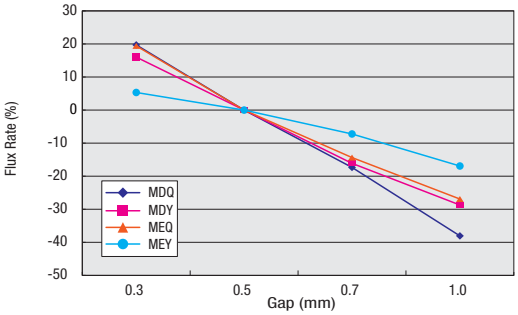
■Design Data
-Magnetic Flux Variation Rate by Temperature (Reference)



-Space Magnetic Flux Density by Distance



-Torque Rate by Distance Change (Reference)



-Cautions
- No alteration is available for the magnet parts.
- Strong impact may cause damage and lead to deterioration in magnetic force.
- The following objects are negatively affected by strong magnetic field.
  Electric devices such as cell-phones, PCs and watches.
  Medical electronics such as pacemakers, etc.
- For its non-contact nature, not suitable for extremely high-speed rotation.
  (Maximum rotational speed 1500rpm)

TM Magnetic Transmission Drive / TM Magnetic Transmission Drive Economy Type

CAD Data

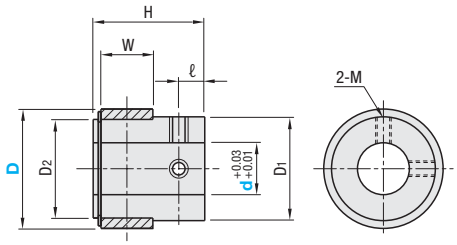
■**Features:** Usable in vacuum

■Standard Type

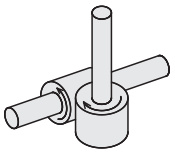
RoHS



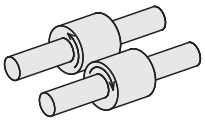
Type	Combined Type	Material	Surface Treatment
MDQ	Perpendicular Type	EN AW-5056/ AlMg5	Out-gassing Prevention Treatment
MDY	Parallel Type		



Perpendicular Type
Force is transmitted with TM Magnets arranged at 90°.



Parallel Type
Force is transmitted with TM Magnets arranged in parallel.



※Operation Temperature: 0 ~ 60°C

Part Number Type	D	d Selection	D1	D2	H	W	ℓ	M	*Allowable Torque (Nm) MDQ	*Allowable Torque (Nm) MDY	€ Unit Price MDQ / MDY
Perpendicular Type MDQ / Parallel Type MDY	16	6 8	13	12	19.5	8	5	M3	0.013	0.032	
	22	8 10 12	18	17	23.5	12			0.050	0.105	
	26	10 12 15	22	20	25.5	14			0.068	0.186	
	35	12 15 20	32	29	34.0	22		M4	0.245	0.558	

⊗Perpendicular Type and Parallel Type cannot be used in combination.
※Can not be used in combination with products from other manufacturers. Please be sure to order in pairs.

* Reference values in the case of gap = 0.5mm

Order Example: Part Number MDQ22 - d 8

Days to Ship: 10 Days

Price

■**Volume Discount** (※Round down to one Cent.) P.87

Quantity	1~39	40~49	50~100
Rate	€ Unit Price	5%	10%

※For orders larger than indicated quantity, please request a quotation.

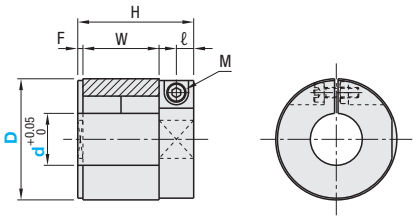
■**Features:** This type is made of plastic and more economical than the standard type. Suitable for use in normal atmosphere. Its allowable torque is almost equivalent to that of Standard Type.

■Economy Type

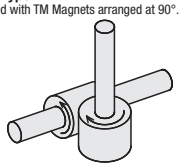
RoHS



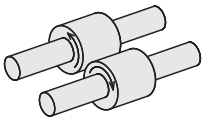
Type	Combined Type	Material
MEQ	Perpendicular Type	Polyacetal
MEY	Parallel Type	



Perpendicular Type
Force is transmitted with TM Magnets arranged at 90°.



Parallel Type
Force is transmitted with TM Magnets arranged in parallel.



※Operation Temperature: 0 ~ 60°C

Part Number Type	D	d Selection	H	W	ℓ	Lock Screw M	Lock Screw Tightening Torque (Nm)	F	*Allowable Torque (Nm) MEQ	*Allowable Torque (Nm) MEY	€ Unit Price MEQ	€ Unit Price MEY
Perpendicular Type MEQ / Parallel Type MEY	26	12 15	25.5	14	5	M2.5	0.333	1.5	0.098	0.167		
	35	15 20	33.5	22	5	M3	0.422	1.5	0.221	0.515		
	45	20	45	30	6.35	M5	0.784	2.0	0.804	-		

⊗Perpendicular Type and Parallel Type cannot be used in combination.
※Can not be used in combination with products from other manufacturers. Please be sure to order in pairs.
※45 of D Diameter is available for Parallel Type only.

* Reference values in the case of gap = 0.5mm

Order Example: Part Number MEQ35 - d 20

Days to Ship: 10 Days

Price

■**Volume Discount** (※Round down to one Cent.) P.87

Quantity	1~39	40~49	50~100
Rate	€ Unit Price	5%	10%

※For orders larger than indicated quantity, please request a quotation.

Rollers

-Straight Type / Crowned Type-(L=15 ~ 100)

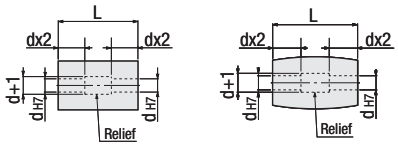


Type				M Material	S Surface Treatment	H Hardness
Straight		Crowned				
L Selectable	L Configurable	L Selectable	L Configurable	Core		
ROLB	-	-	-	1.1191/C45E	Black Oxide	-
ROLM	-	-	-		Electroless Nickel Plating	-
ROLS	-	ROCS	-	1.4301/X5CrNi18-10	-	-
ROLA	-	ROCA	-	EN AW-5052/AlMg2,5	Clear Anodize	-
ROUS	ROFUS	ROCUS	-	1.4301/X5CrNi18-10	Urethane (Natural Color)	Shore A90
ROUA	ROFUA	ROCUA	ROFCUA	EN AW-5052/AlMg2,5		
ROGS	-	ROCGS	ROFCGS	1.4301/X5CrNi18-10		Shore A70
ROGA	ROFGA	ROCGA	-	EN AW-5052/AlMg2,5		
ROHS	ROFHS	ROCHS	-	1.4301/X5CrNi18-10		Shore A50
ROHA	ROFHA	ROCHA	-	EN AW-5052/AlMg2,5		
ROMS	-	-	-	1.4301/X5CrNi18-10	Antistatic Urethane (Gray)	Shore A90
ROMA	-	-	-	EN AW-5052/AlMg2,5		
ROSS	-	ROCSS	-	1.4301/X5CrNi18-10	Silicon Rubber (Light Gray)	Shore A70
ROSA	-	-	-	EN AW-5052/AlMg2,5		
ROTS	-	-	-	1.4301/X5CrNi18-10	Heat Resisting Urethane (Red Brown) Operation Temperature: ~ 110°C	Shore A90
ROTA	-	-	-	EN AW-5052/AlMg2,5		
RONA	-	-	-	EN AW-5052/AlMg2,5	NBR (Black)	Shore A60

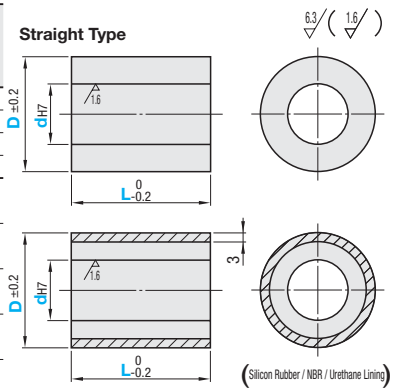
Urethane, Silicon Rubber and NBR are baked on the roller's outer diameter.

When L≤dx3, hole d is machined from the same direction.

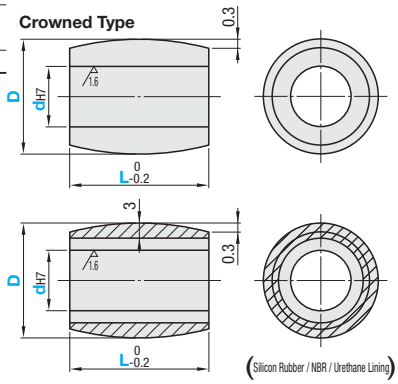
When L>dx3, hole d is machined from both ends as shown below. There may be no relief in some cases.



Straight Type



Crowned Type



■L Dimension Selectable

Part Number Type			D	dH7 Selection	L Selection
Straight					
Core Only	Urethane	Silicon Rubber	20	8	15 20 25 30 40 50
ROLB	ROUS	ROSS			
ROLM	ROUA	ROSA	25	8 10 12	15 20 25 *30 40 50
ROLS	ROGS	Heat Resisting Urethane	30	8 10 12 *15	15 20 25 30 40 50
ROLA	ROGA	ROTS	35	10 *12 15 20	*20 25 30 *40 50
	ROHS	ROTA	40	10 12 15 *20	20 25 30 40 50
	ROHA	NBR	50	12 15 20 25	25 30 40 50 100
	ROMS	RONA	60	12 15 20 25 30	30 40 50 100
	ROMA		80	15 20 *25 30	40 50 100
Crowned					
Core Only	Urethane	Silicon			
ROCS	ROCUS	ROCSS			
ROCA	ROCUA				
	ROCGS				
	ROCGA				
	ROCHS				
	ROCHA				

D60 and D80 are not available for ROSA, ROCSS and RONA.

*marked sizes are not available for Core Only Type.

■L Dimension Configurable

Part Number Type	D	dH7 Selection	L 1mm Increment
Straight	20	8	16~49
Urethane	25	8 10 12	
ROFUS	30	8 10 12 *15	
ROFUA	35	10 *12 15 20	21~49
ROFGA	40	10 12 15 *20	
ROFHS	50	12 15 20 25	26~99
ROFHA	60	12 15 20 25 30	31~99
Crowned	80	15 20 *25 30	41~99
Urethane			
ROFCUA			
ROFCGS			

*marked sizes are not available for Core Only Type. Urethane may discolor over time, but there is no effect on physical properties.

CAD Data

Order Example

Part Number	-	d	-	L
ROLB20	-	8	-	30

Days to Ship

-ROLS, ROCS, Urethane L Dimension Selectable Type
8 Days

-ROLB / ROLM / ROLA / ROCA
Heat Resistant Urethane, Urethane L dimension Configurable Type
10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

-Silicon Rubber, NBR
10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

L Dimension Selectable

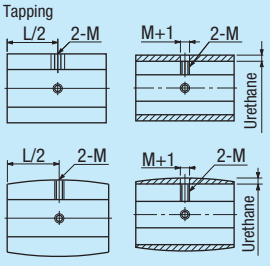
D	L	€ Unit Price																					
		Straight															Crowned						
		Core Only				Urethane				Antistatic Urethane		Silicon		Heat Resisting Urethane		NBR	Core Only		Urethane				Silicon
		ROLB	ROLM	ROLS	ROLA	ROUS	ROUA	ROGS ROHS	ROGA ROHA	ROMS	ROMA	ROSS	ROSA	ROTS	ROTA	RONA	ROCS	ROCA	ROCUS	ROCUA	ROCGS ROCHS	ROCGA ROCHA	ROCSS
20	15~25																						
	30~50																						
25	15~25																						
	30~50																						
30	15~25																						
	30~50																						
35	20~25																						
	30~50																						
40	20~25																						
	30~50																						
50	25																						
	30~50																						
	100																						
60	30~50																						
	100																						
80	40~50																						
	100																						

L Dimension Configurable

D	L	€ Unit Price					
		Straight Urethane				Crowned Urethane	
		ROFUS	ROFUA	ROFHS	ROFGA ROFHA	ROFCUA	ROFCGS
20	16~25						
	26~49						
25	16~25						
	26~49						
30	16~25						
	26~49						
35	21~25						
	26~49						
40	21~25						
	26~49						
50	26~50						
	51~99						
60	31~50						
	51~99						
80	41~50						
	51~99						

Alterations

Part Number	-	d	-	L	-	(MC / UDC)
ROUS20	-	8	-	30	-	UDC

Alterations	Code	Spec.	Price Adder
Tapping 	MC	Female Thread holes located at 90°are added at two locations. D / M: 20, 25, 30 / 3; 35, 40 / 4; 50, 60, 80 / 5. Ordering Code: MC	2,00

Alterations	Code	Spec.	Price Adder
Antistatic Urethane (Urethane Color: Gray)	UDC	Changes urethane shore A90 (ROFUS, ROFCUS, ROFUA and ROFCUA) to antistatic urethane. Ordering Code: UDC. Specific Volume Resistivity 2.1x10⁸Ω·cm Surface Resistivity 4.0x10⁹Ω (Temperature 30°C/Humidity 60%)	4,00

Refer to the next page for Core Only and Urethane (Natural Color) Female Thread Type.

Rollers -Female Thread Type-

-Straight Type / Crowned Type- (L=15 ~ 100)

CAD Data



RoHS

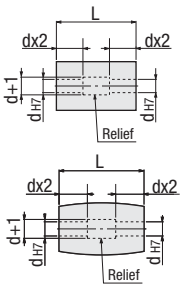
Type		Material	Surface Treatment (Lining)	Hardness
Straight	Crowned	Core		
ROLSN	ROCSN	1.4301/X5CrNi18-10	-	-
ROLAN	ROCAN	EN AW-5052/AlMg2,5	Clear Anodize	-
ROUSN	ROCUSN	1.4301/X5CrNi18-10	Urethane (Natural Color)	Shore A90
ROUAN	ROCUAN	EN AW-5052/AlMg2,5		
ROGSN	-	1.4301/X5CrNi18-10		Shore A70
ROGAN	-	EN AW-5052/AlMg2,5		
ROHSN	-	1.4301/X5CrNi18-10		Shore A50
ROHAN	-	EN AW-5052/AlMg2,5		

Urethane is baked on the outer circumference of the core material.

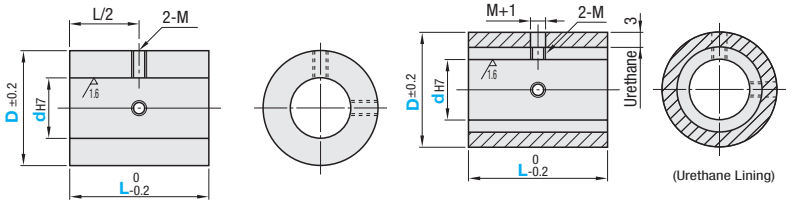
6.3 (1.6)

When L≤dx3, hole d is machined from the same direction.

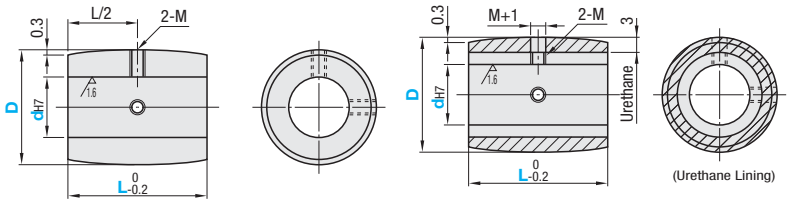
When L>dx3, hole d is machined from both ends as shown below. There may be no relief in some cases.



Straight Type



Crowned Type



Part Number Type		D	dH7 Selection							L Selection							M
Straight		20	8							15	20	25	30	40	50		
Core Only	Urethane	25	8	10	12					15	20	25	*30	40	50		M3
ROLSN	ROUSN	30	8	10	12	*15				15	20	25	30	40	50		
ROLAN	ROUAN	35		10	*12	15	20				*20	25	30	*40	50		M4
	ROGSN	40		10	12	15	*20				20	25	30	40	50		
	ROGAN	50			12	15	20	25				25	30	40	50	100	
	ROHSN	60			12	15	20	25	30				30	40	50	100	M5
	ROHAN	80				15	20	*25	30					40	50	100	
Crowned																	
Core Only	Urethane																
ROCSN	ROCUSN																
ROCAN	ROCUAN																

*marked sizes are not available for Core Only Type. Urethane may discolor over time, but there is no effect on physical properties.

Order Example

Part Number	d	L
ROLAN30	8	30
ROUAN40	10	25

Days to Ship

- ROLSN / ROCSN / Urethane: 8 Days
- ROLAN / ROCAN: 10 Days

Express B: 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - d - L - (UDC)
ROUSN50 - 12 - 50 - UDC

Alteration	Code	Spec.	Price Adder
Antistatic Urethane (Urethane Color: Gray)	UDC	Urethane Shore A90 (ROUSN, ROCUSN, ROUAN and ROCUAN) is changed to Antistatic Urethane. Ordering Code UDC Specific Volume Resistivity 2.1x10⁸Ωcm Surface Resistivity 4.0x10⁹Ω (Temperature 30°C/Humidity 60%)	4,00

D	L	€ Unit Price									
		Straight						Crowned			
		Core Only		Urethane				Core Only		Urethane	
		ROLSN	ROLAN	ROUSN	ROUAN	ROGSN ROHSN	ROGAN ROHAN	ROCSN	ROCAN	ROCUSN	ROCUAN
20	15~25										
	30~50										
25	15~25										
	30~50										
30	15~25										
	30~50										
35	20~25										
	30~50										
40	20~25										
	30~50										
50	25										
	30~50										
	100										
60	30~50										
	100										
80	40~50										
	100										

Vertical Guide Rollers / Rollers with Oil Free Bushing

CAD Data

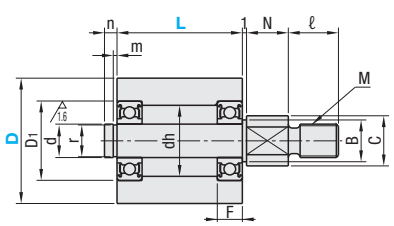
Features: Preassembled rollers contribute to labor savings.

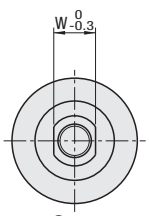
Vertical Guide Rollers

RoHS



Type	Material			Surface Treatment		
	Rollers	Shaft	Retaining Ring	Rollers	Shaft	Retaining Ring
TGRB	1.1191/C45E	1.1191/C45E	Spring Steel	Electroless Nickel Plating	Electroless Nickel Plating	-
TGRS	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	-	-	-





6.3 (1.6)

Please use these products for vertical applications.

Part Number Type	D	L Selection	N	d	ℓ	C	B	r	n	m	dh	D1	F	M (Coarse)	W	Used Bearing	Retaining Ring Standards Shape	Retaining Ring Standards JIS Nominal	€ Unit Price TGRB	€ Unit Price TGRS
TGRB (1.1191/C45E) / TGRS (1.4301/X5CrNi18-10)	20	20 25 30 40 50	10	6	9	10	8	5	2	0.7	10	15	5	6	8	696ZZ	E Type	No.5		
	25	20 25 30 40 50									10	15	5							
	30	20 25 30 40 50		8	12	12	10	7	3	0.9	15	19	6	8	10	698ZZ		No.7		
	35	20 25 30 40 50		10	15	15	13	9.6		1.15	18	22	6	10	13	6900ZZ	C Type	No.10		
	40	20 25 30 40 50		12	18	18	16	11.5			24	28	8	12	14	6001ZZ		No.12		
	50	25 30 40 50									28	32	9			6201ZZ				

Order Example: Part Number TGRS30 - L 30

Days to Ship: 8 Days

Price

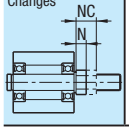
Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~30
Rate	€ Unit Price	5%	10%	18%

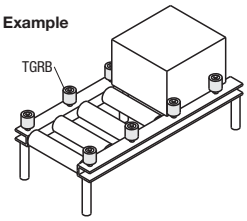
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number TGRB25 - L 30 - (NC) NC15

Alteration	Code	Spec.	Price Adder
N Dimension Changes 	NC	Ordering Code NC15 NC=1mm Increment 5≤NC≤30	2,00

Example

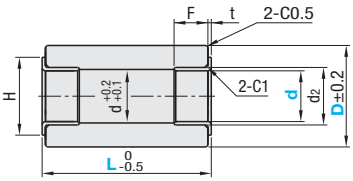


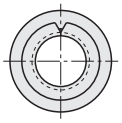
Rollers with Oil Free Bushing

RoHS



Type	Rollers		Oil Free Bushings
	Material	Surface Treatment	
FRTA	EN AW-5052/AlMg2,5	Clear Anodize	Filler Added PTFE Layer Sintered Bronze layer Steel-backed Metal Layer (1.0330/DC01: Tin Plating)
FRTS	1.4301/X5CrNi18-10	-	





6.3

Bushing Details

d Inner Diameter	d Tolerance	F	d2	H
3	+0.062 0	5	4.6	7
5	+0.065 0	5	7	10
6		8	8	12
8		10	10	15
10	+0.068 0	10	12	18
12		10	14	20
15		10	17	23

Part Number Type	D	d (Inner Diameter) Selection	L Selection	t	€ Unit Price FRTA	€ Unit Price FRTS
FRTA (EN AW-5052/AlMg2,5) / FRTS (1.4301/X5CrNi18-10)	8	3	20 25 30 40 50	0.8		
	10	5		1.0		
	12	5 6				
	15	6 8				
	18	8 10				
	20	10 12				
	25	10 12 15				
	30	10 12 15				

* For details of Oil Free Bushings, please see P.330

Order Example: Part Number FRTA10 - d 5 - L 30

Days to Ship: - FRTA 10 Days; - FRTS 8 Days

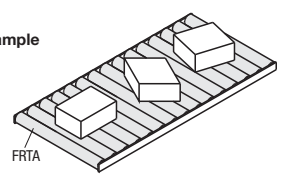
Price

Volume Discount (Round down to one Cent.) P87

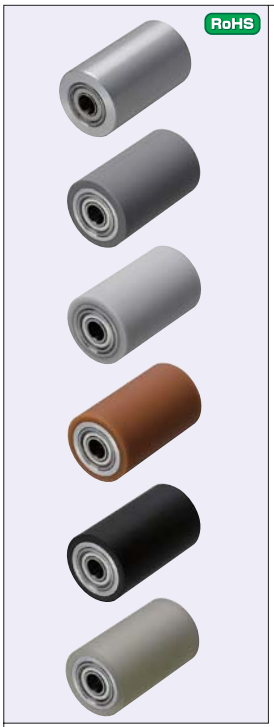
Quantity	1~9	10~14	15~19	20~30
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



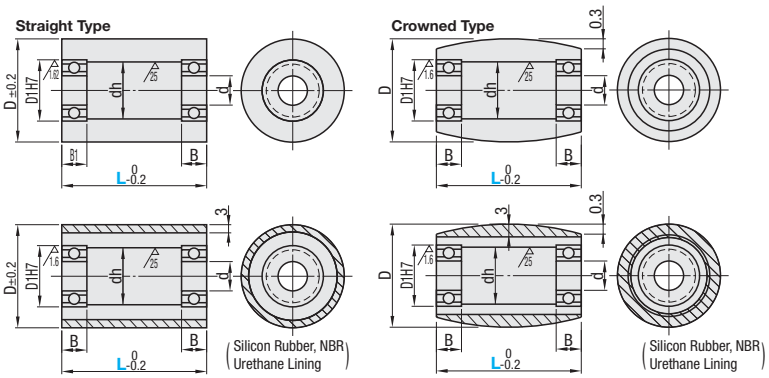
Rollers
-Bearing Type- (L=15 ~ 100)



Type			Material	Surface Treatment (Lining)	Bearing	Hardness
Straight		Crowned				
L Selectable	L Configurable	L Selectable	Core			
RORB	-	ROCRB	1.1191/C45E	Black Oxide	Steel	-
RORM	-	ROCRM		Electroless Nickel Plating		-
RORS	-	ROCRS	1.4301/X5CrNi18-10	-	Steel	-
RORA	-	ROCRA	EN AW-5052/AlMg2,5	Clear Anodize	Steel	-
RORUS	ROFRUS	ROCRUS	1.4301/X5CrNi18-10	Urethane (Natural Color)	Steel	Shore A90
RORUZ	-	-			Stainless Steel	
RORUA	ROFRUA	ROCRUA	EN AW-5052/AlMg2,5		Steel	
RORGS	-	-	1.4301/X5CrNi18-10		Steel	Shore A70
RORGA	ROFRGA	ROCRGA	EN AW-5052/AlMg2,5		Steel	
RORHS	-	ROCRHS	1.4301/X5CrNi18-10		Steel	Shore A50
RORHA	ROFRHA	-	EN AW-5052/AlMg2,5		Steel	
RORSS	ROFRSS	ROCRSS	1.4301/X5CrNi18-10	Silicon Rubber (Light Gray)	Steel	Shore A70
RORSA	-	-	EN AW-5052/AlMg2,5			
RORJS	-	-	1.4301/X5CrNi18-10			Shore A50
RORJA	-	-	EN AW-5052/AlMg2,5			
RORWS	-	-	1.4301/X5CrNi18-10	Silicon Rubber (White)		Shore A70
RORTS	-	-	1.4301/X5CrNi18-10	Heat Resisting Urethane (Red Brown) Operation Temperature: ~ 110°C		Shore A90
RORTA	-	-	EN AW-5052/AlMg2,5			
RORNS	-	-	1.4301/X5CrNi18-10	NBR (Black)		Shore A60
RORNA	-	-	EN AW-5052/AlMg2,5			

Urethane, Silicon Rubber and NBR are baked on the roller's outer diameter.

For detailed bearing dimensions, please see P.907-908



■L Dimension Selectable

Part Number Type	No.	D	L Selection	d	D1 (H7)	dh	B	Bearing
	(20)	20	15 20 25 30 40 50	6	15	10	5	696ZZx2
Straight / Crowned	25	25	20 25 30 40 50	6	15	10	5	696ZZx2
Core Only: RORB RORM RORS RORA / Core Only: ROCRB ROCRM ROCRS ROCRA	30	30	20 25 30 40 50	8	19	15	6	698ZZx2
Silicon Rubber: RORSS RORSA RORJS RORJA RORWS / Urethane: RORUS RORUZ RORUA RORGS RORGA RORHS RORHA / Urethane: ROCRUS ROCRUA ROCRGA ROCRHS / Heat Resisting Urethane: RORTS RORTA / NBR: RORNS RORNA / Silicon Rubber: ROCRSS	35A	35	25 30 40 50	8	22	15	7	608ZZx2
	35			10	22	18	6	6900ZZx2
	40A	40	25 30 40 50	10	26	18	8	6000ZZx2
	40			12	28	24	8	6001ZZx2
	50A	50	25 30 40 50 100	12	32	24	10	6201ZZx2
	50			15	32	28	9	6002ZZx2

D20 is only applicable for Core Only Types (RORB, RORM, RORS, RORA, ROCRB, ROCRM, ROCRS and ROCRA).

■L Dimension Configurable(Straight Only)

Part Number Type	No.	D	L 1mm Increment	d	D1 (H7)	dh	B	Bearing
	25	25	21~49	6	15	10	5	696ZZx2
	30	30		8	19	15	6	698ZZx2
Urethane: ROFRUS ROFRUA ROFRGA ROFRHA / Silicon Rubber: ROFRSS	35A	35	26~49	8	22	18	7	608ZZx2
	35			10			6	6900ZZx2
	40A	40		10	26	18	8	6000ZZx2
	40			12	28	24	8	6001ZZx2
	50A	50	26~99	12	32	24	10	6201ZZx2
	50			15		28	9	6002ZZx2

Urethane may discolor over time, but there is no effect on physical properties.

CAD Data

Order Example

Part Number	-	L
RORB30	-	30
ROFRSS40	-	38

Days to Ship

- RORS / ROCRS / UrethaneL Dimension Selectable Type
  8 Days
- RORB / RORM / RORA / ROCRB / ROCRM / ROCRA Heat Resisting Urethane•Urethane L Configurable Type
  10 Days Express B 5,00 EUR/ piece P.88
  A Express Charge of 13,50 EUR for 3 or more identical pieces.
- -Silicon Rubber -NBR
  10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

L Dimension Selectable

D	L	€ Unit Price Straight																
		Core Only				Urethane					Silicon					Heat Resisting Urethane		NBR	
		RORB	RORM	RORS	RORA	RORUS	RORUZ	RORUA	RORGS RORHS	RORGA RORHA	RORSS	RORSA	RORJS	RORJA	RORWS	RORTS	RORTA	RORNS	RORNA
20	15~25																		
	30~50																		
25	20~25																		
	30~50																		
30	20~25																		
	30~50																		
35 35A	25																		
	30~50																		
40 40A	25																		
	30~50																		
50 50A	25																		
	30~50																		
	100																		

D	L	€ Unit Price Crowned								
		Core Only				Urethane				Silicon
		ROCRB	ROCRM	ROCRS	ROCRA	ROCRUS	ROCRUA	ROCRGA	ROCRHS	ROCRSS
20	15~25									
	30~50									
25	20~25									
	30~50									
30	20~25									
	30~50									
35 35A	25									
	30~50									
40 40A	25									
	30~50									
50 50A	25									
	30~50									
	100									

L Dimension Configurable

D	L	€ Unit Price Straight			
		Urethane			Silicon
		ROFRUS	ROFRUA	ROFRGA ROFRHA	ROFRSS
25	21~25				
	26~49				
30	21~25				
	26~49				
35 35A	26~49				
40 40A	26~49				
50 50A	26~50				
	51~99				

Alterations

Part Number	-	L	-	(UDC / SB)
RORNS40	-	50	-	SB

Alterations	Code	Spec.	Price Adder
Antistatic Urethane (Urethane Color: Gray)	UDC	Changes urethane Shore A90 to antistatic urethane. Ordering Code UDC Volume Inherent Resistivity $2.1\times10^{8}\Omega$cm Surface Resistivity $4.0\times10^{9}\Omega$ (Temperature 30°C/Humidity 60%)	4,00

Alterations	Code	Spec.	Price Adder	
Bearing Material	SB	Bearing material is changed to stainless steel. Ordering Code SB	D20 / 25	4,00
			D30	5,00
			D35	6,00
			D40	9,00
			D50	10,00

Rollers

-Urethane Thickness Selectable Type-

CAD Data

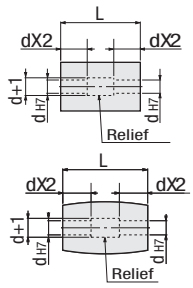


RoHS

Type			Material		Hardness	Bearing
No Bearing	With Bearing					
Straight	Straight	Crowned	Core	Lining		
ROEUS	ROERUS	ROECRUS	1.4301/X5CrNi18-10	Urethane (Natural Color)	Shore A90	Steel
ROEUA	ROERUA	ROECRUA	EN AW-5052/AlMg2,5			
ROEGS	ROERGS	-	1.4301/X5CrNi18-10		Shore A70	
ROEGA	ROERGA	ROECRGA	EN AW-5052/AlMg2,5			
-	ROERHS	-	1.4301/X5CrNi18-10		Shore A50	
-	ROERHA	ROECRHA	EN AW-5052/AlMg2,5			

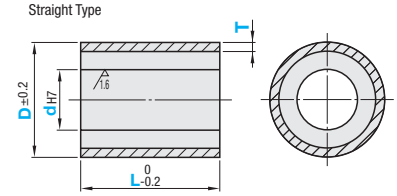
Urethane is baked on the outer circumference of the core material.

When L≤dx3, hole d is machined from the same direction.
When L>dx3, hole d is machined from both ends as shown below. There may be no relief in some cases.



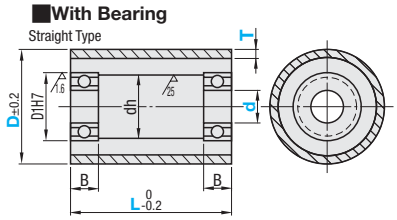
No Bearing

Straight Type

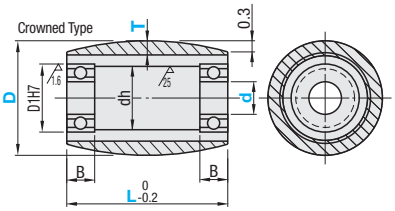


With Bearing

Straight Type



Crowned Type



No Bearing Type

Part Number		dH7	L	T
Type	D	Selection	10mm Increment	Selection
Straight ROEUS ROEUA ROEGS ROEGA	40	8 10 12 15	20~50	5 10
	50	10 12 15 20	30~100	
	60	12 15 20 25		
	80	15 20 25 30		
	100	20 25 30 40		

Bearing Type

Part Number		d	L	T				
Type	D	Selection	10mm Increment	Selection	D_1	dh	B	Bearing
Straight Crowned ROERUS ROECRUS ROERUA ROECRUA ROERGS ROERGA ROECRGA ROERHS ROECRHA ROERHA	40	8	20~50	5	19	15	6	698ZZx2
		10			22	18	6	6900ZZx2
	50	10	30~100		22	18	6	6900ZZx2
		12			28	24	8	6001ZZx2
		15			32	28	9	6002ZZx2
	60	12		5	28	24	8	6001ZZx2
		15		10	32	28	9	6002ZZx2
		20		5	42	36	12	6004ZZx2
	80	15			32	28	9	6002ZZx2
		20			42	36	12	6004ZZx2
		25		5	47	41	12	6005ZZx2
	100	20		10	42	36	12	6004ZZx2
		25			47	41	12	6005ZZx2
		30			55	48	13	6006ZZx2

No Bearing

D	L	€ Unit Price Straight			
		ROEUS	ROEUA	ROEGS	ROEGA
40	20				
	30 · 40 · 50				
50	30 · 40 · 50				
	60~100				
60	30 · 40 · 50				
	60 · 70				
	80 · 90 · 100				
80	30 · 40 · 50				
	60 · 70				
	80 · 90 · 100				
100	30 · 40 · 50				
	60 · 70				
	80 · 90 · 100				

Order Example: Part Number - d - L - T
ROEUS60 - 20 - 50 - T5

Days to Ship: 10 Days

Price

Volume Discount (Round down to one Cent.) P.87

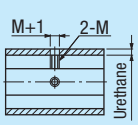
Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations: Part Number - d - L - T - (MC)
ROEUA50 - 12 - 50 - T5 - MC

With Bearing

D	L	€ Unit Price Straight					Crowned				
		ROERUS	ROERUA	ROERGS	ROERGA	ROERHA	ROECRUS	ROECRUA	ROECRGA	ROECRHS	ROECRHA
40	20										
	30 · 40 · 50										
50	30 · 40 · 50										
	60~100										
60	30 · 40 · 50										
	60 · 70										
	80 · 90 · 100										
80	30 · 40 · 50										
	60 · 70										
	80 · 90 · 100										
100	30 · 40 · 50										
	60 · 70										
	80 · 90 · 100										

Alteration	Tapping
Code	MC
Spec.	 Female Thread holes located at 90 °are added at two locations.
Price Adder	2,00

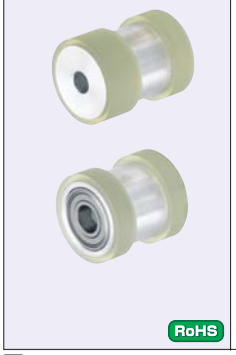
D	M
40	4
50 · 60 · 80	5
100	6
Ordering Code	MC

Urethane may discolor over time, but there is no effect on physical properties.

Available for No Bearing Type only.

Groove Rollers

CAD Data

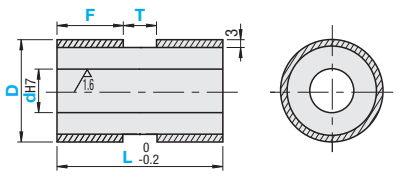


Type		Material			Hardness
No Bearing	With Bearing	Core	Lining	Bearing	
ROUAM	RORUAM	EN AW-5052/AlMg2,5	Urethane (Natural Color)	Steel	Shore A90
ROUSM	-	1.4301/X5CrNi18-10			

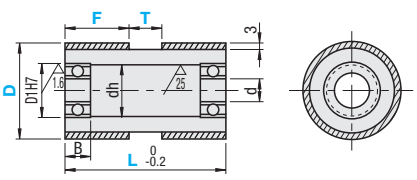
Urethane is baked on the outer circumference of the core material.

6.3 (25 1.6)

No Bearing



With Bearing

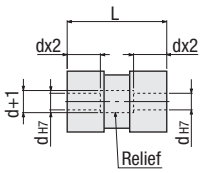


RoHS

No Bearing

Part Number Type	D	dH7	1mm Increment L	1mm Increment F / T
ROUAM ROUSM	25	8 10 12	15~50	0~46 (F+T≤L−2)
	30	8 10 12 15		
	35	10 12 15 20	20~50	
	40	10 12 15 20		
	50	12 15 20 25	25~100	0~96 (F+T≤L−2)
	60	12 15 20 25 30	30~100	
	80	15 20 25 30	40~100	

When L≤dx3, hole d is machined from the same direction.
When L>dx3, hole d is machined from both ends and shaped as shown in the drawing below. There may be no relief alterations.



Urethane may discolor over time, but there is no effect on physical properties.

With Bearing

Part Number Type	D	1mm Increment L	F / T	d	D1H7	dh	B	Bearing
RORUAM	25	20~50	0~46 (F+T≤L−2)	6	15	10	5	696ZZx2
	30			8	19	15	6	698ZZx2
	35	25~50		10	22	18	6	6900ZZx2
	40			12	28	24	8	6001ZZx2
	50	25~100	2~96 (F+T≤L−2)	15	32	28	9	6002ZZx2

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	L	€ Unit Price No Bearing ROUAM	No Bearing ROUSM	With Bearing RORUAM
25	15 (20) ~ 25			
	26~50			
30	15 (20) ~ 25			
	26~50			
35	20 (25) ~ 25			
	26~50			
40	20 (25) ~ 25			
	26~50			
50	25			
	26~50			
	51~100			
60	30~50			
	51~100			
80	40~50			
	51~100			

L dimension in ( ) are for Bearing Type.

Order Example

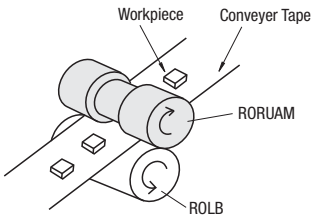
Part Number	-	d	-	L	-	F	-	T
ROUSM30	-	8	-	L30	-	F10	-	T5
RORUAM40			-	L40	-	F8	-	T3

Days to Ship: 10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

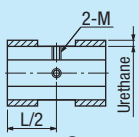
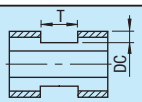
Example



Clamping Roller for Tape Carrier

Alterations

Part Number	-	d	-	L	-	F	-	T	-	(MC / DC / SB)
ROUSM30	-	8	-	L30	-	F10	-	T5	-	MC
RORUAM30			-	L40	-	F10	-	T5	-	SB

Alterations	Tapping	Groove Depth	Bearing Material
Code	MC	DC	SB
Spec.	 Female Thread holes located at 90°are added at two locations. D: 25 · 30 → M3; 35 · 40 → M4; 50 · 60 · 80 → M5. Ordering Code MC. Available for No Bearing Type only.	 No Bearing: D-2xDC≥d+6. Bearing: D-2xDC≥dh+6. Changes groove depth in 1mm increment. Ordering Code DC5	Changes the material of bearings to stainless steel. Ordering Code SB. Available for Bearing Type only.
Price Adder	2,00	6,00	D25: 4,00; D30: 5,00; D35: 6,00; D40: 9,00; D50: 10,00

NEW

Plastic Roller

-Milled Type / Press-fit Type-

Reduced Delivery Time

Price Reduction UP to 36%

CAD Data

■Milled Type RoHS



■Press-fit Type



- Milled Type

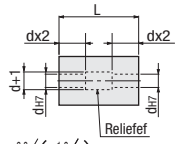
Type		Material Body	Bearing
Straight	Double Flanged		
RORPOS	RORPOWF	Polyacetal	Steel
RORPHS	RORPHWF		Stainless Steel
RORPES	RORPEWF	Ultra High Molecular Weight Polyethylene	Steel
RORPJS	RORPJWF		Stainless Steel
RORPSS	-	Polypropylene	Steel
RORPQS	-		Stainless Steel
RORMCS	RORMCWF	MC Nylon	Steel

- Press-fit Type

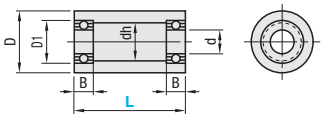
Type		Bearing	Material	
Straight	With Bearing		Core	Plastic
ROASP	RORASP	Steel	1.4301/X5CrNi18-10	Polyacetal
ROAAP	RORAAP		EN AW-5052/AlMg2,5	

When L≤dx3, hole d is machined from the same direction.

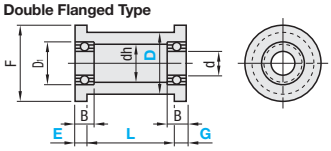
When L>dx3, hole d is machined from both ends as shown below.There may be no relief in some cases.



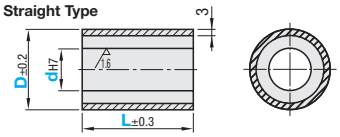
•Milled Type
Straight Type



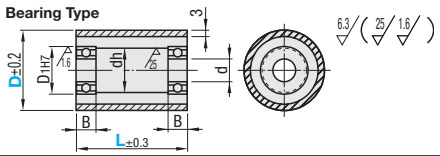
Double Flanged Type



•Press-Fit Type Core is press fit in plastic.
Straight Type



Bearing Type



■Straight Type

Part Number Type		No.	L 1mm Increment	Bearing	D	D1	d	B	(dh)
RORPOS	RORPHS	20	15~ 50	696ZZx2	20	15	6	5	10
RORPES	RORPJS	30	20~ 50	698ZZx2	30	19	8	6	15
RORPSS	RORPQS	40	20~ 50	6900ZZx2	40	22	10	6	18
RORMCS		50	40~100	6001ZZx2	50	28	12	8	24
		60	40~100	6002ZZx2	60	32	15	9	28
		80	40~100	6002ZZx2	80	32	15	9	28

■Double Flanged Type

Part Number Type		No.	1mm Increment D	L	E	G	Bearing	F	D1	d	B	(dh)
RORPOWF	RORPHWF	40	30~35	20~ 50	5~10	5~10	6900ZZx2	40	22	10	6	18
RORPEWF	RORPJWF	50	35~45	40~100	5~10	5~10	6001ZZx2	50	28	12	8	24
RORMCWF		60	40~55	40~100	5~20	5~20	6002ZZx2	60	32	15	9	28
		80	40~75	40~100	5~20	5~20	6002ZZx2	80	32	15	9	28

■Press-Fit Type

Part Number Type		D	dH7 (Only Available for Straight Type)					L Selection						Bearing Type d	D1 (H7)	dh	B	Bearing
		*20	8					15	20	25	30	40	50	-	-	-	-	-
Straight Type	Bearing Type	25	8	10	12			15	20	25	30	40	50	6	15	10	5	696ZZx2
ROASP	RORASP	30	8	10	12	15		15	20	25	30	40	50	8	19	15	6	698ZZx2
ROAAP	RORAAP	35		10	12	15	20		20	25	30	40	50	10	22	18	6	6900ZZx2
		40		10	12	15	20		20	25	30	40	50	12	28	24	8	6001ZZx2
* 20 is only applicable for Straight Type		50			12	15	20	25			25	30	40	50	15	32	28	9	6002ZZx2

Order Example

	Part Number	-	D	-	d	-	L	-	E	-	G
(Straight)	RORPOS60					-	L75				
(Double Flanged)	RORPOWF80	-	D60			-	L90	-	E10	-	G10
(Press-Fit)	RORASP40			-	12	-	50				
	RORAAP30					-	40				

Days to Ship

- Milled Type: 10 Days
- Press-fit Type: 8 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

- Milled Type
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

- Press-fit Type
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request for quotation.

No.	€ Unit Price Straight Polyacetal RORPOS L15~25	L26~50	L51~75	L76~100	RORPHS L15~25	L26~50	L51~75	L76~100	Ultra High-Molecular-Weight Polyethylene RORPES L15~25	L26~50	L51~75	L76~100	RORPJS L15~25	L26~50	L51~75	L76~100	Polypropylene RORPSS L15~25	L26~50	L51~75	L76~100	RORPQS L15~25	L26~50	L51~75	L76~100
20																								
30																								
40																								
50																								
60																								
80																								

No.	€ Unit Price Straight MC Nylon RORMCS L20~25	L26~50	L51~75	L76~100	Double Flanged RORMCWF L20~25	L26~50	L51~75	L76~100	Double Flanged Polyacetal RORPOWF L20~25	L26~50	L51~75	L76~100	RORPHWF L20~25	L26~50	L51~75	L76~100	Double Flanged Ultra High-Molecular-Weight Polyethylene RORPEWF L20~25	L26~50	L51~75	L76~100	RORPJWF L20~25	L26~50	L51~75	L76~100
20																								
30																								
40																								
50																								
60																								
80																								

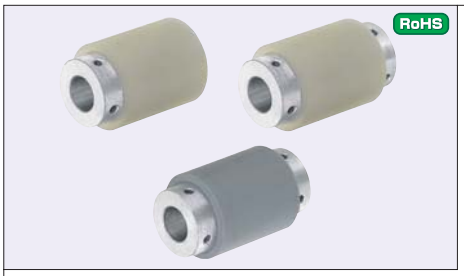
D	€ Unit Price Press-fit / Straight Type Polyacetal ROASP L15~25	L30~50	Press-fit / Straight Type Polyacetal ROAAP L15~25	L30~50	Press-fit / Bearing Type Polyacetal RORASP L20~25	L30~50	Press-fit / Bearing Type Polyacetal RORAAP L20~25	L30~50
20								
25								
30								
35								
40								
50								

‹Features›
- Polyacetal : Material which excels in mechanical strength.
- Ultra High Molecular Weight Polyethylene: Material excellent in abrasion resistance and is compliant to the Food Sanitation Laws.
- Polypropylene : Material which excels in chemical resistance.
- MC Nylon : Material excellent in mechanical strength and wear resistance.

Rollers

-Straight Type with Set Screw Holes-

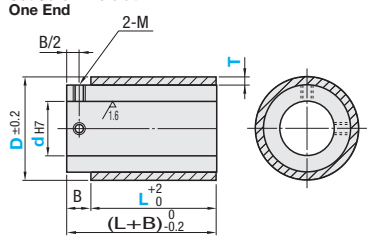
CAD Data



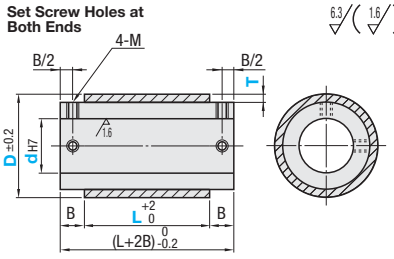
L Dimension Selectable	Urethane Thickness Selectable Type		M Material		H Hardness
Set Screw Holes at Both Ends	Set Screw Hole at One End	Set Screw Holes at Both Ends	Core	Lining	
RONUS	ROEKUS	ROENUS	1.4301/X5CrNi18-10	Urethane (Natural Color)	Shore A90
RONUA	ROEKUA	ROENUA	EN AW-5052/AlMg2,5		
RONGS	ROEKGS	-	1.4301/X5CrNi18-10		Shore A70
RONGA	ROEKGA	ROENGA	EN AW-5052/AlMg2,5		
RONHA	ROEKHA	ROENHA	EN AW-5052/AlMg2,5		Shore A50
RONSS	-	-	1.4301/X5CrNi18-10	Silicon Rubber	Shore A70
RONSA	-	-	EN AW-5052/AlMg2,5		

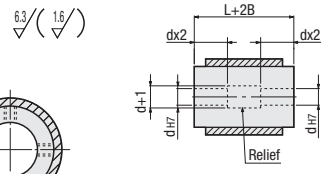
Urethane and silicon are baked on the outer circumference of the core material.

Set Screw Hole at One End



Set Screw Holes at Both Ends





When L+2B≤dx3, hole d is machined from the same direction.
When L+2B>dx3, hole d is machined from both ends as shown above.
There may be no relief in some cases.

■L Dimension Selectable Type (Set Screw Holes at Both Ends Type Only)

Part Number Type	D	dH7 Selection	L Selection	T	B	M
RONSS RONUA RONSA RONGS RONUS RONGA RONHA	20	8	15 20 25 30 40 50	3	8	M3
	25	8 10 12	15 20 25 30 40 50			
	30	8 10 12 15	15 20 25 30 40 50			
	35	10 12 15	20 25 30 40 50			M4
	40	10 12 15	20 25 30 40 50			
	50	12 15	25 30 40 50 100		10	M5

■Urethane Thickness Selectable Type (Set Screw Holes at One End / Both Ends)

Part Number Type		D	dH7 Selection	L 10mm Increment	T Selection	B	M
Set Screw Hole at One End	Set Screw Holes at Both Ends	40	10 12 15	30~50	5	10	M5
ROEKUS	ROENUS	50	10 12 15				
ROEKUA	ROENUA	60	12 15 20	30~100	5 10		
ROEKGS	ROENGA	80	15 20 25			12	M6
ROEKGA	ROENHA	100	20 25 30				
ROEKHA							

■L Dimension Selectable Type (Set Screw Holes at Both Ends Type Only)

D	L	€ Unit Price Set Screw Holes at Both Ends RONSS	RONSA	RONUS	RONUA	RONGS	RONGA RONHA
20	15 / 20 / 25						
	30 / 40 / 50						
25	15 / 20 / 25						
	30 / 40 / 50						
30	15 / 20 / 25						
	30 / 40 / 50						
35	20 / 25						
	30 / 40 / 50						
40	20 / 25						
	30 / 40 / 50						
50	25						
	30 / 40 / 50						
	100						

■Urethane Thickness Selectable Type (Set Screw Holes at One End / Both Ends)

D	L	€ Unit Price Set Screw Hole at One End ROEKUS	ROEKUA	ROEKGS	ROEKGA	ROEKHA	Set Screw Holes at Both Ends RONUS	RONUA	ROENGA	ROENHA
40	30~50									
50	30~50									
	60~100									
60	30~50									
	60~100									
80	30~50									
	60~100									
100	30~50									
	60~100									

Urethane may discolor over time, but there is no effect on physical properties.

Order Example

Part Number	d	L	T
RONSS20	8	30	
ROEKUA50	15	80	T10

Days to Ship

- Urethane: 8 Days
- Silicon Rubber, Urethane Thickness Selectable Type: 10 Days

Price

- L Dimension Selectable Type

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

- Urethane Thickness Selectable Type

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

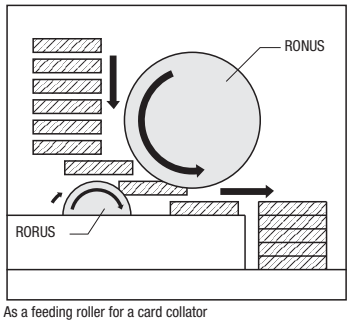
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	d	L	T	(UDC)
RONUS20	8	30		UDC
ROEKUS50	15	80	T10	UDC

Alteration	Code	Spec.	Price Adder
Antistatic Urethane (Urethane Color: Gray)	UDC	Urethane Shore A90 (ROUSN, ROCUSN, ROUAN and ROCUAN) is changed to antistatic urethane. Ordering Code UDC Specific Volume Resistivity 2.1x10⁸Ω·cm Surface Resistivity 40x10⁸Ω·cm (Temperature 30°C/Humidity 60%)	4,00

Example

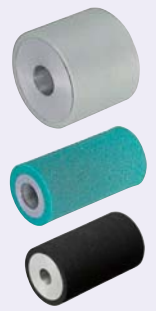


As a feeding roller for a card collator

Rollers
-Press-Fit Straight Type-

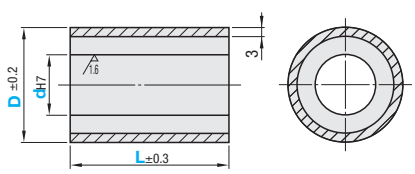
■ Core material is press-fit in the surface material and more economical than the baked type.

■Press-Fit Straight Type RoHS

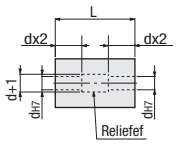


Type	Material		Hardness
	Core	Urethane / Plastic	
ROUSP	1.4301/X5CrNi18-10	Urethane (Natural Color)	Shore A90
ROUAP	EN AW-5052/AlMg2,5		
ROMAP	EN AW-5052/AlMg2,5	Foam Urethane (Green)	Shore A65
ROSAP	EN AW-5052/AlMg2,5	Chloroprene Rubber Sponge	Shore A25

Urethane, foam urethane and chloroprene rubber sponges are press-fit into the core circumference.



When L≤dx3, hole d is machined from the same direction.
When L>dx3, hole d is machined from both ends as shown below. There may be no relief in some cases.



Part Number Type	D	dH7 Selection						L Selection					
Urethane / Foam Urethane / Chloroprene Rubber Sponge	20	8						15	20	25	30	40	50
ROUSP ROUAP / ROMAP / ROSAP	(25)	8	10	12				15	20	25	30	40	50
	(30)	8	10	12	15			15	20	25	30	40	50
	35		10	12	15	20			20	25	30	40	50
	40		10	12	15	20			20	25	30	40	50
	(50)			12	15	20	25			25	30	40	50

Chloroprene rubber sponge is available in sizes in ( ) only.

Order Example Part Number - d - L : ROUSP20 - 8 - 30

Days to Ship - Urethane, Form Urethane: 8 Days - Chloroprene Rubber Sponge: 13 Days

Price

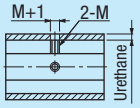
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request for quotation.

Alterations Part Number - d - L - (MC / UDC) : ROUSP20 - 8 - 30 - UDC

D	L	€ Unit Price ROUSP	ROUAP	ROMAP	ROSAP
20	15~25				
	30~50				
25	15~25				
	30~50				
30	15~25				
	30~50				
35	20~25				
	30~50				
40	20~25				
	30~50				
50	25				
	30~50				

Alterations	Code	Spec.	Price Adder
Tapping 	MC	Adds 2 tapped holes at 90°. D: 20, 25, 30 → M: 3; 35, 40 → 4; 50 → 5. Ordering Code MC	2,00
Antistatic Urethane (Urethane Color: Gray)	UDC	Urethane Shore A90 is changed to antistatic urethane. Ordering Code UDC. Specific Volume Resistivity 2.1x10⁸Ωcm Surface Resistivity 4.0x10⁸Ω (Temperature 30°C/Humidity 60%) ⊗Not applicable to foam urethane (ROMAP).	4,00

■Urethane Load (Reference)

Material	Load Standard N(kgf) Radial	Axial
Urethane	147 (15)	242 (25)
Foam Urethane	97 (10)	97 (10)
Chloroprene Rubber Sponge	-	18 (2)

*Data above are for reference only, not guaranteed values.

Urethane, foam urethane and chloroprene rubber sponges are press-fit into the core. Therefore, unbalanced load may cause urethane and sponge part to slip or misalign with the core.
Urethane may discolor over time, but there is no effect on physical properties.

■Foam Urethane

Closed-cell foamed urethane. Each bubble is divided by walls resulting in lower absorption of water, oil and chemicals compared to general sponges with connected cells. Also, it excels in gripping power and shock absorption compared to conventional urethane and other general rubber products. Especially suitable for conveying thin materials.

■Chloroprene Rubber Sponge

Synthetic rubber made of polymerized chloroprene. Superior to natural rubber in resilience, weather fastness and ozone resistance, and also features resistance to heat, cold and oil. While it is a well-balanced rubber material, it is not suitable for use in low temperature (less than -35°C). Mainly used for general industrial products.

For characteristics, please see P.2-358

Rollers / Aluminum Rollers

-Press-Fit Bearing Type-

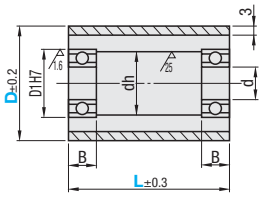
CAD Data

■Press-Fit Straight Type with Bearings RoHS



Type	Material		Hardness	Bearing
	Core	Urethane / Plastic		
RORUSP	1.4301/X5CrNi18-10	Urethane (Natural Color)	Shore A90	Steel
RORUAP	EN AW-5052/AlMg2,5			
RORMSP	1.4301/X5CrNi18-10	Foam Urethane (Green)	Shore A65	
RORMAP	EN AW-5052/AlMg2,5			
RORSAP	EN AW-5052/AlMg2,5	Chloroprene Rubber Sponge	Shore A25	

Urethane, foam urethane and chloroprene rubber sponge are press-fit on the outer circumference of the core material.



6.3 (25 1.6)

Part Number Type	D	L Selection					d	D1 (H7)	dh	B	Bearing
Urethane RORUSP RORUAP / Foam Urethane RORMSP RORMAP / Chloroprene Rubber Sponge RORSAP	25	20	25	30	40	50	6	15	10	5	B696ZZx2
	30	20	25	30	40	50	8	19	15	6	B698ZZx2
	35		25	30	40	50	10	22	18	6	B6900ZZx2
	40		25	30	40	50	12	28	24	8	B6001ZZx2
	50		25	30	40	50	15	32	28	9	B6002ZZx2

Order Example: Part Number RORUSP25 - L 30

Days to Ship: - Other than listed on the right 8 Days - Chloroprene Rubber Sponge 13 Days

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request for quotation.

Alterations: Part Number RORUSP25 - L 30 - (UDC / SB) UDC

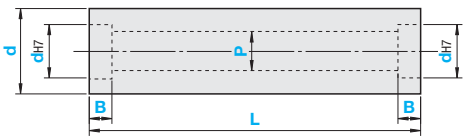
D	L	€ Unit Price				
		RORUSP	RORUAP	RORMSP	RORMAP	RORSAP
25	20~25					
	30~50					
30	20~25					
	30~50					
35	25					
	30~50					
40	25					
	30~50					
50	25					
	30~50					

Alterations	Code	Spec.		Price Adder
Antistatic Urethane (Urethane Color: Gray)	UDC	Urethane Shore A90 is changed to antistatic urethane. Ordering Code UDC Specific Volume Resistivity 2.1x108Ωcm Surface Resistivity 4.0x109Ω (Temperature 30°C/Humidity 60%) ⊗Not applicable to foam urethane.		4,00
Bearing Material	SB	Bearing material is changed to stainless steel. ⊗Chloroprene Rubber Sponge is not applicable.	D25	4,00
			D30	5,00
			D35	6,00
			D40	9,00
			D50	10,00

■Aluminum Rollers RoHS

AROE





M Material: EN AW-5052/AlMg2,5 S Surface Treatment: Clear Anodize

Part Number Type	D	L 1mm Increment	d 1mm Increment	B 1mm Increment	P 1mm Increment	€ Unit Price L50~100	L101~150	L151~200	L201~250	L251~300
AROE	30	50~300	19~55 (d≤D−5)	4~15	15~53 (P≤d−2)					
	40									
	50									
	60									

Order Example: Part Number AROE30 - L 100 - d 24 - B B6 - P P22

Days to Ship: 10 Days

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~15	16~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Hollow Rollers

-Straight Type (L=100 ~ 500)-

Price Reduction 8%

CAD Data

Drawn aluminum pipes are used. Lightweight and reasonably priced.

Straight Type

RoHS

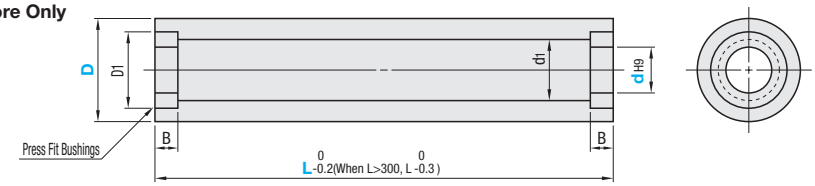




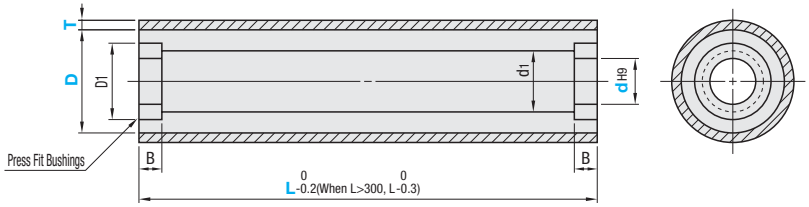
Type	Material Core	Sufrace Treatment (Lining)	Hardness
ROLLA	EN AW-5052/ AlMg2,5	Clear Anodize	-
ROLAU		Urethane (Natural Color)	Shore A90
ROLAG			Shore A70

Surface treatment may not be applied to shaft end and inner diameter.
Urethane is baked on the outer circumference of the core material.

Core Only



Urethane Baked



Outer diameter of this product is D+2T. (It is different from other rollers.)

Part Number Type	D	Urethane Thickness T	dH9 Selection	L Selection	d1	D1	B
Core Only ROLLA / Urethane Baked ROLAU ROLAG	30	3 / 5 / 10	8	100 150 200 250 300 350 400 450 500	15	22	10
			10				
			12				
	40		12		17	33	
			15				
			20		22		
	50	3 / 5	15		17	40	
			20		27		
		10	25				
	60		20		22	45	
			25		32		
			30				
	80		25		41	55	15
			30				
			35				

Order Example

Part Number	-	T	-	d	-	L
ROLLA50			-	20	-	L300
ROLAU60	-	T10	-	20	-	L400

Days to Ship

-ROLLA: 10 Days

-ROLAU / ROLAG: 13 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~15
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

The prices of ROLAG are the unit price shown in the table multiplied by 1.1. (Round down to the ten Cent.)

Core Only

Type	D	€ Unit Price L100	L150	L200	L250	L300	L350	L400	L450	L500
ROLLA	30									
	40									
	50									
	60									
	80									

Urethane Baked

D	T	€ Unit Price ROLAU(€ Unit Price x 1.0) L100	L150	L200	L250	L300	L350	ROLAG(€ Unit Price x 1.1) L400	L450	L500
30	3									
40										
50										
60										
80										
30	5									
40										
50										
60										
80										
30	10									
40										
50										
60										
80										

Urethane may discolor over time, but there is no effect on physical properties.

Hollow Rollers
-Bearing Type (L=100 ~ 500)-

Price Reduction 8%

CAD Data

Drawn aluminum pipes are used. Lightweight and reasonably priced.

Bearing Type

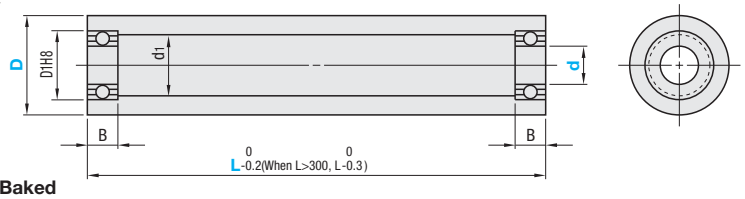
RoHS



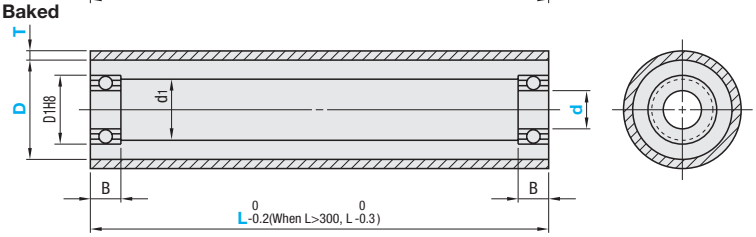
Type	Material: Core	Material: Bearing	Sufrace Treatment (Lining)	Hardness
RORLA	EN AW-5052/ AlMg2,5	Steel	Clear Anodize	-
RORLAU			Urethane (Natural Color)	Shore A90
RORLAG				Shore A70
RORLAH				Shore A50
RORLM	1.0480/H240LA		Electroless Nickel Plating	-
RORLS	1.4301/X5CrNi18-10		-	-

Surface treatment is not applied to the shaft ends and inner diameter.
Urethane is baked on the outer circumference of the core material.

Core Only



Urethane Baked



Bearings can be detached. Temporarily attached with tape for shipping.
Outer diameter of this product is D+2T. (It is different from other rollers.)

Part Number Type	D	Urethane Thickness T	d	L Selection	Bearing	D_1	B	d_1 Aluminum (EN AW-5052/AlMg2,5)	d_1 Steel (1.0480/H240LA) Stainless Steel (1.4301/X5CrNi18-10)
Core Only RORLA RORLM RORLS / Urethane Baked RORLAU RORLAG RORLAH	30	3	8	100 150 200 250 300 350 400 450 500	B698ZZ	19	6	15	15.8 (18)
		5	*8A		B608ZZ	22	7		
		10	10		B6900ZZ	22	6		
			12		B6901ZZ	24			
	35		10		B6900ZZ	22	6	17	18.1 (18)
			12		B6901ZZ	24	6		
			15		B6902ZZ	28	7		
	40		8		B628ZZ	24	8	17	18.7 (20)
			10		B6000ZZ	26			
			12		B6901ZZ	24	6	22	
			15		B6902ZZ	28	7	17**	
			20		B6804ZZ	32		22	22.7 (22)
	50		10		B6200ZZ	30	9	17	18 (22)
			12		B6001ZZ	28	8	22	
			15		B6902ZZ	28	7	17**	
			20		B6904ZZ	37	9	27	30 (28)
			25		B6905ZZ	42			
	60		12		B6201ZZ	32	10	22	-
			15		B6002ZZ		9		
			20		B6904ZZ	37	9	32	-
			25		B6905ZZ	42			
			30		B6906ZZ	47			
	80		25		B6205ZZ	52	15	41	-
			30		B6006ZZ	55	13		
			35		B6907ZZ		10		

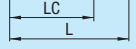
** The end faces are added relief so to avoid contact with the bearing inner ring. For detailed bearing dimensions, please see P.907
* D30 - d8A is only available in Steel Type and Stainless Steel Type. For applicable sizes, please check the price list.

Order Example

Part Number	-	T	-	d	-	L
RORLA50				20		L300
RORLAU60		T10		20		L400

Alterations

Part Number	-	T	-	d	-	L (LC)
RORLA50				20		LC151

Alteration	L Dimension Modification
Spec.	 Ordering Code LC151 (Change L to LC) LC=1mm Increment 50≤LC≤490 Only Applicable for Core Type
Code	LC
Price Adder	2,00

Days to Ship

- RORLA / RORLM / RORLS: 10 Days
- RORLAU / RORLAG / RORLAH: 13 Days

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~15
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

For RORLAG and RORLAH, the unit prices in the table are to be multiplied by factor (x1.1). (Round down to one Cent)

Core Only

Type	D	€ Unit Price L100	L150	L200	L250	L300	L350	L400	L450	L500
RORLA (Aluminum)	30									
	35									
	40									
	50									
	60									
	80									
RORLM (Steel)	30									
	35									
	40									
	50									
RORLS (Stainless Steel)	30									
	35									
	40									
	50									

Urethane Baked (Only Applicable for Aluminum Core Type)

D	T	€ Unit Price RORLAU (€ Unit Price x 1.0) L100	L150	L200	RORLA (€ Unit Price x 1.1) L250	L300	L350	ROR (€ Unit Price x 1.1) L400	L450	L500
30	3									
40										
50										
60										
80										
30	5									
40										
50										
60										
80										
30	10									
40										
50										
60										
80										

Urethane may discolor over time, but there is no effect on physical properties.

Hollow Rollers
-Set Screw Type (L=100 ~ 500)-

Price Reduction 8%

CAD Data

Drawn aluminum pipes are used. Lightweight and reasonably priced.

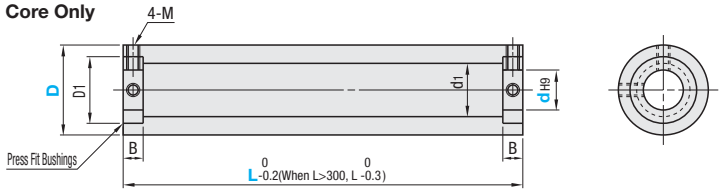
■Set Screw Type RoHS



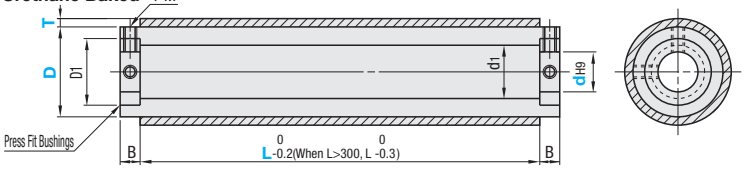
Type	Material: Core	Surface Treatment (Lining)	Hardness
ROLNLA	EN AW-5052/AlMg2,5	Clear Anodize	-
ROLNAU		Urethane (Natural Color)	Shore A90
ROLNAG			Shore A70
ROLNAH			Shore A50
ROLNLM	1.0480/H240LA	Electroless Nickel Plating	-
ROLNLS	1.4301/X5CrNi18-10	-	-

Surface treatment may not be applied to shaft end and inner diameter.
Urethane is baked on the outer circumference of the core material.

Core Only



Urethane Baked 4-M



Outer diameter of this product is D+2T. (It is different from other rollers.)

Part Number: Type	D	Urethane Thickness T	dH9 Selection	L Selection	d1: Aluminum (EN AW-5052/AlMg2,5)	d1: Steel (1.0480/H240LA) Stainless Steel (1.4301/X5CrNi18-10)	D1	B	M
Core Only ROLNLA ROLNLM ROLNLS	30		8	100 150 200 250 300 350 400 450 500	15	15.8 (18)	22	10	M4
			10						
			12						
	*35		10		17	18.1 (18)	27		M4
			12						
			15						
	40		12		17	22.7 (22)	33		M4
			15						M5
		3	20		22	22.7 (22)			M6
	50		15		17	30 (28)	40		M5
Thermally Bonded Urethane ROLNAU ROLNAG ROLNAH		5	20		27				M6
			25						
	60	10	20		22	-	45		M6
			25		32				
			30						
	80		25		41	-	55	15	M8
			30						
			35						
	*100		30		76	-	85	20	M8
			35						
			40						

Sizes marked with * are not available for urethane baked type.

Order Example

Part Number	T	d	L
ROLNLA50		20	L300
ROLNLM30		8	L350
ROLNAU60	T10	20	L400

Alterations

Part Number	T	d	L (LC)
ROLNLA30		12	LC315

Days to Ship

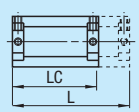
- ROLNLA / ROLNLM / ROLNLS: 10 Days
- ROLNAU / ROLNAG / ROLNAH: 13 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~15
Rate	€ Unit Price	5%

For ROLNAG and ROLNAH, the unit prices in the table are multiplied by factor (x1.1).
For orders larger than indicated quantity, please request a quotation.

Alteration	L Dimension Modification
Spec.	 Ordering Code LC151 (Change L to LC) LC=1mm Increment 50≤LC≤490 Only Applicable for Core Type
Code	LC
Price Adder	2,00

■Core Only

Type	D	€ Unit Price L100	L150	L200	L250	L300	L350	L400	L450	L500
ROLNLA (Aluminum)	30									
	35									
	40									
	50									
	60									
	80									
	100									
ROLNLM (Steel)	30									
	35									
	40									
	50									
ROLNLS (Stainless Steel)	30									
	35									
	40									
	50									

■Thermally Bonded Urethane (Only Applicable for Aluminum Core Type)

D	T	€ Unit Price ROLNAU(€ Unit Price x 1.0) ROLNAG(€ Unit Price x 1.1) ROLNAH(€ Unit Price x 1.1) L100	L150	L200	L250	L300	L350	L400	L450	L500
30	3									
40										
50										
60										
80										
30	5									
40										
50										
60										
80										
30	10									
40										
50										
60										
80										

Urethane may discolor over time, but there is no effect on physical properties.

Long Hollow Rollers

-Set Screw Type / Bearing Type (L=550 ~ 1000mm)-

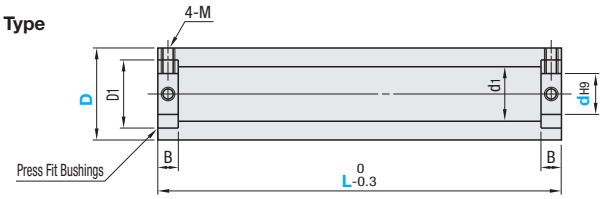
CAD Data

JIS STKM material resists bending.

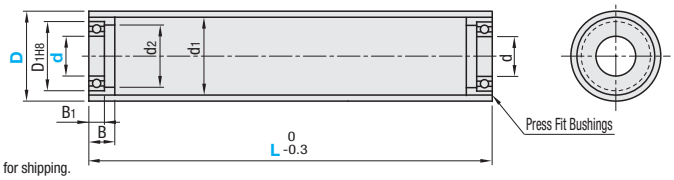


Type		Material Core	Surface Treatment	Bearing
Set Screw Type	ROLNT	1.0480/H240LA (1.1158/C25E)	Electroless Nickel Plating	-
Bearing Type	RORC			Steel

Set Screw Type



Bearing Type



Bearings can be detached.
Temporarily attached with tape for shipping.

Set Screw Type

Part Number Type	D	dH9 Selection	L Selection	d1	D1	B	M
ROLNT	50	15	550 600 650 700 750 800 850 900 950 1000	40	43	10	M6
		20					
		25					
	60	20		49.5	53		
		25					
		30					
	80	25		68.6	72	15	M8
		30					
		35					

Bearing Type

Part Number Type	D	d Selection	L Selection	D1	B1	B	d1	d2	Bearing
RORC	50	10	550 600 650 700 750 800 850 900 950 1000	30	9	15	40	17	B6200ZZ
		12		28	8			22	B6001ZZ
	60	12		32	10		49.5	22	B6201ZZ
		15			9				B6002ZZ
	80	25		52	15	20	68.6	41	B6205ZZ
		30		55	13				B6006ZZ

For details bearing dimensions, P.897

Order Example

Part Number	-	d	-	L
ROLNT80	-	25	-	L700
RORC60	-	15	-	L600

Days to Ship: 10 Days

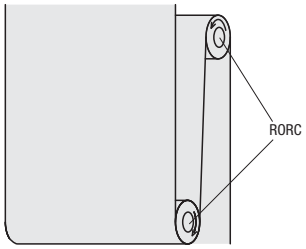
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~15
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Example



As guides for sheets (label films etc.)

Set Screw Type

Type	D	€ Unit Price L550	L600	L650	L700	L750	L800	L850	L900	L950	L1000
ROLNT	50										
	60										
	80										

Bearing Type

Type	D	€ Unit Price L550	L600	L650	L700	L750	L800	L850	L900	L950	L1000
RORC	50										
	60										
	80										

Rollers
-Straight Type with Keyway-

CAD Data

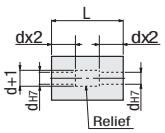
Features: 10th business day shipping is available for shaft bore with keyway machining and urethane lining.



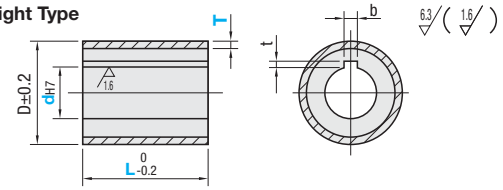
L Dimension Selectable		Urethane Thickness Selectable Type		Material		Hardness
Straight	Female Thread	Straight	Female Thread	Core	Lining	
ROUSK	ROUSKN	ROEUSK	ROEUSKN	1.4301/X5CrNi18-10	Urethane (Natural Color)	Shore A90
ROUAK	ROUAKN	ROEUAK	ROEUAKN	EN AW-5052/AlMg2,5		
ROGSK	-	ROEGSK	-	1.4301/X5CrNi18-10		Shore A70
ROGAK	-	ROEGAK	-	EN AW-5052/AlMg2,5		
ROHSK	-	-	-	1.4301/X5CrNi18-10		Shore A50
ROHAK	-	ROEHAK	-	EN AW-5052/AlMg2,5		

Urethane is baked on the outer circumference of the core material.

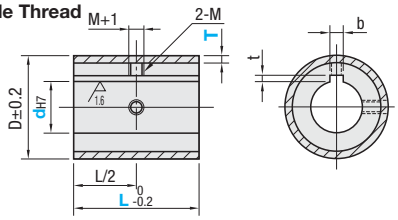
When L≤dx3, hole d is machined from the same direction.
When L>dx3, hole d is machined from both ends as shown below. There may be no relief in some cases.



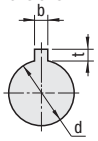
Straight Type



Female Thread



Keyway Dimensions



Shaft Hole Dia. d	b Ref. Dim.	b Tolerance (JS9)	t Ref. Dim.	t Tolerance (JS9)
8	3	±0.0125	1.4	+0.1 0
10				
12	4	±0.0150	1.8	
15	5		2.3	
20	6		2.8	
25	8	±0.0180	3.3	+0.2 0
30				

L Dimension Selectable

Part Number Type		D	dH7 Selection					L Selection						T	M
Straight	Female Thread	20	8					15	20	25	30	40	50	3	3
ROUSK	ROUSKN	25	8	10	12			15	20	25	30	40	50		
ROUAK	ROUAKN	30	8	10	12	15		15	20	25	30	40	50		
ROGSK		35		10	12	15	20		20	25	30	40	50		4
ROGAK		40		10	12	15	20		20	25	30	40	50		
ROHSK		50			12	15	20	25			25	30	40	50	5
ROHAK															

Urethane Thickness Selectable Type

Part Number Type		D	dH7 Selection					L 10mm Increment	T Selection	M
Straight	Female Thread	50	10	12	15			30~100	5	5
ROEUSK	ROEUSKN	60		12	15	20			10	
ROEUAK	ROEUAKN	80			15	20	25			6
ROEGSK		100				20	25	30		
ROEGAK										
ROEHAK										

L Dimension Selectable

D	L	€ Unit Price (Straight - Female Thread. For Female Thread Type, add 2,00 EUR to the prices shown below.) ROUSK (ROUSKN)	ROUAK (ROUAKN)	ROGSK	ROHSK	ROGAK	ROHAK
20	15~25						
	30~50						
25	15~25						
	30~50						
30	15~25						
	30~50						
35	20~25						
	30~50						
40	20~25						
	30~50						
50	25						
	30~50						

Urethane Thickness Selectable Type

D	L	€ Unit Price (Straight - Female Thread. For Female Thread Type, add 2,00 EUR to the prices shown below.) ROEUSK (ROEUSKN)	ROEUAK (ROEUAKN)	ROEGSK	ROEGAK	ROEHAK
50	30~50					
	60~100					
60	30~50					
	60~100					
80	30~50					
	60~100					
100	30~50					
	60~100					

Urethane may discolor over time, but there is no effect on physical properties.

Order Example

Part Number	-	d	-	L	-	T
ROUSK20	-	8	-	30		
ROEUSK80	-	20	-	50	-	T5

Days to Ship 10 Days

Price

- L Dimension Selectable Type

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-Urethane Thickness Selectable Type

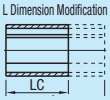
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	d	-	L	-	T	-	(UDC / LC)
ROUSK20	-	8	-	30			-	UDC
ROEUSK80	-	20	-	50	-	T5	-	
ROUAK30	-	10	-	30			-	LC29

Alterations	Code	Spec.	Price Adder
Antistatic Urethane (Urethane Color: Gray)	UDC	Urethane Shore A90 (ROUSN, ROCUSN, ROUAN and ROCUAN) is changed to antistatic urethane. Ordering Code UDC Specific Volume Resistivity 2.1x10⁸Ω·cm Surface Resistivity 40x10⁹Ω·cm (Temperature 30°C/Humidity 60%)	4,00
L Dimension Modification 	LC	Ordering Code LC11 LC=1mm Increment L≤LC≤45 Only applicable for L dimension selectable types	3,00

Hollow Rollers with Shafts (L Dimension up to 800mm)

-Straight / Both Ends Female Thread / Both Ends Retaining Ring Groove Type-

Price Reduction 16%

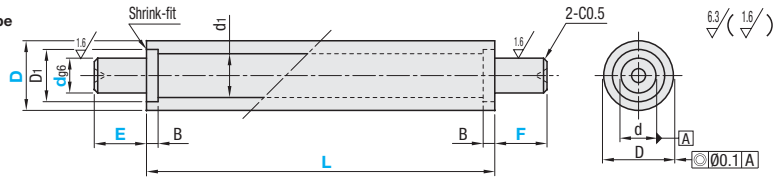
CAD Data

Features: With factory mounted shafts and ready to use out-of-box.

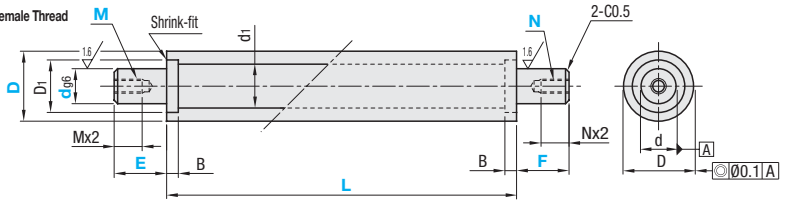
RoHS



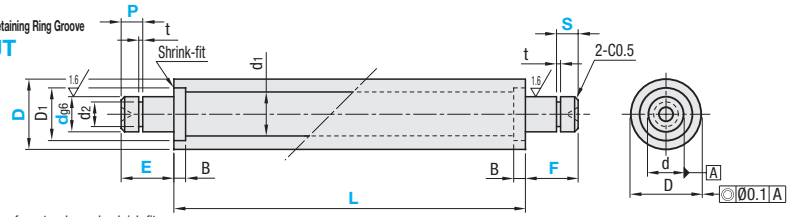
Straight Type
ROLJ



Both Ends Female Thread
ROLJM



Both Ends Retaining Ring Groove
ROLJT



The end surfaces turn brown by shrink-fit process.

M Material: 1.0480/H240LA (1.1158/C25E)
S Surface Treatment: Electroless Nickel Plating

Part Number Type	D	d_{g6} Selection	L 10mm Increment	E / F 1mm Increment	M(Coarse Thread) / N(Coarse Thread) Selection	P / S 1mm Increment	d_1	D_1	B	t Tolerance	d2 Tolerance	Applicable Retaining Ring
ROLJ ROLJM ROLJT	50	15	100~800	5~45	5 6	5≤P<E-5 5≤S<F-5	40	43	25	1.15 +0.14 0	14.3 0 -0.11	JIS C Type 15
		20		5~60	5 6 8 10 12					1.35	19	JIS C Type 20
		25		5~75	5 6 8 10 12 16					1.35	23.9 0 -0.21	JIS C Type 25
	60	20		5~60	5 6 8 10 12		49.5	53	30	1.35	19	JIS C Type 20
		25		5~75	5 6 8 10 12 16					1.35	23.9	JIS C Type 25
		30		5~90	8 10 12 16 20					1.65	28.6	JIS C Type 30
	80	25		5~75	5 6 8 10 12 16		68.6	72	40	1.35	23.9	JIS C Type 25
		30		5~90	8 10 12 16 20					1.65	28.6	JIS C Type 30
		35		5~100	8 10 12 16 20 24					1.65	33 0 -0.25	JIS C Type 35

Order Example

	Part Number	-	d	-	L	-	E	-	F	-	M	-	N	-	P	-	S
(Straight)	ROLJ60	-	20	-	590	-	E30	-	F30								
(Both Ends Female Thread)	ROLJM80	-	30	-	720	-	E20	-	F20	-	M12	-	N12				
(Both Ends Retaining Ring Groove)	ROLJT50	-	25	-	850	-	E40	-	F42					-	P15	-	S35

Days to Ship **13 Days**

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~15
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Straight

Part Number Type	D	€ Unit Price L100 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L510 ~550	L560 ~600	L610 ~650	L660 ~700	L710 ~750	L760 ~800
ROLJ	50														
	60														
	80														

Both Ends Female Thread

Part Number Type	D	€ Unit Price L100 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L510 ~550	L560 ~600	L610 ~650	L660 ~700	L710 ~750	L760 ~800
ROLJM	50														
	60														
	80														

Both Ends Retaining Ring Groove

Part Number Type	D	€ Unit Price L100 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L510 ~550	L560 ~600	L610 ~650	L660 ~700	L710 ~750	L760 ~800
ROLJT	50														
	60														
	80														

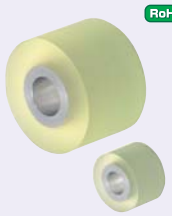
Urethane Rollers with Collars / Knurled Urethane Rollers

-Set Screw Type-

CAD Data

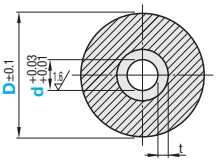
Urethane Rollers with Collars

RoHS



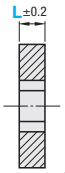
Type	Material: Core	Material: Lining	Hardness
UMC	EN AW-5052/ AlMg2,5	Urethane (Natural Color)	Shore A90
UMCM			Shore A70
UMCL			Shore A50

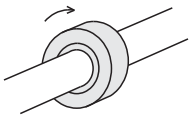
Urethane is baked on the outer circumference of the core material.





Example





*Secure the roller to the shaft with loctite adhesive.

Part Number Type	D	d Selection	L Selection	t
UMC (Shore A90) UMCM (Shore A70) UMCL (Shore A50)	10	3	5 10 15	2
	12	3	5 10 15	
	13	4	5 10 15	
	15	5	5 10 15	
	16	5 6	5 10 15	
	20	5 6 8	10 15 20	3
	25	6 8 10	10 15 20 25	
	30	8 10 12 15	10 15 20 25 30 40 50	
	35	8 10 12 15	10 15 20 25 30 40 50	
	40	8 10 12 15	10 15 20 25 30 40 50	4
	45	10 12 15	10 15 20 25 30 40 50	
	50	10 12 15	10 15 20 25 30 40 50	
	55	10 12 15	15 20 25 30 40 50	
	60	10 12 15	20 25 30 40 50	
	70	12 15 20	20 25 30 40 50	5
	80	12 15 20	20 25 30 40 50	

D	€ Unit Price UMC L5	L10	L15	L20	L25	L30	L40	L50	UMCM L5	L10	L15	L20	L25	L30	L40	L50	UMCL L5	L10	L15	L20	L25	L30	L40	L50
10																								
12																								
13																								
15																								
16																								
20																								
25																								
30																								
35																								
40																								
45																								
50																								
55																								
60																								
70																								
80																								

Order Example: Part Number UMC30 - d 10 - L 20

Days to Ship: 8 Days

Alterations: Part Number UMC30 - d 10 - L 20 - (HRC) HRC; 10 Days

Alteration	Parallel Knurls
Code	HRC
Spec.	Straight-line knurling is applied to Roller surfaces.
Price Adder	3,00

Price

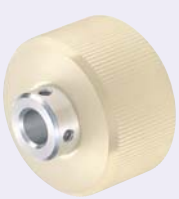
Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

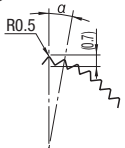
Knurled Urethane Rollers -Set Screw Type-

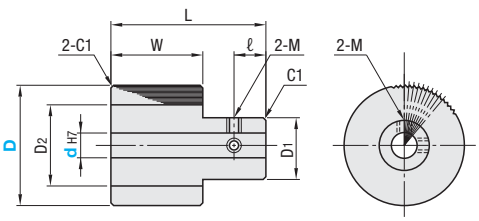
RoHS



Type	Material: Core	Material: Lining	Hardness
UMKH	EN AW-5052/ AlMg2,5	Urethane (Natural Color)	Shore A90
UMKM			Shore A70
UMKL			Shore A50

Urethane is baked on the outer circumference of the core material.





Part Number Type	D	dH7	α°	# of teeth	D1	D2	W	L	ℓ	M	€ Unit Price UMKH	UMKM	UMKL
UMKH (Shore A90) UMKM (Shore A70) UMKL (Shore A50)	15	4 5	10	36	8	8	10	20	5	M3			
	20	4 5 6	7.5	48	10	15							
	25	6 8	6	60	12		15	25					
	30	8 10	5	72	16	20	20	35	7.5	M4			
	40	8 10 12	3.75	96									
	50	8 10 12	3	120	18	22							

Order Example: Part Number UMKM25 - d 6

Days to Ship: 10 Days

Express B 2,00 EUR/ piece P88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

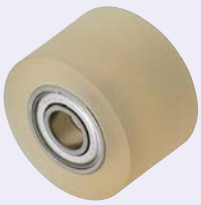
Bearing Bonded Urethane Rollers / Urethane Rollers / Knurling Urethane Rollers

-Set Screw Type-

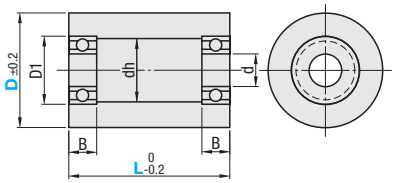
CAD Data

Features: Economical Urethane Rollers with bearings directly adhesive bonded.

Bearing Integrated Urethane Rollers RoHS



UMJ



For detailed bearing dimensions, please see P.907-908

M Material: Bearing: Steel
Urethane Roller: Polyurethane (Natural Color)
H Hardness: Shore A90

Part Number Type	D	L	d	D_1	dh	B	Used Bearing	€ Unit Price L20	L30	L40	L50
UMJ	20	20 30 40 50	6	15	10	5	696ZZx2				
	25	20 30 40 50	6	15	10	5	696ZZx2				
	30	20 30 40 50	8	19	15	6	698ZZx2				
	35	30 40 50	10	22	18	6	6900ZZx2				
	40	30 40 50	12	28	24	8	6001ZZx2				
	50	30 40 50	15	32	28	9	6002ZZx2				

Order Example: Part Number UMJ30 - L 30

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

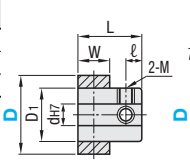
-Set Screw Type- RoHS



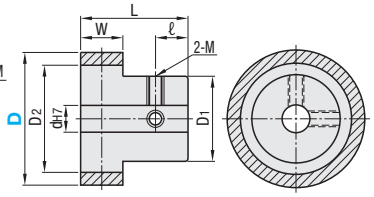
Type	M Material: Core	M Material: Lining	H Hardness
UMHSH	1.4301/ X5CrNi18-10	Urethane (Natural Color)	Shore A90
UMHS			Shore A70
UMHSL			Shore A50

Urethane is baked on the outer circumference of the core material.

D15 / 20

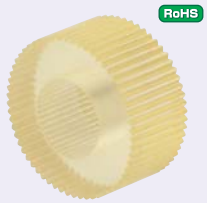


D25~50

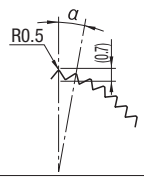


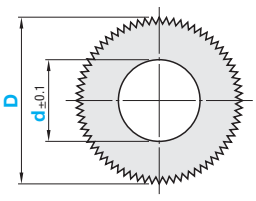
Part Number Type	No.	D	d	D_1	D_2	W	L	ℓ	M	Standard € Unit Price UMHSH	UMHS	UMHSL
UMHSH (Shore A90) UMHS (Shore A70) UMHSL (Shore A50)	15	15	4	10	-	6	12	3	3			
	15-5		5									
	20	20	4	16	-	6	12	3	3			
	20-5		5									
	25	25	6	16	20	8	20	6	3			
	25-8		8						4			
	30	30	6	16	24	8	20	6	3			
	30-8		8						4			
	35	35	8	20	28	10	25	7.5	4			
	35-10		10									
	40	40	8	25	36	10	25	7.5	4			
	40-10		10									
	50	50	10	30	42	10	25	7.5	4			
	50-12		12									

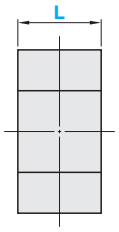
Knurled Urethane Rollers RoHS



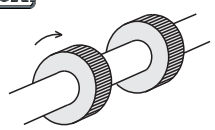
ULCV







Example



M Material: Polyurethane (Natural Color)
H Hardness: Shore A50

Part Number Type	D	L Selection	d Selection	α°	# of teeth	€ Unit Price L6	L10	L15	L20
ULCV (Shore A50)	15	6 10	8	12	30				
	20	10 15	8 10	9	40				
	25	10 15 20	8 10 15	7.2	50				
	30	10 15 20	8 10 15	6	60				

Order Example: Part Number UMHS15 / ULCV20 - L 10 - d 8

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Urethane Rollers with Shafts

-Straight Type / Both Ends Male Thread Type-

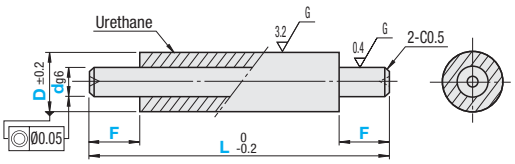
CAD Data

■Straight Type



Type	Material: Shaft	Material: Lining	Hardness
USH	1.3505/100Cr6 Induction Hardening (Depth 0.8~2mm) 58HRC~	Urethane (Natural Color)	Shore A90
USM			Shore A70
USL			Shore A50

※Urethane is baked on the outer circumference of the core material.



Part Number Type	D	dg6 Selection	L 1mm Increment	F 1mm Increment
USH USM USL	10	5 6	50~100	5≤F≤dx2 2F<L
	15	6 8 10	50~150	
	20	8 10 12 15	50~200	
	25	10 12 15 20		
	30	15 20	50~300	
	35	15 20		

Order Example: Part Number - d - L - F → USH20 - 8 - 150 - F10

Days to Ship: 10 Days

Price

■Volume Discount (※Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

Part Number Type	D	€ Unit Price L50~100	L101~150	L151~200	L201~250	L251~300
USH	10					
	15					
	20					
	25					
	30					
	35					

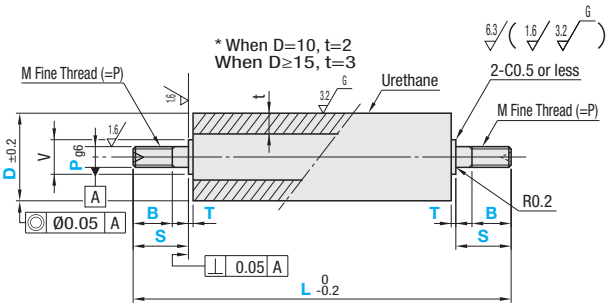
Part Number Type	D	€ Unit Price L50~100	L101~150	L151~200	L201~250	L251~300
USM USL	10					
	15					
	20					
	25					
	30					
	35					

■Both Ends Male Thread Type



Type	Material: Shaft	Material: Lining	Hardness
USMH	1.1191/ C45E	Urethane (Natural Color)	Shore A90
USMM			Shore A70
USML			Shore A50

※Urethane is baked on the outer circumference of the core material.



Part Number Type	D	L 1mm Increment	Pg6 Selection	1mm Increment S	1mm Increment B	1mm Increment T
USMH USMM USML	10	50~100	3	3≤S≤Px5	(When P≤6) B≤S−2 (When P=8, 10) B≤S−3 (When P≥12) B≤S−5	1~30
	15	50~150	3 4 5 6			
	20	50~200	4 5 6 8 10			
	25		4 5 6 8 10 12			
	30	50~300	5 6 8 10 12 15 17			
	35		8 10 12 15 17 20			

See the list below, for V and M to dimension P.

P	V	M (Fine Thread)
3	5	M3xP0.35
4	6	M4xP0.5
5	7	M5xP0.5
6	8	M6xP0.75
8	10	M8xP1.0
10	13	M10xP1.0
12	15	M12xP1.0
15	17	M15xP1.0
17	20	M17xP1.0
20	24	M20xP1.0

Order Example: Part Number - L - P - S - B - T → USMH20 - 180 - P10 - S30 - B25 - T1

Days to Ship: 10 Days

Price

■Volume Discount (※Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

Part Number Type	D	€ Unit Price L50~100	L101~150	L151~200	L201~250	L251~300
USMH	10					
	15					
	20					
	25					
	30					
	35					

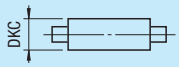
Part Number Type	D	€ Unit Price L50~100	L101~150	L151~200	L201~250	L251~300
USMM USML	10					
	15					
	20					
	25					
	30					
	35					

Alterations

Part Number - d - L - F - P - S - B - T - (DKC / UDC)

USH15 - 8 - 80 - F5 - - DKC

USMH20 - - 120 - P8 - S8 - B5 - T4 - UDC

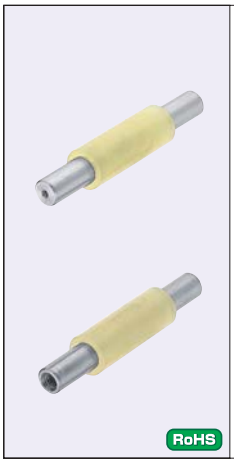
Alteration	Code	Spec.	Price Adder
Outer Diameter Tolerance 	DKC	Changes the D dimension tolerance. D Tolerance +0.05 0 Ordering Code DKC	15,00

Alteration	Code	Spec.	Price Adder
Antistatic Urethane (Urethane Color: Gray)	UDC	Changes to antistatic urethane (only USH and USMH Type). Ordering Code UDC Specific Volume Resistivity 2.1x10⁸Ωcm Surface Resistivity 4.0x10⁹Ω (Temperature 30°C/Humidity 60%)	4,00

Urethane Rollers with Shafts

-Urethane Thickness Configurable Type-

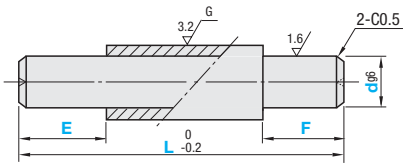
CAD Data



RoHS

Straight

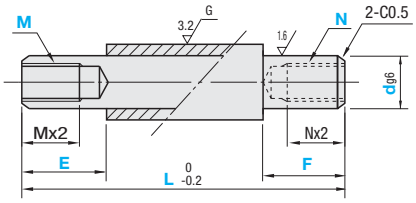
Type	Material: Shaft	Material: Lining	Hardness
USRH	1.1191/C45E	Urethane (Natural Color)	Shore A90
USRM			Shore A70
USSRH	1.4301/ X5CrNi18-10	Urethane (Natural Color)	Shore A90



Both Ends Female Thread

Type	Material: Shaft	Material: Lining	Hardness
USRWH	1.1191/ C45E	Urethane (Natural Color)	Shore A90

Urethane is baked on the outer circumference of the core material.



Part Number: Type		d	T 1mm Increment	L 1mm Increment	E · F 1mm Increment	Both Ends Female Thread: M(Coarse Thread) · N(Coarse Thread) Selection
(Straight) USRH USRM USSRH	(Both Ends Female Thread) USRWH	8	2~5	50~200	5≤E<L/2	3 4 5
		10				4 5 6
		12			5≤F<L/2	5 6 8
		15		50~300		5 6 8 10

Order Example

	Part Number	-	T	-	L	-	E	-	F	-	M	-	N
(Straight)	USRH10	-	2	-	195	-	E10	-	F10				
(Both Ends Female Thread)	USRWH10	-	2	-	195	-	E10	-	F10	-	M5	-	N6

Days to Ship 10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Straight

d	€ Unit Price: USRH L50 ~100	USRH L101 ~150	USRH L151 ~200	USRH L201 ~250	USRH L251 ~300	USRM L50 ~100	USRM L101 ~150	USRM L151 ~200	USRM L201 ~250	USRM L251 ~300	USSRH L50 ~100	USSRH L101 ~150	USSRH L151 ~200	USSRH L201 ~250	USSRH L251 ~300
8															
10															
12															
15															

Both Ends Female Thread

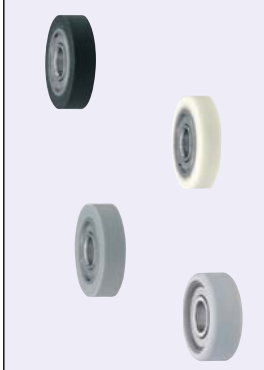
d	€ Unit Price: USRWH L50 ~100	USRWH L101 ~150	USRWH L151 ~200	USRWH L201 ~250	USRWH L251 ~300
8					
10					
12					
15					

Silicon Rubber / Urethane Mold Bearings

–Flat Type–

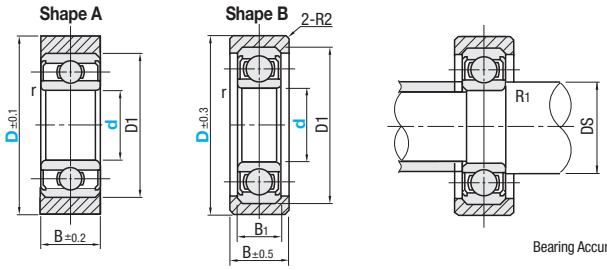
CAD Data

RoHS



Urethane (white) may turn yellow with age.

Type Bearing: Steel (1.3505/100Cr6)	Type Bearing: Stainless Steel (1.4125/X105CrMo17)	Material	Hardness	Color
UMBB	UMSB	Urethane	Shore A90	Black
UMBW	UMSW			White
UMBG	UMSG		Shore A70	Black
UMBGW	UMSGW			White
UMBL	-		Shore A50	Black
UMBLW	-			White
UMBD	-	Antistatic Urethane	Shore A90	Gray
SUMBB	SUMSB	Silicon Rubber	Shore A70	Light Gray



Bearing Accuracy JISB1514 Class 0

* The end faces are added relief so to avoid contact with the bearing inner ring. For detailed bearing dimensions, please see **P.907**

Shape A

Part Number Type	d	D	Allowable Load N(kgf) Urethane Shore A90	Urethane Shore A70	Urethane Shore A50	Silicon Shore A70	B	D1	r (min.)	Relative Dimension Ds (min.)	Ds (max.)	R1 (max.)	Bearing
Urethane UMBB UMBW UMBG UMBGW UMBL UMBLW	3	12	34(3.5)	10(1)	6(0.6)	9.8(1)	3	7	0.1	3.9	4.1	0.1	W683ZZA
	*4	13	44(4.5)	13(1.3)	7(0.7)	13(1.3)	4	9	0.15	5	5.2		W684AX50ZZ
		16	59(6)	16(1.6)	6(0.6)	18(1.8)	5	13	0.2	5.6	6.2	0.2	624ZZ
	*5	16		16(1.6)						6.6	6.9		WBC5-13ZZ
		20	78(8)	20(2)	9(0.9)	24(2.4)		16	0.3	7	7.6	0.3	625ZZ
	*6	20		23(2.3)	15(1.5)			15	0.2	7.6	7.8	0.2	696ZZ
		28	157(16)	44(4.5)	39(4)	47(4.8)	6	19	0.3	8	9.5	0.3	626ZZ
	*8	28		42(4.3)	35(3.6)		7	22		10	12.2		608ZZ
		30A	176(18)	81(8.3)	65(6.7)	53(5.4)							608ZZ
Antistatic Urethane UMBD		30A		94(9.6)	51(5.2)		8	26		12	13.5		6000ZZ
	10	40A	274(28)	136(13.9)	93(9.5)	82(8.4)	9	30	0.6	14	16	0.6	6200ZZ
		40A		122(12.4)	96(9.9)			32	0.3	17	19	0.3	6002ZZ
Silicon Rubber SUMBB *SUMSB	15	45A	343(35)	109(11.1)	102(10.5)	103(10.5)	11	35	0.6	19	20	0.6	6202ZZ
		45A		130(13.3)	98(10.1)		9	37	0.3	22	24	0.3	6904ZZ
	20	55A	490(50)	225(22.9)	176(18.1)	147(15)	14	47	1	25	28	1	6204ZZ
	25	65A	750(70)	333(34)	250(25.8)	226(23)	15	52		30	32		6205ZZ

Only d4~8 are available for * marked types.

Allowable load is for reference.

D: 30A~45A are for UMBB, UMBW and UMSB only, 55A and 65A are for UMBB and UMBW only.

Shape B

Part Number Type	d	D	Allowable Load N(kgf) Urethane Shore A90	Urethane Shore A70	Urethane Shore A50	Silicon Shore A70	B	D1	B1	r (min.)	Relative Dimension Ds (min.)	Ds (max.)	R1 (max.)	Bearing
Urethane UMBB UMBW UMBG UMBGW UMBL UMBLW	8	30	176 (18)	81(8.3)	65(6.7)	53(5.4)	11	22	7	0.3	10	12.2	0.3	608ZZ
	10	30		94(9.6)	51(5.2)			26	8		12	13.5		6000ZZ
		40	274 (18)	136(13.9)	93(9.5)	82(8.4)		30	9	0.6	14	16	0.6	6200ZZ
	15	40		122(12.4)	96(9.9)		12	32		0.3	17	19	0.3	6002ZZ
		45	343 (35)	109(11.1)	102(10.5)	103(10.5)	15	35	11	0.6	19	20	0.6	6202ZZ
Antistatic Urethane UMBD	20	45		130(13.3)	98(10.1)		12	37	9	0.3	22	24	0.3	6904ZZ
Silicon Rubber SUMBB SUMSB		55	490 (50)	225(22.9)	176(18.1)	147 (15)	18	47	14	1	25	28	1	6204ZZ
	25	65	750 (70)	333(34)	250(25.8)	226 (23)	19	52	15		30	32		6205ZZ

Allowable load is for reference.

Order Example Part Number - D: UMBB10 - 30A

Days to Ship

8 Days — Express A — 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

•Silicon rubber only

10 Days — Express B — 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	15%	30%

For orders larger than indicated quantity, please request a quotation.

Alterations Part Number - D - (DC): UMBB6 - 20 - DC18

Alteration	Code	Spec.	Price Adder
	DC	Changes the D dimension in 1mm increment. D1+2≤DC≤D-1 Ordering Code DC18	3,00

Properties of Antistatic Urethane

Item	Unit	UMBD
Specific Volume Resistivity	Ωcm	2.1×10^8
Surface Resistivity	Ω	4.0×10^9

Test Conditions (Temperature 30°C/Humidity 60%)

Listed values are not guaranteed values but an example of measured values.

d	D	€ Unit Price: Steel Bearing Urethane (Shore A90) UMBB UMBW	Urethane (Shore A70) UMBG UMBGW	Urethane (Shore A50) UMBL UMBLW	Antistatic Urethane UMBD	Silicon Rubber (Shore A70) SUMBB	Stainless Steel Bearing Urethane (Shore A90) UMSB UMSW	Urethane (Shore A70) UMSG UMSGW	Silicon Rubber (Shore A70) SUMSB
3	12								
4	13								
	16								
5	16								
	20								
6	20								
	28								
8	28								
	30 / 30A								
10	30 / 30A								
	40 / 40A								
15	40 / 40A								
	45 / 45A								
20	45 / 45A								
	55 / 55A								
25	65 / 65A								

D: 30A~45A are for UMBB, UMBW and UMSB only, 55A and 65A are for UMBB and UMBW only.

Silicon Rubber / Urethane Mold Bearings
-Arc Type-

CAD Data

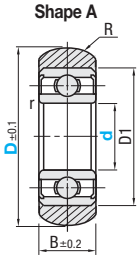
RoHS



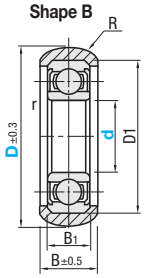
Urethane (white) may turn yellow with age.

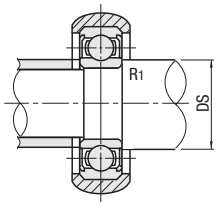
Type Bearing		Material	Hardness	Color
Steel (1.3505/100Cr6)	Stainless Steel (1.4125/X105CrMo17)			
UMBBR	UMSBR	Urethane	Shore A90	Black
UMBWR	UMSWR			White
SUMBBR	-	Silicon Rubber	Shore A70	Light Gray

Shape A



Shape B





Bearing Accuracy JISB1514 Class 0

* The end faces are added relief so to avoid contact with the bearing inner ring. For detailed bearing dimensions, please see P.907

Shape A

Part Number Type	d	D	Allowable Load N(kgf) Urethane Shore A90	Silicon Shore A70	B	D1	r (min.)	R	Relative Dimension Ds (min.)	Ds (max.)	R1 (max.)	Bearing
Urethane UMBBR •UMSBR UMBWR •UMSWR Silicon Rubber SUMBBR	3	12	34(3.5)	9.8 (1)	3	7	0.1	5	3.9	4.1	0.1	W683ZZA
	*4	13	44(4.5)	13 (1.3)	4	9	0.15		5	5.2		W684AX50ZZ
		16	59(6)	18 (1.8)	5	13	0.2		5.6	6.2	0.2	624ZZ
	*5	16							6.6	6.9		WBC5-13ZZ
		20	78(8)	24 (2.4)		16	0.3		7	7.6	0.3	625ZZ
	*6	20				15	0.2		7.6	7.8	0.2	696ZZ
		28	157(16)	47 (4.8)	6	19	0.3		8	9.5	0.3	626ZZ
	*8	28	176(18)		7	22			10	12.2		608ZZ

Only d4~8 are available for * marked types.

Allowable load is for reference.

Order Example: Part Number - D → UMBBR25 - 65

Days to Ship

8 Days
Express A 2,00 EUR/ piece P.88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

•Silicon rubber only
10 Days
Express B 2,00 EUR/ piece P.88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	15%	30%

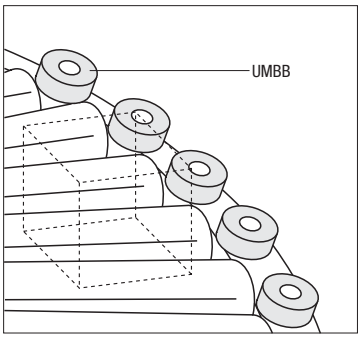
For orders larger than indicated quantity, please request a quotation.

Shape B

Part Number Type	d	D	Allowable Load N(kgf) Urethane Shore A90	Silicon Shore A70	B	D1	B1	r (min.)	R	Relative Dimension Ds (min.)	Ds (max.)	R1 (max.)	Bearing
Urethane UMBBR UMSBR UMBWR UMSWR Silicon Rubber SUMBBR	8	30	176 (18)	53 (5.4)	11	22	7	0.3	15	10	12.2	0.3	608ZZ
	10	30				26	8			12	13.5		6000ZZ
		40	274 (18)	82 (8.4)		30	9	0.6		14	16	0.6	6200ZZ
	15	40			12	32		0.3		17	19	0.3	6002ZZ
		45	343 (35)	103 (10.5)	15	35	11	0.6		19	20	0.6	6202ZZ
	20	45			12	37	9	0.3		22	24	0.3	6904ZZ
		55	490 (50)	147 (15)	18	47	14	1	20	25	28	1	6204ZZ
	25	65	750 (70)	226 (23)	19	52	15			30	32		6205ZZ

Allowable load is for reference.

Example



As work guides for conveyors

d	D	€ Unit Price Steel Bearing Urethane (Shore A90) UMBBR UMBWR	Silicon Rubber (Shore A70) SUMBBR	Stainless Steel Bearing Urethane (Shore A90) UMSBR UMSWR
3	12			
4	13			
	16			
5	16			
	20			
6	20			
	28			
8	28			
	30			
10	30			
	40			
15	40			
	45			
20	45			
	55			
25	65			

Silicon Rubber / Urethane Mold Bearings

-Male Thread Flat Type-

CAD Data

RoHS



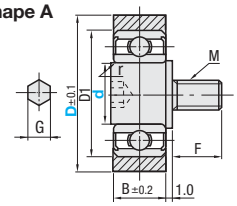
Urethane (white) may turn yellow with age.

Type: Flat Type – Standard	Flat Type – Long	M Material	H Hardness	Color	Bearing	Shaft: M Material	Shaft: S Surface Treatment
UMBH	UMBT	Urethane	Shore A90	Black	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating
UMSBH	UMSBT				1.4125/X105CrMo17	1.4305/X10CrNiS18-9	-
UMBWH	UMBWT			White	1.3505/100Cr6	1.3505/100Cr6	Trivalent Chromate
UMSWH	UMSWT				1.4125/X105CrMo17	1.4305/X10CrNiS18-9	-
UMBGH	-		Shore A70	Black	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating
UMBLH	-		Shore A50	Black	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating
UMBLWH	UMBLWT			White	1.3505/100Cr6	1.3505/100Cr6	Trivalent Chromate
SUMBH	SUMBT	Silicon Rubber	Shore A70	Light Gray	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating
SUMSBH	SUMSBT				1.4125/X105CrMo17	1.4305/X10CrNiS18-9	-
UMBDH	UMBDT	Antistatic Urethane	Shore A90	Gray	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating

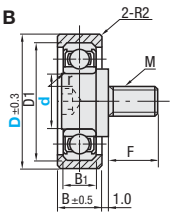
M Material:
Steel Type:
Bearing : 1.3505/100Cr6,
Shaft : 1.3505/100Cr6
Stainless Steel Type:
Bearing : 1.4125/X105CrMo17,
Shaft : 1.4305/X10CrNiS18-9
Bearing Accuracy JISB1514 Class 0

S Surface Treatment: Electroless Nickel Plating (Electroless Nickel Plating: UMB_ / UMBGH / UMBL_ SUMB_ / UMBD_; Trivalent Chromate: (UMBW_ / UMBLW_))

Shape A



Shape B



For detailed bearing dimensions, please see P.907

Shape A

Part Number: Type	d	D	M (Coarse)	F: Standard	F: Long	Allowable Load N(kgf): Urethane Shore A90	Urethane Shore A70	Urethane Shore A50	Silicon Shore A70	B	D1	r (min.)	G	Bearing
	3	12	M3	4	6	34 (3.5)	10 (1)	6 (0.6)	9.8 (1)	3	7	0.1		W683ZZA
	*4	13	M4	5	8	44 (4.5)	13 (1.3)	7 (0.7)	13 (1.3)	4	9	0.15	1.5	W684AX50ZZ
		16				59 (6)	16 (1.6)	6 (0.6)	18 (1.8)	5	13	0.2		624ZZ
	*5	16					16 (1.6)							WBC5-13ZZ
		20				78 (8)	20 (2)	9 (0.9)	24 (2.4)		16	0.3	2.5	625ZZ
	*6	20	M6	8	12		23 (2.3)	15 (1.5)			15	0.2		696ZZ
		28				157 (16)	44 (4.5)	39 (4)	47 (4.8)	6	19	0.3		626ZZ
	*8	28				176 (18)	42 (4.3)	35 (3.6)		7	22		4	608ZZ
		30A					81 (8.3)	65 (6.7)	53 (5.4)					608ZZ
	10	30A					94 (9.6)	51 (5.2)		8	26			6000ZZ
		40A				274 (28)	136 (13.9)	93 (9.5)	82 (8.4)	9	30	0.6	5	6200ZZ
	15	40A	M10	12	20		122 (12.4)	96 (9.9)			32	0.3		6002ZZ
		45A				343 (35)	109 (11.1)	102 (10.5)	103 (10.5)	11	35	0.6		6202ZZ
	20	45A					130 (13.3)	98 (10.1)		9	37	0.3	8	6904ZZ
		55A				490 (50)	225 (22.9)	176 (18.1)	147 (15)	14	47	1		6204ZZ
	25	65A				750 (70)	333 (34)	250 (25.8)	226 (23)	15	52		10	6205ZZ

Standard / Long:
UMBH / UMBT
UMSBH / UMSBT
UMBWH / UMBWT
* UMSWH / * UMSWT
UMBGH
UMBLH
UMBLWH / UMBLWT
* SUMBH / * SUMBT
SUMSBH / SUMSBT
UMBDH / UMBDT

Only applicable from d4 to 8 for *marked part numbers.
Allowable load is for reference.
* D: 30A~45A are for UMBH, UMBT, UMBWH, UMBWT, UMSBH and UMSBT only, 55A and 65A are for UMBH, UMBT, UMBWH and UMBWT only.

Order Example: Part Number - D → UMBH10 - 30A

Days to Ship: 8 Days (P.88) — Express A, 2,00 EUR/piece
A Express Charge of 5,40 EUR for 3 or more identical pieces.

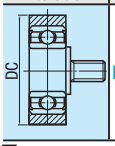
-Silicon rubber only
5 Days (P.88) — Express B, 2,00 EUR/piece
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	15%	30%

For orders larger than indicated quantity, please request a quotation.

Alterations: Part Number - D - (DC) → UMBH6 - 20 - DC18

Alteration	Code	Spec.	Price Adder
	DC	Changes the D dimension in 1mm increment. D1+2≤DC≤D-1 Ordering Code DC18	3,00

Shape B

Part Number: Type	d	D	M (Coarse)	F: Standard	F: Long	Allowable Load N(kgf): Urethane Shore A90	Urethane Shore A70	Urethane Shore A50	Silicon Shore A70	B	D1	B1	r (min.)	G	Bearing
	8	30	M6	8	12	176 (18)	81 (8.3)	65 (6.7)	53 (5.4)	11	22	7	0.3	4	608ZZ
	10	30					94 (9.6)	51 (5.2)			26	8		5	6000ZZ
		40				274 (28)	136 (13.9)	93 (9.5)	82 (8.4)		30	9	0.6		6200ZZ
	15	40	M10	12	20		122 (12.4)	96 (9.9)		12	32		0.3		6002ZZ
		45				343 (35)	109 (11.1)	102 (10.5)	103 (10.5)	15	35	11	0.6		6202ZZ
	20	45					130 (13.3)	98 (10.1)		12	37	9	0.3	8	6904ZZ
		55				490 (50)	225 (22.9)	176 (18.1)	147 (15)	18	47	14	1		6204ZZ
	25	65				750 (70)	333 (34)	250 (25.8)	226 (23)	19	52	15		10	6205ZZ

Standard / Long:
UMBH / UMBT
UMSBH / UMSBT
UMBWH / UMBWT
UMSWH / UMSWT
UMBGH
UMBLH
UMBLWH / UMBLWT
SUMBH / SUMBT
SUMSBH / SUMSBT
UMBDH / UMBDT

Allowable load is for reference.

Properties of Antistatic Urethane

Item	Unit	UMBDH / UMBDT
Specific Volume Resistivity	Ωcm	2.1×10^8
Surface Resistivity	Ω	4.0×10^9

Test Conditions (Temperature 30°C/Humidity 60%)
Listed values are not guaranteed values but an example of measured values.

d	D	€ Unit Price: Urethane (Shore A90) Steel Bearing	Urethane (Shore A90) Stainless Steel Bearing	Urethane (Shore A70) Steel Bearing	Urethane (Shore A50) Steel Bearing	Silicon Rubber (Shore A70) Steel Bearing	Silicon Rubber (Shore A70) Stainless Steel Bearing	Antistatic Urethane (Shore A90) Steel Bearing
		UMBH UMBWH UMBT UMBWT	UMSBH UMSWH UMSBT UMSWT	UMBGH	UMBLH UMBLWH UMBLWT	SUMBH SUMBT	SUMSBH SUMSBT	UMBDH UMBDT
3	12							
4	13							
	16							
5	16							
	20							
6	20							
	28							
8	28							
	30 / 30A							
10	30 / 30A							
	40 / 40A							
15	40 / 40A							
	45 / 45A							
20	45 / 45A							
	55 / 55A							
25	65 / 65A							

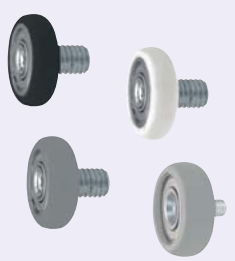
* D:30A ~ 45A is only applied to UMBH, UMBT, UMBWH, UMBWT, UMSBH and UMSBT. 55A and 65A are only applied to UMBH, UMBT, UMBWH and UMBWT.

Silicon Rubber / Urethane Mold Bearings

-Male Thread R Type-

CAD Data

RoHS



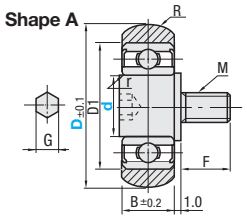
Urethane (white) may turn yellow with age.

Type		M Material	H Hardness	Color	Bearing	Shaft	
Crowned Type						M Material	S Surface Treatment
Standard	Long						
UMBRH	UMBRT	Urethane	Shore A90	Black	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating
UMSBRH	-				1.4125/X105CrMo17	1.4305/X10CrNiS18-9	-
UMBWRH	UMBWRT			White	1.3505/100Cr6	1.3505/100Cr6	Trivalent Chromate
UMSWRH	UMSWRT				1.4125/X105CrMo17	1.4305/X10CrNiS18-9	-
UMBGRH	-		Shore A70	Black	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating
UMBGWRH	-			White	1.3505/100Cr6	1.3505/100Cr6	Trivalent Chromate
SUMBRH	SUMBRT	Silicon Rubber	Shore A70	Light Gray	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating
SUMSBRH	SUMSBRT				1.4125/X105CrMo17	1.4305/X10CrNiS18-9	-
UMBDRH	UMBDRT	Antistatic Urethane	Shore A90	Gray	1.3505/100Cr6	1.3505/100Cr6	Electroless Nickel Plating

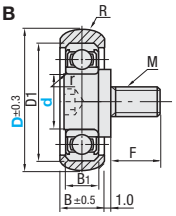
M Material:
Steel Type:
Bearing : 1.3505/100Cr6,
Shaft : 1.3505/100Cr6
Stainless Steel Type:
Bearing : 1.4125/X105CrMo17,
Shaft : 1.4305/X10CrNiS18-9
Bearing Accuracy JISB1514 Class 0

S Surface Treatment: Electroless Nickel Plating
- Electroless Nickel Plating (UMBR_ / UMBGRH_ / SUMBR_ / UMBDR_)
- Trivalent Chromate (UMBWR_ / UMBGWRH)

Shape A



Shape B



For detailed bearing dimensions, please see P.907

Shape A

Part Number Type	d	D	M (Coarse)	F Standard	F Long	Allowable Load N(kgf) Urethane Shore A90	Urethane Shore A70	Silicon Shore A70	B	D1	r (min.)	G	R	Bearing
Standard: UMBRH, UMSBRH, UMBWRH, UMSWRH, UMBGRH, UMBGWRH, SUMBRH, SUMSBRH, UMBDRH / Long: UMBRT, UMBWRT, UMSWRT, SUMBRT, SUMSBRT, UMBDRT	3	12	M3	4	6	34(3.5)	10(1)	9.8 (1)	3	7	0.1	1.5	5	W683ZZA
	*4	13	M4	5	8	44(4.5)	13(1.3)	13(1.3)	4	9	0.15			W684AX50ZZ
		16				59(6)	16(1.6)	18(1.8)	5	13	0.2			624ZZ
	*5	16					16(1.6)					2.5		WBC5-13ZZ
		20				78(8)	20(2)	24(2.4)		16	0.3			625ZZ
	*6	20	M6	8	12		23(2.3)			15	0.2			696ZZ
		28				157(16)	44(4.5)	47(4.8)	6	19	0.3			626ZZ
	*8	28				176(18)	42(4.3)		7	22		4		608ZZ

Only d4~8 are available for * marked types.

Allowable load is for reference.

Shape B

Part Number Type	d	D	M (Coarse)	F Standard	F Long	Allowable Load N(kgf) Urethane Shore A90	Urethane Shore A70	Silicon Shore A70	B	D1	B1	r (min.)	G	R	Bearing
Standard: UMBRH, UMSBRH, UMBWRH, UMSWRH, UMBGRH, UMBGWRH, SUMBRH, SUMSBRH, UMBDRH / Long: UMBRT, UMBWRT, UMSWRT, SUMBRT, SUMSBRT, UMBDRT	8	30	M6	8	12	176 (18)	81(8.3)	53(5.4)	11	22	7	0.3	4	15	608ZZ
	10	30					94(9.6)			26	8		5		6000ZZ
		40				274 (28)	136(13.9)	82(8.4)		30	9	0.6			6200ZZ
	15	40	M10	12	20		122(12.4)		12	32		0.3			6002ZZ
		45				343 (35)	109(11.1)	103(10.5)	15	35	11	0.6			6202ZZ
	20	45					130(13.3)		12	37	9	0.3	8		6904ZZ
		55				490 (50)	225(22.9)	147 (15)	18	47	14	1		20	6204ZZ
	25	65				750 (70)	333(34)	226 (23)	19	52	15		10		6205ZZ

Allowable load is for reference.

Order Example: Part Number SUMBRH20 - D 55

Days to Ship
- 8 Days P.88 — Express A 2,00 EUR/ piece
  - A Express Charge of 5,40 EUR for 3 or more identical pieces.
- -Silicon rubber only
- 10 Days P.88 — Express B 2,00 EUR/ piece
  - A Express Charge of 5,40 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	15%	30%

For orders larger than indicated quantity, please request a quotation.

Properties of Antistatic Urethane

Item	Increment	UMBDRH / UMBDRT
Specific Volume Resistivity	Ωcm	2.1×10^8
Surface Resistivity	Ω	4.0×10^9

Test Conditions (Temperature 30°C/Humidity 60%)
Listed values are not guaranteed values but an example of measured values.

d	D	€ Unit Price: Urethane (Shore A90) Steel Bearing: UMBRH, UMBWRH, UMBRT, UMBWRT	Urethane (Shore A90) Stainless Steel Bearing: UMSBRH, UMSWRH, UMSWRT	Urethane (Shore A70) Steel Bearing: UMBGRH, UMBGWRH	Silicon Rubber (Shore A70) Steel Bearing: SUMBRH, SUMBRT	Silicon Rubber (Shore A70) Stainless Steel Bearing: SUMSBRH, SUMSBRT	Antistatic Urethane (Shore A90) Steel Bearing: UMBDRH, UMBDRT
3	12						
4	13						
	16						
5	16						
	20						
6	20						
	28						
8	28						
	30						
10	30						
	40						
15	40						
	45						
20	45						
	55						
25	65						

Urethane Mold Bearings
-Protruded Inner Ring Type-

Reduced Delivery Time

CAD Data

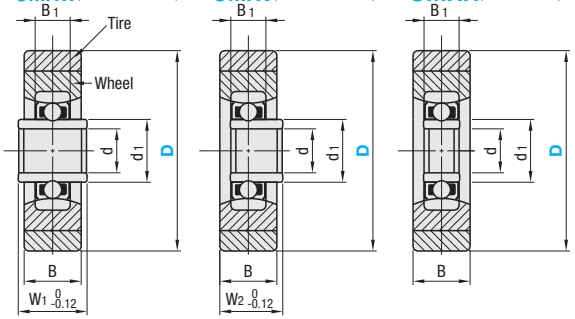
■Urethane Mold Bearings Inner Wheel Protruded Type (For Light Load)



RoHS

■Light Load

UMRW(Both Sides Protruded) **UMRV**(One Side Protruded) **UMRR**(No Protrusion)



Operation Temperature Range: −20°C~40°C

	Material
Tire Section	Thermoplastic Ether Type Urethane (Black, Shore A95)
Wheel Section	Thermoplastic Lactone Type Urethane (Black)
Bearing	Outer Ring, Inner Ring, Balls: 1.3505/100Cr6
	Shield: Rubber

The structure of D20 to D35 is single layer (only for tire section).

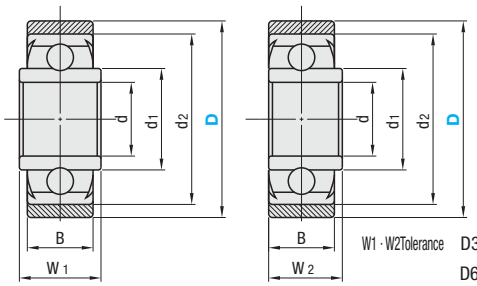
■Urethane Mold Bearings Inner Wheel Protruded Type (For Heavy Load)



RoHS

■Heavy Load

UMRHW(Both Sides Protruded) **UMRHV**(One Side Protruded)



W1 · W2Tolerance D30~60 0 -0.12 / D65 · 70 0 -0.15

Operation Temperature Range: −20°C~40°C

	Material
Tire Section	Thermosetting Ether Type Urethane (Brown, Shore A95)
Bearing	Outer Ring, Inner Ring, Balls: 1.3505/100Cr6
	Shield: Steel

■Light Load

Part Number Type	D	d	d Tolerance UMRW · UMRV	d Tolerance UMRR	d1	B	B1	W1	W2	Allowable Load N (Reference Value)	Mass (g) UMRW	Mass (g) UMRV	Mass (g) UMRR	€ Unit Price UMRW	€ Unit Price UMRV	€ Unit Price UMRR
UMRW (Both Sides Protruded) UMRV (One Side Protruded) UMRR (No Protrusion)	20	6	0 -0.02	0 -0.008	8.6	8	5	11	9.5	55	7	6	5			
	25				9.3	9	6	12	10.5	79	12	11	10			
	30	8	0 -0.04		12	11	7	15	13	108	21	19	17			
	35									147	24	22	20			
	40	10			14	12	8	16	14	196	34	32	30			
	45	12	+0.005 -0.012		18.3 (16.8)	14	10	18	16	245	60	55	50			
	50									274	66	61	56			
	55	15			21.6 (20.0)	15	11	19	17	314	82	76	70			
	60									343	90	83	77			
	65	17			24.6 (23.0)	16	12	20	18	392	120	112	104			
	70									441	130	121	113			
	75	20		0 -0.01	29.3 (27.6)	18	14	22	20	510	188	175	164			
	80									589	199	187	176			

■Heavy Load

d1 dimension in ( )is applicable to UMRR.

kgf=Nx0.101972

Part Number Type	D	d	d Tolerance	d1	d2	B	W1	W2	Allowable Load N (Reference Value)	Mass (g) UMRHW	Mass (g) UMRHV	€ Unit Price UMRHW	€ Unit Price UMRHV
UMRHW (Both Sides Protruded) UMRHV (One Side Protruded)	30	8	0 -0.04	12	22	11	15	13	303	24	23		
	35								347	28	27		
	40	12		18	32	14	18	16	474	62	59		
	45	15		20	35	15	19	17	579	78	75		
	50	20		26	37	16	20	18	660	84	82		
	55	20	+0.005 -0.012	27.6	47	18	22	20	794	157	151		
	60								829	167	162		
	65	25		32.6	52	19	23	21	918	199	191		
	70								1050	210	202		

kgf=Nx0.101972

Order Example

Part Number
UMRW40
UMRHV55

Days to Ship

8 Days | Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~199
Rate	€ Unit Price	5%	15%	30%

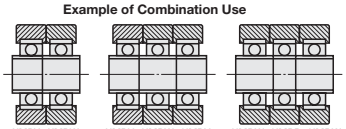
For orders larger than indicated quantity, please request a quotation.

■Features

- As the bearing inner rings protrude, there is no need to combine stepped shafts or collars for mounting.
- The urethane part is a multi-layer structure consisting of tire section and wheel section (single layer for D20 to D35). It is economical as small diameter shafts can be used even for rollers with large external diameter.
- The bearings used have special configuration to prevent the urethane from detaching.
- Though it excels in oil resistance, applying solvents may cause swelling and reduction in strength.

Example

Example of Combination Use



Male Thread Bearings / Urethane Mold Bearings Shafts / Eccentric Bushings

CAD Data

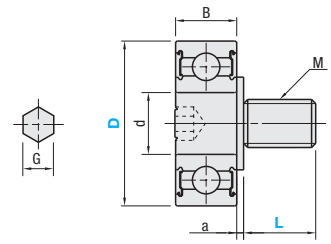
Features:Male Thread s tuds are swaged-on, no extra retaining measure required.

Male Thread Bearings

RoHS



Type		M Material		S Surface Treatment
Standard	Long	Bearing	Shaft	Shaft
NTBG	NTBGT	Steel	1.3505/100Cr6	Electroless Nickel Plating
NTSBG	NTSBGT	Stainless Steel	1.4305/X10CrNiS18-9	-



Part Number Type	D	L Standard	L Long	B	d	a	G	M (Coarse)	Bearing	€ Unit Price NTBG	NTSBG	NTBGT	NTSBGT
Standard NTBG NTSBG / Long NTBGT NTSBGT	6	4	-	2.5	3	1	1.5	M3	673ZZ				
	7	4	6	3	3				W683ZZ				
	8	5	-	2.5	5				675ZZ				
	9	5	8	4	4			M4	W684Ax50ZZ				
	13	5	8	5	4				624ZZ				
	16	5	8	5	5				625ZZ				
	19	8	12	6	6			M6	626ZZ				
	22	8	12	7	8		4		608ZZ				
	26	8	12	8	10	2.5	5		6000ZZ				
	30	8	12	9	10	2	5		6200ZZ				
	32	12	20	9	15	2.5	5	M10	6002ZZ				
	35	12	20	11	15	3	5		6202ZZ				
	37	12	20	9	20	2.5	8		6904ZZ				
	47	12	20	14	20	3	8		6204ZZ				
	52	12	20	15	25	3	10		6205ZZ				

Order Example: Part Number NTBG16 - L 5

Days to Ship: 8 Days (Express A, 2,00 EUR/ piece) P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

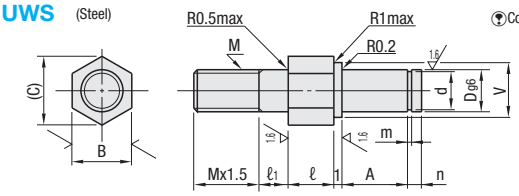
For orders larger than indicated quantity, please request a quotation.

Shafts for Urethane Mold Bearings

RoHS



UWS (Steel)



Conformed to the products P.1035-1036

6.3 1.6

M Material 1.0038/S235JR
S Surface Treatment: Black Oxide
A Accessory Nut Retaining Ring-C Type
(Retaining Ring-E Type is included with No. 312-830.)

Part Number Type	No.	Dg6	A	ℓ	ℓ1	V	d	Tolerance	M	B	(C)	m Dim.	m Tolerance	n	Applicable Urethane Molded Bearing		€ Unit Price
UWS	312	3	3	5	-	4	2.05	+0.06 0	3	5	5.8	0.5	+0.05 0	2	UMBB	UMBBR	3-12
	413	4	4		1	5	3.05		4	7	8.1				UMBW	UMBWR	4-13
	416		5			6									UMBG		4-16
	516	5	5		2	6.9	4.05	+0.075 0	5	8	9.2	0.7			UMBGW		5-16
	520					7.5									UMBL		5-20
	620	6	5		3	8	5.05		6	10	11.5		+0.1 0		UMBLW		6-20
	628		6			9									UMBD		6-28
	828	8	7	10	4	12	7.1	+0.09 0	8	14	16.2	0.9		3	SUMBB	SUMBBR	8-28
	830														UMSB	UMSBR	8-30
	1030	10	8			13	9.6	0 -0.09	10	19	21.9	1.15			UMSW	UMSWR	8-30
	1040		9			16									UMSG		10-40
	1540	15	9	15	5	18	14.3	0 -0.11	12	21	24		+0.14 0	4	UMSGW		15-40
	1545		11			19									SUMSB		15-45
	2045	20	9		6	23	19	0 -0.21	16	27	31.2	1.35					20-45
	2055		14			25											20-55

Order Example: Part Number UWS312

Days to Ship: 8 Days (Express A, 2,00 EUR/ piece) P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

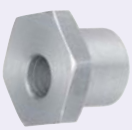
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

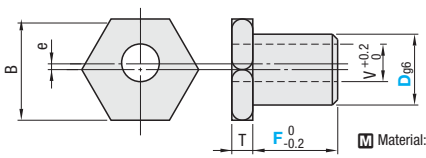
For orders larger than indicated quantity, please request a quotation.

Eccentric Bushings

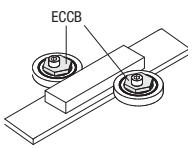
RoHS



ECCB



Example



M Material:1.1191/C45E

Part Number Type	Dg6	F	Applicable Bearing	V	B	T	e	€ Unit Price
ECCB	6	5	696ZZ	3	10	3	0.3	
		6	606ZZ · 626ZZ					
	8	6	698ZZ	4	12		0.5	
		7	608ZZ					
		8	628ZZ					
	10	6	6900ZZ	5	14		1	
		8	6000ZZ					
		9	6200ZZ					
	12	6	6901ZZ	6	17		1.2	
		8	6001ZZ					
		10	6201ZZ					
	15	7	6902ZZ	8	19		1.5	
		9	6002ZZ					
		11	6202ZZ					

Order Example: Part Number ECCB10 - F 8

Days to Ship: 6 Days P.88

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Engineered Plastic Bearings

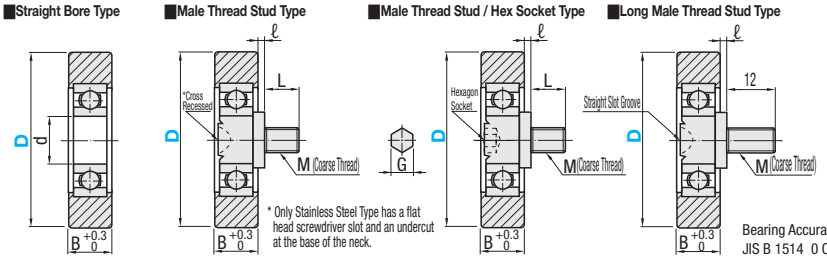
■Flat Type RoHS



Type				Material			Surface Treatment
Straight Bore	Male Thread Stud	Male Thread Stud / Hex Socket	Long Thread	Surface Plastic	Bearing	Shaft	Shaft
EBSS	EBBS	EBHS	-	Polyacetal	1.4125/X105CrMo17	1.4301/X5CrNi18-10	-
EB	EBB	EBH	EBBL		1.3505/100Cr6	JIS SWCH	Trivalent Chromate
EBD	EBBD	-	-	Antistatic Polyacetal	1.4125/X105CrMo17	1.4301/X5CrNi18-10	-
EBC	-	EBBC	-		1.4125/X105CrMo17 (Low Particulate Generation)		
EBSZ	-	EBHZ	-		1.4301/X5CrNi18-10 (Low Particulate Generation)		

Surface resistivity of antistatic polyacetal is $1.5x10^{11}\Omega$ (Temperature 23°C/Humidity 65%)
For identification, markings are painted on the side of Plastic part. Wipe them off before using.

■Straight Bore Type ■Male Thread Stud Type ■Male Thread Stud / Hex Socket Type ■Long Male Thread Stud Type



* Only Stainless Steel Type has a flat head screwdriver slot and an undercut at the base of the neck.

Bearing Accuracy JIS B 1514 0 Class

Part Number Type	D	Allowable Load N ( ) indicates 1.4301/ X5CrNi18-10	d	B	M (Coarse)	L	ℓ	Hexagon Socket G	Bearing	€ Unit Price: Straight Bore EBSS	EB	EBD	EBC	EBSZ	Male Thread Stud EBBS	EBB	EBBD	Male Thread Stud / Hex Socket EBHS	EBH	EBBC	EBHZ	Long Thread EBBL
Straight Bore EBSS EB EBD EBC EBSZ / Male Thread Stud EBBS EBB EBBD / Male Thread Stud / Hex Socket EBHS EBH EBBC EBHZ / Long Thread EBBL	(13)	29.4	4	5	-	-	-	-	L-1040ZZ													
	(14)		5						695ZZ													
	(16)																					
	(18)																					
	19	78.4 (39.2)	6	6	6	8	1	2.5	696ZZ													
	20																					
	22																					
	24																					
	26	176 (88)	8	8				5	608ZZ													
	30			9																		
	35																					
	*40	245	10	12	8	12	2	6	6200ZZ													
	*45																					
	*50																					

( ) marked sizes are only available for EBSS and EB.
*marked sizes are only available for EBSS, EB and EBH.

Prices in red are for added sizes.

kgf=Nx0.101972

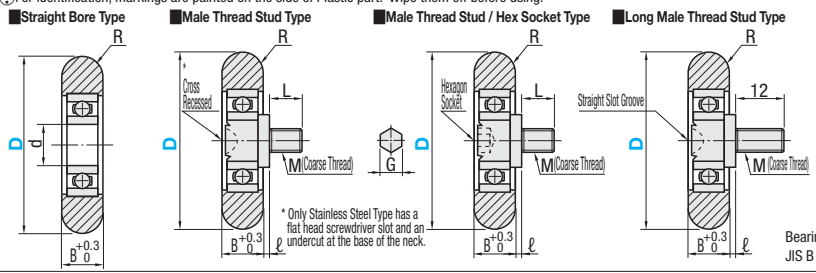
■Crowned Type RoHS



Type				Material			Surface Treatment
Straight Bore	Male Thread Stud	Male Thread Stud / Hex Socket	Long Thread	Surface Plastic	Bearing	Shaft	Shaft
ERBS	ERBBS	ERBHS	-	Polyacetal	1.4125/X105CrMo17	1.4301/X5CrNi18-10	-
ERB	ERBB	ERBH	ERBBL		1.3505/100Cr6	JIS SWCH	Trivalent Chromate
ERBZ	-	ERBHZ	-	Antistatic polyacetal	1.4301/X5CrNi18-10 (Low Particulate Generation)	1.4301/X5CrNi18-10	-

Surface resistivity of antistatic polyacetal is $1.5x10^{11}\Omega$ (Temperature 23°C/Humidity 65%)
For identification, markings are painted on the side of Plastic part. Wipe them off before using.

■Straight Bore Type ■Male Thread Stud Type ■Male Thread Stud / Hex Socket Type ■Long Male Thread Stud Type



* Only Stainless Steel Type has a flat head screwdriver slot and an undercut at the base of the neck.

Bearing Accuracy JIS B 1514 0 Class

Part Number Type	D	Allowable Load N ( ) indicates 1.4301/ X5CrNi18-10	d	R	B	M (Coarse)	L	ℓ	Hexagon Socket G	Used Bearing	€ Unit Price: Straight Bore ERBS	ERB	ERBZ	Male Thread Stud ERBBS	ERBB	Male Thread Stud / Hex Socket ERBHS	ERBH	ERBHZ	Long Thread ERBBL
Straight Bore ERBS ERB ERBZ / Male Thread Stud ERBBS ERBB / Hexagon Socket ERBHS ERBH ERBHZ / Long Thread ERBBL	19	78.4 (39.2)	6	5	6	6	8	1	2.5	696ZZ									
	20				7														
	22																		
	24																		
	26	176 (88)	8		8			0.5											
	30				9			1	5	608ZZ									
	35																		
	*40	245	10	6	12	8	12	2	6	6200ZZ									
	*45																		
	*50																		

*marked sizes are only available for ERBS, ERB and ERBH.

Prices in red are for added sizes.

kgf=Nx0.101972

Plating color may vary depending on production lot but no differences in plating properties.

■Bracket-equipped Flat Type RoHS



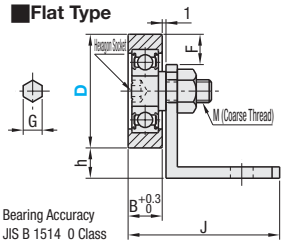
■Bracket-equipped Crowned Type



Type		Material			Surface Treatment	Accessory
Flat Type	Crowned Type	Surface Plastic	Bearing	Shaft	Shaft	
ENHS	-	Polyacetal	1.4125/X105CrMo17	1.4301/X5CrNi18-10	-	(1) Bracket (Clear Anodize) (2) Nut (M6)
ENH	ERNH		1.3505/100Cr6	JIS SWCH	Trivalent Chromate	

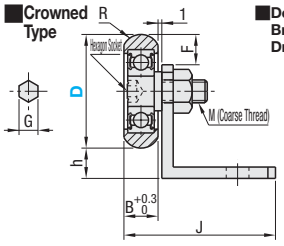
Engineered Plastic Bearings and accessories are in separate packages.

■Flat Type

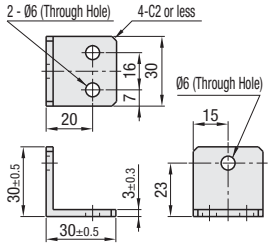


Bearing Accuracy JIS B 1514 0 Class

■Crowned Type



■Detailed Bracket Drawings



Part Number Type	D	Allowable Load N ( ) indicates 1.4301/ X5CrNi18-10	F	R	h	B Flat Type	B Crowned Type	M (Coarse)	J Flat Type	J Crowned Type	Hexagon Socket G	Bearing	€ Unit Price ENHS	ENH	ERNH
Flat Type ENHS ENH / Crowned Type ERNH	24	78.4 (39.2)	5	5	11	6	7	6	37	38	2.5	696ZZ			
	26		6		10	8	8		39	39	5	608ZZ			
	30	176 (88)	8		8	9	9		40	40					
	35		10.5		5.5										

kgf=Nx0.101972

■U Groove Type



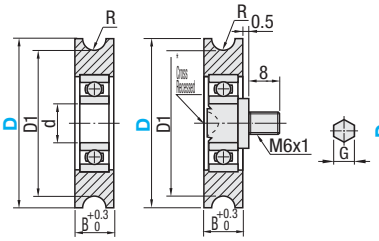
■V Groove Type RoHS



Type Straight Bore	Male Thread Stud	Male Thread Stud / Hex Socket	Material Surface Plastic	Bearing	Shaft	Surface Treatment Shaft
EUBS	EUBBS	EUBHS	Polyacetal	1.4125/X105CrMo17	1.4301/X5CrNi18-10	-
EUB	EUBB	EUBH		1.3505/100Cr6	JIS SWCH	Trivalent Chromate
EVB	EVBB	EVBH				

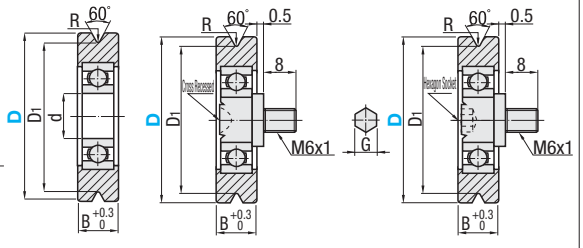
■U Groove Type

Straight Bore Type | Male Thread Stud Type | Male Thread Stud / Hex Socket Type



■V Groove Type

Straight Bore Type | Male Thread Stud Type | Male Thread Stud / Hex Socket Type



* Only Stainless Steel Type has a flat head screwdriver slot and an undercut at the base of the neck.

Bearing Accuracy JIS B 1514 0 Class

Part Number Type	D	Allowable Load N	d	D1	B	R U Groove Type	R U Groove Type	Hexagon Socket G	Bearing	€ Unit Price Straight Bore EUBS	Straight Bore EUB EVB	Male Thread Stud EUBBS	Male Thread Stud EUBB EVBB	Male Thread Stud / Hex Socket EUBHS	Male Thread Stud / Hex Socket EUBH EVBH
Straight Bore EUBS EUB EVB / Male Thread Stud EUBBS EUBB EVBB / Male Thread Stud / Hex Socket EUBHS EUBH EVBH	22	78.4	6	19	7	2.5	0.6	2.5	696ZZ						
	24			21											
	30	176	8	27	9			5	608ZZ						
	35			31											

For U Groove Male Thread Type of B=7 in size, the threaded axis head may be extended further forward than B.

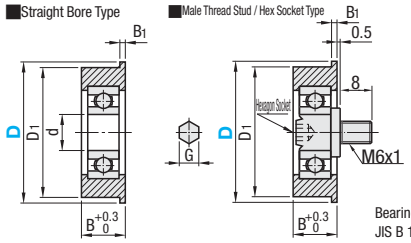
kgf=Nx0.101972

■One Side Flanged Type RoHS



Type Straight Bore	Male Thread Stud / Hex Socket	Material Surface Plastic	Bearing	Shaft	Surface Treatment Shaft
EKB	EKBH	Polyacetal	1.3505/100Cr6	JIS SWCH	Trivalent Chromate

■Straight Bore Type ■Male Thread Stud / Hex Socket Type



Bearing Accuracy JIS B 1514 0 Class

Part Number Type	D	Allowable Load N	d	D1	B	B1	Hexagon Socket G	Bearing	€ Unit Price Straight Bore EKB	Male Thread Stud / Hex Socket EKBH
EKB (Straight Bore) EKBH (Male Thread Stud / Hex Socket)	24	78.4	6	20	7	1.5	2.5	696ZZ		
	35	176	8	30	9	2	5	608ZZ		

kgf=Nx0.101972

Order Example

Part Number
EB24
ERB24
EUB24
EKB35

Days to Ship

8 Days

Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

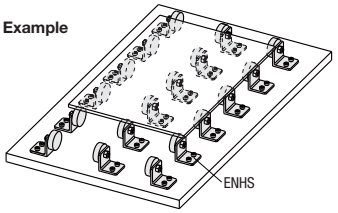
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	15%	30%

For orders larger than indicated quantity, please request a quotation.

Example



Guide Rollers

-V Groove 60° Type / V Groove 90° Type / Sheave Type (for Wire Cables)-

Features: Available for various rails and work guides. For 60° = wire, For 90° = L channel, For sheaves = wire cable.

CAD Data

RoHS



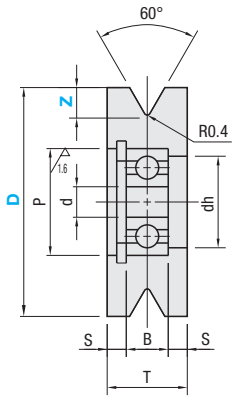
Type			M Main Material	S Surface Treatment	M Material	
60°: For Wire	90°: For Channel	Sheave (For wire cable)			Retaining Ring	Bearing
VMRN	VMQN	-	1.1191/C45E	-	Spring Steel	Steel
VMRB	-			Black Oxide		
VMRG	VMQG			Electroless Nickel Plating	Stainless Steel	
VMRA	-		EN AW-5052/ AlMg2,5	Clear Anodize		
VMRP	-		Polyacetal	-		
VMRM	-		Conductive MC Nylon			
-	-	SMRN	MC Nylon		Spring Steel	

*Bearing Accuracy JIS B1514 0 Class

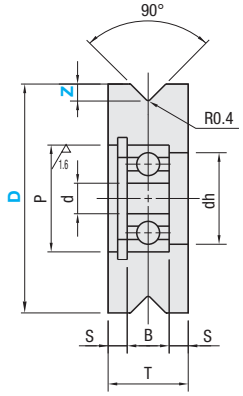
Bearings are press-fitted.

6.3 (1.6)

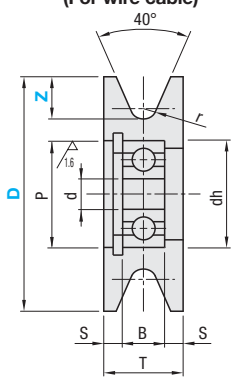
For Wire



For L Channel Track



Sheave Type (For wire cable)



Part Number Type			D	Z Groove Depth 60° / Sheave	Z Groove Depth 90°	d	P	dh	T	S	B	r	Applicable Wire Cable Dia.	Bearing
For Wire	For L Channel Track	Sheave Type (For wire cable)	(20)	4	3	3	10	8	10	3	4	-	-	623ZZ
VMRN	VMQN	SMRN	(30)			5	16	13		2.5	5	-	-	625ZZ
VMRB	VMQG		40		-	6	19	16	12	3	6	-	-	626ZZ
VMRG			30	5		6	19	16	12	3	6	-	-	626ZZ
VMRA			40			8	24	21	14		8	-	-	628ZZ
VMRP			(40)	7	5	8	24	21	14	3	8	-	-	628ZZ
VMRM			(50)			10	26	23				-	-	6000ZZ
			*50	9	-	10	26	23	14	3	8	2.2	4	6000ZZ
			60									-	-	
			*60	10		10	26	23	16	4	8	3.3	6	6000ZZ
			*60	10A		10	26	23	18	5	8	4.4	8	
			60	11	-	10	26	23	16	4	8	-	-	
			(60)		6	10	26	23	16	4	8	-	-	
			*60		-	12	28	25	20	6	8	5.5	10	6001ZZ
			(100)		6	12	28	25	16	4	8	-	-	

90°: L Channel Track is only applied types in ( )

For Sheave (For wire cable), only * marked sizes are available.

D	Z Groove Depth 60° Sheave	Z Groove Depth 90°	€ Unit Price For Wire VMRN(x1.0) VMRB(x1.1) VMRG(x1.2)	For Wire VMRA	For Wire VMRP	For Wire VMRM	For L Channel Track VMQN(x1.0) VMQG(x1.2)	Sheave Type SMRN
20	4	3						
30								
40		-						
30	5							
40								
40	7	5						
50								
50	9	-						
60								
60	10							
60	10A							
60	11	6						
100								

The unit prices in the table are to be multiplied by factor (x1.1) for VMRB, and factor (x1.2) for VMQG and VMRG. (round down to one Cent)

Order Example

Part Number	-	Groove Depth Z
VMRA40	-	5
SMRN50	-	9
VMQN40	-	5

Days to Ship

8 Days

Price

Volume Discount (Round down to one Cent.) P.87

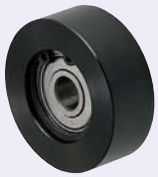
Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Guide Rollers
-Flat Type / Double Flanged Type-

CAD Data

RoHS



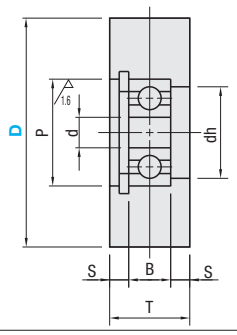


Type		M Main Material	S Surface Treatment	M Material	
Flat Type	Double Flanged Type			Retaining Ring	Bearing
FTMRN	HMRN	1.1191/C45E	-	Spring Steel	Steel
FTMRB	-		Black Oxide		
ETMRA	HMRA	EN AW-5052/ AlMg2,5	Clear Anodize	Stainless Steel	
FTMRP	HMRP	Polyacetal	-		

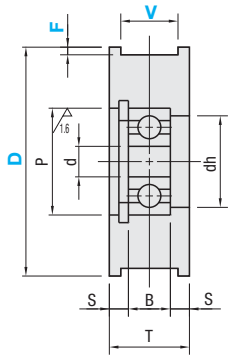
*Bearing Accuracy JIS B1514 Class 0
Bearings are press-fitted.

6.3 (1.6)

Flat Type



Double Flanged Type



Part Number Type	D	Double Flanged Type V Slot Width	Double Flanged Type F 0.5mm Increment	d	P	dh	T	S	B	Bearing
Flat Type FTMRN FTMRB FTMRA FTMRP / Double Flanged HMRN HMRA HMRP	15	4	0.5~2.0	3	10	8	9	2.5	4	623ZZ
	20			4	13	11	10		5	624ZZ
	30			5	16	13				625ZZ
	(30)	-	-	6	19	16	12	3	6	626ZZ
	20	5	0.5~2.0	4	13	11	10	2.5	5	624ZZ
	30			5	16	13				625ZZ
	40			6	19	16	11		6	626ZZ
	(40)	-	-	8	24	21	14	3	8	628ZZ
	30	6	0.5~2.0	5	16	13	10	2.5	5	625ZZ
	40			6	19	16	11		6	626ZZ
	50			8	24	21	14	3	8	628ZZ
	(50)	-	-	10	26	23	14	3	8	6000ZZ
	40	8	0.5~2.0	6	19	16	11	2.5	6	626ZZ
	50			8	24	21	14	3	8	628ZZ
	(60)			10	26	23				6000ZZ
	(100)	-	-	12	28	25	16	4	8	6001ZZ

marked sizes are only available for Flat Type.( )

D	V Slot Width	€ Unit Price Flat Type FTMRN(x1.0) FTMRB(x1.1)	Flat Type FTMRA	Flat Type FTMRP	Double Flanged Type HMRN	Double Flanged Type HMRA	Double Flanged Type HMRP
15	4						
20							
30							
20	5						
30							
40							
30	6						
40							
50							
40	8						
50							
60							
100							

For FTMRB, the unit prices in the table are to be multiplied by factor (x1.1). (Round down to one Cent.)

Order Example

Part Number	-	Slot Width V	-	F
FTMRN40 HMRA30	-	4	-	F0.5

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Motor Rollers Guide

Selection Method

(1) Calculate the required tangential force

◆Formula for the required a force

Required Tangential Force (N) = 9.8 (constant value) x Object (kg) x Rolling Friction Coefficient

◆Rolling Friction Coefficient Chart

Wood	Metal	Cardboard	Plastic	Rubber Lining
0.02~0.05	0.01~0.02	0.05~0.1	0.02~0.04	0.1

Above values vary by roller pitch or condition of roller surface, etc..

Sample Calculation When carrying a cardboard box of weight 40 (kg)

* From the above chart of Rolling Friction Coefficient, maximum friction coefficient for cardboard is 0.10.
Required tangential force=**9.8x40 (kg)x0.10=39.2 (N)**

* Rolling friction coefficient depends on the material of the object. Refer to the table above.

(2) Select the model provisionally

Select the model that matches the caring speed from the specification table on the right page.

Example When carrying the objects at the speed of 20m/min, MOR57–(Length)–20.

(3) Determine the number of required rollers

Determine the number of required rollers considering the following 2 elements.

- Motor Roller Tangential Force (Start-up or at rated output) - Carried weight and Roller allowable static load (Please see the standards table "Roller Strength (N)" on right)

◆
Calculate the required tangential force
Carrying Capability (N) = Starting Tangential Force of the Motor Roller (N) x 0.9 (Constant value)

◆
Determine the number of required rollers
The Number of Required Rollers = Required Tangential Force (N) / Carrying Capability (N)

Sample Calculation Required tangential force for carrying is 39.2 (N) from the sample calculation above.

When MOR57–(Length)–20

•Carrying capability is 55 (N) (Starting tangential force) x 0.9 = 49.5 (N).
•The number of required rollers is 39.2 (N) (Required tangential force)/ 49.5(N) (Carrying capability) = 0.79 (pcs)…1roller is required to carry.

(4) Determine the length of the rollers

- Determine the length of the rollers from the size of the bottom surface (length and width) of the object

Sample Calculation When the length of the bottom surface is 300mm and the width is 400mm
- The width of the object is 400mm + Margin 100mm = 500mm.

It follows that in this case, the part numbers should be **MOR57-500-20**

[Caution in selection]

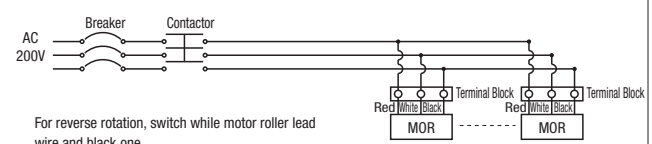
* The calculated value using carrying tangential force gives the minimum value for required tangential force needed to carry the work. Transfer capability could vary depending on roller level differences, carried object bottom surface shape (conditions) and material, motor roller speed, etc. Please use more rollers depending on usage conditions and considering safety. If rated speed is important, use rated tangential force for calculation.
* When motor rollers are loaded at all times, use rated tangential force in calculating for selection.
* The object is assumed to start from on the motor rollers.

Features

- Built-in motor and gear enables space savings for driving mechanisms.
- Requires no maintenance such as lubrication.
- With multiple motor rollers used depending on transfer load size, one of the rollers in trouble does not result in production line shutdown.

Circuit Layout Diagram

3 Phase, 200V

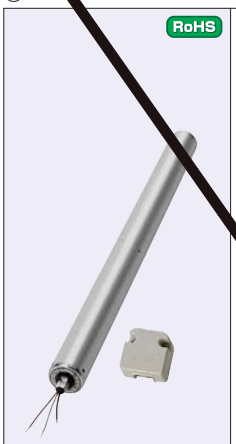


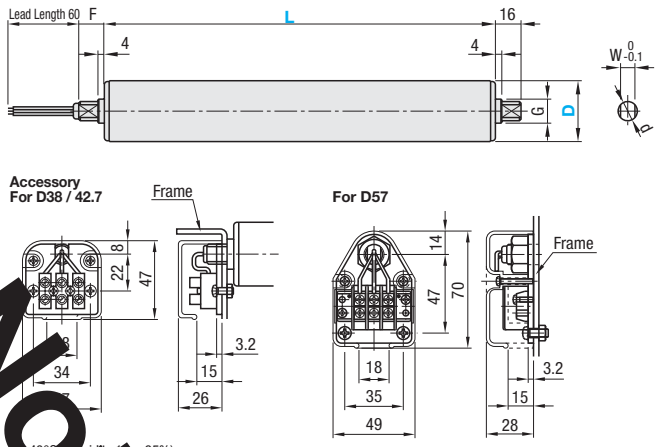
- For reverse rotation, switch white motor roller lead wire and black one.
- Normal / reverse rotation can be changed by switch.
- When red, white and black wires are connected in the identical manner, the rollers will rotate in the same direction.

Motor Rollers

CAD Data

A motor and a decelerator are built in the conveyer roller.





Operation Temperature: [illegible] ~ 85%)

Part Number		L Selection	Nominal Speed Selection	€ Unit Price Qty. 1~5		
Type	D			L300	L400	L500
	38	300 400 500	10 15 20			
	42.7					
	57					

For orders larger than indicated quantity, please request a quotation.

D	Velocity Nominal	Power Supply	Rated Current	d	G	W	F	Speed (m/min)		Tangential Force (N)				Torque (N-cm)				Roller Strength (N)*		
								50Hz	60Hz	50Hz		60Hz		50Hz		60Hz		L300	L400	L500
										Rating	Starting	Rating	Starting	Rating	Starting	Rating	Starting			
38	10	Three-Phase 200V 50/60Hz Input 16/12W	0.055 / 0.050 (A)	12	18	8	16	10.4	13.1	16.7	37.3	12.4	31.3	31.8	70.9	23.6	59.6	343	294	294
	15							14.2	16.1	12.3	39.6			23.3	75.3	17.5	58.7			
	20							22.2	25.2	7.8	25.3			14.9	48.0	11.1	37.4			
42.7	10	Three-Phase 200V 50/60Hz Input 18/17W	0.065 / 0.062 (A)					12.3	14.0	14.2	30.7				65.5	30.3	50.1	490	441	392
	15							18.2	20.7	9.6	20.8	9.6			44.4	20.5	33.9			
	20							24.8	28.3	7.0	15.2	7.0			32.5	15.0	24.8			
57	10	Three-Phase 200V 50/60Hz Input 33/27W	0.120 / 0.100 (A)		15		23	11.2	13.3	44.5	83.1	37.0			236.8	105.4	213.1	980	980	784
	15							12.4	14.8	40.2	75.1	33.5			144.1	95.4	192.6			
	20							17.0	20.2	29.4	55.0	24.5	49.5		156.7	69.8	141.0			

Applicable voltage variation for 50Hz is ±3%. (When 60Hz, up to ±5% of voltage variation is applicable.)

kgf=Nx0.101972

In case 50Hz is applied at ±5% of voltage variation, torque value diminishes by 40% from the values shown in the table above.

Speed in the table indicates the values at rated current. Also rotational velocity and torque change when load is light or excessive.

Roller strength varies considerably by extent of impact load, weight or material of the object. Add extra value to allow for a margin. (recommended additional value: 1/3 to 1/2 of the above value)

Order Example

Part Number - L - Nominal Speed

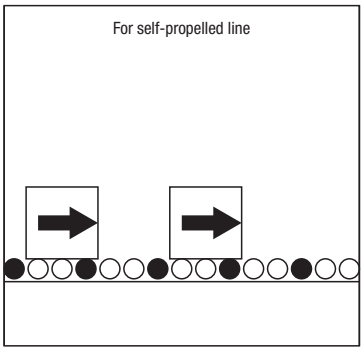
- 300 - 10

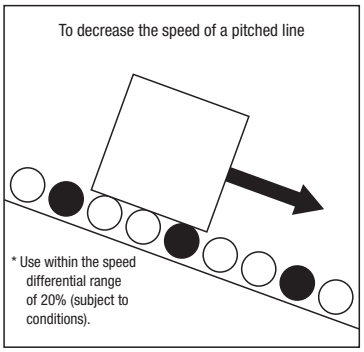
Days to Ship: 8 Days

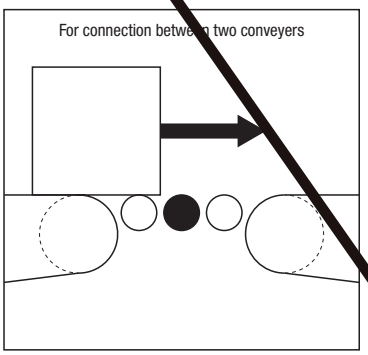
Express A | 8,00 EUR/piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Example







Not Available

Conveyor Rollers
-Pressed-in Bearing Type-

CAD Data

Refer to **P.1046** for roller motor drivers, and **P.1049** for dedicated shafts. See the right page for <Shaft / Roller Set> products.

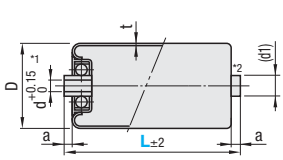


RoHS

Not urethane-coated Type	M Material Core	M Material Wheel	S Surface Treatment	Bearing
HRO	JIS STKM	Steel	Trivalent Chromate Plating	Pressed-in Bearings
HROC	JIS STKM	Steel	Hard Chromate Plating	Pressed-in Bearings
HROB (Silent Type)	JIS STKM	Steel	Trivalent Chromate Plating	Standard Bearing
HROA	Aluminum	Steel	Clear Anodize	Pressed-in Bearing*
HROS	1.4301	1.4301	-	Pressed-in Bearings

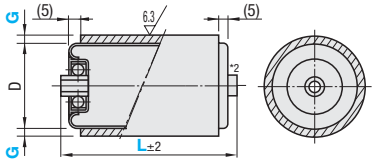
Urethane-coated Type	M Material Core	M Material Wheel	M Material Lining	H Hardness	Bearing
HROU	JIS STKM	Steel	Urethane (Natural Color)	Shore A90	Pressed-in Bearings
HROG	JIS STKM	Steel	Urethane (Natural Color)	Shore A70	Pressed-in Bearings
HROH	JIS STKM	Steel	Urethane (Natural Color)	Shore A50	Pressed-in Bearings
HROBU (Silent Type)	JIS STKM	Steel	Urethane (Natural Color)	Shore A90	Standard Bearing
HROSU	1.4301	1.4301	Urethane (Natural Color)	Shore A90	Pressed-in Bearings

*Machined bearing for No.28 only



*1. HROB and HROBU are $d_{-0.008}^{0}$

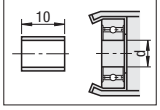
Urethane Lined Type



* 2. Collar part of HROB and HROBU is plastic (6 nylon).

Only for No.19 and No. 28 of HROB and HROBU.

Collar



Part Number Type	No.	L Selection	G Selection	D	a	d	(d1)	t	Roller Strength (N) L113	L163	L213	L263	L313	L413	L513
HRO HROU HROG (Urethane Lining Type) HROH	19	113	3	19.1	5	6.2	(9)	1.2	618	573	530	436	343	294	206
	*22			22.2	3.5	6.2	(9)	1.2	618	-	530	-	343	294	206
	28			28.6	3.5	8.2	(12)	1.2	1236	1148	1059	873	687	588	412
	38			38.1	5.5	12.2	(16)	1.2	1342	1342	1342	1132	922	785	588
	*42			42.7	5	12.2	(16)	1.4	1667	1628	1589	1310	1030	883	745
	*50			50.8	6.5	12.2	(18)	1.6	1716	1628	1648	1584	1520	1442	1147
	57			57.2	6.5	12.2	(18)	1.4	2354	2206	2059	1912	1765	1471	1157
HROC	22	163		22.2	3.5	6.2	(9)	1.2	618	573	530	436	343	-	-
	28			28.6	3.5	8.2	(12)	1.2	1236	1148	1059	873	687	-	-
	38	213		38.1	5.5	12.2	(16)	1.2	1342	1342	1342	1132	922	-	-
HROB HROBU (Urethane Lining Type)	19	263	4	19.1	6	6	(8)	1.2	775	721	667	549	431	373	-
	28	313	5	28.6	6.5	8	(10)	1.2	1549	1436	1323	1093	863	745	520
	38	413		38.1	6.5	12	(18)	2.3	2206	2040	1875	1673	1471	1226	1040
	42	513		42.7	5	12	(18)	2.3	2942	2687	2432	2319	2206	1844	1451
	57			57.2	6.5	12	(18)	1.4	2942	2687	2432	2319	2206	1844	1451
HROA	28			28.6	5.5	8.2	(12)	1.6	617	573	529	436	343	-	-
	38			38.1	5	8.1	(13)	1.6	705	705	705	583	460	-	-
	57			57.1	6.5	12.2	(18)	1.6	784	735	686	637	588	-	-
HROS HROSU (Urethane Lining Type)	19			19.0	5	6.2	(10)	1.2	432	403	373	309	245	196	147
	38			38.1	3.5	8.2	(16)	1.0	883	836	790	684	579	490	373
	50			50.8	6.5	12.2	(18)	1.5	1324	1250	1177	1128	1079	883	687

HROB and HROBU are excellent in quietness and durability as standard bearings are used. For No.19 and No.28 of HROB and HROBU, hubs are substituted with collars. Sizes with * (No.22, No.42, No.50) are available for HRO only.

Order Example

Part Number	-	L	-	G
HRO38	-	213		
HROU38	-	213	-	3

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~29
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

- HRO · HROC · HROB · HROA · HROS: 8 Days
- HROU · HROG · HROH · HROBU · HROSU: 10 Days

Express A: 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Part Number Type	No.	€ Unit Price L113	L163	L213	L263	L313	L413	L513
HRO	19							
	22							
	28							
	38							
	42							
	50							
	57							
HROC	22							
	28							
	38							
HROB	19							
	28							
	38							
	42							
	57							

The prices of HROG and HROH are the unit price shown in the table multiplied by 1.1. (Round down to ten Cent.)

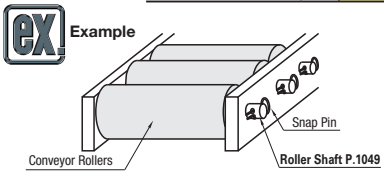
Part Number Type	No.	€ Unit Price L113	L163	L213	L263	L313	L413	L513
HROA	28							
	38							
	57							
HROS	19							
	38							
	50							
HROU (€ Unit Price x 1.0) HROG (€ Unit Price x 1.1) HROH (€ Unit Price x 1.1)	19							
	28							
	38							
	57							
HROBU	19							
	28							
	38							
	42							
	57							
HROSU	19							
	38							
	50							

Alterations

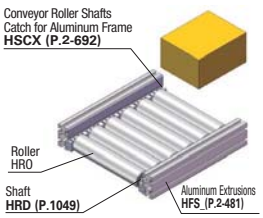
Part Number	-	L	-	G	-	(UDC)
HROU38	-	213	-	3	-	UDC

Alteration	Code	Spec.	Price Adder
Antistatic Urethane (Urethane color: gray)	UDC	Urethane Lined Type Shore A90 is changed to antistatic. Ordering Code: UDC. Specific Volume Resistivity 2.1x10⁸Ωcm Surface Resistivity 4.0x10⁸Ω (Temperature 30°C/Humidity 60%)	4,00

Example



Please use combined with Roller Shafts **P.1049**
Do not use in applications where hubs on both sides of conveyer rollers receive load, as eccentric load is applied to bearings.



Conveyer Rollers / Plastic Conveyor Rollers
-Shaft / Roller Set Type-

NEW

Reduced Delivery Time

CAD Data

■ Feature: Set of Conveyor Rollers and economical pipe rollers

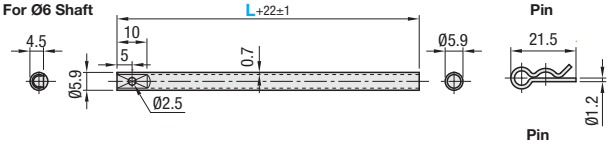


RoHS

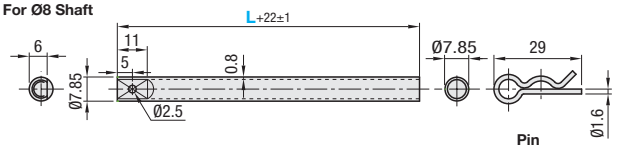
※Shafts and Pins are not shipped as included accessories not inserted into rollers.

Type	Material				Surface Treatment	Bearing
	Rollers		Shaft	Pin	Roller · Shaft · Pin	
	Core	Wheel				
HROJS	JIS STKM	Steel	Steel	Steel	Trivalent Chromate Plating	Pressed-in Bearings

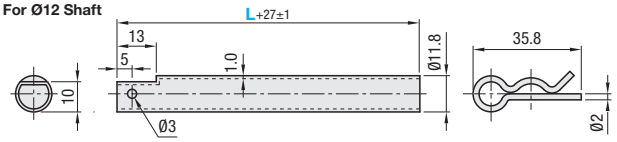
For Ø6 Shaft



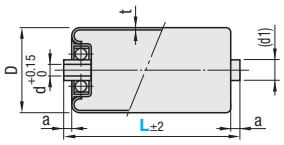
For Ø8 Shaft



For Ø12 Shaft



Rollers



Part Number Type	No.	L Selection	D	a	d	(d1)	t	Set Shaft · Pin	Roller Strength (N) L113	L163	L213	L263	L313	L413	L513
HROJS	19	113	19.1	5	6.2	(9)	1.2	For Ø6	618	573	530	436	343	294	206
	22	163	22.2	3.5	6.2	(9)	1.2		618	-	530	-	343	294	206
	28	213	28.6	3.5	8.2	(12)	1.2	For Ø8	1236	1148	1059	873	687	588	412
	38	263	38.1	5.5	12.2	(16)	1.2	For Ø12	1342	1342	1342	1132	922	785	588
	42	313	42.7	5	12.2	(16)	1.4		1667	1628	1589	1310	1030	883	745
	50	413	50.8	6.5	12.2	(18)	1.6		1716	1628	1648	1584	1520	1442	1147
	57	513	57.2	6.5	12.2	(18)	1.4		2354	2206	2059	1912	1765	1471	1157

Part Number Type	No.	€ Unit Price L113	L163	L213	L263	L313	L413	L513
HROJS	19							
	22							
	28							
	38							
	42							
	50							
	57							

Order Example: Part Number HROJS38 - L 263

Days to Ship: 8 Days — Express A 5,00 EUR/ piece — P.88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■ Volume Discount (※Round down to one Cent.) P.87

Quantity	1~4	5~29
Rate	€ Unit Price	5%

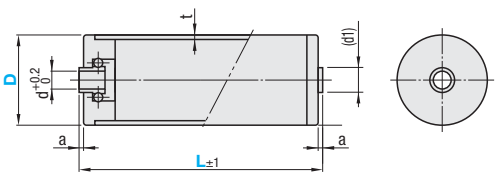
※For orders larger than indicated quantity, please request a quotation.

■Plastic Conveyor Rollers

HRJA



RoHS



※Plastic wheel and roller are glued.
※Please use combined with Roller Shafts P.1049
Do not use in applications where hubs on both sides of conveyer rollers receive load, as eccentric load is applied to bearings.

	Rollers	Wheel
Material	ABS Plastic	Outer Wheel / Inner Wheel: Polyacetal Retainer: 66 Nylon Cover: ABS Plastic Ball: 1.4301/X5CrNi18-10

Part Number Type	D	L 1mm Increment	a	d	(d1)	t	Roller Strength for Reference (N) L113	L213	L313	L413	L513	€ Unit Price L50~150	L151~250	L251~350	L351~450	L451~513
HRJA	20	50~513	3	6.2	9.5	1.5	113	105	98	90	83					
	30			8.2	14	1.8	162	154	147	139	132					
	50			12.2	17	2.8	314	304	294	289	279					

Order Example: Part Number HRJA20 - L 213

Price

■ Volume Discount (※Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

※For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days — Express A 5,00 EUR/ piece — P.88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Conveyor Roller Shafts / Mini-Rollers for Conveyors

Price Reduction 24%

CAD Data

Conveyer Roller Shafts RoHS

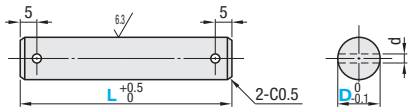


⊗ Not applicable for Silent Conveyor Rollers
Please use Rotary Shafts on P.735~.

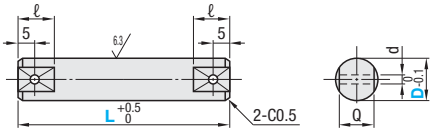
Type	Material	Surface Treatment
HRD	1.1191/C45E	-
HRDB		Black Oxide
HRDM		Electroless Nickel Plating
HRDS	1.4301/X5CrNi18-10	-

Conformed to Conveyor Rollers and Mini-Rollers on P.1047.

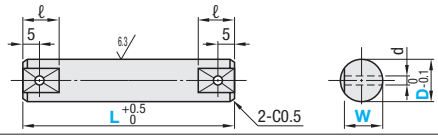
Shape A



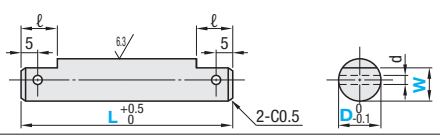
Shape G



Shape D



Shape E (D12 Only)



Part Number Type	Shape	D	L 1mm Increment	W Selection		Q	d	ℓ
HRD HRDB HRDM HRDS	A D G E	6	60~550	4	4.5	4	2.5	11
		8		5.8	6	6	2.5	12
		12		10		8	3	13

Order Example

Part Number Type	Shape	D	-	L	-	W
HRD	D	6	-	135	-	4.5

Price (euros)

Days to Ship: 8 Days

Express A: 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

For the total unit price, add shape charge to the body price.

Part Number Type	D	€ Body Price 60~200	201~400	401~550	Shape Charge (€ Body+) A	D	E	G
HRD	6							
	8							
	12							
HRDB	6							
	8							
	12							
HRDM	6							
	8							
	12							
HRDS	6							
	8							
	12							

Mini-Rollers for Conveyors RoHS



Type	Material	Surface Treatment	Bearing
CNMR	Steel	Trivalent Chromate Plating	Pressed-in Bearing
CNMRC		Hard Chromate Plating	
CNMRS	Stainless Steel	-	

B=15, 2 B=50, 100

Part Number Type	D	B	d	d1 CNMR · CNMRS	d1 CNMRC	W	Allowable Load (N)	€ Unit Price CNMR	CNMRC	CNMRS
CNMR CNMRC CNMRS	20	15	6.1	9.2	10	17	294			
		25	6.1	9.2	10	27	392			
		50	6.2	10		52	490			
		100	6.2	10		102	490			

kgf=Nx0.101972

Use with roller shafts.

Order Example

Part Number	-	B
CNMRC20	-	50

Price (euros)

Days to Ship: 8 Days

Express A: 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	40%	50%

For orders larger than indicated quantity, please request a quotation.

Conveyor Wheels / Plastic Conveyor Wheels

Price Reduction 4%

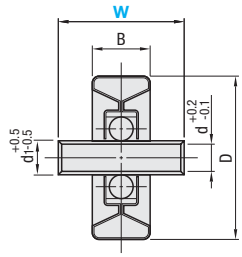
CAD Data

Conveyor Wheels RoHS



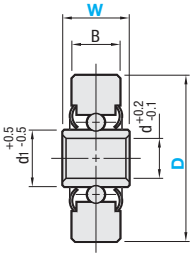
Pressed Wheels

HPH



Machined Wheels

HMH
HMHS



Type	M Material	S Surface Treatment
HPH	Steel	Trivalent Chromate
HMH		
HMHS	Stainless Steel	-

Conveyer Wheels (Pressed Wheels)

Part Number Type	No.	W	D	d	d1	B	Allowable Load (N)	€ Unit Price Qty. 1 ~ 4	Volume Discount Qty. 5 ~ 29
HPH	25	16	25.4	6.2	10	10	294		
	36	25	36	6.5	11	10	147		
	38	25	38	6.5	11	12	196		
	50	28	50	8.2	13	20	245		

For orders larger than indicated quantity, please request a quotation.

Conveyer Wheels (Machined Wheels)

Part Number Type	D	W	d	d1	B	Allowable Load (N)	HMH € Unit Price Qty. 1 ~ 4	HMH Volume Discount Qty. 5 ~ 29	HMHS € Unit Price Qty. 1 ~ 4	HMHS Volume Discount Qty. 5 ~ 29
HMH HMHS	*25	16	6.2	12	9	294				
	*36	25	6.2	14	9	392				
	50	20	8.2	19	14.5	784				
	50	20A	10.2	19	14.5	980				
	50	32	8.2	19	14.5	980				

* Stainless steel type is available with D25 and 36 only.

kgf=Nx0.101972

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	W
HPH25	-	16
HMHS36	-	25

Days to Ship: 8 Days

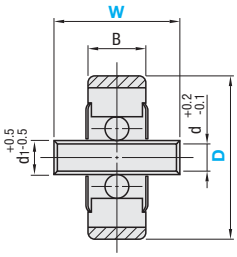
Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Conveyor Rubber-wrapped Wheels RoHS



HGH
HUH



Type	M Material	S Surface Treatment	Material of Roller Surface
HGH	Steel	Trivalent Chromate	Nitrile Rubber (White)
HUH			Polyurethane (Blue)

Conveyer Wheels (Rubber Rolled Wheels / Urethane Rolled Wheels)

Part Number Type	D	W	d	d1	B	Allowable Load (N) HGH	Allowable Load (N) HUH	HGH € Unit Price Qty. 1 ~ 4	HGH Volume Discount Qty. 5 ~ 29	HUH € Unit Price Qty. 1 ~ 4	HUH Volume Discount Qty. 5 ~ 29
HGH HUH	40	25	6.2	14	9	196	294				
		14	8.2	14	9	196	294				
		28	8.2	14	9	196	294				
	60	20	12.2	18.9	13	490	490				

kgf=Nx0.101972

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	W
HGH40	-	25

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Roller Carriers (Milled Rollers / Press Rollers)

-General Nut / U Nut Roller Width 7 ~ 9mm Type-

CAD Data

■ Steel



■ Stainless Steel



■ Plastic



■ Press Rollers



(With Bracket)



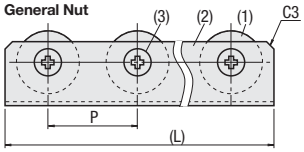
RoHS

Rollers Type	Fixing Nuts Type	Roller Pitch P=30 No Bracket	Roller Pitch P=30 With Bracket	Roller Pitch P=35 No Bracket	(1) Roller M Material	(1) Roller S Surface Treatment	Bearing M Material	(2) Frame M Material	(2) Frame S Surface Treatment	(3) Screw / Nut M Material	(3) Screw / Nut S Surface Treatment	(4) Bracket M Material	(4) Bracket S Surface Treatment
Milled Rollers	General Nuts (JIS Type 3)	CRONF	CRONFB	CRON	Steel	Trivalent Chromate / Hard Chromate Plating	Steel	Steel	ZAM Plating*	Steel	Trivalent Chromate	Steel	Trivalent Chromate
		-	-	CROC									
		-	-	CROS	Stainless Steel	-	Stainless Steel	Stainless Steel	-	Stainless Steel	-	Stainless Steel	-
		-	-	CROJ	Polyacetal	-	Steel	Steel	ZAM Plating*	Steel	Trivalent Chromate	Steel	Trivalent Chromate
		-	-	CROJS				Stainless Steel		Stainless Steel	-	Stainless Steel	-
Press Rollers		-	-	CROP	Steel (Press)	Trivalent Chromate	Press Bearing	Steel	Trivalent Chromate	Steel	Trivalent Chromate	-	-
Milled Rollers	U Nut	CRONFU	-	CRONU	Steel	Trivalent Chromate / Hard Chromate Plating	Steel	Steel	Trivalent Chromate	Steel	Trivalent Chromate	-	-
		-	-	CROCU									
		-	-	CROSU	Stainless Steel	-	Stainless Steel	Stainless Steel	-	Stainless Steel	-	-	-

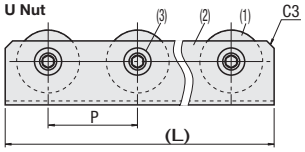
U Nuts have 20 times higher vibration resistance than general nuts, and do not easily come loose.

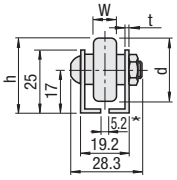
*ZAM Plating (Fused Plating of Zinc Aluminum Magnesium Type)

General Nut



U Nut





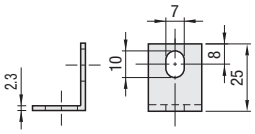
*Slot width dimension is $5.2^{+1.2}_{0}$ (M5 screw applicable)

Roller Type	Nut	Roller Material	Frame	h	d	w	t
Milled Rollers	General Nuts (JIS Type 3) U Nut	Steel	Steel	29.5	25	9	1.6
		Stainless Steel	Stainless Steel				1.5
	General Nuts (JIS Type 3)	Polyacetal	Steel	30	26	8	1.5
			Stainless Steel			7	
Press Rollers	General Nuts (JIS Type 3)	Steel	Steel	29.7	25.4	10	1.6

(4) Included Brackets (x4 Pcs.)

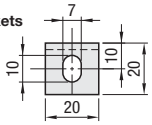
Selectable by Bracket Type and Alterations

Only applicable for general Milled Roller nuts



Method for Mounting Brackets

Remove 2 nuts from a location where brackets are to be mounted. Then mount the included brackets using the nuts included.



Part Number Type	Wheel Quantity	L P=30	L P=35	€ Unit Price Milled Rollers General Nuts CRONF CRON	CROC	CROS	CROJ	CROJS	CRONFB	Milled Rollers U Nut Type CRONFU CRONU	CROCU	CROSU	Press Rollers General Nuts CROP
	2	(58)	(68)										
	3	(88)	(103)										
	4	(118)	(138)										
	5	(148)	(173)										
	6	(178)	(208)										
	7	(208)	(243)										
	8	(238)	(278)										
	9	(268)	(313)										
	10	(298)	(348)										
	11	(328)	(383)										
	12	(358)	(418)										
	13	(388)	(453)										
	14	(418)	(488)										
	15	(448)	(523)										
	16	(478)	(558)										
	17	(508)	(593)										
	18	(538)	(628)										
	19	(568)	(663)										
	20	(598)	(698)										
	21	(628)	(733)										
	22	(658)	(768)										
	23	(688)	(803)										
	24	(718)	(838)										
	25	(748)	(873)										
	26	(778)	(908)										
	27	(808)	(943)										
	28	(838)	(978)										
	29	(868)	(1013)										
	30	(898)	(1048)										
	31	(928)	(1083)										
	32	(958)	(1118)										
	33	(988)	(1153)										

■Milled Rollers

With General Nuts / With U Nuts

CRONF (Steel) / **CRONFU** (Steel)

CRON (Steel) / **CRONU** (Steel)

CROC (Steel+Hard Chrome Plating) / **CROCU** (Steel+Hard Chrome Plating)

CROS (Stainless Steel) / **CROSU** (Stainless Steel)

CROJ (Plastic)

CROJS (Plastic Roller / Stainless Steel Frame)

CRONFB (Steel With Brackets)

■Press Rollers

CROP (Rollers – Press-formed Frame)

For loading weight, 30kgf (294N) per wheel for Milled Rollers, and 15kgf (147N) for Press Rollers.

Order Example Part Number: CROS25 CRONU30

Price (euros)

Days to Ship 8 Days

Express A 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express is not available for U Nut Type and Press Roller Type products.

■**Volume Discount** (Round down to one Cent.) P.87

-CRON · CROS · CROJ · CROJS · CRONU · CROCU · CROSU

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-CRONF · CROC· CRONFB· CRONFU· CROP

Quantity	1~19	20~29
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

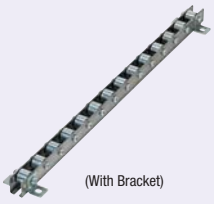
Alterations Part Number - (BC · BS) CRON25 - BC

Alterations	Code	Spec.	Price Adder
Mounting Brackets	BC BS	4 Mounting Brackets are included. Ordering Code BC	BC (Steel) : 4,70 BS (Stainless Steel): 11,80

Roller Carriers
-Roller Width 15mm Type-

CAD Data

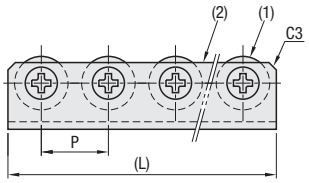


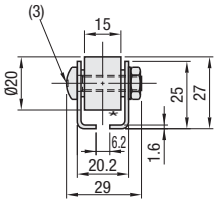


RoHS

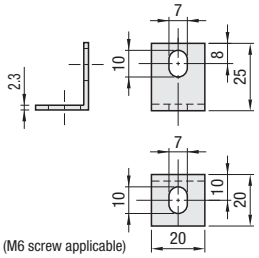
Type	Roller Pitch			(1) Roller		Bearing	(2) Frame		(3) Screw / Nut		(4) Bracket	
	P=25	P=30	P=35	M Material	S Surface Treatment	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
No Bracket	CRONEY	CRONFY	CRONY	Steel	Trivalent Chromate	Steel	1.0320/St.22	ZAM Plating*	Steel	Trivalent Chromate	-	-
With Bracket	CRONEYB	CRONFYB	CRONYB								Steel	Trivalent Chromate

*ZAM Plating (Fused Plating of Zinc Aluminum Magnesium Type)





(4) Included Brackets (x4 Pcs.)



* Slot width dimension is $6.2^{+1.2}_{0}$ (M6 screw applicable)

Part Number		L			€ Unit Price	
Type	No. of Wheels	P=25	P=30	P=35	CRONEY CRONFY CRONY	CRONEYB CRONFYB CRONYB
No Bracket CRONEY CRONFY CRONY	2	(48)	(58)	(68)		
	3	(73)	(88)	(103)		
	4	(98)	(118)	(138)		
	5	(123)	(148)	(173)		
	6	(148)	(178)	(208)		
	7	(173)	(208)	(243)		
	8	(198)	(238)	(278)		
	9	(223)	(268)	(313)		
	10	(248)	(298)	(348)		
	11	(273)	(328)	(383)		
	12	(298)	(358)	(418)		
	13	(323)	(388)	(453)		
	14	(348)	(418)	(488)		
	15	(373)	(448)	(523)		
	16	(398)	(478)	(558)		
	17	(423)	(508)	(593)		
	18	(448)	(538)	(628)		
With Bracket CRONEYB CRONFYB CRONYB	19	(473)	(568)	(663)		
	20	(498)	(598)	(698)		
	21	(523)	(628)	(733)		
	22	(548)	(658)	(768)		
	23	(573)	(688)	(803)		
	24	(598)	(718)	(838)		
	25	(623)	(748)	(873)		
	26	(648)	(778)	(908)		
	27	(673)	(808)	(943)		
	28	(698)	(838)	(978)		
	29	(723)	(868)	(1013)		
	30	(748)	(898)	(1048)		
	31	(773)	(928)	(1083)		
	32	(798)	(958)	(1118)		
	33	(823)	(988)	(1153)		

Loading weight is 30 kgf (294N) per wheel.

Order Example — Part Number: CRONEY15

Days to Ship — 8 Days

Express A 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount

(Round down to one Cent.) P.87

Quantity	1~19	20~29
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Method for Mounting Brackets

Remove nuts from two bracket joining locations, and use included brackets and screws to install.

Roller Carriers

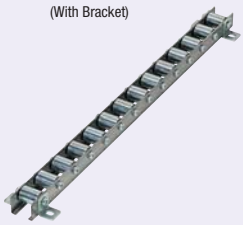
-Roller Width 25mm Type-

CAD Data

RoHS

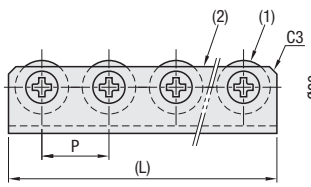

(Steel)

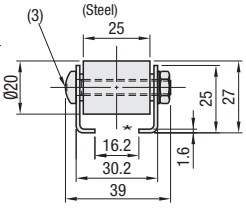

(Stainless Steel)

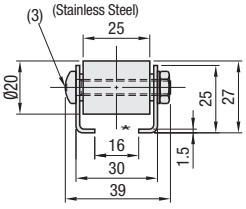

(With Bracket)

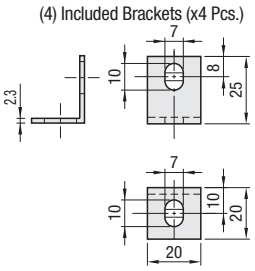
Type	Roller Pitch			(1) Roller		Bearing	(2) Frame		(3) Screw / Nut		(4) Bracket	
	P=25	P=30	P=35	M Material	S Surface Treatment	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
No Bracket	CRONEW	CRONFW	CRONW	Steel	Trivalent Chromate	Steel	Steel	ZAM Plating*	Steel	Trivalent Chromate	-	-
With Bracket	CRONEWB	CRONFWB	CRONWB								Steel	Trivalent Chromate
With Bracket	-	-	CROCWB		Hard Chromate Plating							
No Bracket	-	-	CROSW	Stainless Steel	-	Stainless Steel	Stainless Steel	-	Stainless Steel	-	-	-
With Bracket	-	-	CROSWB								Stainless Steel	-

*ZAM Plating (Fused Plating of Zinc Aluminum Magnesium Type)









* Slot width dimension is $16.2^{+1.2}_{0}$ (Steel), $16^{+1.2}_{0}$ (Stainless Steel)

Part Number		L			€ Unit Price				
Type	No. of Wheels	P=25	P=30	P=35	CRONEW CRONFW CRONW	CRONEWB CRONFWB CRONWB	CROCWB	CROSW	CROSWB
No Bracket CRONEW CRONFW CRONW CROSW	2	(48)	(58)	(68)					
	3	(73)	(88)	(103)					
	4	(98)	(118)	(138)					
	5	(123)	(148)	(173)					
	6	(148)	(178)	(208)					
	7	(173)	(208)	(243)					
	8	(198)	(238)	(278)					
	9	(223)	(268)	(313)					
	10	(248)	(298)	(348)					
	11	(273)	(328)	(383)					
	12	(298)	(358)	(418)					
	13	(323)	(388)	(453)					
	14	(348)	(418)	(488)					
	15	(373)	(448)	(523)					
	16	(398)	(478)	(558)					
	17	(423)	(508)	(593)					
With Bracket CRONEWB CRONFWB CRONWB CROCWB CROSWB	18	(448)	(538)	(628)					
	19	(473)	(568)	(663)					
	20	(498)	(598)	(698)					
	21	(523)	(628)	(733)					
	22	(548)	(658)	(768)					
	23	(573)	(688)	(803)					
	24	(598)	(718)	(838)					
	25	(623)	(748)	(873)					
	26	(648)	(778)	(908)					
	27	(673)	(808)	(943)					
	28	(698)	(838)	(978)					
	29	(723)	(868)	(1013)					
	30	(748)	(898)	(1048)					
	31	(773)	(928)	(1083)					
	32	(798)	(958)	(1118)					
	33	(823)	(988)	(1153)					

Loading weight is 40 kgf (392N) per wheel.

Order Example — Part Number: CRONEW15

Days to Ship: 8 Days

Express A — 5,00 EUR/piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

-CRONW_ · CROSW_

Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-CRONEW_ · CRONFW_ · CROCWB

Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~29
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Method for Mounting Brackets

Remove nuts from two bracket joining locations, and use included brackets and screws to install.
Use included brackets and screws to install.

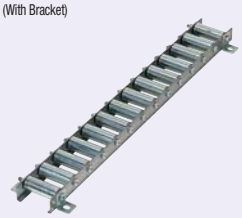
Roller Carriers
-Roller Width 50mm Type-

CAD Data





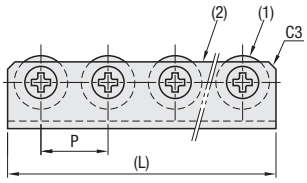
(With Bracket)

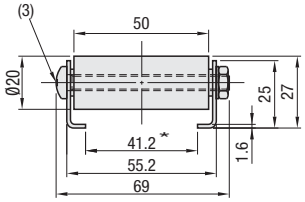


RoHS

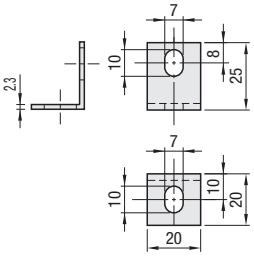
Type	Roller Pitch		(1) Roller		Bearing	(2) Frame		(3) Screw / Nut		(4) Bracket	
	P=25	P=35	M Material	S Surface Treatment	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
No Bracket	CRONEX	CRONX	Steel	Trivalent Chromate	Steel	Steel	ZAM Plating*	Steel	Trivalent Chromate	-	-
With Bracket	CRONEXB	CRONXB								Steel	Trivalent Chromate

*ZAM Plating (Fused Plating of Zinc Aluminum Magnesium Type)





(4) Included Brackets (x4 Pcs.)



*Slot width dimension is $41.2^{+1.2}_{0}$

Part Number		L		€ Unit Price	
Type	No. of Wheels	P=25	P=35	CRONEX CRONX	CRONEXB CRONXB
No Bracket CRONEX CRONX / With Bracket CRONEXB CRONXB	2	(48)	(68)		
	3	(73)	(103)		
	4	(98)	(138)		
	5	(123)	(173)		
	6	(148)	(208)		
	7	(173)	(243)		
	8	(198)	(278)		
	9	(223)	(313)		
	10	(248)	(348)		
	11	(273)	(383)		
	12	(298)	(418)		
	13	(323)	(453)		
	14	(348)	(488)		
	15	(373)	(523)		
	16	(398)	(558)		
	17	(423)	(593)		
	18	(448)	(628)		
	19	(473)	(663)		
	20	(498)	(698)		
	21	(523)	(733)		
	22	(548)	(768)		
	23	(573)	(803)		
	24	(598)	(838)		
	25	(623)	(873)		
	26	(648)	(908)		
	27	(673)	(943)		
	28	(698)	(978)		
	29	(723)	(1013)		
	30	(748)	(1048)		
	31	(773)	(1083)		
	32	(798)	(1118)		
	33	(823)	(1153)		

Loading weight is 50 kgf (490N) per wheel.

Order Example — Part Number: CRONEXB15

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~29
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Method for Mounting Brackets

Remove nuts from two bracket joining locations, and use included brackets and screws to install.

Roller Conveyor Overview

■ Selection Method of Roller Conveyors

(1) Selection of Roller Width

Select a roller width according to an outer size of conveyed objects.
1. Optimum width selection is "Object width + 50mm or more".
2.If the objects to be conveyed are on pallets, it is acceptable for the roller width to be narrower than the object width as long as the objects do not come into contact with the conveyer frame.

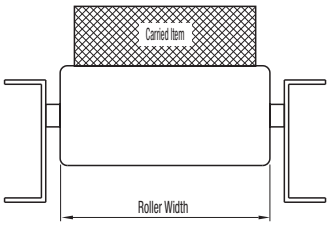
(2) Selection of Roller Pitch

Roller pitch is determined by surface length and mass of conveyed object.

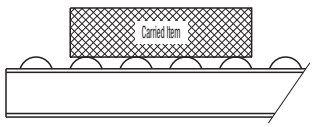
-When the conveyed objects have hard bottoms
When the objects have hard bottoms, such as steel, plastic etc., select a pitch that always supports the objects with more than 4 rollers (>3 pitches).

-When the conveyed objects have soft bottoms
When the objects have soft bottoms, such as cardboard and rubber etc., select a pitch that always supports the objects with more than 6 rollers (>5 pitches). In addition, make designed load per roller within the allowable values shown in the table below.

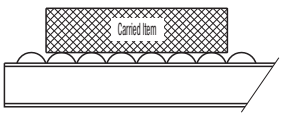
-When impact is generated upon loading
When impact is generated upon loading, impact load is 1.5~3 times larger than the usual load. Please select the conveyor with ample load capacity.



- When the product bottom is hard



- When the product bottom is soft



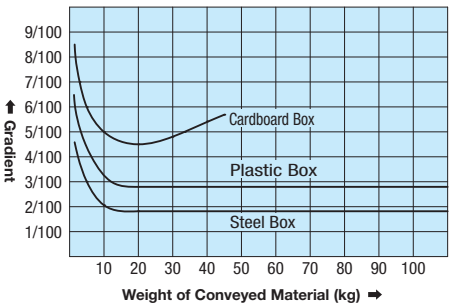
■ List of Strength per Roller

Roller Outer Diameter	Roller Strength (N)				
	W113	W213	W313	W413	W513
19.1mm	618	530	343	294	206
28.6mm	1236	1059	687	588	412
38.1mm	1342	1342	922	785	588

(3) Selection of Gravity Feed Inclination

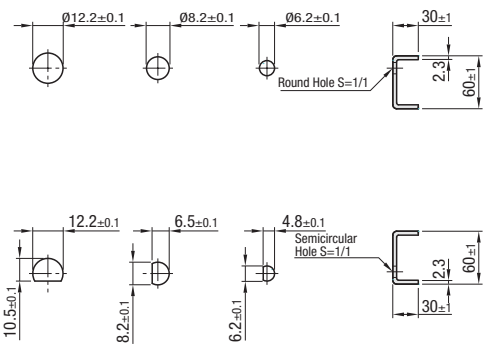
When Roller Conveyors are installed at an incline, conveyed products move by own weights. This inclination is called gravity feed inclination. Gravity feed inclination varies depending on the condition of the bottom, material and a mass of the conveyed products.

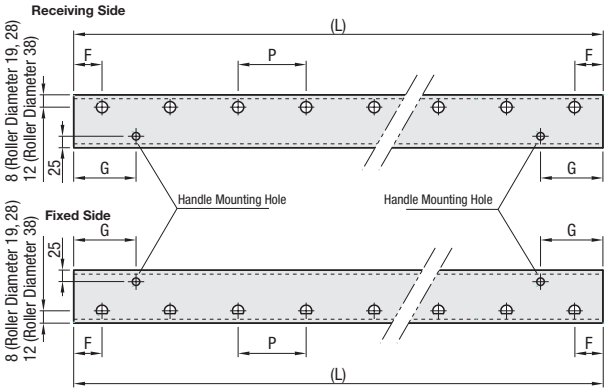
1. Refer to the right chart for selecting. The chart shows approximate values for flat bottom objects.



[Frame Side View]

Roller Dia. 38mm Type Roller Dia. 28mm Type Roller Dia. 19mm Type





Type	ROCO		ROCON		ROCOM		ROCOG		ROCOE ROCOJ		ROCOH	
Frame Size	ø19xP20		ø19xP30		ø28xP30		ø28xP50		ø38xP50 ø38xP100*		ø38xP75	
(L)	F	G	F	G	F	G	F	G	F	G	F	G
100~199	10	20	20	35	-	-	-	-	-	-	-	-
200~299		40	10	55	25	70				50		
300~399		80	15	90	15	90	25	100	25	100	37.5	75
400~499		140	20	155	20	155					50	87.5
500~599			10	145	25	160		150		150	25	137.5
600~699			15	150	15	150					37.5	150
700~799			20	155	20	155					50	162.5
800~899			10	145	25	160					25	137.5
900~1000			15	150	15	150					37.5	150

* Holes for Roller Shafts are provided at 50mm pitch on ø38 x P100 flames.

Roller Conveyor Length Configurable Type

-Roller Diameter 19mm Type-

CAD Data

■ **Feature: Short roller conveyors 1m or less, with configurable width and length.**



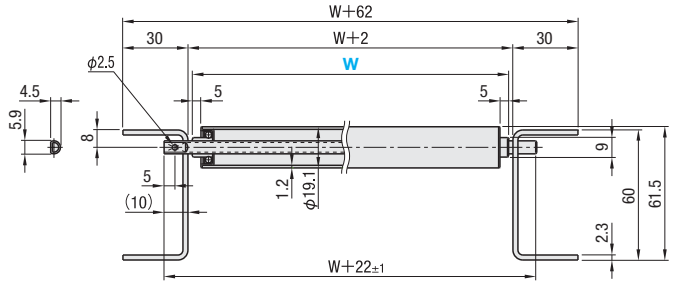
Roller Pitch		(1) Roller (HRO19)		Bearing	(2) Frame	
P=20	P=30	M Material	S Surface Treatment	M Material	M Material	S Surface Treatment
ROCO	ROCON	Steel	Trivalent Chromate	Steel	Steel	* ZAM Plating

Roller Pitch		R Pin		Frame Coupling Support		Screw / Nut	
P=20	P=30	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
ROCO	ROCON	Steel	Trivalent Chromate	Steel	Trivalent Chromate	Steel	Trivalent Chromate

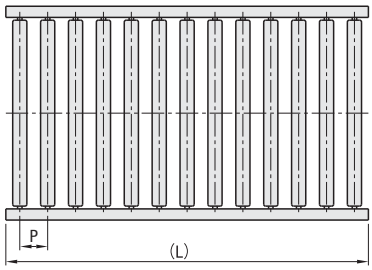
* ZAM Plating (Fused Plating of Zinc Aluminum Magnesium Type)

ROCO
ROCON

Roller Only



Roller Conveyor



Refer to the left page for Frame Side View.

Part Number		(L)		€ Unit Price Qty. 1 ~ 5										
Type	Rollers Quantity	ROCO P=20	ROCON P=30	ROCO(P=20)					ROCON(P=30)					
				W113	W213	W313	W413	W513	W113	W213	W313	W413	W513
ROCO ROCON	6	(120)	(190)										
	7	(140)	(200)										
	8	(160)	(230)										
	9	(180)	(260)										
	10	(200)	(290)										
	11	(220)	(330)										
	12	(240)	(360)										
	13	(260)	(390)										
	14	(280)	(430)										
	15	(300)	(460)										
	16	(320)	(490)										
	17	(340)	(500)										
	18	(360)	(530)										
	19	(380)	(560)										
	20	(400)	(590)										
	21	(420)	(630)										
	22	(440)	(660)										
	23	(460)	(690)										
	24	(480)	(730)										
	25	(500)	(760)										
	26	(520)	(790)										
	27	(540)	(800)										
	28	(560)	(830)										
	29	(580)	(860)										
	30	(600)	(890)										
	31	(620)	(930)										
	32	(640)	-										
	33	(660)	-										
	34	(680)	-										
	35	(700)	-										
	36	(720)	-										
	37	(740)	-										
	38	(760)	-										
	39	(780)	-										
	40	(800)	-										
	41	(820)	-										
	42	(840)	-										
	43	(860)	-										
	44	(880)	-										
	45	(900)	-										
	46	(920)	-										
	47	(940)	-										
	48	(960)	-										

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	W
ROCO38	-	113
ROCON22	-	313

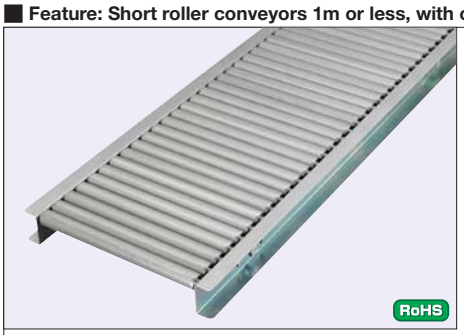
Days to Ship: 10 Days

Roller Conveyor Length Configurable Type

-Roller Diameter 28mm Type-

CAD Data

■ Feature: Short roller conveyors 1m or less, with configurable width and length.

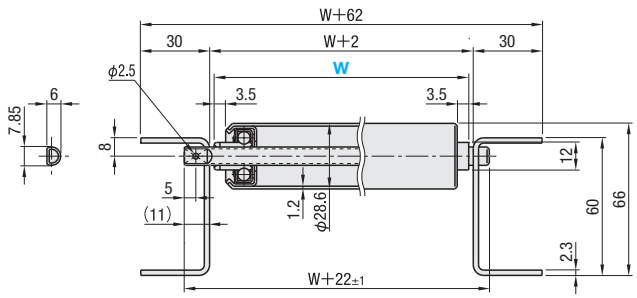


Roller Pitch		(1) Roller (HRO28)		Bearing	(2)Frame	
P=30	P=50	M Material	S Surface Treatment	M Material	M Material	S Surface Treatment
ROCOM	ROCOG	Steel	Trivalent Chromate	Steel	Steel	* ZAM Plating

Roller Pitch		R Pin		Frame Coupling Support		Screw · Nut	
P=30	P=50	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
ROCOM	ROCOG	Steel	Trivalent Chromate	Steel	Trivalent Chromate	Steel	Trivalent Chromate

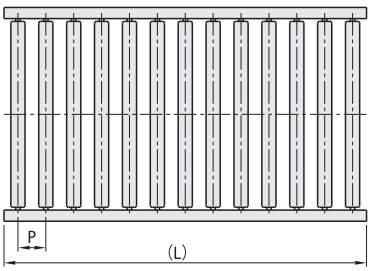
* ZAM Plating (Fused Plating of Zinc Aluminum Magnesium Type)

Roller Only



ROCOM
ROCOG

Roller Conveyor



For Frame Side Views, P.1055

Part Number		(L)		€ Unit Price Qty. 1 ~ 5									
Type	Rollers Quantity	ROCOM P=30	ROCOG P=50	ROCOM(P=30)					ROCOG(P=50)				
				W113	W213	W313	W413	W513	W113	W213	W313	W413	W513
ROCOM ROCOG	7	(230)	(350)										
	8	(260)	(400)										
	9	(290)	(450)										
	10	(300)	(500)										
	11	(330)	(550)										
	12	(360)	(600)										
	13	(390)	(650)										
	14	(430)	(700)										
	15	(460)	(750)										
	16	(490)	(800)										
	17	(530)	(850)										
	18	(560)	(900)										
	19	(590)	(950)										
	20	(600)	-										
	21	(630)	-										
	22	(660)	-										
	23	(690)	-										
	24	(730)	-										
	25	(760)	-										
	26	(790)	-										
	27	(830)	-										
	28	(860)	-										
	29	(890)	-										
	30	(900)	-										
	31	(930)	-										
	32	(960)	-										

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	W
ROCOM20	-	413
ROCOG16	-	213

Days to Ship: 10 Days

Roller Conveyor Length Configurable Type

-Roller Diameter 38mm Type-

CAD Data

■ Feature: Short roller conveyors 1m or less, with configurable width and length.



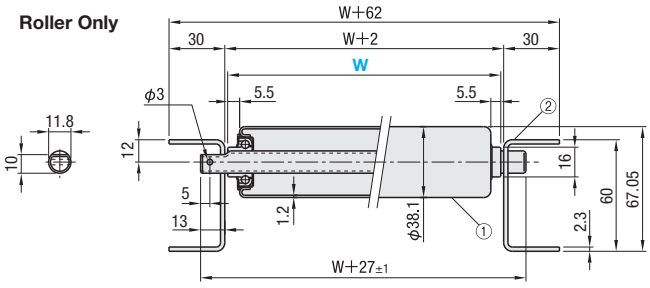
Roller Pitch			(1) Roller (HRO38)		Bearing	(2) Frame	
P=50	P=75	P=100	M Material	S Surface Treatment	M Material	M Material	S Surface Treatment
ROCOE	ROCOH	ROCOJ	Steel	Trivalent Chromate	Steel	Steel	* ZAM Plating

Roller Pitch			R Pin		For frame connections Bracket		Screw · Nut	
P=50	P=75	P=100	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
ROCOE	ROCOH	ROCOJ	Steel	Trivalent Chromate	Steel	Trivalent Chromate	Steel	Trivalent Chromate

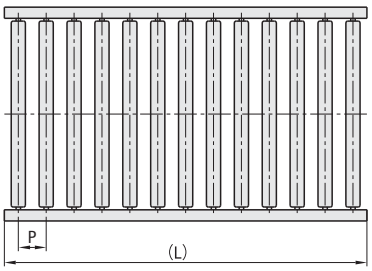
*Holes for Roller Shafts are provided at 50mm pitch on ROCOJ frames.
* ZAM Plating (Fused Plating of Zinc Aluminum Magnesium Type)

ROCOE
ROCOH
ROCOJ

Roller Only



Roller Conveyor



For Frame Side Views, P.1055

Part Number Type	Rollers Quantity	(L) ROCOE P=50	ROCOH P=75	ROCOJ P=100	€ Unit Price Qty. 1 ~ 5 ROCOE(P=50) W113	W213	W313	W413	W513	ROCOH(P=75) W113	W213	W313	W413	W513	ROCOJ(P=100) W113	W213	W313	W413	W513
ROCOE ROCOH ROCOJ	4	(200)	(300)	(350)																
	5	(250)	(375)	(450)																
	6	(300)	(475)	(550)																
	7	(350)	(500)	(650)																
	8	(400)	(575)	(750)																
	9	(450)	(675)	(850)																
	10	(500)	(775)	-																
	11	(550)	(800)	-																
	12	(600)	(875)	-																
	13	(650)	(975)	-																
	14	(700)	-	-																
	15	(750)	-	-																
	16	(800)	-	-																
	17	(850)	-	-																
	18	(900)	-	-																
	19	(950)	-	-																

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	W
ROCOE8	-	313
ROCOJ6	-	113

Days to Ship: 10 Days

Ball Roller

-Milled Stainless Steel Type-

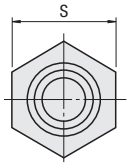
■Hex Head Stud Type



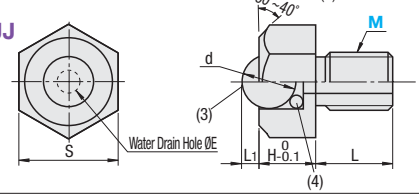


RoHS

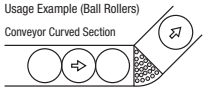
BCHL
BCHLJ



BCHLJJ



Example



Type	Material (1) Body	(2) Spacer	(3) Main Ball	(4) Sub Balls
BCHL	1.4301/ X5CrNi18 -10	1.4301/ X5CrNi18- 10	1.4125/X105 CrMo17 HRC55~	1.4125/ X105CrMo17 HRC55~
BCHLJ			Polyacetal Balls	
BCHLJJ	Polyacetal	-		

Part Number Type	M	L	L1	H	d	S	Allowable Load N (kgf) BCHL	BCHLJ	€ Unit Price
BCHL (Stainless Steel Balls)	6	8	1.2	6	4.76	10	14 (1.4)	7 (0.7)	
	8	10	1.5	7	5.56	13	41 (4.2)	27 (2.8)	
	10	12	2.5	10	8.73	17	55 (5.6)	34 (3.5)	
	12	15	3.5	11	10.32	19	62 (6.3)	55 (5.6)	
BCHLJ (Polyacetal Balls)	16	20	5.3	15	15.87	24	343 (35)	69 (7)	
	20	25	6.3	18	19.05	30	412 (42)	82 (8.4)	

Part Number Type	M	L	L1	H	d	S	E	Allowable Load N (kgf)	€ Unit Price
BCHLJJ (Plastic Body)	5	6	1.5	5	4.76	8	1.5	2 (0.2)	
	6	8	1.7	6	5.56	10	2.5	4 (0.4)	
	8	10	2.8	8	8.73	13	3	7 (0.7)	
	10	12	3.5	10	10.32	17	3.5	11 (1.1)	

BCHLJJ is not suitable for high-speed transfer.

■Press-Fit Type

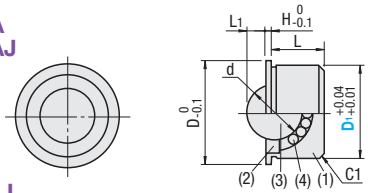


■Insertion / Adhesive Type

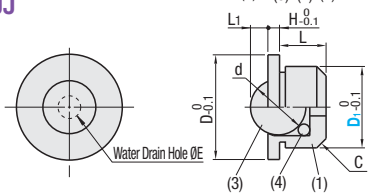


RoHS

BCHA
BCHAJ

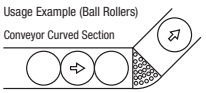


BCHJJ



H7 is recommended for mounting holes.

Example



Adhesive attaching recommended.
(Do not press fit. It may cause ball malfunction.)

Type	Material (1) Body	(2) Spacer	(3) Main Ball	(4) Sub Balls
BCHA	1.4301/ X5CrNi18 -10	1.4301/ X5CrNi18 -10	1.4125/X105CrMo17 HRC55~	1.4125/ X105CrMo17 HRC55~
BCHAJ			Polyacetal Balls	
BCHJJ	Polyacetal	-		

Part Number Type	D1	D	L	H	L1	d	Allowable Load N (kgf) BCHA	BCHAJ	€ Unit Price
BCHA (Stainless Steel Balls)	9	11	5	1	1.2	4.76	14 (1.4)	7 (0.7)	
	11	13	6		1.5	5.56	41 (4.2)	27 (2.8)	
	15	17	9		2.5	8.73	55 (5.6)	34 (3.5)	
BCHAJ (Polyacetal Balls)	18	20	10		3.5	10.32	62 (6.3)	55 (5.6)	
	24	26	14	1.5	5.3	15.87	343 (35)	69 (7)	
	30	32	17	2	6.3	19.05	412 (42)	82 (8.4)	

Part Number Type	D1	D	L	H	L1	d	E	C	Allowable Load N (kgf)	€ Unit Price
BCHJJ (Plastic Body)	7	9	4	1	1.5	4.76	1.5	0.8	2 (0.2)	
	9	11	5		1.7	5.56	2.5	1	4 (0.4)	
	13	15	7		2.8	8.73	3.0		7 (0.7)	
	15	17	8		3.5	10.32	3.5		11 (1.1)	
	20	22	11.5	1.5	5.2	15.87	5.3		14 (1.4)	
	24	26	15		6.6	19.05	6.4		21 (2.1)	

BCHJJ is not suitable for high-speed transfer.

■Plunger Type (Press-Fit)

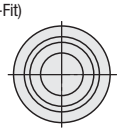


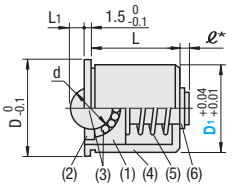
(Male Thread)



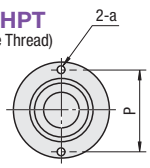
RoHS

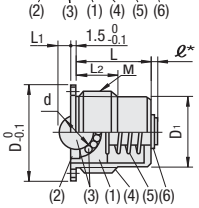
BCHP
(Press-Fit)





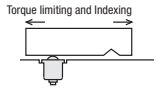
BCHPT
(Male Thread)





* Allows objects to slide within the ball stroke.
H7 is recommended for mounting holes.

Example



* Allows objects to slide within the ball stroke.
For tightening, wrenches for ball rollers are required.
Refer to Alteration BR on the next page.

Type	Material (1) Body	(2) Spacer	(3) Ball	(4) Casing	(5) Springs	(6) Retaining Ring
BCHP BCHPT	1.4301/ X5CrNi18 -10	1.4301/ X5CrNi18 -10	1.4125/ X105CrMo17 HRC55~	1.4301/ X5CrNi18 -10	1.4568/ X7CrNiAl17 -7	1.4301/ X5CrNi18 -10

Part Number Type	D1	D	L	L1	d	ℓ	Load (N) min.	max.	€ Unit Price
BCHP	14	16	14	1.5	5.56	1.5	23	30	
	18	20	17	2.5	8.73	2	24	38	
	22	24	21.5	3.5	10.32		24	55	

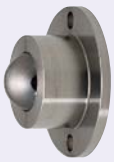
Part Number Type	Nominal	M (Fine Thread)	D	D1	L	L1	L2	a	d	P	ℓ	Load (N) min.	max.	€ Unit Price
BCHPT	16	16x1.5	19	13.5	14	1.5	9	2	5.56	15.4	1.5	23	30	
	20	20x1.5	24	16.5	17	2.5	10	2	8.73	18.5	2	24	38	
	24	24x1.5	28	20.5	21.5	3.5	12	2.5	10.32	24		24	55	

kgf=Nx0.101972

■Lock Nut Type

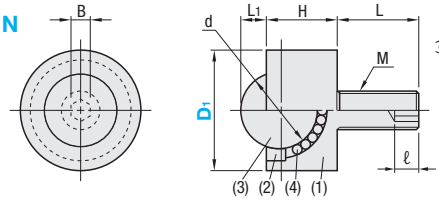


■Flange Mounting Type

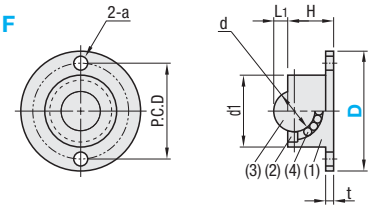


RoHS

BCHN



BCHF



■Nut Dimensions

M	B1	(e)	T
M6	10	11.5	5
M8	13	15	6.5
M10	17	19.6	8

Type	Material			
	(1) Body	(2) Spacer	(3) Main Ball	(4) Sub Balls
BCHN BCHF	1.4301/X5CrNi18-10		1.4125/X105CrMo17 HRC55~	

Part Number Type	D1	L1	H	M	L	d	B	(ℓ)	Allowable Load N (kgf)	€ Unit Price
BCHN	12	1.5	6.5	6	15	5.56	3	3.5	41 (4.2)	
	16	2.5	9.5			8.73			55 (5.6)	
	19	3.5	11.5	8	20	10.32	4	5	62 (6.3)	
	25	5.3	14.7			15.87			343 (35)	
	31	6.3	18.7	10	25	19.05	5	6	412 (42)	

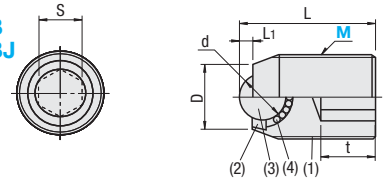
Part Number Type	D	D1	L1	H	t	P.C.D	a	d	Allowable Load N (kgf)	€ Unit Price
BCHF	27	15	2.5	9.5	2	21	3.5	8.73	55 (5.6)	
	30	18	3.5	11.5	2	24	3.5	10.32	62 (6.3)	
	39	24	5.3	14.7	3	31.5	4.5	15.87	343 (35)	
	48	30	6.3	18.7	4	39	5.5	19.05	412 (42)	

■Set Screw Type



RoHS

BCSB BCSBJ

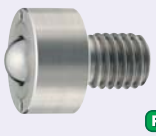


Size M8 main balls are swaged in place without a spacer (2).

Type	Material			
	(1) Body	(2) Spacer	(3) Main Ball	(4) Sub Balls
BCSB	1.4567/ X3CrNiCu 18-9-4	1.4301/ X5CrNi18 -10	1.4125/ X105CrMo17 HRC55~	1.4125/ X105CrMo17 HRC55~
BCSBJ			Polyacetal Balls	

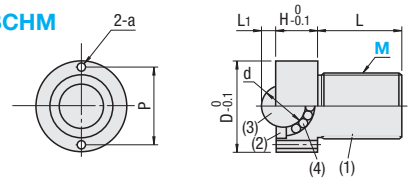
Part Number Type	M	L	L1	D	d	S	t	Allowable Load N (kgf) BCSB	Allowable Load N (kgf) BCSBJ	€ Unit Price
BCSB (Stainless Steel Balls) BCSBJ (Polyacetal Balls)	8	14	1.3	5	4.76	4	5	5 (0.5)	1 (0.1)	
	10	16	1.2	7	4.76	5	6	14 (1.4)	7 (0.7)	
	12	20	1.5	8	5.56	6	8	41 (4.2)	27 (2.8)	
	16	25	2.5	12	8.73	8	10	55 (5.6)	34 (3.5)	
	20	30	3.5	15	10.32	10	12	62 (6.3)	55 (5.6)	

■Round Head Stud Type



RoHS

BCHM



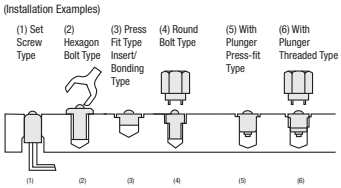
For tightening, wrenches for ball rollers are required. (Refer to Alteration BR)

Type	Material			
	(1) Body	(2) Spacer	(3) Main Ball	(4) Sub Balls
BCHM	1.4301/ X5CrNi18 -10	1.4301/ X5CrNi18 -10	1.4125/ X105CrMo17 HRC55~	1.4125/ X105CrMo17 HRC55~

Part Number Type	M	L	L1	H	D	d	a	P	Allowable Load N (kgf)	€ Unit Price
BCHM (Stainless Steel Balls)	10	12	2.5	10	18.5	8.73	2	15.4	55 (5.6)	
	12	15	3.5	11	22	10.32		18.5	62 (6.3)	
	16	20	5.3	15	27	15.87	2.5	24	343 (35)	
	20	25	6.3	18	33	19.05		29.6	412 (42)	

Example

(Installation Examples)



Order Example

Part Number
BCHP18

Alterations

Part Number - (BR)
BCHPT20 - BR

8 Days

Days to Ship

6 Days P. 87

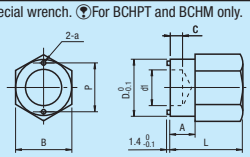
2 Days

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~49	50~74	75~99	100~199
Rate	€ Unit Price	5%	10%	18%

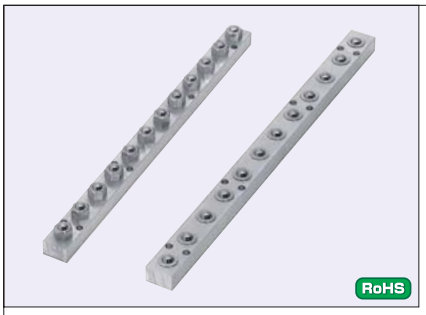
For orders larger than indicated quantity, please request a quotation.

Alteration	Code	Spec.	Price Adder
Special Wrench Included	BR	Includes a special wrench. For BCHPT and BCHM only. 	5,00

Nominal	BCHPT Applicable (Nom.)	BCHM Applicable (M)	L	A	B	C	D	D1	P	a
10	16	For M10	25	8	19	3	18.5	10	15.4	2
12	20	For M12	30	10	24	4	22	12	18.5	
16	24	For M16	35	12	27	6	27	17	24	2.5
20	-	For M20	40	14	30	7	33	20	29.6	

Ball Roller Units

CAD Data



Type	Ball Roller		Material				
			Ball Roller				Frame
	Shape	Part Number (Please see P.1059)	Bearing	Spacer	Main Ball	Sub Balls	
BUHL	Hex Head Stud Type	BCHL16	1.4301/ X5CrNi18-10	1.4301/ X5CrNi18-10	1.4125/ X105CrMo17 HRC55~	1.4125/ X105CrMo17 HRC55~	EN AW-6063/ AlMg0,7Si (Clear Anodized)
BUHA	Press-Fit Type	BCHA24					

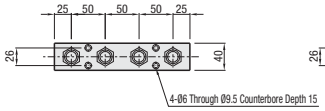
For details of the Ball Rollers, P.1059

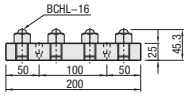
Hex Head Stud Type

BUHL

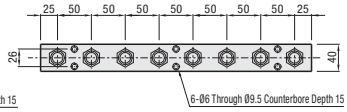
(Stainless Steel Balls)

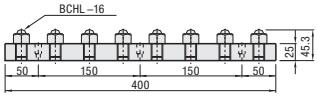
-Overall Length 200



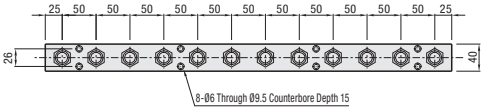


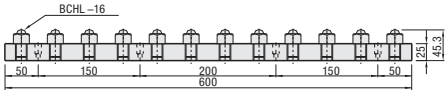
-Overall Length 400





-Overall Length 600



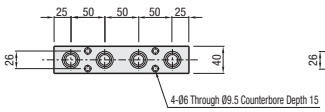


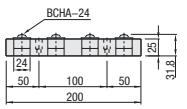
Press-Fit Type

BUHA

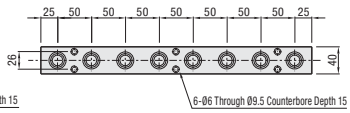
(Stainless Steel Balls)

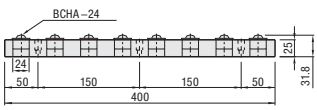
-Overall Length 200



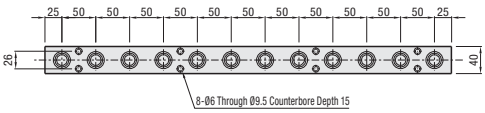


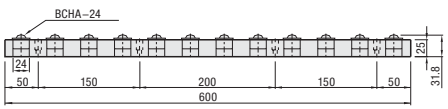
-Overall Length 400





-Overall Length 600





Part Number		No. of Rollers	€ Unit Price	
Type	Full Length		BUHL	BUHA
Hex Head Stud Type **BUHL**(Stainless Steel Balls)	200	4		
	400	8		
Press-Fit Type **BUHA**(Stainless Steel Balls)	600	12		

Allowable Load per Ball Roller

Type	Allowable Load N (kgf)
BUHL BUHA	343 (35)

Order Example Part Number: BUHL200

Days to Ship 6 Days P.87

Price

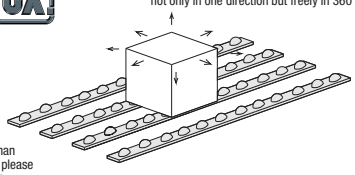
Volume Discount (Round down to one Cent.) P.87

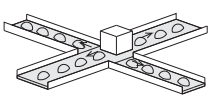
Quantity	1~9	10~19	20~29
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example

* As shown in the drawing below, the Ball Roller Units transfer carried objects not only in one direction but freely in 360 degree directions.





Ball Roller

-Milled Steel Type / Steel Press Formed Type-

NEW

Reduced Delivery Time

Price Reduction Up to 65%

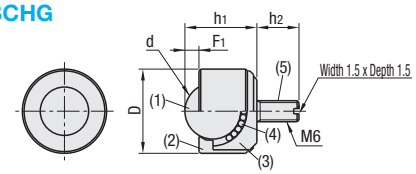
CAD Data

■Milled Male Thread Stud Type

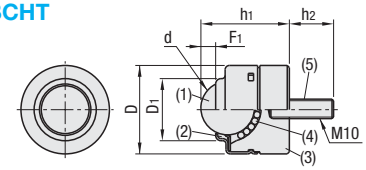


RoHS

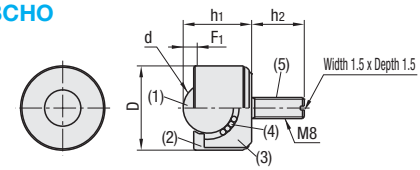
BCHG



BCHT



BCHO



Type	Material (1) Main Ball	(2) Spacer	(3) Ball Roller	(4) Sub Balls	(5) Male Thread Section
BCHG	1.3505/100Cr6	1.0038/S235JR equivalent	1.7242/16CrMo4	1.3505/100Cr6	1.7242/16CrMo4
BCHO		JIS SPPC equivalent			
BCHT					1.7220/34CrMo4

Part Number Type	Part Number No.	D	D1	d	h1	h2	F1	Allowable Load N (kgf)	€ Unit Price
BCHG	24	24	-	15.875	20.5	12	4	196.1 (20)	
BCHO	32	32	-	19.05	26	20	4	490.3 (50)	
BCHT	42	42	31.3	25.40	42	21	7.4	784.5 (80)	

■Press Fit Type

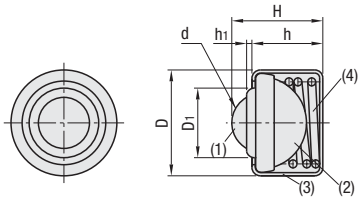


■Press Formed Flange Mounting Type

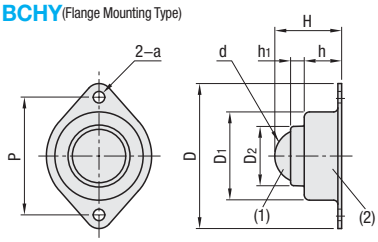


RoHS

BCHW (Press-Fit)



BCHY (Flange Mounting Type)



Type	Material (1) Main Ball	(2) Body	(3) Frame	(4) Spring
BCHW	1.3505/100Cr6	1.0330/DC01	JIS SPCE	JIS SPW-A
BCHY	JIS SWRM12		-	-

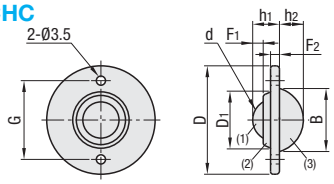
Part Number Type	Part Number No.	D	D1	D2	d	H	h	h1	a	P	Spring Ball Movement	Allowable Load N (kgf)	€ Unit Price
BCHW	20	20	13	-	11.113	17.2	13.4	2.8	-	-	1.8	49 (5Kg)	
	26	25.8	17.5	-	15.875	23.6	17.5	3.7	-	-	2	78 (8Kg)	
BCHY	69	69	42	29.5	25.40	31	17	7.5	5.5	56	-	294 (30Kg)	

■Press Formed - Screw Mounted · Male Thread Stud Type

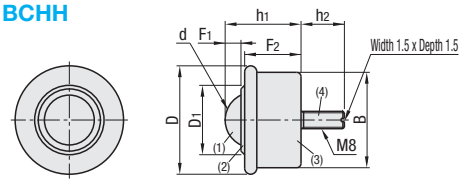


RoHS

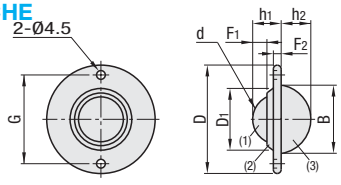
BCHC



BCHH



BCHE



Type	Material (1) Main Ball	(2) Spacer	(3) Ball Roller	(4) Male Thread Section
BCHC	1.3505/100Cr6	1.0330/DC01	1.4301/X5CrNi18-10	-
BCHE				
BCHH			1.0330/DC01 equivalent	1.0038/S235JR equivalent

Part Number Type	Part Number No.	D	D1	d	G	B	h1	h2	F1	F2	Allowable Load N (kgf)	€ Unit Price
BCHC	40	41.3	22	15.875	30	24	10.2	9.1	4	3.4	78.5 (8)	
BCHE	55	55.5	32.5	25.40	45.5	36	14.6	15.2	7.3	4	294.2 (30)	
BCHH	50	50	32	25.40	-	44	35	20	7.3	26	294.2 (30)	

Order Example — Part Number: BCHW 20

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~50
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

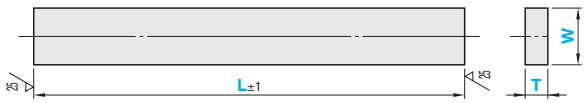
Days to Ship: 6 Days P.87

Abrasion Resisting Polymer Guide Rails

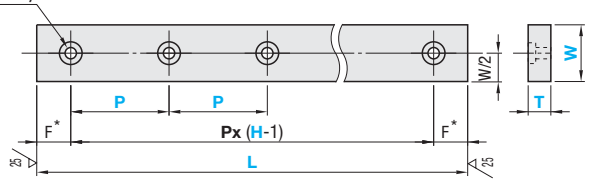
RoHS



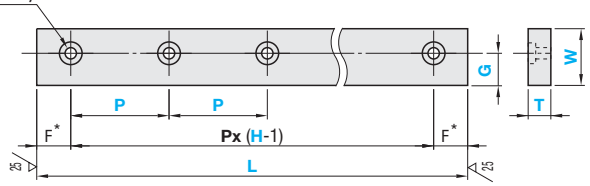
Without Holes
NLBA



With Counterbored Holes
NLBB *Z,ZN(Counterbore)



Counterbore Type / Hole Position Configurable Type
NLBBF *Z,ZN(Counterbore)



$*F = \frac{L-P(H-1)}{2}$

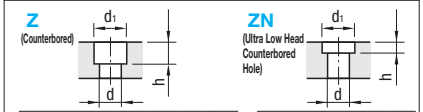
Thermal Expansion Factor: 1.7x10-4/°C

M Material: Ultra High-Molecular-Weight Polyethylene

■Without Holes

Part Number Type	T	W Selection	L 1mm Increment
NLBA	3	10 15 20 25	100~1800
	5	15 20 25 30 35	
	8	20 25 30 35 40	
	10	20 25 30 35 40	
	15	25 30 35 40	
	20	30 35 40	

* Details of Hole Machining



Screw Nominal Diameter	3	4	5	6	8
d	3.5	4.5	5.5	6.5	9
d1	6.5	8	9.5	11	14
h	3.5	4.5	5.5	6.5	9

Screw Nominal Diameter	4	5	6
d	4.5	5.5	6.5
d1	9	10	11
h	2	2.5	2.5

ZN is applicable to extra low hexagon head cap screws CBSS and CBSTS. P2-190

■With Counterbored Holes

Part Number Type	T	W Selection	L 1mm Increment	H (No. of Holes)	P 1mm Increment	Screw Hole Nominal Diameter Configurable Z	ZN
NLBB	3	10 15 20 25	100~1200	2~10	P≥20	-	4
	5	15 20 25 30 35				-	4 5 6
	8	20 25 30 35 40				3 4 5	4 5 6
	10	20 25 30 35 40				4 5 6	5 6
	15	25 30 35 40				4 5 6 8	-
	20	30 35 40				4 5 6 8	-

{L-P(H-1)}/2≥d1/2+2

■Counterbore Type / Hole Position Configurable Type

Part Number Type	T	W Selection	L 1mm Increment	H (No. of Holes)	P 1mm Increment	G 1mm Increment	Screw Hole Nominal Diameter Configurable Z	ZN
NLBBF	3	10 15 20 25	100~1200	2~10	P≥20	7~20 d1/2+1≤G≤W/2	-	4
	5	15 20 25 30 35					-	4 5 6
	8	20 25 30 35 40					3 4 5	4 5 6
	10	20 25 30 35 40					4 5 6	5 6
	15	25 30 35 40					4 5 6 8	-
	20	30 35 40					4 5 6 8	-

{L-P(H-1)}/2≥d1/2+2

Reduced Delivery Time

Price Reduction 3%

CAD Data

Order Example

Part Number	-	W	-	L	-	H	-	P	-	G	-	Screw Nominal Diameter
NLBA5	-	25	-	1200								
NLBB8	-	20	-	500	-	H4	-	P115			-	Z5
NLBBF10	-	25	-	1100	-	H4	-	P115	-	G12	-	Z5

Days to Ship

■Without Holes

8 Days

Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

■With Holes

8 Days

Price

euros

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

For Hole Machined Type, hole machining charges must be added to the body price.
(Price Calculation Example) NLBB8-20-500-H4-P115-Z5
(Body Price) + (Hole Machining Charge) = (Product Price)
34,70 + 8,00 = 42,70 EUR

■Body price

Part Number Type	T	W	€ Body Price NLBA / NLBB / NLBBF L100~200	L201~400	L401~600	L601~900	L901~1200	NLBA L1201~1500	L1501~1800
NLBA NLBB NLBBF	3	10							
		15							
		20							
		25							
	5	15							
		20							
		25							
		30							
		35							
	8	20							
		25							
		30							
		35							
		40							
	10	20							
		25							
		30							
		35							
		40							
	15	25							
		30							
		35							
		40							
	20	30							
		35							
		40							

■Hole Machining Charge (Body Price+)

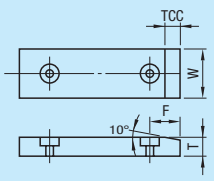
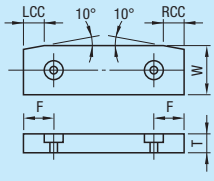
Hole Machining No. of Holes (H)	NLBB NLBBF (Counterbored)
2	
3	
4	
5	
6	
7	
8	
9	
10	

Volume Discount is not applicable to hole machining charges.

Alterations

Part Number	-	W	-	L	-	H	-	P	-	G	-	Screw Nominal Diameter	-	(TCC / LCC / RCC)
NLBB8	-	20	-	500	-	H4	-	P115			-	Z5	-	TCC5
NLBBF15	-	30	-	1000	-	H4	-	P110	-	G7	-	Z5	-	TCC5

10 Days

Alterations	Corner Cut (End Upper Face)	Corner Cut (Ends Side Faces)	
Spec.	 Selection TCC5 TCC10 TCC<F-d1/2-2	 Selection LCC5 LCC10 RCC5 RCC10 LCC(RCC)<F-d1/2	
Code	TCC	LCC	RCC
Price Adder	2,00	2,00	2,00

■Features of Ultra High-Molecular-Weight Polyethylene

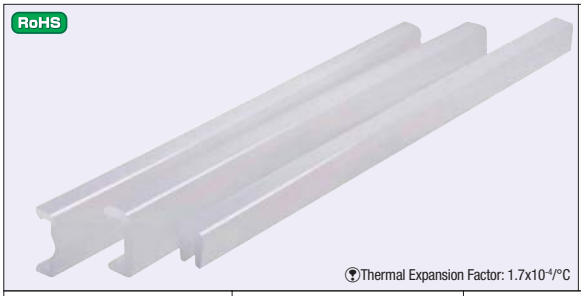
(1) Abrasion Resistance Approx. 6 times stronger than that of fluororesin.
Approx. 5 times stronger than that of nylon resin.
Approx. 6 times stronger than that of polyurethane.
(2) Self-lubricating tribological property is the same as that of fluororesin.
(3) Passed standard test No. 20 of Health and Welfare Ministry.

■Characteristic Values (Reference Values)

Item	Unit	Ultra High-Molecular-Weight Polyethylene	Nylon 6	Fluorine Resin
Specific Gravity	-	0.94	1.08	2.2
Tensile Strength	MPa	44	64	25
Elongation	%	450	210	300
Hardness	Rockwell R Scale	40	95	32
Impact Strength	Izot Notch kJ/m	>137	13	16
Thermal Expansion Coefficient	10^{-4}/°C	1.7	0.8	1.0
Heat Resistance Temperature	°C	80	80~120	260~278
Moisture Absorption Ratio	%	<0.01	1.5	<0.01
Dielectric Constant	-	2.3	4.0	2.1
Breakdown Voltage	kV/mm	50	20	20
Strong Acid Resistance	-	◎	X	◎
Alkali Resistance	-	◎	○	◎
Organic Solvent Resistance	-	◎	○	◎

Abrasion Resisting Polymer Guide Rails

CAD Data



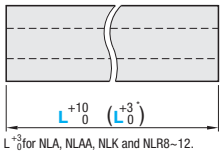
RoHS

Thermal Expansion Factor: 1.7×10^{-4}/°C

Standard Type
NLA
NLAA
NLK
NL8 · 10 · 12
NLL3 · 5
NLV3 · 5 · 6 · 10
Antistatic Type
NLEL3
NLEV3



(See below for detailed dimensions)

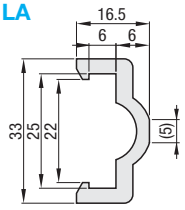


L^{+3}_{0} for NLA, NLAA, NLK and NLR8~12.

Antistatic properties may be reduced when wet.

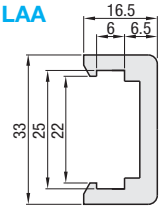
M Material: Ultra High-Molecular-Weight Polyethylene

NLA



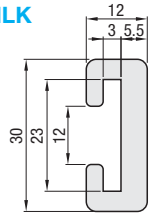
(Matching Plate Dimension 25x6)

NLAA



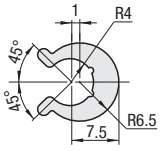
(Matching Plate Dimension 25x6)

NLK



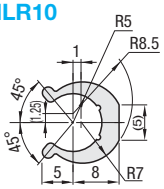
(Matching Plate Dimension 22x3)

NLR8



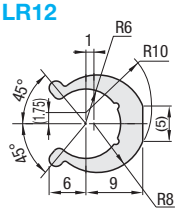
(Matching Pole Dimension Ø8)

NLR10



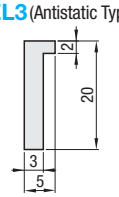
(Matching Pole Dimension Ø10)

NLR12

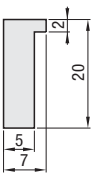


(Matching Pole Dimension Ø12)

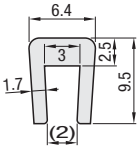
NLL3
NLEL3 (Antistatic Type)



NLL5

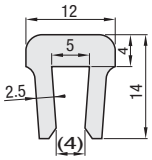


NLV3
NLEV3 (Antistatic Type)



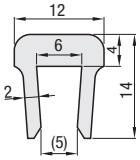
(Matching Plate Thickness 3)

NLV5



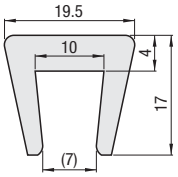
(Matching Plate Thickness 5)

NLV6



(Matching Plate Thickness 6)

NLV10

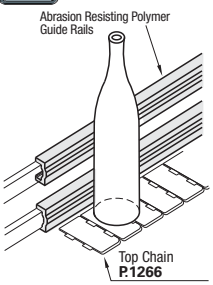


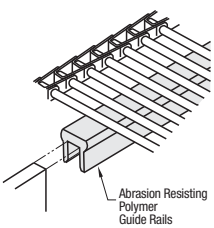
(Matching Plate Thickness 10)

Caution: NLL_, NLE_3, NLV_ are delivered in rolls and must be stretched before use.

Polymer Guide Rails should be installed by directly press fitting or by screws. When screws are to be used for mounting, take in consideration for the material's large thermal expansion coefficient. The supporting metal structure should fill end-to end.

Example





Type	L 1mm Increment	€ Unit Price/m Qty.1-20
NLA	50~1800	
NLAA		
NLK		
NLR8		
NLR10		
NLR12		
NLL3	50~9900	
NLL5		
NLV3		
NLV5		
NLV6		
NLV10		
NLEL3		
NLEV3		

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
NLA	-	800

Price

€ Unit Price/m x Specified Full Length = Unit Sales Price
Ex: NLA-800
34,50 x 0.8m = 27,60 EUR (Round down to ten Cent)

Days to Ship

8 Days | Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Characteristic Values

Item		Increment	Antistatic Type
Specific Gravity		-	0.94
Tensile Strength		MPa	30.3
Breaking Elongation		%	526.3
Compression Strength	5% deformed	MPa	18.2
	10% deformed	MPa	23.5
Compressive Elasticity Modulus		MPa	714.9
Bending Strength		MPa	21.0
Flexural Modulus		MPa	729.3
Izot Impact Strength	(Notched)	J/m	Does not break
Rockwell Hardness		R Scale	46.8
Deflection Temperature Under Load	4.6kgf/cm²	°C	119.4
	18.6kgf/cm²	°C	47.9
Linear Expansion Coefficient	-30 ~ 30	$\times 10^{-5}$/°C	14.2
Specific Volume Resistivity	500V	Ωcm	4.44×10^{9}
Heat Resistance Temperature		°C	80
Strong Acid Resistance		-	00
Alkali Resistance		-	00
Organic Solvent Resistance		-	00

Not guaranteed values. Refer to P.1064 for Standard Type.

Slide Tapes / Strong Double-Sided Tapes /Guide Rails

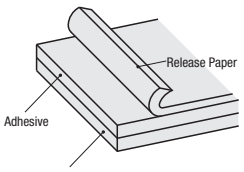
CAD Data

Slide Tapes

RoHS



NLTP



Heat Resistance Temperature -30 ~ 80°C Color: Milky White

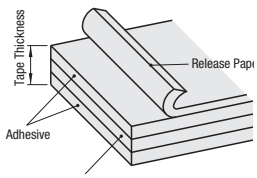
Part Number	Base Material Thickness	Tape Width	Tape Length	€ Unit Price Qty. 1 ~ 4	Volume Discount Qty. 5 ~ 19
NLTP 1320	0.13	20	40m		
NLTP 1330		30			
NLTP 1340		40			
NLTP 1350		50			
NLTP 5020	0.5	20	20m		
NLTP 5030		30			
NLTP 5040		40			
NLTP 5050		50			

Strong Double-Sided Tapes

RoHS



RMT



Heat Resistance Temperature -40 ~ 70°C

Part Number	Tape Thickness	Tape Width	Tape Length	€ Unit Price Qty. 1 ~ 4	Volume Discount Qty. 5 ~ 19
RMT3310	0.33	10	20m		
RMT3315		15			
RMT3320		20			
RMT3325		25			
RMT3330		30			
RMT3335		35			
RMT3340		40			

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number: NLTP1320

Days to Ship 8 Days

Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Cautions on the usage of tapes

(1) Remove contamination including dust, grease and water.
(2) Some materials have low adherence properties..
(3) NLTP attached 1 or 2 days prior to assembly will have higher bonding strength.
(4) RMT bonds well to ultra high-molecular-weight polyethylene (UHMW).

Dynamic Friction Coefficient (Reference Value)

	Dry	Water Lubricated
Ultra High-Molecular-Weight Polyethylene	0.07~0.22	0.05~0.10
Nylon 6	0.15~0.40	0.14~0.19
Nylon 66	0.15~0.40	0.14~0.19
Fluorine Resin	0.04~0.25	0.04~0.08
Polyacetal	0.15~0.35	0.10~0.20

Referential Adhesive Strength (NLTP) (Unit: N/20mm Width)

Taped Subject	Base Material Thickness 0.13	Base Material Thickness 0.5
1.4301	9.8	8.8
Polyvinyl Chloride Resin	18.6	18.6

(Test Method) 180°Peeling Test Temperature 23°C Peeling Speed 300mm/min

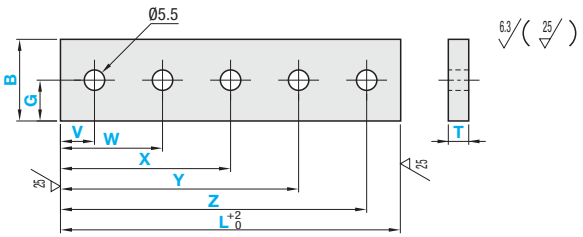
Referential Adhesive Strength (RMT)

Taped Subject	
1.4301	21.6N

RoHS



Type	M Material	S Surface Treatment
SGL	1.0038/ S235JR	(Black)
SGLM		Electroless Nickel Plating



Part Number Type	Part Number H (No. of Holes)	B Selection	T Selection	L 1mm Increment	G · V · W · X · Y · Z 0.5mm Increment
SGL SGLM	N (No Hole) 2H 3H 4H 5H	22 25 32 38	3 5 6 10	50~1000	5~995

When selecting N, hole machining is not available.

Order Example

Part Number													
Type	H (No. of Holes)	-	B	-	T	-	L	-	G	-	V	-	W	-	X	-	Y	-	Z
SGL	N	-	22	-	3	-	300												
SGLM	5H	-	25	-	5	-	800	-	G14	-	V15	-	W265	-	X480	-	Y600	-	Z785

Days to Ship 10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

N (No Hole Machining) Type Body Price (The unit price of SGLM is base plate (No Hole Machining) unit price added price below.

Type	B	L 1mm Increment	€ Body Price T 3	T 5	T 6	T 10	€ Body Price SGLM Added Price (SGL+)
SGL	22	50~200					
		201~400					
		401~600					
	25	601~800					
		801~1000					
	32	50~200					
		201~400					
		401~600					
	38	601~800					
		801~1000					

Hole Machining Charge

Hole Machining Type	Hole Machining Charge
2H	
3H	
4H	
5H	

The price of the Hole Machining Type is the unit price plus the hole machining charge.

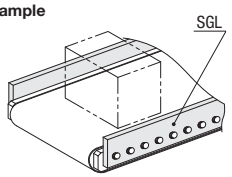
(Ex.) Part Number - B - T - L - G - V - W

SGL2H - 25 - 5 - 50 - G13 - V15 - W35

(€ Unit Price) 7,00 EUR + (Hole Machining Charge) 3,00 EUR = Total Price 10,00 EUR

Qty. discount rate is not applicable to hole machining charge.

Example



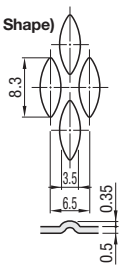
Stainless Steel Sliding Plates / Product Chute Thin Plate

■Stainless Steel Sliding Plates



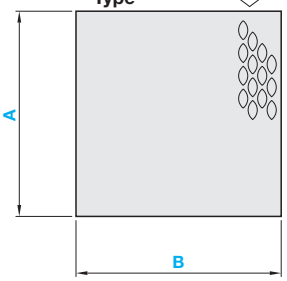
RoHS

(Surface Shape)



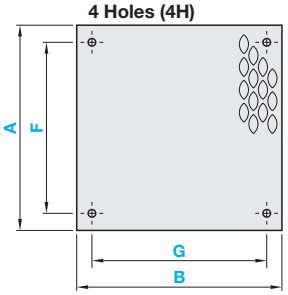
FENB Standard Type

Sliding Direction

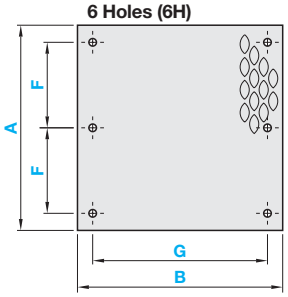


With Holes

4 Holes (4H)



6 Holes (6H)



Ⓟ4-hole: A-(F+N)≥10, B-(G+N)≥10
Ⓟ6-hole: A-(2F+N)≥10, B-(G+N)≥10

Hole Machining Details

N (Through Hole)



Screw Nominal Diameter	3	4	5	6	8	10
d	4	5	6	7	9	11

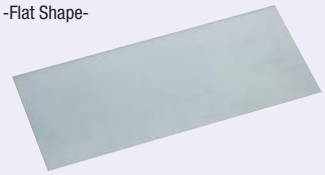
■Features
- Products slide smoothly even when sufficient shoot angle cannot be provided.
- Prevents oil absorption.
- Ⓟ Sliding surface is the convex side.

Ⓜ Material: 1.4301/X5CrNi18-10

■Product Chute Thin Plates

RoHS

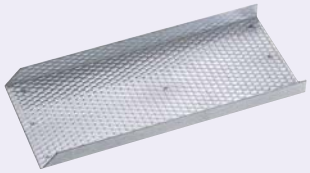
-Flat Shape-

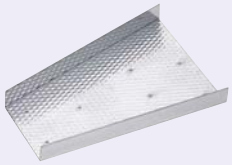


-Folded-

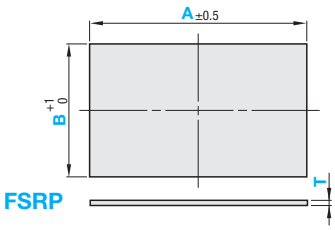


-Sliding Plate Welded and Folded-

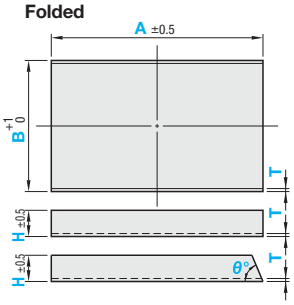




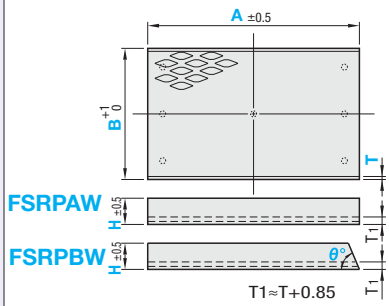
Flat Shape



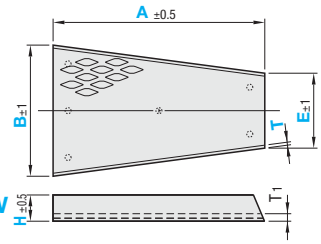
Folded



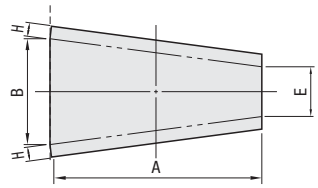
Sliding Plate Welded and Folded



Sliding Plate Welded and Folded (Funnel Shape)



Funnel Developed View



Ⓟ Protective film applied on polished surface before shipping
Ⓟ Welded Sliding Plate Type has a spot-welded stainless steel sliding plate (FENB) on the upper side of the bottom surface. Spot-welded locations and quantity vary depending on the unit size.

Ⓜ Material: 1.4301/X5CrNi18-10 (One Side Polished)

■Stainless Steel Sliding Plates ■Standard Type

Part Number	1mm Increment A	1mm Increment B	€ Unit Price
FENB	50~200	50~249	
		250~399	
		400~599	
		600~800	
	201~400	50~249	
		250~399	
		400~599	
		600~800	
	401~600	50~249	
		250~399	
		400~599	
		600~800	
	601~800	50~249	
		250~399	
		400~599	
		600~800	

■With Holes

Part Number Type	Nominal	1mm Increment A	1mm Increment B	1mm Increment F	1mm Increment G	Nominal Screw Diameter N (Through Hole)
FENB	4H	50~800	50~800	40~790	40~790	3
	6H					4
						5
						6
						8
						10

For Hole Machined Type, hole machining charges must be added to Standard Type unit price.

(Ex.) Part Number - A - B - F - G - Screw Nominal Dia.
FENB4H - 600 - 400 - F580 - G380 - N8

(Standard Type € Unit Price) + (Hole Machining Charge) = With Holes
+ 6,00 = 110,20 EUR

Order Example

Part Number - A - B - F - G - N

FENB - 100 - 300
FENB4H - 600 - 400 - F580 - G380 - N8

Days to Ship

8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~29
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

■Hole Machining Charge

Type	4H	6H
Price	6,00 EUR	9,00 EUR

■Product Chute Thin Plates

Part Number Type	T	1mm Increment A	B	E	H	θ°
Flat Shape FSRP	0.8	50~100	50~500	E<B	10~80 H≤B/2 H≤E/2	30
		101~200				
		201~300	50~800			
Folded FSRPA FSRPB		301~400				45
	1.0	401~500				60
Sliding Plate Welded and Folded FSRPAW FSRPBW FSRPVW	1.5	501~600				
		601~700				
		701~800				

E is available for FSRPVW only. θ° is available for FSRPB and FSRPBW only.
FSRP is available for T, A, B dimension only.

Order Example

Part Number - A - B - E - H - θ

FSRP0.8 - 300 - 200
FSRPB1.5 - 300 - 200 - 30 - 30
FSRPVW1.0 - 300 - 200 - 120 - 45

Days to Ship

-FSRP / FSRPA / FSRPB
8 Days

-FSRPAW / FSRPBW / FSRPVW
10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~29
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Flat / Folded

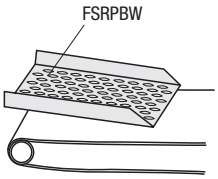
A	B	FSRP € Unit Price T0.8	T1.0	T1.5	FSRPA € Unit Price T0.8	T1.0	T1.5	FSRPB € Unit Price T0.8	T1.0	T1.5
50~100	50~299									
	300~500									
101~200	50~299									
	300~500									
201~300	50~299									
	300~599									
	600~800									
301~400	50~299									
	300~599									
	600~800									
401~500	50~299									
	300~599									
	600~800									
501~600	50~299									
	300~599									
	600~800									
601~700	50~299									
	300~599									
	600~800									
701~800	50~299									
	300~599									
	600~800									

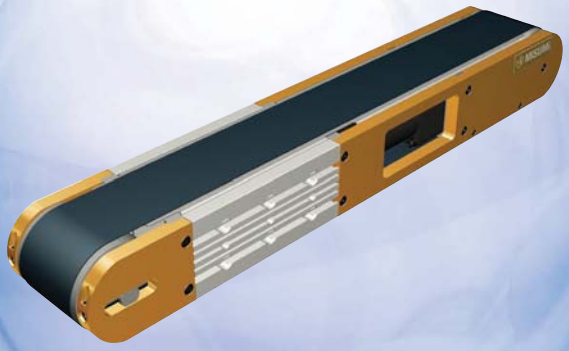
Sliding Plate Welded and Folded

A	B	FSRPAW € Unit Price T0.8	T1.0	T1.5	FSRPBW € Unit Price T0.8	T1.0	T1.5	FSRPVW € Unit Price T0.8	T1.0	T1.5
50~100	50~299									
	300~500									
101~200	50~299									
	300~500									
201~300	50~299									
	300~599									
	600~800									
301~400	50~299									
	300~599									
	600~800									
401~500	50~299									
	300~599									
	600~800									
501~600	50~299									
	300~599									
	600~800									
601~700	50~299									
	300~599									
	600~800									
701~800	50~299									
	300~599									
	600~800									

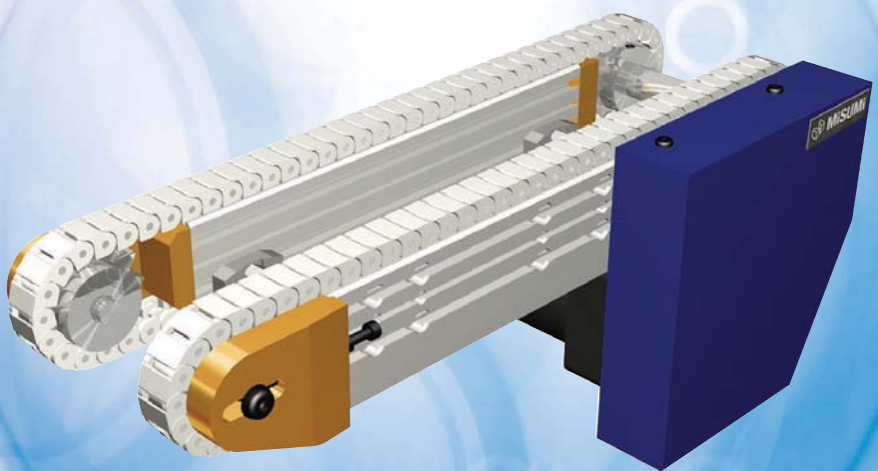
Example

Relay to the conveyor



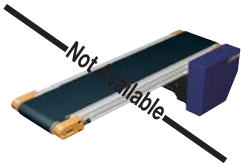


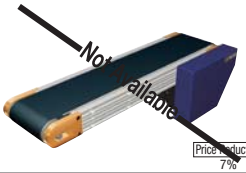


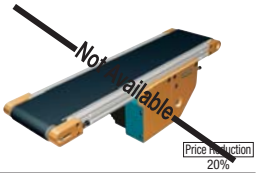


Conveyors

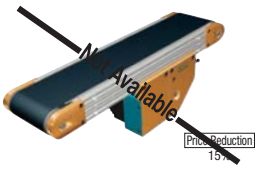
Conveyors

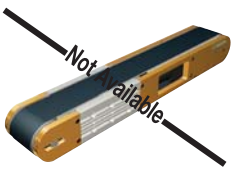






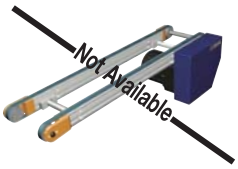
Product Name	Flat Belt Conveyor -Single Track Head Drive, 2-Groove Frame Type-	-Single Track Head Drive, 3-Groove Frame Type-	-Single Track Center Drive, 2-Groove Frame Type-
Page	1073	1074	1075

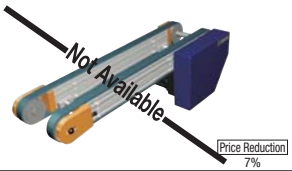


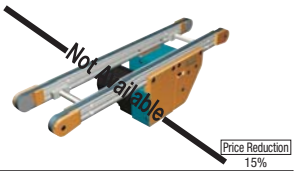




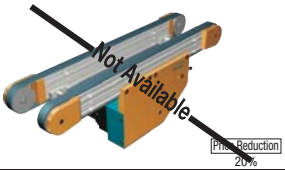
-Single Track Center Drive, 3-Groove Frame Type-	-Single Track Built-in Motor Drive, 2-Groove Frame Type-	-Plastic Chain Conveyor -Dual Track Head Drive, 3-Groove Frame Type-
1076	1077	1078







Timing Belt Conveyor -Dual Track Head Drive, 2-Groove Frame Type-	-Dual Track Head Drive, 3-Groove Frame Type-	-Dual Track Center Drive, 2-Groove Frame Type-
1079	1080	1081







-Dual Track Center Drive, 3-Groove Frame Type-	Conveyor Guide Rails	Guide Rail Brackets
1082	1083	1083



Conveyor Support Stands
1083

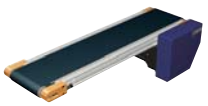
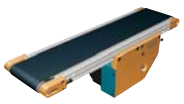
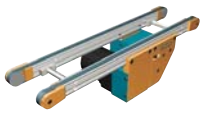
Miniature Conveyor Guide

■Overview · Features

Belt Conveyors suitable for use in automated machinery.

Feature 1: Space-saving design; one of the most compact conveyors in the market **with the size of 30mm in width x 200mm in length.**
Feature 2: Lightweight but rigid by the use of extruded aluminum sections for frame sections.
Anodizing is applied and corrosion-resistant.
Feature 3: Design of frame slots allows accessories to be installed easily.
Feature 4: Min. **10th day shipping** and quick delivery

■Product List

Number of Tracks	Belt	Driving Position: Head Drive	Driving Position: Center Drive	Driving Position: Built-in Drive
		Tension adjustment is easy because the non-driven tail roller also acts as a tension roller. It is reasonably priced and uses a smaller number of parts.	Belt tension can be adjusted at the center drive section. Overall length does not change after tension adjustment. Drive section is easily movable within the adjustment range.	The built-in motor between frames has resulted in space savings.
Single Track Broader carrying surface can convey various shapes of work pieces.	**Flat Belt** Flat belt is selectable from two types for your purpose. ■Selectable Flat Belts Use / Type / Color / Page General Purpose / HBLT (W) / Green / [illegible] For Sliding / SHBLT (W) / White / [illegible]37	 P.1073 · 1074	 P.1075 · 1076	 P.1077
Dual Track Clearance between tracks allows installation of stoppers and sensors. Two tracks are synchronously driven by the use of timing belts and plastic chains.	**Timing Belt** Double-sided fabric coated belts (Type: LTBRA **P.1203**) are suitable for accumulating conveyance. *CVSTP uses LTBR(**P.1204**).	 P.1079 · 108[illegible]	 P.1081 · 1082	
	Plastic Chains Engineering plastic chains(Type: CHEEP **P.1265**) are used.	 P.1078		

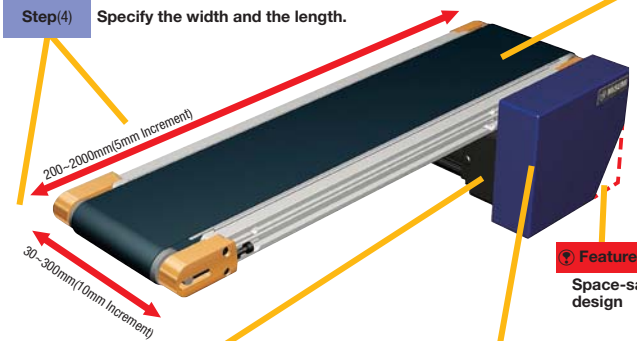
■How to select

Select miniature conveyors by following the steps below.

Step(1) Select a type and the number of tracks for conveyance.

Selectable	
Single Track (Flat Belt)	Dual Track (Timing Belt / Plastic Chain)
 Broader carrying surface can convey various shapes of work pieces.	 Clearance between tracks allows installation of stoppers and sensors. Two tracks are synchronously driven by the use of timing belts and engineering plastic chains.

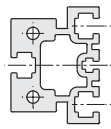
Step(4) Specify the width and the length.



Features Space-saving design

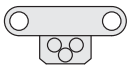
Features Easy attachment of accessories

*Ex. Frame for CVSB (Flat Belt, Pulley Diameter φ50)



Features General purpose hexagon nuts can be used for frame slots.

Step(2) Select a driving position.

Selectable		
Head Drive	Center Drive	Built-in Drive
 The non-driven tail roller also acts as a tension roller. It is reasonably priced, and uses a smaller number of parts.	 Belt tension can be adjusted at the center drive section. Overall length does not change after tension adjustment. Drive section is easily movable within the adjustment range.	 The built-in motor between frames has resulted in space savings.

Step(3) Select a motor.

Selectable	
Induction Motor	Variable Speed Motor
Motor with constant speed. Suitable for the continuous one-way operation. Also usable for the intermittent operation with relatively-long intervals.	Variable Speed Motor. Comes with a control box with which conveyance speed can be adjusted. Control box is not fixed on the conveyor and can be installed for your purpose.

Panasonic motors and Oriental motors are selectable.

Not Available

■Part No. List of Motor · Gear Head Makers

Motor Output	Motor Type	Motor Voltage	Panasonic Motors			Conveyor Type
			MISUMI Part No.	Motor Part No.	Gear Head Part No. (MISUMI Part No.) *_ includes a reduction ratio.	
6W	Induction Motor (P.999)	Single-Phase100V	PACMS60-W6-V100	M61X6G4L	MX6G_BA (PACMGX60-_)	
		Single-Phase 200V	PACMS60-W6-V200	M61X6G4Y		
	Variable Speed Motor (P.1001)	Single-Phase100V	PACMV-U60-W6-V100	MUSN606GL		
		Single-Phase 200V	PACMV-U60-W6-V200	MUSN606GY		
25W	Induction Motor (P.999)	Single-Phase100V	PACMS80-W25-V100	M81X25G4L	MX8G_B (PACMGX80-_)	
		Single-Phase 200V	PACMS80-W25-V200	M81X25G4Y		
		Three-phase 200V	PACMT80-W25-V200	M8MX25G4Y		
	Variable Speed Motor (P.1001)	Single-Phase100V	PACMV-U80-W25-V100	MUSN825GL		
		Single-Phase 200V	PACMV-U80-W25-V200	MUSN825GY		
40W	Induction Motor (P.999)	Single-Phase100V	PACMS90-W40-V100	M91X40G4L	MX9G_B (PACMGX90-_)	
		Single-Phase 200V	PACMS90-W40-V200	M91X40G4Y		
		Three-phase 200V	PACMT90-W40-V200	M9MX40G4Y		
	Variable Speed Motor (P.1001)	Single-Phase100V	PACMV-U90-W40-V100	MUSN940GL		
		Single-Phase 200V	PACMV-U90-W40-V200	MUSN940GY		

(*Above specifications should be applied only in Japan.)

■Belt Replacement · Chain Replacement

Please note the followings when replacing belts.

(1)Minimum pulley diameter of belts / No. of Plastic Chains
There is a limit on minimum pulley diameter (bending diameter) of belts.Please refer to flat belts on **P.1087** and timing belts on **P.1923** and confirm the pulley diameter of the selected miniature conveyor. For plastic chains, select the right plastic chain suitable for No. 40 sprocket (No. of teeth: 14).

(2)Calculations of Belt and Plastic Lengths
Calculate and confirm the belt length by referring to the table below.

(3)Direction of Conveyance
Please note that some belts have a specified direction of conveyance.

■Formula of Belt Length

Type of Belt	Number of Tracks	Driving Position	Pulley Dia.	Type	Page	Formula	Unit	Note
Flat Belt	Single Track	Head	30		P.1073	(2L+97)/1.005	mm	
			50		P.1074	(2L+160)/1.005	mm	
Flat Belt	Single Track	Middle	30		P.1075	(2L+270)/1.005	mm	
			50		P.1076	(2L+333)/1.005	mm	
Flat Belt	Single Track	Built-in	70		P.1077	(2L+270)/1.005	mm	
Plastic Chains	Dual Track	Middle	50		P.1078	(2L+179)/12.7+1	Link	
Timing Belt	Dual Track	Head	30		P.1079	(2L+100)/5	Teeth	Round down to one Cent.
			50		P.1080	(2L+180)/10	Teeth	Round off to one yen.
Timing Belt	Dual Track	Middle	30		P.1081	(2L+260)/5	Teeth	Round down to one Cent.
			50		P.1082	(2L+420)/10	Teeth	Round off to one yen.

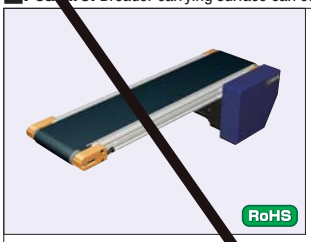
Not Available

Miniature Conveyor System

-Flat Belt Single Track Head Drive, 2-Groove Frame Type (Pulley Dia. 30mm)-

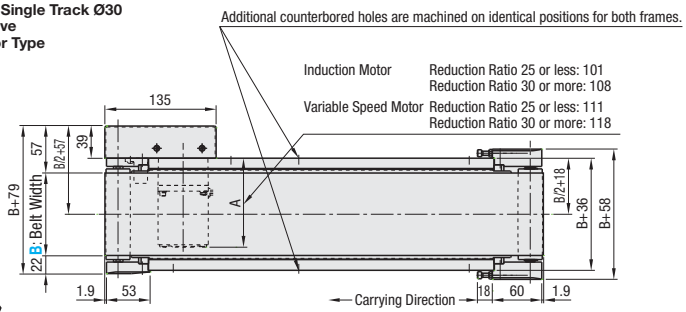
CAD Data

Feature: Broader carrying surface can convey various shapes of work pieces. Low price can be realized by the simple structure of the system.

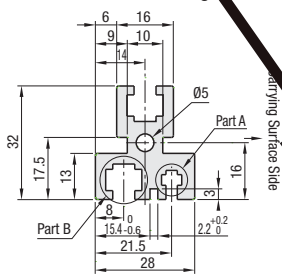


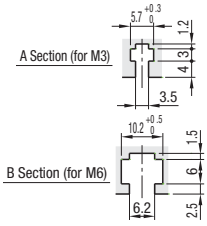
RoHS

Flat Belt Single Track Ø30
Head Drive
6W Motor Type

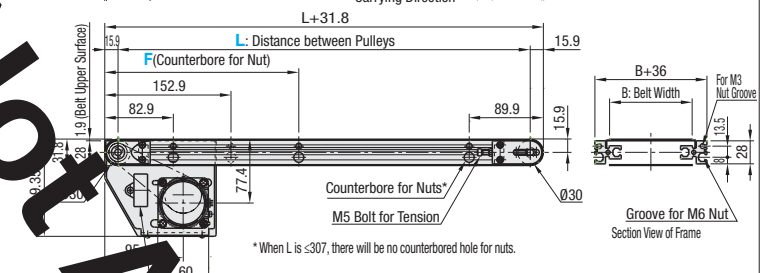


Frame Cross Section / Enlarged



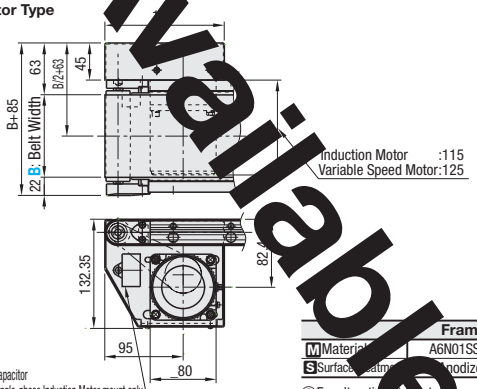


Compatible with JIS standard hexagon nuts.



Capacitor
Single-phase Induction Motor mount only.

25W Motor Type

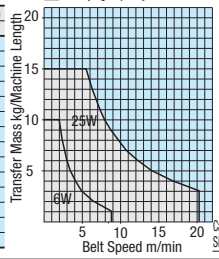


Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.327	0.411
15	0.272	0.343
18	0.227	0.286
25	0.163	0.206
30	0.136	0.171
36	0.113	0.143
50	0.082	0.103
60	0.068	0.086
75	0.054	0.069
90	0.045	0.057
100	0.041	0.051
120	0.034	0.043
150	0.027	0.034
180	0.023	0.029

Conveying Capacity * Reference Value



Capacitor
Single-phase Induction Motor mount only.

	Frame	Motor Cover	Pulley Holder
M Material	A6N01SS-T5	1.0330/DC01	EN AW-5052/AlMg2,5
S Surface treatment	Anodized	Coating	Gold Anodized

For alteration to motor reversed, please refer to **P.1084**

Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Voltage (V)	Specification	Gear Head Ratio	Belt Specification	F (Additional Counterbored Holes) 5mm Increment
	30~300	200~2000	6 25	TA115(Single-Phase) SA220(Three-Phase) * SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	H(General Purpose) S(For Sliding)	170<F<L-110 * Additional counterbored holes will not be machined unless specified.

Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM) with an output of 25W. For motor details such as circuit diagrams, please refer to Pages following **P.997**. For details of flat belts, please refer to **P.1086**
Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will be always the direction as specified in the drawings.

Part Number	B	€ Body Price Qty. 1 ~2																	
		Min.L~ 300	L305~ 400	L405~ 500	L505~ 600	L605~ 700	L705~ 800	L805~ 900	L905~ 1000	L1005~ 1100	L1105~ 1200	L1205~ 1300	L1305~ 1400	L1405~ 1500	L1505~ 1600	L160~ 1700	L1705~ 1800	L1805~ 1900	L1905~ 2000
	30~50																		
	60~100																		
	110~150																		
	160~200																		
	210~250																		
	260~300																		

For an Induction Motor (**IM**), a body price equals a unit price. For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.
When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.

Example) CVSA-60-1200-25-TA115-SCM-15-H-300 ➡

Body Price	+	Optional Motor price specification	=	€ Unit Price
881,00 EUR	+	60,00 EUR	=	941,00 EUR

Optional Motor Price (€ Unit Price +)	
SCM	

Order Example

Part Number	-	B	-	L	-	Motor: Output	-	Voltage	-	Specification	-	Gear Head Reduction Ratio	-	Belt Specification	-	F
	-	60	-	660	-	6	-	TA115	-	IM	-	36	-	H	-	300

Alterations P.1084

Days to Ship 13 Days

Not Available

NEW

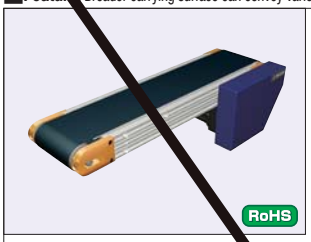
Miniature Conveyor System

-Flat Belt Single Track Head Drive, 3-Groove Frame Type (Pulley Dia. 50mm)-

Price Reduction 7%

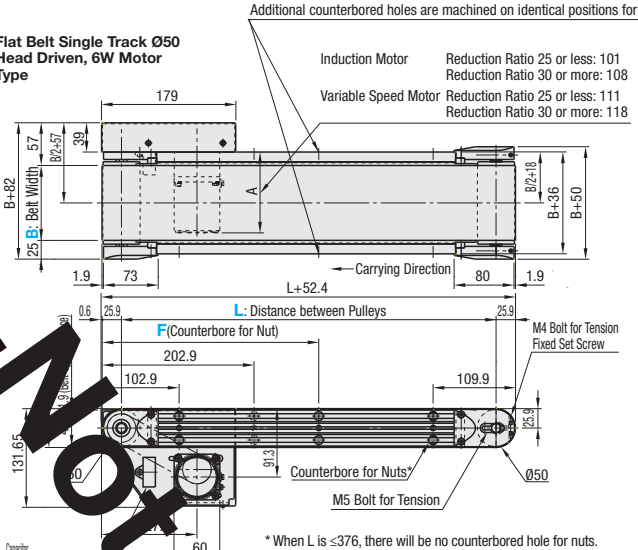
CAD Data

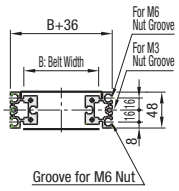
■Feature: Broader carrying surface can convey various shapes of work pieces. Low price can be realized by the simple structure of the system. Three rows of frame slot facilitate installation of accessories.



RoHS

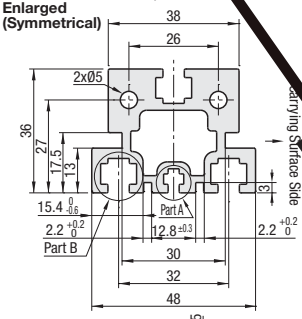
Flat Belt Single Track Ø50 Head Driven, 6W Motor Type

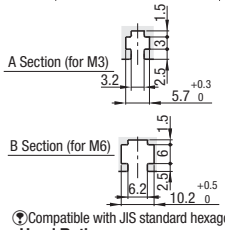




Section View of Frame

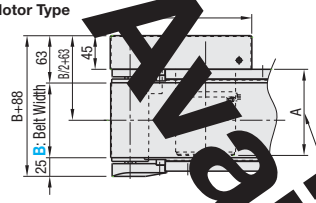
Frame Cross Section, Enlarged (Symmetrical)



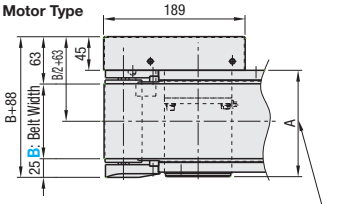


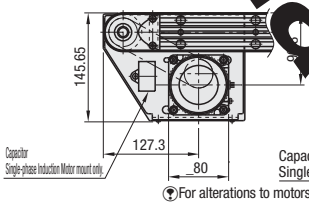
Ⓣ Compatible with JIS standard hexagon nuts.

25W Motor Type

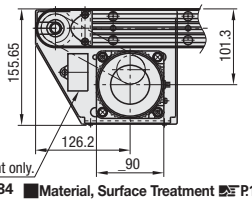


40W Motor Type





Induction Motor :115
Speed Control Motor:125



Induction Motor :142
Speed Control Motor:152

Capacitor
Single-phase Induction Motor mount only.

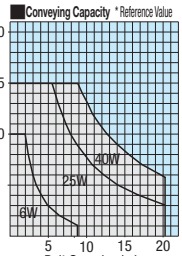
Ⓣ For alterations to motors reversed, please refer to P.1084 ■Material, Surface Treatment P.1073

■Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.268	0.338
15	0.223	0.281
18	0.186	0.234
25	0.134	0.169
30	0.112	0.141
36	0.093	0.117
50	0.067	0.084
60	0.056	0.070
75	0.045	0.056
90	0.037	0.047
100	0.033	0.042
120	0.028	0.035
150	0.022	0.028
180	0.019	0.023

■Conveying Capacity * Reference Value



Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Voltage (V)	Specification	Gear Head Ratio	Belt Specification	F (Additional Counterbored Holes) 5mm Increment
	40~300	220~2000	6 25 40	TA115(Single-Phase) SA220(Three-Phase) * SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	H(General Purpose) S(For Sliding)	220<F<L-130 * Additional counterbored holes will not be machined unless specified.

Ⓣ Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM) with an output of 25W and 40W. Ⓣ For motor details such as circuit diagrams, please refer to Pages following P.997. For details of flat belts, please refer to P.1086
Ⓣ Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Ⓣ Please adjust wiring so that the direction of conveyance will be always in direction as specified in the drawings.

Part Number	B	€ Body Price Qty. 1 ~2																	
		Min.L~300	L305~400	L405~500	L505~600	L605~700	L705~800	L805~900	L905~1000	L1005~1100	L1105~1200	L1205~1300	L1305~1400	L1405~1500	L1505~1600	L1605~1700	L1705~1800	L1805~1900	L1905~2000
	40~50																		
	60~100																		
	110~150																		
	160~200																		
	210~250																		
	260~300																		

Ⓣ For an Induction Motor (**IM**), a body price equals a standard unit price.
Ⓣ When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.
Ⓣ For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Example) CVSB-60-1200-25-TA115-SCM-15-H-300 ➡

Body Price	+	Optional Motor price specification	=	€ Unit Price
955,00 EUR	+	60,00 EUR	=	1015,00 EUR

Optional Motor Price (€ Unit Price +)	
SCM	

Order Example

Part Number	-	B	-	L	-	Motor: Output	-	Voltage	-	Specification	-	Gear Head Reduction Ratio	-	Belt Specification	-	F
	-	60	-	1200	-	25	-	SA230	-	IM	-	50	-	H	-	400

Alterations P.1084

Days to Ship 13 Days

Not Available

NEW

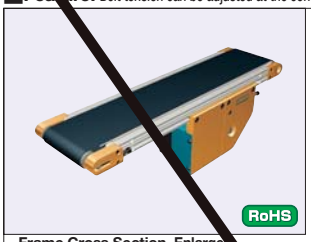
Miniature Conveyor System

-Flat Belt Single Track Center Drive, 2-Groove Frame Type (Pulley Dia. 30mm)-

Price Reduction 20%

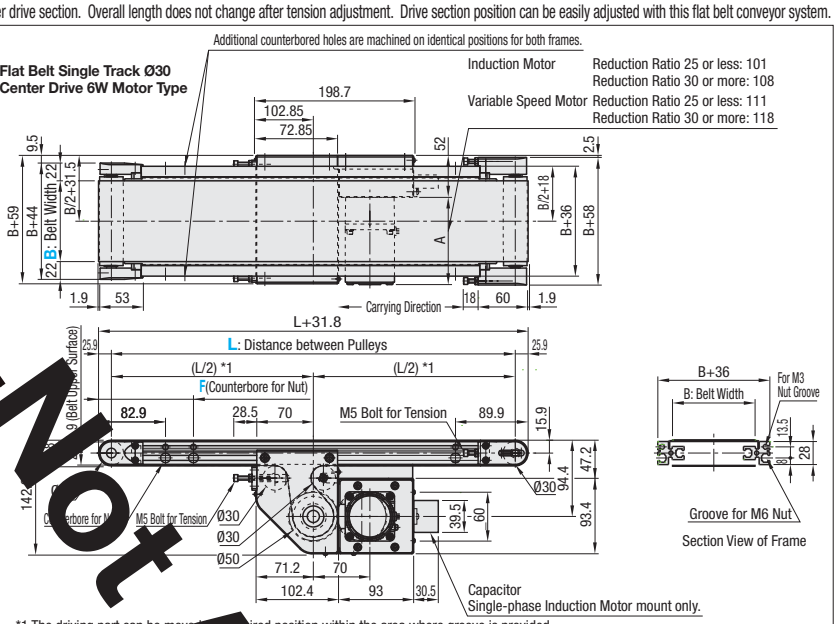
CAD Data

Feature: Belt tension can be adjusted at the center drive section. Overall length does not change after tension adjustment. Drive section position can be easily adjusted with this flat belt conveyor system.



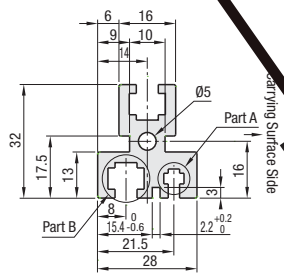
RoHS

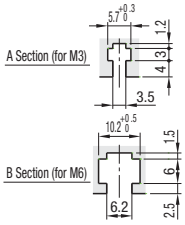
Flat Belt Single Track Ø30 Center Drive 6W Motor Type



Section View of Frame

Frame Cross Section, Enlarged



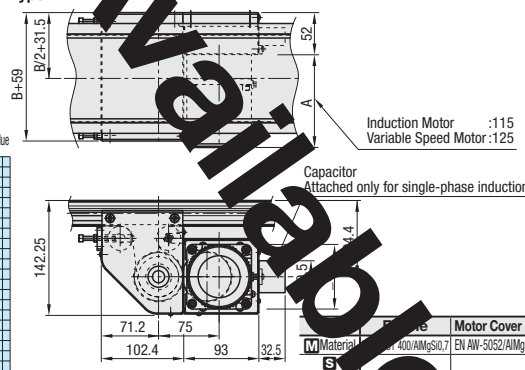


Compatible with JIS standard hexagon nuts.

*1 The driving part can be moved to the desired position within the area where groove is provided on the aluminum frame.

*2 When L is ≤447, there will be one counterbored hole for nuts.

25W Motor Type

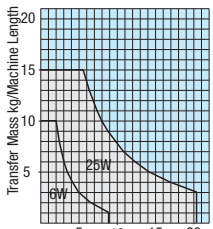


Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.268	0.338
15	0.223	0.281
18	0.186	0.234
25	0.134	0.169
30	0.112	0.141
36	0.093	0.117
50	0.067	0.084
60	0.056	0.070
75	0.045	0.056
90	0.037	0.047
100	0.033	0.042
120	0.028	0.035
150	0.022	0.028
180	0.019	0.023

Conveying Capacity * Reference Value



Material	Motor Cover (1)	Motor Cover (2)	Pulley Holder
M Material	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5	EN AW-5052/AlMg2,5
S Surface Treatment	Gold Anodized	Blue Anodized	Gold Anodized

For roller edge alterations, P.1084

Not Available

Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Motor Selection: Voltage (V)	Motor Selection: Specification	Motor Selection: Gear Head Ratio	Belt Specification	F (Additional Counterbored Holes) 5mm Increment
	30~300	305~2000	6 25	TA115(Single-Phase) SA220(Three-Phase) * SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	H(General Purpose) S(For Sliding)	100<F<L-110 * Additional counterbored holes will not be machined unless specified.

Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM) with an output of 25W. For motor details such as circuit diagrams, please refer to Pages following P.99. For details of flat belts, please refer to P.1086

Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will be always the direction as specified in the drawings.

Part Number	B	€ Body Price Qty. 1 ~2 Min.L~ 400	L405~ 500	L505~ 600	L605~ 700	L705~ 800	L805~ 900	L905~ 1000	L1005~ 1100	L1105~ 1200	L1205~ 1300	L1305~ 1400	L1405~ 1500	L1505~ 1600	L1605~ 1700	L1705~ 1800	L1805~ 1900	L1905~ 2000
	30~50																	
	60~100																	
	110~150																	
	160~200																	
	210~250																	
	260~300																	

For an Induction Motor (**IM**), a body price equals a unit price.

When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.

For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Example) CVSN-60-1200-25-TA115-SCM-15-S-300 ➡

Body Price	+	Optional Motor price specification	=	€ Unit Price
1115,00 EUR	+	60,00 EUR	=	1175,00 EUR

Optional Motor Price (€ Unit Price +)	
SCM	

Order Example

Part Number	B	L	Motor: Output	Motor: Voltage	Motor: Specification	Motor: Gear Head Reduction Ratio	Belt Specification	F
-	90	1440	25	TA115	IM	50	H	600

Alterations P.1084

Days to Ship 13 Days

NEW

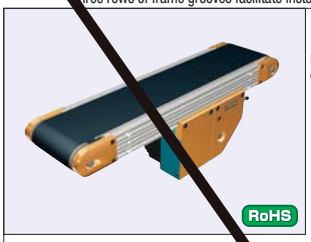
Miniature Conveyor System

-Flat Belt Single Track Center Drive, 3-Groove Frame Type (Pulley Dia. 50mm)-

Price Reduction 15%

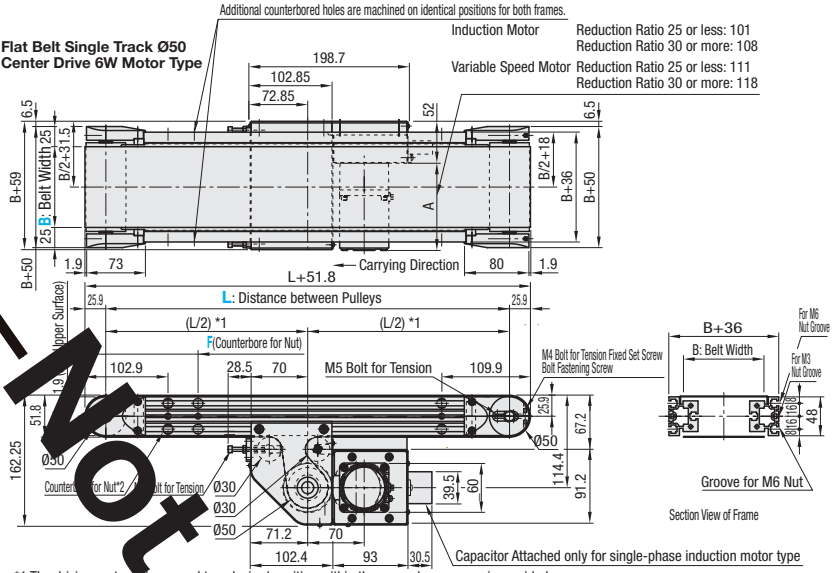
CAD Data

■Features Belt tension can be adjusted at the center drive section. Overall length does not change after tension adjustment. Drive section position can be easily adjusted with this flat belt conveyor system. Three rows of frame grooves facilitate installation of accessories.



RoHS

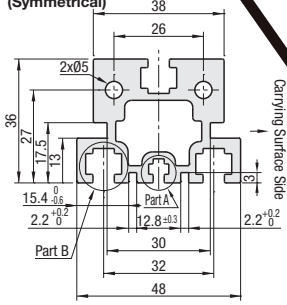
Flat Belt Single Track Ø50 Center Drive 6W Motor Type

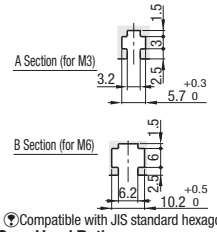


*1 The driving part can be moved to a desired position within the area where groove is provided on the aluminum frame.

*2 When L is ≤471, there ... ed hole for nuts.

Frame Cross Section, Enlarged (Symmetrical)



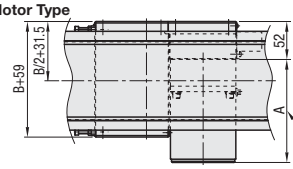


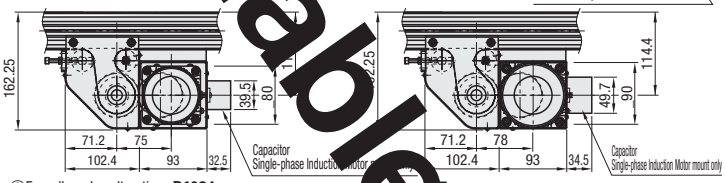
Compatible with JIS standard hexagon nuts.

25W Motor Type



40W Motor Type



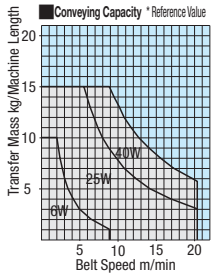


■**Gear Head Ratio**

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.268	0.338
15	0.223	0.281
18	0.186	0.234
25	0.134	0.169
30	0.112	0.141
36	0.093	0.117
50	0.067	0.084
60	0.056	0.070
75	0.045	0.056
90	0.037	0.047
100	0.033	0.042
120	0.028	0.035
150	0.022	0.028
180	0.019	0.023

■**Conveying Capacity** * Reference Value



For roller edge alterations, P.1084

■Material, Surface Treatment P.1075

Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Motor Selection: Voltage (V)	Motor Selection: Specification	Motor Selection: Gear Head Ratio	Belt Specification	F (Additional Counterbored Holes) 5mm Increment
	40~300	300~2000	6 25 40	TA115(Single-Phase) SA220(Three-Phase) * SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	H(General Purpose) S(For Sliding)	120 <F<L-130 * Additional counterbored holes will not be machined unless specified.

Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM) with an output of 25W and 40W. For motor details such as circuit diagrams, please refer to Pages following P.997. For details of flat belts, please refer to P.1086

Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will be always the direction as specified in the drawings.

Part Number	B	Body Price Qty. 1 ~2 Min.L~ 400	L405~ 500	L505~ 600	L605~ 700	L705~ 800	L805~ 900	L905~ 1000	L1005~ 1100	L1105~ 1200	L1205~ 1300	L1305~ 1400	L1405~ 1500	L1505~ 1600	L1605~ 1700	L1705~ 1800	L1805~ 1900	L1905~ 2000
	40~50																	
	60~100																	
	110~150																	
	160~200																	
	210~250																	
	260~300																	

For an Induction Motor (**IM**), a body price equals a unit price.

When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.

For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Example) CVSP-60-1200-25-TA115-SCM-15-S-300 ➡

Body Price	+	Optional Motor price specification	=	€ Unit Price
1207,00 EUR	+	150,00 EUR	=	1357,00 EUR

Optional Motor Price (€ Unit Price +)	
SCM	

Order Example

Part Number	B	L	Motor: Output	Motor: Voltage	Motor: Specification	Motor: Gear Head Reduction Ratio	Belt Specification	F
-	120	1350	40	TA115	SCM	50	H	600

Days to Ship 13 Days

Alterations P.1084

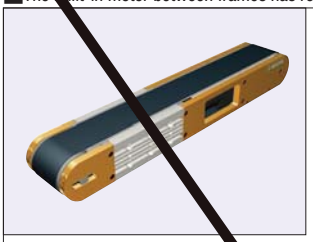
Not Available

Miniature Conveyor System

-Flat Belt Single Track Built-in Motor, 2-Groove Frame Type (Pulley Dia. 70mm)-

CAD Data

■The built-in motor between frames has reduced machine height by about half.

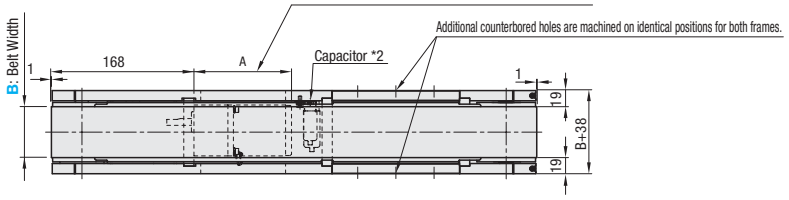


Flat Belt Single Track Ø70

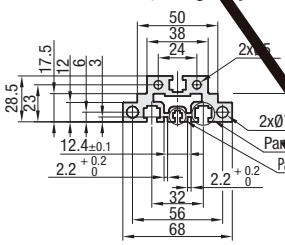
Motor Driven 6W Motor Type

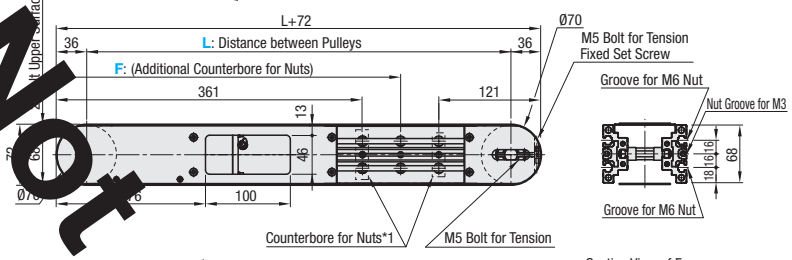
Induction Motor — Reduction Ratio 25 or less: 101; Reduction Ratio 30 or more: 108

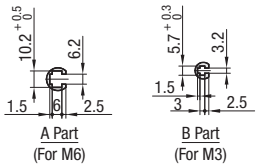
Variable Speed Motor — Reduction Ratio 25 or less: 111; Reduction Ratio 30 or more: 118



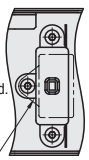
Frame Cross Section, Enlarged (symmetrical)











* 1 When L is ≤817, there will be a counterbored hole for the nuts.

* 2 Single-phase induction motor only

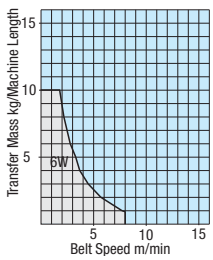
■Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
15	0.367	-
18	0.305	0.367
25	0.220	0.263
30	0.183	0.220
36	0.153	0.183
50	0.110	0.132
60	0.092	0.110
75	0.073	0.088
90	0.062	0.073
100	0.055	0.067
120	0.045	0.055
150	0.037	0.043
180	0.030	0.037

■Conveying Capacity *

Reference Value



	Frame	Pulley Holder
M Material	AC-51 400/AlMGSi0,7SS-T5	EN AW-5052/AlMg2,5
S Surface Treatment	Anodized	Gold Anodized

Part Number	B Selectable	L 5mm Increment	Motor Selection: Output (W)	Voltage (V)	Specification	Gear Head Ratio	Belt Specification	F (Additional Counterbored Holes) 5mm Increment
	60 100 150	415~2000	6	TA115 (Single-Phase)	IM (Induction Motor) SCM (Variable Speed Motor)	15 18 25 30 36 50 60 75 90 100 120 150 180	H(General Purpose) S(For Sliding)	380<F<L-100 * Additional counterbored holes will not be machined unless specified.

Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will be always the direction as specified in the drawings. For motor details such as circuit diagrams, please refer to Pages following **P.997** * For details of the belts, please refer to **P.1086**

Part Number	B	Body Price Qty. 1 ~2: Min.L~450	455~500	505~600	605~700	705~800	805~900	905~1000	1005~1100	1105~1200	1205~1300	1305~1400	1405~1500	1505~1600	1605~1700	1705~1800	1805~1900	1905~2000
	60																	
	100																	
	150																	

For an Induction Motor (**IM**), a body price equals a unit price.

When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.

For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Body Price	+	Optional Motor Price specification	=	€ Unit Price
871,00 EUR	+	60,00 EUR	=	931,00 EUR

Optional Motor Price (€ Unit Price +)

Example) CVSMA-60-1200-6-TA115-SCM-15-H-400 ➡

Order Example

Part Number	-	B	-	L	-	Motor: Output	-	Voltage	-	Specification	-	Gear Head Reduction Ratio	-	Belt Specification	-	F
	-	60	-	660	-	6	-	TA115	-	IM	-	36	-	H	-	400

Alterations P.1084

Days to Ship: 13 Days

Not Available

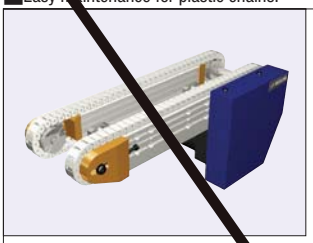
NEW

Miniature Conveyor System

-Plastic Chain Dual Track Head Drive, 3-Groove Frame Type (Sprocket Dia. 57mm) -

CAD Data

■Easy maintenance for plastic chains.

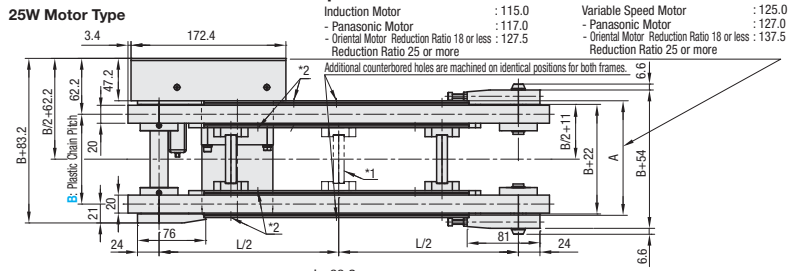


Plastic Chain Dual Track Sprocket 57mm Head Driven

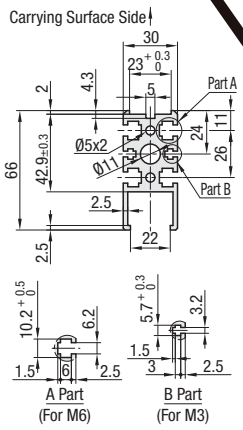
25W Motor Type

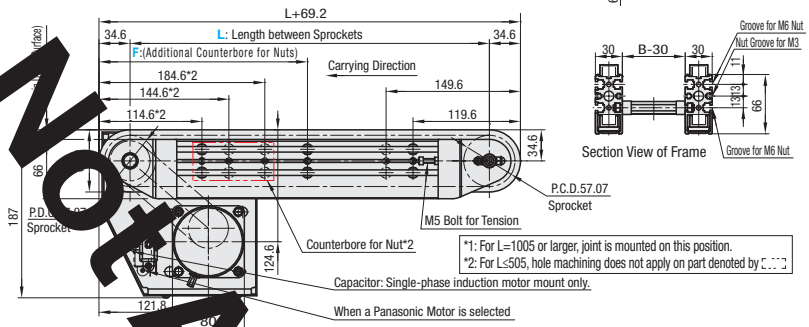
Induction Motor : 115.0
- Panasonic Motor : 117.0
- Oriental Motor Reduction Ratio 18 or less : 127.5
  Reduction Ratio 25 or more

Variable Speed Motor : 125.0
- Panasonic Motor : 127.0
- Oriental Motor Reduction Ratio 18 or less : 137.5
  Reduction Ratio 25 or more



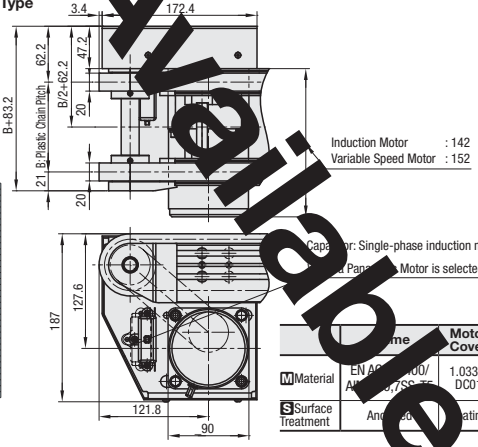
Frame Cross Section , Enlarged (symmetrical)





*1: For L=1005 or larger, joint is mounted on this position.
*2: For L≤505, hole machining does not apply on part denoted by [ ].

40W Motor Type



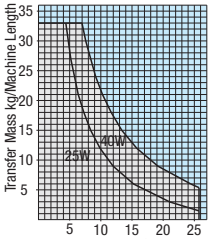
■**Gear Head Ratio**

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec)	
	50Hz	60Hz
12.5	0.358	0.430
15	0.298	0.358
18	0.248	0.298
25	0.180	0.215
30	0.150	0.180
36	0.125	0.150
50	0.090	0.108
60	0.075	0.090
75	0.060	0.072
90	0.050	0.060
100	0.045	0.053
120	0.037	0.045
150	0.030	0.037
180	0.025	0.030

■**Conveying Capacity** *

Reference Value



*Plastic chains and sprockets are 40B series.

	Motor Cover	Sprocket	Pulley Holder	Plastic Chains
M Material	1.0330/ DC01	1.1191/C45E (High-frequency Hardening Teeth Tip)	EN AW-5052/ AlMg2,5	Polyacetal
S Surface Treatment	ating	-	Gold Anodized	-

Part Number	B 10mm Increment	L 5mm Increment	Motor Selection				F (Additional Counterbored Holes) 5mm Increment
			Output (W)	Voltage (V)	Specification	Gear Head Ratio	
	80~300	300~3000	25 40	TA115(Single-Phase) SA220(Three-Phase) * SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	205<F<L-105 Additional counterbored holes will not be machined unless specified.

Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM). * For details of plastic chains (CHEEP), please refer to **P.1265**

Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will be always the direction as specified in the drawings. For motor details such as circuit diagrams, refer to Pages following **P.997**.

Part Number	B	Body Price Qty. 1 ~2																				
		Min.L~ 400	L455~ 500	L505~ 600	L605~ 700	L705~ 800	L805~ 900	L905~ 1000	L1005~ 1100	L1105~ 1200	L1205~ 1300	L1305~ 1400	L1405~ 1500	L1505~ 1600	L1605~ 1700	L1705~ 1800	L1805~ 1900	L1905~ 2000	L2005~ 2500	L2605~ 2700	L2705~ 2800	L2805~ 2900	L2905~ 3000
	80~100																					
	110~200																					
	210~300																					

For an Induction Motor (**IM**), a body price equals a unit price.
When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.

For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Body Price	+	Optional Motor Price specification	=	€ Unit Price
€		60,00 EUR	=	1444,00 EUR

Example) CVSPA-80-1200-25-TA115-SCM-15-300 ➡

Optional Motor Price (€ Unit Price +)

Order Example

Part Number	-	B	-	L	-	Motor: Output	-	Voltage	-	Specification	-	Gear Head Reduction Ratio	-	F
	-	100	-	750	-	25	-	TA115	-	IM	-	90	-	300

Alterations P.1084

Days to Ship: 15 Days

Not Available

NEW

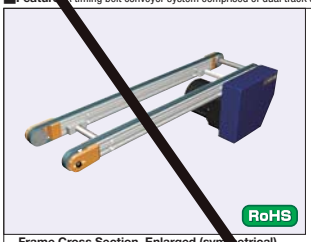
Miniature Conveyor System

-Timing Belt Dual Track Head Drive, 2-Groove Frame Type (Pulley Dia. 30mm)-

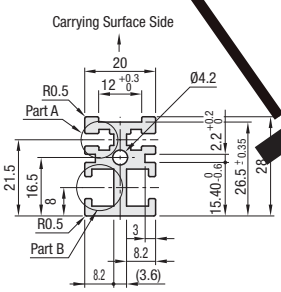
Reduced Delivery Time

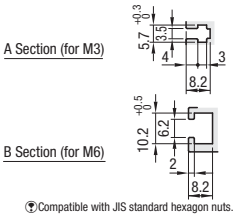
CAD Data

■Feature A timing belt conveyor system comprised of dual track conveyors, between which a stopper or a sensor can be installed.



Frame Cross Section, Enlarged (symmetrical)



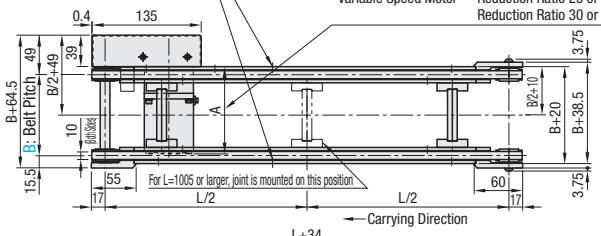


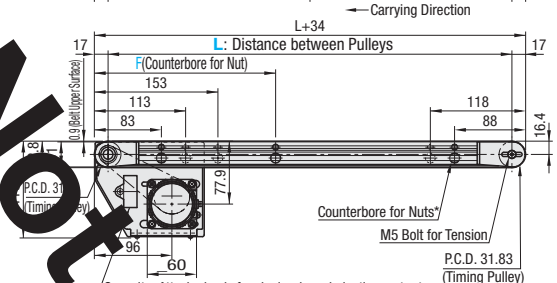
Compatible with JIS standard hexagon nuts.

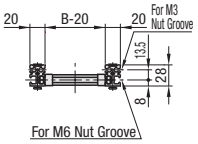
Timing Belt Dual Track Ø30 Head Driven
6W Motor Type

Additional counterbored holes are machined on identical positions for both frames.

Induction Motor	Reduction Ratio 25 or less: 101 Reduction Ratio 30 or more: 108
Variable Speed Motor	Reduction Ratio 25 or less: 111 Reduction Ratio 30 or more: 118

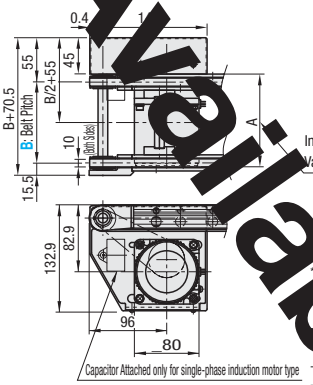






Section View of Frame

25W Motor Type



Induction Motor :115
Variable Speed Motor:125

	Frame	Motor Cover	Pulley Holder
Material	EN AC-51 400-TS	1.0330/DC01	EN AW-5052/AlMg2,5
Surface Treatment	Anodized	Coating	Gold Anodized

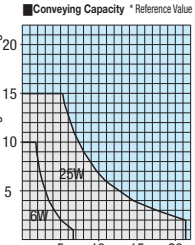
For alternate motor shaft direction, reversed, please refer to **P.1084**

■Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.545	0.687
15	0.454	0.573
18	0.379	0.477
25	0.273	0.344
30	0.227	0.286
36	0.189	0.239
50	0.136	0.172
60	0.114	0.143
75	0.091	0.115
90	0.076	0.095
100	0.068	0.086
120	0.057	0.072
150	0.045	0.057
180	0.038	0.048

■Conveying Capacity * Reference Value



Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Voltage (V)	Specification	Gear Head Ratio	F (Additional Counterbored Holes) 5mm Increment
	80~300	255~2000	6 25	TA115(Single-Phase) SA220(Three-Phase)* SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	170<F<L-130 * Additional counterbored holes will not be machined unless specified.

Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM) with an output of 25W. For motor details such as circuit diagrams, refer to Pages following **P.997**.
Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more.
Please adjust wiring so that the direction of conveyance will be always the direction as specified in the drawings.

Part Number	B	Body Price Qty. 1 ~2: Min.L~ 300	L305~ 400	L405~ 500	L505~ 600	L605~ 700	L705~ 800	L805~ 900	L905~ 1000	L1005~ 1100	L1105~ 1200	L1205~ 1300	L1305~ 1400	L1405~ 1500	L1505~ 1600	L1605~ 1700	L1705~ 1800	L1805~ 1900	L1905~ 2000
	80~100																		
	110~150																		
	160~200																		
	210~250																		
	260~300																		

For an Induction Motor (**IM**), a body price equals a unit price.
When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.
For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Example) CVSTA-80-1200-25-TA115-SCM-15-300 ➡

Body Price	+	Optional Motor Price specification	=	€ Unit Price
1085,00 EUR	+	60,00 EUR	=	1145,00 EUR

Optional Motor Price (€ Unit Price +)	

Order Example

Part Number	-	B	-	L	-	Motor: Output	-	Voltage	-	Specification	-	Gear Head Reduction Ratio	-	F
	-	80	-	1360	-	6	-	TA115	-	IM	-	50	-	300

Alterations P.1084

Days to Ship 13 Days

Not Available

NEW

Miniature Conveyor System

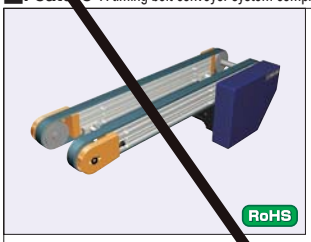
-Timing Belt Dual Track Head Drive, 3-Groove Frame Type (Pulley Dia. 50mm)-

Reduced Delivery Time

Price Reduction 7%

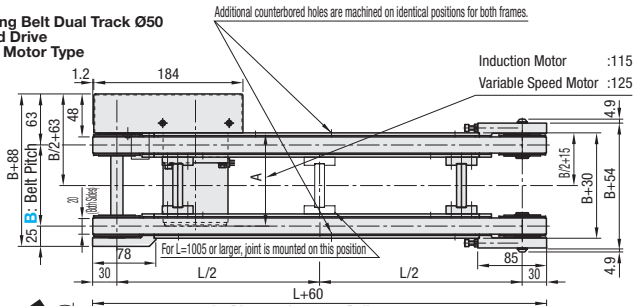
CAD Data

■Feature: A timing belt conveyor system comprised of dual track conveyors, between which a stopper or a sensor can be installed. Three rows of frame slot facilitate installation of accessories.

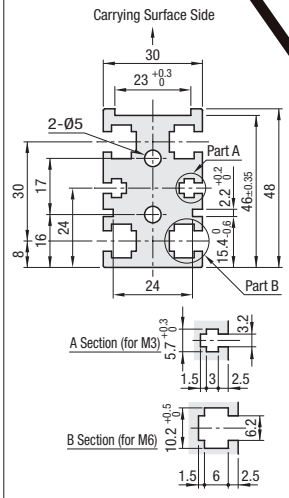


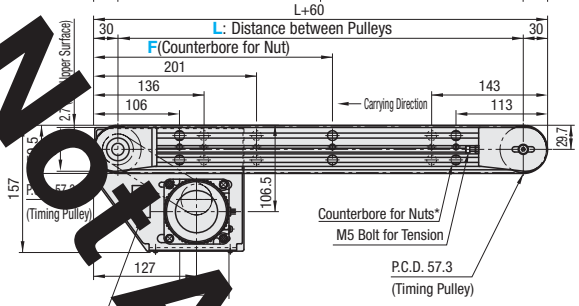
RoHS

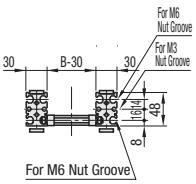
Timing Belt Dual Track Ø50 Head Drive 25W Motor Type



Frame Cross Section, Enlarged (Symmetrical)





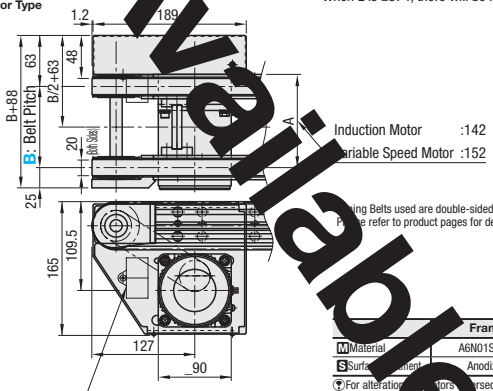


Capacitor Attached only for single-phase induction motor type

* When L is ≤374, there will be no counterbored hole for nuts.

Compatible with JIS standard hexagon nuts.

40W Motor Type



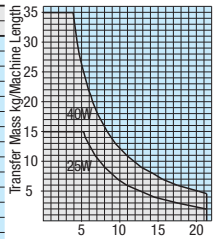
Timing Belts used are double-sided fabric coated T10 Type (**P.1203** LTBRA-T10200~) Please refer to product pages for details.

■Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.278	0.344
15	0.231	0.287
18	0.193	0.239
25	0.139	0.172
30	0.116	0.143
36	0.096	0.120
50	0.069	0.086
60	0.058	0.072
75	0.046	0.057
90	0.039	0.048
100	0.035	0.043
120	0.029	0.036
150	0.023	0.029
180	0.019	0.024

■Conveying Capacity * Reference Value



	Frame	Motor Cover	Pulley Holder
M Material	A6N01SS-T5	1.0330/DC01	EN AW-5052/AlMg2,5
S Surface Treatment	Anodized	Coating	Gold Anodized

For alterations of motors disassembled, please refer to **P.1084**

Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Voltage (V)	Specification	Gear Head Ratio	F (Additional Counterbored Holes) 5mm Increment
	80~300	265~2000	25 40	TA115(Single-Phase) SA220(Three-Phase)* SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	220<F<L-160 * Additional counterbored holes will not be machined unless specified.

Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will be as always the direction as specified in the drawings.
For motor details such as circuit diagrams,refer to Pages following **P.997**. Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM).

Part Number	B	Body Price Qty. 1 ~2: Min.L~300	L305~400	L405~500	L505~600	L605~700	L705~800	L805~900	L905~1000	L1005~1100	L1105~1200	L1205~1300	L1305~1400	L1405~1500	L1505~1600	L1605~1700	L1705~1800	L1805~1900	L1905~2000
	80~100																		
	110~150																		
	160~200																		
	210~250																		
	260~300																		

For an Induction Motor (**IM**), a body price equals a unit price.
When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.
For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Example) CVSTB-80-1200-25-TA115-SCM-15-300 ➡

Body Price	+	Optional Motor Price specification	=	€ Unit Price
1271,00 EUR	+	60,00 EUR	=	1331,00 EUR

Optional Motor Price (€ Unit Price +)	

Order Example

Part Number	-	B	-	L	-	Motor: Output	-	Voltage	-	Specification	-	Gear Head Reduction Ratio	-	F
	-	160	-	880	-	25	-	TA115	-	IM	-	120	-	300

Alterations ☞P.1084

Days to Ship: 13 Days

Not Available

NEW

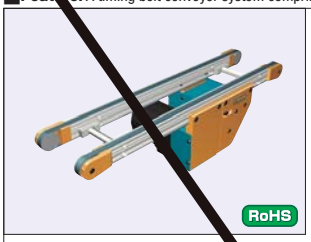
Miniature Conveyor System

-Timing Belt Dual Track Center Drive, 2-Groove Frame Type (Pulley Dia. 30mm)-

Price Reduction 15%

CAD Data

Feature: A timing belt conveyor system comprised of dual track conveyors, between which a stopper or a sensor can be installed. Driving section is adjustable to desired positions.



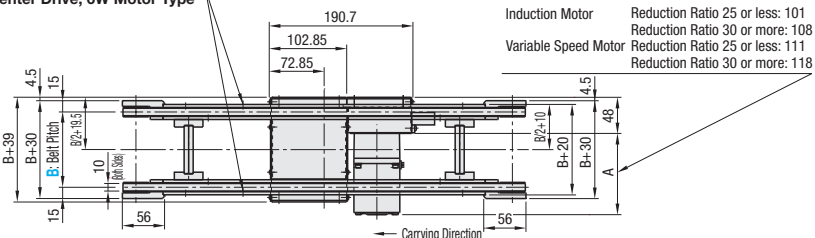
RoHS

Timing Belt Dual Track Ø30 Center Drive, 6W Motor Type

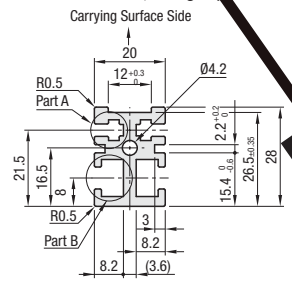
Additional counterbored holes are machined on identical positions for both frames.

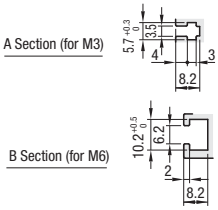
Induction Motor — Reduction Ratio 25 or less: 101; Reduction Ratio 30 or more: 108

Variable Speed Motor — Reduction Ratio 25 or less: 111; Reduction Ratio 30 or more: 118

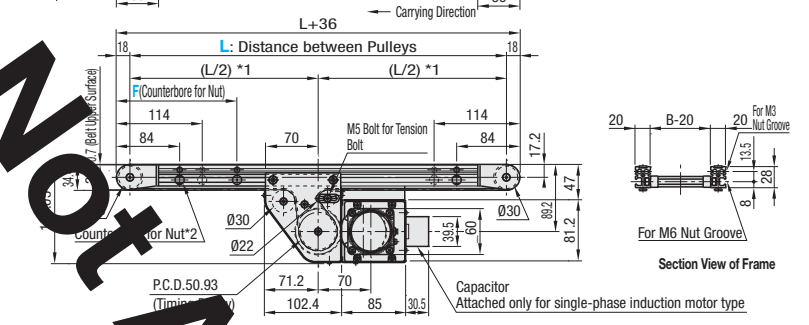


Frame Cross Section, Enlarged (Symmetrical)





Compatible with JIS standard hexagon nuts.

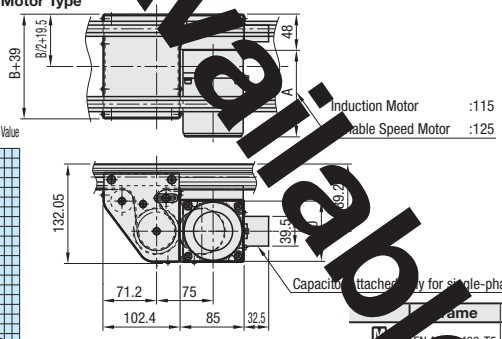


Section View of Frame

*1 The driving part can be moved to a desired position within the area where groove is provided on the aluminum frame.

*2 When L is ≤407, there will be no counterbored hole for nuts.

25W Motor Type

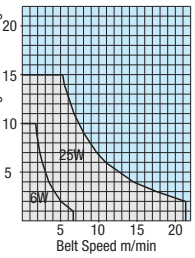


Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.273	0.344
15	0.227	0.286
18	0.189	0.239
25	0.136	0.172
30	0.114	0.143
36	0.095	0.119
50	0.068	0.086
60	0.057	0.072
75	0.045	0.057
90	0.038	0.048
100	0.034	0.043
120	0.028	0.036
150	0.023	0.029
180	0.019	0.024

Conveying Capacity * Reference Value



*Timing Belts used are double-sided fabric coated T5 Type (LTBRA-T5100~**P.1203**) . Please refer to product pages for details.

Frame	Motor Cover (1)	Motor Cover (2)	Pulley Holder
Material	EN AW-5052/AlMg2,5		EN AW-5052/AlMg2,5
Surface Treatment	Gold Anodized	Blue Anodized	Gold Anodized

Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Voltage (V)	Specification	Gear Head Ratio	F (Additional Counterbored Holes) 5mm Increment
	80~300	265~2000	6 25	TA115(Single-Phase) SA220(Three-Phase)* SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	130 <F< L-130 * Additional counterbored holes will not be machined unless specified.

Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM) with an output of 25W. For motor details such as circuit diagrams, refer to pages following **P.997.**

Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will always be the direction as specified in the drawings.

Part Number	B	€ Body Price Qty. 1 ~2																	
		Min.L~300	L305~400	L405~500	L505~600	L605~700	L705~800	L805~900	L905~1000	L1005~1100	L1105~1200	L1205~1300	L1305~1400	L1405~1500	L1505~1600	L1605~1700	L1705~1800	L1805~1900	L1905~2000
	80~100																		
	110~150																		
	160~200																		
	210~250																		
	260~300																		

For an Induction Motor (**IM**), a body price equals a unit price.

When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.

For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Example) CVSTN-80-1200-25-TA115-SCM-15-300 ➡

Body Price	+	Optional Motor price specification	=	€ Unit Price
1319,00 EUR	+	60,00 EUR	=	1379,00 EUR

Optional Motor Price (€ Unit Price +)	

Order Example

Part Number	-	B	-	L	-	Motor: Output	-	Motor: Voltage	-	Motor: Specification	-	Motor: Gear Head Reduction Ratio	-	F
	-	90	-	980	-	6	-	TA115	-	SCM	-	15	-	450

Days to Ship 15 Days

Alterations P.1084

Not Available

NEW

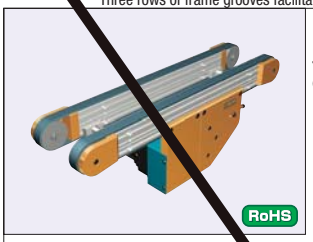
Miniature Conveyor System

-Timing Belt Dual Track Center Drive, 3-Groove Frame Type (Pulley Dia. 50mm)-

Price Reduction 20%

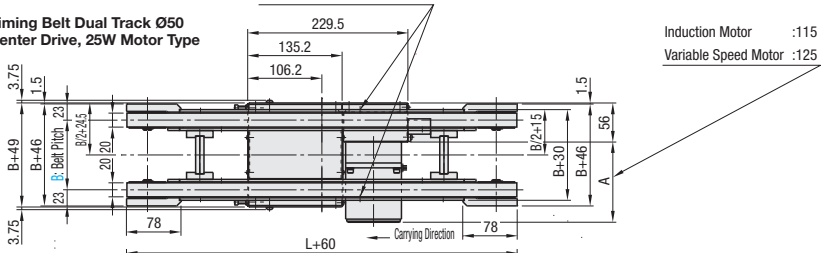
CAD Data

Feature: A timing belt conveyor system comprised of dual track conveyors, between which a stopper or a sensor can be installed. Driving section is adjustable to desired positions. Three rows of frame grooves facilitate installation of accessories.

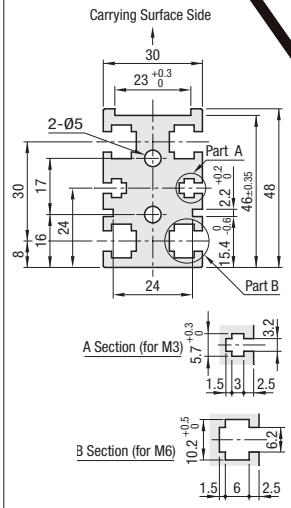


RoHS

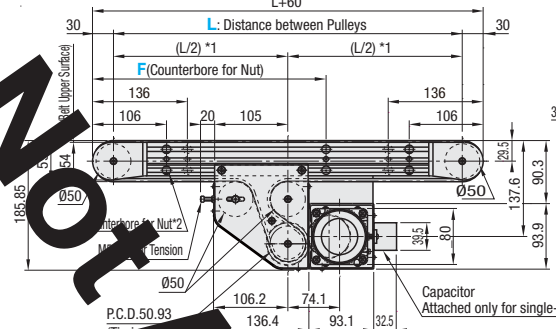
Timing Belt Dual Track Ø50 Center Drive, 25W Motor Type



Frame Cross Section · Enlarged (symmetrical)



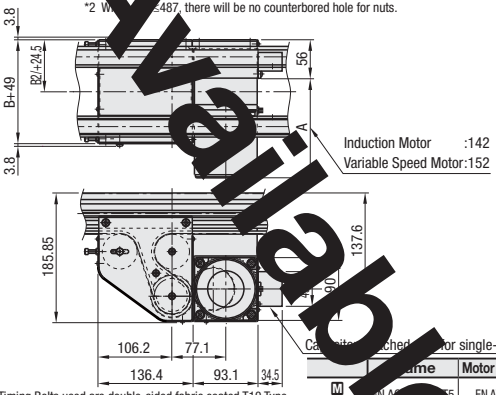
Compatible with JIS standard hexagon nuts.



40W Motor Type

Part can be moved to a desired position within the area where groove is provided on the aluminum frame.

*2 W…487, there will be no counterbored hole for nuts.



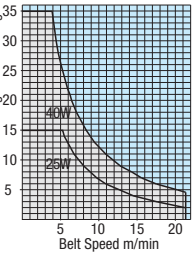
*Timing Belts used are double-sided fabric coated T10 Type (LTBR-T10200~**P.1204**)
Please refer to product pages for details.

Gear Head Ratio

*May decrease depending on load condition.

Gear Head Reduction Ratio	Belt Speed (m/sec) 50Hz	60Hz
12.5	0.278	0.344
15	0.231	0.287
18	0.193	0.239
25	0.139	0.172
30	0.116	0.143
36	0.096	0.120
50	0.069	0.086
60	0.058	0.072
75	0.046	0.057
90	0.039	0.048
100	0.035	0.043
120	0.029	0.036
150	0.023	0.029
180	0.019	0.024

Conveying Capacity * Reference Value



Name	Motor Cover (1)	Motor Cover (2)	Pulley Holder
Material	EN AW-5052		EN AW-5052
Surface Treatment	Gold Anodized	Blue Anodized	Gold Anodized

Part Number	B 10mm Increment	L 5mm Increment	Motor Selection: Output (W)	Motor Selection: Voltage (V)	Motor Selection: Specification	Gear Head Ratio	F (Additional Counterbored Holes) 5mm Increment
	80~300	325~2000	25 40	TA115(Single-Phase) SA220(Three-Phase)* SA230(Three-Phase) *	IM (Induction Motor) SCM (Variable Speed Motor)	12.5 15 18 25 30 36 50 60 75 90 100 120 150 180	150 ≤F≤ L-150 * Additional counterbored holes will not be machined unless specified.

Rotating direction of the belt is the same as motor rotating direction when gear ratio is 25 or less, and the opposite when gear ratio is 30 or more. Please adjust wiring so that the direction of conveyance will be always the direction as specified in the drawings. For motor details such as circuit diagrams, refer to Pages following **P.997**. Motor voltage of SA220 / SA230 (three-phase) is selectable only for Induction Motors (IM).

Part Number	B	€ Body Price Qty. 1 ~2																
		Min.L~ 400	L405~ 500	L505~ 600	L605~ 700	L705~ 800	L805~ 900	L905~ 1000	L1005~ 1100	L1105~ 1200	L1205~ 1300	L1305~ 1400	L1405~ 1500	L1505~ 1600	L1605~ 1700	L1705~ 1800	L1805~ 1900	L1905~ 2000
	80~100																	
	110~150																	
	160~200																	
	210~250																	
	260~300																	

For an Induction Motor (**IM**), a body price equals a unit price.
When Variable Speed Motor (**SCM**) is selected, the unit price will be body price + optional motor price.
For orders larger than indicated quantity, please request a quotation for Days to Ship and Price.

Example) CVSTP-80-1200-25-TA115-SCM-15-300 ➡

Body Price	+	Optional Motor price specification	=	€ Unit Price
1524,00 EUR	+	60,00 EUR	=	1584,00 EUR

Optional Motor Price (€ Unit Price +)	
SCM	

Order Example

Part Number	B	L	Output	Motor: Voltage	Motor: Specification	Motor: Gear Head Reduction Ratio	F
	- 130	- 660	- 25	- SA230	- IM	- 15	- 500

Days to Ship 15 Days

Alterations P.1084

Not Available

Miniature Conveyor Guide Rails / Guide Rail Brackets / Conveyor Support Stands

Price Reduction 20%

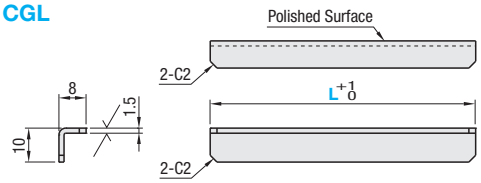
CAD Data

Conveyor Guide Rails



RoHS

CGL



Materials: 1.4301/X5CrNi18-10

Part Number	L 5mm Increment	€ Unit Price Qty. 1 ~ 10
CGL	150~300	
	305~500	
	505~750	
	755~1000	

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number CGL - L 380

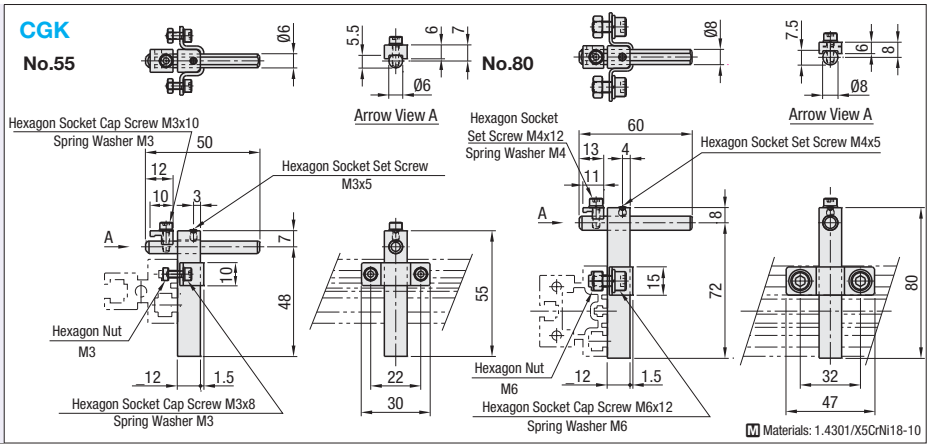
Days to Ship: 10 Days

Conveyor Guide Rail Brackets -Standard Type-



RoHS

CGK



Materials: 1.4301/X5CrNi18-10

Part Number Type	No.	€ Unit Price Qty. 1 ~10
CGK	55	
	80	

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number CGK80

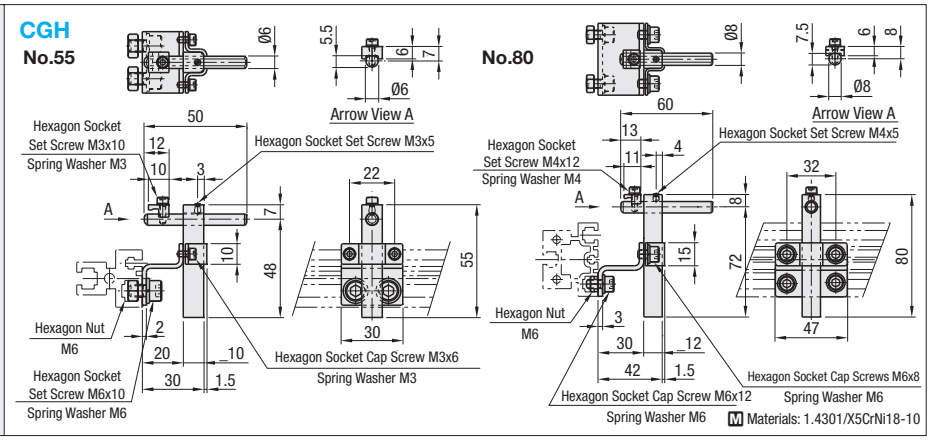
Days to Ship: 10 Days

Conveyor Guide Rail Brackets -Offset Type-



RoHS

CGH



Materials: 1.4301/X5CrNi18-10

Part Number Type	No.	€ Unit Price Qty. 1 ~10
CGH	55	
	80	

For orders larger than indicated quantity, please request a quotation.

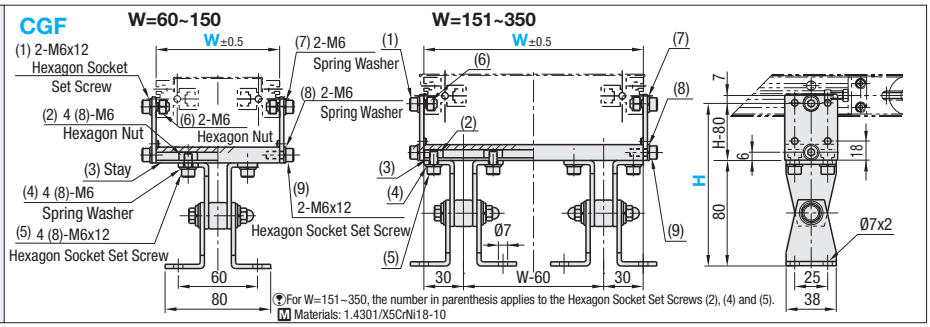
Order Example: Part Number CGH55

Days to Ship: 10 Days

Conveyor Support Stands



CGF



For W=151~350, the number in parenthesis applies to the Hexagon Socket Set Screws (2), (4) and (5).

Materials: 1.4301/X5CrNi18-10

Part Number	W 1mm Increment	H 1mm Increment	€ Unit Price Qty. 1 ~10
CGF	60~350	120~160	

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number CGF - W 220 - H 120

Days to Ship: 10 Days

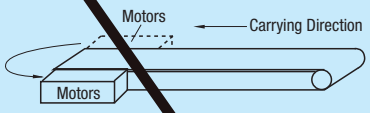
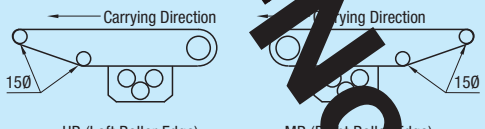
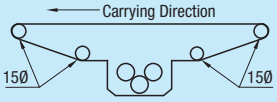
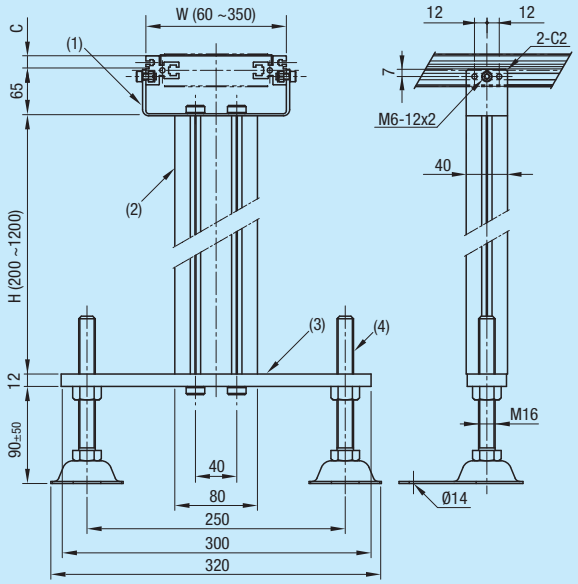
Miniature Conveyor Alterations

-Motor Reversed / One-side · Both-sides Roller Edges / Stands (Legs)-

CAD Data

Alterations	Part Number	B	L	Motor: Output	Motor: Voltage	Motor: Specification	Motor: Gear Head Reduction Ratio	Belt Specification	F	(MK · HR · MR · WR · LE · LW)
	-	100	750	25	TA115	IM	90		300	LE-W60-H500
	-	120	1350	40	TA115	SCM	50	S	600	HR

Not Available

Alterations	Code	Spec	Price Adder
Motor Position Reversed 	MK	Motor position can be changed. Ordering Code MK 17 Days Only the Head Drive Type can be specified. ⊗CVSPA not applicable Ⓨ Applicable Part Numbers: CVSA · CVSB · CVSTA · CVSTB	60,00
One-side Roller Edge 	HR MR	One end of the conveyor can be changed to a roller edge. Ordering Code HR MR 19 Days Only the Center Drive Type can be specified. Ⓨ Only a 25W motor can be selected. Ⓨ Applicable Part Numbers: CVSN · CVSP Ⓨ Selectable from L Dimension 350 or more. ⊗B(Belt Width) 200mm or more can not be selected.	150,00
Both-sides Roller Edge 	WR	One end of the conveyor can be changed to a roller edge. Ordering Code WR 19 Days Only the Center Drive Type can be specified. Ⓨ Only a 25W motor can be selected. Ⓨ Applicable Part Numbers: CVSN · CVSP Ⓨ Selectable from L Dimension 350 or more. ⊗B(Belt Width) 200mm or more can not be selected.	300,00
Conveyor Stand(1 Leg /2 Legs) 	LE LW	Stand will be added to the conveyor. LE: One conveyor mounting stand will be added. LW: Two conveyor mounting stands will be added. Ordering Code LE-W60-H500 LW-W60-H650 Ⓨ W Dimension is configurable in 1mm increment. Ⓨ H Dimension is configurable in 10mm increment. Ⓨ Same as the standard delivery ship.	

Part Number	C	W
	13	B+39
		B+23
	33	B+39
		B+33
	26	B+25

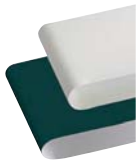
* B refers to belt width.

	H200 ~500	H501 ~700	H701 ~1000	H1001 ~1200
LE	127,00	139,00	150,00	167,00
LW	254,00	279,00	300,00	334,00

	(1) Bracket	(2) Aluminum Frame	(3) Backing Plate	(4) Adjusting Bolt
M Material	1.4301/ X5CrNi18-10	Aluminum (EN AC-51400/ ALMGSI0,7SS-T5)	1.4301/X5CrNi18-10	Steel (1.0038/S235JR)
S Surface Treatment	2B	Clear Anodize	-	Trivalent Chromate

Flat Belts / Round Belts / Pulleys / Idlers

Flat Belts, Round Belts Pulleys, Idlers







Product Name	Flat Belts	-With Meandering Prevention Crosspiece-	Pulleys for Flat Belts -Width T=6~32-
Page	1087	1088	1089







Idlers for Flat Belts -Width T=6~32-	Pulleys for Flat Belts -Width L=25~100-	Idlers for Flat Belts -Width L=25~100-
1090	1091	1092





Addition



Pulleys for Flat Belts Economy Type -Width L=110~500-	Idlers for Flat Belts Economy Type -Width L=110~500-	Pulleys for Flat Belts -Width L=110~500-
1093	1094	1095

Addition







Idlers for Flat Belts -Width L=110~500-	Pulleys for Flat Belts with Urethane-Width L=25~100-	Pulleys for Flat Belts with Urethane Economy Type-Width L=110~500-
1096	1097	1098







Addition



Price Reduced
Up to 36%

Shaft Pulleys for Flat Belts-Width L=25~100-	Idlers for Flat Belts -Width L=38~90-	Idlers for Flat Belts-Width L=100~300-	Polyurethane Round Belts
1099	1100	1100	1101

Addition



Price Reduced
Up to 37%









Polyurethane Round Belts -Seamless Type-	Pulleys for Round Belts–Set Screw / Trapezoid Groove–	-Set Screw / U Groove-	-Clamping / Trapezoidal Groove-	–Clamping / U Groove–
1102	1103	1103	1104	1104







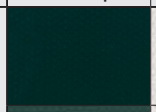
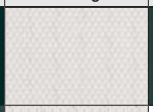
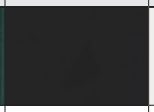
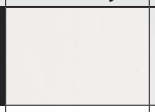
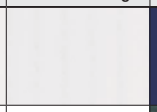
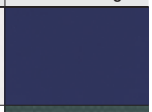


Idlers for Round Belts–Narrow–	–Wide–	Pulleys for Round Belts–Double Grooves–	Idlers for Round Belts–Double Grooves–
1105	1106	1107	1108

Flat Belts / Round Belts / Pulleys / Idlers
–Overview–

■Flat Belts
Seven types of MISUMI flat belts are available: General Purpose, Sliding, Inclination, Electronic Parts Conveyer, Food Conveyer, Heat-Resisting and Oil-Resisting.
Belt Width Configurable Type and meandering prevention Crosspiece Type are also available.

[Flat Belts List by Appearance and Features]

		General Purpose	Sliding	Inclined transfer		Food Conveyer	Heat-Resisting	Oil-Resisting
Appearance (Lower swatches are Meandering Prevention Crosspiece Type.)								
				-	-	-	-	
Friction Coefficient (Reference Value) Against polished steel	Front	0.2	0.1	1.7	0.2	0.2	1.5	0.3
	Back	0.1	0.1	0.1	0.1	0.15	0.1	0.1
Operation Temperature		-10~80					-40~180	5~60
Features		Conveyor flat belt for most general purposes.	Belt surface has a small friction coefficient. Suitable for accumulating conveyance.	Belt surface has a large friction coefficient. Inclined transfer is possible.	Provided with antistatic finish. Suitable for conveyance of static-sensitive electronic components.	Satisfies No. 370 Notification concerning Food Sanitation Laws, and standardized protections against bacterium, mould and fray (ear part fray).	Heat-resistant belt up to 180°C in continuous use. Suitable for conveyance of work with heat.	Oil-resistant vinyl chloride and urethane are used for belt surface. Suitable for conveyance of work with cutting fluids, etc..

·Characteristics of DHBLT (For Electronic Part Conveyor)

Item		Unit	DHBLT
Electrical Resistance of Surface		Ω	104~105
Triboelectrical Voltage	*Test Condition A	V	10~20
	*Test Condition B		5~10

(Lightbulb)* Test Conditions
A: Belt speed: 220m/min, temperature 21±0.5°C, humidity: 70±1%
B: Belt speed: 20m/min, temperature 18±0.5°C, humidity: 50±1%
(Lightbulb)Listed values are not guaranteed values but an example set of measured values.

· Conveyance belt for food has the function compliant with HACCP.
*HACCP ·····Hazard Analysis (and) Critical Control Point
A technology developed by National Aeronautics and Space Administration (NASA) for sanitary control of space foods, which is applied to sanitary control in food industries and restaurants.

· Storage Cautions
- Avoid direct sunlight.
- Store in a place with no rain fall.
- Store in a place with humidity of less than 80%, temperature of 0°~40°.
- Do not store in stacks and avoid bending during storage.
- Do not put them directly on the ground.
- Avoid contact with oil and chemicals.

■ Pulleys and Idlers for Flat Belts
MISUMI pulleys and idlers for flat belts are offered in a wide variety of shapes and sizes.
You can choose the most suitable product for your needs, such as meandering and slip prevention.

[Pulleys / Idlers for Flat Belts List by Type]

		Belt Width (mm)	Outer Dia. (mm)	Standard Type: Straight Type	Standard Type: Crown Type	Standard Type: Crosspiece Groove Straight	Urethane Lined Type	Economy Type	Shaft Type
									
				General straight shape. Flanged type also selectable.	Shape with crown for meandering prevention. Flanged type also available.	Shape with groove for meandering prevention. Compatible with belt with crosspiece.	Urethane lining is applied (partially press-fitted) to prevent slip of the belt and the pulley.	Economical product with thin pipe.	Integrated with shaft. Contributes to reduction of number of parts.
Pulley	Width Selectable	6~32	15~50	P.1089	P.1089	-	P.1089	-	-
	Width Configurable	25~100	15~80	-	P.1091	P.1091	P.1097	-	P.1099
		110~500	15~80	-	P.1095	P.1095	P.1098	P.1093	-
Idler	Width Selectable	6~32	15~50	P.1090	P.1090	-	-	-	-
	Width Configurable	25~100	15~80	P.1092	P.1092	P.1092	-	-	-
		110~500	15~80	P.1096	P.1096	P.1096	-	P.1094	-

■ Round Belts
Five types of MISUMI round belts are available: Standard Type, High Tension Type, Conductive Type, Seamless Type and Hollow Rope Type.
Also, Weld Jointed or Open End are selectable for Standard Type and High Tension Type.

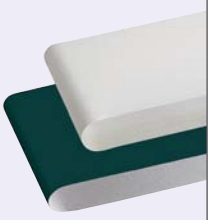
Features of Round Belts
Suitable for conveying lightweight objects. Flexible on designs such as multi-shafts transmission or right angle transmission.
High elasticity and hardness, and excels in abrasion resistance, oil resistance and weather resistance.
Not applicable to aromatic compounds (toluene, benzene, naphthalene, etc.). Avoid using or storing in humid conditions.

Features of each type ☞P.1101-1102

Flat Belts

CAD Data

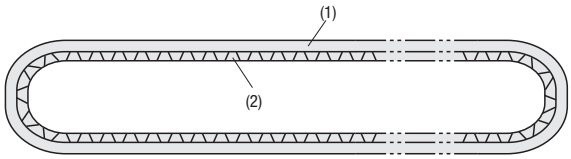
Flat Belts RoHS



Type		Usage	Material		Color Tone	Thickness mm	Weight kg/m²	Allowable Stress kg/cm	Min. Pulley Diameter Ømm	Knife Edge	Continuous Use Temperature °C	Friction Coefficient (Ref. against polished steel)	
Width Selectable	Width Configurable		(1) Front	(2) Back								Front	Back
HBLT	HBLTW	Gen. Purpose	Polyurethane	Polyester	Green	0.9	1	4	25	5R	-10~80	0.2	0.1
SHBLT	-	Sliding	Polyester		White	0.5	0.5	4	25	3R		0.1	0.1
LHBLT	-	Inclined Apps.	Soft Polyurethane		Green	1.5	1.6	4	30	-		1.7	0.1
DHBLT	-	Electronic Parts Conveyer	Conductive Polyurethane		Black	0.6	0.7	3	25	3R	-10~80	0.2	0.1
FHBLT	-	Food Conveyer	Polyurethane		White	0.8	0.9	3.5	20	3R		0.2	0.15
HHBLT	-	Heat-Resisting	Silicon Rubber		White	1.3	1.4	5	75	-	-40~180	1.5	0.1
OHBLT	-	Oil-Resisting	Oil-resistant chloroethene		Navy	1.0	1.1	4	25	-	5~60	0.3	0.1



* W±1 when W=30 or less
W±2 when W=30 or more



Characteristics of belts **P.1086**

Belts Width Selectable Type

Part Number Type	Belt Width W (mm)	Circumference L (m) 0.01m Increment	€ Price / m HBLT	SHBLT	LHBLT	DHBLT	FHBLT	HHBLT	OHBLT	Joint Machining Charge (Body € Price +) HBLT / SHBLT / LHBLT / DHBLT / FHBLT / OHBLT	HHBLT
DHBLT	5	0.50~3.00									
HBLT DHBLT SHBLT FHBLT LHBLT OHBLT	10	0.50~20.00									
	15										
	20										
HBLT FHBLT SHBLT OHBLT LHBLT	25										
	30										
	35										
	40										
HBLT SHBLT LHBLT FHBLT HHBLT OHBLT	50	0.80~20.00									
	60										
	75										
	80										
	90										
	100										
	125										
	150										
	200										
	250										
	300										

Flat belts are weld-joined before shipping.
Connecting section may be thicker by approx. 0.3mm for HBLT(HBLTW), SHBLT, LHBLT, DHBLT, FHBLT, 0.4mm for OHBLT and 0.6mm for HHBLT.

Belt Width Configurable Type

Part Number Type	Belt Width W (mm) 10mm Increment	Circumference L (m) 0.01m Increment	€ Price / m HBLTW	Joint Machining Charge (Body € Price +)
HBLTW	110~200	0.80~20.00		
	210~300			
	310~400			
	410~500			

Flat belts are weld joined before shipping. The connected portion may become approx. 0.3mm thicker.

Order Example

Part Number	-	Circumference L (m)
Type	Belt Width	
DHBLT 15	-	14.50
HBLTW 350	-	4.23

Days to Ship

-HBLT / SHBLT / LHBLT / DHBLT / FHBLT / HBLTW

10 Days | Express B | 3,00 EUR/ piece | P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

-HHBLT / OHBLT

10 Days ⊗Express Serviceis not available.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

Quantity discount rate is not applicable to belt jointing charges.
Price Calculation Example (Round down to ten Cent.)
For orders larger than indicated quantity, please request a quotation.
DHBLT15-14.50
(Length m) x (Body Price/m) + (Belt Jointing Charge) = Product Price
14.50 X 7,20 EUR + 16,30 EUR =120,70 EUR

Minimum Pulley Dia. and Driving Pulley Dia.

Identify the relevant pulley diameters by reading the width and length of the belt from the table below, and determine the smaller value as "minimum pulley diameter" and larger value as "drive pulley diameter".

[Table 1] Minimum Pulley Diameter Selection Table (Belt Width)

Belt Width (mm)	Min. Pulley Diameter HBLT SHBLT DHBLT FHBLT OHBLT	LHBLT	HHBLT
Less than 100	25	30	75
100~190	50	55	75
200~400	50	55	100
410~500	75	80	100

(Ex.) When the width is 150mm and length is 5.00mm
Select from Width: 50…Small Value…
Min. Pulley Diameter
Select from Length: 75…Large Value…
Min. Driving Pulley Diameter

[Table 2] Minimum Pulley Diameter Selection Table (Belt Length)

Belt Length (m)	Min. Pulley Diameter HBLT SHBLT DHBLT FHBLT OHBLT	LHBLT	HHBLT
Less than 1.00	25	30	75
1.01~1.99	50	55	75
2.00~4.00	50	55	100
4.01~7.00	75	80	100
7.01~10.00	100	105	125
10.01~20.00	100	105	150

Flat Belts
-With Meandering Prevention Crosspiece-

■Features: Suitable for ensuring the running straightness and strength against lateral forces.

■**Flat Belts** RoHS
–With Prevention Crosspiece–

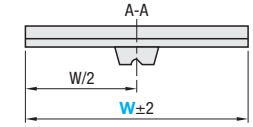
(1) Front

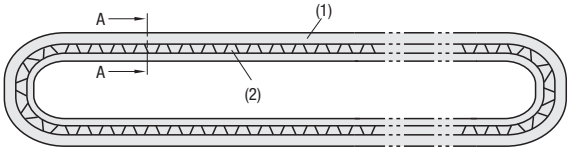


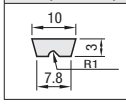
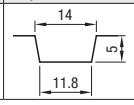
(2) Back



Type	Usage	Material (1) Front	Material (2) Back	Color Tone	Thickness mm	Weight kg/m²	Allowable Stress kg/cm	Min. Pulley Diameter Ømm	Continuous Use Temperature °C	Friction Coefficient (Ref. against polished steel) Front	Back
HBLTDS	Gen. Purpose	Polyurethane	Polyester	Green	1.4	1.5	8	40	-30~80	0.8	0.2
SHBLTDS	Sliding	Polyester		White	1.3	1.1		40		0.2	0.2
OHBLTDS	Oil-Resisting	Oil-resistant Urethane		Green	1.4	1.5		25		0.8	0.2





Crosspiece Shape	Pulley / Idler Relief Dimensions
	

Characteristics of belts **P.1086**

■**With Prevention Crosspiece**

Part Number Type	Part Number Belt Width W 10mm Increment	Circumference L (m) 0.01m Increment	€ Price / m HBLTDS	€ Price / m SHBLTDS	€ Price / m OHBLTDS	Joint Machining Charge (Body € Price +)
HBLTDS SHBLTDS OHBLTDS	50~90	1.00~20.00 (L≥Wx4)				
	100~190					
	200~290					
	300~400					
	410~500					

Order Example

Part Number		-	Circumference L
Type	Belt Width		(m)
HBLTDS	350	-	4.50

Days to Ship 10 Days

Price

■**Volume Discount** (Round down to one Cent.) **P.87**

Qty.	1~4	5~7	8~10
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Price Calculation Example (Round down to ten Cent.)
HBLTDS350-4.50
(Length m) x (Body Price/m) + (Belt Jointing Charge) = Product Price
4.50 X 130,50 EUR + 44,00 EUR =631,20 EUR

Quantity discount rate is not applicable to belt jointing charges.

■**Resistance against Chemicals and Oils**

Chemical Name	Gen. Purpose HBLT HBLTW HBLTDS	Sliding SHBLT SHBLTDS	Inclined Apps. LHBLT	Electronic Parts Conveyer DHBLT	Food Conveyer FHBLT	Heat-Resisting HHBLT	Oil-Resisting OHBLT OHBLTDS
Isopropyl Alcohol	○	Δ(○)	○	○	○	○	Δ(○)
Ethanol	○	○	○	○	○	○	○
Potassium Chloride	○	○	○	○	○	○	○
Calcium Chloride	○	○	○	○	○	○	○
Hydrochloric Acid (Gas)	X	X	X	X	X	○	Δ
Hydrochloric Acid (5% or less)	○	○	○	○	○	○	○
Hydrochloric Acid (5~36%)	X	X	X	X	X	○	○
Caustic Soda	Δ(X)	○(X)	Δ	Δ	Δ	○	○ (X)
Solution of Caustic Soda (50%)	Δ(X)	X	Δ	Δ	Δ	X	○ (X)
Volatile Oil	○	○	○	○	○	Δ	○
Strong Alkali	Δ(X)	X	Δ	Δ	Δ	Δ	Δ
Strong Acid	X	X	X	X	X	○	Δ
Light Oil	○	Δ	○	○	○	Δ	Δ(○)
Ethyl Acetate	X	X	X	X	X	Δ	X
Sodium Hypochlorite (Undiluted Solution)	Δ(X)	Δ(X)	Δ	Δ	Δ	○	○ (X)
Sodium Hypochlorite (600ppm)	○ (X)	○ (X)	○	○	○	○	○ (X)
Weak Alkali	○	○	○	○	○	○	○
Weak Acid	○	○	○	○	○	○	○
Soap	○	○	○	○	○	○	○
Machining Oil	Δ	Δ	Δ	Δ	Δ	X	○
Diesel Oil	○	Δ	○	○	○	X	○
Toluene	Δ	X	Δ	Δ	Δ	X	X
Naphthalene	Δ(X)	Δ(X)	Δ	Δ	Δ	X	Δ
Paraffin Oil	○	○	○	○	○	○	○
Phenol	Δ(X)	Δ(X)	Δ	Δ	Δ	Δ	Δ(X)
Antirust Oil	Δ	Δ	Δ	Δ	Δ	X	○
Machine Oil	Δ	Δ	Δ	Δ	Δ	X	○
Methanol	○	○	○	○	○	○	○
Sulfuric Acid (10%)	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Sulfuric Acid (50%)	Δ	Δ	Δ	Δ	Δ	Δ	Δ(X)
Sulfuric Acid (70%)	X	X	X	X	X	Δ	X
Sulfuric Acid (98%)	X	X	X	X	X	X	X

■**Resistance against Foods**

Foods	Gen. Purpose HBLT HBLTW HBLTDS	Sliding SHBLT SHBLTDS	Inclined Apps. LHBLT	Electronic Parts Conveyer DHBLT	Food Conveyer FHBLT	Heat-Resisting HHBLT	Oil-Resisting OHBLT OHBLTDS
Yeast	○	○	○	○	○	○	○
Tea Leaves	○	○	○	○	○	○	○
Olive Oil	○	○	○	○	○	Δ	○
Fruits	○	○	○	○	○	○	○
Cashew Nuts	X	X	X	X	X	X	X
Cream	○	○	○	○	○	○	○
Spices	○	○	○	○	○	○	○
Grains	○	○	○	○	○	○	○
Coffee Beans	○	○	○	○	○	○	○
Flour	○	○	○	○	○	○	○
Rice Grains	○	○	○	○	○	○	○
Fish	○	○	○	○	○	Δ	○
Sugar	○	○	○	○	○	○	○
Salt	○	○	○	○	○	○	○
Salt Water	○	○	○	○	○	○	○
Fat	○	○	○	○	○	X	○
Cooking Oil	○	○	○	○	○	Δ	○
Syrup	○	○	○	○	○	○	○
Soy Sauce	○	○	○	○	○	Δ	○
Vinegar	○	○	○	○	○	Δ	○ (X)
Sauce	○	○	○	○	○	Δ	Δ
Molasses	○	○	○	○	○	○	○
Meat	○	○	○	○	○	Δ	○
Butter	○	○	○	○	○	Δ	○
Bread	○	○	○	○	○	○	○
Peanut Oil	○	○	○	○	○	X	○
Beer	○	○	○	○	○	○	○
Margarine	○	○	○	○	○	Δ	○
Mayonnaise	○	○	○	○	○	Δ	○
Water	○	○	○	○	○	○	○ (X)
Lard	○	○	○	○	○	Δ	○

○ Not affected at all, Δ Slightly Affected, x Severely Affected The symbols in ( ) are for Crosspiece Groove Type.

○ Not affected at all, Δ Slightly Affected, x Severely Affected The symbols in ( ) are for Crosspiece Groove Type.

The above table shows adequacy in the condition where materials including chemicals and oil are loaded on belt surface and carried in room temperature.
Actual conditions may differ in cases where belts are completely submerged in materials or used in higher temperature than room temperature.

Pulleys for Flat Belts- Width T=6~32-

-Flanged / Crowned / Press-Fit Urethane-

CAD Data

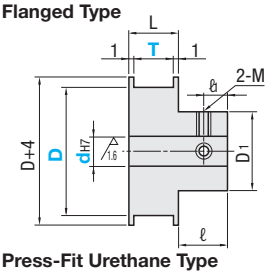




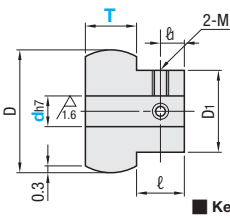


Type			Material	Nylon 6 (Glass Fiber 30%)
Flanged	Crowned	Press-Fit Urethane		Lining
HBPG	HBPCG	-	1.1191/C45E	Black Oxide
HBPM	HBPCM			Electroless Nickel Plating
HBPA	HBPCA		EN AW-2017/AlCu4MgSi	White Alumite
HBPS	HBPCS		1.4301/X5CrNi18-10	-
-	-	HBPUS		Urethane Shore A70

Flanged Type

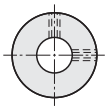


Crown Type

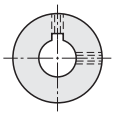


Shaft Hole Specifications

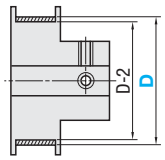
Round Hole + Tap: P



New JIS Keyway Hole + Tap: N



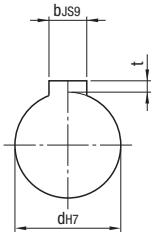
Press-Fit Urethane Type



Urethane shore A70 (blue) is press-fit on the roller face. D dimension does not change. Urethane Thickness 1mm

Keyway Dimension

N: New JIS (B1301) Keyway Dimension



Nominal	dH7		bJS9		t Tolerance	
N8	8	+0.015 0	3	±0.0125	1.4	+0.1 0
N10	10					
NK10	10		4	±0.0150	1.8	
N12	12	+0.018 0			2.3	
N15	15		5			
N20	20	+0.021 0	6		2.8	
N30	30		8	±0.0180	3.3	+0.2 0
N40	40	+0.025 0	12	±0.0215		

Part Number		dH7														T	D1	ℓ	ℓ1	M	L
Type	d	P (Round Hole + Tap)									N (Keyway + Tap) Selected					Selectable					
Flanged Type HBPG HBPM HBPA HBPS	15	5	6								-					6* 11 16 21 27 32	12	8	4	3	T+2
	18	5	6	8							-										
	20	5	6	8							8						16				
	28		6	8	10						8										
	30		6	8	10	12					8	10	12				20				
Crown Type HBPCG HBPCM HBPCA HBPCS	35			8	10	12						10	12								
	40			8	10	12						10	12								
	45				10	12						10	12				30	12	6	5	
	50				10	12						10	12								
Press-Fit Urethane Type HBPUS	60				10	12	15					10	12	15							
	80						15	20	30					15	20	30	50	16	8	8	
	100							20	30	40					20	30	40	60				

* T=6 is not available for Crowned Type. Select NK10 when Keyway + Tap with shaft hole diameter 10 and keyway width 4.0mm (height 1.8mm) is requested.

Order Example

Part Number	-	P	-	N	-	T
HBPM30	-	P6			-	11
HBPCG35			-	NK10	-	32

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

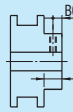
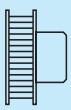
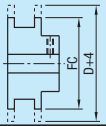
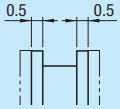
·HBPG / HBPM / HBPA / HBPS / HBPCG / HBPCM / HBPCA / HBPCS: 8 Days

·HBPUS: 10 Days

d	€ Unit Price								
	Flanged Type				Crown Type				Press-Fit Urethane Type
	HBPG	HBPM	HBPA	HBPS	HBPCG	HBPCM	HBPCA	HBPCS	HBPUS
15									
18									
20									
28									
30									
35									
40									
45									
50									
60									
80									
100									

Alterations

Part Number	-	P / N	-	T	-	(BC / HRC / FC / TC)	10 Days
HBPM18	-	P8	-	11	-	BC6.5	

Alterations	Boss Cut	Knurl Flat Thread	Flange Cut	Flange Thickness
Code	BC	HRC	FC	TC
Spec.	Cuts the boss length in 0.5mm increment. M+3≤BC≤ℓ  Order Code BC6.5	 Machines knurling flat pattern on the roller section. Applicable to HBPG, HBPM, HBPA and HBPS.	Lowers flange by cutting. FC: 0.5mm Increment  D≤FC<D+4 Order Code FC42 Not applicable to Crowned Type.	Machines flange thickness by 0.5mm. L dimension becomes 1mm shorter.  Not applicable to Crowned Type.
Price Adder	5,00	3,00	3,00	3,00

Idlers for Flat Belts- Width T=6~32-

-Flanged / Crowned-

CAD Data



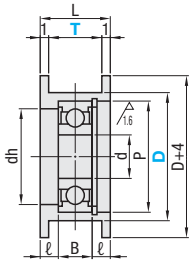


Type		Material	Surface Treatment Nylon 6 (Glass Fiber 30%)	Material	Accessories
Flanged	Crowned			Bearing	
HBG	HBGC	1.1191/C45E	Black Oxide	Steel	Retaining Ring (1.4301/ X5CrNi18-10)
HBGM	HBGCM		Electroless Nickel Plating		
HBGA	HBGCA	EN AW-2017/AlCu4MgSi	White Alumite		
HBGS	HBGCS	1.4301/X5CrNi18-10	-	Stainless Steel	
HBGP	-	Polyacetal	-	Steel	

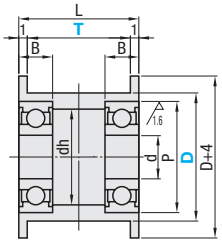
* Bearing Precision JISB1514 Class 0
Bearings are press-fitted.



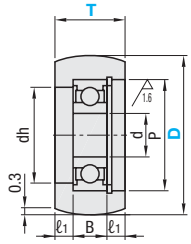
Flanged Type
T=6, 11



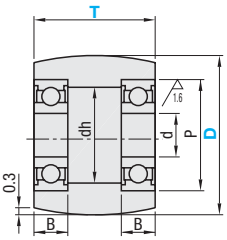
T=16, 21, 27, 32



Crown Type
T=11



T=16, 21, 27, 32



Part Number Type	d	T	P	dh	ℓ	ℓ1	L	Bearing No.	d	B	€ Unit Price Flanged Type HBG	HBGM	HBGA	HBGS	HBGP	Crown Type HBGC	HBGCM	HBGCA	HBGCS
Flanged Type HBG HBGM HBGA HBGS HBGP (Applicable to * only) Crown Type HBGC HBGCM HBGCA HBGCS	15	*1 6	11	9	2	-	8	694ZZx1	4	4									
	20		16	13	1.5			625ZZx1	5	5									
	20	11	16	13	4	3	13	625ZZx1	5	5									
	*25		19	16	3.5	2.5		626ZZx1	6	6									
	*30			17				698ZZx1	8										
	15	16	11	9	-	-	18	685ZZx2	5	5									
	20		16	13				625ZZx2											
	25		19	16				626ZZx2	6	6									
	*30			17				698ZZx2	8										
	35		26 (22)	23 (17)				6000ZZx2 (6900ZZX2)*2	10	8 (6)									
	*40																		
	15	21	11	9	-	-	23	685ZZx2	5	5									
	20		16	14				688ZZx2	8										
	25		19	17				698ZZx2		6									
	*30							698ZZx2											
	35		26	23				6000ZZx2	10	8									
	*40																		
	*50		28	25				6001ZZx2	12	8									
	15	27	11	9	-	-	29	685ZZx2	5	5									
	20		16	14				688ZZx2	8										
	25		19	17				698ZZx2		6									
	30							698ZZx2											
	40		26	23				6000ZZx2	10	8									
	50		28	25				6001ZZx2	12										
	15	32	11	9	-	-	34	685ZZx2	5	5									
	20		16	14				688ZZx2	8										
	25		19	17				698ZZx2		6									
	30																		
	40		26	23				6000ZZx2	10	8									
	50		28	25				6001ZZx2	12										

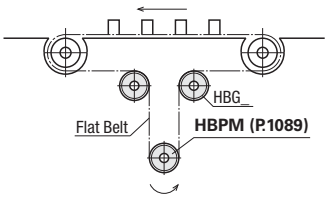
For Detailed Bearing Dimensions, refer to P.897-907 HBGP is only applicable to sizes marked with *. *1 T=6 is not available for Crowned Type.
*2 Values in ( ) are Bearing Dimensions when T=16 and D=35 or 40 for Crowned Type.

Order Example

Part Number	-	T
HBG15	-	6
HBGCS50	-	21

Days to Ship 8 Days

Example



Price

Volume Discount (Round down to one Cent.) P.87

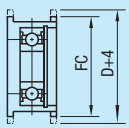
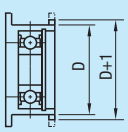
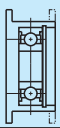
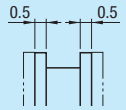
Qty.	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	T	-	(FC / KLC / KFC / TC)
HBG15	-	6	-	KFC

10 Days

Alterations	Flange Cut	One Side Low Flange	One Flange Type	Flange Thickness
Code	FC	KLC	KFC	TC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment  D≤FC<D+4 Order Code FC30.5 Not applicable to Crowned Type.	 Lowers a flange on one side. Not applicable to Crowned Type.	Cuts off the flange on the right side of the drawing.  Not applicable to Crowned Type.	Machines flange thickness by 0.5mm. L dimension becomes 1mm shorter.  Not applicable to HBGP.
Price Adder	3,00	2,00	2,00	3,00

Pulleys for Flat Belts- Width L=25~100-

-Crowned / Crosspiece Groove Straight-

CAD Data

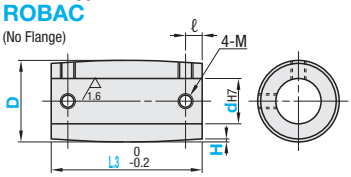


RoHS

Crown Type

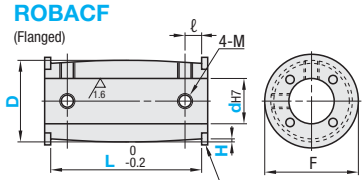
ROBAC

(No Flange)



ROBACF

(Flanged)



Flange (t=2.0)

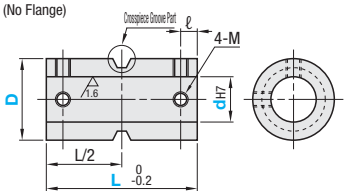
Screwed with Countersunk Screw

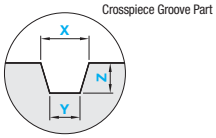
6.3 (1.6)

Crosspiece Groove Straight

ROBAM

(No Flange)





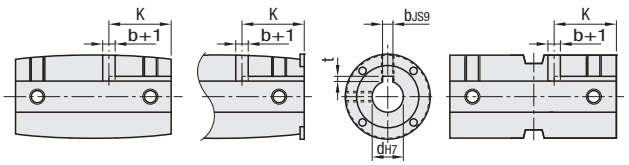
M Materials: EN AW-5052/AlMg2,5

S Surface Treatment: White Alumite

New JIS (B1301) Keyway Dimension

Nominal		dH7		bJS9		t Tolerance	
N8	8	+0.015 0	3	±0.0125	1.4	+0.1 0	
N10	10						
NK10	10		4	±0.0150	1.8		
N12	12	+0.018 0					
N15	15		5		2.3		
N20	20	+0.021 0	6		2.8		
N25	25		8	±0.0180	3.3	+0.2 0	
N30	30						

Shape of Keyway



For Crosspiece Groove Straight type, key length is shorter under the following conditions in order to avoid causing interference with through holes made by keyway machining.When L/2-X/2≤K ≤L/2+X/2,
K=L/2-(X/2+(b+1)/2+1)

Part Number		dH7		Specify in 1mm Increment	Crowned Type Only Selectable	Only Crosspiece Groove Straight Type Specify in 0.1mm Increment			Key Length	M		ℓ	F
Type	d	Round Hole + Tap	Keyway Hole + Tap	L	H	X	Y	Z	K	Round Hole + Tap	Keyway Hole + Tap		
Crown Type ROBAC ROBACF / Crosspiece Groove Straight ROBAM	15	8	N8	Crown Type 25~100 / Crosspiece Groove Straight 50~100 / When Keyway is selected at D=60 or 80 for Crosspiece Groove Straight Type 60~100	0.3 / 0.5	-	-	-	25	M4	M3	3.5	-
	20	8	N8						25				-
		10	N10 / NK10										
	25	8	N8						25				26
		10	N10 / NK10										
	30	8	N8			7.0~15.0	5.0~12.0	4.0~7.0	25				31
		10	N10 / NK10										
		12	N12					4.0~6.0	30				
	35	10	N10 / NK10						25				36
		12	N12						30		M4		
		15	N15										
	40	12	N12						30		M3		41
		15	N15								M4		
		20	N20								M5		
	50	15	N15					4.0~7.0	30	M5	M4	4	51
		20	N20								M5		
		25	N25								M5		
	60	20	N20						30	M6	M5	4.5	61
		25	N25								M6		
		30	N30										
	80	25	N25						30	M8	M6	6	81
		30	N30										
		35	-						-		-		

When L≤36(N8, N10, NK10) or L≤43(N12, N15, N20) or L≤45(N25, N30), K=L (No Flanged) or K=L+4 (Flanged).

Only D=25 or more are available for Flanged Type, D=30 or more are available for Flanged Type with Keyways.

Order Example

■Crown Type

Part Number	-	d	-	L	-	H
ROBAC30	-	NK10	-	L62	-	H0.3

■with Crosspiece Groove Straight Type

Part Number	-	d	-	L	-	X	-	Y	-	Z
ROBAM40	-	15	-	L82	-	X7.8	-	Y6.0	-	Z5.0

Days to Ship

10 Days

Express B 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

When keyway is specified, unit price is (body price + keyway machining charge).

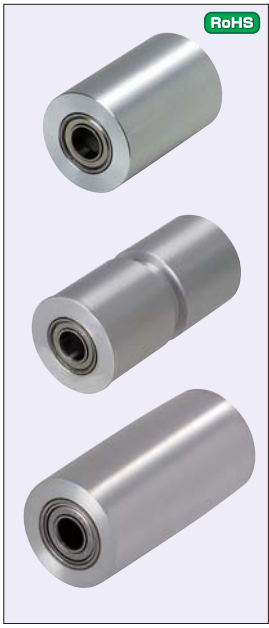
Calculation Example: ROBAC30-N12-L80-H0.3
23,20 EUR (body price) + 3,30 EUR (keyway machining charge) = 26,50 EUR (unit price)

d	€ Body Price								Keyway Machining Charge (€ Unit Price+)
	Crown Type						Crosspiece Groove Straight		
	ROBAC			ROBACF			ROBAM		
	L25~50	L51~75	L76~100	L25~50	L51~75	L76~100	L50~75	L76~100	
15									
20									
25									
30									
35									
40									
50									
60									
80									

Idlers for Flat Belts- Width L=25~100-

-Straight / Crosspiece Groove Straight / Crowned-

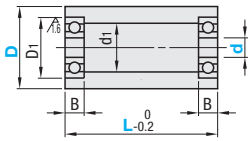
CAD Data



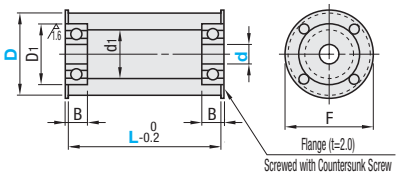
RoHS

Straight Type

ROFAN
(No Flange)



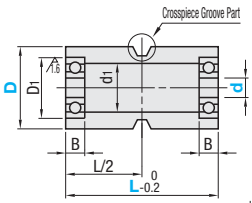
ROFAF
(Flanged)

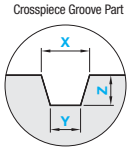


6.3 (1.6)

Crosspiece Groove Straight

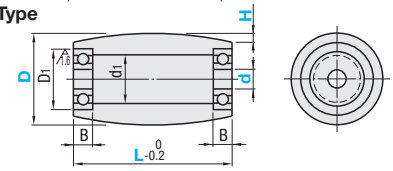
ROFAM
(No Flange)





Crown Type

ROFAC
(No Flange)



M Materials: EN AW-5052/AlMg2,5
S Surface Treatment: White Alumite
* Bearing Precision JISB1514 Class 0
Ⓥ Bearings are press-fitted.

Part Number Type	d	d	Specify in 1mm Increment L	Only Crosspiece Groove Straight Type Specify in 0.1mm Increment X	Y	Z	Crowned Type Only Selectable H	d1	Bearing Dimension No.	D1	B	F
Straight Type ROFAN ROFAF Crosspiece Groove Straight ROFAM Crown Type ROFAC Ⓥ Crosspiece Groove Straight Type is only available in D dimension 35 or larger.	15	(5)	Straight Type Crown Type 25~100 Crosspiece Groove Straight 50~100 Ⓥ L≥Bx2+2	-	-	-	0.3 0.5	7	B675ZZ	8	2.5	-
		(6)						9	B676ZZ	10	3	
	20	(6)						10	B686ZZ	13	5	-
		(8)						10	B678ZZ	12	3.5	
	25	6						10	B696ZZ	15	5	26
		(8)							B688ZZ	16		
	30	8						15	B698ZZ	19	6	31
		(10)							B6900ZZ	22		
		(12)							B6901ZZ	24		
	35	10		7.0~15.0	5.0~12.0	4.0~6.0		17	B6900ZZ	22	6	36
		12							B6901ZZ	24		
		(15)							B6902ZZ	28	7	
	40	8				4.0~7.0		17	B628ZZ	24	8	41
		10							B6000ZZ	26		
		12							B6901ZZ	24	6	
		15							B6902ZZ	28	7	
		(20)				4.0~6.0		22	B6804ZZ	32	7	
	50	10				4.0~7.0		17	B6200ZZ	30	9	51
		12						22	B6001ZZ	28	8	
		15						17	B6902ZZ	28	7	
		20						27	B6904ZZ	37	9	
		(25)							B6905ZZ	42		
	60	12						22	B6201ZZ	32	10	61
		15							B6002ZZ		9	
		20							B6904ZZ	37	9	
		25						32	B6905ZZ	42		
		30							B6906ZZ	47		
	80	25						41	B6205ZZ	52	15	81
		30							B6006ZZ	55	13	
		35							B6907ZZ		10	

Ⓥ Sizes in ( ) for d are only applicable to No Flange Type. Ⓥ For Detailed Bearing Dimensions, refer to P.897-907

Order Example

■Straight Type

Part Number	-	d	-	L
ROFAN30	-	10	-	L52

■with Crosspiece Groove Straight Type

Part Number	-	d	-	L	-	X	-	Y	-	Z
ROFAM40	-	12	-	L82	-	X7.8	-	Y6.0	-	Z5.0

■Crown Type

Part Number	-	d	-	L	-	H
ROFAC60	-	20	-	L75	-	H0.5

Days to Ship

10 Days

Express B 5,00 EUR/ piece P. 88

Ⓥ A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Ⓥ Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Ⓥ For orders larger than indicated quantity, please request a quotation.

d	€ Unit Price										
	Straight Type						Crosspiece Groove Straight		Crown Type		
	ROFAN			ROFAF			ROFAM		ROFAC		
	L25~50	L51~75	L76~100	L25~50	L51~75	L76~100	L50~75	L76~100	L25~50	L50~75	L76~100
15											
20											
25											
30											
35											
40											
50											
60											
80											

Economy Pulleys for Flat Belts-Width L=110~500-

-Crowned / Crosspiece Groove Straight-

CAD Data

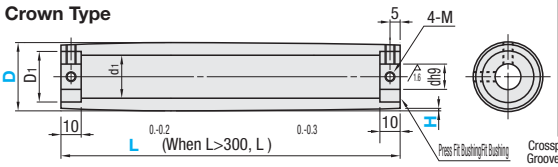
Feature: Use of thin pipes has realized price reduction by average 32%.



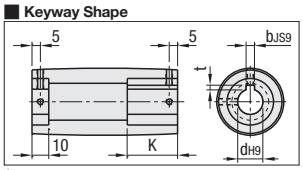
Type		M Material	S
Crowned	Crosspiece Groove Straight Type is only available in D dimension 30 or larger.		Nylon 6 (Glass Fiber 30%)
RBWAC	RBWAM	EN AW-5056/AlMg5 · EN AW-6063/ AlMg0,7Si (Crowned Type D38 or larger)	-
RBWWC	RBWWM		White Alumite

6.3 / (1.6 /)

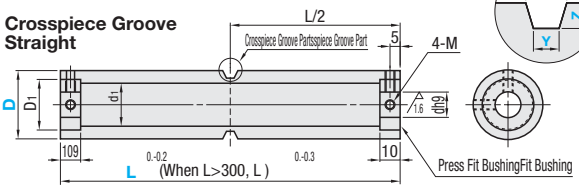
Crown Type



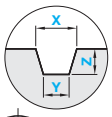
Keyway Shape



Crosspiece Groove Straight



Crosspiece Groove Part



New JIS (B1301) Keyway Dimension

Nominal	dH9		bJS9		t	Tolerance
N8	8	+0.036 0	3	±0.0125	1.4	+0.1 0
N10	10					
NK10	10		4	±0.0150	1.8	
N12	12	+0.043 0				
N15	15		5		2.3	
N20	20	+0.052 0	6		2.8	
N25	25		8	±0.0180	3.3	+0.2 0
N30	30					
N35	35	+0.062 0	10			
N40	40		12	±0.0215		
N50	50		14		3.8	

Crowned Type

Part Number Type	d	dH9 Round Hole + Tap	dH9 Keyway Hole + Tap	10mm Increment L	H Selection L=110~300	H Selection L=310~500	Key Length K	d1	D1	M
Crown Type RBWAC RBWWC	18	8	-	110~500	0.3	0.5	-	10	12	M3
	28	8	N8				25	20	22	M3
		10	N10 / NK10				30			
		12	N12				-			M4
		15	-							
	38	12	N12				30	30	32	M3
		15	N15							M4
		20	N20							M5
		25	-				-			M6
	48	15	N15				30	40	42	M4
		20	N20							M5
		25	N25							M6
		30	N30		0.5	1.0				
	58	20	N20					50	52	M5
		25	N25							M6
		30	N30							
		35	N35							M8
	78	25	N25					70	72	M6
		30	N30							
		35	N35							M8
		40	N40							
		50	N50							

Crosspiece Groove Straight Type

Part Number Type	d	dH9 Round Hole + Tap	dH9 Keyway Hole + Tap	10mm Increment L	Specify in 0.1mm Increment X	Y	Z	Key Length K	d1	D1	M
Crosspiece Groove Straight RBWAM RBWWM	38	12	N12	110~500	7.0~15.0	5.0~12.0	4.0~6.0	30	20	22	M3
		15	-					-			M4
	48	15	N15					30	30	32	M4
		20	N20								M5
		25	-					-			M6
	58	20	N20					30	40	42	M5
		25	N25								M6
		30	N30								
		35	-					-			M8
	78	25	N25					30	60	62	M6
		30	N30								
		35	N35								M8
		40	N40								
		50	N50								

Order Example

	Part Number	d	L	H	X	Y	Z
(Crowned)	RBWAC28	10	350	H0.5			
(Crosspiece Groove Straight)	RBWWM58	N25	250		X14.0	Y11.8	Z5.0

Days to Ship 10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

When keyway is specified, unit price is (body price + keyway machining charge).
Price Calculation Example: RBWAC38-N15-250-H0.5
35,60 EUR (body price) + 6,90 EUR (keyway machining charge) = 42,50 EUR (unit price)

d	€ Body Price Crown Type RBWAC L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	RBWWC L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	Keyway Machining Charge (€ Unit Price+)
18																	
28																	
38																	
48																	
58																	
78																	

d	€ Body Price Crosspiece Groove Straight RBWAM L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	RBWWM L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	Keyway Machining Charge (€ Unit Price+)
38																	
48																	
58																	
78																	

Economy Idlers for Flat Belts-Width L=110~500-

-Straight Type / Crowned Type / Crosspiece Groove Straight Type-

CAD Data

Feature: Use of thin pipes has realized price reduction by average 34%.

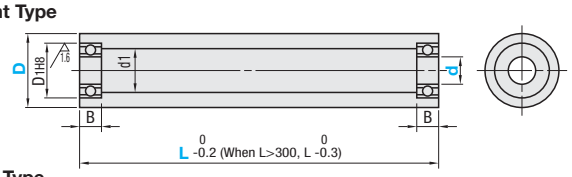
RoHS



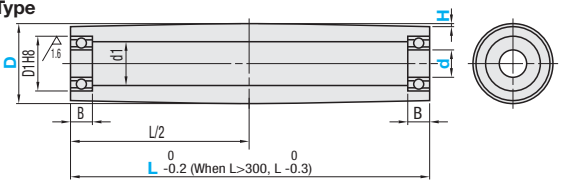
Type			Material	S Nylon 6 (Glass Fiber 30%)
Straight	Crowned	Crosspiece Groove Straight Type is only available in D dimension 30 or larger.	M	
RFWAS	RFWAC	RFWAM	Aluminum Alloy	-
RFWWS	RFWWC	RFWWM		White Alumite

6.3 (1.6)

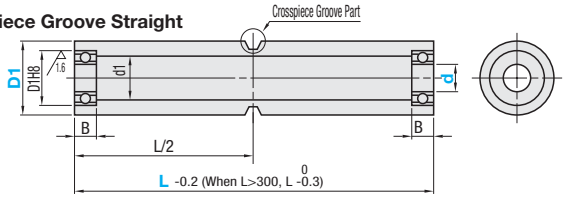
Straight Type

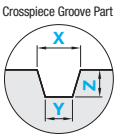


Crown Type



Crosspiece Groove Straight





Bearings can be detached. Temporarily attached with tape for shipping.

* Bearing Precision JISB1514 Class 0

Straight Type / Crowned Type

Part Number Type	d	d	10mm Increment L	H Selectable	d1	Bearing Dimension No.	D1	B
Straight Type RFWAS RFWWS Crown Type RFWAC RFWWC	18	8	110~500	0.3 0.5	10	678ZZ	12	3.5
	28	8			20	608ZZ	22	7
		10				6900ZZ	22	6
	38	15			30	6002ZZ	32	9
		20				6804ZZ	32	7
	48	15			30	6202ZZ	35	11
		20				6904ZZ	37	9
		25			40	6905ZZ	42	9
		30				6806ZZ	42	7
	58	20			40	6204ZZ	47	14
		25				6005ZZ	47	12
		30				6906ZZ	47	9
		40			50	6808ZZ	52	7
	78	30			60	6306ZZ	72	19
		35				6207ZZ	72	17

Crosspiece Groove Straight

Part Number Type	d	d	10mm Increment L	Specify in 0.1mm Increment X	Y	Z	d1	Bearing Dimension No.	D1	B
with Crosspiece Groove Straight Type RFWAM RFWWM	38	12	110~500	7.0~15.0	5.0~12.0	4.0~6.0	20	6001ZZ	28	8
		15						6002ZZ	32	9
	48	15					30	6002ZZ	32	9
		20						6904ZZ	37	9
		25						6905ZZ	42	9
	58	20					40	6204ZZ	47	14
		25						6905ZZ	42	9
		30						6906ZZ	47	9
		35						6807ZZ	47	7
	78	30					60	6306ZZ	72	19
		35						6207ZZ	72	17
		40						6008ZZ	68	15

Order Example

	Part Number	- d -	L -	H -	X -	Y -	Z
(Straight)	RFWWS28	- 8 -	200				
(Crowned)	RFWAC28	- 10 -	350	- H0.5			
(Crosspiece Groove Straight)	RFWWM58	- 20 -	250		- X14.0	- Y11.8 -	Z5.0

Days to Ship 10 Days

Express B 5,00 EUR/ piece P88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

d	€ Unit Price Straight Type RFWAS L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	RFWWS L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500
18																
28																
38																
48																
58																
78																

d	€ Unit Price Crown Type RFWAC L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	RFWWC L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500
18																
28																
38																
48																
58																
78																

d	€ Unit Price Crosspiece Groove Straight RFWAM L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	RFWWM L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500
38																
48																
58																
78																

Pulleys for Flat Belts-Width L=110~500-

-Crowned / Crosspiece Groove Straight-

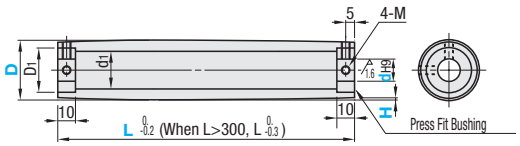
CAD Data



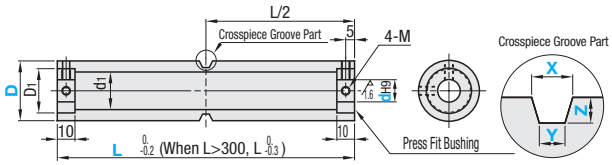
Type		Material	
Crown Type	Crosspiece Groove Straight	M	S
ROBAWC	ROBAWM	EN AW-5052/AlMg2,5	White Alumite
ROBMWC	ROBMWM	1.0480/H240LA	Electroless Nickel Plating
ROBSWC	ROBSWM	1.4301/X5CrNi18-10	-

6.3 / (1.6 /)

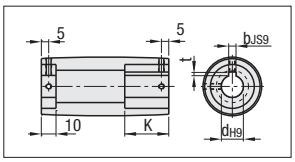
Crown Type
ROBAWC · ROBMWC · ROBSWC



Crosspiece Groove Straight
ROBAWM · ROBMWM · ROBSWM



Keyway Shape



New JIS (B1301) Keyway Dimensions

Nominal	dH9		bJS9		t	Tolerance
N8	8	+0.036 0	3	±0.0125	1.4	+0.1 0
N10	10					
NK10	10		4	±0.0150	1.8	
N12	12	+0.043 0				
N15	15		5		2.3	
N20	20	+0.052 0	6		2.8	
N25	25		8	±0.0180	3.3	+0.2 0
N30	30					
N35	35	+0.062 0	10			

Part Number		dH9		10mm Increment	H Selection		Specify in 0.1mm Increment			K	d1			D1	M	
Type	d	Round Hole + Tap	Keyway Hole + Tap	L	L=110~300	L=310~500	X	Y	Z	Key Length	Aluminum (EN AW-5052/AlMg2,5)	Steel (1.0480/H240LA)	Stainless Steel (1.4301/X5CrNi18-10)		Round Hole + Tap	Keyway Hole + Tap
Crown Type ROBAWC ROBMWC ROBSWC	30	8	N8	110~500	0.3	0.5	-	-	-	25	15	15.8	18	22	M4	M3
		10	N10 / NK10							30						
		12	N12							25	17	18.1	18	27	M4	M3
	35	10	N10							30						
		12	N12													
		15	N15													
Crosspiece Groove Straight ROBAWM ROBMWM ROBSWM	40	12	N12				7.0~15.0	5.0~12.0	4.0~7.0	30	17	18.7	20	33	M4	M3
		15	N15													M4
		20	N20						4.0~6.0		22	22.7	22			M5
	50	15	N15		0.5	1.0			4.0~7.0		17	30	28	40	M5	M4
		20	N20								22					M5
		25	N25								27					M6
Crosspiece groove straight type is available with D dimension 40 or larger.	(60)	20	N20								22	-	-	45	M6	M5
		25	N25								32					M6
		30	N30													
	(80)	25	N25								41	-	-	55	M8	M6
		30	N30													
		35	N35													M8

When D=(60) or (80), only available in Aluminum (EN AW-5052/AlMg2,5).

Order Example

Crown Type

Part Number	-	d	-	L	-	H
ROBAWC30	-	10	-	L350	-	H1.0
ROBMWC35	-	N10	-	L300	-	H0.5
ROBSWC50	-	N15	-	L400	-	H0.5

with Crosspiece Groove Straight Type

Part Number	-	d	-	L	-	X	-	Y	-	Z
ROBAWM60	-	25	-	L250	-	X14.0	-	Y11.8	-	Z5.0
ROBMWM50	-	20	-	L350	-	X13.0	-	Y11.5	-	Z6.0
ROBSWM50	-	25	-	L400	-	X12.0	-	Y10.0	-	Z6.0

Days to Ship

10 Days

Express B 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

When keyway is specified, unit price is (body price + keyway machining charge).
Calculation Example: ROBAWC40-N15-H0.5
66,10 EUR (body price) + 4,30 EUR (keyway machining charge) = 70,40 EUR (unit price)

d	€ Unit Price – Crown Type																		Keyway Machining Charge (€ Unit Price+)
	ROBAWC – Aluminum (EN AW-5052/AlMg2,5)								ROBMWC – Steel (1.0480/H240LA)								ROBSWC – Stainless Steel (1.4301/X5CrNi18-10)								
	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	
30																									
35																									
40																									
50																									
60																									
80																									

d	€ Unit Price – Crosspiece Groove Straight																		Keyway Machining Charge (€ Unit Price+)
	ROBAWM – Aluminum (EN AW-5052/AlMg2,5)								ROBMWM – Steel (1.0480/H240LA)								ROBSWM – Stainless Steel (1.4301/X5CrNi18-10)								
	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	
40																									
50																									
60																									
80																									

Idlers for Flat Belts -Width L=110~500-

-Straight Type / Crowned Type / Crosspiece Groove Straight Type-

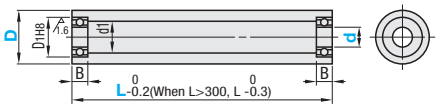
CAD Data



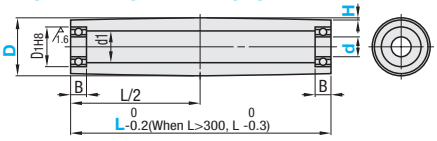
Type			Material	Surface Treatment Nylon 6 (Glass Fiber 30%)
Straight Type	Crown Type	Crosspiece Groove Straight		
ROFAWC	ROFAWT	ROFAWM	EN AW-5052/AlMg2,5	White Alumite
ROFMWC	ROFMWT	ROFMWM	1.0480/H240LA	Electroless Nickel Plating
ROFSWC	ROFSWT	ROFSWM	1.4301/X5CrNi18-10	-

B6.3 / (D6.3 /)

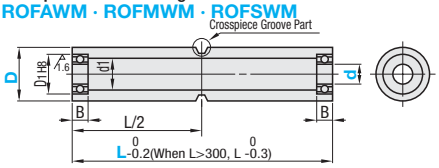
Straight Type
ROFAWC · ROFMWC · ROFSWC



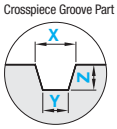
Crown Type
ROFAWT · ROFMWT · ROFSWT



Crosspiece Groove Straight
ROFAWM · ROFMWM · ROFSWM



Crosspiece Groove Part



Bearings are removable.
Temporarily attached with tape for shipping.

RoHS

Type	d	d	Specify in 10mm Increment L	H Selectable	Specify in 0.1mm Increment X	Y	Z	d1 Aluminum (EN AW-5052/AlMg2,5)	d1 Steel (1.0480/H240LA)	d1 Stainless Steel (1.4301/X5CrNi18-10)	Bearing Dimension No.	D1	B
Straight Type ROFAWC ROFMWC ROFSWC	30	8	110~500	0.3	-	-	-	15	-	-	B698ZZ	19	6
		8A*						-	15.8	18	B608ZZ	22	7
		10						15			B6900ZZ	22	6
		12									B6901ZZ	24	
	35	10						17	18.1	18	B6900ZZ	22	6
		12									B6901ZZ	24	
		15						22			B6902ZZ	28	7
Crown Type ROFAWT ROFMWT ROFSWT	40	8					4.0~7.0	17	18.7	20	B628ZZ	24	8
		10									B6000ZZ	26	
		12									B6901ZZ	24	6
		15									B6902ZZ	28	7
		20					4.0~6.0	22	22.7	22	B6804ZZ	32	
Crosspiece Groove Straight ROFAWM ROFMWM ROFSWM	50	10		0.5	7.0~15.0	5.0~12.0	4.0~7.0	17	24	22	B6200ZZ	30	9
		12						22			B6001ZZ	28	8
		15						17			B6902ZZ	28	7
		20						22			B6804ZZ	32	7
		25						27	30	28	B6905ZZ	42	9
Crosspiece groove straight type is available with D dimension 40 or larger.	(60)	12						22	-	-	B6201ZZ	32	10
		15									B6002ZZ	32	9
		20									B6904ZZ	37	
		25						32			B6905ZZ	42	
		30									B6906ZZ	47	
	(80)	25						41	-	-	B6205ZZ	52	15
		30									B6006ZZ	55	13
		35									B6907ZZ	55	10

*When D=30 and d=8A, only available in Steel or Stainless Steel. When D=(60) or (80), only available in Aluminum (EN AW-5052/AlMg2,5).

Order Example

	Part Number	d	L	H	X	Y	Z
(Straight)	ROFAWC40	8	L200				
(Crowned)	ROFAWT30	10	L350	H0.5			
(Crosspiece Groove Straight)	ROFSWM50	20	L250		X14.0	Y11.8	Z5.0

Days to Ship 10 Days

Express B 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

€ Unit Price
Straight Type

d	ROFAWC Aluminum (EN AW-5052/AlMg2,5)								ROFMWC Steel (1.0480/H240LA)								ROFSWC Stainless Steel (1.4301/X5CrNi18-10)							
	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500
30																								
35																								
40																								
50																								
60																								
80																								

€ Unit Price
Crown Type

d	ROFAWT Aluminum (EN AW-5052/AlMg2,5)								ROFMWT Steel (1.0480/H240LA)								ROFSWT Stainless Steel (1.4301/X5CrNi18-10)							
	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500
30																								
35																								
40																								
50																								
60																								
80																								

€ Unit Price
Crosspiece Groove Straight

d	ROFAWM Aluminum (EN AW-5052/AlMg2,5)								ROFMWM Steel (1.0480/H240LA)								ROFSWM Stainless Steel (1.4301/X5CrNi18-10)							
	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500	L110 ~150	L160 ~200	L210 ~250	L260 ~300	L310 ~350	L360 ~400	L410 ~450	L460 ~500
40																								
50																								
60																								
80																								

Pulleys for Flat Belts with Urethane- Width L=25~100-

-Crowned / Crosspiece Groove Straight-

CAD Data

Feature: Urethane lining is applied on the surface to increase friction resistance, for the prevention of slip between belt and pulley.

RoHS



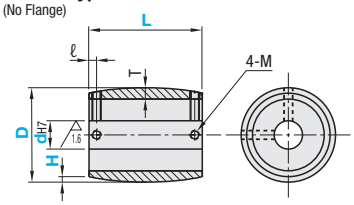
Type				Material		Hardness
Crowned		Crosspiece Groove Straight Type is only available in D dimension 30 or larger.				
No Flange	Flanged	No Flange	Flanged	Core	Lining	
RWCUN	RWCUF	RWMUN	RWMUF	EN AW-5052/ AlMg2,5	Urethane (Natural Color)	Shore A90
RWCGN	RWCGF	RWMGN	RWMGF			Shore A70

L3 ▽ (-0.2 ▽)

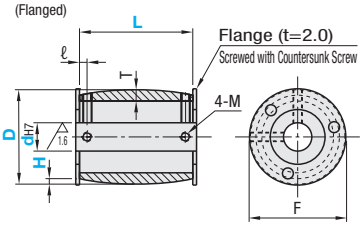
Urethane is baked on the outer circumference of the core material.

Crown Type

(No Flange)

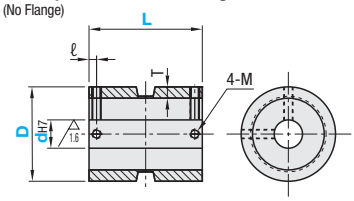


(Flanged)

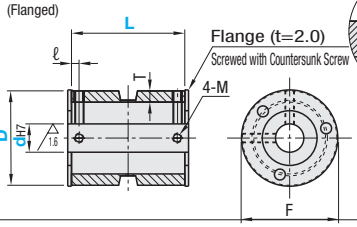


Crosspiece Groove Straight

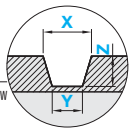
(No Flange)



(Flanged)



Crosspiece Groove Part



Part Number Type	d	dH7	Specify in 1mm Increment L	H Selection Crowned Type Only	Specify in 1mm Increment X	Y	Z	T	M	ℓ	F
Crown Type (No Flange) RWCUN RWCGN (Flanged) RWCUF RWCGF	15	8	Crown Type 25~100	0.3	-	-	-	2	M4	4.5	-
	20	8						2			-
		10						3			-
	25	8									
		10									
	30	*8						3			31
		*10									-
		12						3	M4	4.5	36
	35	*10									
		*12									
		*15									
Crosspiece Groove Straight (No Flange) RWMUN RWMGN (Flanged) RWMUF RWMGF	40	*12	Crosspiece Groove Straight 50~100	0.5	7~15	5~12	4~5	6	M4	4.5	41
		*15									-
		20						6	M5	5	51
	50	*15									
		*20									
		*25									
Crosspiece Groove Straight Type is available in D dimension 40 or larger.	60	*20					4~7	8	M6	5.5	61
		*25									
		*30									
	80	*25						8	M8	7	81
		*30									
		*35									

Flanged Type is available with d dimensions marked with *. Urethane may discolor with time passing, but there is no effect on properties.

Order Example

■Crown Type

Part Number	-	d	-	L	-	H
RWCUN30	-	10	-	62	-	H0.3

■with Crosspiece Groove Straight Type

Part Number	-	d	-	L	-	X	-	Y	-	Z
RWMGF40	-	15	-	82	-	X7	-	Y6	-	Z5

Days to Ship 10 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~4	5~10
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

d	€ Unit Price											
	Crowned Type Shore A90						Crowned Type Shore A70					
	RWCUN			RWCUF			RWCGN			RWCGF		
	L25 ~50	L51 ~75	L76 ~100	L25 ~50	L51 ~75	L76 ~100	L25 ~50	L51 ~75	L76 ~100	L25 ~50	L51 ~75	L76 ~100
15												
20												
25												
30												
35												
40												
50												
60												
80												

d	€ Unit Price							
	Crosspiece Groove Straight Type Shore A90				Crosspiece Groove Straight Type Shore A70			
	RWMUN		RWMUF		RWMGN		RWMGF	
	L50 ~75	L76 ~100	L50 ~75	L76 ~100	L50 ~75	L76 ~100	L50 ~75	L76 ~100
40								
50								
60								
80								

Pulleys for Flat Belts Economy Type with Urethane-Width L=110~500-

-Crowned / Crosspiece Groove Straight-

CAD Data

■ **Feature: Use of thin pipes has realized price reduction by average 39%.**

RoHS

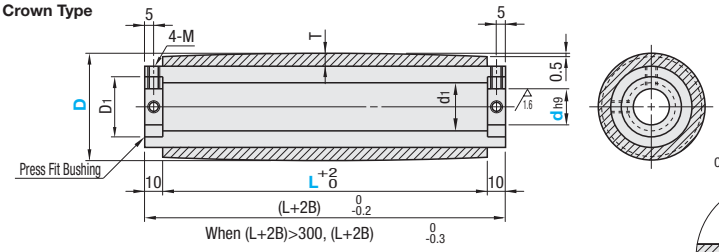


Type		Material		Hardness
Crowned	Crosspiece Groove Straight Type is only available in D dimension 30 or larger.	Core	Lining	
RWBCU	RWBMU	EN AW-6063/AlMg0,7Si	Urethane (Natural Color)	Shore A90
RWBCG	RWBMG			Shore A70

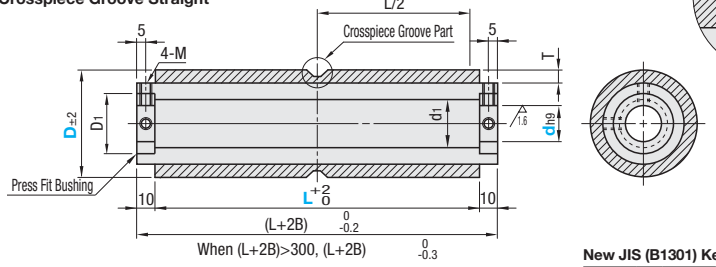
Urethane is baked on the outer circumference of the core material.

L3 ▽ (-0.2 ▽)

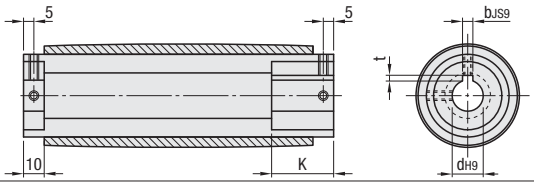
Crown Type



Crosspiece Groove Straight



■**Keyway Shape**



New JIS (B1301) Keyway Dimension

Nominal	dH9		bJS9		t Tolerance	
N10	10	+0.036 0	3	±0.0125	1.4	+0.1 0
NK10	10					
N12	12	+0.043 0	4	±0.0150	1.8	
N20	20	+0.052 0	6	±0.0180	2.8	+0.2 0
N25	25		8		3.3	
N30	30					
N35	35	+0.062 0	10			

Part Number		dH9		10mm Increment	Specify in 1mm Increment			Urethane Thickness	Key Length	d1	D1	M
Type	d	Round Hole + Tap	Keyway Hole + Tap	L	X	Y	Z	T	K			
Crown Type RWBCU RWBCG	28	8	-	110~500	-	-	-	5	-	10	12	M3
	38	12	N12					5	25	20	22	
		15	-						-			
	48	*10	*N10 /*NK10		7~15	7~12	4~7	10	25	20	22	
Crosspiece Groove Straight RWBMU RWBMG		*15	-						-			
		20	N20		-	-	-	5	30	30	32	M5
		25	-						-			
	58	*20	*N20		7~15	7~12	4~7	10	30	30	32	
Crosspiece Groove Straight Type Crosspiece Groove Straight Type is available with d dimensions marked with *.		*25	-						-			
	78	*25	*N25						30	50	52	M6
		*30	*N30					10				
		*35	*N35									

Urethane may discolor with time passing, but there is no effect on properties.

Order Example

■ Crown Type

Part Number	-	d	-	L
RWBCU58	-	N20	-	320

■ with Crosspiece Groove Straight Type

Part Number	-	d	-	L	-	X	-	Y	-	Z
RWBMG48	-	15	-	120	-	X8	-	Y7	-	Z5

Days to Ship 13 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~4	5~9	10~15
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

When keyway is specified, unit price is (body price + keyway machining charge).

Price Calculation Example: RWBCU48-N10-250
79,00 EUR (body price) + 6,90 EUR (keyway machining charge) = 85,90 EUR (unit price)

d	€ Body Price Crown Type RWBCU								€ Body Price Crown Type RWBCG								Keyway Machining Charge (€ Unit Price+)
	L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	
28																	
38																	
48																	
58																	
78																	

d	€ Body Price Crosspiece Groove Straight RWBMU								€ Body Price Crosspiece Groove Straight RWBMG								Keyway Machining Charge (€ Unit Price+)
	L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	L110~150	L160~200	L210~250	L260~300	L310~350	L360~400	L410~450	L460~500	
48																	
58																	
78																	

Shaft Pulleys for Round Belts- Width L=25~100-

-Straight Type / Crowned Type / Crosspiece Groove Straight Type-

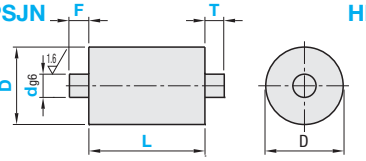
CAD Data

Feature: Flat belt pulleys with integrated shafts. Contributes to reduction of number of parts.

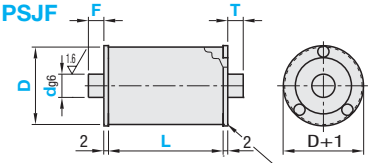
RoHS



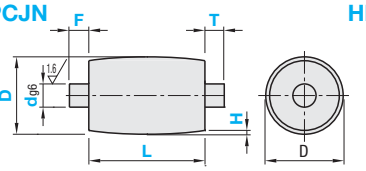
Straight Type (No Flange) HPSJN



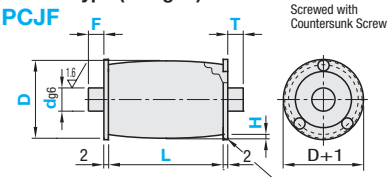
Straight Type (Flanged) HPSJF



Crowned Type (No Flange) HPCJN

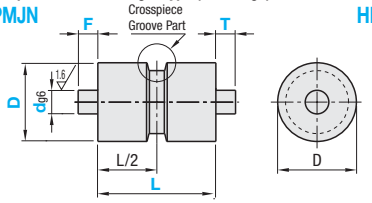


Crowned Type (Flanged) HPCJF

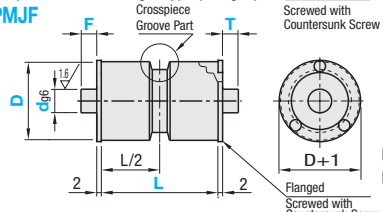


Flanged
Screwed with Countersunk Screw

Crosspiece Groove Straight Type (No Flange) HPMJN

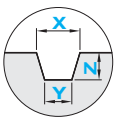


Crosspiece Groove Straight Type (Flanged) HPMJF



Flanged
Screwed with Countersunk Screw

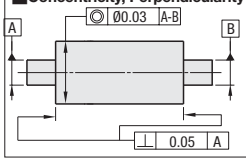
Crosspiece Groove Part



M Material: 1.1191/C45E

S Surface Treatment: Nylon 6 (Glass Fiber 30%) Electroless Nickel Plating

■Concentricity, Perpendicularity



Part Number Type	d	d_{g6}	Specify in 1mm Increment L	Specify in 1mm Increment F / T	Only for Crowned Type H	Only for Crosspiece Groove Straight Type X	Only for Crosspiece Groove Straight Type Y	Specify in 0.1mm Increment Z
Straight Type HPSJN HPSJF Crown Type HPCJN HPCJF Crosspiece Groove Straight HPMJN HPMJF	20	6	Straight Type Crown Type 25~100 Crosspiece Groove Straight 50~100	4≤F, T≤60 F, T≤dx5 (For Crowned Type, when D=50~80, 8≤F and T≤60.)	0.3 0.5	7.0~15.0	5.0~12.0	4.0~5.0 4.0~7.0
		8						
	30	8						
		10						
		12						
	35	10						
		12						
		15						
	40	12						
		15						
		20						
	50	15						
		20						
		25						
	60	20						
		25						
		30						
	80	25						
		30						
		35						

Order Example

	Part Number	d	L	F	T	H	X	Y	Z
(Straight)	HPSJN40	15	52	F50	T10				
(Crowned)	HPCJF60	20	75	F25	T40	H0.5			
(Crosspiece Groove Straight)	HPMJN30	12	76	F15	T50		X14.0	Y11.8	Z5.0

10 Days | Express B | 5,00 EUR/ piece | P. 88

(A Express Charge of 13,50 EUR for 3 or more identical pieces.

■Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

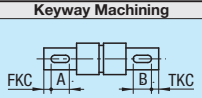
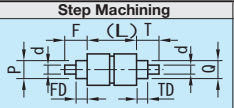
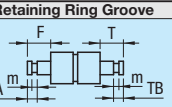
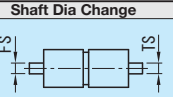
For orders larger than indicated quantity, please request a quotation.

d	€ Unit Price															
	Straight Type						Crown Type						Crosspiece Groove Straight			
	HPSJN			HPSJF			HPCJN			HPCJF			HPMJN		HPMJF	
	L25~50	L51~75	L76~100	L25~50	L51~75	L76~100	L25~50	L51~75	L76~100	L25~50	L51~75	L76~100	L50~75	L76~100	L50~75	L76~100
20																
30																
35																
40																
50																
60																
80																

Alterations

Part Number - d - L - F - T - X - Y - Z - (FKC / TKC / FD / TD / TA / TB / FS / TS)

HPMJN30 - 12 - L76 - F50 - T15 - X14.0 - Y11.8 - Z5.0 - FKC5-A15

Alterations	Keyway Machining	Step Machining	Retaining Ring Groove	Shaft Dia Change
				
Code	FKC / TKC	FD / TD	TA / TB	FS / TS
Spec.	Adds a Keyway on Shaft F or T. FKC, TKC, A, B = 1mm Increment Order Code FKC5-A10 (TKC0-B10) (FKC=0 or 2≤FKC ⊗FKC: Combination with FD or TA is not available. (TKC=0 or 2≤TKC ⊗TKC: Combination with TD or TB is not available. (FKC+A≤F-2 ⊗Combination of FKC and TKC is not available. (TKC+B≤T-2 (For details of keyways, refer to P.734	Adds a Step on Shaft F or T. FD, TD, P, Q = 1mm Increment Order Code FD5-P8 (TD5-Q8) (FD≤F-2 (TD≤T-2 (No Flange: d<P(Q)<D-2 (Flanged Flanged: d<P(Q)<D-12	Adds a Retaining Ring Groove (Retaining ring is not included. TA, TB = 1mm Increment Order Code TA5 (TB5) (4≤TA≤F-2 (When FD is specified: 4≤TA≤F-FD-2) (4≤TB≤T-2 (When TD is specified: 4≤TB≤T-TD-2) (For dimensions of Retaining Ring Groove, refer to P.734	Changes Shaft Diameter (d). FS, TS = 1mm Increment Order Code FS17 (TS17) d | FS (TS) Specification Range | d | FS (TS) Specification Range 20 | 6~18 | 50 | 15~48 30 | 8~28 | 60 | 20~58 35 | 10~33 | 80 | 25~78 40 | 12~38
Price Adder	FKC: 4,00 TKC: 4,00	FD: 3,00 TD: 3,00	TA: 4,00 TB: 4,00	FS: 3,00 TS: 3,00

Idlers for Flat Belts

-Width L=38~90 / L=100~300-

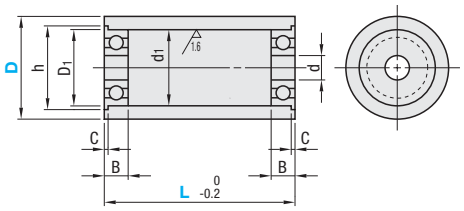
CAD Data

Width L38~90

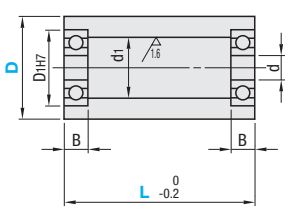
RoHS



Type	Material	Surface Treatment Nylon 6 (Glass Fiber 30%)	Material Bearing
ROFB	1.1191/C45E	Black Oxide	Steel
ROFM		Electroless Nickel Plating	
ROFA	EN AW-5052/AlMg2,5	White Alumite	
ROFS	1.4301/X5CrNi18-10	-	Stainless Steel



D=30A / 40A



* Bearing Precision JISB1514 Class 0

Part Number Type	d	L Selectable							d	d1	Bearing Dimension No.	D1	B	C	h
ROFB ROFM ROFA ROFS	20	38	45	50					6	15	FL696ZZx2	15	5	1.2	17
	25	38	45	50	60					17	FL606ZZx2	17	6		19
	30	38	45	50	60	70									
	30A	38	45	50	60	70			8		B698ZZx2	19		-	-
	35	38	45	50	60	70	85	90		22	FL608ZZx2	22	7	1.5	25
	40	38	45	50	60	70	85	90							
	40A	38	45	50	60	70	85	90	10		B6000ZZx2	26	8	-	-

For Detailed Bearing Dimensions, refer to P.907-911

Order Example: Part Number ROFM25 - L 50

Days to Ship: -ROFS 8 Days; -ROFB / ROFM / ROFA 10 Days

Express B 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

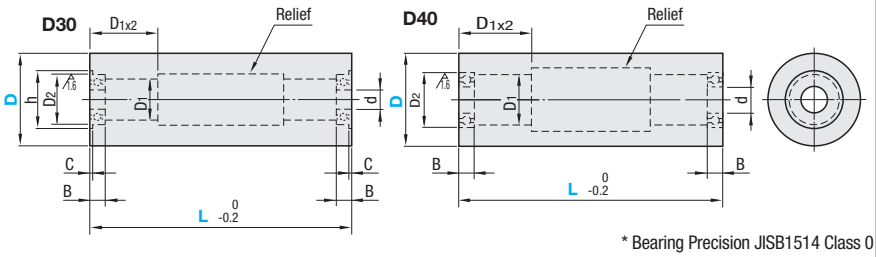
d	€ Unit Price											
	ROFB			ROFM			ROFA			ROFS		
	L38~50	L60 / 70	L85 / 90	L38~50	L60 / 70	L85 / 90	L38~50	L60 / 70	L85 / 90	L38~50	L60 / 70	L85 / 90
20												
25												
30												
30A												
35												
40												
40A												

Width L100~300

RoHS



ROFWB (1.1191/C45E + Black Oxide)
ROFAWB (EN AW-5052/AlMg2,5 + White Alumite)



* Bearing Precision JISB1514 Class 0

Part Number Type	d	L Configurable 10mm Increment	d	D1	Bearing Dimension No.	D2	B	C	h	€ Unit Price ROFWB L100~150	ROFWB L160~200	ROFWB L210~250	ROFWB L260~300	ROFAWB L100~150	ROFAWB L160~200	ROFAWB L210~250	ROFAWB L260~300
ROFWB	30	100~300	8	10	FL678ZZ	12	3.5	0.8	13.6								
ROFAWB	40		12	18	B6801ZZ	21	5	-	-								

Order Example: Part Number ROFWB40 - L 150

Days to Ship: 10 Days

Express B 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~10	11~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Add. Spec.

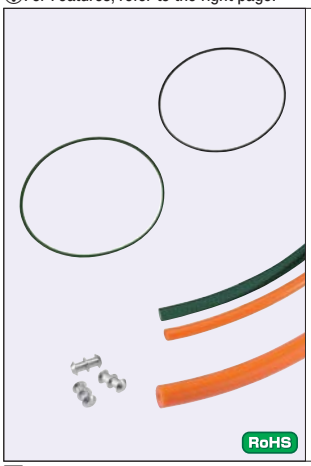
Polyurethane Round Belts

-Welded Joints / Open End / Hollow Rope Type-

Price Reduction
Up to 36%

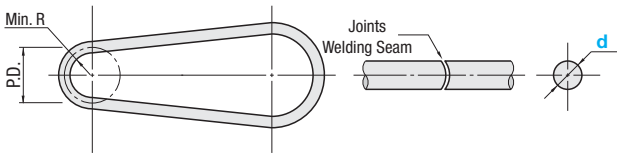
CAD Data

For Features, refer to the right page.



Type		Type	Color	Material	Heat Resistant Temperature
Welding Joints	Open End Type				
MBT	MBT-N	Standard Type	Orange	Polyurethane	80°C
MBTH	MBTH-N	High Tension Type	Green		80°C
MBTD	-	Conductive Type	Black		50°C
-	MBQ	Hollow Rope Type	Orange		80°C

Welding Joints



Open End Type



Hollow Rope Type



Welded Joints Standard Type / High Tension Type / Conductive Type

Part Number Type	d	L (Belt Length) Specify in 1mm Increment	€ Unit Price Min. L ~ 500	L501~1000	L1001~2000	L2001~3000	L3001~4000	L4001~5000	L5001~6000
Standard Type MBT	2	100~2000							
	3	100~3000							
	4	100~4000							
	5	135~5000							
	6	140~6000							
	8	190~6000							
	10	250~6000							
High Tension Type MBTH	2	100~2000							
	3	100~3000							
	4	100~4000							
	5	135~5000							
	6	140~6000							
	8	190~6000							
	10	250~6000							
Conductive Type MBTD	3	200~3000							
	4	200~4000							
	5	200~5000							

Open End Type

Part Number Type	d	L (Belt Length) 1m Increment	€ Unit Price/m MBT-N	MBTH-N
Standard Type MBT-N / High Tension Type MBTH-N	1.5	10~20		
	2			
	2.5			
	3			
	3.5			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	12			
	15			

Hollow Rope Type

Part Number Type	d	L 1m Increment	€ Unit Price/m	Applicable Metal Joint
MBQ	5	1 ~ 20		MBQC5
	6			MBQC6

Metal Joints for Hollow Ropes

Part Number Type	d	Material	€ Unit Price per Package (10 Pcs. per Package)
MBQC	5	EN AW-5052/AlMg2,5	
	6		

Features

·Welded Joints (Standard Type / High Tension Type / Conductive Type): MBT·MBTH·MBTD

Round belt of rope shape is cut into any specified length and made endless with heat welding.
Though connecting section may look thicker, appropriate diameter can be obtained when tension is being applied during operation.
MBT and MBTH both satisfy the Food Hygienic Regulations.
MBTD is a Round Belt with conductive material (Carbon) kneaded. Usable under various conditions affected by static electricity

·Open End Type (Standard Type / High Tension Type): MBT-N·MBTH-N

Cut by meter sections only. Endless jointing is not applied.
MBT-N and MBTH-N both satisfy the Food Hygienic Regulations.

·Hollow Rope Type: MBQ

The cross section is hollow in the center, and no endless jointing is applied before shipping.
Simple and reliable endless connection is possible by cutting the belt in any length and inserting a dedicated metal jointing parts MBQC.
Satisfies the food and hygiene standard in accordance to the Notice No. 434 of Japanese Ministry of Health and Welfare.

(How to Connect)
Cut the round belt in the length of 5% shorter than the calculated or actual measured length with a knife at a right angle. Hold the dedicated metal joint MBQC by using a pair of pliers.
Insert the metal joint up to the center of the hollow belt end.
To help the insertion in a cold season, warm the belt by immersing in warm water of 40°C for 1~2minutes.
Ensure not to damage the edge of the metal joint.
Insert the metal joint into the other side of the belt.

Order Example

Part Number	-	L
MBT5	-	150
MBTH-N6	-	12
MBQ6	-	5
MBQC5		

Days to Ship

-MBQ / MBQC

8 Days

Express A | 5,00 EUR/ piece | P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.



-MBT / MBTH / MBTD / MBT-N / MBTH-N

10 Days

Express B | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 30 or more pieces of MBTD, for 11 or more pieces of MBT-N and MBTH-N.

Polyurethane Round Belts
-Seamless Type-

Price Reduction Up to 37%

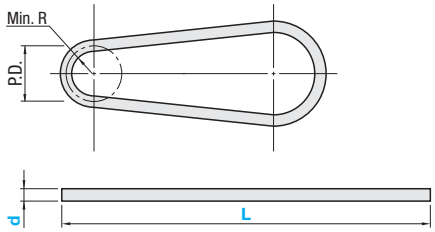
Reduced Delivery Time

CAD Data

Features: Belt has no joint as it is made endless by molding.



Type	Type	Color	Material	Heat Resistant Temperature
MBN	Seamless Type	Natural Color	Polyurethane	70°C



Seamless Type

Part Number Type	d	Belt Length L (mm)	€ Unit Price
MBN	2	100	
		125	
		140	
		160	
		170	
		180	
		190	
		200	
		239	
		250	
	3	150	
		160	
		170	
		180	
		200	
		213	
		223	
		236	
		250	
		260	
		290	
		305	
		330	
		390	

Part Number Type	d	Belt Length L (mm)	€ Unit Price
MBN	4	200	
		225	
		250	
		258	
		275	
		290	
		305	
		390	
	5	225	
		250	
		275	
		290	
		305	
		330	
		348	
		380	
		440	
		460	

Order Example

Part Number	-	L
MBN2	-	100

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Features of Polyurethane Round Belts

-Minimum P.D. of Pulleys (mm)

d	Cross Section Area mm²	Minimum P.D. of Pulleys MBT / MBN	MBTH	MBTD	MBQ
2	3.14	15	20	-	-
3	7.07	20	30	30 (40)*	-
4	12.57	30	40	40 (50)*	-
5	19.63	40	50	50 (60)*	40
6	28.27	50	60	-	50
8	50.24	70	80	-	-
10	78.5	90, 95	100	-	-

*Values in ( ) are the min. P.D. when using by turning 90°.

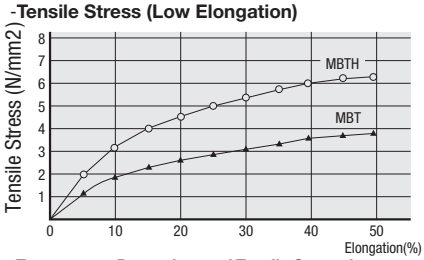
-Tensile Strength (N)–Shows the tensile strength (N) when belt is extended (elongation:%).-

d	MBT 5%	MBTH 5%	MBTD 8%	MBN 8%	MBQ 5%
2	1.9	2.8	-	1.274	-
3	4.1	6.2	13.0	2.940	-
4	7.4	11.1	22.0	5.292	-
5	12.5	18.7	33.0	8.232	24.5
6	16.6	24.9	-	-	44.1
8	29.4	44.1	-	-	-
10	46.2	69.3	-	-	-

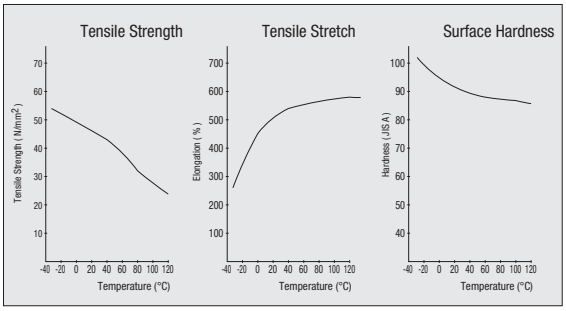
-Physical Properties kgf=Nx0.101972

Item	Test Method	Unit	MBT	MBTH	MBN
Specific Gravity	-	-	1.22	1.22	1.26
Hardness	JIS K 6301	JIS A	88	92	72
5% Modulus		N/mm²	1.2	2.0	0.44
10%			1.8	3.1	0.88
100%			6.3	8.8	6.0
300%			16.9	14.7	9.0
Tensile Strength			24.5 or more	32.4 or more	30 or more
Tensile Elongation at Breakage		%	400 or more	400 or more	600 or more
Tear Strength		kN/mm²	88	93	90 or more

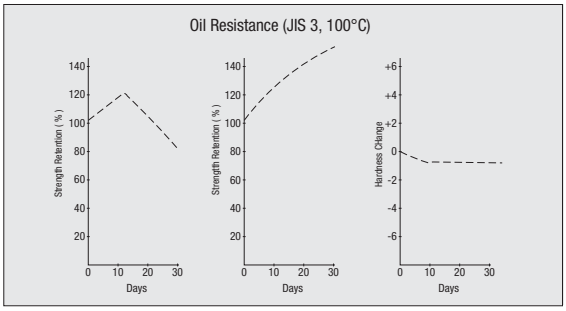
-Tensile Stress (Low Elongation)



-Temperature Dependency of Tensile Strength, Stretch and Surface Hardness



-Oil Resistance



Pulleys for Round Belts

- Set Screw Type-

Reduced Delivery Time

CAD Data



RoHS

Part Number

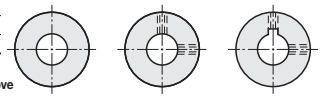
Not RoHS compliant

Trapezoid Groove		U Groove		Material	Surface Treatment Nylon 6 (Glass Fiber 30%)
A Shape	B Shape	A Shape	B Shape		
MBRDF	MBRD	MBRF	MBR	1.1191/C45E	Black Oxide
MBRDFM	MBRDM	MBRFM	MBRM		Electroless Nickel Plating
-	MBRDS	-	MBRS	1.4301/X5CrNi18-10	-
MBRDFA	MBRDA	MBRFA	MBRA	EN AW-5052/AlMg2.5	White Alumite

Shaft Hole Specifications

N New JIS Keyway Hole + Tap

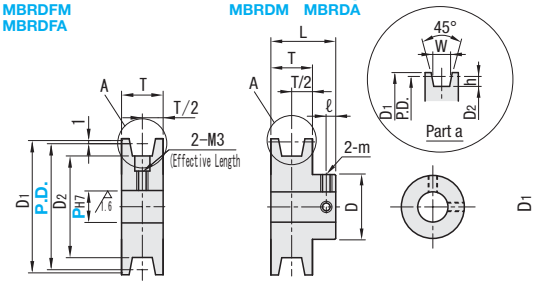
H Round Hole | P Round Hole+Tap | C Old JIS Keyway Hole + Tap



Trapezoid Groove

AShape: MBRDF, MBRDFM, MBRDFA

BShape (With Hub): MBRD MBRDS, MBRDM MBRDA



Trapezoid grooves suppress slipping of round belts. Refer to next page for details.

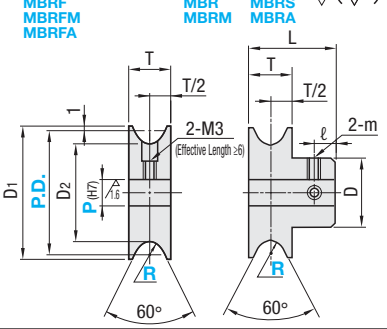
Set screws are not included Refer to.P.Z-205

* For details of Keyway Dimensions,P.1112

U Groove

AShape: MBRF, MBRFM, MBRFA

BShape (With Hub): MBR MBRS, MBRM MBRA



Part Number Type	P.D.	Belt Radius R Trapezoid	R U Groove	Shaft Bore Specifications, Inner Diameter: Specify in 1mm Increment H / P (H7)	Specify in 1mm Increment N (New JIS)	Selectable C (Old JIS)	D1	D2	h	W	T	L	ℓ	d	m	Applicable Belt Diameter	€ Unit Price: MBRDF MBRF	MBRDFM MBRFM	MBRDFA MBRFA	MBRD MBR	MBRDM MBRM	MBRDS MBRS	MBRDA MBRA
	*15	1		4~7	-		17	13	1	2.2	5	11	3	12	M3	2							
	*20						22	18						16									
	*30			4~12	8 / 10		32	28															
	*40					-	42	38						20									
	20	1.5		4~12	8 / 10		22	17	1.5	3.3	10	16	3	16	M3	3							
	30			5~12			32	27						20									
	40						42	37															
	45			5~20	8~20 (8~15)	10	47	42				20	5	25	M4								
	60						62	57															
Trapezoid Groove AShape MBRDF MBRDFM MBRDFA BShape MBRD MBRDM MBRDS MBRDA	18	2		5~12	8 / 10	-	20	14	2	4.4	10	16	3	16	M3	4							
	23						25	19						20									
	28						30	24															
	30						32	26															
	40						42	36															
	45			5~20	8~20 (8~15)	10	47	41				20	5	25	M4								
	48						50	44															
	60						62	56															
	80						82	76															
	28	2.5		5~12	8 / 10	-	30	23	2.5	5.5	10	16	3	20	M3	5							
	40			5~20	8~20 (8~15)	10	42	35				20	5	25	M4								
	48						50	43															
	50						52	45															
	60						62	55															
	75						77	70															
	80						82	75															
U Groove AShape MBRF MBRFM MBRFA BShape MBR MBRM MBRS MBRA	28	3		5~12	8 / 10	-	30	22	3	6.6	10	16	3	20	M3	6							
	38						40	32															
	48			5~20	8~20 (8~15)	10	50	42				20	5	25	M4								
	50						52	44															
	58						60	52															
	60						62	54															
	75						77	69															
	80						82	74															
	95						97	89															
	100						102	94															
	50	4		5~20	8~20	10 12 15	52	42	4	8.8	12	24	6	30	M4 (M5) *1	8							
	60						62	52															
	80						82	72															
	100						102	92															
	120						122	112															
	60	5		5~20	8~20	10 12 15	62	50	5	11	15	27	6	30	M4 (M5) *1	10							
	80						82	70															
	100						102	90															
	120						122	110															
	140						142	130															

Shaft Hole Dia. 6.35 is available for Shaft Hole Specification H-P, .Values in ( ) are for B shape.

Shaft Hole Dia. 9 is not available for Shaft Hole specification N.

Sizes marked with * are only for B shape. BShape *1: When shaft diameter is 15mm or more, set screw size is M5.

Order Example

Part Number	Belt Radius	R	Shaft Bore Specifications, Inner Dia.
MBRDF30	1.5		H5
MBR60		2	N12

Days to Ship 8 Days

Express A 2,00 EUR/ piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Express Serviceis now available for MBRFA and MBRDFA.

Price

Volume Discount (Round down to one Cent.) P. 87

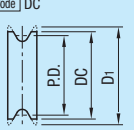
Qty.	1~9	10~14	15~19	20~30
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	Belt Radius	R	Shaft Bore Specifications, Inner Dia.	(DC)
MBRD40	1.5	-	H6	DC

Alteration Code	Outer Diameter Cut: DC
Spec.	Reduces D1 diameter by cutting. Order Code DC



Applicable Belt Diameter	DC
2	PD+0.8
3	PD+1.2
4	PD+1.6
5	PD+1.8

Applicable to corresponding belt dia. 2, 3, 4 and 5 only.

Surface treatment may not be applied to the machined area.

Price Adder	3,00

Pulleys for Round Belts

- Clamping Type -

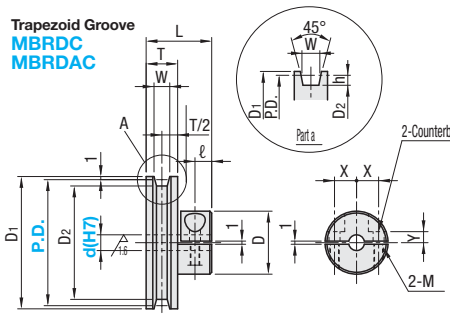
CAD Data



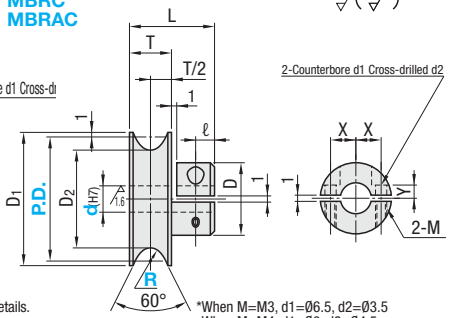


Type		M Material	S Surface Treatment Nylon 6 (Glass Fiber 30%)	A Accessories
Trapezoid Groove	U Groove			
MBRDC	MBRC	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw (x2) 1.7220/34CrMo4
MBRDAC	MBRAC	EN AW-5052/AlMg2,5	White Alumite	Hexagon Socket Head Cap Screws (x2) Stainless Steel

Trapezoid Groove
MBRDC
MBRDAC



U Groove
MBRC
MBRAC



Tolerance d is the tolerance before slitting.

Trapezoid grooves suppress slipping of round belts. Refer to the following for details.
No clear anodizing is applied to slit parts.

*When M=M3, d1=Ø6.5, d2=Ø3.5
When M=M4, d1=Ø8, d2=Ø4.5

Part Number Type	P.D.	Belt Radius Trapezoid	R U Groove	d (H7)	d	D_1	D_2	h	W	L	T	ℓ	X	Y	M	Applicable Belt Diameter	€ Unit Price MBRDC MBRC	€ Unit Price MBRDAC MBRAC
Trapezoid Groove MBRDC MBRDAC	20	1		4 5	16	22	18	1	2.2	11	5	2.5	5	3	M3	2		
	30			4 5 6 6.35 8	20	32	28						7	3.5				
	40					42	38											
	30	1.5		5 6 6.35 8	20	32	27	1.5	3.3	16	10	2.5	7	3.5	M3	3		
	40					42	37											
	45			5 6 6.35 8 10 11 12	25	47	42			20		4.5	9	4.5	M4			
	60					62	57											
	23	2		5 6 6.35 8	20	25	19	2	4.4	16	10	2.5	7	3.5	M3	4		
	28					30	24											
	30					32	26											
	40					42	36											
	45			5 6 6.35 8 10 11 12	25	47	41			20		4.5	9	4.5	M4			
	48					50	44											
	60					62	56											
	80					82	76											
U Groove MBRC MBRAC	28	2.5		5 6 6.35 8	20	30	23	2.5	5.5	16	10	2.5	7	3.5	M3	5		
	40			5 6 6.35 8 10 11 12	25	42	35			20		4.5	9	4.5	M4			
	48					50	43											
	50					52	45											
	60					62	55											
	75					77	70											
	80					82	75											
	28	3		5 6 6.35 8	20	30	22	3	6.6	16	10	2.5	7	3.5	M3	6		
	38			5 6 6.35		40	32						6.5					
	48			5 6 6.35 8 10 11 12	25	50	42			20		4.5	9	4.5	M4			
	50					52	44											
	58					60	52											
	60					62	54											
	75					77	69											
	95					97	89											
	100					102	94											

Order Example

Part Number	-	Belt Radius	-	R	-	d
MBRDC30	-	2			-	5
MBRC60			-	2.5	-	6

Days to Ship: 8 Days — Express A: 2,00 EUR/piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

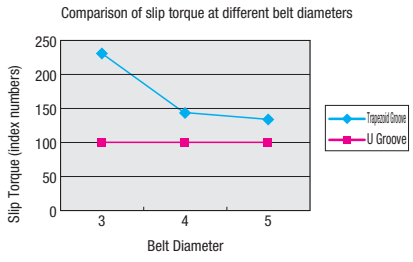
■Volume Discount (Round down to one Cent). P. 87

Qty.	1~9	10~14	15~19	20~30
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

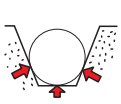
Alterations Left page

<Difference of Slip Torque for Trapezoidal and U Grooves> *Index numbers as compared with values for U groove as base value (100)



■Test Conditions
- Size: P.D.60
- Material: EN AW-5052/AlMg2,5 Aluminum Alloy, Surface Treatment: Black Oxide
- Belt: MBT3, 4, 5 (Refer to) P.1101

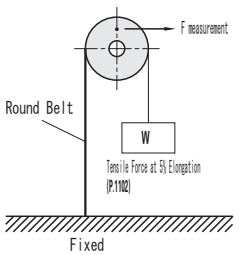
Trapezoid Groove Shape



U Groove Shape



Slip torque is improved with a trapezoidal grooved pulley, as it contacts belts with 3 surfaces, while U-grooved pulley contact belts with one surface.



The values are for reference. Difference may vary depending on operating environment.

Idlers for Round Belts

-Narrow Type-

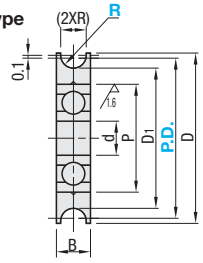
CAD Data

RoHS

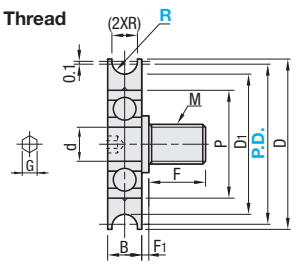


Type		Main Body		Male Thread		Bearing
Standard	Male Thread	M Material	S Surface Treatment Nylon 6 (Glass Fiber 30%)	M Material	S Surface Treatment Nylon 6 (Glass Fiber 30%)	M Material
MBF	MBFN	1.1191/C45E	Black Oxide	1.1191/C45E	Black Oxide	Steel
MBFM	MBFNM		Electroless Nickel Plating		Electroless Nickel Plating	
MBFA	MBFNA	EN AW-5052/AlMg2,5	White Alumite	1.4301/ X5CrNi18-10	-	
MBFS	MBFNS	1.4301/X5CrNi18-10	-			Stainless Steel

Standard Type



Male Thread



6.3 (1.6)

* Bearing Precision JISB1514 Class 0
Bearings are glued.
Male Thread pins are swaged on.

Part Number Type	P.D.	R	F	d	P	d	D1	B	Bearings	M	G	F1	Applicable Round Belt Dia.
Standard: MBF, MBFM, MBFA, MBFS / Male Thread: MBFN, MBFNM, MBFNA, MBFNS	*15	1.1	-	4	11	17	13	4	694ZZ	-	-	-	2
	*20				13	21	18	5	624ZZ				
	*30			5	16	32	28		625ZZ				
	*20	1.6	-	4	13	22	17	5	624ZZ	-	-	-	3
	*23			5	16	25	20		625ZZ				
	*30					32	27						
	*18	2.1	-	5	11	20	14	5	685ZZ	-	-	-	4
	23		8	6	15	25	19		696ZZ	M6	3	1.0	
	28				19	30	24	6	626ZZ		3		
	30			8		32	26		698ZZ		4		
	40		12	12	24	42	36		6901ZZ	M10	6	1.5	
	48					50	44						
	28	2.6	8	6	19	30	23	6	626ZZ	M6	3	1.0	5
	40			8		42	35		698ZZ		4		
	48					50	43						
	50		12	12	24	52	45		6901ZZ	M10	6	1.5	
	38	3.1	10	8	24	40	32	8	628ZZ	M8	4	1.0	6
	48					50	42						
	50		12	12	28	52	44		6001ZZ	M10	6	1.5	
	60					62	54						
	100			20	37	102	94	9	6904ZZ				
	50	4.1	12	12	32	52	42	10	6201ZZ	M10	6	1.5	8
	60					62	52						
	60	5.1	12	20	42	62	50	12	6004ZZ	M10	6	1.5	10
	80					82	70						
	*140					142	130			-	-	-	

Sizes marked with * are only available for Standard.

For Detailed Bearing Dimensions, refer to P.897-907

P.D.	R	€ Unit Price							
		Standard				Male Thread			
		MBF	MBFM	MBFA	MBFS	MBFN	MBFNM	MBFNA	MBFNS
15	1.1								
20									
30									
20	1.6								
23									
30									
18	2.1								
23									
28									
30									
40									
48									
28	2.6								
40									
48									
50									
38	3.1								
48									
50									
60									
100									
50	4.1								
60									
60	5.1								
80									
140									

Order Example

Part Number	-	R
MBF28	-	2.6
MBFN38	-	3.1
MBG40	-	2

Days to Ship

8 Days

Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19	20~30
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - R - (DC)
MBFN40 - 2.1 - DC

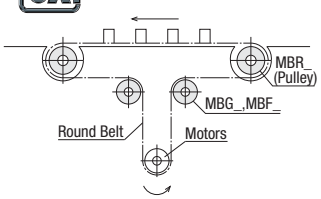
Alterations Code	Outer Diameter Cut: DC
Spec.	Reduces D diameter by cutting. Order Code: DC

Applicable Belt Diameter	DC
2	PD+0.8
3	PD+1.2
4	PD+1.6
5	PD+1.8

Applicable to corresponding belt dia. 2, 3, 4 and 5 only.
Surface treatment may not be applied to the machined area.

Price Adder	3,00

Example



Idlers for Round Belts

–Wide–

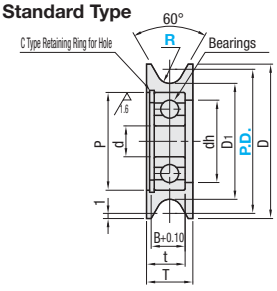
CAD Data

RoHS

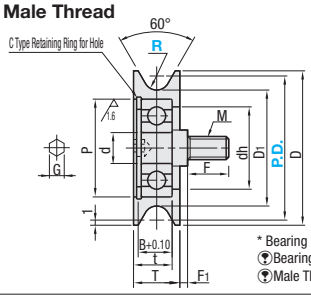


Type		Main Body		Male Thread		Bearing	A Accessories
Standard	Male Thread	M Material	S Surface Treatment Nylon 6 (Glass Fiber 30%)	M Material	S Surface Treatment Nylon 6 (Glass Fiber 30%)	M Material	
MBG	MBGN	1.1191/C45E	Black Oxide	1.1191/C45E	Black Oxide	Steel	Retaining Ring (1.4301/ X5CrNi18-10)
MBGM	MBGNM		Electroless Nickel Plating		Electroless Nickel Plating		
MBGA	MBGNA	EN AW-5052/AlMg2,5	White Alumite	1.4301/ X5CrNi18-10	-	Stainless Steel	
MBGS	MBGNS	1.4301/X5CrNi18-10	-				
MBGJ	MBGNJ	Polyacetal				Steel	

Standard Type



Male Thread



* Bearing Precision JISB1514 Class 0
Ⓟ Bearings are press-fitted.
Ⓟ Male Thread pins are swaged on..

Part Number Type	P.D.	R	d	P	dh	d	D_1	T	t	B	Bearing	M	G	F	F_1	Applicable Round Belt Dia.
	*15	1	3	10	8	17	13	10	6.5	5	623ZZ	-	-	-	-	2
	*20		5	16	13	22	18		7.5	6	625ZZ					
	*30					32	28	12	9							
	*20	1.5	4	13	11	22	17	10	7.5	6	624ZZ	-	-	-	-	3
	30		6	19	16	32	27	12	9	7	626ZZ	M6	3	8	1	
	*23	2	5	16	13	25	19	10	7.5	6	625ZZ	-	-	-	-	4
	28		6	19	16	30	24	12	9	7	626ZZ	M6	3	8	1	
	30					32	26									
	40		10	26	23	42	36	15	11.5	9.2	6000ZZ	M8	5	10	1.5	
	48		12	28	25	50	44				6001ZZ	M10	6	12		
	60					62	56									
	*23	2.5	5	16	13	25	18	10	7.5	6	625ZZ	-	-	-	-	5
	28		6	19	16	30	23	12	9	7	626ZZ	M6	3	8	1	
	40		10	26	23	42	35	15	11.5	9.2	6000ZZ	M8	5	10	1.5	
	48					50	43									
	50		12	28	25	52	45				6001ZZ	M10	6	12		
	60					62	55									
	28	3	6	19	16	30	22	12	9	7	626ZZ	M6	3	8	1	6
	38		10	26	23	40	32	15	11.5	9.2	6000ZZ	M8	5	10	1.5	
	48		12	28	25	50	42				6001ZZ	M10	6	12		
	50					52	44									
	60					62	54									
	80					82	74									
	100					102	94									
	50	4	12	28	25	52	42	15	11.5	9.2	6001ZZ	M10	6	12	1.5	8
	60					62	52									
	80					82	72									
	100		15	32	28	102	92	16	12.5	10.2	6002ZZ		6		1	
	120					122	112									
	60	5	12	28	25	62	50	15	11.5	9.2	6001ZZ	M10	6	12	1.5	10
	80					82	70									
	100		15	32	28	102	90	16	12.5	10.2	6002ZZ		6		1	
	120					122	110									
	140					142	130									

Standard: MBG, MBGM, MBGA, MBGS, MBGJ
Male Thread: MBGN, MBGNM, MBGNA, MBGNS, MBGNJ

Sizes marked with * are only available for Standard.

Ⓟ For applicable sizes, refer to the price list.

Ⓟ For Detailed Bearing Dimensions, refer to ☞P.897-907

P.D.	R	€ Unit Price									
		Standard					Male Thread				
		MBG	MBGM	MBGA	MBGS	MBGJ	MBGN	MBGNM	MBGNA	MBGNS	MBGNJ
15	1										
20											
30											
20	1.5										
30											
23	2										
28											
30											
40											
48											
60											
23	2.5										
28											
40											
48											
50											
60											
28	3										
38											
48											
50											
60											
80											
100											
50	4										
60											
80											
100											
120											
60	5										
80											
100											
120											
140											

■Order Example, Days to Ship, Volume Discount, Alteration and Example ☞Left page

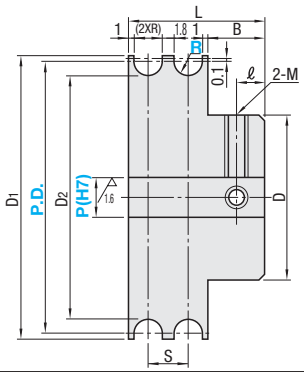
Pulleys for Round Belts
-Double Type-

CAD Data

■Pulleys for Round Belts RoHS



Type	M Material	S Nylon 6 (Glass Fiber 30%)	A Accessories
MBWA	EN AW-5052/ AlMg2,5	Electroless Nickel Plating	Set Screws 2 Pcs. (1.4301/ X5CrNi18-10)
MBWS	1.4301/ X5CrNi18-10	-	



Part Number Type	P.D.	R	Shaft Bore Specifications, Inner Diameter P (H7) 1mm Increment	S	d	D1	D2	L	ℓ	B	2-M (Coarse)	Accessories Set Screws	Applicable Round Belt Dia.	€ Unit Price MBWA	€ Unit Price MBWS
MBWA MBWS	15	1.1	3~8	4	12	17	13	14	3	5.8	M3	M3x3	2		
	20		4~10		16	22	18								
	30		4~12		20	32	28								
	20	1.6	3~10	5	16	22	17	16	3	5.8	M3	M3x3	3		
	30		5~12		20	32	27								
	40					42	37								
	45		5~20		30	47	42								
	23	2.1	5~12	6	20	25	19	18	3	5.8	M3	M3x3	4		
	28					30	24								
	30					32	26								
	40					42	36								
	45		5~18		25	47	41	20	4	7.8	M4	M4x3			
	48		5~20		30	50	44								
	28	2.6	5~12	7	20	30	23	20	3	5.8	M3	M3x3	5		
	40		5~20		30	42	35	22	4	7.8	M4	M4x3			
	50					52	45								
	28	3.1	5~12	8	22	30	22	22	3	5.8	M3	M3x3	6		
	38		5~20		30	40	32	24	4	7.8	M4	M4x3			
	48					50	42								
	50					52	44								
	60					62	54								
	75					77	69								
	100					102	94								
	50	4.1	5~20	10	30	52	42	30	5	9.8	M5	M5x4	8		
	60					62	52								
	100					102	92								
	60	5.1	5~20	12	34	62	50	34	5	9.8	M5	M5x4	10		
	100					102	90								
	140					142	130								

For MBWA, Electroless nickel plating may not be applied to shaft bores.

Order Example

Part Number	-	R	-	Shaft Bore Specifications, Inner Diameter
MBWS30	-	1.6	-	P5

Days to Ship

- R1.1 / R1.6 / R2.1

8 Days | Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

- R2.6 / R3.1 / R4.1 / R5.1

8 Days ⊗Express Serviceis not available.

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19	20~30
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

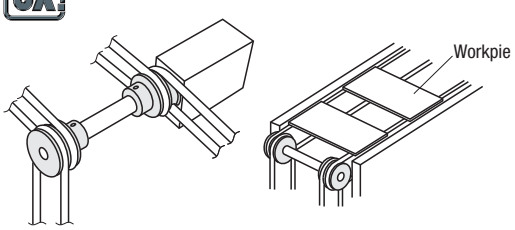
Part Number	-	R	-	Shaft Bore Specifications, Inner Diameter	-	(DC)
MBWA40	-	2.6	-	P8	-	DC

Alterations Code	Outer Diameter Cut: DC
Spec.	Reduces D1 diameter by cutting. Order Code: DC
Price Adder	3,00

Applicable Belt Diameter	DC
2	PD+0.8
3	PD+1.2
4	PD+1.6
5	PD+1.8

Applicable to corresponding belt dia. 2, 3, 4 and 5 only.
Surface treatment may not be applied to the machined area.

Example



Idlers for Round Belts

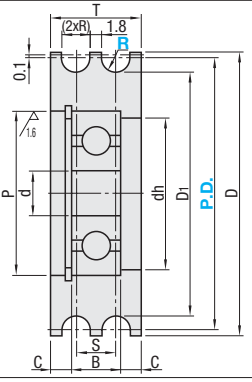
-Double Type-

CAD Data

■Idlers for Round Belts RoHS



Type	M Material		S Surface Treatment Nylon 6 (Glass Fiber 30%)	A Accessories
	Bearing	Main Body		
MBXA	Stainless Steel	EN AW-5052/ AlMg2,5	Electroless Nickel Plating	Retaining Ring (1.4301/ X5CrNi18-10)
MBXS		1.4301/ X5CrNi18-10	-	



* Bearing Precision JIS B1514 Class 0
Bearings are press-fitted.

Part Number Type	P.D.	R	S	d	P	dh	d	D1	T	B	C	Employed Bearing	Applicable Round Belt Dia.	€ Unit Price MBXA	€ Unit Price MBXS
MBXA MBXS	15	1.1	4	3	10	8	17	13	9	4	2.5	623ZZ	2		
	20			4	13	11	22	18	10	5		624ZZ			
	30			6	19	16	32	28	11	6		626ZZ			
	20	1.6	5	4	13	11	22	17	11	5	3	624ZZ	3		
	30			6	19	16	32	27		6	2.5	626ZZ			
	40			10	26	23	42	37	14	8	3	6000ZZ			
	45						47	42							
	23	2.1	6	6	15	13	25	19	13	5	4	696ZZ	4		
	28				19	16	30	24		6	3.5	626ZZ			
	30						32	26							
	40			10	26	23	42	36	14	8	3	6000ZZ			
	45						47	41							
	48						50	44							
	28	2.6	7	8	19	16	30	23	15	6	4.5	698ZZ	5		
	40			10	26	23	42	35	16	8	4	6000ZZ			
	50			12	32	27	52	45		10	3	6201ZZ			
	28	3.1	8	6	19	16	30	22	17	6	5.5	626ZZ	6		
	38			10	26	23	40	32	18	8	5	6000ZZ			
	48						50	42							
	50			12	32	27	52	44		10	4	6201ZZ			
	60						62	54							
	75						77	69							
	100						102	94							
	50	4.1	10	12	32	27	52	42	21	10	5.5	6201ZZ	8		
	60						62	52							
	100			15	35	30	102	92		11	5	6202ZZ			
	60	5.1	12	15	35	30	62	50	25	11	7	6202ZZ	10		
	100						102	90							
	140						142	130							

For Detailed Bearing Dimensions, refer to P.897-907

Order Example

Part Number	-	R
MBXS30	-	1.6

Days to Ship

- R1.1 / R1.6 / R2.1

8 Days | Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

- R2.6 / R3.1 / R4.1 / R5.1

8 Days

Express Serviceis not available.

Price

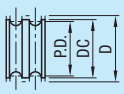
■Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19	20~30
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	R	-	(DC)
MBXA40	-	2.6	-	DC

Alterations Code	Outer Diameter Cut DC
Spec.	Reduces D diameter by cutting. Order Code DC  Applicable Belt Diameter / DC 2 / PD+0.8 3 / PD+1.2 4 / PD+1.6 5 / PD+1.8 Applicable to corresponding belt dia. 2, 3, 4 and 5 only. Surface treatment may not be applied to the machined area.
Price Adder	3,00

Timing Pulleys / Belts / MechaLock

Timing Pulleys/ Belts/ MechaLock






Product Name	High Torque Timing Pulleys -2GT Type-	-3GT Type-	-5GT Type-	-8YU Type-
Page	1113	1115	1117	1119








Timing Pulleys-MXL Type-	-XL Type-	-L Type-	-H Type-	High Torque Timing Pulleys-S2M Type-	-S3M Type-
1121	1123	1125	1127	1129	1131







High Torque Timing Pulleys -S5M Type-	-S8M Type-	-S14M Type-	Non-Backlash Timing Pulleys-S8M Type-	High Torque Timing Pulleys-P2M, P3M Type-
1133	1135	1137	1139	1141


Price Reduction 10%


Price Reduction 15%






High Torque Timing Pulleys -P5M Type-	-P8M Type-	Timing Pulleys-T5 Type-	-T10 Type-	-AT5 Type-	-AT10 Type-
1143	1145	1147	1149	1151	1151







Keyless Timing Pulleys-XL Type-	-L Type-	-L Type (MechaLocktandard Type incorporated)-	-H Type-	-H Type (Mechanical Lock Standard Type incorporated)-
1154	1155	1156	1157	1158







Keyless High Torque Timing Pulleys-S3M Type-	-S3M Type (Mechanical Lock Standard Type incorporated)-	-S5M Type-	-S5M Type (Mechanical Lock Standard Type incorporated)-	-S8M Type-
1159	1160	1161	1162	1163







Keyless High Torque Timing Pulleys-S8M Type-	-P5M Type-	-P8M Type-	Keyless Timing Pulleys-T5 Type-	-T5 Type (Mechanical Lock Standard Type incorporated)-
1164	1165	1166	1167	1168



Keyless Timing Pulleys-T10 Type- 1169



-T10 Type (Mechanical Lock Standard Type incorporated)- 1170



Clamping High Torque Timing Pulleys-S3M, S5M, S8M Type- 1171



Timing Pulleys-Width Configurable Type- 1173



Bar-Shaped Timing Pulleys-MXL, XL, S2M, S3M, S5M Type- 1174



Flanged Idlers with Teeth-MXL, XL Type- 1175



-L, H Type- 1177



-S2M, S3M Type- 1179



-S5M, S8M, S14M Type- 1181



-P2M, P3M, P5M, P8M, 2GT, 3GT, 5GT, 8YU Type- 1183



Flanged Idlers with Teeth-T5, T10, AT5, AT10 Type- 1185



Price Reduction 20% Max.

Idlers-Backside Tension Type- 1187



Idlers / Idler Shafts 1188



High Torque Timing Belts -2GT, 3GT Type- 1189



Super High Torque Timing Belts -EV5GT, EV8YU Type- 1191



Price Reduction Up to 15%

Timing Belts-MXL, XL, H Type- 1193



Price Reduction Up to 50%

High Torque Timing Pulleys-S2M, S3M, S5M, S8M, S14M Type- 1195



-P2M, P3M, P5M, P8M Type- 1197



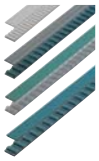
Super High Torque Timing Belts-MTS8M, UP5M, UP8M- 1199



Timing Belts-T5, T10 Type- 1200



Timing Belts with Attachments 1201

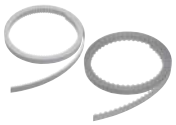


Long Timing Belts-Iron Rubber®- 1203



Price Reduction 5%

-Polyurethane- 1204



Open End Belts-Iron Rubber®- 1205



-Polyurethane, Chloroprene Rubber- 1206



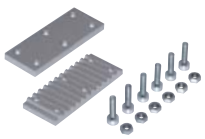
Timing Belts Guides 1207



Metal Fittings for Timing Belts -Overpressure Prevention Type- 1209



-Overpressure Prevention Metal Fittings Hole Position Configurable Type- 1210



-Nut Fitting Type- 1211



-Bottom Metal Short Type- 1212



MechaLock-Thin Type- 1214



-Compact Type- 1215



-Standard Type- 1217



-Straight Type- 1219



-Easy Mounting (Nut) Type- 1220



-Straight Type for High Torque- 1220

Timing Pulley and Belt Overview

Timing Pulleys

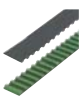
MISUMI timing pulleys are shaft bore machined and surface-treated. In addition to regular pulleys,
- wide variety of pulleys including significantly reduced backlash pulleys
- MechaLock incorporated keyless timing pulleys are available.

Usage	Features	Type of Belt	Pitch	Timing Pulleys			Idlers	
				Timing Pulleys	Keyless Timing Pulleys	Clamping Timing Pulleys	Idlers with Teeth	Idlers
								
				General purpose pulleys, surface treated and bores pre-machined.	MechaLock incorporated timing pulleys, easy phase matching.	Timing pulleys easily fastened to shafts with a single screw.	Surface-treated and bearing incorporated idlers with teeth.	Idlers without teeth used for tensioning on belt backsides.
Regular Torque	General purpose timing pulleys suitable for torque transmission and light load conveyance.	MXL	2.032mm (2/25inch)	P.1121	-	-	P.1175	P.1187
		XL	5.08mm (1/5inch)	P.1123	P.1154			
		L	9.525mm (3/8inch)	P.1125	P.1155-1156		P.1177	
		H	12.7mm (1/2inch)	P.1127	P.1157-1158			
High Torque	Timing pulleys for high torque transmission.	S2M	2.0mm	P.1129	-	-	P.1179	
		S3M	3.0mm	P.1131	P.1159-1160	P.1171		
		S5M	5.0mm	P.1133	P.1161-1162		P.1181	
		S8M	8.0mm	P.1135-1139	P.1163-1164			
		S14M	14.0mm	P.1137	-	-		
		P2M	2.0mm	P.1141	-	-	P.1183	
		P3M	3.0mm	P.1141	-			
		P5M	5.0mm	P.1143	P.1165			
		P8M	8.0mm	P.1145	P.1166			
High Accuracy Positioning	Timing pulleys with small backlash. Suitable for positioning.	2GT	2.0mm	P.1113	-	-	P.1183	
		3GT	3.0mm	P.1115				
		5GT	5.0mm	P.1117				
		8YU	8.0mm	P.1119				
Light Load Conveyance, Regular Torque	Trapezoidal toothed timing pulleys suitable for conveyance. Also usable for transmission.	T5	5.0mm	P.1147	P.1167-1168	-	P.1185	
		T10	10.0mm	P.1149	P.1169-1170			
Heavy Load Conveyance	Timing belts suitable for heavy load conveyance. Possesses 1.3 times larger allowable tension than T type.	AT5	5.0mm	P.1151	-	-	P.1185	
		AT10	10.0mm	P.1151				

Significantly reduced backlash timing pulley is available for S8M (**P.1139**). Special timing belts are not required.

Timing Belts

MISUMI offers many kinds of timing belts for the customers.
Conventional Timing Belts for Transmission, Timing Belts with Attachments for Conveyance, Tooth Count Configurable Long Timing Belts, and Open End Belts are available. The GT series suitable for high accuracy positioning is newly added to the product lineup.

Usage	Type of Belt	Pitch	Timing Belts			Timing Belts								
			Timing Belts		With attachment Timing Belts	Long Timing Belts No. of Teeth Configurable Type		Long Timing Belts No. of Teeth Configurable, Cloth Type		Open End Belts		
												
			General purpose timing belts for transmission.		Belts with attachments for conveyors.	Number of teeth specifiable type. Can be specified up to 10m.		Timing belts with low friction cloth. Most suitable for accumulation conveyance and noise reduction.		Most suitable for reciprocal motion. Various metal joints are available.		
			Rubber	Polyurethane	Polyurethane (for joint process)	Iron Rubber® (Polyurethane)	Polyurethane (for joint process)	Iron Rubber® (Polyurethane)	Polyurethane (for joint process)	Rubber	Iron Rubber® (Polyurethane)	Polyurethane
Regular Torque	MXL	2.032mm (2/25inch)	P.1193	P.1193	-	-	-	-	-	-	-	-
	XL	5.08mm (1/5inch)				P.1203	P.1204	P.1203	P.1204	P.1206	P.1205	P.1206
	L	9.525mm (3/8inch)										
	H	12.7mm (1/2inch)		-								
High Torque	S2M	2.0mm	P.1195	P.1195	-	-	-	-	-	-	-	-
	S3M	3.0mm					P.1204					
	S5M	5.0mm								P.1206	-	P.1206
	S8M	8.0mm		-			-					
	S14M	14.0mm								-		-
	P2M	2.0mm	P.1197	-	-	-	-	-	-	-	-	-
	P3M	3.0mm										
	P5M	5.0mm								P.1206		
	P8M	8.0mm										
High Accuracy Positioning	2GT	2.0mm	P.1189	-	-	-	-	-	-	-	-	-
	3GT	3.0mm										
	EV5GT	5.0mm	P.1191									
	EV8YU	8.0mm										
	MA3	3.0mm	-								P.1205	
	MA5	5.0mm										
	MA8	8.0mm										
Super High Torque	MTS8M	8.0mm	P.1199	-	-	-	-	-	-	-	-	-
	UP5M	5.0mm										
	UP8M	8.0mm										
Light Load Conveyance, Regular Torque	T5	5.0mm	-	P.1200	P.1201	P.1203	P.1204	P.1203	P.1204	-	P.1205	P.1206
	T10	10.0mm										
Heavy Load Conveyance	AT5	5.0mm	-	-	-			-	-			
	AT10	10.0mm										

MTS8M belts are applicable to S8M timing pulleys and idlers. UP5M, UP8M belts are compatible with S5M, S8M timing pulleys and idlers.
EV5GT belts are applicable to 5GT and EV8YU belts are applicable to 8YU timing pulleys and idlers.
Iron Rubber® is the trademark of NOK Corp. Pulleys compatible with MA_ belts are available on our website.

For Design Data, refer to **P.1943**

Cautions

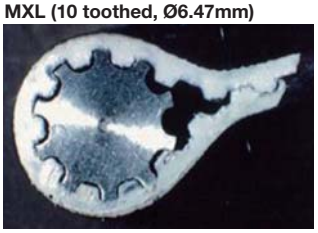
- Do not bend belts too hard.
- When core wire is steel cord, avoid giving tension from the backside.
- Avoid using and storing the products in an environment of extremely high or low temperature (beyond the operating temperature) and humid.
- Avoid direct contact with water, solvent, oil, acid, alkali, ultra-violet light, ozone, etc. If the belt swells its service life will be considerably shortened.
- Make sure to shut down the machine and confirm the complete stop of its behavior before starting installation or maintenance check.
- Timing pulleys and belts (MXL, XL, L, H) for general use are compliant with JIS and ISO Standards.
  Timing Pulleys: JIS B 1856 (ISO5294)
  Timing Belts: JIS K6372 (ISO5296-1), JIS-K6373(ISO5296-2)
- S Type (S_M) timing pulleys and belts are compatible with S_M Type from Mitsuboshi Belting Ltd. as well as Bando Chemical Industries Ltd.
- MTS Type (MTS8M) belts are compatible with MTS8M from Mitsuboshi Belting Ltd.
- P Type (P_M) timing pulleys and belts are compatible with P_M Type from Tsubakimoto Chain Co.
- UP Type (UP_M) timing belts are compatible with UP_M-HC Type from Tsubakimoto Chain Co.
- MA Type timing pulleys are compatible with MA_Type from NOK Corporation.
- GT Type (_GT) and EV Type (EV5GT, EV8YU) timing pulleys and belts are compatible with _GT, EV5GT, EV8YU Types from Gates Unitta Asia Company.

Features of GT Belts

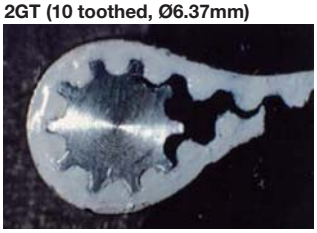
- The tooth engagements occur based on involute motion that closely assimilates the profiles of both teeth, thus minimizing backlash and making the scheme suitable for high accuracy positioning applications.

*Backlash means the clearances between the belt tooth surface and the pulley tooth surface when engaged.

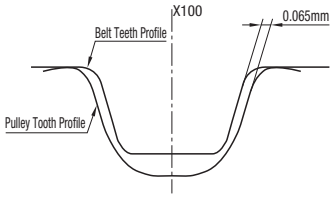
MXL (10 toothed, Ø6.47mm)



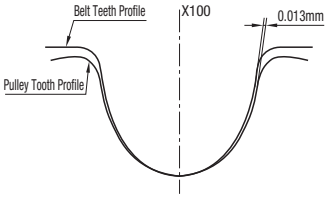
2GT (10 toothed, Ø6.37mm)



Reference: Comparison of Static Backlashes



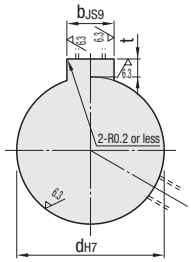
Static backlash between the MXL Type belt and the pulley (No. of Pulley Teeth: 20)



Static backlash between the 2GT Type belt and the pulley (No. of Pulley Teeth: 20)

For the durability and tooth jumping torque performance, see refer to **P.1114**

Metric Keyway Dimension



N: New JIS (B1301) Keyway Dimensions

Nominal	dH7		bJS9		t Tolerance	
N 8	8	+0.015 0	3	±0.0125	1.4	+0.1 0
N10	10					
NK10	10		4	±0.0150	1.8	
N11	11	+0.018 0				
N12	12					
N13	13		5		2.3	
N14	14					
N15	15					
N16	16					
N17	17		6		2.8	
N18	18					
N19	19	+0.021 0				
N20	20					
N21	21					
N22	22					
N23	23		8	±0.0180	3.3	+0.2 0
N24	24					
N25	25					
N26	26					
N27	27					
N28	28					
N29	29					
N30	30					
N31	31	+0.025 0	10			
N32	32					
N33	33					
N34	34					
N35	35					
N36	36					
N37	37					
N38	38					

Nominal	dH7		bJS9		t Tolerance	
N39	39	+0.025 0	12	±0.0215	3.3	+0.2 0
N40	40					
N41	41					
N42	42					
N43	43					
N44	44		14		3.8	
N45	45					
N46	46					
N47	47					
N48	48					
N49	49					
N50	50					
N55	55	+0.030 0	16		4.3	
N60	60					
N61	61					
N62	62		18		4.4	
N63	63					
N64	64					
N65	65					
N66	66					
N67	67					
N68	68		20	±0.0260	4.9	
N69	69					
N70	70					

C: Old JIS Keyway Dimension

dH7 Shaft bore diameters and codes	bF7		t Tolerance	
C10	4	+0.022 +0.010	1.5	+0.1 0
C12				
C15	5		2	
C16				
C18				
C19				
C20				
C30	7	+0.028 +0.013	3	
C33	10		3.5	
C34				
C35				
C36				
C37				
C38				
C39				
C40				
C41	12	+0.034 +0.016		
C42				
C43				
C44				
C45				
C50				
C55	15		5	
C60				
C61	18		6	
C62				
C63				
C64				
C65				
C66				
C67				
C68				
C69				
C70				

High Torque Timing Pulleys 2GT Type

Features: Circular Tooth Profile Pulleys with little backlash, suitable for positioning.

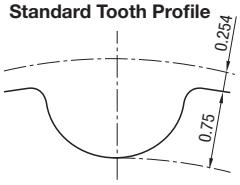
For High Torque Timing Belts, refer to P.1189,
For Idlers with Teeth, refer to P.1183



Part No.			Material		Surface Treatment
Belt Width 4mm	Belt Width 6mm	Belt Width 9mm	Pulley	Flange	
A:5.0 W:8.3 L:16.0	A:7.0 W:10.3 L:18.0	A:10.0 W:13.3 L:21.0			
GPA__GT2040	GPA__GT2060	GPA__GT2090	EN AW-2017/AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize

Ⓣ Flange swaged. Set screws are included to Shaft Bore Specifications P and N.

Standard Tooth Profile

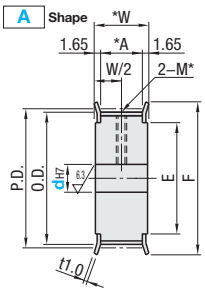


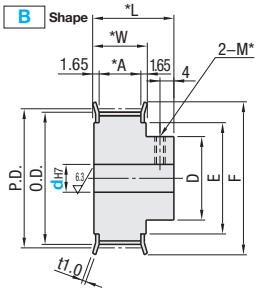
Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 2.0mm)

Shaft Bore Specifications H (Round Hole) do not have tapped holes.

•Pulley Shape





Ⓧ Not selectable under 21 teeth for B Shape.

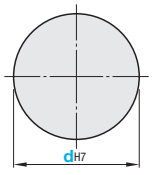
Tapped Hole Dimensions (Shaft Bores: P, N)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
5	M3	M3x3
6~22	M4	M4x3

•Shaft Bore Specs.

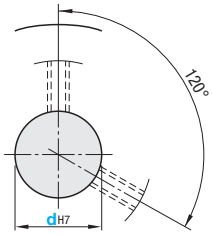
Ⓣ The shaft bore may not have surface treatment.

H Round Hole



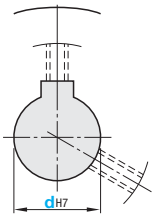
*No tapped holes and set screws.

P Round Hole+Tap



*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap



*For Keyway Dimension Details, refer to P.1112

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)						P.D.	O.D.	D	F	E
					H		P		N						
Type	Teeth	Type Nominal Width			dH7										
					A	B	A	B	A	B					
EN AW-2017/AlCu4MgSi GPA	14	GT2040 *A :5.0 *W :8.3 *L :16.0 GT2060 *A :7.0 *W :10.3 *L :18.0 GT2090 *A :10.0 *W :13.3 *L :21.0	A	H P N	3	-	-	-	-	-	8.91	8.40	-	13	6
	15				3, 4						9.55	9.04		14	7
	16				3, 4						10.19	9.68		14	7
	18				4, 5						11.46	10.95		16	8
	20				4~6						12.73	12.22		17	9
	21				4~6						13.37	12.86		18	10
	22		A B		4~6	4	-	-	-	-	14.01	13.50	8	18	10
	24				5~7	5					15.28	14.77	10	20	12
	25				5~7	5~7					15.92	15.41	10	20	12
	26				5~8	5~8					16.55	16.04	10	21	12
	28				5~8	5~8					17.83	17.32	10	23	14
	30				5~8	5~8					19.10	18.59	11	24	15
	32				5~10	5~8	5~10	5, 6	-	-	20.37	19.86	13	25	17
	34				6~10	6~10	6~10	6~8			21.65	21.14	14	27	18
	36				6~10	6~10	6~10	6~8			22.92	22.41	14	27	18
	38				6~10	6~10	6~10	6~8	8	-	24.19	23.68	16	29	20
	40				6~12	6~13	6~12	6~10	8, 10		25.46	24.95	17	30	21
	44				6~15	6~15	6~13	6~12	8~11		28.01	27.50	19	32	23
	48				8~17	8~16	8~15	8~12	8~13	8	30.56	30.05	22	35	26
	50				8~17	8~16	8~16	8~12	8~14	8	31.83	31.32	22	36	27
	60				8~24	8~24	8~22	8~22	8~19	8~14	38.20	37.69	28	42	33

Ⓣ Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H and P. Ⓧ Shaft Bore Dia. 9 is not available for Shaft Bore specification N.

Order Example: Part Number GPA32GT2060 - Pulley Shape A - Shaft Bore Spec. / Inner Dia. H8

Days to Ship: 8 Days

Price

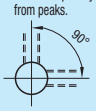
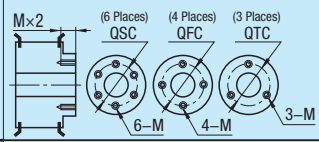
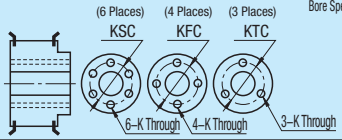
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

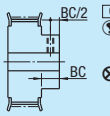
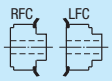
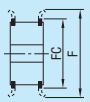
Teeth	€ Body Price Qty.1~9 EN AW-2017/AlCu4MgSi (Clear Anodize)						Shaft Bore Machining Charge (€ Body Price +)	
	GT2040		GT2060		GT2090			
	A	B	A	B	A	B	P	N
14								
15								
16								
18								
20								
21								
22								
24								
25								
26								
28								
30								
32								
34								
36								
38								
40								
44								
48								
50								
60								

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	(KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC)
GPA32GT2060	-	A	-	H8	-	NFC

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) Specify KC90 when selecting QFC for the Shaft Bore specifications P and N. The pilot hole for tapping may go through. QSC is not applicable to the Shaft Bore Specification P and N. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) Specify KC90 when selecting KFC for Shaft Bore specifications P and N. KSC is not applicable to the Shaft Bore Specification P and N. K (Through Hole Dia.) Selection K4.0~K8.0 (0.5mm Increment) Ordering Code KSC20-K5.0 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

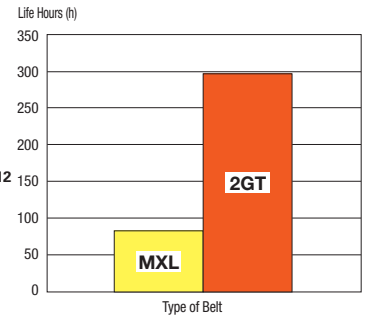
Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut
Code	BC	NFC	RFC · LFC	FC
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore H:3≤BC≤L-W Shaft Bore P, N: M+3≤BC≤L-W  Ordering Code BC6.5 The hub machining surface may not have surface treatment. Not available for A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape. 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code FC17.0
Price Adder	5,00	3,00	3,00	3,00

Performance Comparison between MXL and 2GT Belts

Reference (1): Durability

<Performance Conditions>
No. of belt teeth: 126
Belt Width: 9.5mm
No. of Pulley Teeth: 12 (2GT)
: 14 (MXL)
Revolutions: 7,900rpm
Load Torque: 24.3Nm

*Technical Data for backlash, P.1112

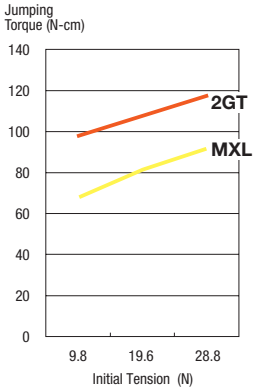


Reference (2): Jumping Torque Capability

<Performance Conditions>
No. of belt teeth: 126
Belt Width: 4.8mm
No. of Pulley Teeth: 20 (2GT)
: 20 (MXL)
Revolutions: 1,130rpm

Teeth Height
MXL:0.51mm
2GT:0.75mm

*Jumping Torque represents the max. torque when a jumping occurs.



High Torque Timing Pulleys 3GT Type

Features: Circular Tooth Profile Pulleys with little backlash, suitable for positioning.

For High Torque Timing Belts, refer to P.1189,
For Idlers with Teeth, refer to P.1183

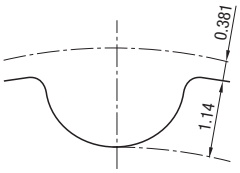


RoHS

Part No.			Material		S
Belt Width 6mm	Belt Width 9mm	Belt Width 15mm	Pulley	Flange	Surface Treatment
A:7.3 W:11.0 L:19.0	A:10.3 W:14.0 L:22.0	A:16.3 W:20.0 L:28.0			
GPA__GT3060	GPA__GT3090	GPA__GT3150	EN AW-2017/AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
GPT__GT3060	GPT__GT3090	GPT__GT3150	1.1191/C45E	1.0330/DC01	-
GPM__GT3060	GPM__GT3090	GPM__GT3150			Black Oxide

Flange swaged. Set screws are included to Shaft Bore Specifications P and N.

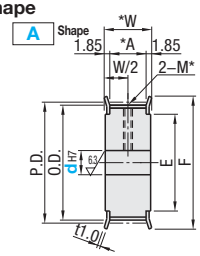
Standard Tooth Profile

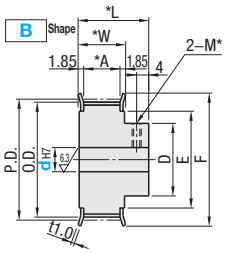


Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 3.0mm)

•Pulley Shape





*For Shaft Bore Specifications H (Round Hole), V and F (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

⊗Not selectable under 21 teeth for B Shape.

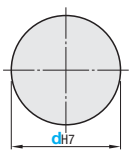
Tapped Hole Dimensions (Shaft Bores: P, N)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
5	M3	M3x3
6~17	M4	M4x3
18~38	M5	M5x4

Shaft Bore Specs.

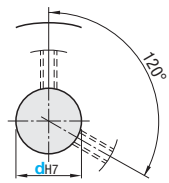
The shaft bore may not have surface treatment.

H Round Hole



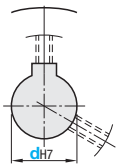
*No tapped holes and set screws.

P Round Hole+Tap



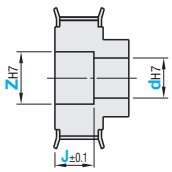
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap



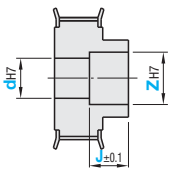
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



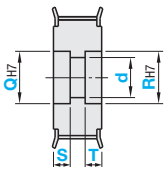
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)														P.D.	O.D.	D	F	E
					H		P		N		V / F					Y							
					dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7 / RH7	S / T					
Type	Teeth	Type Nominal Width			A	B	A	B	A	B	A	B	A	B	A • B	A	A	A					
EN AW-2017/ AlCu4MgSi GPA (1.1191/ C45E) GPT (1.1191/C45E+ Black Oxide) GPM	16	GT3060 *A :7.3 *W :11.0 *L :19.0	A	H P N V F Y	4~7	-	-	-	-	-	4, 5	-	6, 7	-	(For A Shape) 2.0≤J≤W-2.0 (For B Shape) 2.0≤J≤L-2.0	4, 5	6, 7	3~9 S+T≤W-3	15.28	14.52	-	19	11
	18				5~8		5				5, 6		7, 8			5, 6	7, 8		17.19	16.43		21	12
	20				5~9		5, 6		-		5~7		7~9			5~7	7~9		19.10	18.34		23	14
	22				6~10	6~8	6~7				6~7		8~9			6~7	8~9		21.01	20.25	12	24	16
	24	GT3060 *A :7.3 *W :11.0 *L :19.0	B		6~10	6~10	6~8	6	-	-	6~7	6	8~9	8		6~7	8~9		22.92	22.16	14	26	18
	25				6~11	6~10	6~10	6			6~8	6~8	8~11	8~10		6~8	8~11		23.87	23.11	14	27	18
	26				6~11	6~11	6~11	6	8		6~8	6~8	8~11	8~10		6~8	8~11		24.83	24.07	15	28	19
	28	GT3090 *A :10.3 *W :14.0 *L :22.0			6~13	6~13	6~13	6~8	8~10		6~10	6~10	8~12	8~12		6~10	8~12		26.74	25.98	17	30	21
	30				6~15	6~15	6~14	6~10	8~10	8	6~13	6~13	8~15	8~15		6~13	8~15		28.65	27.89	19	32	23
	32				6~17	6~16	6~14	6~10	8~12	8	6~15	6~14	8~17	8~16		6~15	8~17		30.56	29.80	20	34	25
	34	GT3150 *A :16.3 *W :20.0 *L :28.0			8~20	8~20	8~16	8~12	8~13	8~10	8~18	8~18	10~23	10~18		8~18	10~20		32.47	31.71	22	36	27
	36				8~20	8~20	8~18	8~14	8~14	8~12	8~18	8~18	10~23	10~20		8~18	10~20		34.38	33.62	24	38	29
	40				8~24	8~24	8~23	8~18	8~17	8~15	8~22	8~22	10~24	10~24		8~22	10~24		38.20	37.44	28	42	33
	44				10~28	10~26	10~25	10~20	10~20	10~15	10~26	10~26	12~28	12~26		10~26	12~28		42.02	41.26	30	46	36
	48				10~30	10~28	10~25	10~22	10~23	10~17	10~28	10~26	12~30	12~28		10~28	12~30		45.84	45.08	32	49	40
	50				10~32	10~30	10~28	10~23	10~24	10~18	10~30	10~28	12~32	12~30		10~30	12~32		47.75	46.99	34	51	42
	60				12~38	12~32	12~38	12~24	12~30	12~20	12~36	12~30	14~38	14~32		12~36	14~38		57.30	56.54	36	61	52

Z-d≥2 for shaft bore specification V and F.

⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.

Q(R)-d≥2 for shaft bore specification Y.

Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore: H / P / N)	GPA30GT3060	-	A	-	H10												
(Shaft Bore: V / F)	GPA40GT3150	-	B	-	V12	-	Z14	-	J18.0								
(Shaft Bore: Y)	GPA36GT3090	-	A	-	Y15						Q18	-	R20	-	S3	-	T4

Days to Ship **8 Days**

Price

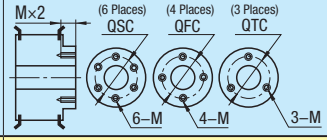
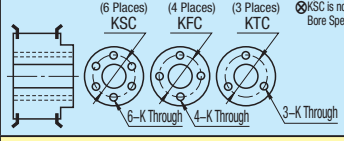
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

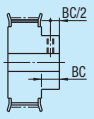
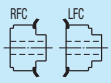
Teeth	€ Body Price Qty.1~9																		Shaft Bore Machining Charge (€ Body Price +)		
	EN AW-2017/AlCu4MgSi (Clear Anodize)						1.1191/C45E						1.1191/C45E (Black Oxide)								
	GT3060		GT3090		GT3150		GT3060		GT3090		GT3150		GT3060		GT3090		GT3150				
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N・V・F	Y
16																					
18																					
20																					
22																					
24																					
25																					
26																					
28																					
30																					
32																					
34																					
36																					
40																					
44																					
48																					
50																					
60																					

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	Pulley Shape	Shaft Bore Spec. / Inner Dia.	Z	J	Q	R	S	T	(KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC)
GPA30GT3090 -	A	- H10							- FC30.0

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) Specify KC90 when selecting QFC for the Shaft Bore specifications P and N. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. QSC is not applicable to the Shaft Bore Specification P and N. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) Specify KC90 when selecting KFC for Shaft Bore specifications P and N. Not applicable to Shaft Bore Specifications F or Y. KSC is not applicable to the Shaft Bore Specification P and N. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5.0 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut
Code	BC	NFC	RFC · LFC	FC
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore P, N: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code FC35.0
Price Adder	5,00	3,00	3,00	3,00

High Torque Timing Pulleys 5GT Type

For Super High Torque Timing Belts (compatible with EV5GT belts), refer to P.1191,
For Idlers with Teeth, refer to P.1183

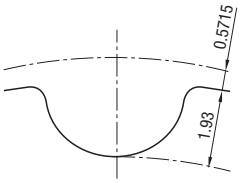
Features: Circular Tooth Profile Pulleys with little backlash, suitable for positioning.



Part No.			Material		Surface Treatment
Belt Width 9mm	Belt Width 12mm	Belt Width 15mm	Pulley	Flange	
A:10.3 W:14.0 L:22.0	A:13.3 W:17.0 L:25.0	A:16.3 W:20.0 L:28.0			
GPA__GT5090	GPA__GT5120	GPA__GT5150	EN AW-2017/AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
GPT__GT5090	GPT__GT5120	GPT__GT5150	1.1191/C45E	1.0330/DC01	-
GPM__GT5090	GPM__GT5120	GPM__GT5150			Black Oxide

Flange swaged. Set screws are included to Shaft Bore Specifications P and N.

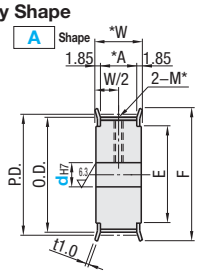
Standard Tooth Profile

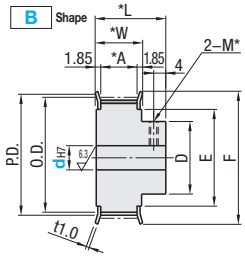


Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 5.0mm)

•Pulley Shape





*For Shaft Bore Specifications H (Round Hole), V and F (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

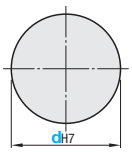
Tapped Hole Dimensions (Shaft Bores: P, N)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
6~12	M4	M4x3
13~30	M5	M5x4
31~45	M6	M6x5 (A Shape only)

•Shaft Bore Specs.

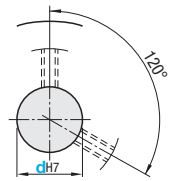
The shaft bore may not have surface treatment.

H Round Hole



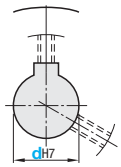
*No tapped holes and set screws.

P Round Hole+Tap



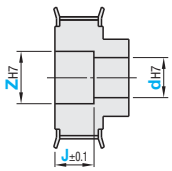
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap



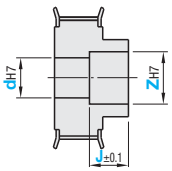
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



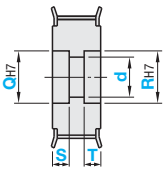
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)														P.D.	O.D.	D	F	E
					H		P		N		V / F				J (0.1mm Increment)	Y							
Type	Teeth	Type Nominal Width			dH7						dH7		ZH7			d	QH7 · RH7	S / T					
					A	B	A	B	A	B	A	B	A	B	A· B	A	A	A					
EN AW-2017/ AlCu4MgSi GPA (1.1191/ C45E) GPT (1.1191/ C45E+ Black Oxide) GPM	14	GT5090 *A :10.3 *W :14.0 *L :22.0	A B	H P N V F Y	6~10	6~8	6~8	-	-	-	6	-	8	-	(For A Shape) 2.0≤J≤W-2.0 (For B Shape) 2.0≤J≤L-2.0	6	8	3~14 S+T≤W-3	22.28	21.14	12	26	16
	15				6~10	6~10	6~8				6~8	6	8~10	8		6~8	8~10		23.87	22.73	13	27	17
	16				6~12	6~12	6~10	6	8		6~10	6~8	8~12	8~10		6~10	8~12		25.46	24.32	15	29	19
	18				6~14	6~14	6~13	6~9	8~10		6~10	6~10	8~12	8~12		6~12	8~14		28.65	27.51	18	32	22
	20				8~16	8~15	8~14	8~10	8~12	8	8~14	8~13	10~16	10~15		8~14	10~16		31.83	30.69	20	35	24
	22				8~19	8~19	8~17	8~12	8~12	8	8~17	8~14	10~19	10~16		8~17	10~19		35.01	33.87	22	39	27
	24				8~22	8~22	8~18	8~16	8~14	8~10	8~20	8~16	10~23	10~18		8~20	10~22		38.20	37.06	26	42	30
	25				8~22	8~22	8~20	8~16	8~16	8~12	8~20	8~18	10~23	10~20		8~20	10~22		39.79	38.65	28	43	32
	26	GT5120 *A :13.3 *W :17.0 *L :25.0			10~27	10~24	10~21	10~16	10~17	10~13	10~25	10~20	12~27	12~22		10~25	12~27		41.38	40.24	28	45	33
	28				10~27	10~27	10~24	10~20	10~19	10~15	10~25	10~25	12~27	12~27		10~25	12~27		44.56	43.42	30	48	36
	30				10~28	10~28	10~26	10~22	10~20	10~16	10~26	10~26	12~28	12~28		10~26	12~28		47.75	46.61	32	51	39
	32	GT5150 *A :16.3 *W :20.0 *L :28.0			10~32	10~30	10~30	10~22	10~23	10~17	10~30	10~26	12~32	12~28		10~30	12~32		50.93	49.79	34	55	42
	34				12~37	12~32	12~32	12~24	12~26	12~18	12~35	12~28	14~37	14~30		12~35	14~37		54.11	52.97	36	58	46
	36				12~37	12~34	12~34	12~26	12~30	12~20	12~35	12~30	14~37	14~32		12~35	14~37		57.30	56.16	38	61	49
	40				12~42	12~36	12~36	12~26	12~30	12~22	12~40	12~32	14~42	14~34		12~40	14~42		63.66	62.52	40	67	55
	44				12~50	12~38	12~42	12~26	12~30	12~23	12~48	12~34	14~50	14~36		12~48	14~50		70.03	68.89	42	74	62
	48				12~55	12~42	12~45	12~30	12~30	12~26	12~53	12~36	14~55	14~38		12~53	14~55		76.39	75.25	46	80	68
	50				12~59	12~42	12~45	12~30	12~30	12~27	12~57	12~38	14~59	14~40		12~57	14~59		79.58	78.44	46	83	71
	60				12~72	12~44	12~45	12~30	12~30	12~30	12~70	12~40	14~72	14~42		12~70	14~72		95.49	94.35	52	99	87

Z-d≥2 for shaft bore specification V and F.
Q(R)-d≥2 for shaft bore specification Y.
Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y.
Shaft Bore Dia. 9 is not available for Shaft Bore specification N.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore: H / P / N)	GPA20GT5090	-	A	-	N10												
(Shaft Bore: V / F)	GPA36GT5120	-	B	-	V20	-	Z22	-	J10.0								
(Shaft Bore: Y)	GPA40GT5150	-	A	-	Y25					-	Q27	-	R35	-	S5	-	T7

Days to Ship **8 Days**

Price

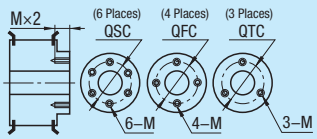
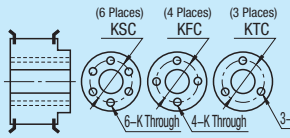
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

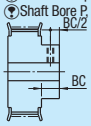
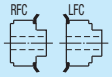
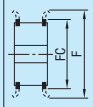
Teeth	€ Body Price Qty.1~9																		Shaft Bore Machining Charge (€ Body Price +)		
	EN AW-2017/AlCu4MgSi (Clear Anodize)						1.1191/C45E						1.1191/C45E (Black Oxide)								
	GT5090		GT5120		GT5150		GT5090		GT5120		GT5150		GT5090		GT5120		GT5150				
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N·V·F	Y
14																					
15																					
16																					
18																					
20																					
22																					
24																					
25																					
26																					
28																					
30																					
32																					
34																					
36																					
40																					
44																					
48																					
50																					
60																					

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T	-	(KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC)
GPA20GT5090	-	A	-	N10													-	KC90

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) Specify KC90 when selecting QFC for the Shaft Bore specifications P and N. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. QSC is not applicable to the Shaft Bore Specification P and N. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) Specify KC90 when selecting KFC for Shaft Bore specifications P and N. Not applicable to Shaft Bore Specifications F or Y. KSC is not applicable to the Shaft Bore Specification P and N. K Through Hole Dia. Selection K4.0–K13.0 (0.5mm Increment) Ordering Code KSC20-K5.0 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut
Code	BC	NFC	RFC · LFC	FC
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore P N: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code FC33.0
Price Adder	5,00	3,00	3,00	3,00

High Torque Timing Pulleys 8YU Type

Features: Circular Tooth Profile Pulleys with little backlash, suitable for positioning.

For Super High Torque Timing Belts (compatible with EV8YU belts), refer to P.1191,
For Idlers with Teeth, refer to P.1183

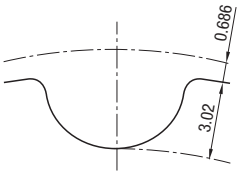


RoHS

Part Number			Material		Surface Treatment
Belt Width 15mm	Belt Width 20mm	Belt Width 25mm	Pulley	Flange	
A:16.7 W:23.0 L:43.0	A:21.7 W:28.0 L:48.0	A:26.7 W:33.0 L:53.0			
GPA__YU8150	GPA__YU8200	GPA__YU8250	EN AW-2017/AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
GPT__YU8150	GPT__YU8200	GPT__YU8250	1.1191/C45E	1.0330/DC01	-
GPM__YU8150	GPM__YU8200	GPM__YU8250			Black Oxide

Flange swaged. Set screws are included to Shaft Bore Specifications P and N.

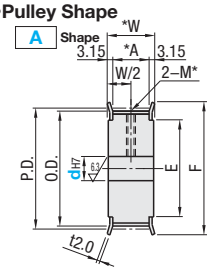
Standard Tooth Profile

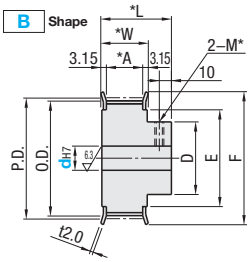


Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 8.0mm)

•Pulley Shape





*For Shaft Bore Specifications H (Round Hole), V and F (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

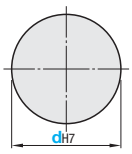
Tapped Hole Dimensions (Shaft Bores: P, N)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
16~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

•Shaft Bore Specs.

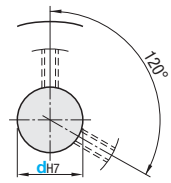
The shaft bore may not have surface treatment.

H Round Hole



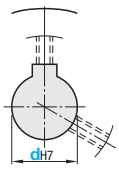
*No tapped holes and set screws.

P Round Hole+Tap



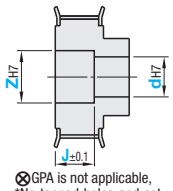
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap



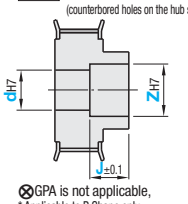
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



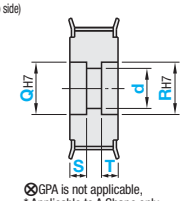
⊗GPA is not applicable,
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



⊗GPA is not applicable,
* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



⊗GPA is not applicable,
* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)															P.D.	O.D.	D	F	E
					H		P		N		V / F						Y							
					dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7 · RH7	S · T					
Type	Teeth	Type Nominal Width			A	B	A	B	A	B	A	B	A	B	A · B	A	A	A					
EN AW-2017/ AlCu4MgSi GPA (1.1191/ C45E) GPT (1.1191/ C45E+ Black Oxide) GPM	20		A B	H P N V F Y	16~32	16~32	16~28	16~20	16~21	16~18	16~30	16~30	18~32	18~32	(For A Shape) 3.0≤J≤ W-3.0 (For B Shape) 3.0≤J≤ L-3.0	16~30	18~32	3~23 S+T≤W-3		50.93	49.56	36	62	40
	22				16~37	16~37	16~29	16~24	16~26	16~22	16~35	16~32	18~37	18~34		16~35	18~37			56.02	54.65	40	64	45
	24				16~42	16~40	16~34	16~28	16~30	16~24	16~40	16~38	18~42	18~40		16~40	18~42			61.12	59.75	44	70	50
	25	YU8150 *A :16.7 *W :23.0 *L :43.0			16~48	16~42	16~36	16~30	16~30	16~26	16~46	16~40	18~48	18~42		16~46	18~48			63.66	62.29	46	72	52
	26				16~50	16~42	16~38	16~32	16~30	16~28	16~48	16~43	18~50	18~45		16~48	18~50			66.21	64.84	48	75	54
	28				16~52	16~47	16~42	16~35	16~30	16~30	16~50	16~44	18~52	18~46		16~50	18~52			71.30	69.93	52	80	59
	30	YU8200 *A :21.7 *W :28.0 *L :48.0			16~59	16~50	16~45	16~39	16~30	16~30	16~57	16~48	18~59	18~50		16~57	18~59			76.39	75.02	56	85	64
	32				20~59	20~55	20~48	20~42	20~30	20~30	20~57	20~48	22~59	22~50		20~57	22~59			81.49	80.12	60	90	69
	34				20~67	20~58	20~52	20~45	20~30	20~30	20~65	20~54	22~67	22~56		20~65	22~67			86.58	85.21	64	95	74
	36				20~72	20~64	20~58	20~48	20~30	20~30	20~70	20~60	22~72	22~62		20~70	22~72			91.67	90.30	68	100	79
	38	YU8250 *A :26.7 *W :33.0 *L :53.0			20~76	20~68	20~62	20~52	20~30	20~30	20~74	20~62	22~76	22~64		20~74	22~76			96.77	95.40	72	105	84
	40				25~80	25~70	25~65	25~54	25~30	25~30	25~80	25~64	27~82	27~66		25~75	27~82			101.86	100.49	74	110	89
	44				25~80	25~72	25~65	25~56	25~30	25~30	25~80	25~66	27~92	27~68		25~75	27~92			112.05	110.68	78	121	99
	48				25~80	25~74	25~65	25~58	25~30	25~30	25~80	25~68	27~95	27~70		25~75	27~95			122.23	120.86	80	131	109
	50				25~80	25~76	25~65	25~60	25~30	25~30	25~80	25~70	27~95	27~72		25~75	27~95			127.32	125.95	82	136	114
	60				30~80	30~80	30~65	30~65	30~30	30~30	30~80	30~72	32~95	32~74		30~75	32~95			152.79	151.42	88	161	140

Z-d≥2 for shaft bore specification V and F. Q(R)-d≥2 for shaft bore specification Y. ⊗Aluminum is applicable to Shaft Bore H, P, and N only.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore: H / P / N)	GPA30YU8150	-	A	-	P25												
(Shaft Bore: V / F)	GPT36YU8200	-	B	-	V20	-	Z24	-	J20.0								
(Shaft Bore: Y)	GPM40YU8250	-	A	-	Y30					-	Q34	-	R38	-	S10	-	T15

CAD Data

Days to Ship 8 Days

Price
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

Teeth	€ Body Price Qty.1~9																		Shaft Bore Machining Charge (€ Body Price +)		
	EN AW-2017/AlCu4MgSi (Clear Anodize)						1.1191/C45E						1.1191/C45E (Black Oxide)								
	YU8015		YU8020		YU8025		YU8015		YU8020		YU8025		YU8015		YU8020		YU8025				
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N・V・F	Y
20																					
22																					
24																					
25																					
26																					
28																					
30																					
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34																					
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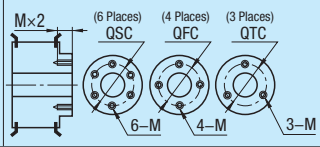
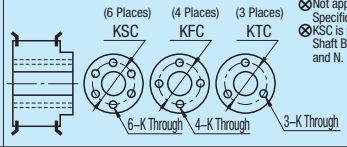
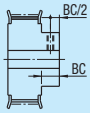
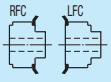
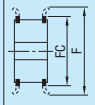
38																					
40																					
44																					
48																					
50																					
60																					

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T	-	(KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC)
GPA30YU8150	-	A	-	P25													-	KC90~QFC40~M4

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) Specify KC90 when selecting QFC for the Shaft Bore specifications P and N. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. QSC is not applicable to the Shaft Bore Specification P and N. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) Specify KC90 when selecting KFC for the Shaft Bore specifications P and N. Not applicable to Shaft Bore Specifications F or Y. KSC is not applicable to the Shaft Bore Specification P and N. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut
Code	BC	NFC	RFC · LFC	FC
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore P, N: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code FC55
Price Adder	5,00	3,00	3,00	3,00

Timing Pulleys MXL Type

■For Timing Belts, refer to P.1193, for Idlers with Teeth, refer to P.1175



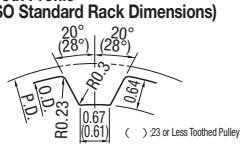
RoHS

Part Number				Material		
Belt Width 4.8mm (3/16inch)	Belt Width 6.4mm (1/4inch)	Belt Width 9.5mm (3/8inch)	Belt Width 12.7mm (1/2inch)	Pulley	Flange	S Surface Treatment
A: 6 W:10 L:16.5	A: 7.5 W: 11.5 L: 18	A: 11 W: 15 L: 22	A: 14 W: 18 L: 25			
ATP__MXL019	ATP__MXL025	ATP__MXL037	ATP__MXL050	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
BTP__MXL019	BTP__MXL025	BTP__MXL037	BTP__MXL050			Black Anodize
KTP__MXL019	KTP__MXL025	KTP__MXL037	KTP__MXL050			Hard Clear Anodize*
NTP__MXL019	NTP__MXL025	NTP__MXL037	NTP__MXL050			Electroless Nickel Plating
-	MTP__MXL025	MTP__MXL037	-	1.1191/C45E	1.0330/DC01	-
-	MTPB__MXL025	MTPB__MXL037	-			Black Oxide
-	MTPP__MXL025	MTPP__MXL037	-			Electroless Nickel Plating
-	STP__MXL025	STP__MXL037	-	1.4301	1.4301	-

The flange is swaged, and set screws are included to Shaft Bore Specifications P, N and C. (Not for Shape A)

*Hard Anodize Treatment: Film Hardness 300HV~

Tooth Profile (ISO Standard Rack Dimensions)



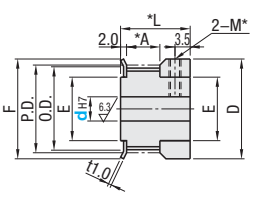
Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 2.032mm)

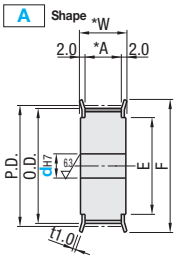
*Shaft Bore Specifications H (Round Hole), V and F (Stepped Holes) and Y (Both Sides Stepped Hole) do not have tapped holes.

•Pulley Shape

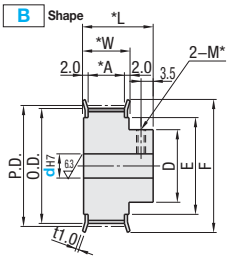
K Shape



A Shape



B Shape



■Tapped Hole Dimensions (Shaft Bore: P / N / C)

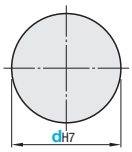
dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
3~5	M3	M3x3
6~18	M4	M4x3
19~21	M5	M5x4

*Shaft Bore Specifications H (Round Hole), V and F (Stepped Holes) and Y (Both Sides Stepped Hole) do not have tapped holes.

•Shaft Bore Specs.

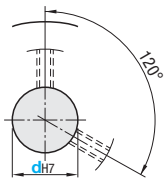
The shaft bore may not have surface treatment.

H Round Hole



*No tapped holes and set screws.

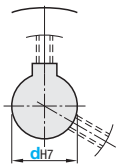
P Round Hole+Tap



⊗Not available for A Shape.

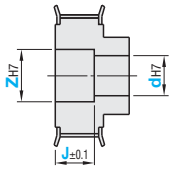
N New JIS Keywayed Bore + Tap

C Old JIS Keywayed Bore + Tap



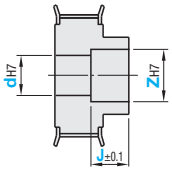
⊗A Shape has keywayed bores only, not tapped holes.
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



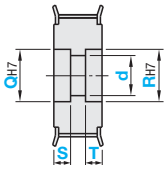
⊗Not applicable to K Shape.
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)												P.D.	O.D.	D	F	E
Type	Teeth	Type Nominal Width			H dH7		P dH7	N · C dH7		V · F dH7		V · F ZH7		J (0.1mm Increment)	Y d	Y QH7 / RH7	Y S / T					
					A	B · K	B · K	A	B	A	B	A	B	A · B	A	A	A					
	14		A		3, 4	3, 4	3, 4			-		-		-	-	-	-	9.06	8.55	12	12	6
	15				3, 4	3, 4	3, 4											9.70	9.19			
	16*	MXL019			3, 4, 5	3, 4, 5	3, 4, 5	-	-	3	-	5	-		3	5		10.35	9.84	14	14	8
	17	*A :6	K		3, 4, 5	3, 4, 5	3, 4, 5			3		5			3	5		11.00	10.49			
	18	*W :10			3, 4, 5	3, 4, 5	3, 4, 5			3		5			3	5		11.64	11.14			
	19	*L :16.5		H	3, 4, 5	3, 4, 5	3, 4, 5			3		5			3	5		12.29	11.78			
EN AW-2017/ AlCu4MgSi	20*				3~6	3~6	3, 4, 5			3, 4	3	5, 6	5		3, 4	5, 6		12.94	12.43			
	21				3~6	3~6	3, 4, 5			3, 4	3	5, 6	5		3, 4	5, 6		13.58	13.07	9	18	11
ATP	22*			P	3~6	3~6	3, 4, 5			3, 4	3	5, 6	5		3, 4	5, 6		14.23	13.72			
BTP	23	MXL025			3~8	3~7	3~7			3~6	3~5	5~8	5~7		3~6	5~8		14.88	14.37			
KTP	24*	*A :7.5			3~8	3~7	3~7	-	-	3~6	3~5	5~8	5~7		3~6	5~8		15.52	15.02	11	20	13
NTP	25*	*W :11.5		N	3~8	3~7	3~7			3~6	3~5	5~8	5~7		3~6	5~8		16.17	15.66			
	26	*L :18			3~9	3~8	3~8			3~7	3~6	5~9	5~8		3~7	5~9		16.82	16.31			
	27				4~9	4~8	4~8			4~7	4~6	6~9	6~8	(For A Shape)	4~7	6~9		17.46	16.96	12	22	14
(1.1191/C45E)	28			C	4~9	4~8	4~8			4~7	4~6	6~9	6~8	2.0≤J≤W-2.0	4~7	6~9	3~7	18.11	17.60			
MTP	30*	MXL037			4~11	4~10	4~8	8		4~9	4~8	6~11	6~10		4~9	6~11	S+T≤	19.40	18.90			
MTPB	32*	*A :11	A	V	4~11	4~10	4~8	8	-	4~9	4~8	6~11	6~10	(For B Shape)	4~9	6~11	W-3	20.70	20.19	14	25	16
MTPP	34	*W :15	B		4~11	4~10	4~8	8		4~9	4~8	6~11	6~10	2.0≤J≤L-2.0	4~9	6~11		21.99	21.48			
	36*	*L :22			5~13	5~12	5~10	8~11	8	5~11	5~10	7~13	7~12		5~11	7~13		23.29	22.78	16	28	18
(1.4301/ X5CrNi18-10)	38			F	5~13	5~12	5~10	8~11	8	5~11	5~10	7~13	7~12		5~11	7~13		24.58	24.07			
STP	40*				5~15	5~14	5~10	8~13	8, 10	5~13	5~12	7~15	7~14		5~13	7~15		25.87	25.36	18	30	20
	42			Y	5~15	5~14	5~10	8~13	8, 10	5~13	5~12	7~15	7~14		5~13	7~15		27.17	26.66			
	44	MXL050			5~18	5~16	5~12	8~16	8~12	5~16	5~14	7~18	7~16		5~16	7~18		28.46	27.95	20	32	23
	46	*A :14			5~18	5~16	5~12	8~16	8~12	5~16	5~14	7~18	7~16		5~16	7~18		29.75	29.24			
	48	*W :18			5~20	5~18	5~13	8~18	8~13	5~18	5~16	7~20	7~18		5~18	7~20		31.05	30.54	22	35	25
	50*	*L :25			5~20	5~18	5~13	8~18	8~13	5~18	5~16	7~20	7~18		5~18	7~20		32.34	31.84	22	35	25
	60*				5~27	5~24	5~20	8~25	8~16	5~25	5~22	7~27	7~24		5~25	7~27		38.81	38.30	28	44	32
	72				5~35	5~26	5~21	8~33	8~18	5~33	5~24	7~35	7~26		5~33	7~35		46.57	46.06	30	52	40

STP is available for * marked No. of teeth only.
Shaft hole specifications N and C for A Shape do not have tapped holes.
Z-d≥2 for shaft bore specification V and F.
Q(R)-d≥2 for shaft bore specification Y.
Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112

⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
⊗Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21~33 are not available for Shaft Bore Specification C.
Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y.

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H / P / N / C) ATP40MXL025	-	B	-	N10												
(Shaft Bore: V / F) ATP60MXL037	-	B	-	V8	-	Z14	-	J13.0								
(Shaft Bore: Y) ATP48MXL050	-	A	-	Y8					-	Q16	-	R16	-	S5	-	T5

Days to Ship

- ATP / MTP / MTPB / MTPP / STP

8 Days | Express A | 8,00 EUR/ piece | P.88

Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces
Ⓧ Express Serviceis not available for A Shape.

- BTP / KTP / NTP

10 Days

Price

■ **Volume Discount** (Ⓟ Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

Ⓟ Please request a quotation for orders of 30 or more of STP.
Ⓟ For orders larger than indicated quantity, please request a quotation.

Ⓟ The prices of BTP, KTP and MTPB are the body prices in the table multiplied by 1.1, while the prices of NTP and MTPP are multiplied by 1.2.(Round down to ten Cent.)
(Ex.) Body Price of NTP25MXL025-B is 89,0x1.2 = 10,68 → 10,60 EUR
Ⓟ Unit price is the sum of Body Price and Shaft Bore Machining Charge. (Except STP)
Ⓟ € Unit Price of STP is the Body Price and Volume Discount is not applicable to Shaft Bore Machining Charge.
Ⓟ **H** bore machining is free of charge.

Teeth	€ Body Price																Shaft Bore Machining Charge (€ Body Price+)							
	ATP(x1.0)- BTP / KTP /(x1.1) NTP(x1.2)								MTP(x1.0)- MTPB(x1.1)- MTPP(x1.2)				STP(x1.0)				ATP / BTP / KTP / NTP MTP / MTPB / MTPP				STP			
	MXL019		MXL025		MXL037		MXL050		MXL025		MXL037		MXL025		MXL037									
	A	B・K	A	B・K	A	B・K	A	B・K	A	B・K	A	B・K	A	B・K	A	B・K	P	N・C・V・F	Y		P	N・C・V・F	Y	
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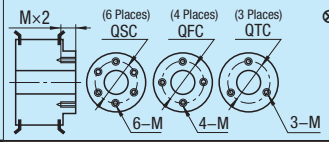
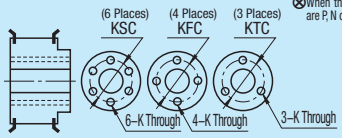
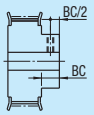
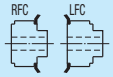
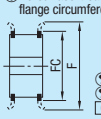
72																								

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

ATP72MXL050 - B - H12 - KSC20 - K4

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC / QFC / QTC	KSC / KFC / KTC
Spec.	Changes an angle of set screw to 90°. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Ⓟ Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) Ⓟ d=Z when the Shaft Bore Specifications is V. Ⓟ Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. Ⓟ The pilot hole for tapping may go through. Ⓧ Not applicable to K Shape. Ⓧ Not applicable to Shaft Bore Specifications F or Y. Ⓧ When the Shaft Bore Specifications are P, N or C, QSC is not applicable. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Ⓟ Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) Ⓟ d=Z when the Shaft Bore Specifications is V. Ⓟ Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Ⓧ Not applicable to K Shape. Ⓧ Not applicable to Shaft Bore Specifications F or Y. Ⓧ When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC / LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Ⓟ Shaft Bore specification H, V, F: 3≤BC≤L-W Ⓟ Shaft Bore specification P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Ⓟ Clear anodized products may not have surface treatment on the embossed plane. Ⓧ Not applicable to K and A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Ⓟ Same on A Shape Ⓧ Not applicable to K Shape. 	Lowers flange by cutting. FC: 0.5mm Increment Ⓧ Not applicable to Stainless Steel Type. Ⓟ No surface treatment applied on flange circumference.  Ⓟ FC≥(O.D.)+2 Ⓟ FC≤F-2 Ordering Code FC22	Changes the tapped hole dimension. Ⓟ Applicable to Shaft Bore specification P, N, C only. Ⓧ Not applicable to A Shape. M / TPC M3 / M4 M4 / M3 / M5 M5 / M4 Ordering Code TPC5	Changes the length of the included set screws. Ⓟ Applicable to Shaft Bore specification P, N, C only. Ⓧ Not applicable to A Shape. Ⓧ Not applicable to Stainless Steel Type. Set Screw / SLH M3x3 / 6 M4x3 / 5 / 8 M5x4 / 6 / 10 Ordering Code SLH8
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

Timing Pulleys XL Type

■For Timing Belts, refer to **P.1193**, for Keyless Timing Pulleys, refer to **P.1154**, for Idlers with Teeth, refer to **P.1175**



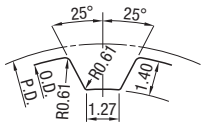
RoHS

Part Number				Material		Surface Treatment
Belt Width 6.4mm (1/4inch)	Belt Width 7.9mm (5/16inch)	Belt Width 9.5mm (3/8inch)	Belt Width 12.7mm (1/2inch)	Pulley	Flange	
A: 7.5 W: 12.5 L: 21	A: 9 W: 14 L: 23	A: 11 W: 16 L: 25	A: 14 W: 19 L: 28			
ATP__XL025	ATP__XL031	ATP__XL037	ATP__XL050	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
BTP__XL025	BTP__XL031	BTP__XL037	BTP__XL050			Black Anodize
KTP__XL025	KTP__XL031	KTP__XL037	KTP__XL050			Hard Clear Anodize*
NTP__XL025	NTP__XL031	NTP__XL037	NTP__XL050			Electroless Nickel Plating
MTP__XL025	-	MTP__XL037	MTP__XL050	1.1191/C45E	1.0330/DC01	-
MTPB__XL025	-	MTPB__XL037	MTPB__XL050			Black Oxide
MTPP__XL025	-	MTPP__XL037	MTPP__XL050			Electroless Nickel Plating
STP__XL025	-	STP__XL037	STP__XL050	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	-

Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.

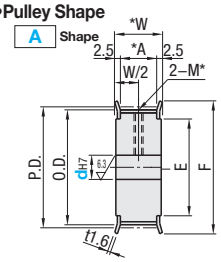
*Hard Anodize Treatment: Film Hardness 300HV~

Tooth Profile (ISO Standard Rack Dimensions)

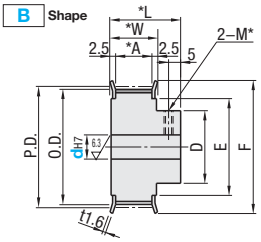


•Pulley Shape

A Shape



B Shape



■Tapped Hole Dimensions (Shaft Bore: P / N / C)

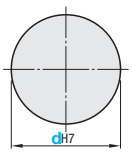
dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
4	M3	M3x3
5~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5

*For Shaft Bore Specifications H (Round Hole), V and F (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

•Shaft Bore Specs.

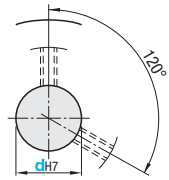
The shaft bore may not have surface treatment.

H Round Hole



*No tapped holes and set screws.

P Round Hole+Tap

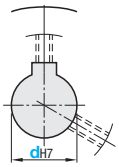


**ForA Shape pulley, the screw holes are set at around 120° to keep away from peaks.

⊗Not applicable to A Shape with 15 or less teeth and nominal width 025.

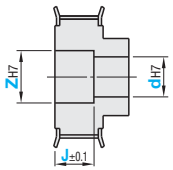
N New JIS Keywayed Bore + Tap

C Old JIS Keywayed Bore + Tap



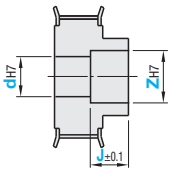
⊗A Shape with 15 or less teeth and nominal width 025 has keywayed bores only, not tapped holes.
*For Keyway Dimension Details, refer to **P.1112**

V Stepped Hole



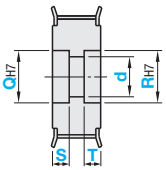
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)												P.D.	O.D.	D	F	E
Type	Teeth	Type Nominal Width			H / P / N / C dH7						V / F dH7		V / F ZH7		V / F J (0.1mm Increment)	Y d	Y QH7 · RH7	Y S / T					
					A	B	A	B	A	B	A	B	A	B	A·B	A	A	A					
	10				4~7	4, 5, 6	-	4, 5, 6	-	-	4, 5	4	6, 7	6		4, 5	6, 7		16.17	15.66	10	24	12
	11				4~7	4, 5, 6	-	4, 5, 6	-	-	4, 5	4	6, 7	6		4, 5	6, 7		17.79	17.28			
	12				4~10	4~8	4~6	4, 5, 6	-	-	4~8	4, 5, 6	6~10	6, 7, 8		4~8	6~10		19.40	18.90	12	25	15
	14				5~13	5~11	5~9	5~8	8	8	5~11	5~9	7~13	7~11		5~11	7~13		22.64	22.13	15	28	18
	15	XL025			5~13	5~13	5~11	5~10	8~10	8, 10	5~11	5~10	7~13	7~12		5~11	7~13		24.26	23.75	17	32	20
	16*	*A :7.5			5~13	5~13	5~13	5~10	8~13	8, 10	5~11	5~10	7~13	7~12		5~12	7~14		25.87	25.36			
EN AW-2017/ AlCu4MgSi	18*	*W :12.5			6~16	6~16	6~15	6~13	8~15	8~13	6~14	6~14	8~16	8~16		6~14	8~17		29.11	28.60	21	36	24
ATP	19	*L :21			6~16	6~16	6~15	6~15	8~15	8~13	6~14	6~14	8~16	8~16		6~14	8~17		30.72	30.22			
BTP	20*				8~19	8~19	8~16	8~15	8~16	8~15	8~17	8~17	10~19	10~19		8~17	10~19		32.34	31.83	24	40	27
KTP	21				8~19	8~19	8~18	8~16	8~18	8~16	8~17	8~17	10~19	10~19		8~17	10~19		33.96	33.45			
NTP	22*	XL031			8~22	8~22	8~20	8~17	8~20	8~18	8~20	8~20	10~23	10~23		8~20	10~22		35.57	35.07	26	45	30
	24*	*A :9			8~22	8~22	8~22	8~17	8~22	8~18	8~20	8~20	10~23	10~23		8~20	10~22		36.81	38.30			
	25*	*W :14			8~27	8~26	8~22	8~19	8~22	8~19	8~25	8~24	10~27	10~26	(For A Shape) 2.0≤J≤W-2.0	8~25	10~27		40.43	39.92	30	48	35
(1.1191/ C45E)	26	*L :23			8~27	8~26	8~23	8~20	8~23	8~20	8~25	8~24	10~27	10~26		8~25	10~27	3~8	42.01	41.53			
MTP	28*		A	H P N C V F Y	8~32	8~31	8~26	8~25	8~25	8~20	8~30	8~29	10~32	10~31	(For B Shape) 2.0≤J≤L-2.0	8~30	10~32	S+T≤W-3	45.28	44.77	35	55	40
MTPB	30*	XL037	B		10~32	8~31	10~30	8~25	10~30	8~20	10~30	8~29	12~32	10~31		10~30	12~32		48.51	48.00			
MTPP	32*	*A :11			10~37	10~36	10~30	10~30	10~30	10~25	10~35	10~34	12~37	12~36		10~35	12~37		51.74	51.24	40	61	45
	34	*W :16			10~38	10~36	10~30	10~30	10~30	10~25	10~35	10~34	12~37	12~36		10~35	12~37		54.98	54.47			
	36*	*L :25			10~42	10~36	10~30	10~30	10~30	10~25	10~40	10~34	12~42	12~36		10~40	12~42		58.21	57.70		67	50
(1.4301/ X5CrNi18-10)	38				10~43	10~36	10~30	10~30	10~30	10~25	10~40	10~34	12~42	12~36		10~40	12~42		61.45	60.94			
STP	40*	XL050			10~50	10~36	10~30	10~30	10~30	10~25	10~48	10~34	12~50	12~36		10~48	12~50		64.68	64.17	40	74	58
	42	*A :14			10~50	10~36	10~30	10~30	10~30	10~25	10~48	10~34	12~50	12~36		10~48	12~50		67.91	67.41			
	44	*W :19			10~52	10~36	10~30	10~30	10~30	10~25	10~50	10~34	12~52	12~36		10~50	12~52		71.15	70.64		80	60
	46	*L :28			10~55	10~36	10~30	10~30	10~30	10~25	10~50	10~34	12~52	12~36		10~50	12~52		74.38	73.87			
	48				10~59	10~36	10~30	10~30	10~30	10~25	10~57	10~34	12~59	12~36		10~57	12~59		77.62	77.11		87	67
	50				10~59	10~36	10~30	10~30	10~30	10~25	10~57	10~34	12~59	12~36		10~57	12~59		80.85	80.34		87	67
	60				10~76	10~36	10~30	10~30	10~30	10~25	10~74	10~34	12~76	12~36		10~74	12~76		97.01	96.51	40	104	84
	72				10~80	10~36	10~30	10~30	10~30	10~25	10~80	10~34	12~94	12~36		10~75	12~94		116.43	115.92		123	102

STP is available for * marked No. of teeth only.

A Shape with 15 or less teeth and nominal width 025 is not available for shaft bore specification P, and no tapped holes for shaft bore specifications N and C.

Z-d≥2 for Shaft Bore Specification V. Q(R)-d≥2 for shaft bore specification Y.

Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y.

Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. **P.1112**

⊗Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 20~30 are not available for Shaft Bore specification C.

⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H / P / N / C)	ATP24XL037	-	B	-	N10												
(Shaft Bore: V / F)	ATP60XL050	-	A	-	V20	-	Z28	-	J16.0								
(Shaft Bore: Y)	ATP40XL050	-	A	-	Y20					-	Q32	-	R32	-	S7	-	T7

Days to Ship

- ATP / MTP / MTPB / MTPP / STP: **8 Days** — Express A: 8,00 EUR/piece — P. 88
- BTP / KTP / NTP: **10 Days**

A Express Charge of 21,60 EUR for 3 or more identical pieces

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

Please request a quotation for orders of 30 or more of STP.
For orders larger than indicated quantity, please request a quotation.

The prices of BTP, KTP and MTPB are the body prices in the table multiplied by 1.1, while the prices of NTP and MTPP are multiplied by 1.2.(Round down to ten Cent.)
Unit price is the sum of Body Price and Shaft Bore Machining Charge. (Except STP)
€ Unit Price of STP is the Body Price and Volume Discount is not applicable to Shaft Bore Machining Charge.
H bore machining is free of charge.

Teeth	€ Body Price																		Shaft Bore Machining Charge (€ Body Price+)					
	ATP(x1.0)- BTP / KTP /(x1.1) NTP(x1.2)								MTP(x1.0)- MTPB(x1.1)- MTPP(x1.2)						STP(x1.0)						ATP · BTP · KTP · NTP MTP · MTPB · MTPP			STP		
	XL025		XL031		XL037		XL050		XL025		XL037		XL050		XL025		XL037		XL050							
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N · C · V · F	Y	P	N · C · V · F	Y
10																										
11																										
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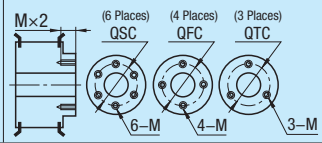
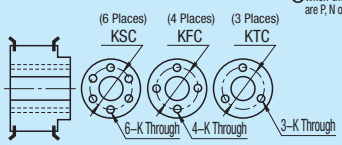
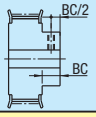
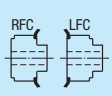
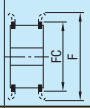
72																										

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. • Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

ATP36XL037 - B - H15 - KSC25 - K5

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC / QFC / QTC	KSC / KFC / KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, QSC is not applicable. M Selection: M3,M4,M5,M6,M8 Ordering Code: QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K (Through Hole Dia.) Selection: K4.0–K13.0 (0.5mm Increment) Ordering Code: KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC / LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification H, V, F: 3≤BC≤L-W Shaft Bore specification P, N, C: M+3≤BC≤L-W Ordering Code: BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape. 	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm increment Not applicable to Stainless Steel Type. No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F–2 Ordering Code: FC35 	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. Ordering Code: TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Not applicable to Stainless Steel Type. Ordering Code: SLH10
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

M	TPC
M3	M4
M4	M3 / M5
M5	M4 / M6
M6	M5

Set Screw	SLH
M3x3	6
M4x3	5, 8
M5x4	6, 10
M6x5	10

Timing Pulleys L Type

■For Timing Belts, refer to ☞ P.1193, for Long Timing Belts, refer to ☞ P.1203, for Keyless Timing Pulleys, refer to ☞ P.1155, for Idlers with Teeth, refer to ☞ P.1177

RoHS

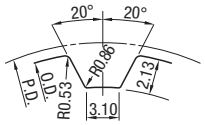


Part Number				Material		S
Belt Width 12.7mm (1/2inch)	Belt Width 19.1mm (3/4inch)	Belt Width 25.4mm (1inch)	Belt Width 38.1mm (1.5inch)	Pulley	Flange	Surface Treatment
A:14W:19L:31 (39)	A:21W:26L:38 (46)	A:27W:32L:44 (53)	A:40W:45L:57			
ATPA__L050	ATPA__L075	ATPA__L100	ATPA__L150	EN AW-7075/ AlZn5,5MgCu (Extra Super Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
ATPB__L050	ATPB__L075	ATPB__L100	ATPB__L150			Black Anodize
ATPK__L050	ATPK__L075	ATPK__L100	ATPK__L150			Hard Clear Anodize*
ATPN__L050	ATPN__L075	ATPN__L100	ATPN__L150			Electroless Nickel Plating
ATPT__L050	ATPT__L075	ATPT__L100	ATPT__L150			-
ATP__L050	ATP__L075	ATP__L100	ATP__L150	1.1191/C45E	1.0330/DC01	Black Oxide
ATPP__L050	ATPP__L075	ATPP__L100	ATPP__L150			Electroless Nickel Plating

☞Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.
☞L dimensions in ( ) are for 60~72 toothed pulleys.

*Hard Anodize Treatment: Film Hardness 300HV~

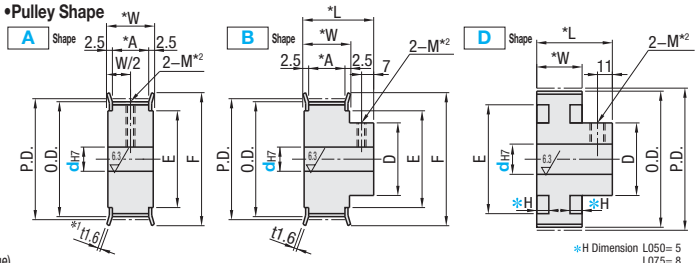
Tooth Profile (ISO Standard Rack Dimensions)



Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 9.525mm)

•Pulley Shape



*H Dimension L050= 5 L075= 8 L100=11

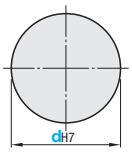
*1 t=2.0 for 60 and 72 toothed pulleys (Cut Flange).
*2 Shaft Bore Specifications H (Round Hole), V,F (Stepped Hole) and Y (Both Sides Stepped Hole), do not have tapped holes.

■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
6~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

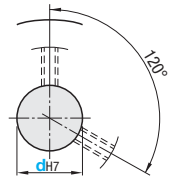
•Shaft Bore Specs. ☞The shaft bore may not have surface treatment.

H Round Hole



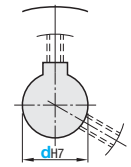
*No tapped holes and set screws.

P Round Hole+Tap



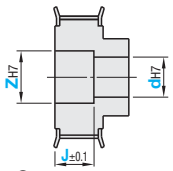
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



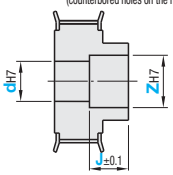
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



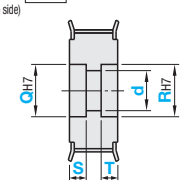
⊗Not available for D Shape.
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)																	
Type	Teeth	Type Nominal Width			H		P		N · C		V · F				Y			P.D.	O.D.	D	F	E
					dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7 / RH7	S / T					
					A	B · D	A	B · D	A	B · D	A	B	A	B	A · B	A	A	A					
	10	L050	A B	H P N C V F Y	6~16	6~16	6~14	6~14	8~14	8~14	6~14	6~14	8~16	8~16	(For A Shape) 3.0≤J≤W-3.0 (For B Shape) 3.0≤J≤L-3.0	6~14	8~16	3~21 S+T≤W-3	30.32	29.56	22	36	24
	12	L050 · L075			8~22	8~22	8~18	8~18	8~18	8~18	8~20	8~20	10~23	10~23		8~20	10~22		36.38	35.62	27	45	30
	14				8~27	8~26	8~21	8~20	8~21	8~20	8~25	8~24	10~27	10~26		8~25	10~27		42.45	41.68	30	48	35
	15				8~27	8~26	8~23	8~20	8~23	8~20	8~25	8~24	10~27	10~26		8~25	10~27		45.48	44.72			
	16	L050			10~32	10~28	10~26	10~22	10~23	10~22	10~30	10~26	12~32	12~28		10~30	12~32		48.51	47.75	32	55	40
	17	*A :14			10~32	10~30	10~26	10~24	10~26	10~23	10~30	10~28	12~32	12~30		10~30	12~32		51.54	50.78	34		
	18	*W :19			10~37	10~32	10~29	10~26	10~29	10~23	10~35	10~30	12~37	12~32		10~35	12~37		54.57	53.81	36	61	45
	19	*L :31			12~42	12~34	12~34	12~28	12~30	12~25	12~40	12~32	14~42	14~34		12~40	14~42		57.61	56.84	38	67	50
EN AW-7075/ AlZn5,5MgCu	20	(60 · 72 = L:39)			12~42	12~36	12~34	12~30	12~30	12~26	12~40	12~34	14~42	14~36		12~40	14~42		60.64	59.88	40	67	50
ATPA	21				12~48	12~38	12~40	12~30	12~32	12~26	12~46	12~36	14~48	14~38		12~46	14~48		63.67	62.91	42	70	56
ATPB	22	L075			12~52	12~41	12~42	12~33	12~34	12~30	12~50	12~39	14~52	14~41		12~50	14~52		66.70	65.94	45	80	60
ATPK	24	*A :21			12~59	12~46	12~49	12~38	12~41	12~30	12~57	12~44	14~59	14~46		12~57	14~59		72.77	72.00	50	87	67
ATPN	25	*W :26			12~59	12~46	12~49	12~38	12~41	12~30	12~57	12~44	14~59	14~46		12~57	14~59		75.80	75.04			
	26	*L :38			12~59	12~46	12~49	12~38	12~41	12~30	12~57	12~44	14~59	14~46		12~57	14~59		78.83	78.07			
(1.1191/C45E)	28	(60 · 72 = L:46)			12~67	12~46	12~57	12~38	12~49	12~30	12~65	12~44	14~67	14~46		12~65	14~67		84.89	84.13		95	75
ATPT	30				12~72	12~52	12~62	12~42	12~50	12~34	12~70	12~50	14~72	14~52		12~70	14~72		90.96	90.20	56	99	80
ATP	32	L100			14~76	14~52	14~65	14~42	14~50	14~34	14~74	14~50	16~76	16~52		14~74	16~76		97.02	96.26		104	84
ATPP	34	*A :27			14~80	14~59	14~65	14~49	14~50	14~41	14~80	14~57	16~82	16~59		14~75	16~82		103.08	102.32		111	90
	36	*W :32			14~80	14~59	14~65	14~49	14~50	14~41	14~80	14~57	16~94	16~59		14~75	16~94		109.15	108.39	63	123	102
	38	*L :44			15~80	15~59	15~65	15~49	15~50	15~41	15~80	15~57	17~95	17~59		15~75	17~95		115.21	114.45		127	105
	40	(60 · 72 = L:53)			15~80	15~59	15~65	15~49	15~50	15~41	15~80	15~57	17~95	17~59		15~75	17~95		121.28	120.51	63	131	110
	42				16~80	16~67	16~65	16~57	16~50	16~49	16~80	16~65	18~95	18~67		16~75	18~95		127.34	126.58		135	115
	44				16~80	16~67	16~65	16~57	16~50	16~49	16~80	16~65	18~95	18~67		16~75	18~95		133.40	132.64		140	120
	46	L150			16~80	16~67	16~65	16~57	16~50	16~49	16~80	16~65	18~95	18~67		16~75	18~95		139.47	137.71	71	144	125
	48	*A :40			16~80	16~67	16~65	16~57	16~50	16~49	16~80	16~65	18~95	18~67		16~75	18~95		145.53	144.77		152	130
	50	*W :45			16~80	16~67	16~65	16~57	16~50	16~49	16~80	16~65	18~95	18~67		16~75	18~95		151.60	150.83		160	140
		*L :57																				170 (160)
ATPT ATP ATPP	60		A D		16~100	16~67	16~65	16~57	16~50	16~49	16~100	-	18~125	-		16~100	18~125		181.91	181.15	71	190	200 (197)
	72				16~100	16~67	16~65	16~57	16~50	16~49	16~100		18~125			16~100	18~125		218.30	217.53		225	

☞Z-d≥2 for Shaft Bore Specification V. ☞Q(R)-d≥2 for shaft bore specification Y. ☞*E dimensions in ( ) are for "D" shape.
☞Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y. ⊗Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21~ 50 are not available for Shaft Bore specification C.
⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
☞Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. ☞P.1112

Order Example

	Part Number	Pulley Shape	Shaft Bore Spec. / Inner Dia.	Z	J	Q	R	S	T
(Shaft Bore:H / P / N / C)	ATP14L075 -	A	- N10						
(Shaft Bore: V / F)	ATP36L100 -	A	- V15	- Z29	- J18.0				
(Shaft Bore: Y)	ATP50L150 -	A	- Y25			- Q47	- R47	- S12	- T12

CAD Data

Days to Ship

- ATPA / ATPT / ATP / ATPP

8 Days | Express A | 8,00 EUR/ piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces

- ATPB / ATPK / ATPN

10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The body price is the unit price in the table multiplied by 1.05 for ATP, 1.1 for ATPB / ATPK, coefficient 1.15 for ATPP, 1.2 for ATPN.
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

Teeth	€ Body Price																Shaft Bore Machining Charge (€ Body Price +)		
	ATPA(x1.0)ATPB / ATPK(x1.1) ATPN(x1.2)								ATPT(x1.0) ATP(x1.05) ATPP(x1.15)										
	L050		L075		L100		L150		L050		L075		L100		L150				
	A	B	A	B	A	B	A	B	A	B・D	A	B・D	A	B・D	A	B	P	N・C・V・F	Y
10																			
12																			
14																			
15																			
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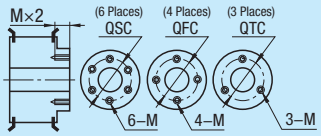
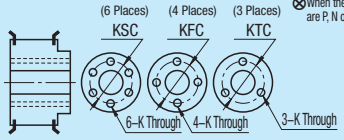
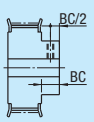
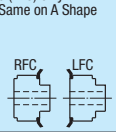
42																			
44																			
46																			
48																			
50																			
60																			
72																			

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

ATP20L075 - A - H25 - KSC36 - K5

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC / QFC / QTC	KSC / KFC / KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, QSC is not applicable. M Selection: M3,M4,M5,M6,M8 Ordering Code: QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K (Through Hole Dia.) Selection: K4.0~K13.0 (0.5mm Increment) Ordering Code: KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC / LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification H, V, F: 3≤BC≤L-W Shaft Bore specification P, N, C: M+3≤BC≤L-W  Ordering Code: BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not applicable to A / D Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code: FC38	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. M / TPC M4 / M5 M5 / M4, M6 M6 / M5, M8 M8 / M6, M10 M10 / M8 Ordering Code: TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Set Screw / SLH M4x3 / 5, 8 M5x4 / 6, 10 M6x5 / 10 M8x6 / 10, 12 M10x8 / 12, 15 Ordering Code: SLH12
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

Timing Pulleys H Type

■For Timing Belts, refer to P.1193, for Long Timing Belts, refer to P.1203, for Keyless Timing Pulleys, refer to P.1157, for Idlers with Teeth, refer to P.1177

RoHS

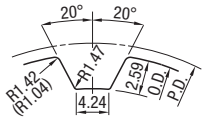


Part Number				Material		Surface Treatment
Belt Width 19.1mm (3/4inch)	Belt Width 25.4mm (1inch)	Belt Width 38.1mm (1.5inch)	Belt Width 50.8mm (2 inches)	Pulley	Flange	
A: 21 W: 26 L: 41	A: 27 W: 32 L: 47	A: 40 W: 45 L: 60	A: 54 W: 59 L: 74			
ATPA__H075	ATPA__H100	ATPA__H150	ATPA__H200	EN AW-7075/ AlZn5,5MgCu (Extra Super Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
ATPB__H075	ATPB__H100	ATPB__H150	ATPB__H200			Black Anodize
ATPK__H075	ATPK__H100	ATPK__H150	ATPK__H200			Hard Clear Anodize*
ATPN__H075	ATPN__H100	ATPN__H150	ATPN__H200			Electroless Nickel Plating
ATPT__H075	ATPT__H100	ATPT__H150	ATPT__H200			-
ATP__H075	ATP__H100	ATP__H150	ATP__H200	1.1191/C45E	1.0330/DC01	Black Oxide
ATPP__H075	ATPP__H100	ATPP__H150	ATPP__H200			Electroless Nickel Plating

Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.

*Hard Anodize Treatment: Film Hardness 300HV~

Tooth Profile (ISO Standard Rack Dimensions)

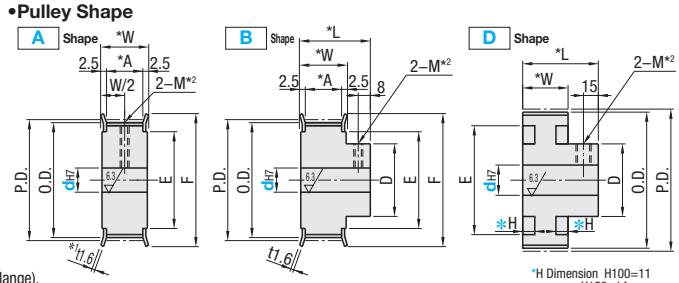


( ): 19 teeth or less

Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 12.7mm)

•Pulley Shape



*H Dimension H100=11 H150=14

*1 t=2.0 for 40~50 toothed pulleys (Cut Flange).
*2 Shaft Bore Specifications H (Round Hole), V,F (Stepped Hole) and Y (Both Sides Stepped Hole), do not have tapped holes.

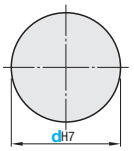
■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~46	M8	M8x6
47~65	M10	M10x8

•Shaft Bore Specs.

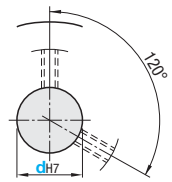
The shaft bore may not have surface treatment.

H Round Hole



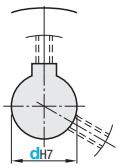
*No tapped holes and set screws.

P Round Hole+Tap



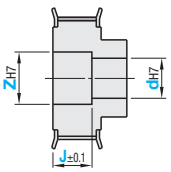
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



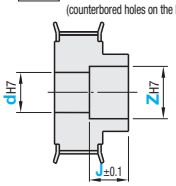
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



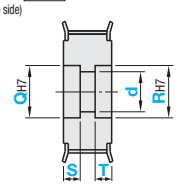
⊗Not available for D Shape.
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)															P.D.	O.D.	D	F	E
					H		P		N · C		V · F						Y								
Type	Teeth	Type Nominal Width			dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7 · RH7	S / T						
					A	B · D	A	B · D	A	B · D	A	B	A	B	A · B	A	A	A						
EN AW-7075/ AlZn5, 5MgCu ATPA ATPB ATPK ATPN (1.1191/ C45E) ATPT ATP ATPP	14		A B	H P N C V F	12~37	12~35	12~30	12~29	12~29	12~25	12~35	12~33	14~37	14~35	(For A Shape) 3.0≤J≤W-3.0 (For B Shape) 3.0≤J≤L-3.0	12~35	14~37	3~28 S+T≤W-3	56.60	55.22	39	61	45
	15				12~42	12~41	12~34	12~33	12~30	12~29	12~40	12~39	14~42	14~41		12~40	14~42		60.64	59.27	45	67	50
	16	H075			12~48	12~44	12~40	12~36	12~35	12~30	12~46	12~42	14~48	14~44		12~46	14~48		64.68	63.31	48	70	56
	17	*A :21			12~52	12~44	12~44	12~36	12~40	12~30	12~50	12~42	14~52	14~44		12~50	14~52		68.72	67.35		80	60
	18	*W :26			12~52	12~46	12~44	12~38	12~43	12~35	12~50	12~44	14~52	14~46		12~50	14~52		72.77	71.39	50		
	19	*L :41			14~59	14~46	14~49	12~38	14~47	14~35	14~57	14~44	16~59	16~46		14~57	16~59		76.81	75.44		87	67
	20				14~59	14~54	14~50	14~46	14~50	14~38	14~57	14~52	16~59	16~54		14~57	16~59		80.85	79.48		87	67
	21	H100			14~67	14~54	14~57	14~46	14~50	14~38	14~65	14~52	16~67	16~54		14~65	16~67		84.89	83.52	58	95	75
	22	*A :27			14~67	14~54	14~57	14~46	14~50	14~38	14~65	14~52	16~67	16~54		14~65	16~67		88.94	87.56			
	24	*W :32			16~76	16~54	16~65	16~46	16~50	16~38	16~74	16~52	18~76	18~54		16~74	18~76		97.01	95.65		104	84
	25	*L :47 (38~=L: 53			16~80	16~59	16~65	16~49	16~50	16~41	16~80	16~57	18~82	18~59		16~75	18~82		101.06	99.69		111	90
	26	72= L: 58			20~80	20~59	20~65	20~49	20~50	20~41	20~80	20~57	22~82	22~59		20~75	22~82		105.11	103.73			
	28				20~80	20~59	20~65	20~49	20~50	20~41	20~80	20~57	22~94	22~59		20~75	22~94		113.19	111.82	63	123	102
	30	H150			20~80	20~59	20~65	20~49	20~50	20~41	20~80	20~57	22~95	22~59		20~75	22~95		121.28	119.90		127	105
	32	*A :40			20~80	20~59	20~65	20~49	20~50	20~43	20~80	20~57	22~95	22~59		20~75	22~95		129.36	127.99		135	115
	34	*W :45			20~80	20~67	20~65	20~57	20~50	20~49	20~80	20~65	22~95	22~67		20~75	22~95		137.45	136.07	71	144	125
	36	*L :60 (38~=L: 65			20~80	20~67	20~65	20~57	20~50	20~49	20~80	20~65	22~95	22~67		20~75	22~95		145.53	144.16		152	130
(1.1191/ C45E) ATPT ATP ATPP	38	72= L: 70	A D		20~80	20~67	20~65	20~57	20~50	20~49	20~80		22~95			20~75	22~95		153.62	152.24		165	140 (126)
	40				20~80	20~67	20~65	20~57	20~50	20~49	20~80		22~95			20~75	22~95		161.70	160.33		170	150 (135)
	42	H200			20~80	20~67	20~65	20~57	20~50	20~49	20~80	-	22~95	-		20~75	22~95		169.79	168.41	88	180	155 (143)
	44	*A :54			20~100	20~67	20~65	20~57	20~50	20~49	20~100		22~125			20~100	22~125		177.87	176.50		190	170 (152)
	48	*W :59			20~100	20~67	20~65	20~57	20~50	20~49	20~100		22~125			20~100	22~125		194.04	192.67		205	180 (168)
	50	*L :74			20~100	20~67	20~65	20~57	20~50	20~49	20~100		22~125			20~100	22~125		202.13	200.76		210	185 (175)
	60		D		-	25~67	-	25~57	-	25~49	-	-	-	-		-	-		242.55	241.18	88	-	216
	72					25~67		25~57		25~49									291.06	289.69			265

Z-d≥2 for Shaft Bore Specification V.
Q(R)-d≥2 for shaft bore specification Y.
Available number of teeth with nominal width H075 and H200 is up to 36.
*E dimension in ( ) are for D Shape with 38~48 teeth.
⊗Shaft Bore Dia. 13, 14, 17, 21~50 are not available for Shaft Bore specification C.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	ATP18H150	-	B	-	N20												
(Shaft Bore: V · F)	ATP20H100	-	A	-	V20	-	Z38	-	J23.0								
(Shaft Bore: Y)	ATP30H150	-	A	-	Y25					-	Q42	-	R42	-	S9	-	T9

CAD Data

Days to Ship

- ATPA / ATPT / ATP / ATPP

8 Days | Express A | 8,00 EUR/ piece | P. 88

Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces

- ATPB / ATPK / ATPN

5 Days

Price

Volume Discount (Ⓨ Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Ⓨ The prices of ATP is the body price in the table multiplied by 1.05, while the prices of ATPB and ATPK are multiplied by 1.1, the prices of ATPP are multiplied by 1.15, and the price of ATPN is multiplied by 1.2. (Round down to ten Cent.)
Ⓨ Product price is the sum of body price and shaft bore machining charge.
Ⓨ H bore machining is free of charge.

Teeth	€ Body Price																Shaft Bore Machining Charge (€ Body Price +)		
	ATPA(x1.0) ATPB ATPK (x1.1) ATPN(x1.2)								ATPT(x1.0) ATP(x1.05) ATPP(x1.15)										
	H075		H100		H150		H200		H075		H100		H150		H200				
	A	B	A	B	A	B	A	B	A	B	A	B・D	A	B・D	A	B	P	N・C・V・F	Y
14																			
15																			
16																			
17																			
18																			
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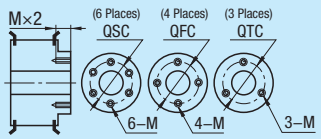
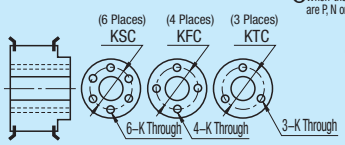
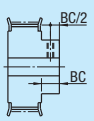
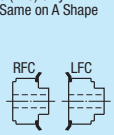
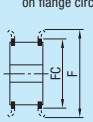
40																			
42																			
44																			
48																			
50																			
60																			
72																			

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

ATP18H150 - B - H20 - KSC30 - K4

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC / QFC / QTC	KSC / KFC / KTC
Spec.	Changes an angle of set screw to 90°. Ⓨ For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Ⓨ Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) Ⓨ d=Z when the Shaft Bore Specifications is V. Ⓨ Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. Ⓨ The pilot hole for tapping may go through. ⊗ Not applicable to Shaft Bore Specifications F or Y. ⊗ When the Shaft Bore Specifications are P, N or C, QSC is not applicable. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Ⓨ Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) Ⓨ d=Z when the Shaft Bore Specifications is V. Ⓨ Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. ⊗ Not applicable to Shaft Bore Specifications F or Y. ⊗ When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K Through Hole Dia.) Selection K4.0–K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC / LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Ⓨ Shaft Bore specification H, V, F: 3≤BC≤L-W Ⓨ Shaft Bore specification P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Ⓨ Clear anodized products may not have surface treatment on the embossed plane. ⊗ Not applicable to A / D Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Ⓨ Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment Ⓨ No surface treatment applied on flange circumference.  Ⓨ FC≥(O.D.)+2 Ⓨ FC≤F-2 Ordering Code FC64	Changes the tapped hole dimension. Ⓨ Applicable to Shaft Bore specification P, N, C only. M / TPC M4 / M5 M5 / M4, M6 M6 / M5, M8 M8 / M6, M10 M10 / M8 Ordering Code TPC5	Changes the length of the included set screws. Ⓨ Applicable to Shaft Bore specification P, N, C only. Set Screw / SLH M4x3 / 5, 8 M5x4 / 6, 10 M6x5 / 10 M8x6 / 10, 12 M10x8 / 12, 15 Ordering Code SLH15
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

High Torque Timing Pulleys S2M Type

■For High Torque Timing Belts, refer to P.1195, for Idlers with Teeth, refer to P.1179

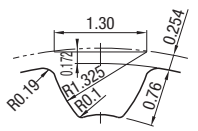


RoHS

Part Number			Material		Surface Treatment
Belt Width 4mm	Belt Width 6mm	Belt Width 10mm	Pulley	Flange	
A: 5 W: 9 L: 17	A: 7 W: 11 L: 19	A: 11 W: 15 L: 23			
HTPA__S2M040	HTPA__S2M060	HTPA__S2M100	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
HTPB__S2M040	HTPB__S2M060	HTPB__S2M100			Black Anodize
HTPK__S2M040	HTPK__S2M060	HTPK__S2M100			Hard Clear Anodize*
HTPN__S2M040	HTPN__S2M060	HTPN__S2M100			Electroless Nickel Plating
HTPT__S2M040	HTPT__S2M060	-	1.1191/C45E	1.0330/DC01	-
HTPM__S2M040	HTPM__S2M060	-			Black Oxide
HTPP__S2M040	HTPP__S2M060	-			Electroless Nickel Plating
HTPS__S2M040	HTPS__S2M060	-	1.4301/X5CrNi18-10		-

Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C. *Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

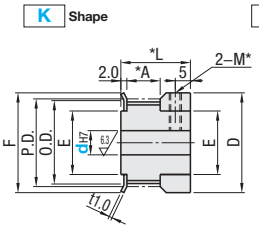


Tooth groove dimensions slightly change according to No. of teeth.

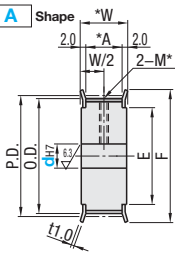
(Pitch: 2.0mm)

•Pulley Shape

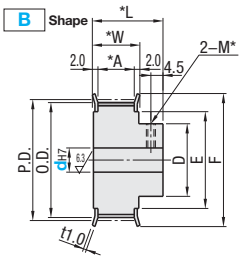
K Shape



A Shape



B Shape



*For Shaft Bore Specifications H (Round Hole), V (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

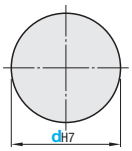
■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
3~5	M3	M3x3
6~24	M4	M4x3

•Shaft Bore Specs.

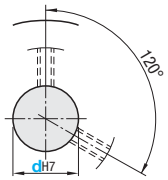
The shaft bore may not have surface treatment.

H Round Hole



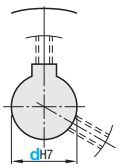
*No tapped holes and set screws.

P Round Hole+Tap



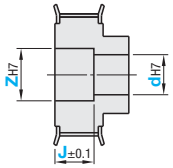
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



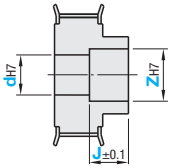
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



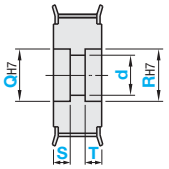
⊗Not applicable to K Shape.
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)														P.D.	O.D.	D	F	E
					H		P		N / C		V / F					Y							
					dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7·RH7	S・T					
Type	Teeth	Type Nominal Width			A	B・K	A	B・K	A	B	A	B	A	B	A・B	A	A	A					
	14				3, 4	3, 4		3, 4			-		-		-	-	-	-	8.91	8.4	12	12	6
	15				3, 4	3, 4	-	3, 4	-	-		-		-					9.55	9.04			
	16*				3, 4, 5	3, 4, 5		3, 4, 5			3		5			3	5		10.19	9.68	14	14	8
	18*				3, 4, 5	3, 4, 5		3, 4, 5			3		5			3	5		11.46	10.95			
EN AW-2017/ AlCu4MgSi	20*				3~6	3~6		3~6			3, 4		5, 6			3, 4	5, 6		12.73	12.22	16	16	10
HTPA	22*	S2M040	A	H	3~6	3~6		3~6			3, 4		5, 6			3, 4	5, 6		14.01	13.5	18	18	11
HTPB	23	*A :5		P	3~6	3~6		3~6			3, 4		5, 6			3, 4	5, 6		14.64	14.13			
HTPK	24*	*W :9	K	N	3~7	3~7	-	3~7	-	-	3, 4, 5	-	5, 6, 7	-		3, 4, 5	5, 6, 7		15.28	14.77	20	20	13
HTPN	25*	*L :17		C	3~7	3~7		3~7			3, 4, 5		5, 6, 7			3, 4, 5	5, 6, 7		15.92	15.41			
	26	S2M060		V	3~8	3~8		3~8			3~6		5~8		(For A Shape)	3~6	5~8		16.55	16.04			
(1.1191/C45E)	28	*A :7		F	3~8	3~8		3~8			3~6		5~8		2.0≤J≤W-2.0	3~6	5~8		17.83	17.32	22	22	14
HTPT	30*	*W :11		Y	3~8	3~8		3~8			3~6		5~8			3~6	5~8	3~6	19.10	18.59			
HTPM	32*	*L :19			4~10	4~8	4~10	4, 5, 6	8		4~7	4~6	6~10	6~8	(For B Shape)	4~7	6~10	S+T≤W-3	20.37	19.86	12	25	16
HTPP	34	S2M100			4~10	4~10	4~10	4~8	8, 10	-	4~7	4~6	6~10	6~8	2.0≤J≤L-2.0	4~7	6~10		21.65	21.14	14		
	36*	*A :11			4~10	4~10	4~10	4~8	8, 10		4~8	4~8	6~11	6~10		4~8	6~11		22.92	22.41		28	18
(1.4301/ X5CrNi18-10)	40*	*W :15	A		4~12	4~13	4~12	4~10	8~12	8	4~10	4~10	6~12	6~12		4~10	6~12		25.46	24.96	18	30	20
HTPS	44	*L :23	B		5~15	5~15	5~13	5~12	8~13	8~11	5~13	5~13	7~15	7~15		5~13	7~15		28.01	27.5	20	32	23
	48				5~17	5~16	5~15	5~12	8~15	8~11	5~15	5~14	7~17	7~16		5~15	7~17		30.56	30.05		35	25
	50*				5~17	5~16	5~16	5~12	8~16	8~11	5~15	5~14	7~24	7~16		5~15	7~24		31.83	31.32	20	35	25
	60				5~24	5~25	5~22	5~22	8~22	8~16	5~22	5~22	7~24	7~24		5~22	7~24		38.20	37.69	30	44	32
	72				5~30	5~30	5~24	5~24	8~22	8~17	5~28	5~24	7~30	7~26		7~28	7~30		45.84	45.33	34	50	38

HTPS is available for * marked No. of teeth only.
Z-d≥2 for shaft bore specification V and F.
Q(R)-d≥2 for shaft bore specification Y.
Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112

Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y.
⊗Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21, 22 are not available for Shaft Bore specification C.
⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H・P・N・C)	HTPA48S2M040	-	B	-	N10												
(Shaft Bore: V・F)	HTPA60S2M060	-	B	-	V10	-	Z17	-	J14.2								
(Shaft Bore: Y)	HTPA36S2M100	-	A	-	Y6					-	Q10	-	R10	-	S3	-	T3

Days to Ship

- HTPA / HTPT / HTPM / HTPP / HTPS

8 Days | Express A | 8,00 EUR/ piece | P.88

Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces
Ⓝ Express Serviceis not available for "A" shape with 14~30 teeth.

- HTPB / HTPK / HTPN

10 Days

Price

Volume Discount (Ⓨ Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Ⓨ The prices of HTPM is the body price in the table multiplied by 1.05, while the prices of HTPB and HTPK are multiplied by 1.1, the prices of HTPP are multiplied by 1.15, and the price of HTPN is multiplied by 1.2. (Round down to ten Cent.)
Ⓨ Product price is the sum of body price and shaft bore machining charge.
Ⓨ **H** bore machining is free of charge.

Teeth	€ Body Price														Shaft Bore Machining Charge (€ Body Price+)					
	HTPA(x1.0)· HTPB · HTPK(x1.1) · HTPN(x1.2)						HTPT(x1.0) · HTPM(x1.05) · HTPP(x1.15)				HTPS(x1.0)				HTPA · HTPB · HTPK · HTPN HTPT · HTPM · HTPP			HTPS		
	S2M040		S2M060		S2M100		S2M040		S2M060		S2M040		S2M060							
	A	B · K	A	B · K	A	B · K	A	B · K	A	B · K	A	B · K	A	B · K	P	N · C · V · F	Y	P	N · C · V · F	Y
14																				
15																				
16																				
18																				
20																				
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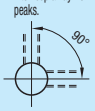
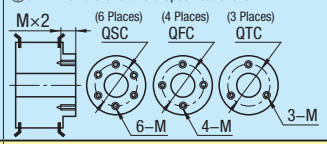
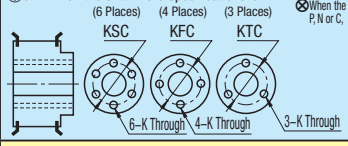
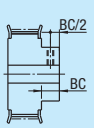
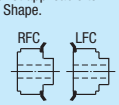
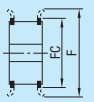
44																				
48																				
50																				
60																				
72																				

Alterations

Part Number - Pulley Shape · Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

HTPM48S2M040 - B - H10 - NFC

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. Ⓨ For A shape pulley, the set screw hole is set at around 90 ° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Ⓨ Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) Ⓨ d=Z when the Shaft Bore Specifications is V. Ⓨ Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. Ⓨ The pilot hole for tapping may go through. Ⓝ Not applicable to Shaft Bore Specifications F or Y. Ⓝ When the Shaft Bore Specifications are P, N or C, QSC is not applicable. Ⓝ Not applicable to K Shape. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Ⓨ Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) Ⓨ d=Z when the Shaft Bore Specifications is V. Ⓨ Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Ⓝ Not applicable to K Shape. Ⓝ Not applicable to Shaft Bore Specifications F or Y. Ⓝ When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Ⓨ Shaft Bore specification: H, V, F: 3≤BC≤L-W Ⓨ Shaft Bore specification: P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Ⓨ Clear anodized products may not have surface treatment on the embossed plane. Ⓝ Not applicable to K and A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Ⓨ Same on A Shape Ⓝ Not applicable to K Shape. 	Lowers flange by cutting. FC: 0.5mm Increment Ⓝ Not available for Stainless Steel Type. Ⓨ No surface treatment applied on flange circumference.  Ⓨ FC≥(O.D.)+2 Ⓨ FC≤F-2 Ordering Code FC17	Changes the tapped hole dimension. Ⓨ Applicable to Shaft Bore specification P, N, C only. M | TPC M3 | M4 M4 | M3 Ordering Code TPC4	Changes the length of the included set screws. Ⓨ Applicable to Shaft Bore specification P, N, C only. Set Screw | SLH M3x3 | 6 M4x3 | 5, 8 Ordering Code SLH8
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

High Torque Timing Pulleys S3M Type

■For High Torque Timing Belts, refer to P.1195, for Keyless High Torque Timing Pulleys refer to P.1159, for Idlers with Teeth, refer to P.1179

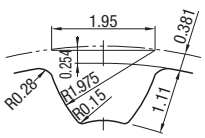


RoHS

Part Number			Material		Surface Treatment
Belt Width 6mm	Belt Width 10mm	Belt Width 15mm	Pulley	Flange	
A: 7 W: 11 L: 19	A: 11 W: 15 L: 23	A: 17 W: 21 L: 29			
HTPA__S3M060	HTPA__S3M100	HTPA__S3M150	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
HTPB__S3M060	HTPB__S3M100	HTPB__S3M150			Black Anodize
HTPK__S3M060	HTPK__S3M100	HTPK__S3M150			Hard Clear Anodize*
HTPN__S3M060	HTPN__S3M100	HTPN__S3M150			Electroless Nickel Plating
HTPT__S3M060	HTPT__S3M100	HTPT__S3M150	1.1191/C45E	1.0330/ DC01	-
HTPM__S3M060	HTPM__S3M100	HTPM__S3M150			Black Oxide
HTPP__S3M060	HTPP__S3M100	HTPP__S3M150			Electroless Nickel Plating
HTPS__S3M060	HTPS__S3M100	-	1.4301/X5CrNi18-10		-

Ⓣ Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C. *Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

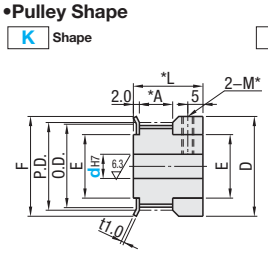


Tooth groove dimensions slightly change according to No. of teeth.

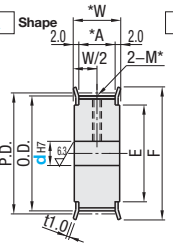
(Pitch: 3.0mm)

•Pulley Shape

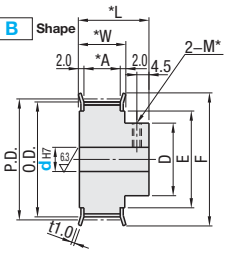
K Shape



A Shape



B Shape



*For Shaft Bore Specifications H (Round Hole), V (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

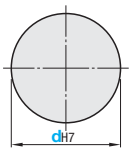
■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
4~5	M3	M3x3
6~17	M4	M4x3
18~33	M5	M5x4
34~42	M6	M6x5

Shaft Bore Specs.

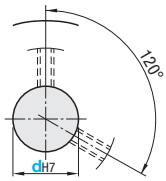
Ⓣ The shaft bore may not have surface treatment.

H Round Hole



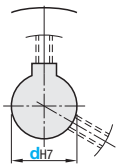
*No tapped holes and set screws.

P Round Hole+Tap



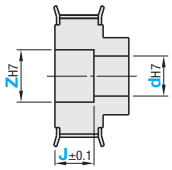
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.
⊗Shaft bore specification P is not selectable for A Shape with 22 or less teeth and nominal width 060.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



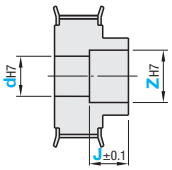
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



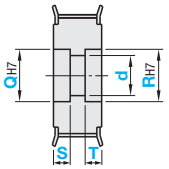
⊗Not applicable to K Shape.
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)																
					H		P		N · C		V · F				Y			P.D.	O.D.	D	F	E
					dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7 · RH7	S · T					
Type	Teeth	Type Nominal Width			A	B·K	A	B·K	A	B	A	B	A	B	A·B	A	A	A					
EN AW-2017/ AlCu4MgSi HTPA HTPB HTPK HTPN (1.1191/ C45E) HTPT HTPM HTPP (1.4301/ X5CrNi18-10) HTPS	14		A K	H P N C V F Y	4,5,6	4,5,6	·	4,5,6			4		6		(For A Shape) 2.0≤J≤W-2.0 (For B Shape) 2.0≤J≤L-2.0	4	6	3~9 S+T≤W-3	13.37	12.61	16	16	10
	15				4,5,6	4,5,6	·	4,5,6			4		6			4	6		14.32	13.56	18	18	11
	16				4~7	4~7	·	4~7			4, 5		6, 7			4, 5	6, 7		15.28	14.52			
	18*				4~8	4~8	4, 5	4~8	·	·	4, 5, 6	·	6, 7, 8	·		4, 5, 6	6, 7, 8		17.19	16.43	20	20	13
	19				4~9	4~8	4, 5, 6	4~8			4~7		6~9			4~7	6~9		18.14	17.38	22	22	14
	20*	S3M060			4~9	4~8	4, 5, 6	4~8			4~7		6~9			4~7	6~9		19.10	18.34	22	22	14
	22*	*A :7 *W :11			4~10	4~10	4~8	4~10			4~7		6~9			4~7	6~9		21.01	20.25	25	25	16
	24*	*L :19			4~10	4~10	4~10	4~8	·	·	4~7	4~6	6~9	6~8		4~7	6~9		22.92	22.16	14	25	16
	25*				4~11	4~11	4~11	4~10	8, 10, 11	8	4~8	4~8	6~11	6~10		4~8	6~11		23.87	23.11	16	28	18
	26	S3M100			5~11	5~11	5~11	5~10	8, 10, 11	8	5~8	5~8	7~11	7~10		5~8	7~11		24.83	24.07			
	28*	*A :11 *W :15			5~13	5~13	5~13	5~10	8~13	8	5~10	5~10	7~12	7~12		5~10	7~12		26.74	25.98	18	30	20
	30*	*L :23			6~15	6~15	6~14	6~12	8~14	8~11	6~13	6~13	8~15	8~15		6~13	8~15		28.65	27.89	20	32	23
	32*				6~17	6~16	6~16	6~12	8~16	8~11	6~15	6~14	8~17	8~16		6~15	8~17		30.56	29.80		35	25
	34	S3M150			6~20	6~20	6~18	6~18	8~18	8~13	6~18	6~18	8~23	8~23		6~18	8~20		32.47	31.71	26	40	28
	36*	*A :17 *W :21			6~20	6~20	6~18	6~18	8~18	8~13	6~18	6~18	8~23	8~23		6~18	8~20		34.38	33.62			
	40*	*L :29			8~24	8~24	8~23	8~21	8~23	8~16	8~22	8~22	10~24	10~24		8~22	10~24		38.20	37.44	30	44	32
	44				8~28	8~28	8~25	8~23	8~25	8~18	8~26	8~26	10~28	10~28		8~26	10~28		42.02	41.25	32	48	36
	48				8~30	8~30	8~25	8~25	8~25	8~20	8~28	8~28	10~30	10~30		8~28	10~30		45.84	45.07	34	50	38
	50				8~32	8~30	8~28	8~25	8~28	8~20	8~30	8~28	10~32	10~30		8~30	10~32		47.75	46.98		52	40
	60				8~38	8~35	8~33	8~30	8~32	8~22	8~36	8~33	10~38	10~35		8~36	10~38		57.30	56.53	39	61	46
	72				8~50	8~46	8~42	8~38	8~40	8~32	8~48	8~44	10~50	10~46		8~48	10~50		68.75	67.99	50	74	58

Ⓣ HTPS is available for * marked No. of teeth only.
Ⓣ Z-d≥2 for shaft bore specification V and F.
Ⓣ Q(R)-d≥2 for shaft bore specification Y.
Ⓣ Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y.
Ⓣ Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112

⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
⊗Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21 ~ 32 are not available for Shaft Bore specification C.
⊗Shaft bore specification P is not selectable for A Shape with 22 or less teeth and nominal width 060.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	HTPA32S3M100	-	A	-	C16												
(Shaft Bore: V · F)	HTPA48S3M150	-	A	-	V12	-	Z26	-	J17.0								
(Shaft Bore: Y)	HTPA36S3M100	-	A	-	Y10					-	Q19	-	R15	-	S5	-	T4

Reduced Delivery Time

CAD Data

Days to Ship

- HTPA / HTPT / HTPM / HTPP / HTPS: **8 Days** | Express A | 8,00 EUR/ piece | P. 88
  - A Express Charge of 21,60 EUR for 3 or more identical pieces
- HTPB / HTPK / HTPN: **10 Days**
- HTPA (Applicable for A Shape and K Shape with No. of teeth from 14 to 72): **8 Days** | Express T | 2,00 EUR/ piece | P. 88
  - Express ServiceT is available up to 6 pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

- The prices of HTPM is the body price in the table multiplied by 1.05, while the prices of HTPB and HTPK are multiplied by 1.1, the prices of HTPP are multiplied by 1.15, and the price of HTPN is multiplied by 1.2. (Round down to ten Cent.)
- Product price is the sum of body price and shaft bore machining charge.
- **H** bore machining is free of charge.

Teeth	€ Body Price																Shaft Bore Machining Charge (€ Body Price+)											
	~~HTPA(x1.0) · HTPB(x1.1) · HTPK(x1.1) · HTPN(x1.2)~~						HTPT(x1.0) · HTPM(x1.05) · HTPP(x1.15)						HTPS(x1.0)				HTPA · HTPB HTPK · HTPN			HTPT · HTPM · HTPP			HTPS				
	S3M060		S3M100		S3M150		S3M060		S3M100		S3M150		S3M060		S3M100													
	A	B · K	A	B · K	A	B · K	A	B · K	A	B · K	A	B · K	A	B · K	A	B · K	P	N · C · V F	Y	P	N · C · V F	Y	P	N · C · V F	Y		
14																												
15																												
16																												
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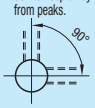
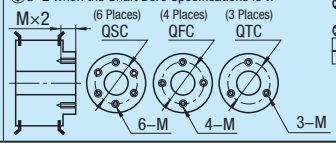
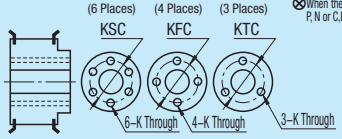
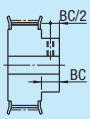
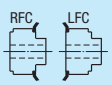
44																												
48																												
50																												
60																												
72																												

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

HTPA60S3M100 - A - H16 - KSC25 - K4

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, QSC is not applicable. Not applicable to K Shape. M Selection: M3,M4,M5,M6,M8 Ordering Code: QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to "K" shape. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K (Through Hole Dia.) Selection: K4.0~K13.0 (0.5mm Increment) Ordering Code: KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification H, V, F: 3≤BC≤L-W Shaft Bore specification: P, N, C: M+3≤BC≤L-W  Ordering Code: BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not applicable to K and A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape Not applicable to K Shape. 	Lowers flange by cutting. FC: 0.5mm Increment Not available for Stainless Steel Type. No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code: FC35	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. M: TPC M3: M4 M4: M3 / M5 M5: M4 Ordering Code: TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Set Screw: SLH M3x3: 6 M4x3: 5, 8 M5x4: 6, 10 M6x5: 10 Ordering Code: SLH10
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

High Torque Timing Pulleys S5M Type

■For High Torque Timing Belts, refer to P.1195, for Keyless High Torque Timing Pulleys, refer to P.1161, for Idlers with Teeth, refer to P.1181

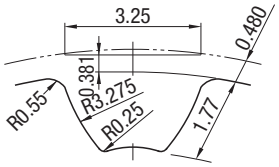
RoHS



Part Number			Material		Surface Treatment
Belt Width 10mm	Belt Width 15mm	Belt Width 25mm	Pulley	Flange	
A: 11 W: 16 L: 28	A: 17 W: 22 L: 34	A: 27 W: 32 L: 44			
HTPA__S5M100	HTPA__S5M150	HTPA__S5M250	EN AW-2017 /AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
HTPB__S5M100	HTPB__S5M150	HTPB__S5M250			Black Anodize
HTPK__S5M100	HTPK__S5M150	HTPK__S5M250			Hard Clear Anodize*
HTPN__S5M100	HTPN__S5M150	HTPN__S5M250			Electroless Nickel Plating
HTPT__S5M100	HTPT__S5M150	HTPT__S5M250	1.1191/C45E	1.0330/ DC01	-
HTPM__S5M100	HTPM__S5M150	HTPM__S5M250			Black Oxide
HTPP__S5M100	HTPP__S5M150	HTPP__S5M250			Electroless Nickel Plating
HTPS__S5M100	HTPS__S5M150	-	1.4301/X5CrNi18-10		-

Ⓨ Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C. *Hard Anodize Treatment: Film Hardness 300HV~

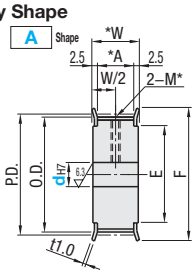
Standard Tooth Profile

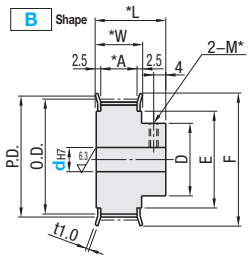


Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 5.0mm)

•Pulley Shape





*For Shaft Bore Specifications H (Round Hole), V (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

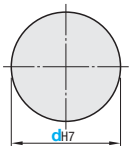
■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
5	M3	M3x3
6~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

•Shaft Bore Specs.

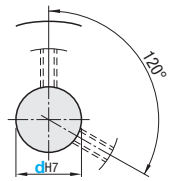
Ⓨ The shaft bore may not have surface treatment.

H Round Hole



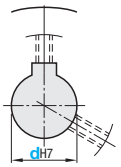
*No tapped holes and set screws.

P Round Hole+Tap



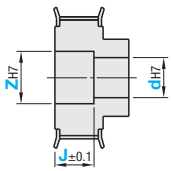
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



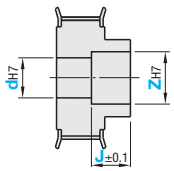
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



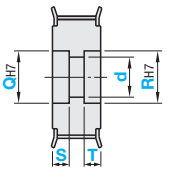
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number Type	Teeth	Type Nominal Width	Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment) H dH7 A	H dH7 B	P dH7 A	P dH7 B	N·C dH7 A	N·C dH7 B	V·F dH7 A	V·F dH7 B	V·F ZH7 A	V·F ZH7 B	V·F J (0.1mm Increment) A·B	Y d A	Y QH7·RH7 A	Y S·T A	P.D.	O.D.	D	F	E
EN AW-2017/ AlCu4MgSi HTPA HTPB HTPK HTPN	14	S5M100 *A :11 *W :16 *L :28	A	H	5~10	5~10	5~10	5~8	8, 10	-	5, 6	5, 6	7, 8	7, 8	(For A Shape) 2.0≤J≤W-2.0	5, 6	7, 8	3~14 S+T≤W-3	22.28	21.32	14	26	16
	15				5~10	5~10	5~10	5~8	8, 10		5~8	5~8	7~10	7~10		5~8	7~10		23.87	22.91	15	28	18
	16				5~12	5~12	5~12	5~10	8~12	8	5~10	5~10	7~12	7~12		5~10	7~12		25.46	24.50	17	32	20
	18				6~14	6~14	6~12	6~11	8~12	8, 10	6~12	6~12	8~14	8~14		6~12	8~14		28.65	27.69	19	33	22
	19				6~16	6~15	6~16	6~11	8~16	8, 10	6~14	6~13	8~16	8~15		6~14	8~16		30.24	29.28		36	24
	20*			P	6~16	6~15	6~16	6~11	8~16	8, 10	6~14	6~13	8~16	8~15		6~14	8~16		31.83	30.87	19	36	24
	22*				7~19	7~19	7~18	7~15	8~18	8~12	7~17	7~17	9~19	9~19		7~17	9~19		35.01	34.05	24	40	27
	24*			N	7~22	7~22	7~20	7~17	8~20	8~13	7~20	7~20	9~23	9~23		7~20	9~22		38.20	37.24	27	45	30
	25*				7~22	7~22	7~20	7~17	8~20	8~15	7~20	7~20	9~23	9~23		7~20	9~22		39.79	38.83			
	26	S5M150 *A :17 *W :22 *L :34	A		8~27	8~27	8~22	8~21	8~22	8~17	8~25	8~25	10~27	10~27		8~25	10~27		41.38	40.42	31	48	35
(1.1191/C45E) HTPT HTPM HTPP	28*			C	8~27	8~27	8~24	8~22	8~24	8~18	8~25	8~25	10~27	10~27		8~25	10~27		44.56	43.60	32		
	30*		B		10~28	10~28	10~26	10~23	10~26	10~18	10~26	10~26	12~28	12~28	(For B Shape) 2.0≤J≤L-2.0	10~26	12~28		47.75	46.79	33	52	36
	32*			V	10~32	10~32	10~28	10~27	10~28	10~22	10~30	10~30	12~32	12~32		10~30	12~32		50.93	49.97	37	55	40
	34	S5M250 *A :27 *W :32 *L :44			10~37	10~36	10~30	10~30	10~30	10~25	10~35	10~34	12~37	12~36		10~35	12~37		54.11	53.15	40	61	45
(1.4301/ X5CrNi18-10) HTPS	36*			F	10~37	10~36	10~30	10~30	10~30	10~25	10~35	10~34	12~37	12~36		10~35	12~37		57.30	56.34			
	40*				10~42	10~42	10~38	10~35	10~38	10~28	10~40	10~40	12~42	12~42		10~40	12~42		63.66	62.70	47	67	50
	44				12~50	12~46	12~42	12~38	12~40	12~32	12~48	12~44	14~50	14~46		12~48	14~50		70.03	69.07	50	74	58
	48			Y	12~55	12~55	12~45	12~45	12~40	12~40	12~53	12~53	14~55	14~55		12~53	14~55		76.39	75.43	60	83	63
	50				12~59	12~59	12~45	12~45	12~43	12~43	12~57	12~57	14~59	14~59		12~57	14~59		79.58	78.62	63	87	67
	60				12~72	12~71	12~45	12~45	12~45	12~45	12~70	12~69	14~72	14~71		12~70	14~72		95.49	94.53	75	99	80
	72				12~80	12~80	12~65	12~65	12~50	12~50	12~80	12~80	14~92	14~86		12~75	14~92		114.59	113.63	90	119	100

Ⓨ HTPS is available for * marked No. of teeth only.
Ⓨ Z-d≥2 for shaft bore specification V and F. Ⓨ Q(R)-d≥2 for shaft bore specification Y.
Ⓨ Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F. Q (R)-d≥2 for shaft bore specification Y.
Ⓨ Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112
⊗ Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
⊗ Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21 ~ 45 are not available for Shaft Bore specification C.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	HTPA20S5M150	-	B	-	NK10												
(Shaft Bore: V · F)	HTPA26S5M150	-	A	-	V10	-	Z23	-	J16.0								
(Shaft Bore: Y)	HTPA40S5M250	-	A	-	Y17					-	Q35	-	R35	-	S10	-	T10

Reduced Delivery Time

CAD Data

Days to Ship

- HTPA / HTPT / HTPM / HTPP / HTPS

8 Days | Express A | 8,00 EUR/ piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces

- HTPB / HTPK / HTPN

10 Days

- HTPA (Applicable for A Shape with No. of teeth from 14 to 40.)

8 Days | P.88

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The prices of HTPM is the body price in the table multiplied by 1.05, while the prices of HTPB and HTPK are multiplied by 1.1, the prices of HTPP are multiplied by 1.15, and the price of HTPN is multiplied by 1.2. (Round down to ten Cent.)

Product price is the sum of body price and shaft bore machining charge.

H bore machining is free of charge.

Teeth	€ Body Price												Shaft Bore Machining Charge (€ Body Price+)							
	HTPA(x1.0)HTPB · HTPK(x1.1)HTPN(x1.2)						HTPT(x1.0)HTPM(x1.05)HTPP(x1.15)						HTPS(x1.0)				HTPA · HTPB · HTPK · HTPN HTPT · HTPM · HTPP			HTPS		
	S5M100		S5M150		S5M250		S5M100		S5M150		S5M250		S5M100		S5M150							
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N · C · V · F	Y	P	N · C · V · Z	Y
14																						
15																						
16																						
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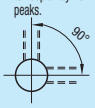
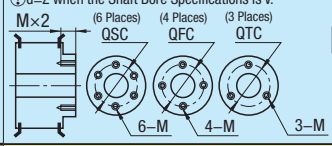
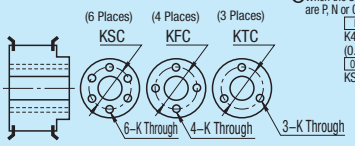
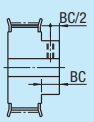
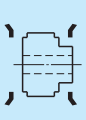
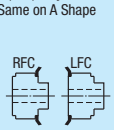
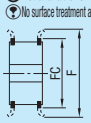
Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

HTPM60S5M150 - A - H30 - KSC50 - K12

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,QSC is not applicable. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,KSC is not applicable. K Through Hole Dia.) Selection K4.0–K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification H, V, F: 3≤BC≤L-W Shaft Bore specification: P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment Not available for Stainless Steel Type. No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC33 	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. M / TPC M3 / M4 M4 / M3 / M5 M5 / M4 / M6 M6 / M5 / M8 M8 / M6 Ordering Code TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Set Screw / SLH M3x3 / 6 M4x3 / 5, 8 M5x4 / 6, 10 M6x5 / 10 M8x6 / 10, 12 M10x8 / 12, 15 Ordering Code SLH10
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

High Torque Timing Pulleys S8M Type

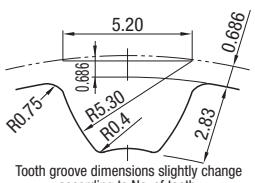
■For Non-Backlash Timing Pulleys, refer to P.1139
■For Super High Torque Timing Belts, refer to P.1199, for High Torque Timing Belts, refer to P.1195, for Keyless High Torque Timing Pulleys, refer to P.1163, for Idlers with Teeth, refer to P.1181



Part Number				Material		Surface Treatment
Belt Width 15mm	Belt Width 25mm	Belt Width 30mm	Belt Width 40mm	Pulley	Flange	
A: 17 W: 22 L: 37(42)	A: 28 W: 33 L: 48(53)	A: 33 W: 38 L: 53(58)	A: 44 W: 49 L: 64(69)			
HTPA__S8M150	HTPA__S8M250	HTPA__S8M300	HTPA__S8M400	EN AW-7075/ AlZn5,5MgCu (Extra Super Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
HTPB__S8M150	HTPB__S8M250	HTPB__S8M300	HTPB__S8M400			Black Anodize
HTPK__S8M150	HTPK__S8M250	HTPK__S8M300	HTPK__S8M400			Hard Clear Anodize*
HTPN__S8M150	HTPN__S8M250	HTPN__S8M300	HTPN__S8M400			Electroless Nickel Plating
HTPT__S8M150	HTPT__S8M250	HTPT__S8M300	HTPT__S8M400	1.1191/C45E	1.0330/DC01	-
HTPM__S8M150	HTPM__S8M250	HTPM__S8M300	HTPM__S8M400			Black Oxide
HTPP__S8M150	HTPP__S8M250	HTPP__S8M300	HTPP__S8M400			Electroless Nickel Plating

Ⓨ Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.
Ⓨ L Dimensions in () are for 44~72 toothed pulleys.
*Hard Anodize Treatment: Film Hardness 300HV~

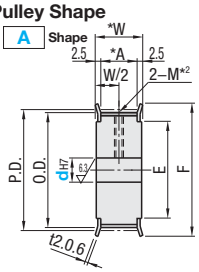
Standard Tooth Profile



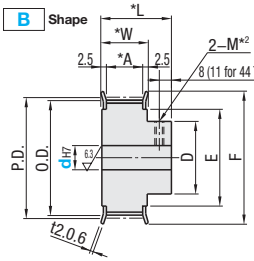
Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 8.0mm)

•Pulley Shape

A Shape



B Shape



*1 t=2.0 for 72 toothed pulleys (Cut Flange).
*2 Shaft Bore Specifications H (Round Hole), V,F (Stepped Hole) and Y (Both Sides Stepped Hole), do not have tapped holes.

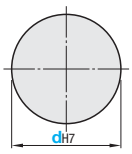
■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

•Shaft Bore Specs.

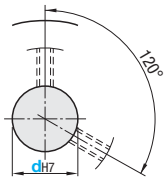
Ⓨ The shaft bore may not have surface treatment.

H Round Hole



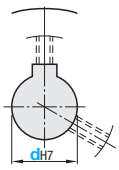
*No tapped holes and set screws.

P Round Hole+Tap



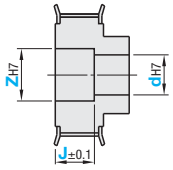
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



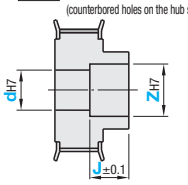
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



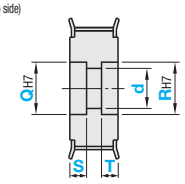
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part No. Type	Teeth	Type Nominal Width	Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment) H dH7 A	H dH7 B	P dH7 A	P dH7 B	N·C dH7 A	N·C dH7 B	V·F dH7 A	V·F dH7 B	V·F ZH7 A	V·F ZH7 B	V·F J (0.1mm Increment) A·B	Y d A	Y QH7·RH7 A	Y S·T A	P.D.	O.D.	D	F	E
EN AW-7075/ AlZn5, 5MgCu HTPA HTPB HTPK HTPN (1.1191/ C45E) HTPT HTPM HTPP	18		A B	H P N C V F Y	12~28	12~28	12~26	12~22	12~26	12~20	12~26	12~26	14~28	14~28	(For A Shape) 3.0≤J≤W-3.0 (For B Shape) 3.0≤J≤L-3.0	12~26	14~28	3~23 S+T≤W-3	45.84	44.46	32	52	36
	19	S8M150 *A :17 *W :22 *L :37 (L: 42)			12~32	12~31	12~28	12~25	12~28	12~20	12~30	12~29	14~32	14~31		12~30	14~32		48.38	47.01	35	55	40
	20				12~32	12~32	12~30	12~26	12~30	12~22	12~30	12~30	14~32	14~32		12~30	14~32		50.93	49.56	36	58	
	21				12~37	12~36	12~32	12~30	12~32	12~24	12~35	12~34	14~37	14~36		12~35	14~37		53.48	52.10	40	61	45
	22				12~37	12~37	12~34	12~30	12~34	12~25	12~35	12~35	14~37	14~37		12~35	14~37		56.02	54.65	41		
	24				12~42	12~42	12~40	12~34	12~40	12~28	12~40	12~40	14~42	14~42		12~40	14~42		61.12	59.74	46	67	50
	25	S8M250 *A :28 *W :33 *L :48 (L: 53)			12~48	12~44	12~40	12~36	12~40	12~28	12~46	12~42	14~48	14~44		12~46	14~48		63.66	62.29	48	70	56
	26				14~50	14~47	14~45	14~39	14~45	14~31	14~48	14~45	16~50	16~47		14~48	16~50		66.21	64.84	51	74	58
	28				14~52	14~47	14~48	14~43	14~48	14~35	14~50	14~49	16~52	16~51		14~50	16~52		71.30	69.93	55	80	60
	30				14~59	14~56	14~50	14~46	14~50	14~38	14~57	14~54	16~59	16~56		14~57	16~59		76.39	75.02	60	87	67
	32				14~59	14~59	14~55	14~49	14~50	14~45	14~57	14~57	16~59	16~59		14~57	16~59		81.49	80.12	63		
	34	S8M300 *A :33 *W :38 *L :53 (L: 58)			16~67	16~66	16~60	16~56	16~50	16~48	16~65	16~64	18~67	18~66		16~65	18~67		86.58	85.21	70	95	75
	36				16~72	16~71	16~65	16~61	16~50	16~50	16~70	16~69	18~72	18~71		16~70	18~72		91.67	90.30	75	99	80
	38				16~76	16~76	16~65	16~65	16~50	16~50	16~74	16~74	18~76	18~76		16~74	18~76		96.77	95.39	80	104	84
	40				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~79	22~82	22~81		20~75	22~82		101.86	100.49	85	111	90
	44	S8M400 *A :44 *W :49 *L :64 (L: 69)			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~92	22~86		20~75	22~92		112.05	110.67	90	119	100
	48				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95		122.23	120.86		127	105
	50				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95		127.32	125.95	100	135	115
	60				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95		152.79	151.42		160	140
	72				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95		183.35	181.97	100	190	170

Ⓩ Z-d≥2 for shaft bore specification V and F.
Ⓠ Q(R)-d≥2 for shaft bore specification Y.
Ⓨ L Dimensions in () are for 44~72 toothed pulleys.
⊗ Shaft Bore Dia. 13, 14, 17, 21 ~ 50 are not available for Shaft Bore specification C.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. · Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	HTPA36S8M250	-	A	-	H65												
(Shaft Bore: V · F)	HTPA30S8M300	-	B	-	V20	-	Z38	-	J23.0								
(Shaft Bore: Y)	HTPA40S8M250	-	A	-	Y30					-	Q62	-	R47	-	S16	-	T9

Days to Ship

- HTPA / HTPT / HTPM / HTPP

8 Days	Express A	8,00 EUR/ piece	P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces

- HTPB / HTPK / HTPN

10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The prices of HTPM is the body price in the table multiplied by 1.05, while the prices of HTPB and HTPK are multiplied by 1.1, the prices of HTPP are multiplied by 1.15, and the price of HTPN is multiplied by 1.2. (Round down to ten Cent.)
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

Teeth	€ Body Price																Shaft Bore Machining Charge (€ Body Price +)		
	HTPA (x1.0) HTPB · HTPK (x1.1) HTPN (x1.2)								HTPT(x1.0) · HTPM(x1.05) · HTPP(x1.15)										
	S8M150		S8M250		S8M300		S8M400		S8M150		S8M250		S8M300		S8M400				
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N·C·V·F	Y
18																			
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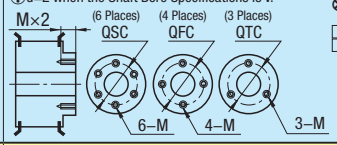
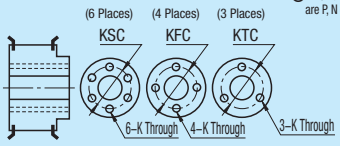
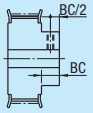
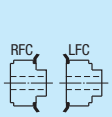
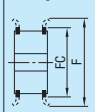
50																			
60																			
72																			

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

HTPM60S8M250 - A - H65 - KSC80-K8

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,QSC is not applicable. M Selection: M3,M4,M5,M6,M8 Ordering Code: QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,KSC is not applicable. K Through Hole Dia.) Selection: K4.0~K13.0 (0.5mm Increment) Ordering Code: KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore specification: P, N, C: M+3≤BC≤L-W  Ordering Code: BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code: FC55	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. Ordering Code: TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Ordering Code: SLH12
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

M	TPC
M4	M5
M5	M4 / M6
M6	M5 / M8
M8	M6 / M10
M10	M8

Set Screw	SLH
M4x3	5, 8
M5x4	6, 10
M6x5	10
M8x6	10, 12
M10x8	12, 15

High Torque Timing Pulleys S14M Type

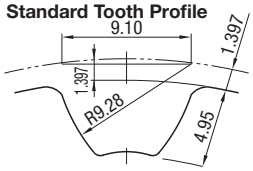
■For High Torque Timing Belts, refer to P.1195 For Idlers with Teeth, refer to P.1181



Part Number		Material		Surface Treatment
Belt Width 40mm	Belt Width 60mm	Pulley	Flange	
A:46 W:53 L:73 (78)	A:67 W:74 L:94 (99)			
HTPT__S14M400	HTPT__S14M600	1.1191/ C45E	1.0330/ DC01	-
HTPM__S14M400	HTPM__S14M600			Black Oxide

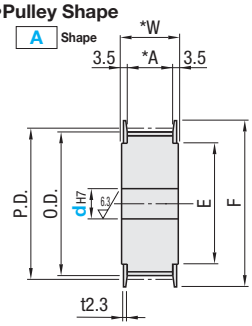
Flange attached
L Dimensions in ( ) are for 44~56 toothed pulleys.

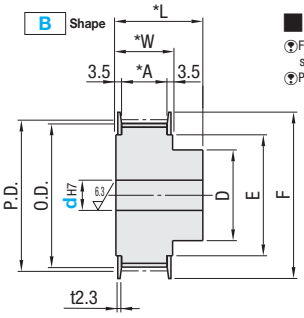
Standard Tooth Profile



Tooth groove dimensions slightly change according to No. of teeth.

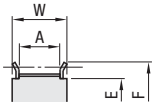
•Pulley Shape





■ Flange Shape

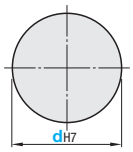
Flanges are normally machined but may be substituted with pressed products in some cases.
Pressed flange may be the shape shown below.



Shaft Bore Specs.

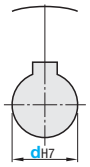
The shaft bore may not have surface treatment.

H Round Hole



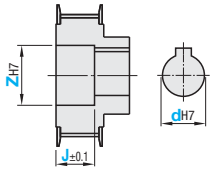
*No tapped holes and set screws.
Specify TP as alteration when tapped hole is required.

N New JIS Keyawyed Bore
C Old JIS Keyawyed Bore



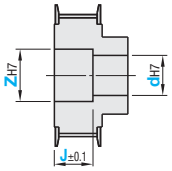
*No tapped holes and set screws.
*For Keyway Dimension Details, refer to P.11
Specify TP as alteration when tapped hole is required.

G New JIS Keyawyed Bore and + Stepped Hole



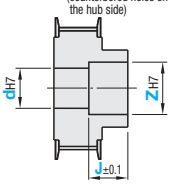
*No tapped holes and set screws.
Specify TP as alteration when tapped hole is required.

V Stepped Hole



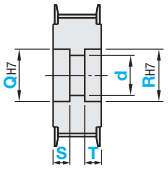
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)													P.D.	O.D.	D	F	E
					H		N·C·G		V·F					Y								
					dH7				dH7		ZH7		J (0.1mm Increment)	d	QH7·RH7	S·T						
Type	Teeth	Type Nominal Width			A	B	A	B	A	B	A	B	A·B	A	A	A						
HTPT	28	S14M400 *A :46 *W :53 *L :73 (L: 78)	A	HNCGVFY	30~70	30~60	30~70	30~60	30~66	30~56	30~70	30~60	(For A Shape) 5.0≤J≤W-5.0	30~66	35~75	5~23 S+T≤W-5		124.78	121.98	90	136	101
	30				30~80	30~70	30~70	30~70	30~76	30~66	30~80	30~70		30~76	35~85			133.69	130.90	100	144	111
	32				30~85	30~75	30~70	30~70	30~81	30~71	30~85	30~75		30~81	35~90			142.60	139.81	110	152	121
	34				30~90	30~85	30~70	30~70	30~86	30~81	30~90	30~85		30~86	35~95			151.52	148.72	120	161	131
	36				30~95	30~85	30~70	30~70	30~91	30~81	30~95	30~85		30~91	35~100			160.43	157.63	120	172	141
	40				35~105	35~95	35~70	35~70	35~101	35~91	35~105	35~95		35~101	40~110			178.25	175.46	135	190	161
HTPM	42	S14M600 *A :67 *W :74 *L :94 (L: 99)	B		35~110	35~100	35~70	35~70	35~106	35~96	35~110	35~100	(For B Shape) 5.0≤J≤L-5.0	35~106	40~115			187.17	184.37	145	200	164
	44				35~115	35~100	35~70	35~70	35~111	35~96	35~115	35~100		35~111	40~120			196.08	193.28	155	208	173
	48				40~120	40~110	40~70	40~70	40~116	40~106	40~120	40~110		40~116	45~125			213.90	211.11	160	224	190
	50				40~130	40~110	40~70	40~70	40~126	40~106	40~130	40~110		40~126	45~135			222.82	220.02	160	235	200
	56				40~150	40~110	40~70	40~70	40~146	40~106	40~150	40~110		40~146	45~155			249.55	246.76	160	260	224

Z-d≥4 for shaft bore specification G, V and F.
Q(R)-d≥4 for shaft bore specification Y.
When Z≤d+ key height for shaft bore specification G, keyway is added to the Z dimension part.
L Dimensions in ( ) are for 44~56 toothed pulleys.
⊗Shaft Bore Dia. 31, 32, 46~49, 51~54, 56~59 are not available for Shaft Bore Specification N, C and G.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · N · C)	HTPT32-S14M400	-	A	-	H40												
(Shaft Bore:G · V · F)	HTPM48-S14M600	-	B	-	G70	-	Z90	-	J90.0								
(Shaft Bore:Y)	HTPT56-S14M400	-	A	-	Y80					-	Q120	-	R120	-	S20	-	T20

Days to Ship

- HTPT: 10 Days
- HTPM: 13 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~10
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

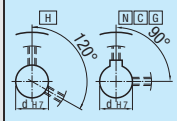
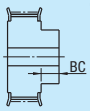
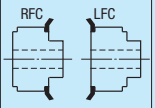
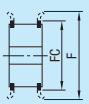
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

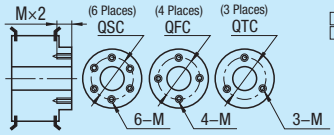
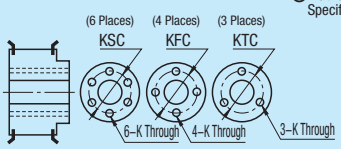
Teeth	€ Body Price								Shaft Bore Machining Charge (€ Body Price +)	
	HTPT				HTPM					
	S14M400		S14M600		S14M400		S14M600			
	A	B	A	B	A	B	A	B	N · C · V · F	G · Y
28										
30										
32										
34										
36										
40										
42										
44										
48										
50										
56										

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (TP / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC)

HTPM40-S14M400 - A - H65 - NFC

Alterations	Tapped Hole	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut
Code	TP	BC	NFC	RFC · LFC	FC
Spec.	Adds a tapped hole.  dH7 (Shaft Bore Inner Dia.) / TP / A (Tapped Hole Angle) / Accessory Set Screw 30~45: M8 / M10 / 90° / M8x6 / M10x8 46~65: M10 / M12 / 90° / M10x8 / M12x10 66~150: M12 / M16 / 120° / M12x10 / M16x10 Applicable to Shaft Bore specifications H, N, C and G only. Adds a tapped hole at teeth (A/2) for A Shape, at hub ((L-W)/2) for B Shape. For A Shape the tapped holes are set at around 90°, 120° to keep away from peaks. Depth of tapped hole is Mx2, and the rest is counterbore. Tapped Hole Angle: 90° 120° Ordering Code: TP10-A90	Cuts the hub length in 0.5mm increment. 3≤BC≤L-W  Ordering Code: BC6.5 Not available for A Shape.	Shipped without flanges pre-attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape  	Lowers flange by cutting. FC: 0.5mm Increment  FC≥(O.D.)+2 FC≤F-2 Ordering Code: FC185
Price Adder	12,00	12,00	Free of Charge	Free of Charge	8,00

Alterations	Side Tapped Hole	Side Through Hole
Code	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 4mm A Shape: d+M+8≤QSC(QFC, QTC)≤E-(M+8) B Shape: d+M+8≤QSC(QFC, QTC)≤D-(M+8) d=Z when the Shaft Bore Specifications is V. The pilot hole for tapping may go through. When shaft bore specification is V, the pilot holes for tapping may bore through the step part. Not applicable to Shaft Bore Specifications F or Y. M Selection: M5,M6,M8 Ordering Code: QTC120-M8  	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 4mm A Shape: d+K+8≤KSC(KFC, KTC)≤E-(K+8) B Shape: d+K+8≤KSC(KFC, KTC)≤D-(K+8) d=Z when the Shaft Bore Specifications is V. When shaft bore specification is V, through holes may bore through the step part. Not applicable to Shaft Bore Specifications F or Y. K (Through Hole Dia.) Selection: K12~K17 (1mm Increment) Ordering Code: KSC80-K12 
Price Adder	QSC: 20,00 QFC / QTC: 14,00	KSC: 35,00 KFC / KTC: 28,00

Non-Backlash Timing Pulleys S8M Type

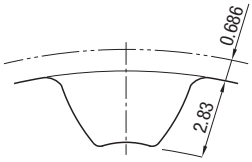
■**Features**: Timing pulleys with backlash significantly reduced in comparison with the conventional pulleys.
Special timing belts are not required. Timing Belts P.1195, P.1199



Part Number				Material		Surface Treatment
Belt Width 15mm	Belt Width 25mm	Belt Width 30mm	Belt Width 40mm	Pulley	Flange	
A: 17 W: 22 L: 37(42)	A: 28 W: 33 L: 48(53)	A: 33 W: 38 L: 53(58)	A: 44 W: 49 L: 64(69)			
BLPA__S8M150	BLPA__S8M250	BLPA__S8M300	BLPA__S8M400	7075 Aluminum Alloy (Extra Super Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
BLPK__S8M150	BLPK__S8M250	BLPK__S8M300	BLPK__S8M400			Hard Clear Anodize*
BLPN__S8M150	BLPN__S8M250	BLPN__S8M300	BLPN__S8M400			Electroless Nickel Plating
BLPT__S8M150	BLPT__S8M250	BLPT__S8M300	BLPT__S8M400	1.1191/C45E	1.0330/DC01	-
BLPM__S8M150	BLPM__S8M250	BLPM__S8M300	BLPM__S8M400			Black Oxide
BLPP__S8M150	BLPP__S8M250	BLPP__S8M300	BLPP__S8M400			Electroless Nickel Plating

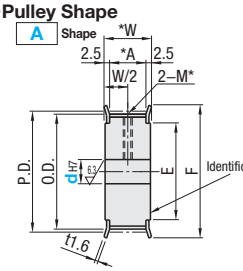
Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.
L Dimensions in () are for 44~60 toothed pulleys.
*Hard Anodize Treatment: Film Hardness 300HV~

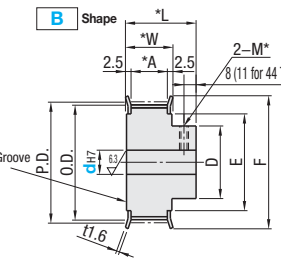
Standard Tooth Profile



Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 8.0mm)

•Pulley Shape





■Tapped Hole Dimensions (Shaft Bore: P / N / C)

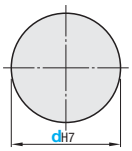
dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

*For Shaft Bore Specifications H (Round Hole), V and F (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

•Shaft Bore Specs.

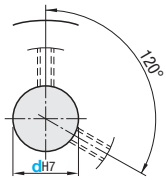
The shaft bore may not have surface treatment.

H Round Hole



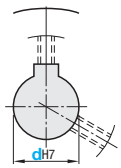
*No tapped holes and set screws.

P Round Hole+Tap



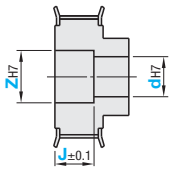
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



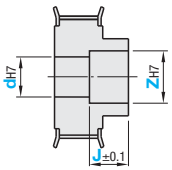
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



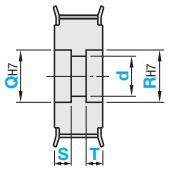
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number					Shaft Bore Spec. (1mm Increment)																	
					H		P		N · C		V · F					Y						
Type	Teeth	Type Nominal Width	Pulley Shape	Shaft Bore Specifications	dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7 · RH7	S·T	P.D.	O.D.	D	F	E
					A	B	A	B	A	B	A	B	A	B	A · B	A	A	A					
	18				12~28	12~28	12~26	12~22	12~26	12~20	12~26	12~26	14~28	14~28		12~26	14~28		45.84	44.46	32	52	36
	19	S8M150			12~32	12~31	12~28	12~25	12~28	12~20	12~30	12~29	14~32	14~31		12~30	14~32		48.38	47.01	35	55	40
	20	*A :17			12~32	12~32	12~30	12~26	12~30	12~22	12~30	12~30	14~32	14~32		12~30	14~32		50.93	49.56	36	58	
	21	*W :22			12~37	12~36	12~32	12~30	12~32	12~24	12~35	12~34	14~37	14~36		12~35	14~37		53.48	52.10	40	61	45
(7075	22	*L :37		H	12~37	12~37	12~34	12~30	12~34	12~25	12~35	12~35	14~37	14~37		12~35	14~37		56.02	54.65	41		
Aluminum Alloy)	24	(L: 42)		P	12~42	12~42	12~40	12~34	12~40	12~28	12~40	12~40	14~42	14~42		12~40	14~42		61.12	59.74	46	67	50
BLPA	25	S8M250		N	12~48	12~44	12~40	12~36	12~40	12~28	12~46	12~42	14~48	14~44		12~46	14~48		63.66	62.29	48	70	56
BLPK	26	*A :28		C	14~50	14~47	14~45	14~39	14~45	14~31	14~48	14~45	16~50	16~47	(For A Shape)	14~48	16~50		66.21	64.84	51	74	58
BLPN	28	*W :33	A	V	14~52	14~51	14~48	14~43	14~48	14~35	14~50	14~49	16~52	16~51	3.0≤J≤W-3.0	14~50	16~52		71.30	69.93	55	80	60
	30	*L :48		F	14~59	14~56	14~50	14~46	14~50	14~38	14~57	14~54	16~59	16~56		14~57	16~59	3~23	76.39	75.02	60	87	67
(1.1191/	32	S8M300		Y	14~59	14~59	14~55	14~49	14~50	14~45	14~57	14~57	16~59	16~59	(For B Shape)	14~57	16~59	S+T≤W-3	81.49	80.12	63		
C45E)	34	*A :33			16~67	16~66	16~60	16~56	16~50	16~48	16~65	16~64	18~67	18~66	3.0≤J≤L-3.0	14~65	18~67		86.58	85.21	70	95	75
BLPT	36	*W :38	B		16~72	16~71	16~65	16~61	16~50	16~50	16~70	16~69	18~72	18~71		16~70	18~72		91.67	90.30	75	99	80
BLPM	38	*L :53			16~76	16~76	16~65	16~65	16~50	16~50	16~74	16~74	18~76	18~76		16~74	18~76		96.77	95.39	80	104	84
BLPP	40	(L: 58) S8M400			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~79	22~82	22~81		20~75	22~82		101.86	100.49	85	111	90
	44	*A :44			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~92	22~86		20~75	22~92		112.05	110.67	90	119	100
	48	*W :49			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95		122.23	120.86		127	105
	50	*L :64			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95		127.32	125.95	100	135	115
	60	(L: 69)			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95		152.79	151.42		160	140

Z-d≥2 for shaft bore specification V and F.
Q(R)-d≥2 for shaft bore specification Y.
L Dimensions in () are for 44~60 toothed pulleys.
⊗Shaft Bore Dia. 13, 14, 17, 21 ~ 50 are not available for Shaft Bore specification C.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	BLPA40S8M150	-	A	-	N30												
(Shaft Bore: V · F)	BLPK60S8M400	-	B	-	F40	-	Z60	-	J25.0								
(Shaft Bore: Y)	BLPA20S8M250	-	A	-	Y15					-	Q20	-	R23	-	S3	-	T15

Reduced Delivery Time

CAD Data

Days to Ship

- BLPA / BLPT / BLPM / BLPP: 8 Days
- BLPK / BLPN: 10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

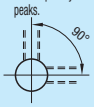
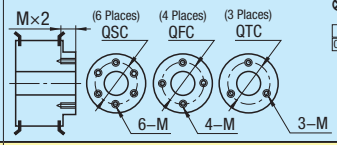
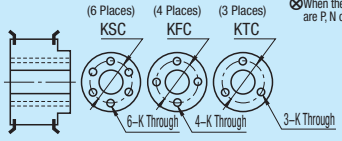
For the prices of BLPM, BLPK, BLPP and BLPN multiply the body prices in the table by coefficient 1.05, 1.1, 1.15 and 1.2 respectively.
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.
Volume Discount is applicable to body price only.

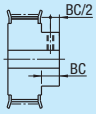
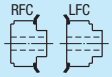
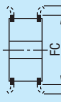
Teeth	€ Body Price																Shaft Bore Machining Charge (€ Body Price +)		
	BLPA(x1.0) BLPK(x1.1)BLPN(x1.2)								BLPT(x1.0)BLPM(x1.05)BLPP(x1.15)										
	S8M150		S8M250		S8M300		S8M400		S8M150		S8M250		S8M300		S8M400				
	Z	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N·C·V·F	Y
18																			
19																			
20																			
21																			
22																			
24																			
25																			
26																			
28																			
30																			
32																			
34																			
36																			
38																			
40																			
44																			
48																			
50																			
60																			

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

BLPA36S8M250 - A - H65 - NFC

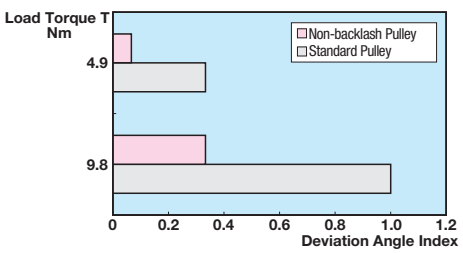
Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90 ° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC · QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC · QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,QSC is not applicable. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC · KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC · KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification H, V, F: 3≤BC≤L-W Shaft Bore specification P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code FC55	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. M: TPC M4: M5 M5: M4 / M6 M6: M5 / M8 M8: M6 / M10 M10: M8 Ordering Code TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Set Screw / SLH M4x3 / 5, 8 M5x4 / 6, 10 M6x5 / 10 M8x6 / 10, 12 M10x8 / 12, 15 Ordering Code SLH10
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

Features of Non-backlash Pulleys (S8M)

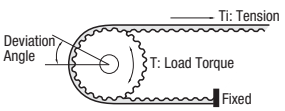
- Non-backlash pulley is a timing pulley whose backlash is reduced to work with high-accuracy positioning mechanism by timing pulley belt.
- Backlash is significantly smaller than standard pulleys. (The amount reduced depends on application.)
- Use regular S8M timing belt.

Reference: Comparison of deviation angles between non-backlash pulleys and standard pulleys



<Test Conditions>

Belt Type	: S8M
Belt Width	: 25mm
Pulley Size	: 30 toothed (P.D.76.39mm)
Tension Ti	: 382N



High Torque Timing Pulleys P2M / P3M Type

■For High Torque Timing Belts, refer to ☞P.1197, for Idlers with Teeth, refer to ☞P.1183



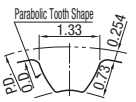
Part Number			Material		S Surface Treatment
P2M	P3M		Pulley	Flange	
Belt Width 6mm	Belt Width 10mm	Belt Width 15mm			
A: 7.5 W: 11.5 L: 20	A: 12 W: 16 L: 23 (A=11 when 20 toothed or less)	A: 17 W: 21 L: 29			
PTPA_ _P2M060	PTPA_ _P3M100	PTPA_ _P3M150	High Strength Aluminum Alloy	Aluminum	Clear Anodize
-	PTPM_ _P3M100	PTPM_ _P3M150	1035 Carbon Steel	1.0330/ DC01	Black Oxide
-	PTPP_ _P3M100	PTPP_ _P3M150			Electroless Nickel Plating

Flange swaged. Set screws are included to Shaft Bore Specifications P, N and C.

* ℓ=4.5 (P2M Type)
ℓ=4 (P3M Type)

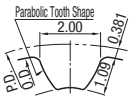
Standard Tooth Profile

■P2M Type



(Pitch: 2.0mm)

■P3M Type

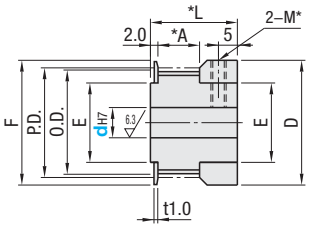


(Pitch: 3.0mm)

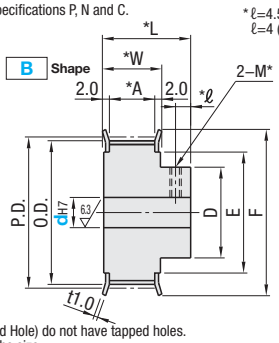
The tooth groove slightly changes according to No. of teeth.

•Pulley Shape

K Shape



B Shape



*Shaft Bore Specifications H (Round Hole), V, F (Stepped Hole) do not have tapped holes. It may have a relief in the tapped hole depending on the size.
*For 28 Toothed Type of P2M, flanges are straight.

■Tapped Hole Dimensions

P2M Type

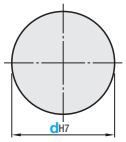
dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
3~ 6.35	M3	M3x3
7~19	M4	M4x3

P3M Type

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
4~ 6.35	M3	M3x3
7~12	M4	M4x3
13~18	M5	M5x4

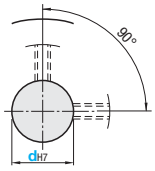
Shaft Bore Specs. (P)The shaft bore may not have surface treatment.

H Round Hole



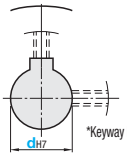
*No tapped holes and set screws.

P Round Hole+Tap



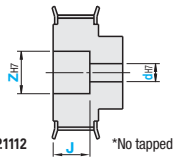
N New JIS Keywayed Bore + Tap

C Old JIS Keywayed Bore + Tap



*Keyway Dimensions Details, refer to P.1112

V Stepped Hole



*No tapped holes and set screws.

■P2M Type

Part Number Type	Teeth	Type, Nominal Width	Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment) H dH7	P dH7	N dH7	C dH7	V dH7	V ZH7	V J (0.1mm Increment)	P.D.	O.D.	D	F	E
PTPA	14	P2M060 *A: 7.5 *W: 11.5 *L: 20	K	H	-	*3, 4	-	-	-	-	-	8.91	8.40	12	12	5.5
	15					*3, 4, 5						9.55	9.04	13	13	7
	16					*3, 4, 5						10.19	9.68			
	18					*3~6						11.46	10.95	15	15	8
	20			P		*4~6.35						12.73	12.22	17	17	10
	22					*4~6.35						14.01	13.50			
	24					*4~6.35						15.28	14.77			
	25					*4~6.35						15.92	15.41	20	21	13.3
	28		B	N	*5~ 6.35	*5~6.35						17.83	17.32	12	25	15
	30				*5~ 8	*5~8						19.10	18.59		26	
	32				*5~ 8	*5~8						20.37	19.86		28	16
	36			C	*5~ 9	*5~8			6	9		22.92	22.41	14	29	18
	40				*5~10	*5~10	8		6, 7	9~10		25.46	24.96	16	32	21.2
	42				*5~12	*5~12	8, 10	10	6~9	9~12		26.74	26.23			
	44			V	*5~12	*5~12	8, 10	10	6~9	9~12	2≤J≤L-2	28.01	27.50	18	34	23
	48				*5~12	*5~12	8, 10	10	6~9	9~12		30.56	30.05		36	22.4
	50				*5~15	*5~15	8~13	10, 12	6~9	9~12		31.83	31.32	22	39	26.5
	60				*5~19	*5~19	8~18	10~18	6~12	9~15		38.20	37.69	28	45	33.5

■P3M Type

Part Number Type	Teeth	Type, Nominal Width	Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment) H dH7	P dH7	N dH7	C dH7	V dH7	V ZH7	V J (0.1mm Increment)	P.D.	O.D.	D	F	E
PTPM PTPP	10	P3M100 *A: 12 *W: 16 *L: 23 (A=11 when 20 toothed or less) A=11)	K	H	-	*4	-	-	-	-	-	9.55	8.79	12	12	5.5
	12					*4, 5						11.46	10.7	15	15	8
	14					*4~6.35						13.37	12.61	17	17	10
	15					*4~6.35						14.32	13.56			
	16					*4~6.35						15.28	14.52			
	18			P		*4~6.35						17.19	16.43	21	21	13.3
	20					*4~6.35						19.1	18.34	25	25	15
PTPA PTPM PTPP	22	P3M150 *A: 17 *W: 21 *L: 29	B	N	*5~8	*5~8						21.01	20.25	12	28	16
	24				*5~9	*5~9			6	9	2≤J≤L-2	22.92	22.16	14	29	18
	25			C	*5~9	*5~9			6	9		23.87	23.11		31	19
	26				*6~10	*6~10	8		7	10		24.83	24.07	16		
	28			V	*6~12	*6~12	8, 10	10	7, 8, 9	10~12		26.74	25.98	18	32	21.2
	30				*6~12	*6~12	8, 10	10	7, 8, 9	10~12		28.65	27.89		34	23
	32				*6~12	*6~12	8, 10	10	7, 8, 9	10~12		30.56	29.8		36	22.4
PTPA	36				*6~16	*6~16	8~14	10~15	7~13	10~16		34.38	33.62	24	43	30
	40				*6~18	*6~18	8~15	10~16	7~14	10~18		38.2	37.44	26	45	33.5

(P)For Shaft Bore Specifications H and P, min. shaft bore dia. tolerance (* marked): H9 (H10 for 18 toothed or less) ⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
(P)Z-d≥2 for Shaft Bore Specification V. ⊗Shaft Bore Dia. 11, 13, 14, 17 are not available for Shaft Bore Specification C.
(P)Shaft Bore Dia. 6.35 is selectable for shaft bore specifications H and P only.
(P)Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. ☞P.1112

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J
(Shaft Bore : H · P · N · C)	PTPA48P2M060	-	B	-	NK10				
(Shaft Bore: V)	PTPM32P3M100	-	B	-	V7	-	Z10	-	J6

Days to Ship

- PTPA / PTPM: **8 Days** | Express A: 8,00 EUR/piece | P.88
- PTPP: **8 Days** | ⊗Express Serviceis not available.

ⓅA Express Charge of 21,60 EUR for 3 or more identical pieces

Price

Volume Discount (ⓅRound down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

ⓅFor orders larger than indicated quantity, please request a quotation.

ⓅProduct price is the sum of the body price and shaft bore machining charge.
ⓅH bore machining is free of charge.
ⓅVolume Discount is applicable to the body price only.

P2M Type

Teeth	€ Body Price PTPA	Shaft Bore Machining Charge (Body Price +)	
	P2M060	P	N·C·V
14			
15			
16			
18			
20			
22			
24			
25			
28			
30			
32			
36			
40			
42			
44			
48			
50			
60			

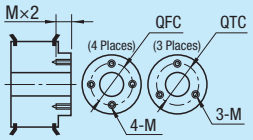
P3M Type

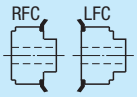
Teeth	€ Body Price						Shaft Bore Machining Charge (€ Body Price +)	
	PTPA		PTPM		PTPP			
	P3M100	P3M150	P3M100	P3M150	P3M100	P3M150	P	N·C·V
10								
12								
14								
15								
16								
18								
20								
22								
24								
25								
26								
28								
30								
32								
36								
40								

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Hole Dia. - Z - J - (KC120 / QFC / QTC / NFC / RFC / LFC)

PTPA48P2M060 - B - N10 - NFC

Alterations	Set Screw Angle	Side Tapped Hole
Code	KC120	QFC · QTC
Spec.	 Changes angle layout of set screws to 120°. ⊗Not applicable to K Shape.	 Machines tapped hole on the side surface of hub side. (QFC, QTC: 1mm Increment) ⓅThickness required: minimum 2mm d+M+4≤QFC(QTC)≤D-(M+4) Ⓟd=Z when the Shaft Bore Specifications is V. ⓅSpecify KC120, when selecting QTC for Shaft Bore Specifications P, N and C. ⓅThe pilot hole for tapping may go through. ⊗Not applicable to K Shape. M Selection M3, M4, M5 Ordering Code QFC28-M4
Price Adder	Free of Charge	5,00

Alterations	Flange not Attached	Flange Attached on One Side Only
Code	NFC	RFC · LFC
Spec.	 Flange is not attached. (Flange included) ⊗Not applicable to K Shape.	 Shipped with a flange pre-attached only on the hub side (RFC) or the opposite side (LFC). ⊗Not applicable to K Shape.
Price Adder	Free of Charge	Free of Charge

High Torque Timing Pulleys P5M Type

■For High Torque Timing Belts, refer to P.1197, for Keyless High Torque Timing Pulleys, refer to P.1165, for Idlers with Teeth, refer to P.1183

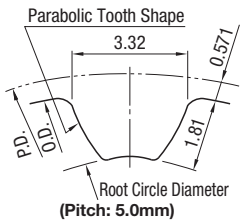


Part Number		Material		Surface Treatment
Belt Width 10mm	Belt Width 15mm	Pulley	Flange	
A:11.6W:16L:28	A: 16.6 W: 21 L: 33			
PTPA__P5M100	PTPA__P5M150	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
PTPB__P5M100	PTPB__P5M150			Black Anodize
PTPK__P5M100	PTPK__P5M150			Hard Clear Anodize*
PTPN__P5M100	PTPN__P5M150			Electroless Nickel Plating
PTPM__P5M100	PTPM__P5M150	1035 Carbon Steel	1.0330/ DC01	Black Oxide
PTPP__P5M100	PTPP__P5M150			Electroless Nickel Plating

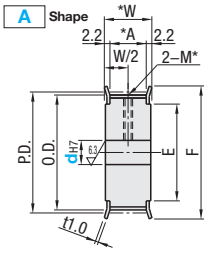
Ⓕ Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C. *Hard Anodize Treatment: Film Hardness 300HV~

•Pulley Shape

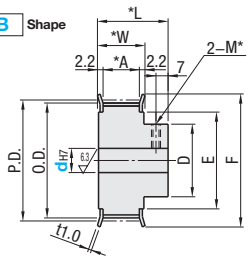
Standard Tooth Profile (Tooth groove dimensions slightly change according to No. of teeth.)



A Shape



B Shape



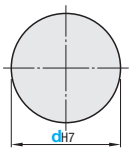
■Tapped Hole Dimensions (Shaft Bore: P · N · C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
5~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

* Shaft bore Specifications H (Round hole), V F (Stepped hole) and Y (Both sides stepped hole) do not have tapped holes. It may have a relief in the tapped hole depending on the size.

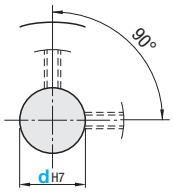
•Shaft Bore Specs. Ⓕ The shaft bore may not have surface treatment.

H Round Hole



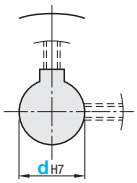
*No tapped holes and set screws.

P Round Hole+Tap



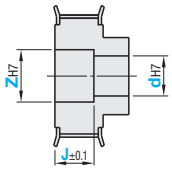
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.
For A Shape the set screws are placed at around 90° to keep away from the tooth peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



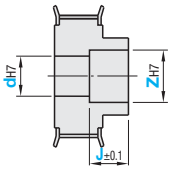
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



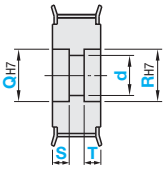
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



⊗Not applicable to PTPM, PTPP.
*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



⊗Not applicable to PTPM, PTPP.
*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)										P.D.	O.D.	D	F		E	
Type	Teeth	Type, Nominal Width			H	P	N	C	V · F			Y									
					dH7				dH7	ZH7	J (0.1mm Increment)	d	QH7 · RH7	S · T				Alu-minum	Steel	Alu-minum	Steel
EN AW-2017/ AlCu4MgSi	12				5 / 6	5 / 6	-								19.10	17.96	11	22	23	14	13
	14				5 / 6	5 / 6									22.28	21.14	13	25	28	16	16
	15				5~10	5~8	8		-	-	-	-	-	-	23.87	22.73	15	28	-	18	-
	16				5~10	5~10	8								25.46	24.32	17	30	31	20	19
	18				6~12	6~12	8~11	10	6~7	9 / 10		7~10	12 / 13		28.65	27.51	19	32	36	23	22.4
	20				6~12	6~12	8~11	10	6~7	9 / 10		7~12	12~15		31.83	30.69		35		25	
PTPA	22	P5M100	A	H	8~17	8~17	8~15	10~15	8 / 9 / 10	11~14		7~14	12~18		35.01	33.87	25	40	43	28	30
PTPB	24	*A :11.6		P	8~17	8~17	8~15	10~15	8 / 9 / 10	11~14		7~16	12~20		38.20	37.06		44	44	32	31
PTPK	25	*W :16		N	10~20	10~20	10~18	10~19	10~13	13~16		7~16	12~20		39.79	38.65	30		45		33.5
PTPN	26	*L :28		C	10~20	10~20	10~18	10~19	10~13	13~16		8~20	12~25		41.38	40.24		48	47	36	35.5
	28			V	10~22	10~22	10~20	10~20	10~14	13~18	(For A Shape)	8~20	12~25		44.56	43.42	32	50	52	38	37.5
	30	P5M150		F	12~24	12~24	12~22	12~20	12~16	15~20	3≤J≤W-3	10~20	15~25		47.75	46.60	35	55	55	40	42.5
(1035 Carbon Steel)	32	*A :16.6			12~26	12~26	12~25	12~20	12~17	15~21		10~24	15~29	3~14	50.93	49.79	38				
PTPM	34	*W :21		Y	12~30	12~30	12~25	12~20	12~20	15~25	(For B Shape)	10~28	15~32	S+T≤W-3	54.11	52.97	42	61	-	46	-
PTPP	36	*L :33			12~30	12~30	12~30	12~20	12~20	15~25	2≤J≤L-3	10~28	15~32		57.30	56.15	44	67	64	50	50
	40				12~32	12~32	12~32	12~20	12~22	15~26		10~30	15~35		63.66	62.52	48		67		56
	44				15~38	15~38	15~38	15~20	15~28	19~32		12~30	19~45		70.03	68.89	56	74	74	58	63
	48				15~38	15~38	15~38	15~20	15~28	19~32		12~30	19~46		76.39	75.25	58	83	82	63	67
	50				15~42	15~40	15~40	15~20	15~30	19~35		12~35	19~50		79.58	78.44	64	87	86	67	71
	60				15~52	15~40	15~40	15~20	15~30	19~43		12~38	19~60		95.49	94.35	80	104	103	84	85
	72				15~80	15~65	15~50	15~20	15~80	19~86		12~75	19~92		114.59	113.45	90	119	-	100	-

Ⓩ Z-d≥2 for shaft bore specification V and F.
Ⓠ Q(R)-d≥2 for shaft bore specification Y.
Ⓢ Shaft Bore Dia. 6.35 is selectable for shaft bore specifications H and P only.
⊗ Shaft Bore Dia. 9, 27, 36 and 39 are not available for Shaft Bore Specification N.
⊗ Shaft Bore Dia. 11, 13, 14, 17 are not available for Shaft Bore Specification C.
⊗ Shaft bore specifications F and Y are not applicable to PTPM and PTPP.
Ⓣ Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	PTPA20P5M150	-	A	-	NK10												
(Shaft Bore: V · F)	PTPA60P5M100	-	B	-	V20	-	Z29	-	J22								
(Shaft Bore: Y)	PTPA36P5M150	-	A	-	Y17					-	Q30	-	R30	-	S7	-	T7

Price Reduction
10%

CAD Data

Days to Ship

- PTPA / PTPM

8 Days | Express A | 8,00 EUR/ piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces

- PTPP

8 Days ⊗Express Serviceis not available.

- PTPB / PTPK / PTPN

10 Days ⊗Express Serviceis not available.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

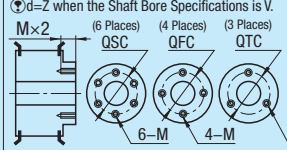
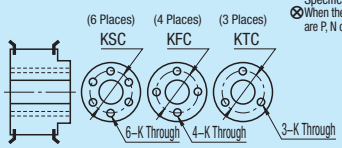
The prices of PTPB and PTPK are the body prices in the table multiplied by 1.1, while the prices of PTPN is multiplied by 1.2.(Round down to ten Cent.)
For the body price of PTPP, add 5,00 EUR to the unit price shown in the table.
Product price is the sum of body price and shaft bore machining charge. (Except PTPM, PTPP)
€ Unit Price of PTPM / PTPP are the Body Price, and Volume Discount is not applicable to Shaft Bore Machining Charge.
H bore machining is free of charge.

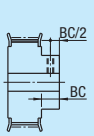
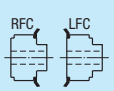
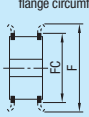
Teeth	€ Body Price								Shaft Bore Machining Charge (€ Body Price+)				
	PTPA(x1.0)PTPB / PTPK(x1.1)PTPN(x1.2)				PTPM / PTPP(+ 5,00 EUR)				PTPA · PTPB · PTPK · PTPN			PTPM · PTPP	
	P5M100		P5M150		P5M100		P5M150						
	A	B	A	B	A	B	A	B	P	N · C · V · F	Y	P	N · C · V
12													
14													
15													
16													
18													
20													
22													
24													
25													
26													
28													
30													
32													
34													
36													
40													
44													
48													
50													
60													
72													

Alter-ations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC120 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

PTPA60P5M150 - B - H40 - BC8.5

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC120	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90 ° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC120, when selecting QTC for Shaft Bore Specifications P, N and C. The pilot hole for tapping may go through. ⊗Not applicable to Shaft Bore Specifications F or Y. ⊗When the Shaft Bore Specifications are P, N or C,QSC is not applicable. ⊗QSC is not applicable to PTPM, PTPP. ⊗M6, M8 are not applicable to PTPM, PTPP. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. (KSC, KFC, KTC: 1mm Increment) Specify KC120 when selecting KTC for Shaft Bore specifications P, N and C. ⊗Not applicable to PTPM, PTPP. ⊗Not applicable to Shaft Bore Specifications F or Y. ⊗When the Shaft Bore Specifications are P, N or C,KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore specification: P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. ⊗Not available for A Shape. ⊗Not applicable to PTPM, PTPP.	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment ⊗Not applicable to PTPM, PTPP. No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code FC45	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. ⊗Not applicable to PTPM, PTPP. M: TPC M4: M5 M5: M4 / M6 M6: M5 / M8 M8: M6 M10: M8 Ordering Code TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. ⊗Not applicable to PTPM, PTPP. Set Screw: SLH M4x3: 5, 8 M5x4: 6, 10 M6x5: 10 M8x6: 10, 12 M10x8: 12, 15 Ordering Code SLH10
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

High Torque Timing Pulleys P8M Type

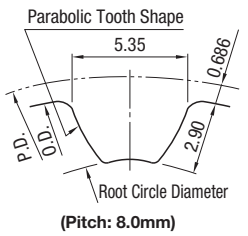
■For High Torque Timing Belts, refer to P1197, For Keyless High Torque Timing Pulleys, refer to P.1166, for Idlers with Teeth, refer to P.1183.



Part Number		Material		Surface Treatment
Belt Width 15mm	Belt Width 25mm	Pulley	Flange	
A:16.8 W:22 L:39 (44)	A:27.8 W:33 L:50 (55)			
PTPA__P8M150	PTPA__P8M250	EN AW-7075/ AlZn5,5MgCu (Extra Super Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
PTPK__P8M150	PTPK__P8M250			Hard Clear Anodize*
PTPN__P8M150	PTPN__P8M250			Electroless Nickel Plating
PTPM__P8M150	PTPM__P8M250	1035 Carbon Steel	1.0330/DC01	Black Oxide
PTPP__P8M150	PTPP__P8M250			Electroless Nickel Plating

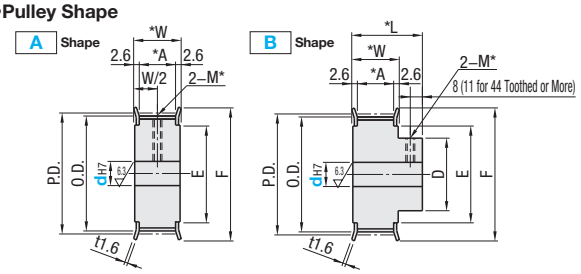
Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C. *Hard Anodize Treatment: Film Hardness 300HV~
L Dimensions in () are for for 44~60 toothed pulleys.

Standard Tooth Profile (Tooth groove dimensions slightly change according to No. of teeth.)



(Pitch: 8.0mm)

•Pulley Shape



■Tapped Hole Dimensions (Shaft Bore: P / N / C)

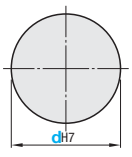
dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~62	M10	M10x8

* Shaft bore Specifications H (Round hole), V F (Stepped hole) and Y (Both sides stepped hole) do not have tapped holes. It may have a relief in the tapped hole depending on the size.

•Shaft Bore Specs.

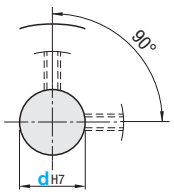
The shaft bore may not have surface treatment.

H Round Hole



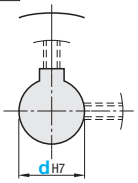
*No tapped holes and set screws.

P Round Hole+Tap



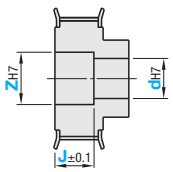
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.
For A Shape the set screws are placed at around 90° to keep away from the tooth peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



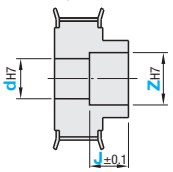
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



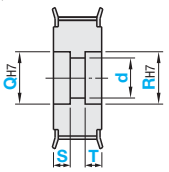
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



⊗Not applicable to PTPM, PTPP.
*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



⊗PTPM and PTPP are not applicable.
*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)										P.D.	O.D.	D	F		E	
					H	P	N	C	V · F			Y									
Type	Teeth	Type, Nominal Width			dH7				dH7	ZH7	J (0.1mm Increment)	d	QH7 · RH7	S · T				Alumi-num	Steel	Alumi-num	Steel
EN AW-7075/ AlZn5,5MgCu PTPA PTPK PTPN (1035 Carbon Steel) PTPM PTPP	20	P8M150 *A :16.8 *W :22 *L :39 (L: 44)	A B	H P N C V F Y	12~22	12~22	12~22	12~20	12~14	12~18	(For A Shape) 3≤J≤W-3 (For B Shape) 2≤J≤L-3	12~22	18~26	3~23 S+T≤W-3	50.93	49.56	36	55	55	40	42.5
	22				12~25	12~25	12~25	12~20	12~17	12~21		12~25	18~30		56.02	54.65	41	61	62	45	45
	24				12~28	12~28	12~28	12~20	12~18	12~23		12~30	18~35		61.12	59.74	46	67	66	50	50
	26				16~30	16~30	16~30	16~20	16~20	16~25		16~30	21~40		66.21	64.84	51	74	73	58	56
	28				16~34	16~34	16~34	16~20	16~24	16~29		16~30	21~42		71.30	69.93	55	80	79	60	63
	30				16~35	16~35	16~35	16~20	16~25	16~30		16~35	21~50		76.39	75.02	60	83	82	63	67
	32				16~38	16~38	16~38	16~20	16~28	16~32		16~35	21~50		81.49	80.12	65	87	86	67	71
	34				16~42	16~42	16~42	16~20	16~30	16~35		16~35	26~55		86.58	85.21	70	95	91	75	77
	36	P8M250 *A :27.8 *W :33 *L :50 (L: 55)			16~45	16~45	16~45	16~20	16~30	16~38		16~38	26~60		91.67	90.30	75	99	97	80	80
	40				20~50	20~50	20~50	20	20~30	20~40		20~42	27~65		101.86	100.49	85	111	107	90	90
	44				20~55	20~55	20~50	20	20~30	20~43		20~50	27~72		112.05	110.67	90	119	119	100	102
	48				20~62	20~62	20~50	20	20~35	20~50		20~50	27~80		122.23	120.86		127	127	105	112
	50				20~62	20~62	20~50	20	20~35	20~50		20~50	27~80		127.32	125.95	100	135	135	115	120
	60				20~62	20~62	20~50	20	20~35	20~50		20~50	27~80		152.79	151.42		160	158	140	140

Z-d≥2 for shaft bore specification V and F.
Q(R)-d≥2 for shaft bore specification Y.
L Dimensions in () are for for 44~60 toothed pulleys.

⊗Shaft Bore Dia. 27, 36, 39, 41, 49 are not available for Shaft Bore specification N.
⊗Shaft Bore Dia. 13, 14, 17 are not available for Shaft Bore specification C.
⊗Shaft bore specifications F and Y are not applicable to PTPM and PTPP.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	PTPA50P8M250	-	A	-	H50												
(Shaft Bore: V · F)	PTPA48P8M250	-	B	-	V25	-	Z43	-	J25								
(Shaft Bore: Y)	PTPA36P8M150	-	A	-	Y20					-	Q32	-	R37	-	S7	-	T9

Price Reduction
15%

CAD Data

Days to Ship

- PTPA / PTPM: 8 Days
- Express A: 8,00 EUR/ piece P.88
- PTPP: 8 Days ⊗Express Serviceis not available.

⍟A Express Charge of 21,60 EUR for 3 or more identical pieces

- PTPK / PTPN: 10 Days ⊗Express Serviceis not available.

Price

Volume Discount (⍟Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

⍟For orders larger than indicated quantity, please request a quotation.

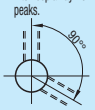
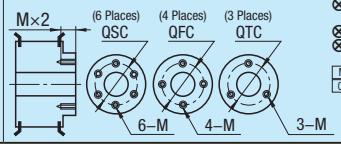
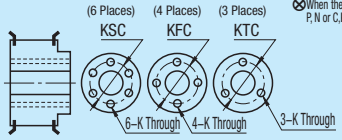
⍟The prices of PTPK is the body prices in the table multiplied by 1.1, while the prices of PTPN is multiplied by 1.2.(Round down to ten Cent.)
⍟For the body price of PTPP, add 5,00 EUR to the unit price shown in the table.
⍟Product price is the sum of body price and shaft bore machining charge.
⍟€ Unit Price of PTPM / PTPP are the Body Price, and Volume Discount is not applicable to Shaft Bore Machining Charge.
⍟**H** bore machining is free of charge.

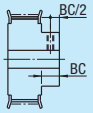
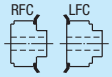
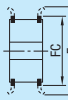
Teeth	€ Body Price								Shaft Bore Machining Charge (€ Body Price+)				
	PTPA(x1.0) PTPK(x1.1) PTPN(x1.2)				PTPM · PTPP(+ 5,00 EUR)				PTPA · PTPK · PTPN			PTPM · PTPP	
	P8M150		P8M250		P8M150		P8M250						
	A	B	A	B	A	B	A	B	P	N · C · V · F	Y	P	N · C · V
20													
22													
24													
26													
28													
30													
32													
34													
36													
40													
44													
48													
50													
60													

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC120 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

PTPA50P8M250 - A - H60 - QSC80 - M8

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC120	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. ⍟For A shape pulley, the set screw hole is set at around 90 ° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) ⍟Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC · QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC · QTC)≤D-(M+4) ⍟d=Z when the Shaft Bore Specifications is V. ⍟Specify KC120, when selecting QTC for Shaft Bore Specifications P, N and C. ⍟The pilot hole for tapping may go through. ⊗Not applicable to Shaft Bore Specifications F or Y. ⊗When the Shaft Bore Specifications are P, N or C,QSC is not applicable. ⊗QSC is not applicable to PTPM, PTPP. ⊗M6, M8 are not applicable to PTPM, PTPP. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) ⍟Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC · KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC · KTC)≤D-(K+4) ⍟d=Z when the Shaft Bore Specifications is V. ⍟Specify KC120 when selecting KTC for Shaft Bore specifications P, N and C. ⊗Not applicable to PTPM, PTPP. ⊗Not applicable to Shaft Bore Specifications F or Y. ⊗When the Shaft Bore Specifications are P, N or C,KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. ⍟Shaft Bore specification: H, V, F: 3≤BC≤L-W ⍟Shaft Bore specification: P, N, C: M+3≤BC≤L-W Ordering Code BC6.5 ⍟Clear anodized products may not have surface treatment on the embossed plane. ⊗Not available for A Shape. ⊗Not applicable to PTPM, PTPP. 	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. ⍟Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment ⊗Not applicable to PTPM, PTPP. ⍟No surface treatment applied on flange circumference. ⍟FC≥(O.D.)+2 ⍟FC≤F-2 Ordering Code FC45 	Changes the tapped hole dimension. ⍟Applicable to Shaft Bore specification P, N, C only. ⊗Not applicable to PTPM, PTPP. Ordering Code TPC5	Changes the length of the included set screws. ⍟Applicable to Shaft Bore specification P, N, C only. ⊗Not applicable to PTPM, PTPP. Ordering Code SLH10
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

M	TPC
M4	M5
M5	M4 / M6
M6	M5 / M8
M8	M6 / M10
M10	M8

Set Screw	SLH
M4x3	5, 8
M5x4	6, 10
M6x5	10
M8x6	10, 12
M10x8	12, 15

Timing Pulleys T5 Type

■For Timing Belts, refer to P.1200, for Long Timing Belts, refer to P.1203, for Keyless Timing Pulleys, refer to P.1167, for Idlers with Teeth, refer to P.1185

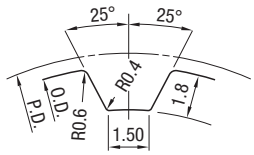


Part Number				Material		Surface Treatment
Belt Width 10mm	Belt Width 15mm	Belt Width 20mm	Belt Width 25mm	Pulley	Flange	
A: 11 W: 16 L: 28	A: 17 W: 22 L: 34	A: 22 W: 27 L: 39	A: 27 W: 32 L: 44			
TTPA__T5100	TTPA__T5150	TTPA__T5200	TTPA__T5250	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
TTPB__T5100	TTPB__T5150	TTPB__T5200	TTPB__T5250			Black Anodize
TTPK__T5100	TTPK__T5150	TTPK__T5200	TTPK__T5250			Hard Clear Anodize*
TTPN__T5100	TTPN__T5150	TTPN__T5200	TTPN__T5250			Electroless Nickel Plating
TTPT__T5100	TTPT__T5150	TTPT__T5200	TTPT__T5250	1.1191/C45E	1.0330/ DC01	-
TTPM__T5100	TTPM__T5150	TTPM__T5200	TTPM__T5250			Black Oxide
TTPP__T5100	TTPP__T5150	TTPP__T5200	TTPP__T5250			Electroless Nickel Plating

Ⓟ Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.

*Hard Anodize Treatment: Film Hardness 300HV~

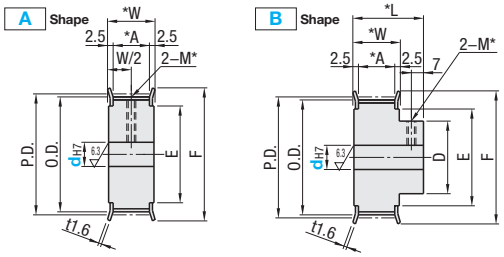
Standard Tooth Profile



Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 5.0mm)

•Pulley Shape



*For Shaft Bore Specifications H (Round Hole), V and F (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

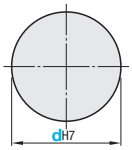
Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
5	M3	M3x3
6~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6

•Shaft Bore Specs.

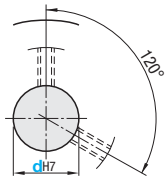
Ⓟ The shaft bore may not have surface treatment.

H Round Hole



*No tapped holes and set screws.

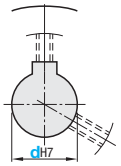
P Round Hole+Tap



*For A Shape pulley, the set screw hole is set at around 120 ° to keep away from peaks.

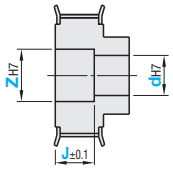
N New JIS Keywayed Bore + Tap

C Old JIS Keywayed Bore + Tap



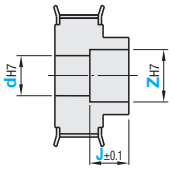
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



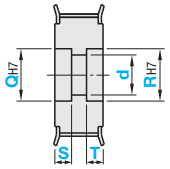
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



*Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



*Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)														P.D.	O.D.	D	F	E
					H		P		N · C		V · F					Y							
					dH7						dH7		ZH7		J (0.1mm Increment)	d	QH7 · RH7	S · T					
Type	Teeth	Type Nominal Width			A	B	A	B	A	B	A	B	A	B	A · B	A	A	A					
EN AW-2017/ AlCu4MgSi TTPA TTPB TTPK TTPN (1.1191/ C45E) TTPT TTPM TTPP	12		A	H P N C V F Y	5~8	-	5~8	-	8	-	-	-	-	-	-	-	-	-	19.10	18.25	-	24	12
	14				5~10	5~10	5~10	5~8	8, 10		5, 6	5, 6	7, 8	7, 8		5, 6	7, 8		22.28	21.45	14	26	16
	15				5~10	5~10	5~10	5~8	8, 10		5~8	5~8	7~10	7~10		5~8	7~10		23.87	23.05	15	28	18
	16	T5100			6~12	6~12	6~12	6~10	8~12	8	6~10	6~10	8~12	8~12		6~10	8~12		25.46	24.60	17	32	20
	18	*A :11 *W :16 *L :28			6~14	6~14	6~12	6~11	8~12	8, 10	6~12	6~12	8~14	8~14		6~12	8~14		28.65	27.80	19	33	22
	20				6~16	6~15	6~16	6~12	8~16	8, 10	6~14	6~13	8~16	8~15		6~14	8~16		31.83	31.00	19	36	24
	22				7~19	7~19	7~18	7~15	8~18	8~12	7~17	7~17	9~19	9~19		7~17	9~19		35.01	34.25	24	40	27
	24	T5150			7~22	7~22	7~20	7~17	8~20	8~13	7~20	7~20	9~23	9~23		7~20	9~22		38.20	37.40	27	45	30
	25	*A :17 *W :22 *L :34			7~22	7~22	7~20	7~18	8~20	8~15	7~20	7~20	9~23	9~23		7~20	9~22		39.79	39.00			
	26				8~27	8~27	8~22	8~21	8~22	8~17	8~25	8~25	10~27	10~27	(For A Shape) 2.0≤J≤W-2.0	8~25	10~27		41.38	40.60	31	48	35
	28	T5200			8~27	8~27	8~24	8~22	8~24	8~18	8~25	8~25	10~27	10~27		8~25	10~27	3~14	44.56	43.75	32		
	30	*A :22 *W :27 *L :39			10~28	10~28	10~26	10~23	10~26	10~18	10~26	10~26	12~28	10~30	(For B Shape) 2.0≤J≤L-2.0	10~26	12~28	S+T≤W-3	47.75	46.95	33	52	36
	32				10~32	10~32	10~28	10~27	10~28	10~22	10~30	10~30	12~32	12~35		10~30	12~32		50.93	50.10	37	55	40
	34				10~37	10~36	10~30	10~30	10~30	10~25	10~35	10~34	12~37	12~36		10~35	12~37		54.11	53.25	40	61	45
	36	T5250			10~37	10~36	10~30	10~30	10~30	10~25	10~35	10~34	12~37	12~36		10~35	12~37		57.30	56.45	40	61	45
	40	*A :27 *W :32 *L :44			10~42	10~42	10~38	10~37	10~38	10~29	10~40	10~40	12~42	12~42		10~40	12~42		63.66	62.85	47	67	50
	44				12~50	12~46	12~42	12~40	12~40	12~32	12~48	12~44	14~50	14~46		12~48	14~50		70.03	69.2	50	74	58
	48				12~55	12~55	12~45	12~45	12~40	12~40	12~53	12~53	14~55	14~55		12~53	14~55		76.39	75.55	60	83	63
	50				12~59	12~59	12~45	12~45	12~43	12~43	12~57	12~57	14~59	14~59		12~57	14~59		79.58	78.75	63	87	67
	60				12~72	12~71	12~45	12~45	12~45	12~45	12~70	12~69	14~72	14~71		12~70	14~72		95.49	94.65	75	99	80

Ⓟ Z-d≥2 for shaft bore specification V and F.
Ⓟ Q(R)-d≥2 for shaft bore specification Y.
Ⓟ Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F.Q (R)-d≥2 for shaft bore specification Y.
Ⓟ Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112

⊗ Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
⊗ Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21 ~ 45 are not available for Shaft Bore specification C.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	TTPA18T5100	-	A	-	NK10												
(Shaft Bore: V · F)	TTPA30T5200	-	A	-	V10	-	Z23	-	J16.0								
(Shaft Bore: Y)	TTPA48T5150	-	A	-	Y25					-	Q42	-	R37	-	S9	-	T7

Days to Ship

- TTPA / TTPT / TTPM / TTPP

8 Days | Express A | 8,00 EUR/ piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces

- TTPB / TTPK / TTPN

10 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The prices of TTPM is the body price in the table multiplied by 1.05, while the prices of TTPB and TTPK are multiplied by 1.1, the prices of TTPP are multiplied by 1.15, and the price of TTPN is multiplied by 1.2. (Round down to ten Cent.)

Product price is the sum of body price and shaft bore machining charge.

H bore machining is free of charge.

Teeth	€ Body Price																Shaft Bore Machining Charge (€ Body Price +)		
	TTPA(x1.0)TTPB · TTPK(x1.1)TTPN(x1.2)								TTPT(x1.0)TTPM(x1.05)TTPP(x1.15)										
	T5100		T5150		T5200		T5250		T5100		T5150		T5200		T5250				
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N · C V · F	Y
12																			
14																			
15																			
16																			
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26																			
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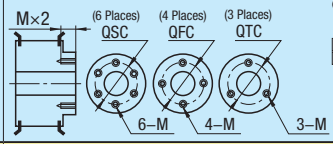
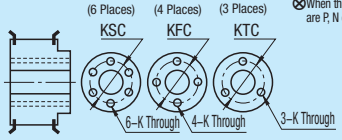
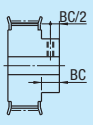
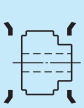
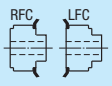
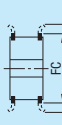
34																			
36																			
40																			
44																			
48																			
50																			
60																			

Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

TTPA25T5100 - A - H10 - QSC18 - M4

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,QSC is not applicable. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C,KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore specification: P, N, C: M+3≤BC≤L-W Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape. 	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference. FC≥(D.D.)+2 FC≤F-2 Ordering Code FC45 	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. Ordering Code TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Ordering Code SLH12
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

M	TPC
M3	M4
M4	M3 / M5
M5	M4 / M6
M6	M5 / M8
M8	M6

Set Screw	SLH
M3x3	6
M4x3	5, 8
M5x4	6, 10
M6x5	10
M8x6	10, 12

Timing Pulleys T10 Type

■For Timing Belts, refer to P.1200, for Long Timing Belts, refer to P.1203, for Keyless Timing Pulleys, refer to P.1169, for Idlers with Teeth, refer to P.1185



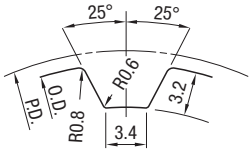
Part Number						Material		Surface Treatment
Belt Width 15mm	Belt Width 20mm	Belt Width 25mm	Belt Width 30mm	Belt Width 40mm	Belt Width 50mm	Pulley	Flange	
A:17W:22L:37	A:22W:27L:42	A:27W:32L:47 (52)	A:32W:37L:52 (57)	A: 43 W: 48 L: 61(63)	A: 53 W: 58 L: 70			
TTPA__T10150	TTPA__T10200	TTPA__T10250	TTPA__T10300	TTPA__T10400	TTPA__T10500	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg 2,5	Clear Anodize
TTPB__T10150	TTPB__T10200	TTPB__T10250	TTPB__T10300	TTPB__T10400	TTPB__T10500			Black Anodize
TTPK__T10150	TTPK__T10200	TTPK__T10250	TTPK__T10300	TTPK__T10400	TTPK__T10500			Hard Clear Anodize*
TTPN__T10150	TTPN__T10200	TTPN__T10250	TTPN__T10300	TTPN__T10400	TTPN__T10500			Electroless Nickel Plating
TTPT__T10150	TTPT__T10200	TTPT__T10250	TTPT__T10300	TTPT__T10400	TTPT__T10500	1.1191/ C45E	1.0330/ DC01	-
TTPM__T10150	TTPM__T10200	TTPM__T10250	TTPM__T10300	TTPM__T10400	TTPM__T10500			Black Oxide
TTPP__T10150	TTPP__T10200	TTPP__T10250	TTPP__T10300	TTPP__T10400	TTPP__T10500			Electroless Nickel Plating

Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.
L Dimensions in () are for 44~60 toothed pulleys.

*Hard Anodize Treatment: Film Hardness 300HV~

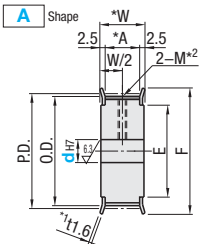
•Pulley Shape

Standard Tooth Profile

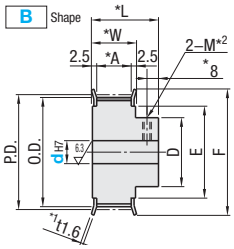


Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 10.0mm)

A Shape



B Shape



*1 t=2.0 for 34, 50 and 60 toothed pulleys (Cut Flange).
*2 Shaft Bore Specifications H (Round Hole), V,F (Stepped Hole) and Y (Both Sides Stepped Hole), do not have tapped holes.

* 11 for T10250 and T10300 with 44~60 teeth.
(L-W)/2 for T10400 and T10500.

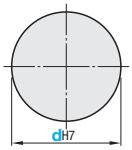
■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
8~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

•Shaft Bore Specs.

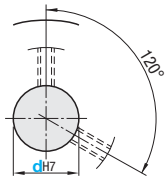
The shaft bore may not have surface treatment.

H Round Hole



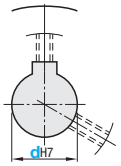
*No tapped holes and set screws.

P Round Hole+Tap



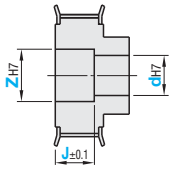
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



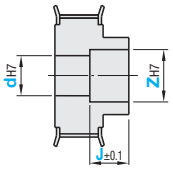
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



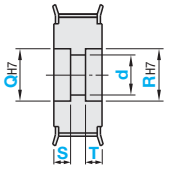
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
*No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
*Shaft Bore Dia. D is general tolerance.
*No tapped holes and set screws.

Part Number			Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment)																		P.D.	O.D.	D	F	E
Type	Teeth	Type Nominal Width			H		P		N · C		V · F				J (0.1mm Increment)	Y											
					dH7						dH7		ZH7			d	QH7 · RH7	S · T									
					A	B	A	B	A	B	A	B	A	B	A · B	A	A	A									
EN AW-2017/ AlCu4MgSi	12	T10150	A	H P N C V F Y	8~19	-	8~18	-	8~18	-	8~17	-	10~23	-	(For A Shape) 3.0≤J≤ W-3.0 (For B Shape) 3.0≤J≤L-3.0	8~17	10~19	3~17 S+T≤W-3					38.20	36.35	-	40	27
	14	* A :17 * W :22 * L :37			10~27	10~27	10~26	10~22	10~26	10~20	10~25	10~25	12~27	12~27		10~25	12~27						44.56	42.70	32	48	35
	15				10~28	10~28	10~26	10~23	10~26	10~20	10~26	10~26	12~28	12~28		10~26	12~28						47.75	45.90	33	52	36
	16	T10200			12~32	12~32	12~30	12~27	12~30	12~22	12~30	12~30	14~32	14~32		12~30	14~32						50.93	49.05	37	58	40
	18	* A :22 * W :27 * L :42			12~37	12~36	12~30	12~30	12~30	12~25	12~35	12~34	14~37	14~36		12~35	14~37						57.30	55.45	40	61	45
	20				12~42	12~42	12~40	12~35	12~40	12~29	12~40	12~40	14~42	14~42		12~40	14~42						63.66	61.80	47	67	50
	22	T10250			12~52	12~46	12~48	12~38	12~48	12~32	12~50	12~44	14~52	14~46		12~50	14~52						70.03	68.15	50	80	60
TTPA	24	* A :27 * W :32 * L :47 (L: 52)			12~59	12~56	12~50	12~46	12~50	12~40	12~57	12~54	14~59	14~56		12~57	14~59						76.39	74.55	60	87	67
TTPB	25				12~59	12~59	12~50	12~49	12~50	12~43	12~57	12~57	14~59	14~59		12~57	14~59						79.58	77.70	63		
TTPK	26		A		12~59	12~59	12~50	12~49	12~50	12~43	12~57	12~57	14~59	14~59		12~57	14~59						82.76	80.90			
TTPN	28	T10300 * A :32 * W :37 * L :52 (L: 57)			12~67	12~66	12~57	12~56	12~50	12~48	12~65	12~64	14~67	14~66		12~65	14~67						89.13	87.25	70	95	75
(1.1191/C45E)	30		B		12~76	12~71	12~65	12~61	12~50	12~50	12~74	12~69	14~76	14~71		12~74	14~76						95.49	93.65	75	104	84
TTPT	32				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~79	22~82	22~81		20~75	22~82						101.86	100.00	85	111	90
TTPM	34	T10400 * A :43 * W :48 * L :61 (L: 63)			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~92	22~86		20~75	22~92						108.23	106.40	90	115	95
TTPP	36				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~94	22~91		20~75	22~94						114.59	112.75	95	123	102
	40				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95						127.32	125.45		135	115
	44	T10500			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95						140.06	138.20	100	152	130
	48	* A :53 * W :58 * L :70			20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95						152.79	150.95		160	140
	50				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95						159.15	157.30		170	150
	60				20~80	20~80	20~65	20~65	20~50	20~50	20~80	20~80	22~95	22~95		20~75	22~95						190.99	189.10		200	175

Z-d≥2 for shaft bore specification V and F.
Q(R)-d≥2 for shaft bore specification Y.
L Dimensions in () are for 44~60 toothed pulleys.
Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112

⊗Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
⊗Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21 ~ 50 are not available for Shaft Bore specification C.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	TTPA14T10500	-	A	-	NK10												
(Shaft Bore: V · F)	TTPA48T10500	-	B	-	V20	-	Z38	-	J23.5								
(Shaft Bore: Y)	TTPA24T10250	-	A	-	Y25						Q37	-	R37	-	S7	-	T7

Days to Ship

- TTPA / TTPT / TTPM / TTPP

8 Days	Express A	8,00 EUR/ piece	P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces

- TTPB / TTPK / TTPN

10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The prices of TTPM is the body price in the table multiplied by 1.05, while the prices of TTPB and TTPK are multiplied by 1.1, the prices of TTPP are multiplied by 1.15, and the price of TTPN is multiplied by 1.2. (Round down to ten Cent.)
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

Teeth	€ Body Price																						Shaft Bore Machining Charge (€ Body Price +)		
	TTPA (x1.0) TTPB · TTPK (x1.1) TTPN (x1.2)												TTPT (x1.0) TTPM (x1.05) TTPP (x1.15)												
	T10150		T10200		T10250		T10300		T10400		T10500		T10150		T10200		T10250		T10300		T10400		T10500		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	P	N·C·V·F	Y
12																									
14																									
15																									
16																									
18																									
20																									
22																									
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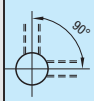
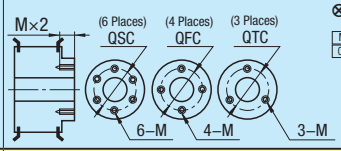
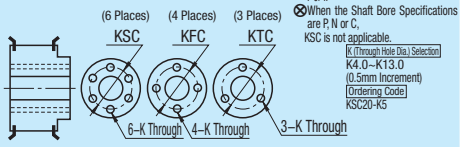
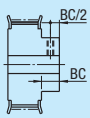
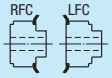
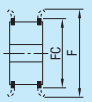
Alterations

Part Number - Pulley Shape - Shaft Bore Spec. / Inner Dia. - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)

TTPA36T10250 - A - H40 - KSC80 - K10

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC90	QSC / QFC / QTC	KSC / KFC / KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting QFC for Shaft Bore specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Spec-ifications are P, N or C, QSC is not applicable. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC90 when selecting KFC for Shaft Bore Specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore specification: P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(0.D.)+2 FC≤F-2 Ordering Code FC80	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. M / TPC M4 / M5 M5 / M4 / M6 M6 / M5 / M8 M8 / M6 / M10 M10 / M8 Ordering Code TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Set Screw / SLH M4x3 / 5, 8 M5x4 / 6, 10 M6x5 / 10 M8x6 / 10, 12 M10x8 / 12, 15 Ordering Code SLH12
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

Timing Pulleys AT5 / AT10 Type

■**Features**: Applicable to AT type belt with 1.3 times greater allowable tension than T type.
■For Long Timing Belts, refer to P.1203, for Open End Belts, refer to P.1205, for Idlers with Teeth, refer to P.1185



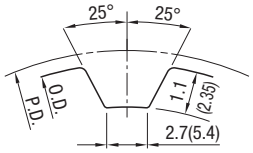
Part Number					Material		Surface Treatment
AT5 Type		AT10 Type			Pulley	Flange	
Belt Width 10mm	Belt Width 15mm	Belt Width 15mm	Belt Width 20mm	Belt Width 25mm			
A:11.6 W:16.5 L:25 (27 / 29)(Ⓣ)	A:16.6 W:21.5 L:30 (32 / 34)(Ⓣ)	A: 16.5 W: 22.5 L: 38(40)(Ⓣ)	A: 21.5 W: 27.5 L: 43(45)(Ⓣ)	A: 26.5 W: 32.5 L: 48(50)(Ⓣ)			
TTPA_ _-AT5100	TTPA_ _-AT5150	TTPA_ _-AT10150	TTPA_ _-AT10200	TTPA_ _-AT10250	EN AW-2017/ AlCu4MgSi (Duralumin)	EN AW-5052/ AlMg2,5	Clear Anodize
TTPB_ _AT5100	TTPB_ _AT5150	TTPB_ _-AT10150	TTPB_ _-AT10200	TTPB_ _-AT10250			Black Anodize
TTPK_ _AT5100	TTPK_ _AT5150	TTPK_ _-AT10150	TTPK_ _-AT10200	TTPK_ _-AT10250			Hard Clear Anodize*
TTPN_ _-AT5100	TTPN_ _-AT5150	TTPN_ _-AT10150	TTPN_ _-AT10200	TTPN_ _-AT10250			Electroless Nickel Plating

Ⓣ Flange attached. Set screws are attached to Shaft Bore Specifications P, N and C.
Ⓣ L dimension varies depending on the number of teeth. Refer to the Specification Table..

*Hard Anodize Treatment: Film Hardness 300HV~

AT5 Type
*ℓ=4 (No. of Teeth 15, 16)
ℓ=5 (No. of Teeth 18~28)
ℓ=6 (No. of Teeth 30~60)
AT10 Type
*ℓ=8 (No. of Teeth 14~48)

Standard Tooth Profile

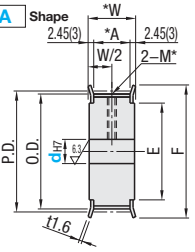


Tooth groove dimensions slightly change according to No. of teeth.
(AT5 Pitch:5.0mm/AT10 Pitch:10.0mm)

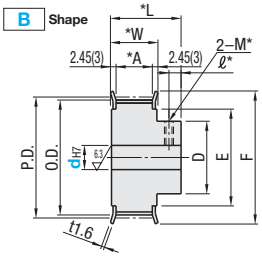
Ⓣ The dimensions with ( ) in the diagram are applied for AT10.

•Pulley Shape

A Shape



B Shape



*For Shaft Bore Specifications H (Round Hole), V and F (Stepped Hole) and Y (Both Sides Stepped Hole), no tapped hole is machined.

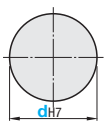
■Tapped Hole Dimensions (Shaft Bore: P / N / C)

dH7 Shaft Bore Inner Dia.	M (Coarse)	Accessory Set Screw
5	M3	M3x3
6~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

Shaft Bore Specs.

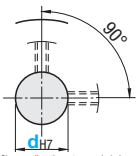
Ⓣ The shaft bore may not have surface treatment.

H Round Hole



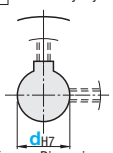
*No tapped holes and set screws.

P Round Hole+Tap



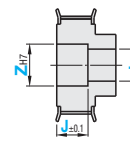
*For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks. For A Shape the set screws are placed at around 90° to keep away from the tooth peaks.

N New JIS Keywayed Bore + Tap
C Old JIS Keywayed Bore + Tap



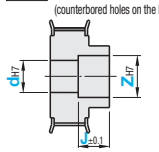
*For Keyway Dimension Details, refer to P.1112

V Stepped Hole



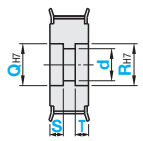
*No tapped holes and set screws.

F Stepped Hole (counterbored holes on the hub side)



* Applicable to B Shape only.
* No tapped holes and set screws.

Y Both Ends Stepped Hole



* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.

■AT5 Type

Part Number: Type	Teeth	Type Nominal Width	Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment) H: dH7 A	H: dH7 B	P: dH7 A	P: dH7 B	N·C: dH7 A	N·C: dH7 B	V·F: dH7 A	V·F: dH7 B	V·F: ZH7 A	V·F: ZH7 B	J (0.1mm Increment) A·B	Y: d A	Y: QH7·RH7 A	Y: S·T A	P.D.	O.D.	D	F	E	ℓ
EN AW-2017/ AlCu4MgSi TTPA TTPB TTPK TTPN	15	AT5100	A B	H P N C V F Y	5~10	5~10	5~10	5~8	8 / 10	-	5~8	5~7	7~10	7~9	(For A Shape) 2.0≤J≤W-2.0 (For B Shape) 2.0≤J≤L-2.0	5~8	7~10	3~14 S+T≤W-3	23.87	22.65	13	28	18	4
	16	* A :11.6 * W :16.5 * L :25 (No. of Teeth 18~28 L:27) (No. of Teeth 30~60 L:29)			6~12	6~12	6~12	6~10	8~12	8	6~10	6~10	8~12	8~12		6~10	8~12		25.46	24.20	16	32	20	
	18				6~14	6~14	6~12	6~11	8~12	8 / 10	6~12	6~10	8~14	8~12		6~12	8~14		26.65	27.40		33	22	
	20				6~16	6~15	6~16	6~12	8~16	8 / 10	6~14	6~14	8~16	8~16		6~14	8~16		31.83	30.60	20	36	24	5
	22				7~19	7~19	7~18	7~15	8~18	8~12	7~17	7~14	9~19	9~16		7~17	9~19		35.01	33.85		40	27	
	24				7~22	7~22	7~20	7~17	8~20	8~13	7~20	7~19	9~23	9~21		7~20	9~22		38.20	37.00	25	45	30	
	25				7~22	7~22	7~20	7~18	8~20	8~15	7~20	7~19	9~23	9~21		7~20	9~22		39.79	38.60				
	26				8~27	8~27	8~22	8~21	8~22	8~17	8~25	8~25	10~27	10~26		8~25	10~27		41.38	40.20	30	48	35	
	28				8~27	8~27	8~24	8~22	8~24	8~18	8~25	8~25	10~27	10~26		8~25	10~27		44.56	43.35				
	30	AT5150			10~28	10~28	10~26	10~23	10~26	10~18	10~26	10~26	12~28	10~31		10~26	12~30		47.75	46.55	35	55	40	6
	32	* A :16.6 * W :21.5 * L :30 (No. of Teeth 18~28 L:32) (No. of Teeth 30~60 L:34)			10~32	10~32	10~28	10~27	10~28	10~22	10~30	10~30	12~32	12~31		10~30	12~35		50.93	49.70				
	36				10~37	10~36	10~30	10~30	10~30	10~25	10~35	10~34	12~37	12~36		10~35	12~37		57.30	56.05	40	61	45	
	40				10~42	10~42	10~38	10~37	10~38	10~29	10~40	10~40	12~42	12~41		10~40	12~42		63.66	62.45	45	67	50	
	44				12~50	12~46	12~42	12~40	12~40	12~30	12~48	12~44	14~50	14~41		12~48	14~50		70.03	68.80		74	58	
	48				12~55	12~55	12~45	12~45	12~40	12~40	12~53	12~53	14~55	14~41		12~53	14~55		76.39	75.15		83	63	
	60				12~72	12~71	12~45	12~45	12~45	12~45	12~70	12~69	14~72	14~41		12~70	14~72		95.49	94.25		99	80	

■AT10 Type

Part Number: Type	Teeth	Type Nominal Width	Pulley Shape	Shaft Bore Specifications	Shaft Bore Spec. (1mm Increment) H: dH7 A	H: dH7 B	P: dH7 A	P: dH7 B	N·C: dH7 A	N·C: dH7 B	V·F: dH7 A	V·F: dH7 B	V·F: ZH7 A	V·F: ZH7 B	J (0.1mm Increment) A·B	Y: d A	Y: QH7·RH7 A	Y: S·T A	P.D.	O.D.	D	F	E	ℓ
EN AW-2017/ AlCu4MgSi TTPA TTPB TTPK TTPN	14	AT10150	A B	H P N C V F Y	10~27	10~30	10~26	10~24	10~26	10~18	10~25	10~27	12~27	12~30	(For A Shape) 3.0≤J≤W-3.0 (For B Shape) 3.0≤J≤L-3.0	10~25	12~27	3~17 S+T≤W-3	44.56	42.70	34	52	36	8
	15	* A :16.5 * W :22.5 * L :38 (No. of Teeth 30~L:40)			10~28	10~31	10~26	10~25	10~26	10~20	10~26	10~29	12~28	12~31		10~26	12~28		47.75	45.90	35	58	40	
	16				12~32	12~31	12~30	12~25	12~30	12~20	12~30	12~29	14~32	14~31		12~30	14~32		50.93	49.05				
	18				12~37	12~31	12~30	12~25	12~30	12~20	12~35	12~29	14~37	14~31		12~35	14~37		57.30	55.45		61	45	
	20				12~42	12~36	12~40	12~30	12~40	12~25	12~40	12~34	14~42	14~36		12~40	14~42		63.66	61.80	40	67	50	
	22	AT10200			12~52	12~36	12~48	12~30	12~48	12~25	12~50	12~34	14~52	14~36		12~50	14~52		70.03	68.15		80	60	
	24	* A :21.5 * W :27.5 * L :43 (No. of Teeth 30~L:45)			12~59	12~46	12~50	12~38	12~50	12~32	12~57	12~44	14~59	14~46		12~57	14~59		76.39	74.55	50	87	67	
	25				12~59	12~46	12~50	12~38	12~50	12~32	12~57	12~44	14~59	14~46		12~57	14~59		79.58	77.70				
	26				12~59	12~46	12~50	12~38	12~50	12~32	12~57	12~44	14~59	14~46		12~57	14~59		82.76	80.90				
	28				12~67	12~55	12~57	12~45	12~50	12~40	12~65	12~53	14~67	14~55		12~65	14~67		89.13	87.25	60	95	75	
	30				12~76	12~55	12~65	12~45	12~50	12~40	12~74	12~53	14~76	14~55		12~74	14~76		95.49	93.65	60	104	84	
	32	AT10250			20~80	20~55	20~65	20~45	20~50	20~40	20~80	20~53	22~82	20~55		20~75	22~82		101.86	100.00		111	90	
	36	* A :26.5 * W :32.5 * L :48 (No. of Teeth 30~L:50)			20~80	20~55	20~65	20~45	20~50	20~40	20~80	20~53	22~94	20~55		20~75	22~94		114.59	112.75		123	102	
	40				20~80	20~55	20~65	20~45	20~50	20~40	20~80	20~53	22~95	20~55		20~75	22~95		127.32	125.45		135	115	
	44				20~80	20~55	20~65	20~45	20~50	20~40	20~80	20~53	22~95	20~55		20~75	22~95		140.06	138.20		152	130	
	48				20~80	20~55	20~65	20~45	20~50	20~40	20~80	20~53	22~95	20~55		20~75	22~95		152.79	150.95		160	140	

Ⓣ Z-d≥2 for shaft bore specification V and F. Ⓣ Q(R)-d≥2 for shaft bore specification Y.
Ⓣ Shaft Bore Dia. 6.35 is selectable for Shaft Bore specifications H, P, V and F. (*AT5 only.)
Ⓣ Select NK10 when New JIS Keywayed Bore + Tap with shaft bore diameter of 10 and keyway width 4.0mm (height 1.8mm) is requested. P.1112
⊗ Shaft Bore Dia. 9 is not available for Shaft Bore specification N.
⊗ Shaft Bore Dia. 8, 9, 11, 13, 14, 17, 21 ~ 50 are not available for Shaft Bore specification C.

Order Example

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T
(Shaft Bore : H · P · N · C)	TTPA30-AT5150	-	A	-	NK10												
(Shaft Bore: V · F)	TTPA50-AT5150	-	B	-	F20	-	Z30	-	J20.0								
(Shaft Bore: Y)	TTPA24-AT10250	-	A	-	Y25					-	Q37	-	R37	-	S7	-	T7

Days to Ship

- TTPA: 8 Days
- TTPB / TTPK / TTPN: 10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The body price is their unit price in the table multiplied by 1.1 for TTPB, TTPK, by 1.2 for TTPN. (Round down to ten Cent.)
Product price is the sum of body price and shaft bore machining charge.
H bore machining is free of charge.

AT5 Type

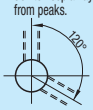
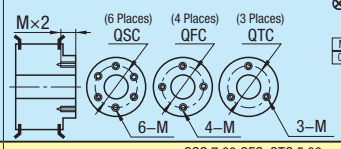
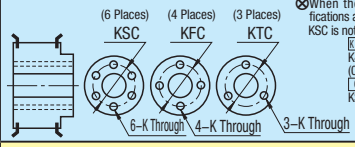
Teeth	€ Body Price TTPA (x1.0) TTPB · TTPK (x1.1) TTPN (x1.2) AT5100 A	AT5100 B	AT5150 A	AT5150 B	Shaft Bore Machining Charge (€ Body Price +) P	N · C · V · F	Y
15							
16							
18							
20							
22							
24							
25							
26							
28							
30							
32							
36							
40							
44							
48							
50							
60							

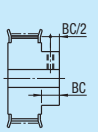
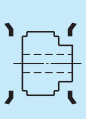
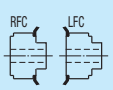
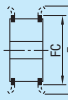
AT10 Type

Teeth	€ Body Price TTPA (x1.0) TTPB · TTPK (x1.1) TTPN (x1.2) AT10150 A	AT10150 B	AT10200 A	AT10200 B	AT10250 A	AT10250 B	Shaft Bore Machining Charge (€ Body Price +) P	N · C · V · F	Y
14									
15									
16									
18									
20									
22									
24									
25									
26									
28									
30									
32									
36									
40									
44									
48									

Alterations

	Part Number	-	Pulley Shape	-	Shaft Bore Spec. / Inner Dia.	-	Z	-	J	-	Q	-	R	-	S	-	T	-	(KC120 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH)
	TTPA18-AT5100	-	A	-	P10													-	NFC

Alterations	Set Screw Angle	Side Tapped Hole	Side Through Hole
Code	KC120	QSC · QFC · QTC	KSC · KFC · KTC
Spec.	Changes an angle of set screw to 90°. For A shape pulley, the set screw hole is set at around 90° to keep away from peaks. 	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+M+4≤QSC(QFC / QTC)≤E-(M+4) B Shape: d+M+4≤QSC(QFC / QTC)≤D-(M+4) d=Z when the Shaft Bore Specifications is V. Specify KC120, when selecting QTC for Shaft Bore Specifications P, N and C. The pilot hole for tapping may go through. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, QSC is not applicable. M Selection M3,M4,M5,M6,M8 Ordering Code QFC28-M4 	Machines through hole on the side surface of hub side. (KSC, KFC, KTC: 1mm Increment) Thickness required: minimum 2mm A Shape: d+K+4≤KSC(KFC / KTC)≤E-(K+4) B Shape: d+K+4≤KSC(KFC / KTC)≤D-(K+4) d=Z when the Shaft Bore Specifications is V. Specify KC120 when selecting KTC for Shaft Bore specifications P, N and C. Not applicable to Shaft Bore Specifications F or Y. When the Shaft Bore Specifications are P, N or C, KSC is not applicable. K (Through Hole Dia.) Selection K4.0~K13.0 (0.5mm Increment) Ordering Code KSC20-K5 
Price Adder	Free of Charge	QSC:7,00 QFC, QTC:5,00	KSC:10,00 KFC, KTC:7,00

Alterations	Boss Cut	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole Dimensions	Set Screw Length
Code	BC	NFC	RFC · LFC	FC	TPC	SLH
Spec.	Cuts the hub length in 0.5mm increment. Shaft Bore specification: H, V, F: 3≤BC≤L-W Shaft Bore specification: P, N, C: M+3≤BC≤L-W  Ordering Code BC6.5 Clear anodized products may not have surface treatment on the embossed plane. Not available for A Shape	Flange is not attached. (Flange included) 	Flange included on the hub side (RFC) or the opposite side (LFC) only. Same on A Shape 	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(0.D.)+2 FC≤F-2 Ordering Code FC45	Changes the tapped hole dimension. Applicable to Shaft Bore specification P, N, C only. M: TPC M4: M5 M5: M4 / M6 M6: M5 / M8 M8: M6 Ordering Code TPC5	Changes the length of the included set screws. Applicable to Shaft Bore specification P, N, C only. Set Screw / SLH M3x3 / 6 M4x3 / 5, 8 M5x4 / 6, 10 M6x5 / 10 M8x6 / 10, 12 Ordering Code SLH10
Price Adder	5,00	Free of Charge	Free of Charge	3,00	Free of Charge	Free of Charge

Keyless Timing Pulley
-Overview-

■Features of Keyless Timing Pulleys

- Machining on shafts such as keyway is not required.
- No machining on shafts retains the strength of shaft.
- Easy positioning.

■Installation

(1) Wipe off the shaft surface and apply oil or grease.
(Do not use any oil or grease containing molybdenum type elimination agent.)
(2)Wipe off and apply oil or grease on contact surfaces of pulley and bushing as well. Apply to the threads and seat of tightening screws as well.
(3) Temporarily assemble the pulley and bushing, then insert the shaft.
(Do not tighten the bushing before inserting the shaft.)
(4)After locating, tighten the clamping screws using a torque wrench in the diagonal line order, beginning lightly (approx. 1/4 of the predetermined tightening torque).
(5)Tighten the screws further to an increased torque (approximately 1/2 specified torque).
(6) Tighten the screws up to specified torque.
(7) Finally, tighten the screws to the listed torque values in a circumferential order.

■Note on Installation

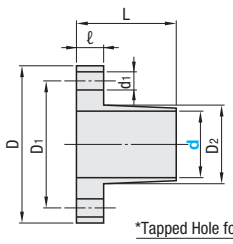
- Be sure to apply oil or grease at mounting. If not, the pulleys may not be tightened firmly; the shaft may slip at rotation.
- Screw tighten the bushing after inserting the shaft.
(Bushing deforms if the screw is tightened before inserting the shaft.)
- Use a torque wrench to tighten the screws.
- Do not use screws other than the included tightening screws.

■Removal

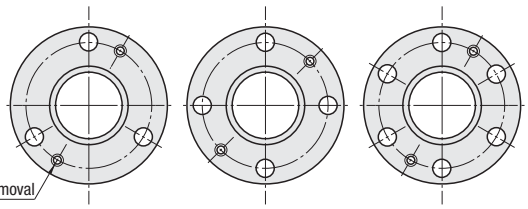
- Be sure to work after the system is completely shut down.
- Loosen the tightening screws in circumferential order.
- Insert a screw in a hole for removal and tighten evenly.
- Repeat "Installation" process for re-installation.



No slits on SH bushings



*3-Screw Tightening Type 4-Screw Tightening Type 6-Screw Tightening Type



Operating Temperature: -20~+80°C

*SH bushings have 3 tapped holes for removal.

Material: Body 1.1191/C45E
Screw 4137 Alloy Steel (Black Oxide)

■Bushing Dimension Table

- Standard Type "E" Shape (ST Bushings)

Shaft Bore Dia. d	Screw Qty.	Screw Size	Tapped Hole for Removal	Max. Allowable Torque Nm	Allowable Thrust Load kN	Screw Tightening Torque Nm	D	D1	D2	d1	L	ℓ
8	4	M3x12	M3x2	16	4.0	2.0	25.5	19	10	3.3	15.5	4
10	3	M4x16	M4x2	39	5.34	4.0	30	22	12	4.5	16.5	5
11				43			31	23	13			
12				48			32	24	14			
14	4	M4x18	M4x2	73	5.34	4.0	35	27	16.6	4.5	22	6
15				78			36	28	17.6		23	7
16				83			37	29	18.6			
17				88			38	30	19.6			
18		M5x20	M5x2	154	8.74	8.3	43	33	20.6	5.5		
19				163			45	35	22.4			
20				171			46	36	23.4			
22				186			48	38	24.6			
24				206			50	40	26.6			
25				216			52	42	28.4			
28	6	M5x25	M5x2	353	8.74	8.3	54	44	30.6	5.5	24	8
30				382			57	47	33.4			
32				412			59	49	34.7		25	9
35				451			63	53	38.4		26.5	
38		M6x28	M6x2	686	12.3	13.7	70	58	42	6.6	28	10
40				725			71	59	43.5		30.5	
42				757			74	62	46		31.5	11
45		M8x35	M8x2	1490	22.7	34.3	84	69	49.5	8.8	38.5	13
48				1600			87	72	52.5			
50				1660			89	74	54.5			

- Shaft tolerance g6, shaft surface roughness Ra6.3 are standard.
- When there are keyway and D cut on the installation shaft, transmitting torque is reduced by approximately more than 15%.

kgf=Nx0.101972

- Short Type "F" Shape (SH Bushings)

Shaft Bore Dia. d	Screw Qty.	Screw Size	Tapped Hole for Removal	Max. Allowable Torque Nm	Allowable Thrust Load kN	Screw Tightening Torque Nm	D	D1	D2	d1	L	ℓ
6	3	M3x10	M3x3	5.6	1.87	1.9	22.5	16	8.5	3.3	10.5	3
8				8.5	2.12		24.5	18	10.5			
10		M4x12	M4x3	18	3.59	3.9	29	21	12.75	4.4	13	4
11				20	3.63		30	22	13.75			
12				23	3.76		31	23	14.75			
14	4	M4x18	M4x2	37	5.21	3.9	36	26	17.65	4.4	17	5
15				39	5.10		37	27	18.65			
16				42	5.17		38	28	19.65			
17				45	5.23		39	29	20.65			
18				48	5.28		40	30	21.85			
19				49	5.12		42	32	22.85			
20	4	M5x18	M5x2	97	9.68	7.8	46	36	24.1	5.5	19	6
22				110	9.98		47	37	25.75			
24				121	10.00		49	39	27.75			
25				124	9.90		51	41	28.75			
28				141	10.00		53	43	31.75			
30				149	9.89		56	46	33.75			
32				163	10.12		58	47	35.75			
35				173	9.88		61	50	39.1		20	

kgf=Nx0.101972

■Mechanical Lock Standard Type Incorporated

In addition to the above bushings, Mechanical Lock Standard Type (☞P.1217) incorporated keyless timing pulley is newly added to the lineup.
It tolerates average 1.2 times and 2.5 times greater torque against ST bushing and SH bushing respectively.

Keyless Timing Pulleys XL Type

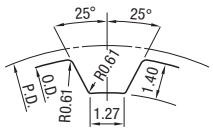
CAD Data

■For Timing Belts, refer to P.1193



Part No.	Material			Surface Treatment		
Belt Width 12.7mm (1/2inch) A: 14 W: 19	Pulley	Flange	Bushing	Pulley	Flange	Bushing
MTPLA_ _XL050	EN AW-7075/AlZn5,5MgCu	EN AW-5052/AlMg2,5	1.1191/C45E	Clear Anodize		-
MTPL_ _XL050	1.1191/C45E	1.0330/DC01	1.1191/C45E	Black Oxide		

Tooth Profile (ISO Standard Rack Dimensions)



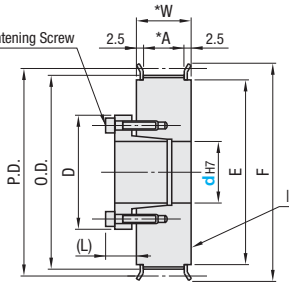
Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 5.08mm)

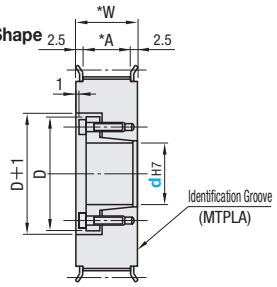
*For quantity and size of tightening screws with Flange attached, refer to P.1153

•Pulley Shape

E Shape *Tightening Screw



F Shape



Ⓣ The shaft bore may not have surface treatment.

Ⓣ Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153

Part Number Type	Teeth	Type, Nominal Width	Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1) E (ST Bushing)	F (SH Bushing)	P.D.	O.D.	F	E
MTPLA MTPL	20	XL050 *A: 14 *W: 19	E	8	-	32.34	31.83	40	27
	21			8		33.96	33.45		
	22		E F	8	8	35.57	35.07	45	30
	24			8	8	38.81	38.30		
	25			8~12	8 / 10 / 11	40.43	39.92	48	35
	26			8~12	8 / 10 / 11	42.04	41.53		
	28			8~17	8~12	45.28	44.77	55	55
	30			10~17	10 / 11 / 12	48.51	48.00	48	48
	32			10~18	10 / 11 / 12	51.74	51.24	61	45
	34			10~18	10 / 11 / 12	54.98	54.47		
	36			10~22	10 / 11 / 12	58.21	57.70	67	50
	38			10~22	10 / 11 / 12	61.45	60.94		
	40			10~30	10 / 11 / 12	64.68	64.17	74	58
	42			10~30	10 / 11 / 12	67.91	67.41		
	44			10~32	10 / 11 / 12	71.15	70.64	80	60
	46			10~32	10 / 11 / 12	74.38	73.87		
	48			10~32	10 / 11 / 12	77.62	77.11	87	67
	50			10~32	10 / 11 / 12	80.85	80.34	87	67
	60			10~32	10 / 11 / 12	97.02	96.51	104	84
	72			10~32	10 / 11 / 12	116.43	115.92	123	102

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm ST Bushing	Max. Allowable Torque Nm SH Bushing	D ST Bushing	D SH Bushing	(L)
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	10.5
11	43	20	31	30	
12	48	23	32	31	
14	73	-	35	-	12
15	78		36		
16	83		37		13
17	88		38		
18	154		43		14
19	163		45		
20	171	-	46	-	14
22	186		48		
24	206		50		
25	216		52		
28	353		54		15.5
30	382		57		
32	412		59		16.5

Ⓣ Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
MTPL30XL050	-	E	-	17

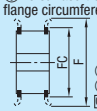
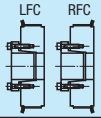
Days to Ship

10 Days — Express B 8,00 EUR/ piece — P. 88

Ⓣ A Express Charge of 21,60 EUR for 3 or more identical pieces

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(FC / NFC / LFC / RFC / BMC / BMR)
MTPLA30XL050	-	E	-	17	-	FC52.5

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC· RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment Ⓣ No surface treatment applied on flange circumference.  Ⓣ FC≥(O.D.)+2 Ⓣ FC≤F-2 Ordering Code FC35	Flange is not attached. (Flange included) 	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC 
Price Adder	3,00	Free of Charge	Free of Charge

Alterations	Surface Treatment
Code	BMC · BMR
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). Ⓣ Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)
Price Adder	BMC: 5,00 BMR: 8,00 (No. of Teeth 20~30) 19,00 (No. of Teeth 32~72)

Price

■Volume Discount (Ⓣ Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Ⓣ For orders larger than indicated quantity, please request a quotation.

Teeth	€ Unit Price MTPLA E	MTPLA F	MTPL E	MTPL F
20				
21				
22				
24				
25				
26				
28				
30				
32				
34				
36				
38				
40				
42				
44				
46				
48				
50				
60				
72				

Keyless Timing Pulleys L Type

CAD Data

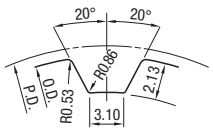
■For Timing Belts, refer to P.1193, for Open End Belts, refer to P.1205



Part Number				Material			Surface Treatment		
Belt Width 12.7mm (1/2inch)	Belt Width 19.1mm (3/4inch)	Belt Width 25.4mm (1inch)	Belt Width 38.1mm (1.5inch)	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 14 W: 19	A: 21 W: 26	A: 27 W: 32	A: 40 W: 45						
MTPLA__L050	MTPLA__L075	MTPLA__L100	MTPLA__L150	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
MTPLK__L050	MTPLK__L075	MTPLK__L100	MTPLK__L150				Hard Clear Anodize*		-
MTPLN__L050	MTPLN__L075	MTPLN__L100	MTPLN__L150				Electroless Nickel Plating		-
MTPL__L050	MTPL__L075	MTPL__L100	MTPL__L150	1.1191/ C45E	1.0330/ DC01	1.1191/ C45E	Black Oxide		
MTPLP__L050	MTPLP__L075	MTPLP__L100	MTPLP__L150				Electroless Nickel Plating		

*Hard Anodize Treatment: Film Hardness 300HV~

Tooth Profile (ISO Standard Rack Dimensions)

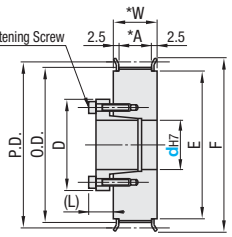


Tooth groove dimensions slightly change according to No. of teeth.

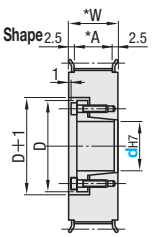
(Pitch: 9.525mm)

•Pulley Shape

E Shape *Tightening Screw



F Shape



*For quantity and size of tightening screws with flange attached, refer to P.1153

(T)The shaft bore may not have surface treatment.

(T)Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153

(T)Cut Flange for 60 and 72 toothed pulleys.

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)								P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		L050		L075		L100		L150					
				E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (ST Bushing) (SH Bushing)	E (ST Bushing)	F (ST Bushing)				
MTPLA MTPLK MTPLN MTPL MTPLP	14	L050 *A: 14 *W: 19	E F	8~12	8, 10	10, 11, 12	8, 10	10, 11, 12	-	11, 12	-	42.45	41.68	48	35
	15			8~12	8, 10	10, 11, 12	8, 10	10, 11, 12	10, 11	11, 12	11, 12	45.48	44.72		
	16			10~17	10, 11, 12	10~17	10~15	10~17	10~15	11~17	11~15	48.51	47.75	55	40
	17			10~17	10, 11, 12	10~17	10~15	10~17	10~15	11~17	11~15	51.54	50.78		
	18			10~17	10, 11, 12	10~17	10~17	10~17	10~17	11~17	11~17	54.57	53.81	61	45
	19			12~17	12	12~17	12~17	12~17	12~17	12~17	12~17	57.61	56.84	67	50
	20			12~17	12	12~17	12~17	12~17	12~17	12~17	12~17	60.64	59.88	67	50
	21			12~25	12	12~25	12~25	12~25	12~25	12~25	12~25	63.67	62.91	70	56
	22			12~25	12	12~25	12~25	12~25	12~25	12~25	12~25	66.70	65.94	80	60
	24	L075 *A: 21 *W: 26		12~30	12	12~30	12~30	12~30	12~30	12~30	12~30	72.77	72.00	87	67
	25			12~32	12	12~32	12~32	12~32	12~32	12~32	12~32	75.80	75.04		
	26			12~32	12	12~32	12~32	12~32	12~32	12~32	12~32	78.83	78.07		
	28			12~32	12	12~35	12~32	12~35	12~35	12~35	12~35	84.89	84.13	95	75
	30	L100 *A: 27 *W: 32		12~32	12	12~42	12~32	12~42	12~35	12~42	12~35	90.96	90.20	99	80
	32			12~32	12	12~42	12~32	12~42	12~35	12~42	12~35	97.02	96.26	104	84
	34			12~32	12	12~42	12~32	12~42	12~35	12~42	12~35	103.08	102.32	111	90
	36	L150 *A: 40 *W: 45		15~32	-	15~42	15~32	15~42	15~35	15~42	15~35	109.15	108.39	123	102
	38			15~32		15~42	15~32	15~42	15~35	15~42	15~35	115.21	114.45	127	105
	40			15~32		15~42	15~32	15~42	15~35	15~42	15~35	121.28	120.51	131	110
	42			16~38		16~50	16~32	16~50	16~35			127.34	126.58	135	115
	44			16~38	-	16~50	16~32	16~50	16~35	-	-	133.40	132.64	140	120
	48			16~38		16~50	16~32	16~50	16~35			145.53	144.77	152	130
	50			16~38		16~50	16~32	16~50	16~35			151.60	150.83	160	140
	60			16~38	-	16~50	16~32	16~50	16~35	-	-	181.91	181.15	190	170
	72			16~38		16~50	16~32	16~50	16~35			218.30	217.53	225	200

(T)For "F" shape of S8M250, ST bushing is applicable to shaft bore diameter of 10~25 and SH bushing is applicable to 28~35.

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	10.5
11	43	20	31	30	
12	48	23	32	31	
14	73	37	35	36	12
15	78	39	36	37	
16	83	42	37	38	13
17	88	45	38	39	
18	154	48	43	40	14
19	163	49	45	42	
20	171	97	46	46	
22	186	110	48	47	
24	206	121	50	49	
25	216	124	52	51	
28	353	141	54	53	15.5
30	382	149	57	56	
32	412	163	59	58	16.5
35	451	173	63	61	
38	686		70		19
40	725		71		
42	757	-	74	-	20
45	1490		84		24.5
48	1600		87		
50	1660		89		

(T)Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
MTPL20L075	-	E	-	17

Price

■Volume Discount(T)Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

(T)For orders larger than indicated quantity, please request a quotation.

Days to Ship

•MTPLA / MTPL / MTPLP

10 Days Express B 8,00 EUR/ piece P.88

(T)A Express Charge of 21,60 EUR for 3 or more identical pieces

•MTPLK / MTPLN

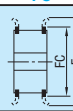
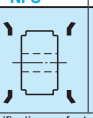
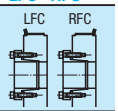
10 Days ⊗Express Serviceis not available.

(T)The price of MTPLK / MTPLP is the unit price in the table multiplied by 1.1, while the price of MTPLN multiplied by 1.2.(Round down to ten Cent.)
Ex.) When MTPLK30L050-E-17 Price in table (81,00) x (1.1) = 89,10 EUR

Alter-ations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC....etc.)
MTPLA20L075	-	E	-	17	-	FC63

Alterations	Surface Treatment
Code	BMC · BMR
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). (T)Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)
Price Adder	BMC:5,00BMR:8,00 (No. of Teeth 14~20) 19,00 (No. of Teeth 21~72)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.			
	For details of specifications, refer to the next page.		
Price Adder	3,00	Free of Charge	Free of Charge

Teeth	€ Unit Price															
	MTPLA(x1.0)- MTPLK(x1.1)- MTPLN(x1.2)								MTPL(x1.0)- MTPLP(x1.1)							
	L050		L075		L100		L150		L050		L075		L100		L150	
	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F
14																
15																
16																
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50																
60																
72																

Keyless Timing Pulleys L Type

-MechaLock Standard Type incorporated (with centering function)-

CAD Data

Features: MechaLock Standard Type (P.1217) incorporated timing pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively.



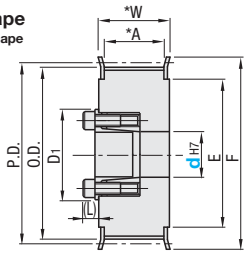
RoHS

Part No.				Material			Surface Treatment		
Belt Width 12.7mm (1/2inch)	Belt Width 19.1mm (3/4inch)	Belt Width 25.4mm (1inch)	Belt Width 38.1mm (1.5inch)	Pulley	Flange	MechaLock	Pulley	Flange	MechaLock
A: 14W: 19Y: 13	A: 21W: 26Y: 14(18)	A: 27W: 32Y: 14 (22•23.5)	A: 40W: 45Y: 19 (28•32)						
HPLA__L050	HPLA__L075	HPLA__L100	HPLA__L150	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
HPLK__L050	HPLK__L075	HPLK__L100	HPLK__L150				Hard Clear Anodize*		-
HPLN__L050	HPLN__L075	HPLN__L100	HPLN__L150				Electroless Nickel Plating		-
HPLT__L050	HPLT__L075	HPLT__L100	HPLT__L150	1.1191/ C45E	1.0330/ DC01	1.1191/ C45E	-		
HPLM__L050	HPLM__L075	HPLM__L100	HPLM__L150				Black Oxide		
HPLP__L050	HPLP__L075	HPLP__L100	HPLP__L150				Electroless Nickel Plating		

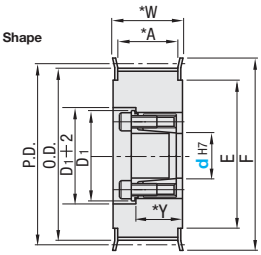
*Hard Anodize Treatment: Film Hardness 300HV~

•Pulley Shape

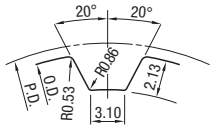
E Shape



F Shape



Tooth Profile (ISO Standard Rack Dimensions)



Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 9.525mm)

①The shaft bore may not have surface treatment.
②Cut Flange for 60 and 72 toothed pulleys.

①Flange attached ①For installation, refer to P.1213, for details of MechaLock, refer to P.1217
②Y dimensions in ( ) require the shaft bore diameter of 12 and above.

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)								P.D.	O.D.	F	E
				L050		L075		L100		L150					
Type	Teeth	Type, Nominal Width		E	F	E	F	E	F	E	F				
HPLA HPLK HPLN HPLT HPLM HPLP	14	L050 *A: 14 *W: 19 *Y: 13 (d12~: Y=18) L100 *A: 27 *W: 32 *Y: 14 (d12~22: Y=22) (d24~: Y=23.5) L150 *A: 40 *W: 45 *Y: 19 (d12~32: Y=28) (d35~: Y=32)	E F	8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	42.45	41.68	48	35
	15			8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	45.48	44.72		
	16			10~14	10	10~14	10~14	10~14	10~14	10~14	10~14	48.51	47.75	55	40
	17			10~14	10	10~14	10~14	10~14	10~14	10~14	10~14	51.54	50.78		
	18			10~16	10	10~16	10~16	10~16	10~16	10~16	10~16	54.57	53.81	61	45
	19			12~19	-	12~19	12~19	12~19	12~19	12~19	12~19	57.61	56.84	67	50
	20			12~19		12~19	12~19	12~19	12~19	12~19	12~19	60.64	59.88	67	50
	21			12~19		12~20	12~19	12~20	12~20	12~20	12~20	63.67	62.91	70	56
	22			12~19		12~22	12~19	12~22	12~22	12~22	12~22	66.70	65.94	80	60
	24			12~19		12~28	12~19	12~28	12~28	12~28	12~28	72.77	72.00		
	25			12~19		12~28	12~19	12~28	12~28	12~28	12~28	75.80	75.04	87	67
	26			12~19	-	12~28	12~19	12~28	12~28	12~28	12~28	78.83	78.07		
	28			12~19		12~32	12~19	12~32	12~30	12~32	12~32	84.89	84.13	95	75
	30			12~19		12~32	12~19	12~32	12~30	12~32	12~32	90.96	90.20	99	80
	32			12~19		12~32	12~19	12~32	12~30	12~32	12~32	97.02	96.26	104	84
	34			12~19		12~32	12~19	12~35	12~30	12~35	12~35	103.08	102.32	111	90
	36			15~19		15~32	15~19	15~40	15~30	15~40	15~40	109.15	108.39	123	102
	38			15~19		15~32	15~19	15~45	15~30	15~45	15~45	115.21	114.45	127	105
	40			15~19		15~32	15~19	15~45	15~30	15~45	15~45	121.28	120.51	131	110
	42			16~19		16~32	16~19	16~50	16~30	16~50	16~45	127.34	126.58	135	115
	44			16~19		16~32	16~19	16~50	16~30	16~50	16~45	133.40	132.64	140	120
	48			16~19		16~32	16~19	16~50	16~30	16~50	16~45	145.53	144.77	152	130
	50			16~19		16~32	16~19	16~50	16~30	16~50	16~45	151.60	150.83	160	140
	60			16~19		16~32	16~19	16~50	16~30	16~50	16~45	181.91	181.15	190	170
	72			16~19	-	16~32	16~19	16~50	16~30	16~50	16~45	218.30	217.53	225	200

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque (Nm) HPLA · HPLK HPLN · HPLT · HPLM	HPLP	D1	(L)
8	19.6	16.6	23.5	6
10	27.5	19.6	25.5	
12	44.1	36.2	28.5	
14	63.7	50.9	30.5	
15	80.4	54.8	31.5	
16	83.3	58.8	33.0	6.5
17	92.2	76.4	33.5	
18	95.1	80.3	34.5	
19	98.1	85.2	35.5	
20	216.0	183.0	42.0	8
22	255.0	201.0	44.0	
24	363.0	252.0	46.0	
25	392.0	264.0	47.0	
28	441.0	295.0	50.0	
30	500.0	396.0	52.0	8.5
32	530.0	423.0	54.0	
35	883.0	548.0	62.0	
40	1079.0	779.0	67.0	10
45	1285.0	882.0	72.0	
50	1706.0	1362.0	77.0	10.5

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HPLA20L075	-	F	-	15

Days to Ship

•HPLA / HPLT / HPLM / HPLP

10 Days — Express B — 8,00 EUR/ piece — P.88

①A Express Charge of 21,60 EUR for 3 or more identical pieces

Price

•HPLK / HPLN

10 Days

⊗Express Serviceis not available.

①For the prices of HPLM, HPLK, HPLP and HPLN multiply the body prices in the table by coefficient 1.05, 1.1, 1.15 and 1.2 respectively. (Round down to ten Cent.)
①(Body Price + MechaLock Incorporation Charge) = Product € Unit Price
When HPLK20L050-E-15 Body price in table(38,50) x Coefficient(1.1) + Mecha-locks incorporation charge (33,60)= 75,90 EUR

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC...etc.)
HPLA20L075	-	F	-	15	-	BMC

Alteration	Surface Treatment	Flange Cut
Code	BMC · BMR	FC
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). ①Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC: Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)	Lowers flange by cutting. FC: 0.5mm Increment ①No surface treatment applied on flange circumference. ①FC≥(O.D.)+2 ①FC≤F-2 Ordering Code FC35
Price Adder	BMC:5,00BMR:8,00 (No. of Teeth 14~20) 19,00 (No. of Teeth 21~72)	3,00

Alterations	Flange not Attached	Flange Attached on One Side Only
Code	NFC	LFC · RFC
Spec.	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	Free of Charge	Free of Charge

Teeth	€ Body Price Qty. 1~9							
	HPLA(x1.0)HPLK(x1.1)HPLN(x1.2)				HPLT(x1.0)HPLM(x1.05)HPLP(x1.15)			
	L050	L075	L100	L150	L050	L075	L100	L150
14								
15								
16								
17								
18								
19								
20								
21								
22								
24								
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26								
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30								
32								
34								
36								
38								
40								
42								
44								
48								
50								
60								
72								

①For orders larger than indicated quantity, please request a quotation.

dH7	MechaLock incorporation charge (€ Body Price +)
8	
10	
12	
14	
15	
16	
17	
18	
19	
20	
22	
24	
25	
28	
30	
32	
35	
40	
45	
50	

Keyless Timing Pulleys H Type

CAD Data

■For Timing Belts, refer to P.1193, for Open End Belts, refer to P.1205

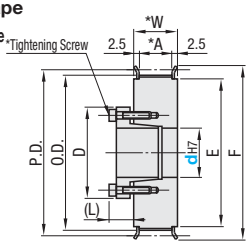


RoHS

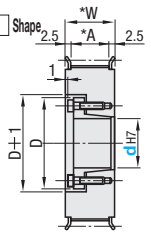
Part Number				Material			Surface Treatment		
Belt Width 19.1mm (3/4inch) A: 21 W: 26	Belt Width 25.4mm (1inch) A: 27 W: 32	Belt Width 38.1mm (1.5inch) A: 40 W: 45	Belt Width 50.8mm (2 inches) A: 54 W: 59	Pulley	Flange	Bushing	Pulley	Flange	Bushing
MTPLA_ _L075	MTPLA_ _H100	MTPLA_ _H150	MTPLA_ _H200	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
MTPL_ _H075	MTPL_ _H100	MTPL_ _H150	MTPL_ _H200	1.1191/ C45E	1.0330/DC01	1.1191/ C45E	Black Oxide		
MTPLP_ _H075	MTPLP_ _H100	MTPLP_ _H150	MTPLP_ _H200				Electroless Nickel Plating		

•Pulley Shape

E Shape



F Shape



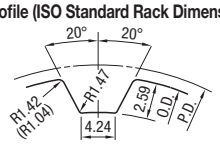
*For quantity and size of tightening screws with flange attached, refer to P.1153

The shaft bore may not have surface treatment.

Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153

Cut Flange for 40~50 toothed pulleys.

Tooth Profile (ISO Standard Rack Dimensions)



( ):19 teeth or less

Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 12.7mm)

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)								P.D.	O.D.	F	E
				H075		H100		H150		H200					
Type	Teeth	Type, Nominal Width		E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)				
MTPLA MTPL MTPLP	14	H075 *A: 21 *W: 26	E	12~17	12~17	12~17	12~17	15~17	15~17	16~17	16~17	56.60	55.22	61	45
	15			14~20	14~20	14~20	14~20	15~20	15~20	16~20	16~20	60.64	59.27	67	50
	16			14~25	14~25	14~25	14~25	15~25	15~25	16~25	16~25	64.68	63.31	70	56
	17			14~25	14~25	14~25	14~25	15~25	15~25	16~25	16~25	68.72	67.35	80	60
	18			14~25	14~25	14~25	14~25	15~25	15~25	16~25	16~25	72.77	71.39		
	19			14~32	14~32	14~32	14~32	15~32	15~32	16~32	16~32	76.81	75.44	87	67
	20			14~32	14~32	14~32	14~32	15~32	15~32	16~32	16~32	80.85	79.48	87	67
	21			14~35	14~32	14~35	14~32	15~35	15~35	16~35	16~35	84.89	83.52	95	75
	22	H100 *A: 27 *W: 32		14~35	14~32	14~35	14~32	15~35	15~35	16~35	16~35	88.94	87.56		
	24			19~35	19~32	19~35	19~32	19~35	19~35	19~35	19~35	97.02	95.65	104	84
	25			19~42	19~32	19~42	19~32	19~42	19~42	19~42	19~42	101.06	99.69	111	90
	26			20~42	20~32	20~42	20~32	20~42	20~42	20~42	20~42	105.11	103.73		
	28	H150 *A: 40 *W: 45	F	20~42	20~32	20~42	20~32	20~42	20~42	20~42	20~42	113.19	111.82	123	102
	30			20~42	20~32	20~42	20~32	20~42	20~42	20~42	20~42	121.28	119.90	127	105
	32			20~42	20~32	20~48	20~32	20~48	20~42	20~48	20~48	129.36	127.99	135	115
	34	H200 *A: 54 *W: 59		20~42	20~32	20~50	20~32	20~50	20~42	20~50	20~50	137.45	136.07	144	125
	36			20~42	20~32	20~50	20~32	20~50	20~42	20~50	20~50	145.53	144.16	152	130
	38			-		25~50	25~32	25~50	25~42	-		153.62	152.24	165	140
	40					25~50	25~32	25~50	25~42			161.70	160.33	170	150
	42					25~50	25~32	25~50	25~42			169.79	168.41	180	155
	44					25~50	25~32	25~50	25~42			177.87	176.50	190	170
	48					25~50	25~32	25~50	25~42			194.04	192.67	205	180
	50					25~50	25~32	25~50	25~42			202.13	200.76	210	185

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
12	48	23	32	31	10.5
14	73	37	35	36	12
15	78	39	36	37	
16	83	42	37	38	13
17	88	45	38	39	
18	154	48	43	40	14
19	163	49	45	42	
20	171	97	46	46	
22	186	110	48	47	
24	206	121	50	49	
25	216	124	52	51	
28	353	141	54	53	15.5
30	382	149	57	56	
32	412	163	59	58	16.5
35	451	-	63	-	
38	686		70		19
40	725		71		
42	757		74		20
45	1490		84		
48	1600		87		24.5
50	1660		89		

Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
MTPLP20H150	-	F	-	30

Days to Ship

- MTPLA / MTPL / MTPLP

10 Days | Express B | 8,00 EUR/ piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC…etc.)
MTPLA20H100	-	E	-	17	-	FC84.5

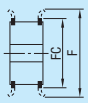
Price

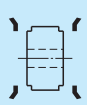
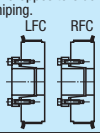
■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

For the price of MTPLP, multiply the unit price in the table by 1.1. (Round down to ten Cent.)
Ex.) When MTPLP30H100-E30 Price in Table (95,90) x (1.1) = 105,49 EUR → 105,40 EUR

Alteration	Surface Treatment	Flange Cut
Code	BMC / BMR	FC
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC :Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR:RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference.  FC≥(O.D.)+2 FC≤F-2 Ordering Code FC35
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 14, 15) 19,00 (No. of Teeth 16~50)	3,00

Alterations	Flange not Attached	Flange Attached on One Side Only
Code	NFC	LFC / RFC
Spec.	Flange is not attached. (Flange included) 	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping.  LFC RFC
Price Adder	Free of Charge	Free of Charge

Teeth	€ Unit Price															
	MTPLA								MTPL(x1.0)MTPLP(x1.1)							
	H075		H100		H150		H200		H075		H100		H150		H200	
	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F
14																
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Keyless Timing Pulleys H Type

-MechaLock Standard Type incorporated (with centering function)-

CAD Data

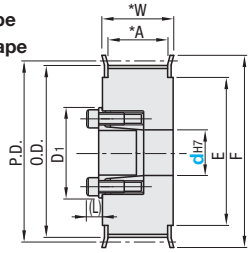
Features: MechaLock Standard Type (P.1217) incorporated timing pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively.



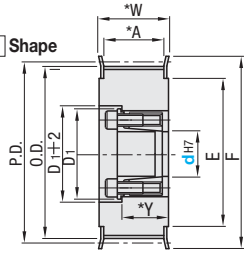
Part Number				Material			Surface Treatment		
Belt Width 19.1mm (3/4inch)	Belt Width 25.4mm (1inch)	Belt Width 38.1mm (1.5inch)	Belt Width 50.8mm (2 inches)	Pulley	Flange	Mecha Lock	Pulley	Flange	Mecha Lock
A: 21W: 26Y: 18	A: 27W: 32Y: 22(23.5)	A: 40W: 45Y: 28(32)	A: 54W: 59Y: 35(39)						
HPLA__L075	HPLA__H100	HPLA__H150	HPLA__H200	7075 Aluminum Alloy	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
HPLT__H075	HPLT__H100	HPLT__H150	HPLT__H200	1.1191/ C45E	1.0330/ DC01	1.1191/ C45E	-		
HPLM__H075	HPLM__H100	HPLM__H150	HPLM__H200				Black Oxide		
HPLP__H075	HPLP__H100	HPLP__H150	HPLP__H200				Electroless Nickel Plating		

•Pulley Shape

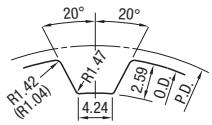
E Shape



F Shape



Tooth Profile (ISO Standard Rack Dimensions)



( ):19 teeth or less

Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 12.7mm)

※The shaft bore may not have surface treatment.
※Cut Flange for 40~50 toothed pulleys.
※Flange attached※For installation, refer to P.1213, for details of MechaLock, refer to P.1217
※Y dimensions in ( ) are for H100 with shaft bore diameter of 24 or above, and for H150 and 200 with shaft bore diameter of 35 or above.

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)								P.D.	O.D.	F	E
				H075		H100		H150		H200					
Type	Teeth	Type, Nominal Width		E	F	E	F	E	F	E	F				
HPLA HPLT HPLM HPLP	14	H075 *A: 21 *W: 26 *Y: 18	E F	12~16	12~16	12~16	12~16	12~16	12~16	12~16	12~16	56.60	55.22	61	45
	15			14~19	14~19	14~19	14~19	14~19	14~19	14~19	14~19	60.64	59.27	67	50
	16			14~20	14~19	14~20	14~20	14~20	14~20	14~20	14~20	64.68	63.31	70	56
	17			14~22	14~19	14~22	14~22	14~22	14~22	14~22	14~22	68.72	67.35	80	60
	18			14~22	14~19	14~22	14~22	14~22	14~22	14~22	14~22	72.77	71.39		
	19			14~28	14~19	14~28	14~28	14~28	14~28	14~28	14~28	76.81	75.44	87	67
	20	H100 *A: 27 *W: 32 *Y: 22 (d24~: Y=23.5)		14~28	14~19	14~28	14~28	14~28	14~28	14~28	14~28	80.85	79.48	87	67
	21			14~32	14~19	14~32	14~30	14~32	14~32	14~32	14~32	84.89	83.52	95	75
	22			14~32	14~19	14~32	14~30	14~32	14~32	14~32	14~32	88.94	87.56		
	24			19~32	19	19~32	19~30	19~32	19~32	19~32	19~32	97.02	95.65	104	84
	25			19~32	19	19~35	19~30	19~35	19~35	19~35	19~35	101.06	99.69	111	90
	26	H150 *A: 40 *W: 45 *Y: 28 (d35~: Y=32)		20~32	-	20~35	20~30	20~35	20~35	20~35	20~35	105.11	103.73		
	28			20~32		20~40	20~30	20~40	20~40	20~40	20~40	113.19	111.82	123	102
	30			20~32		20~45	20~30	20~45	20~45	20~45	20~45	121.28	119.90	127	105
	32			20~32		20~50	20~30	20~50	20~50	20~50	20~50	129.36	127.99	135	115
	34			20~32		20~50	20~30	20~50	20~50	20~50	20~50	137.45	136.07	144	125
	36			20~32		20~50	20~30	20~50	20~50	20~50	20~50	145.53	144.16	152	130
	38	H200 *A: 54 *W: 59 *Y: 35 (d35~: Y=39)		-		20~50	20~30	20~50	20~50	-		153.62	152.24	165	140
	40					20~50	20~30	20~50	20~50			161.70	160.33	170	150
	42					20~50	20~30	20~50	20~50			169.79	168.41	180	155
	44					20~50	20~30	20~50	20~50			177.87	176.50	190	170
	48					20~50	20~30	20~50	20~50			194.04	192.67	205	180
	50					20~50	20~30	20~50	20~50			202.13	200.76	210	185

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque (Nm) HPLA HPLT / HPLM	HPLP	D1	(L)
12	44.1	36.2	28.5	6.5
14	63.7	50.9	30.5	
15	80.4	54.8	31.5	
16	83.3	58.8	33.0	
17	92.2	76.4	33.5	
18	95.1	80.3	34.5	
19	98.1	85.2	35.5	
20	216.0	183.0	42.0	8
22	255.0	201.0	44.0	
24	363.0	252.0	46.0	
25	392.0	264.0	47.0	
28	441.0	295.0	50.0	8.5
30	500.0	396.0	52.0	
32	530.0	423.0	54.0	
35	883.0	548.0	62.0	10
40	1079.0	779.0	67.0	
45	1285.0	882.0	72.0	
50	1706.0	1362.0	77.0	10.5

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HPLA30H200	-	F	-	40

Days to Ship: 10 Days — Express B 8,00 EUR/ piece — P. 88

※A Express Charge of 21,60 EUR for 3 or more identical pieces

Price

※For the prices of HPLM and HPLK, multiply the body prices in the table by coefficient 1.05 and 1.15 respectively. (Round down to ten Cent.)
※(Body Price + MechaLock Incorporation Charge) = Product Price
When HPLM20H075-E-20 Body price in table(4,690) x Coefficient(1.05) + Mecha-locks incorporation charge (3,680)= 86,00 EUR

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC…etc.)
HPLA30H100	-	E	-	35	-	BMC

Alteration	Surface Treatment	Flange Cut
Code	BMC / BMR	FC
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). ※Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC :Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR:RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)	Lowers flange by cutting. FC: 0.5mm Increment ※No surface treatment applied on flange circumference.  ※FC≥(O.D.)+2 ※FC≤F-2 Ordering Code FC35
Price Adder	BMC:5,00BMR: 8,00 (No. of Teeth 14, 15) 19,00 (No. of Teeth 16~50)	3,00

Alterations	Flange not Attached	Flange Attached on One Side Only
Code	NFC	LFC / RFC
Spec.	Flange is not attached. (Flange included) 	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping.
Price Adder	Free of Charge	Free of Charge

Teeth	Body Price Qty. 1~9 HPLA H075	HPLA H100	HPLA H150	HPLA H200	HPLT(x1.0)HPLM(x1.05)HPLP(x1.15) H075	H100	H150	H200
14								
15								
16								
17								
18								
19								
20								
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42								
44								
48								
50								

※For orders larger than indicated quantity, please request a quotation.

dH7	MechaLock incorporation charge (Body Price +)
12	
14	
15	
16	
17	
18	
19	
20	
22	
24	
25	
28	
30	
32	
35	
40	
45	
50	

Keyless High Torque Timing Pulleys S3M Type

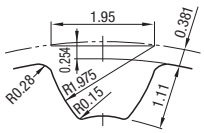
CAD Data

■For High Torque Timing Belts, refer to P.1195, for Open End Belts, refer to P.1205



Part Number		Material			Surface Treatment		
Belt Width 10mm	Belt Width 15mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 11 W: 15	A: 17 W: 21						
HTLA__S3M100	HTLA__S3M150	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
HTLK__S3M100	HTLK__S3M150				Hard Clear Anodize		-
HTLN__S3M100	HTLN__S3M150				Electroless Nickel Plating		-
HTPL__S3M100	HTPL__S3M150	1.1191/C45E	1.0330/ DC01	1.1191/ C45E	Black Oxide		
HTLG__S3M100	HTLG__S3M150				Electroless Nickel Plating		

Standard Tooth Profile

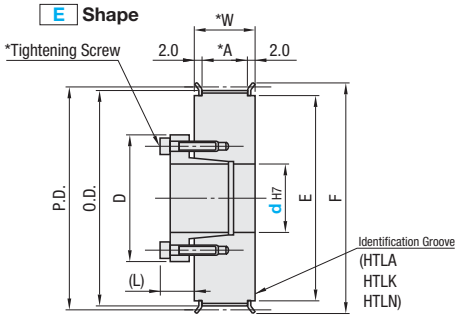


Tooth groove dimensions slightly change according to No. of teeth.

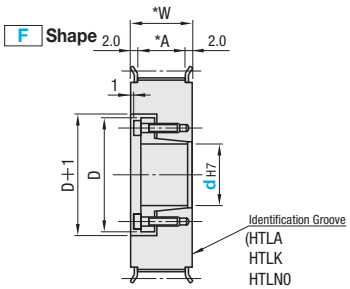
(Pitch: 3.0mm)

•Pulley Shape

E Shape



F Shape



The shaft bore may not have surface treatment.

Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153

*For quantity and size of tightening screws with Flange attached, refer to P.1153

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)				P.D.	O.D.	F	E
				S3M100		S3M150					
Type	Teeth	Type, Nominal Width		E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)				
HTLA HTLK HTLN HTPL HTLG	34	S3M100 *A: 11 *W: 15	E	8	6	8	6	32.47	31.71	40	28
	36			8	6	8	6	34.38	33.62		
	40			8, 10, 11	8	8, 10, 11	8	38.20	37.44	44	32
	44			8~14	8	8~14	8~12	42.02	41.25	48	36
	48	S3M150 *A: 17 *W: 21		8~16	8	8~16	8~12	45.84	45.07	50	38
	50		F	8~17	8	8~17	8~12	47.75	46.98	52	40
	60			8~19	8	8~19	8~12	57.30	56.53	61	46
	72			8~25	8	8~25	8~12	68.75	67.99	74	58

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
6	-	5.6	-	22.5	-
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	10.5
11	43	20	31	30	
12	48	23	32	31	
14	73	-	35	-	12
15	78		36		
16	83		37		13
17	88		38		
18	154		43		14
19	163		45		
20	171		46		
22	186		48		
24	206	-	50	-	14
25	216		52		

Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HTPL 60S3M100	-	E	-	18

Days to Ship

- HTLA / HTPL / HTLG: **10 Days** — Express B 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces

- HTLK / HTLN: **10 Days** — ⊗Express Serviceis not available.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC / BMR / FC / NFC / LFC / RFC)
HTLA 60S3M100	-	E	-	18	-	FC59

Alterations	Surface Treatment
Code	BMC / BMR
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)
Price Adder	BMC:500BMR: 8,00 (No. of Teeth 34~50) 19,00 (No. of Teeth 60, 72)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC / RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC35	Flange is not atta-ched. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	3,00	Free of Charge	Free of Charge

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The price of HTLK, HTLG is the unit price in the table multiplied by 1.1, while the price of HTLN multiplied by 1.2.(Round down to ten Cent.)
Ex.) When HTLK40S3M100-E-10 Price in table (42,50) x (1.1)= 46,75 → 46,70 EUR

Teeth	€ Unit Price							
	HTLA (x1.0) HTLK (x1.1) HTLN (x1.2)				HTPL (x1.0) HTLG (x1.1)			
	S3M100		S3M150		S3M100		S3M150	
	E	F	E	F	E	F	E	F
34								
36								
40								
44								
48								
50								
60								
72								

Keyless High Torque Timing Pulleys S3M Type

-MechaLock Standard Type incorporated (with centering function)-

CAD Data

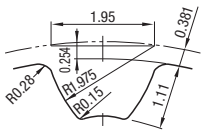
Features: MechaLock Standard Type (P.1217) incorporated timing pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively.



RoHS

Part Number		Material			Surface Treatment		
Belt Width 10mm	Belt Width 15mm	Pulley	Flange	MechaLock	Pulley	Flange	MechaLock
A: 11 W: 15	A: 17W: 21Y: 14						
HHTA__S3M100	HHTA__S3M150	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/C45E	Clear Anodize		-
HHTK__S3M100	HHTK__S3M150				Hard Clear Anodize		-

Standard Tooth Profile

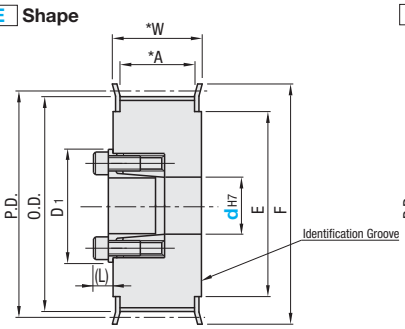


Tooth groove dimensions slightly change according to No. of teeth.

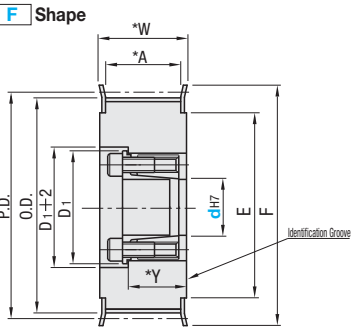
(Pitch: 3.0mm)

•Pulley Shape

E Shape



F Shape



The shaft bore may not have surface treatment.

For installation of flange swaging, refer to P.1213, for details of MechaLock, refer to P.1217

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)			P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		S3M100	S3M150					
				E	E	F				
HHTA HHTK	34	S3M100 *A: 11 *W: 15 S3M150 *A: 17 *W: 21 *Y: 14	E F	6	6	6	32.47	31.71	40	28
	36			6	6	6	34.38	33.62		
	40			8	8	8	38.20	37.44	44	32
	44			8, 10	8, 10	8, 10	42.02	41.25	48	36
	48			8, 10	8~12	8, 10	45.84	45.07	50	38
	50			8, 10	8~14	8, 10	47.75	46.98	52	40
	60			8, 10	8~17	8, 10	57.30	56.53	61	46
	72			8~10	8~19	8~10	68.75	67.99	74	58

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque (Nm) HHTA · HHTK	D1	(L)
6	12.7	21.5	6
8	19.6	23.5	
10	27.5	25.5	
12	44.1	28.5	6.5
14	63.7	30.5	
15	80.4	31.5	
16	83.3	33.0	
17	92.2	33.5	
18	95.1	34.5	
19	98.1	35.5	

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HHTA60S3M150	-	E	-	15

Days to Ship

- HHTA: **10 Days** — Express B 8,00 EUR/ piece P.88
  - A Express Charge of 21,60 EUR for 3 or more identical pieces
- HHTK: **10 Days**
  - Express Serviceis not available.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC / BMR / FC / NFC / LFC / RFC)
HHTA34S3M150	-	F	-	6	-	BMC

Alterations	Surface Treatment
Code	BMC / BMR
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)
Price Adder	BMC: 5,00 BMR: 8,00

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC35	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping.
Price Adder	3,00	Free of Charge	Free of Charge

Price

(Body Price + MechaLock Incorporation Charge) = Product € Unit Price
When HHTK40S3M100-E-10 Body price in table(26,00) + MechaLock incorporation charge (28,90)= 54,90 EUR

Teeth	€ Body Price Qty. 1~9			
	HHTA		HHTK	
	S3M100	S3M150	S3M100	S3M150
34				
36				
40				
44				
48				
50				
60				
72				

For orders larger than indicated quantity, please request a quotation.

dH7	€
6	
8	
10	
12	
14	
15	
16	
17	
18	
19	

Keyless High Torque Timing Pulleys S5M Type

Reduced Delivery Time

CAD Data

■For High Torque Timing Belts, refer to P.1195, for Open End Belts, refer to P.1205

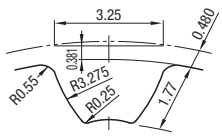
RoHS



Part Number			Material			Surface Treatment		
Belt Width 10mm	Belt Width 15mm	Belt Width 25mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 11 W: 16	A: 17 W: 22	A: 27 W: 32						
HTLA__S5M100	HTLA__S5M150	HTLA__S5M250	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
HTLK__S5M100	HTLK__S5M150	HTLK__S5M250				Hard Clear Anodize*		-
HTLN__S5M100	HTLN__S5M150	HTLN__S5M250				Electroless Nickel Plating		-
HTPL__S5M100	HTPL__S5M150	HTPL__S5M250	1.1191/ C45E	1.0330/ DC01	1.1191/ C45E	Black Oxide		
HTLG__S5M100	HTLG__S5M150	HTLG__S5M250				Electroless Nickel Plating		

*Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

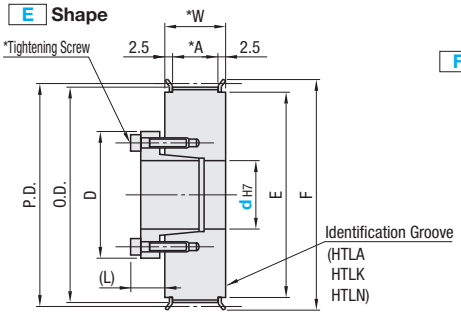


Tooth groove dimensions slightly change according to No. of teeth.

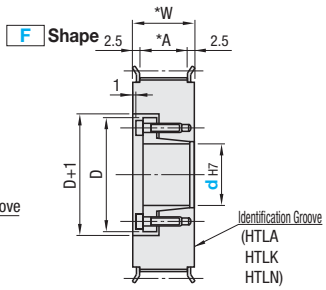
(Pitch: 5.0mm)

•Pulley Shape

E Shape



F Shape



(T)The shaft bore may not have surface treatment.

(T)Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153

*For quantity and size of tightening screws with Flange attached, refer to P.1153

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)						P.D.	O.D.	F	E
				S5M100		S5M150		S5M250					
Type	Teeth	Type, Nominal Width		E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)				
HTLA HTLK HTLN HTPL HTLG	22	S5M100 *A: 11 *W: 16	E	8	-	-	-	-	-	35.01	34.05	40	27
	24			8, 10	8	10	8	10	8	38.20	37.24	45	30
	25			8, 10	8	10	8	10	8	39.79	38.83		
	26			8~12	8	10, 11, 12	8~12	10, 11, 12	8~12	41.38	40.42	48	35
	28			8~12	8	10, 11, 12	8~12	10, 11, 12	8~12	44.56	43.60		
	30	S5M150 *A: 17 *W: 22		10~15		10~15	10, 11, 12	10~15	10, 11, 12	47.75	46.79	52	36
	32			10~17		10~17	10, 11, 12	10~17	10, 11, 12	50.93	49.97	55	40
	34			10~17		10~17	10, 11, 12	10~17	10~17	54.11	53.15	61	45
	36		F	10~17	-	10~17	10, 11, 12	10~17	10~17	57.30	56.34		
	40			10~17		10~17	10, 11, 12	10~17	10~17	63.66	62.70	67	50
	44	S5M250 *A: 27 *W: 32		12~25		12~25	12	12~25	12~25	70.03	69.07	74	58
	48			12~28		12~28	12	12~28	12~28	76.39	75.43	83	63
	50			12~32		12~32	12	12~32	12~32	79.58	78.62	87	67
	60			12~32	-	12~40	12	12~40	12~35	95.49	94.53	99	80
	72			12~32		12~42	12	12~42	12~35	114.59	113.63	119	100

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	10.5
11	43	20	31	30	
12	48	23	32	31	
14	73	37	35	36	12
15	78	39	36	37	
16	83	42	37	38	13
17	88	45	38	39	
18	154	48	43	40	14
19	163	49	45	42	
20	171	97	46	46	
22	186	110	48	47	
24	206	121	50	49	
25	216	124	52	51	
28	353	141	54	53	15.5
30	382	149	57	56	
32	412	163	59	58	16.5
35	451	173	63	61	
38	686	-	70	-	19
40	725		71		
42	757		74		20

(T)Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example Part Number: HTPL 60S5M100 - Pulley Shape: E - Shaft Bore Dia.: 32

Days to Ship

- HTLA / HTPL ("E" shape only): 8 Days
- HTLA / HTPL ("F" shape) / HTLG / HTLK / HTLN: 10 Days — Express B 8,00 EUR/ piece — P.88

(T)A Express Charge of 21,60 EUR for 3 or more identical pieces

⊗Express Serviceis not available for HTLK and HTLN.

Alterations Part Number - Pulley Shape - Shaft Bore Dia. - (BMC / BMR / FC / NFC / LFC / RFC)

Example: HTLA 44S5M150 - F - 12 - FC72

(T)If alterations for HTLA / HTPL ("E" shape) are specified, 5th Day Shipping will be applied for this product.

Price

■Volume Discount (T)Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

(T)For orders larger than indicated quantity, please request a quotation.

(T)The price of HTLK, HTLG is the unit price in the table multiplied by 1.1, while the price of HTLN multiplied by 1.2.(Round down to ten Cent.)
Ex.) When HTLK30S5M100-E-15
Price in table (43,40) x (1.1) = 47,74 → 47,70 EUR

Alterations	Surface Treatment
Code	BMC · BMR
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included.) (T)Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)
Price Adder	BMC: 5,00 BMR: 8,00 (No. of Teeth 22~40) 19,00 (No. of Teeth 21~72)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment (T)No surface treatment applied on flange circumference. (T)FC≥(O.D.)+2 (T)FC≤F-2 Ordering Code FC35	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	3,00	Free of Charge	Free of Charge

Teeth	€ Unit Price											
	HTLA (x1.0), HTLK (x1.1), HTLN (x1.2)						HTPL (x1.0), HTLG (x1.1)					
	S5M100		S5M150		S5M250		S5M100		S5M150		S5M250	
	E	F	E	F	E	F	E	F	E	F	E	F
22												
24												
25												
26												
28												
30												
32												
34												
36												
40												
44												
48												
50												
60												
72												

Keyless High Torque Timing Pulleys S5M Type

-MechaLock Standard Type incorporated (with centering function)-

CAD Data

■Features: MechaLock Standard Type (☞P.1217) incorporated timing pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively.

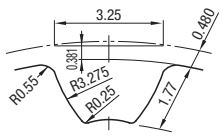


RoHS

Part Number			Material			Surface Treatment		
Belt Width 10mm	Belt Width 15mm	Belt Width 25mm	Pulley	Flange	sMechaLock	Pulley	Flange	MechaLock
A: 11 W: 16	A: 17W: 22Y: 14	A: 27W: 32Y: 14 (22•23.5)						
HHTA__S5M100	HHTA__S5M150	HHTA__S5M250	7075 Aluminum Alloy	EN AW-5052/ AlMg2,5	1.1191/C45E	Clear Anodize		-
HHTK__S5M100	HHTK__S5M150	HHTK__S5M250				Hard Clear Anodize*		-
HHTN__S5M100	HHTN__S5M150	HHTN__S5M250				Electroless Nickel Plating		-
HHTT__S5M100	HHTT__S5M150	HHTT__S5M250	1.1191/C45E	1.0330/ DC01	1.1191/C45E	-		
HHTM__S5M100	HHTM__S5M150	HHTM__S5M250				Black Oxide		
HHTP__S5M100	HHTP__S5M150	HHTP__S5M250				Electroless Nickel Plating		

*Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

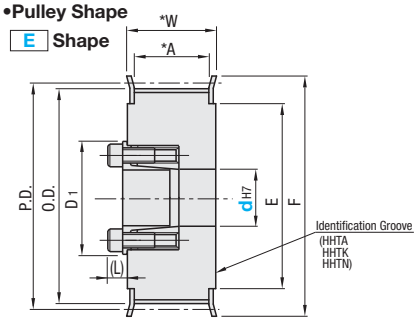


Tooth groove dimensions slightly change according to No. of teeth.

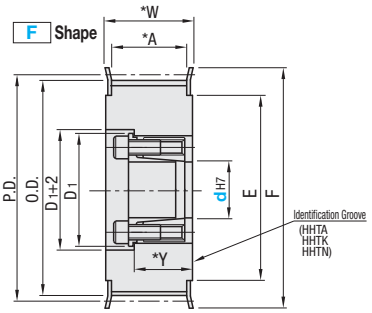
(Pitch: 5.0mm)

•Pulley Shape

E Shape



F Shape



(☞The shaft bore may not have surface treatment.

(☞Flange attached (☞For installation, refer to ☞P.1213, for details of MechaLock, refer to ☞P.1217

(☞Y dimensions in ( ) require the shaft bore diameter of 12 and above.

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)					P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		S5M100	S5M150		S5M250					
				E	E	F	E	F				
HHTA HHTK HHTN HHTT HHTM HHTP	24	S5M100 *A: 11 *W: 16	E	8	8	8	8	8	38.20	37.24	45	30
	25			8	8	8	8	8	39.79	38.83		
	26			8, 10	8, 10	8, 10	8, 10	8, 10	41.38	40.42	48	35
	28			8, 10	8, 10	8, 10	8, 10	8, 10	44.56	43.60		
	30	S5M150 *A: 17 *W: 22 *Y: 14		10	10	10	10	10	47.75	46.79	52	36
	32			10~14	10~14	10	10~14	10~14	50.93	49.97	55	40
	34			10~14	10~16	10	10~16	10~16	54.11	53.15	61	45
	36		F	10~14	10~16	10	10~16	10~16	57.30	56.34		
	40	S5M250 *A: 27 *W: 32 *Y: 14 (d12~22: Y=22) (d24~: Y=23.5)		10~14	10~19	10	10~19	10~19	63.66	62.70	67	50
	44			12~14	12~22		12~22	12~22	70.03	69.07	74	58
	48			12~14	12~22		12~24	12~24	76.39	75.43	83	63
	50			12~14	12~22	-	12~28	12~28	79.58	78.62	87	67
	60			12~14	12~22		12~30	12~30	95.49	94.53	99	80
	72			12~14	12~22		12~35	12~30	114.59	113.63	119	100

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque (Nm) HHTA · HHTK HHTN · HHTT · HHTM	Max. Allowable Torque (Nm) HHTP	D1	(L)
8	19.6	16.6	23.5	6
10	27.5	19.6	25.5	
12	44.1	36.2	28.5	6.5
14	63.7	50.9	30.5	
15	80.4	54.8	31.5	
16	83.3	58.8	33.0	
17	92.2	76.4	33.5	
18	95.1	80.3	34.5	
19	98.1	85.2	35.5	
20	216.0	183.0	42.0	8
22	255.0	201.0	44.0	
24	363.0	252.0	46.0	
25	392.0	264.0	47.0	
28	441.0	295.0	50.0	
30	500.0	396.0	52.0	8.5
32	530.0	423.0	54.0	
35	883.0	548.0	62.0	10

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HHTA 60S5M250	-	F	-	30

Days to Ship

- HHTA / HHTT / HHTM / HHTP: 10 Days (Express B 8,00 EUR/ piece ☞P.88)
- HHTK / HHTN: 10 Days

(☞A Express Charge of 21,60 EUR for 3 or more identical pieces

⊗Express Serviceis not available.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC / BMR / FC / NFC / LFC / RFC)
HHTA 60S5M250	-	E	-	25	-	BMC

Price

(☞For the prices of HHTM, HHTK, HHTP and HHTN multiply the body prices in the table by coefficient 1.05, 1.1, 1.15 and 1.2 respectively. (Round down to ten Cent.)

(☞(Body Price + MechaLock Incorporation Charge) = Product € Unit Price

Ex.) When HHTK30S5M100-E-10 Body price in table(31,10) x Coefficient(1.1) + Mecha-locks incorporation charge (28,90)= 63,10 EUR

Alterations	Surface Treatment
Code	BMC · BMR
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). (☞Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)
Price Adder	BMC: 5,00 BMR: 8,00 (No. of Teeth 24~40) 19,00 (No. of Teeth 21~72)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment (☞No surface treatment applied on flange circumference. (☞FC≥(O.D.)+2 (☞FC≤F-2 Ordering Code FC35	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	3,00	Free of Charge	Free of Charge

Teeth	€ Body Price Qty. 1~9 HHTA(x1.0) S5M100	HHTK(x1.1) S5M150	HHTN(x1.2) S5M250	HHTT(x1.0) S5M100	HHTM(x1.05) S5M150	HHTP(x1.15) S5M250
24						
25						
26						
28						
30						
32						
34						
36						
40						
44						
48						
50						
60						
72						

(☞For orders larger than indicated quantity, please request a quotation.

dH7	€
8	
10	
12	
14	
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18	
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24	
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28	
30	
32	
35	

Keyless High Torque Timing Pulleys S8M Type

Reduced Delivery Time

CAD Data

■For High Torque Timing Belts, refer to P.1195, for Open End Belts, refer to P.1205

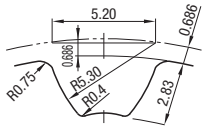


RoHS

Part Number				Material			Surface Treatment		
Belt Width 15mm A: 17 W: 22	Belt Width 25mm A: 28 W: 33	Belt Width 30mm A: 33 W: 38	Belt Width 40mm A: 44 W: 49	Pulley	Flange	Bushing	Pulley	Flange	Bushing
HTLA__S8M150	HTLA__S8M250	HTLA__S8M300	HTLA__S8M400	EN AW-7075/AlZn5,5MgCu	EN AW-5052/AlMg2,5	1.1191/C45E	Clear Anodize		-
HTLK__S8M150	HTLK__S8M250	HTLK__S8M300	HTLK__S8M400				Hard Clear Anodize*		-
HTPL__S8M150	HTPL__S8M250	HTPL__S8M300	HTPL__S8M400	1.1191/C45E	1.0330/DC01	1.1191/C45E	Black Oxide		
HTLG__S8M150	HTLG__S8M250	HTLG__S8M300	HTLG__S8M400				Electroless Nickel Plating		

*Hard Anodize Treatment: Film Hardness 300HV~

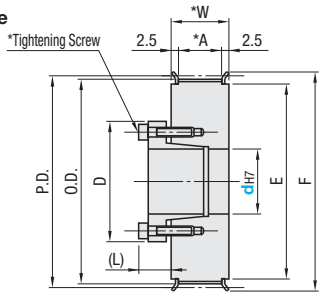
Standard Tooth Profile



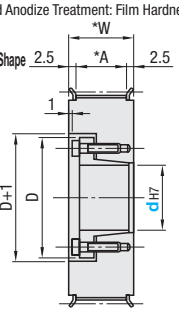
Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 8.0mm)

•Pulley Shape

E Shape



F Shape



Ⓣ The shaft bore may not have surface treatment.
Ⓣ Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153
Ⓣ Cut Flange for 72 toothed pulleys. *For quantity and size of tightening screws with Flange attached, refer to P.1153

Part Number Type	Teeth	Type, Nominal Width	Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1) S8M150 E (ST Bushing)	S8M150 F (SH Bushing)	S8M250 E (ST Bushing)	S8M250 F (ST Bushing/SH Bushing)	S8M300 E (ST Bushing)	S8M300 F (ST Bushing/SH Bushing)	S8M400 E (ST Bushing)	S8M400 F (ST Bushing)	P.D.	O.D.	F	E
HTLA HTLK HTPL HTLG	18	S8M150 *A: 17 *W: 22	E	12	-	12	12	-	-	-	-	45.84	44.46	52	36
	19			12, 14, 15	12	12, 14, 15	12, 14, 15	15	15	-	-	48.38	47.01	55	40
	20			12~17	12	12~17	12, 14, 15	15, 16, 17	15	-	-	50.93	49.56	58	
	21			12~17	12	12~17	12~17	15, 16, 17	15, 16, 17	16, 17	16, 17	53.48	52.10	61	45
	22			12~17	12	12~17	12~17	15, 16, 17	15, 16, 17	16, 17	16, 17	56.02	54.65		
	24			12~17	12	12~17	12~17	15, 16, 17	15, 16, 17	16, 17	16, 17	61.12	59.74	67	50
	25			12~25	12	12~25	12~25	15~25	15~25	16~25	16~25	63.66	62.29	70	56
	26	S8M250 *A: 28 *W: 33	F	14~25	-	14~25	14~25	15~25	15~25	16~25	16~25	66.21	64.84	74	58
	28			14~25		14~25	14~25	15~25	15~25	16~25	16~25	71.30	69.93	80	60
	30			14~32		14~32	14~32	15~32	15~32	16~32	16~32	76.39	75.02	87	67
	32	S8M300 *A: 33 *W: 38		14~32		14~32	14~32	15~32	15~32	16~32	16~32	81.49	80.12		
	34			16~35		16~35	16~35	16~35	16~35	16~35	16~35	86.58	85.21	95	75
	36			16~38		16~38	16~35	16~38	16~35	16~38	16~38	91.67	90.30	99	80
	38	S8M400 *A: 44 *W: 49		16~42		16~42	16~35	16~42	16~35	16~42	16~42	96.77	95.39	104	84
	40			20~42		20~42	20~35	20~42	20~35	20~42	20~42	101.86	100.49	111	90
	44			20~42		20~42	20~35	20~42	20~35	20~42	20~42	112.05	110.67	119	100
	48			20~42		20~42	20~35	20~42	20~35	20~42	20~42	122.23	120.86	127	105
	50			20~50		20~50	20~35	20~50	20~35	20~50	20~42	127.32	125.95	135	115
	60			20~50	-	20~50	20~35	20~50	20~35	20~50	20~42	152.79	151.42	160	140
	72			20~50		20~50	20~35	20~50	20~35	20~50	20~50	183.35	181.97	190	170

Ⓣ For "F" shape of S8M250, ST bushing is applicable to shaft bore diameter of 12~30 and SH bushing is applicable to 32 and 35.
Ⓣ For "F" shape of S8M300, ST bushing is applicable to shaft bore diameter of 15~32 and SH bushing is applicable to 35.

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm ST Bushing	Max. Allowable Torque Nm SH Bushing	D ST Bushing	D SH Bushing	(L)
12	48	23	32	31	10.5
14	73		35		12
15	78		36		
16	83		37		13
17	88		38		
18	154		43		14
19	163	-	45	-	
20	171		46		
22	186		48		
24	206		50		
25	216		52		
28	353		54		15.5
30	382		57		
32	412	163	59	58	16.5
35	451	173	63	61	
38	686		70		19
40	725		71		
42	757	-	74	-	20
45	1490		84		24.5
48	1600		87		
50	1660		89		

Ⓣ Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HTPL 60S8M300	-	E	-	40

Days to Ship

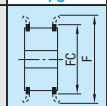
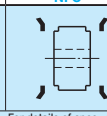
- HTLA / HTPL ("E" shape only, excluding the No. of teeth 72.)
8 Days
- HTLA / HTPL ("F" shape) / HTLG / HTLK
10 Days Express B 8,00 EUR/piece
Ⓣ A Express Charge of 21,60 EUR for 3 or more identical pieces
⊗ Express Serviceis not available for HTLK.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC…etc.)
HTLA25S8M250	-	F	-	25	-	FC65

Ⓣ If alterations for HTLA / HTPL ("E" shape) are specified, 5th Day Shipping will be applied for this product.

Alterations	Surface Treatment
Code	BMC / BMR
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included.) Ⓣ Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)
Price Adder	BMC: 5,00 BMR: 8,00 (No. of Teeth 18~24) 19,00 (No. of Teeth 25~72)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC / RFC
Spec.			
	For details of spec., refer to P.1164		
Price Adder	3,00	Free of Charge	Free of Charge

Price

■Volume Discount (Ⓣ Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Ⓣ For orders larger than indicated quantity, please request a quotation.

Ⓣ For the price of HTLK and HTLG, multiply the unit price in the table by 1.1. (Round down to ten Cent.)
Ex.) When HTLK30S8M150-E-20 Price in table (77,30) x (1.1)= 85,03 → 85,00 EUR

Teeth	€ Unit Price HTLA(x1.0)HTLK(x1.1) S8M150 E	S8M150 F	S8M250 E	S8M250 F	S8M300 E	S8M300 F	S8M400 E	S8M400 F	HTPL(x1.0)HTLG(x1.1) S8M150 E	S8M150 F	S8M250 E	S8M250 F	S8M300 E	S8M300 F	S8M400 E	S8M400 F
18																
19																
20																
21																
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40																
44																
48																
50																
60																
72																

Keyless High Torque Timing Pulleys S8M Type

-MechaLock Standard Type incorporated (with centering function)-

CAD Data

Features:MechaLock Standard Type (P.1217) incorporated timing pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively.

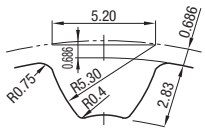


RoHS

Part Number				Material			Surface Treatment		
Belt Width 15mm	Belt Width 25mm	Belt Width 30mm	Belt Width 40mm	Pulley	Flange	Mecha Lock	Pulley	Flange	MechaLock
A: 17 W: 22	A: 28W: 33Y: 22 (24 / 24.5)	A: 33W: 38Y: 24 (25 / 28)	A: 44W: 49Y: 30 (31 / 34)						
HHTA__S8M150	HHTA__S8M250	HHTA__S8M300	HHTA__S8M400	EN AW-7075/AlZn5,5MgCu	EN AW-5052/AlMg2,5	1.1191/C45E	Clear Anodize		-
HHTK__S8M150	HHTK__S8M250	HHTK__S8M300	HHTK__S8M400				Hard Clear Anodize*		-
HHTN__S8M150	HHTN__S8M250	HHTN__S8M300	HHTN__S8M400				Electroless Nickel Plating		-
HHTT__S8M150	HHTT__S8M250	HHTT__S8M300	HHTT__S8M400	1.1191/C45E	1.0330/DC01	1.1191/C45E	-		
HHTM__S8M150	HHTM__S8M250	HHTM__S8M300	HHTM__S8M400				Black Oxide		
HHTP__S8M150	HHTP__S8M250	HHTP__S8M300	HHTP__S8M400				Electroless Nickel Plating		

*Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

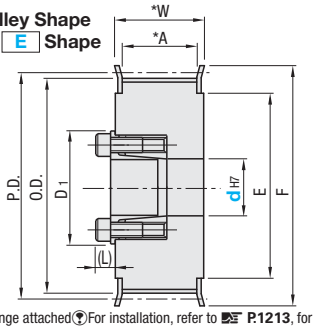


Tooth groove dimensions slightly change according to No. of teeth.

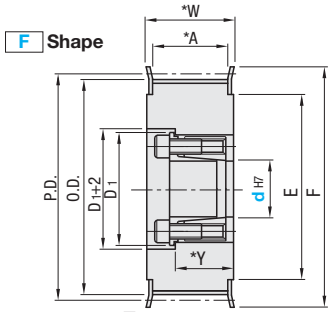
(Pitch: 8.0mm)

•Pulley Shape

E Shape



F Shape



Ⓟ The shaft bore may not have surface treatment.
Ⓟ Cut Flange for 72 toothed pulleys.
Ⓟ Flange attached Ⓟ For installation, refer to P.1213, for details of MechaLock, refer to P.1217
Ⓟ Y dimensions in ( ) require the shaft bore diameter of 24 and above.

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)							P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		S8M150	S8M250		S8M300		S8M400					
				E	E	F	E	F	E	F				
HHTA HHTK HHTN HHTT HHTM HHTP	19	S8M150 *A: 17 *W: 22 S8M250 *A: 28 *W: 33 *Y: 22 (d24~30: Y=24) (d32~: Y=24.5) S8M300 *A: 33 *W: 38 *Y: 24 (d24~32: Y=25) (d35~: Y=28) S8M400 *A: 44 *W: 49 *Y: 30 (d24~32: Y=31) (d35~: Y=34)	E	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	48.38	47.01	55	40
	20			12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	50.93	49.56	58	
	21			12~16	12~16	12~16	12~16	12~16	12~16	12~16	53.48	52.10	61	45
	22			12~16	12~16	12~16	12~16	12~16	12~16	12~16	56.02	54.65		
	24			12~19	12~19	12~19	12~19	12~19	12~19	12~19	61.12	59.74	67	50
	25			12~20	12~20	12~20	12~20	12~20	12~20	12~20	63.66	62.29	70	56
	26			14~22	14~22	14~22	14~22	14~22	14~22	14~22	66.21	64.84	74	58
	28			14~22	14~22	14~22	14~22	14~22	14~22	14~22	71.30	69.93	80	60
	30			14~22	14~28	14~28	14~28	14~28	14~28	14~28	76.39	75.02	87	67
	32			14~22	14~28	14~28	14~28	14~28	14~28	14~28	81.49	80.12		
	34		F	16~22	16~32	16~32	16~32	16~32	16~32	16~32	86.58	85.21	95	75
	36			16~22	16~32	16~32	16~32	16~32	16~32	16~32	91.67	90.30	99	80
	38			16~22	16~32	16~32	16~32	16~32	16~32	16~32	96.77	95.39	104	84
	40			20, 22	20~35	20~32	20~35	20~35	20~35	20~35	101.86	100.49	111	90
	44			20, 22	20~35	20~32	20~35	20~35	20~35	20~35	112.05	110.67	119	100
	48			20, 22	20~45	20~32	20~45	20~45	20~45	20~45	122.23	120.86	127	105
	50			20, 22	20~50	20~32	20~50	20~45	20~50	20~50	127.32	125.95	135	115
	60			20, 22	20~50	20~32	20~50	20~45	20~50	20~50	152.79	151.42	160	140
	72			20, 22	20~50	20~32	20~50	20~45	20~50	20~50	183.35	181.97	190	170

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque (Nm) HHTA · HHTK HHTN · HHTT · HHTM	Max. Allowable Torque (Nm) HHTP	D1	(L)
12	44.1	36.2	28.5	6.5
14	63.7	50.9	30.5	
15	80.4	54.8	31.5	
16	83.3	58.8	33.0	
17	92.2	76.4	33.5	
18	95.1	80.3	34.5	
19	98.1	85.2	35.5	
20	216.0	183.0	42.0	8
22	255.0	201.0	44.0	
24	363.0	252.0	46.0	
25	392.0	264.0	47.0	
28	441.0	295.0	50.0	8.5
30	500.0	396.0	52.0	
32	530.0	423.0	54.0	
35	883.0	548.0	62.0	10
40	1079.0	779.0	67.0	
45	1285.0	882.0	72.0	
50	1706.0	1362.0	77.0	10.5

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HHTA 60S8M300	-	F	-	40

Days to Ship

- HHTA / HHTT / HHTM / HHTP: **10 Days** — Express B 8,00 EUR/piece (P. 88) — **10 Days**
- HHTK / HHTN

Ⓟ A Express Charge of 21,60 EUR for 3 or more identical pieces ⊗Express Serviceis not available.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC…etc.)
HHTA 60S8M300	-	E	-	40	-	BMC

Alterations	Surface Treatment	Flange Cut
Code	BMC · BMR	FC
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). Ⓟ Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC :Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR:RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)	Lowers flange by cutting. FC: 0.5mm Increment Ⓟ No surface treatment applied on flange circumference. Ⓟ FC≥(O.D.)+2 Ⓟ FC≤F-2 Ordering Code FC35
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 19~24) 19,00 (No. of Teeth 25~72)	3,00

Alterations	Flange not Attached	Flange Attached on One Side Only
Code	NFC	LFC · RFC
Spec.	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	Free of Charge	Free of Charge

Price

Ⓟ For the body prices of HHTM, HHTK, HHTP, and HHTN multiply the unit prices in the table by coefficient 1.05, 1.1, 1.15 and 1.2 respectively. (Round down to ten Cent.)
Ⓟ (Body Price + MechaLock Incorporation Charge) = Product € Unit Price
When HHTK30S8M150-E-20 Body price in the table(60,10) x Coefficient(1.1) + Mecha-locks incorporation charge (36,80)= 102,90 EUR

No. of Teeth	€ Body Price Qty. 1~9							
	HHTA(x1.0)HHTK(x1.1) HHTN(x1.2)				HHTT(x1.0)HHTM(x1.05)HHTP(x1.15)			
	S8M150	S8M250	S8M300	S8M400	S8M150	S8M250	S8M300	S8M400
19								
20								
21								
22								
24								
25								
26								
28								
30								
32								
34								
36								
38								
40								
44								
48								
50								
60								
72								

dH7	MechaLock incorporation charge € (Body Price +)
12	
14	
15	
16	
17	
18	
19	
20	
22	
24	
25	
28	
30	
32	
35	
40	
45	
50	

Ⓟ For orders larger than indicated quantity, please request a quotation.

Keyless High Torque Timing Pulleys P5M Type

CAD Data

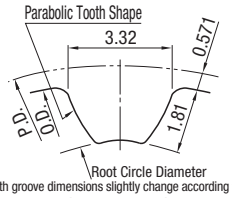
■For High Torque Timing Belts, refer to P.1197, for Open End Belts, refer to P.1205



RoHS

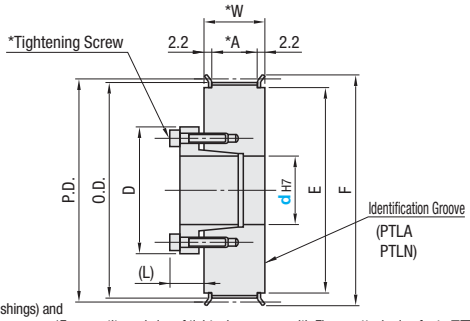
Part Number		Material			Surface Treatment		
Belt Width 10mm	Belt Width 15mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 11.6 W: 16	A: 16.6 W: 21						
PTLA__P5M100	PTLA__P5M150	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
PTLN__P5M100	PTLN__P5M150				Electroless Nickel Plating		-
PTLM__P5M100	PTLM__P5M150	1035 Carbon Steel	1.0330/DC01	1.1191/ C45E	Black Oxide		
PTLG__P5M100	PTLG__P5M150				Electroless Nickel Plating		

Standard Tooth Profile

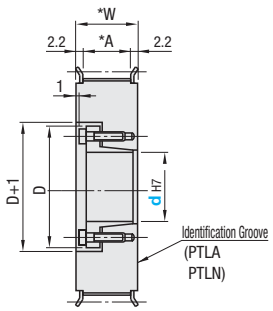


Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 5.0mm)

E Shape



F Shape



Ⓣ The shaft bore may not have surface treatment.
Ⓣ Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153

*For quantity and size of tightening screws with Flange attached, refer to P.1153

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)				P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		P5M100		P5M150					
				E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)				
PTLA PTLN	22	P5M100 *A: 11.6 *W: 16	E	8	8	8	8	35.01	33.87	40	28
	24			8~11	8	8~11	8	38.20	37.06	44	32
	25			8~11	8	8~11	8	39.79	38.65		
	26			8~14	8	8~14	8~12	41.38	40.24	48	36
	28			8~16	8	8~16	8~12	44.56	43.42	50	38
	30	P5M150 *A: 16.6 *W: 21		10~17		10~17	10, 11, 12	47.75	46.60	55	40
	32			10~17		10~17	10, 11, 12	50.93	49.79		
	34			10~17		10~17	10, 11, 12	54.11	52.97	61	46
	36		F	10~22	-	10~22	10, 11, 12	57.30	56.15	67	50
	40			10~22		10~22	10, 11, 12	63.66	62.52		
	44			12~25		12~25	12	70.03	68.89	74	58
	48			12~28		12~28	12	76.39	75.25	83	63
	50			12~35		12~35	12	79.58	78.44	87	67
	60			12~38	-	12~42	12	95.49	94.35	104	84
	72			12~38		12~42	12	114.59	113.45	119	100

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)		P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		P5M100(ST Bushing)	P5M150(ST Bushing)				
PTLM PTLG	22	P5M100 *A: 11.6 *W: 16	E	8	-	35.01	33.87	43	30
	24			8		38.20	37.06	44	31
	26			10, 12		41.38	40.24	47	35.5
	28			10, 12		44.56	43.42	52	37.5
	30	P5M150 *A: 16.6 *W: 21		12	12, 14, 15	47.75	46.60	55	42.5
	32				12, 14, 15	50.93	49.79		
	36				12, 14, 15	57.30	56.15	64	50
	44			-	15, 24	70.03	68.89	74	63
	50				15, 24	79.58	78.44	86	71
	60				15, 24	95.49	94.35	103	85

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	10.5
11	43	20	31	30	
12	48	23	32	31	
14	73	-	35	-	12
15	78		36		
16	83		37		13
17	88		38		
18	154		43		14
19	163		45		
20	171		46		
22	186		48		
24	206	-	50	-	
25	216		52		
28	353		54		15.5
30	382		57		
32	412		59		16.5
35	451		63		
38	686		70		19
40	725		71		
42	757		71		

Ⓣ Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
PTLA40P5M150	-	F	-	12

Days to Ship

- PTLG: 8 Days
- PTLA / PTLM: 10 Days
- PTLN: 10 Days

Express B | 8,00 EUR/ piece — P.88

Ⓣ A Express Charge of 21,60 EUR for 3 or more identical pieces.

⊗ Express Serviceis not available.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC / BMR / OP / FC / NFC / LFC / RFC)
PTLA30P5M150	-	E	-	14	-	BMC

Alterations	Surface Treatment	Pulley for Replacement (Pulley only)
Code	BMC · BMR	OP
Spec.	Applies electroless nickel plating on a bushing. (Antirusting treatment applied screws are included.) Ⓣ Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel) ⊗ Not applicable to PTLM / PTLG	Pulleys will be shipped individually (No bushings).
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 22~34) 19,00 (No. of Teeth 36~72)	€ Unit Price of Keyless Pulley x 0.9 (Round down to ten Cent.)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC / RFC
Spec.			
	For details of spec., refer to P.1166		
Price Adder	3,00	Free of Charge	Free of Charge

Price

■Volume Discount (Ⓣ Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Ⓣ For orders larger than indicated quantity, please request a quotation.

Ⓣ For the price of PTLN, multiply the unit price in the table by coefficient 1.2. (Round down to ten Cent.)
Ex.) WhenPTLN30P5M100-E-15
Price in table (52,80) x (1.2) = 63,36 → 63,30 EUR

Teeth	€ Unit Price							
	PTLA(x1.0)PTLN(x1.2)				PTLM		PTLG	
	P5M100		P5M150		P5M100	P5M150	P5M100	P5M150
	E	F	E	F	E			
22								
24								
25								
26								
28								
30								
32								
34								
36								
40								
44								
48								
50								
60								
72								

Keyless High Torque Timing Pulleys P8M Type

CAD Data

For High Torque Timing Belts, refer to P.1197

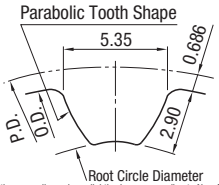


RoHS

Part Number		Material			Surface Treatment		
Belt Width 15mm	Belt Width 25mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 16.8 W: 22	A: 27.8 W: 33						
PTLA__P8M150	PTLA__P8M250	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
PTLK__P8M150	PTLK__P8M250				Hard Clear Anodize*		-
PTLN__P8M150	PTLN__P8M250				Electroless Nickel Plating		-
-	PTLM__P8M250	1035 Carbon Steel	1.0330/ DC01	1.1191/ C45E	Black Oxide		
-	PTLG__P8M250				Electroless Nickel Plating		

*Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile



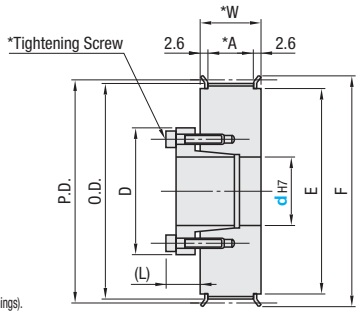
Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 8.0mm)

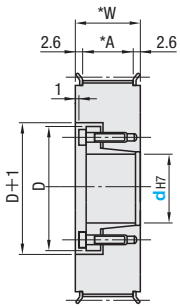
The shaft bore may not have surface treatment.

Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153

E Shape



F Shape



*For quantity and size of tightening screws with Flange attached, refer to P.1153

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)				P.D.	O.D.	F	E
				P8M150		P8M250					
Type	Teeth	Type, Nominal Width		E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (ST Bushing)				
PTLA PTLK PTLN	20	P8M150 *A: 16.8 *W: 22	E	12~17	12	12~17	12	50.93	49.56	55	40
	22			12~17	12	12~17	12~17	56.02	54.65	61	45
	24			12~22	12	12~22	12~18	61.12	59.74	67	50
	26			16~25		16~25	16~24	66.21	64.84	74	58
	28			16~25		16~25	16~25	71.30	69.93	80	60
	30			16~25		16~25	16~25	76.39	75.02	83	63
	32			16~35		16~35	16~32	81.49	80.12	87	67
	34	P8M250 *A: 27.8 *W: 33	F	16~35		16~35	16~35	86.58	85.21	95	75
	36			16~35	-	16~35	16~35	91.67	90.30	99	80
	40			20~42		20~42	20~35	101.86	100.49	111	90
	44			20~42		20~42	20~35	112.05	110.67	119	100
	48			20~42		20~45	20~35	122.23	120.86	127	105
	50			20~42		20~50	20~35	127.32	125.95	135	115
	60			20~42		20~50	20~35	152.79	151.42	160	140

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)	P.D.	O.D.	F	E
				P8M250 · E (ST Bushing)				
Type	Teeth	Type, Nominal Width						
PTLM PTLG	26	P8M250 *A: 27.8 *W: 33	E	20, 24	66.21	64.84	73	56
	30			20, 24, 25	76.39	75.02	82	67
	34			20, 24, 25	86.58	85.21	91	77
	40			20, 24, 25	101.86	100.49	107	90
	48			20, 24, 25	122.23	120.86	127	112

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
12	48	23	32	31	10.5
14	73		35		12
15	78		36		
16	83		37		13
17	88		38		
18	154		43		14
19	163		45		
20	171		46		
22	186		48		
24	206		50		
25	216	-	52	-	
28	353		54		15.5
30	382		57		
32	412		59		16.5
35	451		63		
38	686		70		19
40	725		71		
42	757		74		20
45	1490		84		24.5
48	1600		87		
50	1660		89		

Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example Part Number: PTLA24P8M250 - Pulley Shape: F - Shaft Bore Dia.: 16

Days to Ship

- PTLG: 8 Days
- PTLA / PTLM: 10 Days
- PTLK / PTLN: 10 Days

Express B 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces

Express Serviceis not available.

Alterations Part Number: PTLA30P8M250 - Pulley Shape: F - Shaft Bore Dia.: 20 - (BMC / BMR / OP / FC / NFC / LFC / RFC): BMC

Alterations	Surface Treatment	Pulley for Replacement (Pulley only)
Code	BMC / BMR	OP
Spec.	Applies electroless nickel plating on a bushing. (Antirusting treatment applied screws are included.) Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel) Not applicable to PTLM / PTLG	Pulleys will be shipped individually (No bushings).
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 20~24) 19,00 (No. of Teeth 26~60)	Unit Price of Keyless Pulley x 0.9 (Round down to ten yen.)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC / RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment Not applicable to PTLM / PTLG No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC35	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	3,00	Free of Charge	Free of Charge

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

The price of PTLK is the unit price in the table multiplied by 1.1, while the price of PTLN multiplied by 1.2. (Round down to ten Cent.)
Ex.) When PTLK30P8M250-E-20
Price in table (103,60) x (1.1) = 113,96 → 113,90 EUR

Teeth	€ Unit Price					
	PTLA(x1.0)PTLK(x1.1)PTLN(x1.2)				PTLM	PTLG
	P8M150		P8M250		P8M250	
	EShape	FShape	EShape	FShape	EShape	
20						
22						
24						
26						
28						
30						
32						
34						
36						
40						
44						
48						
50						
60						

Keyless Timing Pulleys T5 Type

CAD Data

■For Timing Belts, refer to P.1200

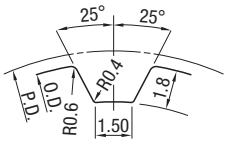


RoHS

Part Number				Material			Surface Treatment		
Belt Width 10mm	Belt Width 15mm	Belt Width 20mm	Belt Width 25mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 11 W: 16	A: 17 W: 22	A: 22 W: 27	A: 27 W: 32						
TTLA_ _T5100	TTLA_ _T5150	TTLA_ _T5200	TTLA_ _T5250	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
TTLK_ _T5100	TTLK_ _T5150	TTLK_ _T5200	TTLK_ _T5250				Hard Clear Anodize*		-

*Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

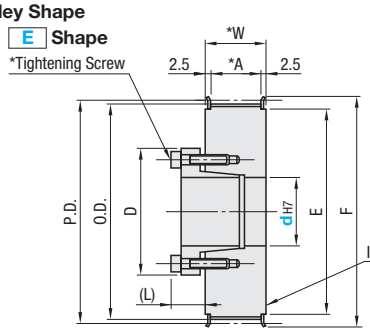


Tooth groove dimensions slightly change according to No. of teeth.

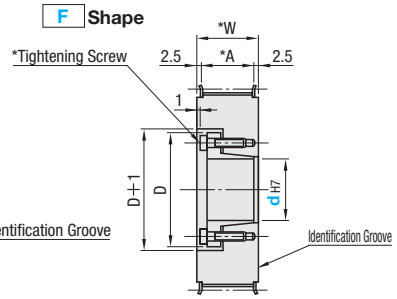
(Pitch: 5.0mm)

•Pulley Shape

E Shape



F Shape



The shaft bore may not have surface treatment.

Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to P.1153 *For quantity and size of tightening screws with Flange attached, refer to P.1153

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)								P.D.	O.D.	F	E
				T5100		T5150		T5200		T5250					
Type	Teeth	Type, Nominal Width		E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)				
TTLA TTLK	22	T5100 *A: 11 *W: 16	E	8	-	-	-	-	-	-	-	35.01	34.25	40	27
	24			8, 10	8	10	8	-	8	-	8	38.20	37.40	45	30
	25			8, 10	8	10	8	-	8	-	8	39.79	39.00		
	26			8~12	8	10, 11, 12	8, 10	12	8, 10	12	8, 10	41.38	40.60	48	35
	28	T5150 *A: 17 *W: 22		8~12	8	10, 11, 12	8, 10, 11	12	8, 10, 11	12	8, 10, 11	44.56	43.75		
	30			10~15		10~15	10, 11, 12	12, 14, 15	10, 11, 12	12, 14, 15	10, 11, 12	47.75	46.95	52	36
	32			10~17		10~17	10, 11, 12	12~17	10~14	12~17	10~14	50.93	50.10	55	40
	34		F	10~17		10~17	10, 11, 12	12~17	10~18	12~17	10~18	54.11	53.25	61	45
	36	T5200 *A: 22 *W: 27		10~17	-	10~17	10, 11, 12	12~17	10~18	12~17	10~18	57.30	56.45	61	45
	40			10~17		10~17	10, 11, 12	12~17	10~19	12~17	10~19	63.66	62.85	67	50
	44			12~25		12~25	12	12~25	12~25	12~25	12~25	70.03	69.20	74	58
	48	T5250 *A: 27 *W: 32		12~28		12~28	12	12~28	12~28	12~28	12~28	76.39	75.55	83	63
	50			12~32	-	12~32	12	12~32	12~32	12~32	12~32	79.58	78.75	87	67
	60			12~38		12~40	12	12~40	12~35	12~40	12~35	95.49	94.65	99	80

Table 1: Select Shaft Bore Diameter

dH7	Max. Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
8	16	8.5	25.5	24.5	8.5
10	39	18	30	29	10.5
11	43	20	31	30	
12	48	23	32	31	12
14	73	37	35	36	
15	78	39	36	37	
16	83	42	37	38	13
17	88	45	38	39	
18	154	48	43	40	14
19	163	49	45	42	
20	171	97	46	46	
22	186	110	48	47	
24	206	121	50	49	
25	216	124	52	51	
28	353	141	54	53	15.5
30	382	149	57	56	
32	412	163	59	58	16.5
35	451	173	63	61	
38	686	-	70	-	19
40	725		71		

Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
TTLA40T5250	-	E	-	15

Days to Ship

- TTLA

10 Days | Express B | 8,00 EUR/ piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- TTLK

10 Days ⊗Express Serviceis not available.

Alter-ations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC / BMR / OP / FC / NFC / LFC / RFC)
TTLA40T5250	-	F	-	15	-	FC65

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

For the price of TTLK, multiply the unit price in the table by coefficient 1.1.(Round down to ten Cent.)
Ex.) When TTLK30T5100-E-15
Price in the table (43,40) x (1.1) = 47,74 → 47,70 EUR

Alterations	Surface Treatment	Pulley for Replacement (Pulley only)
Code	BMC · BMR	OP
Spec.	Applies electroless nickel plating on a bushing. (Antirusting treatment applied screws are included). Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR:RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)	Pulleys will be shipped individually (No bushings).
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 22~40) 19,00 (No. of Teeth 44~60)	€ Unit Price of Keyless Pulley x 0.9 (Round down to ten Cent.)

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC43	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	3,00	Free of Charge	Free of Charge

Teeth	€ Unit Price TTLA(x1.0) TTLK(x1.1)							
	T5100		T5150		T5200		T5250	
	E	F	E	F	E	F	E	F
22								
24								
25								
26								
28								
30								
32								
34								
36								
40								
44								
48								
50								
60								

Keyless Timing Pulleys T5 Type

-MechaLock Standard Type incorporated (with centering function)-

CAD Data

Features:MechaLock Standard Type (P.1217) incorporated timing pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively.

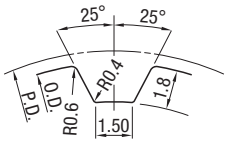


RoHS

Part Number				Material			Surface Treatment		
Belt Width 10mm	Belt Width 15mm	Belt Width 20mm	Belt Width 25mm	Pulley	Flange	MechaLock	Pulley	Flange	MechaLock
A: 11 W: 16	A: 17W: 22Y: 14	A: 22W: 27Y: 14(18)	A: 27W: 32Y: 14 (22, 23.5)						
HTTA_ _T5100	HTTA_ _T5150	HTTA_ _T5200	HTTA_ _T5250	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
HTTK_ _T5100	HTTK_ _T5150	HTTK_ _T5200	HTTK_ _T5250				Hard Clear Anodize*		-

*Hard Anodize Treatment: Film Hardness 300HV~

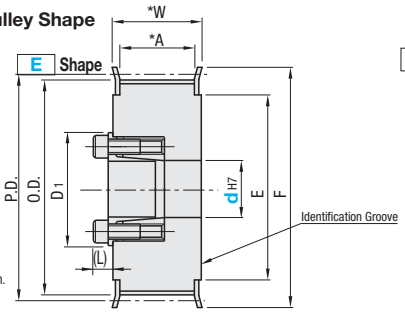
Standard Tooth Profile

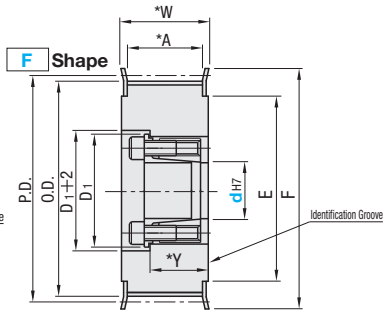


Tooth groove dimensions slightly change according to No. of teeth.

(Pitch: 5.0mm)

•Pulley Shape





Flange attached For installation, refer to P.1213, for details of MechaLock, refer to P.1217

The shaft bore may not have surface treatment.

Y dimensions in ( ) require the shaft bore diameter of 12 and above.

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)							P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		T5100	T5150		T5200		T5250					
				E	E	F	E	F	E	F				
HTTA HTTK	24	T5100 *A: 11 *W: 16	E	8	8	8	8	8	8	8	38.20	37.40	45	30
	25			8	8	8	8	8	8	8	39.79	39.00		
	26	T5150 *A: 17 *W: 22 *Y: 14		8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	41.38	40.60	48	35
	28			8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	8, 10	44.56	43.75	48	35
	30			10	10	10	10	10	10	10	47.75	46.95	52	36
	32	T5200 *A: 22 *W: 27 *Y: 14 (d12~: Y=18)		10, 12, 14	10, 12, 14	10	10, 12, 14	10, 12, 14	10, 12, 14	10, 12, 14	50.93	50.10	55	40
	34			10, 12, 14	10~16	10	10~16	10~16	10~16	10~16	54.11	53.25	61	45
	36		F	10, 12, 14	10~16	10	10~16	10~16	10~16	10~16	57.30	56.45	61	45
	40			10, 12, 14	10~19	10	10~19	10~19	10~19	10~19	63.66	62.85	67	50
	44	T5250 *A: 27 *W: 32 *Y: 14 (d12~22: Y=22) (d24~: Y=23.5)		12, 14	12~22	-	12~22	12~19	12~22	12~22	70.03	69.20	74	58
	48			12, 14	12~22		12~24	12~19	12~24	12~24	76.39	75.55	83	63
	50			12, 14	12~22		12~28	12~19	12~28	12~28	79.58	78.75	87	67
	60			12, 14	12~22		12~32	12~19	12~32	12~30	95.49	94.65	99	80

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque (Nm)	D1	(L)
8	19.6	23.5	6
10	27.5	25.5	
12	44.1	28.5	6.5
14	63.7	30.5	
15	80.4	31.5	
16	83.3	33.0	
17	92.2	33.5	
18	95.1	34.5	
19	98.1	35.5	
20	216.0	42.0	8
22	255.0	44.0	
24	363.0	46.0	
25	392.0	47.0	
28	441.0	50.0	8.5
30	500.0	52.0	
32	530.0	54.0	

Order Example Part Number: HTTA48T5250 - Pulley Shape: F - Shaft Bore Dia.: 20

Days to Ship

- HTTA: 10 Days — Express B: 8,00 EUR/ piece — P. 88
  - A Express Charge of 21,60 EUR for 3 or more identical pieces
- HTTK: 10 Days — Express Service is not available.

Alterations Part Number - Pulley Shape - Shaft Bore Dia. - (BMC / BMR / FC / NFC / LFC / RFC)
HTTA40T5250 - E - 18 - BMC

Price

(Body Price + MechaLock Incorporation Charge) = Product € Unit Price
Ex.) When HTTK30T5100-E-10 Body price in the table(34,20) + MechaLock incorporation charge (28,90)= 63,10 EUR

Alterations	Surface Treatment	Flange Cut
Code	BMC · BMR	FC
Spec.	Applies electroless nickel plating on a bushing. (Antirusting treatment applied screws are included.) Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC :Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR:RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC43
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 24~40) 19,00 (No. of Teeth 44~60)	3,00

Alterations	Flange not Attached	Flange Attached on One Side Only
Code	NFC	LFC · RFC
Spec.	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	Free of Charge	Free of Charge

Teeth	€ Body Price Qty. 1~9							
	HTTA				HTTK			
	T5100	T5150	T5200	T5250	T5100	T5150	T5200	T5250
24								
25								
26								
28								
30								
32								
34								
36								
40								
44								
48								
50								
60								

For orders larger than indicated quantity, please request a quotation.

dH7	€
8	
10	
12	
14	
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Keyless Timing Pulleys T10 Type

CAD Data

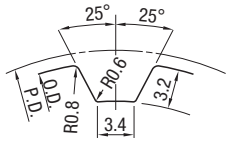
■For Timing Belts, refer to ☞P.1200, for Long Timing Belts, refer to ☞ P.1203



Part Number						Material			Surface Treatment		
Belt Width 15mm	Belt Width 20mm	Belt Width 25mm	Belt Width 30mm	Belt Width 40mm	Belt Width 50mm	Pulley	Flange	Bushing	Pulley	Flange	Bushing
A: 17 W: 22	A: 22 W: 27	A: 27 W: 32	A:32W:37	A:43W:48	A:53W:58						
TTLA__T10150	TTLA__T10200	TTLA__T10250	TTLA__T10300	TTLA__T10400	TTLA__T10500	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/ C45E	Clear Anodize		-
TTLK__T10150	TTLK__T10200	TTLK__T10250	TTLK__T10300	-	-				Hard Clear Anodize*		-
TTLN__T10150	TTLN__T10200	TTLN__T10250	TTLN__T10300	-	-				Electroless Nickel Plating		-
TTPL__T10150	TTPL__T10200	TTPL__T10250	TTPL__T10300	TTPL__T10400	TTPL__T10500	1.1191/ C45E	1.0330/ DC01	1.1191/ C45E	Black Oxide		
TTLG__T10150	TTLG__T10200	TTLG__T10250	TTLG__T10300	TTLG__T10400	TTLG__T10500				Electroless Nickel Plating		

*Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

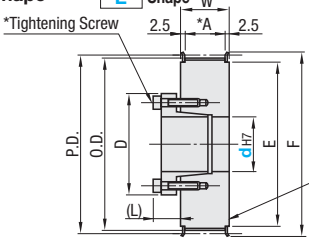


Tooth groove dimensions slightly change according to No. of teeth.

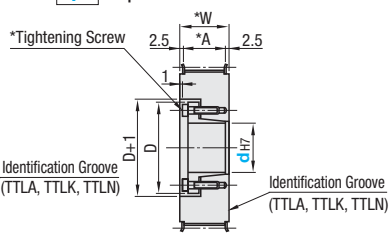
(Pitch: 10.0mm)

•Pulley Shape

E Shape



F Shape



Ⓨ The shaft bore may not have surface treatment. *For quantity and size of tightening screws with Flange attached, refer to ☞P.1153
Two types of bushings are available: Standard Type (ST Bushings) and Short Type (SH Bushings). Refer to ☞P.1153
Ⓨ Machined Flange for 34, 50 and 60 toothed pulleys.

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)												P.D.	O.D.	F	E
				T10150		T10200		T10250		T10300		T10400		T10500					
Type	Teeth	Type, Nominal Width		E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (SH Bushing)	E (ST Bushing)	F (ST Bushing) (SH Bushing)	E (ST Bushing)	F (ST Bushing) (SH Bushing)	E (ST Bushing)	F (ST Bushing)	E (ST Bushing)	F (ST Bushing)				
TTLA TTLK TTLN TTPL TTLG	15	T10150 *A: 17 *W: 22	E	12	12	12	12	12	12	-	-	12~14	12	12~14	12	47.75	45.90	52	36
	16			12~15	12	12~15	12	12~15	12~15	15	15	12~17	12~15	12~17	12~15	50.93	49.05	58	40
	18			12~17	12	12~17	12~17	12~17	12~17	15, 16, 17	15, 16, 17	12~17	12~17	12~17	12~17	57.30	55.45	61	45
	20	T10200 *A: 22 *W: 27		12~17	12	12~17	12~17	12~17	12~17	15, 16, 17	15, 16, 17	12~22	12~18	12~22	12~18	63.66	61.80	67	50
	22			14~25	-	14~25	14~25	14~25	14~25	15~25	15~25	14~25	14~25	14~25	14~25	70.03	68.15	80	60
	24			14~25		14~25	14~25	14~25	14~25	15~25	15~25	14~25	14~25	14~25	14~25	76.39	74.55	87	67
	25	T10250 *A: 27 *W: 32		14~25		14~25	14~25	14~25	14~25	15~25	15~25	14~25	14~25	14~25	14~25	79.58	77.70	87	67
	26			14~25		14~25	14~25	14~25	14~25	15~25	15~25	14~35	14~35	14~35	14~35	82.76	80.90		
	28			16~35		16~35	16~35	16~35	16~35	16~35	16~35	16~35	16~35	16~35	16~35	89.13	87.25	95	75
	30	T10300 *A: 32 *W: 37		16~35		16~35	16~35	16~35	16~35	16~35	16~35	16~42	16~35	16~42	16~35	95.49	93.65	104	84
	32		F	20~42	-	20~42	20~35	20~42	20~35	20~42	20~35	20~42	20~42	20~42	20~42	101.86	100.00	111	90
	34			20~42		20~42	20~35	20~42	20~35	20~42	20~35	20~42	20~42	20~42	20~42	108.23	106.40	115	95
	36	T10400 *A: 43 *W: 48		20~42		20~42	20~35	20~42	20~35	20~42	20~35	20~42	20~42	20~42	20~42	114.59	112.75	123	102
	40			20~50		20~50	20~35	20~50	20~35	20~50	20~35	20~50	20~50	20~50	20~50	127.32	125.45	135	115
	44	T10500 *A: 53 *W: 58		20~50		20~50	20~35	20~50	20~35	20~50	20~35	20~50	20~50	20~50	20~50	140.06	138.20	152	130
	48			20~50		20~50	20~35	20~50	20~35	20~50	20~35	20~50	20~50	20~50	20~50	152.79	150.95	160	140
	50			20~50	-	20~50	20~35	20~50	20~35	20~50	20~35	20~50	20~50	20~50	20~50	159.15	157.30	170	150
	60			20~50		20~50	20~35	20~50	20~35	20~50	20~35	20~50	20~50	20~50	20~50	190.99	189.10	200	175

Ⓨ For "F" shape of S8M250, ST bushing is applicable to shaft bore diameter of 12~30 and SH bushing is applicable to 32 and 35.(Ⓨ TTLK and TTLN are not available for T10400 and T10500.
Ⓨ For "F" shape of S8M300, ST bushing is applicable to shaft bore diameter of 15~32 and SH bushing is applicable to 35.

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque Nm		D		(L)
	ST Bushing	SH Bushing	ST Bushing	SH Bushing	
12	48	23	32	31	10.5
14	73	37	35	36	12
15	78	39	36	37	
16	83	42	37	38	13
17	88	45	38	39	
18	154	48	43	40	14
19	163	49	45	42	
20	171	97	46	46	
22	186	110	48	47	
24	206	121	50	49	
25	216	124	52	51	
28	353	141	54	53	15.5
30	382	149	57	56	
32	412	163	59	58	16.5
35	451	173	63	61	
38	686		70		19
40	725		71		
42	757	-	74	-	20
45	1490		84		
48	1600		87		24.5
50	1660		89		

Ⓨ Electroless nickel plated bushing decreases maximum allowable torque and allowable thrust load by 20~30%

Order Example Part Number - Pulley Shape - Shaft Bore Dia.
TTLA40T10250 - E - 20

Alterations Part Number - Pulley Shape - Shaft Bore Dia. - (BMC…etc.)
TTLA40T10250 - F - 30 - FC132

Days to Ship

- TTLA / TTPL / TTLG: **10 Days** Express B 8,00 EUR/ piece ☞P.88
Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.
- TTLK / TTLN: **10 Days** ⊗Express Serviceis not available.

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Ⓨ The price of TTLK, TTLG is the unit price in the table multiplied by 1.1, while the price of TTLN multiplied by 1.2.(Round down to ten Cent.)
Ex.) When TTLK30T10150-E-20 Price in the table (103,00) x (1.1) = 113,30 EUR

Alterations	Surface Treatment	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	BMC · BMR	FC	NFC	LFC · RFC
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). Ⓨ Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC : Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR : RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)			
		For details of spec., refer to P.1170		
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 15~20) 19,00 (No. of Teeth 22~60)	3,00	Free of Charge	Free of Charge

Teeth	€ Unit Price																					
	TTLA(x1.0)TTLK(x1.1)TTLN(x1.2)												TTPL(x1.0)TTLG(x1.1)									
	T10150		T10200		T10250		T10300		T10400		T10500		T10150		T10200		T10250		T10300		T10400		T10500	
	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F
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Keyless Timing Pulleys T10 Type

-MechaLock Standard Type incorporated (with centering function)-

CAD Data

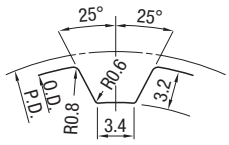
Features: MechaLock Standard Type (P.1217) incorporated timing pulleys. It tolerates an average of 1.2 times and 2.5 times greater torque compared to the conventional ST bushing and SH bushing respectively.



Part Number						Material			Surface Treatment		
Belt Width 15mm	Belt Width 20mm	Belt Width 25mm	Belt Width 30mm	Belt Width 40mm	Belt Width 50mm	Pulley	Flange	Mecha Lock	Pulley	Flange	Mecha Lock
A: 17 W: 22	A: 22 W: 26 Y: 18	A: 27 W: 32 Y: 22(23.5)	A: 32 W: 37 Y: 24 (25, 27)	A: 43 W: 48 Y: 30 (31, 34)	A: 53 W: 58 Y: 35 (36, 38) 35(36, 38)						
HTTA__T10150	HTTA__T10200	HTTA__T10250	HTTA__T10300	HTTA__T10400	HTTA__T10500	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	1.1191/C45E	Clear Anodize		-
HTTK__T10150	HTTK__T10200	HTTK__T10250	HTTK__T10300	-	-				Hard Clear Anodize*		-
HTTT__T10150	HTTT__T10200	HTTT__T10250	HTTT__T10300	HTTT__T10400	HTTT__T10500	1.1191/C45E	1.0330/DC01	1.1191/C45E	-		

*Hard Anodize Treatment: Film Hardness 300HV~

Standard Tooth Profile

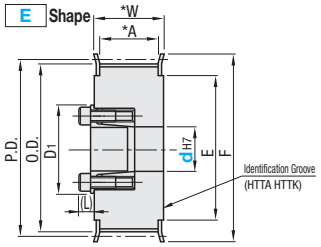


Tooth groove dimensions slightly change according to No. of teeth.

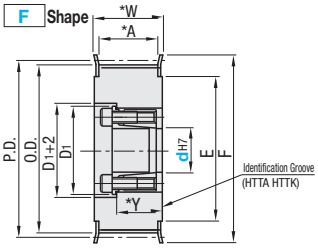
(Pitch: 10.0mm)

•Pulley Shape

E Shape



F Shape



The shaft bore may not have surface treatment.
Machined Flange for 34, 50 and 60 toothed pulleys.
Flange attached Y dimensions in ( ) require the shaft bore diameter of 24 and above.
For installation, refer to P.1213, for details of MechaLock, refer to P.1217

Part Number			Pulley Shape	dH7 Range (Select Shaft Bore Dia. from Table 1)												P.D.	O.D.	F	E
Type	Teeth	Type, Nominal Width		T10150	T10200		T10250		T10300		T10400		T10500						
				E	E	F	E	F	E	F	E	F	E	F					
HTTA HTTK HTTT	16	T10150 *A: 17 *W: 22	E	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14	12, 14		50.93	49.05	58	40
	18			12~16	12~16	12~16	12~16	12~16	12~16	12~16	12~16	12~16	12~16	12~16		57.3	55.45	61	45
	20	T10200 *A: 22 *W: 27 *Y: 18		12~19	12~19	12~19	12~19	12~19	12~19	12~19	12~19	12~19	12~19	12~19		63.66	61.8	67	50
	22			14~22	14~22	14~19	14~22	14~22	14~22	14~22	14~22	14~22	14~22	14~22		70.03	68.15	80	60
	24	T10250 *A: 27 *W: 32 *Y: 22 ((24~1~23.5)		14~22	14~28	14~19	14~28	14~28	14~28	14~28	14~28	14~28	14~28	14~28		76.39	74.55	87	67
	25			14~22	14~28	14~19	14~28	14~28	14~28	14~28	14~28	14~28	14~28	14~28		79.58	77.7	87	67
	26			14~22	14~28	14~19	14~28	14~28	14~28	14~28	14~28	14~28	14~28	14~28		82.76	80.9		
	28	T10300 *A: 32 *W: 37 *Y: 24 ((24~32~1~25) ((35~~Y~27)		16~22	16~32	16~19	16~32	16~30	16~32	16~32	16~32	16~32	16~32	16~32		89.13	87.25	95	75
	30			16~22	16~32	16~19	16~32	16~30	16~32	16~32	16~32	16~32	16~32	16~32		95.49	93.65	104	84
	32		F	20, 22	20~35		20~35	20~30	20~35	20~35	20~35	20~35	20~35	20~35		101.86	100	111	90
	34	T10400 *A: 43 *W: 48 *Y: 30 ((24~32~1~31) ((35~~Y~34)		20, 22	20~35		20~35	20~30	20~35	20~35	20~35	20~35	20~35	20~35		108.22	106.40	115	95
	36			20, 22	20~35		20~40	20~30	20~40	20~35	20~40	20~35	20~40	20~35		114.59	112.75	123	102
	40			20, 22	20~35	-	20~50	20~30	20~50	20~35	20~50	20~35	20~50	20~35		127.32	125.45	135	115
	44			20, 22	20~35		20~50	20~30	20~50	20~35	20~50	20~35	20~50	20~35		140.06	138.2	152	130
	48	T10500 *A: 53 *W: 58 *Y: 35 ((24~32~1~38) ((35~~Y~39)		20, 22	20~35		20~50	20~30	20~50	20~35	20~50	20~35	20~50	20~35		152.79	150.95	160	140
	50			20, 22	20~35	-	20~50	20~30	20~50	20~35	20~50	20~35	20~50	20~35		159.15	157.30	170	150
	60			20, 22	20~35		20~50	20~30	20~50	20~35	20~50	20~35	20~50	20~35		190.99	189.10	200	175

Table 1: Select Shaft Bore Diameter

dH7	Max. Allowable Torque (Nm)	D1	(L)
12	44.1	28.5	6.5
14	63.7	30.5	
15	80.4	31.5	
16	83.3	33	
17	92.2	33.5	
18	95.1	34.5	
19	98.1	35.5	
20	216.0	42	8
22	255.0	44	
24	363.0	46	
25	392.0	47	
28	441.0	50	8.5
30	500.0	52	
32	530.0	54	
35	883.0	62	10
40	1079.0	67	
45	1285.0	72	
50	1706.0	77	10.5

Order Example

Part Number	-	Pulley Shape	-	Shaft Bore Dia.
HTTA36T10250	-	F	-	25

Days to Ship

- HTTA / HTTT: 10 Days — Express B 8,00 EUR/ piece (P.88)
  A Express Charge of 21,60 EUR for 3 or more identical pieces
- HTTK: 10 Days — ⊗Express Serviceis not available.

Alterations

Part Number	-	Pulley Shape	-	Shaft Bore Dia.	-	(BMC…etc.)
HTTA36T10200	-	E	-	30	-	BMC

Price

For the body price of HTTK, multiply the body price in the table by coefficient 1.1.(Round down to ten Cent.)
(Body Price + MechaLock Incorporation Charge) = Product € Unit Price
Ex.) When HTTK20T10150-E-18
Body price in table(54,90) x Coefficient(1.1) + MechaLock incorporation charge (35,30)= 95,60 EUR

€ Body Price Qty. 1~9													dH7	€
Teeth	HTTA(x1.0)HTTK(x1.1)						HTTT							
	T10150	T10200	T10250	T10300	T10400	T10500	T10150	T10200	T10250	T10300	T10400	T10500		
16													12	
18													14	
20													15	
22													16	
24													17	
25													18	
26													19	
28													20	
30													22	
32													24	
34													25	
36													28	
40													30	
44													32	
48													35	
50													40	
60													45	
													50	

For orders larger than indicated quantity, please request a quotation.

Alterations	Surface Treatment	Flange Cut
Code	BMC · BMR	FC
Spec.	Applies electroless nickel plating on a bushing. (Anti-rusting treatment applied screws are included). Electroless nickel plated bushing decreases allowable torque by 20~30%. BMC: Non-RoHS-compliant (Screw: Dacrotized treatment applied 4137 Alloy Steel) BMR:RoHS-compliant (Screw: GeoMet coating applied 4137 Alloy Steel)	Lowers flange by cutting. FC: 0.5mm Increment. No surface treatment applied on flange circumference. FC≥(O.D.)+2, FC≤F-2. Ordering Code FC35
Price Adder	BMC:5,00 BMR: 8,00 (No. of Teeth 16~20) 19,00 (No. of Teeth 22~60)	3,00

Alterations	Flange not Attached	Flange Attached on One Side Only
Code	NFC	LFC · RFC
Spec.	Flange is not attached. (Flange included)	Flange swaged on the bushing side (LFC) or the opposite side (RFC) only prior to shiping. LFC RFC
Price Adder	Free of Charge	Free of Charge

Clamping High Torque Timing Pulleys S3M, S5M, S8M Type

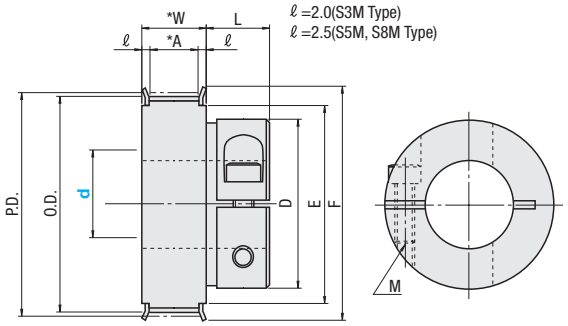
■Feature: Can be connected with a shaft by screwing. Easy positioning.



HTCPA_ _S3M060
S3M100
(Pitch: 3.0mm)

HTCPA_ _S5M100
S5M150
(Pitch: 5.0mm)

HTCPA_ _S8M150
S8M250
(Pitch: 8.0mm)



■**Recommended Shaft Tolerance h7(g6)**

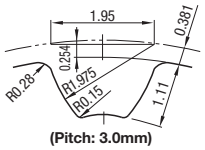
Ⓨ Finish surface roughness: Ra = 3.2a or less.

Type	Material		Surface Treatment
	Pulley	Flange	
HTCPA	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	Clear Anodize

*Flange attached. Hexagon socket head cap screws are included.

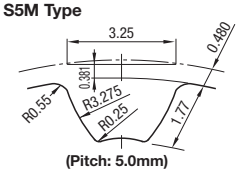
Standard Tooth Profile

S3M Type



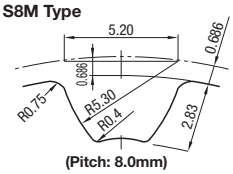
(Pitch: 3.0mm)

S5M Type



(Pitch: 5.0mm)

S8M Type



(Pitch: 8.0mm)

Ⓨ Surface treatment may not be applied to shaft bores. The tooth groove slightly changes according to No. of teeth.

■S3M Type

■For High Torque Timing Belts, refer to 📖P.1195

Part Number			d	P.D.	O.D.	D	F	E	L	Clamp Screws		€ Unit Price	
Type	Teeth	Type, Nominal Width	Selection							M	Tightening Torque (Nm)	S3M060	S3M100
HTCPA	24	S3M060 *A: 7 *W: 11	4	22.92	22.16	13	25	16	9	2	0.4		
	26		4	24.83	24.07		28	18					
	28		4	26.74	25.98		30	20					
	30		6 8	28.65	27.89	20	32	23					
	32		6 8	30.56	29.80		35	25					
	36		6 8	34.38	33.62	26	40	28	12.5	3	1.5		
	40	S3M100 *A: 11 *W: 15	8 10	38.20	37.44		44	32					
	44		8 10	42.02	41.25	31	48	36	14	4	3.5		
	48		8 10 11 12	45.84	45.07	33	50	38					
	50		8 10 11 12 13 14	47.75	46.98	36	52	40					
	60		8 10 11 12 13 14 15 16	57.30	56.53	41	61	46	15.5	5	6		

■S5M Type

■For High Torque Timing Belts, refer to 📖P.1195

Part Number			d	P.D.	O.D.	D	F	E	L	Clamp Screws		€ Unit Price			
Type	Teeth	Type, Nominal Width	Selection							M	Tightening Torque (Nm)	S5M100		S5M150	
												d≤19	20≤d	d≤19	20≤d
HTCPA	24	S5M100 *A: 11 *W: 16	8 10	38.20	37.24	26	45	30	12.5	3	1.5				
	25		8 10	39.79	38.83										
	26		8 10	41.38	40.42	31	48	35	14	4	3.5				
	28		8 10	44.56	43.60										
	30		10	47.75	46.79		52	36							
	32		10 11 12 13 14	50.93	49.97	36	55	40							
	34		10 11 12 13 14 15 16	54.11	53.15	41	61	45	15.5	5	6				
	36		10 11 12 13 14 15 16	57.30	56.34										
	40		10 11 12 13 14 15 16 17 18 19	63.66	62.70	46	67	50							
	44	S5M150 *A: 17 *W: 22	12 13 14 15 16 17 18 19	70.03	69.07	46	74	58	15.5	5	6				
			20 21 22 23 24			55			16.5	6	12				
	48		12 13 14 15 16 17 18 19	76.39	75.43	46	83	63	15.5	5	6				
			20 21 22 23 24 25			55			16.5	6	12				
	50		12 13 14 15 16 17 18 19	79.58	78.62	46	87	67	15.5	5	6				
			20 21 22 23 24 25			55			16.5	6	12				
	60		12 13 14 15 16 17 18 19	95.49	94.53	46	99	80	15.5	5	6				
			20 21 22 23 24 25			55			16.5	6	12				

CAD Data

S8M Type

For High Torque Timing Belts, refer to P.1195

Part Number			d	P.D.	O.D.	D	F	E	L	Clamp Screws		€ Unit Price	
Type	Teeth	Type, Nominal Width	Selection							M	Tightening Torque (Nm)	S8M150	S8M250
HTCPA	20	S8M150 *A: 17 *W: 22	12 13 14	50.93	49.56	36	58	40	14	4	3.5		
	22		12 13 14 15 16	56.02	54.65	41	61	45	16	5	6		
	24		12 13 14 15 16 17 18 19	61.12	59.74	46	67	50					
	25		12 13 14 15 16 17 18 19	63.66	62.29		70	56					
	28		15 16 17 18 19	71.30	69.93		80	60					
			20 21 22 23 24 25			55			17	6	12		
	30		15 16 17 18 19	76.39	75.02	46	87	67	16	5	6		
			20 21 22 23 24 25			55			17	6	12		
	32	S8M250 *A: 28 *W: 33	18 19	81.49	80.12	46			16	5	6		
			20 21 22 23 24 25			55			17	6	12		
	34		18 19	86.58	85.21	46	95	75	16	5	6		
			20 21 22 23 24 25			55			17	6	12		
	36		18 19	91.67	90.30	46	99	80	16	5	6		
			20 21 22 23 24 25			55			17	6	12		

Allowable Torque (S3M Type)

Type	Teeth	Shaft Ø	Allowable Torque (Nm)
S3M	24 26 28	4	0.16
	30 32	6	0.95
		8	2.6
	36	6	0.95
		8	2.6
	40	8	2.6
		10	
	44	8	2.6
		10	
	48	8	2.6
		10	
		11	
		12	
	50	8	2.6
		10	
		11	
		12	
		13	
		14	7.6
	60	8	2.6
		10	
		11	
		12	
		13	
		14	7.6
		15	
		16	

Allowable Torque (S5M Type)

Type	Teeth	Shaft Ø	Allowable Torque (Nm)
S5M	24 25	8	2.6
		10	
	26 28	8	2.6
		10	
	30	10	2.6
	32	10	
		11	
		12	
		13	
		14	7.6
	34 36	10	2.6
		11	
		12	
		13	
		14	7.6
		15	
		16	
	40	10	2.6
		11	
		12	
		13	
		14	7.6
		15	
		16	
		17	
		18	
		19	
	44 48 50 60	12	2.6
		13	
		14	7.6
		15	
		16	
		17	
		18	
		19	
		20	48
		21	
		22	66
		23	
		24	95
		25	

Allowable Torque (S8M Type)

Type	Teeth	Shaft Ø	Allowable Torque (Nm)
S8M	20	12	2.6
		13	
		14	7.6
	22	12	2.6
		13	
		14	7.6
		15	
		16	
	24 25	12	2.6
		13	
		14	7.6
		15	
		16	
		17	
		18	
		19	
	28 30	15	7.6
		16	
		17	
		18	
		19	
		20	48
		21	
		22	66
		23	
		24	95
		25	
	32 34 36	18	7.6
		19	
		20	48
		21	
		22	66
		23	
		24	95
		25	

Order Example

Part Number							Shaft Bore Ø d
Type	Teeth	-	Type, Nominal Width			-	
HTCPA40		-	S3M060			-	10

Days to Ship

8 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

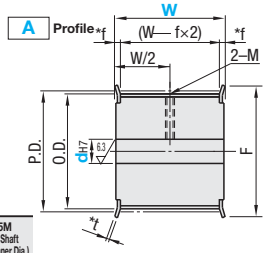
Timing Pulleys

-Width Configurable Type MXL, XL, S2M, S3M, S5M Type-



FTPA_ _MXL
XL
S2M
S3M
S5M

Pulley Shape

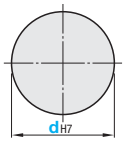


*MXL, S2M, S3M : f=2.0t=1.0
XL, S5M : f=2.5t=1.6

Shaft Bore Specs.

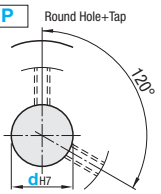
The shaft bore may not have surface treatment.

H Round Hole



*No tapped holes and set screws.

P Round Hole+Tap



The set screw holes are placed at around 120° in order to avoid peaks.

Type	M Material		S Surface Treatment
	Pulley	Flange	
FTPA	2017 Aluminum Alloy	EN AW-5052/AlMg2,5	Clear Anodize

Tapped Hole Dimensions

M (Coarse)	Accessory Set Screw	MXL (dH7 Shaft Bore Inner Dia.)	XL (dH7 Shaft Bore Inner Dia.)	S2M (dH7 Shaft Bore Inner Dia.)	S3M (dH7 Shaft Bore Inner Dia.)	S5M (dH7 Shaft Bore Inner Dia.)
M 3	M 3x3	3~5	-	3~5	4~5	-
M 4	M 4x3	6~18	6~12	6~22	6~17	6~12
M 5	M 5x4	19~20	13~17	-	18~32	13~17
M 6	M 6x5	-	18~30	-	-	18~30
M 8	M 8x6	-	31~47	-	-	31~38

Part Number									€ Unit Price				Shaft Bore Machining Charge
Type	Teeth	Belt Type	Pulley Shape	W 1mm Increment	Shaft Bore Specifications	Shaft Bore Dia. dH7 (1mm Increment)	P.D.	O.D.	F	W15~25	W26~50	W51~75	W76~100	P
FTPA	14	MXL	A	15~100	H	3, 4	9.06	8.55	12					
	15					3, 4	9.70	9.19						
	16					3~5	10.35	9.84	14					
	17					3~5	11.00	10.49						
	18					3~5	11.64	11.14						
	19					3~5	12.29	11.78						
	20					4~6	12.94	12.43	18					
	21					4~6	13.58	13.07						
	22					4~6	14.23	13.72						
	23					4~7	14.88	14.37	20					
	24					4~7	15.52	15.02						
	25					4~7	16.17	15.66						
	26					4~8	16.82	16.31	22					
	27					4~8	17.46	16.96						
	28					4~8	18.11	17.60						
	30			W≤dx5	P	4~10	19.40	18.90	25					
	32					4~10	20.70	20.19						
	34					4~10	21.99	21.48						
	36					5~12	23.29	22.78	28					
	38					5~12	24.58	24.07						
	40					5~12	25.87	25.36	30					
	42					5~12	27.17	26.66						
	44					5~13	28.46	27.95	32					
	46					5~13	29.75	29.24						
	48					5~15	31.05	30.54	35					
	50					5~15	32.34	31.84						
	60					5~20	38.81	38.30	44					
	72					5~20	46.57	46.06	52					
FTPA	16	XL	A	15~100	H	6~13	25.87	25.36	32					
	18					6~15	29.11	28.60	36					
	19					6~15	30.72	30.22						
	20					8~16	32.34	31.83	40					
	22					8~20	35.57	35.07	45					
	24					8~22	38.81	38.30						
	25					8~22	40.43	39.92	48					
	26					8~23	42.04	41.53						
	28			W≤dx5	P	8~25	45.28	44.77	55					
	30					10~30	48.51	48.00						
	32					10~30	51.74	51.24	61					
	36					10~38	58.21	57.70	67					
	40					10~47	64.68	64.17	74					

Part No.									€ Unit Price				Shaft Bore Machining Charge
Type	Teeth	Belt Type	Pulley Shape	W 1mm Increment	Shaft Bore Specifications	Shaft Bore Dia. dH7 (1mm Increment)	P.D.	O.D.	F	W15~25	W26~50	W51~75	W76~100	P
FTPA	14	S2M	A	15~100	H	3, 4	8.91	8.40	12					
	15					3, 4	9.55	9.04						
	16					3~5	10.19	9.68	14					
	18					3~5	11.46	10.95						
	20					3~6	12.73	12.22	16					
	22					3~6	14.01	13.50	18					
	24					3~7	15.28	14.77	20					
	25					3~7	15.92	15.41	20					
	26					3~8	16.55	16.04	22					
	28					3~8	17.83	17.32						
	30					3~8	19.01	18.59						
	32			W≤dx5	P	4~10	20.37	19.86	25					
	36					4~10	22.92	22.41	28					
	40					4~12	25.46	24.96	30					
	44					5~13	28.01	27.50	32					
	48					5~15	30.56	30.05	35					
	50					5~16	31.83	31.32						
	60					5~22	38.20	37.69	44					
FTPA	14	S3M	A	15~100	H	4~6	13.37	12.61	16					
	15					4~6	14.32	13.56	18					
	16					4~7	15.28	14.52						
	18					4~8	17.19	16.43	20					
	20					4~8	19.10	18.34	22					
	22					4~10	21.01	20.25	25					
	24					4~10	22.92	22.16						
	25					4~11	23.87	23.11	28					
	26					5~11	24.83	24.07						
	28					5~13	26.74	25.98	30					
	30			W≤dx5	P	6~14	28.65	27.89	32					
	32					6~16	30.56	29.80	35					
	36					6~18	34.38	33.62	40					
	40					8~23	38.20	37.44	44					
	44					8~25	42.02	41.25	48					
	48					8~25	45.84	45.07	50					
	50					8~28	47.75	46.98	52					
	60					8~32	57.30	56.53	61					
FTPA	14	S5M	A	20~100	H	6~10	22.28	21.32	26					
	16					7~12	25.46	24.50	32					
	20					7~16	31.83	30.87	36					
	24					7~20	38.20	37.24	45					
	25					7~20	39.79	38.83						
	30			W≤dx5	P	10~26	47.75	46.79	52					
	32					10~28	50.93	49.97	55					
	36					10~30	57.30	56.34	61					
	40					10~38	63.66	62.70	67					

Order Example

Part Number	-	Pulley Shape	-	W	-	Shaft Bore Spec. / Inner Dia.
FTPA20S5M	-	A	-	W80	-	P16

Days to Ship

10 Days

Express B 8,00 EUR/ piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces

Alterations

Part Number	-	Pulley Shape	-	W	-	Shaft Bore Spec. / Inner Dia.	-	(KC90 / NFC / RFC / FC / WMC)
FTPA20S5M	-	A	-	W80	-	P16	-	KC90-WMC40-WA20

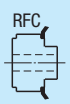
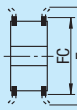
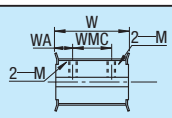
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Volume Discount is applicable to body price only.
Product price is the sum of body and shaft bore machining charge.
H bore machining is free of charge.

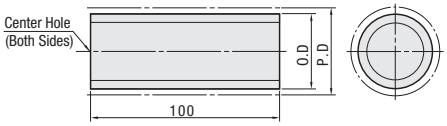
Alterations	Set Screw Angle	Flange not Attached	Flange Attached on One Side Only	Flange Cut	Tapped Hole
Code	KC90	NFC	RFC	FC	WMC
Spec.	 Changes an angle of set screw to 90°. The set screw hole is set at around 90° in order to avoid peaks.	 Flange is not attached. (Flange included)		 Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC35	 Adds a tapped hole. WMC≥M+3 WA≥M/2+3 WMC+WA≤W-(M/2+3) Ordering Code WMC20-WA5 Applicable to P hole specifications. 4 pieces of set screws are included When WA is not specified, WA=(W-WMC)/2.
Price Adder	Free of Charge	Free of Charge	Free of Charge	3,00	3,00

Bar-shaped Timing Pulleys
-MXL, XL, S2M, S3M, S5M Type-

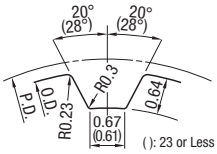
CAD Data

RoHS



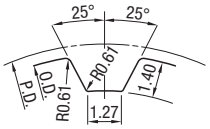


BMXL(MXL Type)

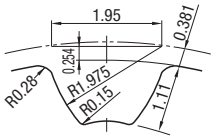


( ): 23 or Less Toothed Pulley

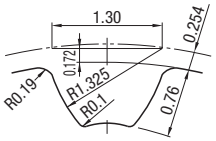
BXL(XL Type)



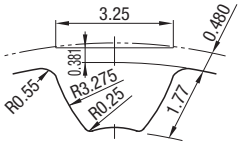
BS3M(S3M Type)



BS2M(S2M Type)



BS5M(S5M Type)



Tooth groove dimensions slightly change according to No. of teeth. M Material: 2017 Aluminum Alloy

Part Number Type	Teeth	P.D.	O.D.	€ Unit Price
BMXL (MXL Type)	10	6.47	5.96	
	11	7.11	6.61	
	12	7.76	7.25	
	13	8.41	7.90	
	14	9.06	8.55	
	15	9.70	9.19	
	16	10.35	9.84	
	17	11.00	10.49	
	18	11.64	11.14	
	19	12.29	11.78	
	20	12.94	12.43	
	21	13.58	13.07	
	22	14.23	13.72	
	23	14.88	14.37	
	24	15.52	15.02	
	25	16.17	15.66	
	26	16.82	16.31	
	27	17.46	16.96	
	28	18.11	17.60	
	30	19.40	18.90	
	32	20.70	20.19	
	34	21.99	21.48	
	36	23.29	22.78	
	38	24.58	24.07	
	40	25.87	25.36	
	42	27.17	26.66	
	44	28.46	27.95	
	46	29.75	29.24	
	48	31.05	30.54	
	50	32.34	31.83	
	60	38.81	38.30	
	72	46.57	46.06	

Part Number Type	Teeth	P.D.	O.D.	€ Unit Price
BXL (XL Type)	16	25.87	25.36	
	18	29.11	28.60	
	19	30.72	30.22	
	20	32.34	31.83	
	22	35.57	35.07	
	24	38.81	38.30	
	25	40.43	39.92	
	26	42.04	41.53	
	28	45.28	44.77	
	30	48.51	48.00	
	32	51.74	51.24	
	36	58.21	57.70	
	40	64.68	64.17	

Part Number Type	Teeth	P.D.	O.D.	€ Unit Price
BS2M (S2M Type)	14	8.91	8.40	
	15	9.55	9.04	
	16	10.19	9.68	
	18	11.46	10.95	
	20	12.73	12.22	
	22	14.01	13.50	
	24	15.28	14.77	
	25	15.92	15.41	
	26	16.55	16.04	
	28	17.83	17.32	
	30	19.10	18.59	
	32	20.37	19.86	
	36	22.92	22.41	
	40	25.46	24.96	
	44	28.01	27.50	
	48	30.56	30.05	
	50	31.83	31.32	
	60	38.20	37.69	

Part Number Type	Teeth	P.D.	O.D.	€ Unit Price
BS3M (S3M Type)	14	13.37	12.61	
	15	14.32	13.56	
	16	15.28	14.52	
	18	17.19	16.43	
	20	19.10	18.34	
	22	21.01	20.25	
	24	22.92	22.16	
	25	23.87	23.11	
	26	24.83	24.07	
	28	26.74	25.98	
	30	28.65	27.89	
	32	30.56	29.80	
	36	34.38	33.62	
	40	38.20	37.44	
	44	42.02	41.25	
	48	45.84	45.07	
	50	47.75	46.98	
	60	57.30	56.53	

Part Number Type	Teeth	P.D.	O.D.	€ Unit Price
BS5M (S5M Type)	14	22.28	21.32	
	16	25.46	24.50	
	20	31.83	30.87	
	24	38.20	37.24	
	25	39.79	38.83	
	30	47.75	46.79	
	32	50.93	49.97	
	36	57.30	56.34	
	40	63.66	62.70	

Order Example | Part Number | BMXL20

Days to Ship | 8 Days | Express A | 2,00 EUR/ piece | P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Flanged Idlers with Teeth
-MXL, XL Type-

■The shaft bore specification Ⓨ for the Timing Pulleys is applicable to the Idlers. ☞P.1121, ☞1123

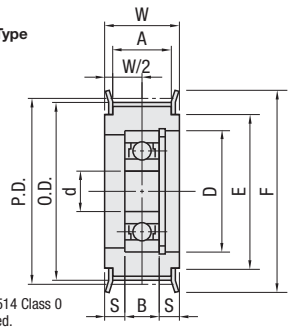
■Idler shafts (cantilever shafts) can be selected from ☞P.795~818
■Tensioners can be selected from ☞P.1271~1272



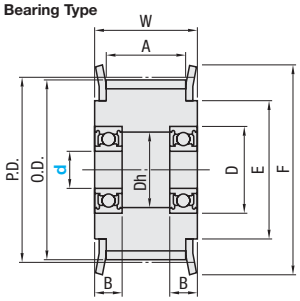
RoHS

Type		Ⓜ Material			Ⓢ
Center Bearing	Both Sides Bearing	Main Body	Flange	Bearing	Surface Treatment
AATF	AATFW	EN AW-2017/ AlCu4MgSi	EN AW-5052/ AlMg2,5	Steel	Clear Anodize
ANTF	-				Electroless Nickel Plating

·Center Bearing Type



·Both Sides Bearing Type



*Bearing Accuracy JIS B1514 Class 0
Ⓟ Bearings are press-fitted.

■MXL Type (Center Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price
Type	Teeth	Applicable belt									No.	D	B	
AATF	20	MXL019	3	12.94	12.43	18	11	6	10	3	693ZZx1	8	4	
	22	MXL019	3	14.23	13.72	18	11	6	10	3	693ZZx1	8	4	
	24	MXL019	3	15.52	15.02	20	13	6	10	3	693ZZx1	8	4	
	30	MXL019	5	19.40	18.90	25	16	6	10	3	695ZZx1	13	4	
	36	MXL019	5	23.29	22.78	28	18	6	10	3	695ZZx1	13	4	
	40	MXL019	6	25.87	25.36	30	20	6	10	2.5	696ZZx1	15	5	
		MXL025						7.5	11.5	3.25				
		MXL037						11	15	5				
	50	MXL019	8	32.34	31.84	35	25	6	10	2	698ZZx1	19	6	
		MXL025						7.5	11.5	2.75				
		MXL037						11	15	4.5				
	60	MXL019	10	38.81	38.30	44	32	6	10	2	6900ZZx1	22	6	
		MXL025						7.5	11.5	2.75				
		MXL037						11	15	4.5				

■MXL Type (Both Sides Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price
Type	Teeth	Applicable belt									No.	D	B	
AATFW	16	MXL019	3	10.35	9.84	14	8	6	10	5	673ZZx2	6	2.5	
	20	MXL019	3	12.94	12.43	18	11	6	10	5	673ZZx2	6	2.5	
	22	MXL025	3	14.23	13.72	18	11	7.5	11.5	5	673ZZx2	6	2.5	
		MXL037						11	15					
		MXL050						14	18					
	24	MXL025	4	15.52	15.02	20	13	7.5	11.5	6	674ZZx2	7	2.5	
		MXL037						11	15					
		MXL050						14	18					
	30	MXL019	4	19.40	18.90	25	16	6	10	6	674ZZx2	7	2.5	
	36	MXL025	5	23.29	22.78	28	18	7.5	11.5	11	695ZZx2	13	4	
		MXL037						11	15					
		MXL050						14	18					
	40	MXL025	5	25.87	25.36	30	20	7.5	11.5	11	695ZZx2	13	4	
		MXL037	6					11	15	13	696ZZx2	15	5	
		MXL050						14	18					
	50	MXL025	5	32.34	31.84	35	25	7.5	11.5	11	695ZZx2	13	4	
		MXL037	8					11	15	16.5	698ZZx2	19	6	
		MXL050						14	18					
	60	MXL025	5	38.81	38.30	44	32	7.5	11.5	11	695ZZx2	13	4	
		MXL037	10					11	15	19.5	6900ZZx2	22	6	
		MXL050						14	18					

Order Example

·Center Bearing Type

Part Number		
Type	Teeth	Applicable belt
AATF	40	MXL037

·Both Sides Bearing Type

Part Number					
Type	Teeth	-	Applicable belt	-	d
AATFW	22	-	MXL050	-	3

CAD Data

■XL Type (Center Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price	
Type	Teeth	Applicable belt									No.	D	B	AATF	ANTF
AATF ANTF	18	XL025	6	29.11	28.60	36	24	7.5	12.5	3.25	626ZZx1	19	6		
		XL031						9	14	4					
		XL037						11	16	5					
	20	XL025	6	32.34	31.83	40	27	7.5	12.5	3.25	626ZZx1	19	6		
		XL031						9	14	4					
		XL037						11	16	5					
	22	XL025	8	35.57	35.07	45	30	7.5	12.5	2.25	628ZZx1	24	8		
		XL031						9	14	3					
		XL037						11	16	4					
		XL050						14	19	5.5					
	25	XL025	10	40.43	39.92	48	35	7.5	12.5	2.25	6000ZZx1	26	8		
		XL031						9	14	3					
		XL037						11	16	4					
		XL050						14	19	5.5					
	28	XL025	10	45.28	44.77	55	40	7.5	12.5	2.25	6000ZZx1	26	8		
		XL031	10					9	14	2.5	6200ZZx1	30	9		
	30	XL025	10	48.51	48.00	55	40	7.5	12.5	2.25	6000ZZx1	26	8		
		XL031	10					9	14	2.5	6200ZZx1	30	9		
		XL037						11	16	3.5					
		XL050						14	19	5					
	36	XL025	12	58.21	57.70	67	50	7.5	12.5	2.25	6001ZZx1	28	8		
		XL031	12					9	14	2	6201ZZx1	32	10		
		XL037						11	16	3					
		XL050						14	19	4.5					

■XL Type (Both Sides Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price
Type	Teeth	Applicable belt									No.	D	B	
AATFW	16	XL025	5	25.87	25.36	32	20	7.5	12.5	11	695ZZx2	13	4	
		XL031						9	14					
		XL037						11	16					
		XL050						14	19					
	18	XL037	6	29.11	28.60	36	24	11	16	13	696ZZx2	15	5	
		XL050						14	19					
	20	XL037	8	32.34	31.83	40	27	11	16	16.5	698ZZx2	19	6	
		XL050						14	19					
	22	XL037	8	35.57	35.07	45	30	11	16	16.5	698ZZx2	19	6	
		XL050						14	19					
	25	XL037	10	40.43	39.92	48	35	11	16	19.5	6900ZZx2	22	6	
		XL050						14	19					
	28	XL037	10	45.28	44.77	55	40	11	16	19.5	6900ZZx2	22	6	
		XL050	12					14	19	25	6001ZZx2	28	8	
	30	XL037	10	48.51	48.00	55	40	11	16	19.5	6900ZZx2	22	6	
		XL050	12					14	19	25	6001ZZx2	28	8	
	36	XL037	10	58.21	57.70	67	50	11	16	19.5	6900ZZx2	22	6	
		XL050	12					14	19	25	6001ZZx2	28	8	

Days to Ship

■Center Bearing Type

- AATF: 8 Days | Express A | 2,00 EUR/piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

-ANTF: 10 Days

■Both Sides Bearing Type

- AATFW: 8 Days | Express A | 8,00 EUR/piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - (FC / NFC / LFC / RFC)

AATF25XL037 - FC43

Alteration	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC43	Flange is not attached. (Flange included)	Flange attached on the retaining ring side (RFC) or the opposite side (LFC).
Price Adder	3,00	Free of Charge	Free of Charge

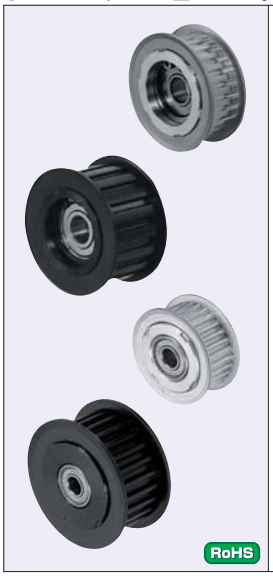
Flanged Idlers with Teeth

-L, H Type-

The shaft bore specification [Y] for the Timing Pulleys is applicable to the Idlers. P.1125,1127

Idler shafts (cantilever shafts) can be selected from P.795~818

Tensioners can be selected from P.1271~1272



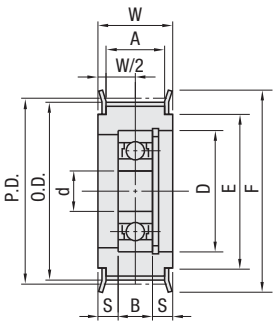
RoHS

Type		[M] Material			[S] Surface Treatment
Center Bearing	Both Sides Bearing	Main Body	Flange	Bearing	
AATF	AATFW	EN AW-7075/ AlZn5,5MgCu	EN AW-5052/ AlMg2,5	Steel	Clear Anodize
-	AKTFW				Hard Clear Anodize*
BATF	BATFW	1.1191/C45E	1.0330/DC01		Black Oxide
MATF	MATFW				Electroless Nickel Plating

*Hard Anodize Treatment: Film Hardness 300HV~

·Center Bearing Type

<Bearing 1 pc.>



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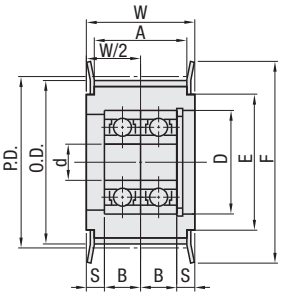
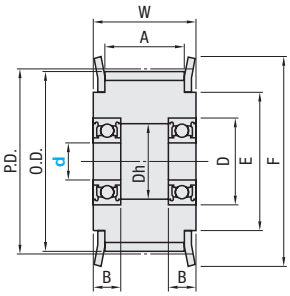


·Both Sides Bearing Type



Bearings are press-fitted.

*Bearing Accuracy JIS B1514 Class 0

■L Type (Center Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price		
Type	Teeth	Applicable belt									No.	D	B	AATF	BATF	MATF
AATF BATF MATF	16	L050	10	48.51	47.75	55	40	14	19	5	6200ZZx1	30	9			
		L075						21	26	8.5						
	18	L050	12	54.57	53.81	61	45	14	19	4.5	6201ZZx1	32	10			
		L075						21	26	8						
		L100						27	32	6	6201ZZx2					
	20	L050	12	60.64	59.88	67	50	14	19	4.5	6201ZZx1	32	10			
		L075						21	26	8						
		L100						27	32	6	6201ZZx2					
	22	L050	15	66.70	65.94	80	60	14	19	4	6202ZZx1	35	11			
	30	L050	15	90.96	90.20	99	80	14	19	4	6202ZZx1	35	11			

■L Type (Both Sides Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price		
Type	Teeth	Applicable belt									No.	D	B	AATFW	BATFW	MATFW
AATFW BATFW MATFW	14	L050	8	42.45	41.68	48	35	14	19	16.5	698ZZx2	19	6			
		L075						21	26							
		L100						27	32							
		L150						40	45							
	15	L050	8	45.48	44.72	48	35	14	19	16.5	698ZZx2	19	6			
		L075						21	26							
		L100						27	32							
		L150						40	45							
	16	L050	8	48.51	47.75	55	40	14	19	16.5	698ZZx2	19	6			
		L075						21	26							
		L100						27	32							
		L150						40	45							
	16	L050	10	48.51	47.75	55	40	14	19	19.5	6900ZZx2	22	6			
		L075						21	26							
		L100						27	32							
		L150						40	45							
	18	L050	12	54.57	53.81	61	45	14	19	25	6001ZZx2	28	8			
		L075						21	26							
		L100						27	32							
		L150						40	45							
	20	L075	15	60.64	59.88	67	50	21	26	29	6002ZZx2	32	9			
		L100						27	32							
		L150						40	45							
	22	L075	15	66.70	65.94	80	60	21	26	29	6002ZZx2	32	9			
		L100	20					27	32	37	6004ZZx2	42	12			
		L150						40	45							
	30	L050	12	90.96	90.20	99	80	14	19	22	6901ZZx2	24	6			
		L075	15					21	26	29	6002ZZx2	32	9			
		L100	20					27	32	37	6004ZZx2	42	12			
		L150						40	45							

Order Example

·Center Bearing Type

Part Number		
Type	Teeth	Applicable belt
AATF	22	L050

·Both Sides Bearing Type

Part Number				
Type	Teeth	-	Applicable belt	- d
BATFW	20	-	L100	- 15

■H Type (Center Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price		
Type	Teeth	Applicable belt									No.	D	B	AATF	BATF	MATF
AATF BATF MATF	14	H075	12	56.60	55.22	61	45	21	26	3	6201ZZx2	32	10			
		H100						27	32	6						
		H150	15					40	45	11.5	6202ZZx2	35	11			
		H200						54	59	18.5						
	16	H075	12	64.68	63.31	70	56	21	26	3	6201ZZx2	32	10			
		H100						27	32	6						
		H150	15					40	45	11.5	6202ZZx2	35	11			
		H200						54	59	18.5						
	18	H075	15	72.77	71.39	80	60	21	26	4	6002ZZx2	32	9			
	20	H075	15	80.85	79.48	87	67	21	26	4	6002ZZx2	32	9			
	22	H075	15	88.94	87.56	95	75	21	26	4	6002ZZx2	32	9			
	24	H075	15	97.02	95.65	104	84	21	26	4	6002ZZx2	32	9			
	25	H075	15	101.06	99.69	111	90	21	26	4	6002ZZx2	32	9			
	28	H075	15	113.19	111.82	123	102	21	26	4	6002ZZx2	32	9			

■H Type (Both Sides Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price			
Type	Teeth	Applicable belt									No.	D	B	AATFW	AKTFW	BATFW	MATFW
AATFW AKTFW BATFW MATFW	14	H075	12	56.60	55.22	61	45	21	26	27	6201ZZx2	32	10				
		H100						27	32								
		H150	15					40	45	30	6202ZZx2	35	11				
		H200						54	59								
	15	H075	12	60.64	59.27	67	50	21	26	27	6201ZZx2	32	10				
		H100						27	32								
		H150	15					40	45	30	6202ZZx2	35	11				
		H200						54	59								
	16	H075	12	64.68	63.31	70	56	21	26	27	6201ZZx2	32	10				
		H100						27	32	25	6001ZZx2	28	8				
		H150						40	45								
		H200						54	59	27	6201ZZx2	32	10				
	16	H100	15	64.68	63.31	70	56	27	32	29	6002ZZx2	32	9				
		H150						40	45								
		H200						54	59	30	6202ZZx2	35	11				
	18	H100	20	72.77	71.39	80	60	27	32	37	6004ZZx2	42	12				
		H150						40	45								
		H200						54	59	41	6204ZZx2	47	14				
	20	H100	20	80.85	79.48	87	67	27	32	37	6004ZZx2	42	12				
		H150						40	45	41	6204ZZx2	47	14				
		H200						54	59								
	22	H100	20	88.94	87.56	95	75	27	32	37	6004ZZx2	42	12				
		H150						40	45	41	6204ZZx2	47	14				
		H200						54	59								
	24	H100	25	97.02	95.65	104	84	27	32	42	6005ZZx2	47	12				
		H150						40	45	46	6205ZZx2	52	15				
		H200						54	59								
	25	H100	25	101.06	99.69	111	90	27	32	42	6005ZZx2	47	12				
		H150						40	45	46	6205ZZx2	52	15				
		H200						54	59								
	28	H100	25	113.19	111.82	123	102	27	32	42	6005ZZx2	47	12				
		H150	30					40	45	56	6206ZZx2	62	16				
		H200						54	59								

Days to Ship

■Center Bearing Type
- AATF / BATF / MATF

8 Days — Express A 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

■Both Sides Bearing Type
-AATFW / BATFW / MATFW

8 Days — Express A 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

-AKTFW

10 Days

Price

■Volume Discount (Round down to one Cent.) P.87

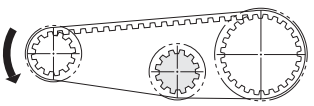
Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	(FC / NFC / LFC / RFC)
AATF20L100	-	FC65

Example



Driving Pulley — Flanged Idlers with Teeth — Driven Pulley

Be sure to use the idler on the loose side.
Install the idler as close as possible to the larger pulley.

Alteration	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment No surface treatment applied on the flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC65	Flange is not attached. (Flange included)	Flange attached on the retaining ring side (RFC) or the opposite side (LFC).
Price Adder	3,00	Free of Charge	Free of Charge

Flanged Idlers with Teeth
-S2M, S3M Type-

The shaft bore specification [Y] for the Timing Pulleys is applicable to the Idlers. P.1129-1131

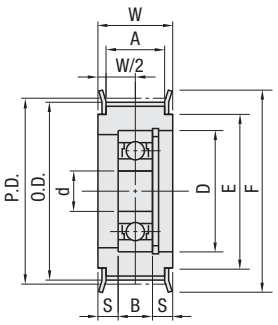
Idler shafts (cantilever shafts) can be selected from P.795~818
Tensioners can be selected from P.1271~1272



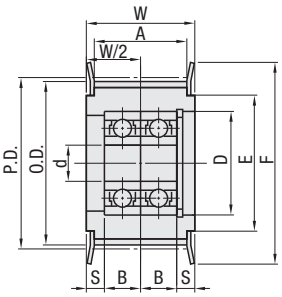
Type		Material			Surface Treatment
Center Bearing	Both Sides Bearing	Main Body	Flange	Bearing	
AHTF	AHTFW	EN AW-2017/ AlCu5MgSi	EN AW-5052/ AlMg2,5	Steel	Clear Anodize
-	KHTFW				Hard Clear Anodize*
NHTF	NHTFW				Electroless Nickel Plating
MHTF	-	1.1191/ C45E	1.0330/ DC01		Electroless Nickel Plating
SHTF	SHTFW	1.4301/X5CrNi18-10		Stainless Steel	-

*Hard Anodize Treatment: Film Hardness 300HV~

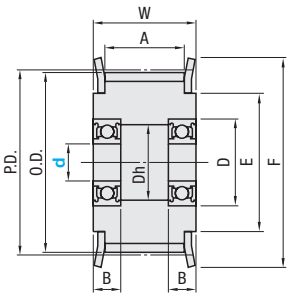
·Center Bearing Type
<Bearing 1 pc.>



<Bearing 2 pcs.>



·Both Sides Bearing Type



RoHS

Bearings are press-fitted.

*Bearing Accuracy JIS B1514 Class 0

■S2M Type (Center Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price	
Type	Teeth	Applicable belt									No.	D	B	AHTF	MHTF
AHTF MHTF	40	S2M040	5	25.46	24.96	30	20	5	9	2.5	695ZZx1	13	4		
		S2M060	6					7	11	3	696ZZx1	15	5		
		S2M100						11	15	5					
	48	S2M040	6	30.56	30.05	35	25	5	9	2	696ZZx1	15	5		
		S2M060						7	11	3					
	50	S2M040	6	31.83	31.32	35	25	5	9	2	696ZZx1	15	5		
		S2M060	8					7	11	2.5	698ZZx1	19	6		
	60	S2M040	10	38.20	37.69	44	32	5	9	1.5	6900ZZx1	22	6		
		S2M060						7	11	2.5					

■S3M Type (Both Sides Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price		
Type	Teeth	Applicable belt									No.	D	B	AHTFW	NHTFW	SHTFW
AHTFW NHTFW SHTFW	20	S2M040	3	12.73	12.22	16	10	5	9	5	673ZZx2	6	2.5			
		S2M060						7	11							
		S2M100	4					11	15	6	674ZZx2	7				
	30	S2M040	3	19.01	18.59	22	14	5	9	5	673ZZx2	6	2.5			
		S2M060						7	11							
		S2M100	4					11	15	6	674ZZx2	7				
	32	S2M040	3	20.37	19.86	25	16	5	9	5	673ZZx2	6	2.5			
		S2M060						7	11							
		S2M100	4					11	15	9.5	694ZZx2	11	4			
	36	S2M040	4	22.92	22.41	28	18	5	9	6	674ZZx2	7	2.5			
		S2M060						7	11							
		S2M100	5					11	15	11	695ZZx2	13	4			
	40	S2M040	4	25.46	24.96	30	20	5	9	6	674ZZx2	7	2.5			
		S2M060	5					7	11	11	695ZZx2	13	4			
		S2M100	6					11	15	13	696ZZx2	15	5			
	48	S2M100	8	30.56	30.05	35	25	11	15	16.5	698ZZx2	19	6			
	50	S2M100	8	31.83	31.32	35	25	11	15	16.5	698ZZx2	19	6			
	60	S2M100	8	38.20	37.69	44	32	11	15	16.5	698ZZx2	19	6			

Order Example

·Center Bearing Type

Part Number		
Type	Teeth	Applicable belt
AHTF	40	S2M060

·Both Sides Bearing Type

Part Number					
Type	Teeth	-	Applicable belt	-	d
AHTFW	32	-	S3M100	-	8

■S3M Type (Center Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions No.	D	B	€ Unit Price AHTF	NHTF	SHTF
AHTF NHTF SHTF	20	S3M060	5	19.10	18.34	22	14	7	11	3	685ZZx1	11	5			
		S3M100						11	15	2.5	685ZZx2					
	24	S3M060	5	22.92	22.16	25	16	7	11	3.5	695ZZx1	13	4			
		S3M100						11	15	3.5	695ZZx2					
	25	S3M060	5	23.87	23.11	28	18	7	11	3.5	695ZZx1	13	4			
	26	S3M060	6	24.83	24.07	28	18	7	11	3	696ZZx1	15	5			
	28	S3M060	6	26.74	25.98	30	20	7	11	3	696ZZx1	15	5			
	30	S3M060	6	28.65	27.89	32	23	7	11	3	696ZZx1	15	5			
		S3M100						11	15	4.5	626ZZx1	19	6			
	32	S3M060	8	30.56	29.80	35	25	7	11	2.5	698ZZx1	19	6			
		S3M100						11	15	4.5						
	36	S3M060	8	34.38	33.62	40	28	7	11	2.5	698ZZx1	19	6			
	40	S3M060	10	38.20	37.44	44	32	7	11	2.5	6900ZZx1	22	6			
	44	S3M060	10	42.02	41.25	48	36	7	11	2.5	6900ZZx1	22	6			
	48	S3M060	10	45.84	45.07	50	38	7	11	2.5	6900ZZx1	22	6			
	50	S3M060	10	47.75	46.98	52	40	7	11	2.5	6900ZZx1	22	6			
	60	S3M060	10	57.30	56.53	61	46	7	11	2.5	6900ZZx1	22	6			

■S3M Type (Both Sides Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions No.	D	B	€ Unit Price AHTFW	KHTFW	SHTFW
AHTFW KHTFW SHTFW	20	S3M060	3	19.10	18.34	22	14	7	11	5	673ZZx2	6	2.5			
		S3M100	4					11	15	6	674ZZx2	7				
		S3M150	5					17	21	9	685ZZx2	11	5			
	24	S3M060	5	22.92	22.16	25	16	7	11	11	695ZZx2	13	4			
		S3M100						11	15							
		S3M150						17	21							
	25	S3M100	6	23.87	23.11	28	18	11	15	13	696ZZx2	15	5			
		S3M150						17	21							
	26	S3M100	6	24.83	24.07	28	18	11	15	13	696ZZx2	15	5			
		S3M150						17	21							
	28	S3M100	6	26.74	25.98	30	20	11	15	13	696ZZx2	15	5			
		S3M150						17	21							
	30	S3M100	6	28.65	27.89	32	23	11	15	13	696ZZx2	15	5			
		S3M150						17	21							
	32	S3M100	8	30.56	29.80	35	25	11	15	16.5	698ZZx2	19	6			
		S3M150						17	21							
	36	S3M100	10	34.38	33.62	40	28	11	15	19.5	6900ZZx2	22	6			
		S3M150						17	21							
	40	S3M100	10	38.20	37.44	44	32	11	15	19.5	6900ZZx2	22	6			
		S3M150						17	21							
	44	S3M100	10	42.02	41.25	48	36	11	15	19.5	6900ZZx2	22	6			
		S3M150						17	21							
	48	S3M100	10	45.84	45.07	50	38	11	15	19.5	6900ZZx2	22	6			
		S3M150						17	21							
	50	S3M100	10	47.75	46.98	52	40	11	15	19.5	6900ZZx2	22	6			
		S3M150						17	21							
	60	S3M100	10	57.30	56.53	61	46	11	15	19.5	6900ZZx2	22	6			
		S3M150	12					17	21	25	6001ZZx2	28	8			

Days to Ship

■Center Bearing Type
- AHTF / MHTF / SHTF

8 Days — Express A — 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

-NHTF

10 Days

■Both Sides Bearing Type
- AHTFW / SHTFW

8 Days — Express A — 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces

-KHTFW / NHTFW

10 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - (FC / NFC / LFC / RFC)

AHTF40S2M060 - FC28

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment Not available for Stainless Steel Type. No surface treatment applied on flange circumference. FC≥(O.D.)+2 FC≤F-2 Ordering Code FC28	Flange is not attached. (Flange included)	Flange attached on the retaining ring side (RFC) or the opposite side (LFC). LFC RFC
Price Adder	3,00	Free of Charge	Free of Charge

Flanged Idlers with Teeth

-S5M, S8M, S14M Type-

The shaft bore specification Y for the Timing Pulleys is applicable to the Idlers. P.1133~1138

Idler shafts (cantilever shafts) can be selected from P.795~818

Tensioners can be selected from P.1271~1272



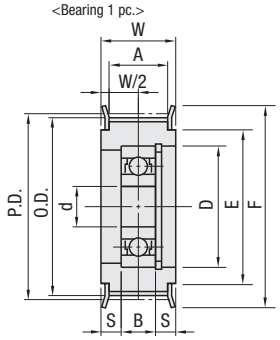
RoHS

Type		Material					Surface Treatment	
Center Bearing	Both Sides Bearing	Main Body S5M	Main Body S8M	Main Body S14M	Flange	Bearing		
AHTF	AHTFW	EN AW-7075/ AlZn5,5MgCu	EN AW-7075/ AlZn5,5MgCu	-	EN AW-5052/ AlMg2,5	Steel	Clear Anodize	
KHTF	KHTFW						Hard Clear Anodize**	
BHTF	BHTFW	1.1191/C45E			1.0330/DC01		Black Oxide	
MHTF	MHTFW						Electroless Nickel Plating	
SHTF	-	1.4301/X5CrNi18-10				Stainless Steel	-	

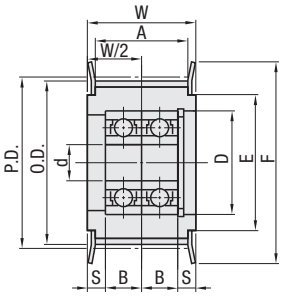
**Hard Anodize Treatment: Film Hardness 300HV~

·Center Bearing Type

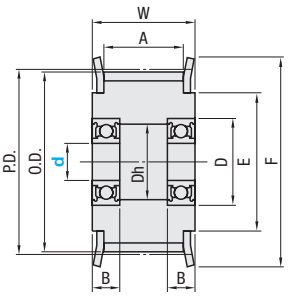
<Bearing 1 pc.>



<Bearing 2 pcs.>



·Both Sides Bearing Type



Bearings are press-fitted. *Bearing Accuracy JIS B1514 Class 0

■S5M Type (Center Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions No.	D	B	€ Unit Price AHTF	KHTF	BHTF	MHTF	SHTF
AHTF KHTF BHTF MHTF SHTF	16	S5M100	6	25.46	24.50	32	20	11	16	5	606ZZx1	17	6					
	18	S5M100	8	28.65	27.69	33	22	11	16	5	698ZZx1	19	6					
	20	S5M100	8	31.83	30.87	36	24	11	16	5	698ZZx1	19	6					
		S5M150						17	22	5	698ZZx2							
	22	S5M100	8	35.01	34.05	40	27	11	16	4	628ZZx1	24	8					
		S5M150						17	22	3	628ZZx2							
	24	S5M100	10	38.20	37.24	45	30	11	16	4	6000ZZx1	26	8					
		S5M150						17	22	3	6000ZZx2							
	25	S5M100	10	39.79	38.83	45	30	11	16	4	6000ZZx1	26	8					
		S5M150						17	22	3	6000ZZx2							
	26	S5M100	10	41.38	40.42	48	35	11	16	3.5	6200ZZx1	30	9					
	28	S5M100	10	44.56	43.60	48	35	11	16	3.5	6200ZZx1	30	9					
		S5M150						17	22	6.5								
	30	S5M100	12	47.75	46.79	52	36	11	16	3	6201ZZx1	32	10					
		S5M150						17	22	6								
	32	S5M100	12	50.93	49.97	55	40	11	16	3	6201ZZx1	32	10					
		S5M150	10					17	22	3	6000ZZx2	26	8					
	36	S5M100	12	57.30	56.34	61	45	11	16	3	6201ZZx1	32	10					
	40	S5M100	12	63.66	62.70	67	50	11	16	3	6201ZZx1	32	10					

■S5M Type (Both Sides Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions No.	D	B	€ Unit Price AHTFW	KHTFW	BHTFW	MHTFW
AHTFW KHTFW BHTFW MHTFW	16	S5M150	6	25.46	24.50	32	20	17	22	14.5	606ZZx2	17	6				
		S5M250						27	32								
	18	S5M150	8	28.65	27.69	33	22	17	22	16.5	698ZZx2	19	6				
		S5M250						27	32								
	20	S5M150	8	31.83	30.87	36	24	17	22	16.5	698ZZx2	19	6				
		S5M250						27	32								
	22	S5M150	8	35.01	34.05	40	27	17	22	19.5	608ZZx2	22	7				
		S5M250						27	32								
	24	S5M150	8	38.20	37.24	45	30	17	22	19.5	608ZZx2	22	7				
		S5M250						27	32								
	25	S5M100	6	39.79	38.83	45	30	11	16	13	696ZZx2	15	5				
		S5M150						17	22								
		S5M250						27	32	14.5	606ZZx2	17	6				
	25	S5M100	8	39.79	38.83	45	30	11	16	16.5	698ZZx2	19	6				
		S5M150						17	22								
		S5M250						27	32	19.5	608ZZx2	22	7				
	26	S5M150	10	41.38	40.42	48	35	17	22	25	6200ZZx2	30	9				
		S5M250						27	32								
	28	S5M100	10	44.56	43.60	48	35	11	16	19.5	6900ZZx2	22	6				
		S5M150						17	22								
		S5M250						27	32	25	6200ZZx2	30	9				
	30	S5M150	12	47.75	46.79	52	36	17	22	25	6001ZZx2	28	8				
		S5M250						27	32	27	6201ZZx2	32	10				
	32	S5M150	12	50.93	49.97	55	40	17	22	25	6001ZZx2	28	8				
		S5M250						27	32	27	6201ZZx2	32	10				
	36	S5M150	15	57.30	56.34	61	45	17	22	29	6002ZZx2	32	9				
		S5M250						27	32	30	6202ZZx2	35	11				
	40	S5M150	15	63.66	62.70	67	50	17	22	29	6002ZZx2	32	9				
		S5M250						27	32	30	6202ZZx2	35	11				

■S8M Type (Center Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions No.	D	B	€ Unit Price AHTF	KHTF	BHTF	MHTF
AHTF KHTF BHTF MHTF	20	S8M150	12	50.93	49.56	58	40	17	22	6	6201ZZx1	32	10				
		S8M250	15					28	33	5.5	6202ZZx2	35	11				
	22	S8M150	12	56.02	54.65	61	45	17	22	6	6201ZZx1	32	10				
	24	S8M150	12	61.12	59.74	67	50	17	22	6	6201ZZx1	32	10				
		S8M250						28	33	6.5	6201ZZx2						
		S8M300	15					33	38	8	6202ZZx2	35	11				
		S8M400						44	49	13.5							
	25	S8M150	15	63.66	62.29	70	56	17	22	5.5	6202ZZx1	35	11				
	26	S8M150	15	66.21	64.84	74	58	17	22	5.5	6202ZZx1	35	11				
	28	S8M150	15	71.30	69.93	80	60	17	22	5.5	6202ZZx1	35	11				
	30	S8M150	15	76.39	75.02	87	67	17	22	5.5	6202ZZx1	35	11				
		S8M250						28	33	5.5	6202ZZx2						
		S8M300	20					33	38	5	6204ZZx2	47	14				
		S8M400						44	49	10.5							
	32	S8M150	20	81.49	80.12	87	67	17	22	4	6204ZZx1	47	14				
	34	S8M150	20	86.58	85.21	95	75	17	22	4	6204ZZx1	47	14				
	40	S8M150	25	101.86	100.49	111	90	17	22	3.5	6205ZZx1	52	15				

■S8M Type (Both Sides Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions No.	D	B	€ Unit Price AHTFW	KHTFW	BHTFW	MHTFW
AHTFW KHTFW BHTFW MHTFW	22	S8M250	12	56.02	54.65	61	45	28	33	27	6201ZZx2	32	10				
		S8M300						33	38								
		S8M400						44	49								
	24	S8M250	12	61.12	59.74	67	50	28	33	27	6201ZZx2	32	10				
		S8M300						33	38								
		S8M400						44	49								
	25	S8M250	12	63.66	62.29	70	56	28	33	27	6201ZZx2	32	10				
		S8M300						33	38								
		S8M400						44	49								
	26	S8M150	12	66.21	64.84	74	58	17	22	25	6001ZZx2	28	8				
		S8M250						28	33								
		S8M300						33	38	27	6201ZZx2	32	10				
		S8M400						44	49								
	28	S8M250	15	71.30	69.93	80	60	28	33	30	6202ZZx2	35	11				
		S8M300						33	38								
		S8M400						44	49								
	30	S8M150	15	76.39	75.02	87	67	17	22	29	6002ZZx2	32	9				
		S8M250						28	33								
		S8M300						33	38	30	6202ZZx2	35	11				
		S8M400						44	49								
	30	S8M250	20	76.39	75.02	87	67	28	33	37	6004ZZx2	42	12				
		S8M300						33	38	41	6204ZZx2	47	14				
		S8M400						44	49								
	32	S8M250	20	81.49	80.12	87	67	28	33	41	6204ZZx2	47	14				
		S8M300						33	38								
		S8M400						44	49								
	34	S8M250	20	86.58	85.21	95	75	28	33	41	6204ZZx2	47	14				
		S8M300						33	38								
		S8M400						44	49								
	40	S8M250	25	101.86	100.49	111	90	28	33	43	6005ZZx2	47	12				
		S8M300						33	38	47	6205ZZx2	52	15				
		S8M400						44	49								

■S14M Type (Both Sides Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions No.	D	B	€ Unit Price BHTFW
BHTFW	28	S14M400	30	124.78	121.98	136	101	46	53	57	6206ZZx2	62	16	
		S14M600						67	74					
		S14M400	40	124.78	121.98	136	101	46	53	73.5	6208ZZx2	80	18	
		S14M600						67	74					

Order Example

-Center Bearing Type

Part Number

Type	Teeth	Applicable belt
AHTF	30	S5M100

-Both Sides Bearing Type

Part Number

Type	Teeth	-	Applicable belt	-	d
BHTFW	28	-	S14M400	-	30

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Please request a quotation for orders of 5 or more pieces of S14M Type.

Days to Ship

- AHTF / BHTF / MHTF / SHTF: 8 Days — Express A 2,00 EUR/piece — P.88
  A Express Charge of 5,40 EUR for 3 or more identical pieces.
- KHTF: 10 Days

- AHTFW / BHTFW (Except S14M Type) / MHTFW: 8 Days — Express A 8,00 EUR/piece — P.88
  A Express Charge of 21,60 EUR for 3 or more identical pieces.
- BHTFW (S14M) / KHTFW: 10 Days

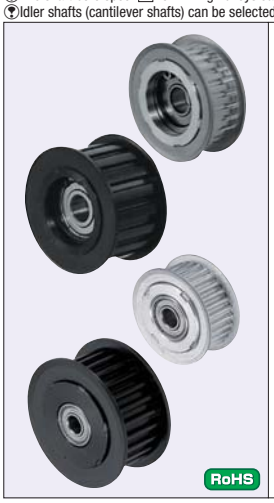
Alterations

Part Number - d - (FC-NFC / LFC / RFC)
AHTF28S5M100 - FC46

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment ⊗Not available for Stainless Steel Type. ?No surface treatment applied on flange circumference. ?FC≥(O.D.)+2 ?FC≤F-2 Ordering Code FC46	Flange is not attached. (Flange included)	Flange attached on the retaining ring side (RFC) or the opposite side (LFC). LFC RFC
Price Adder	S5M, S8M Type: 3,00 S14M Type: 8,00	Free of Charge	Free of Charge

Flanged Idlers with Teeth
-P2M, P3M, P5M, P8M, 2GT, 3GT, 5GT, 8YU Type-

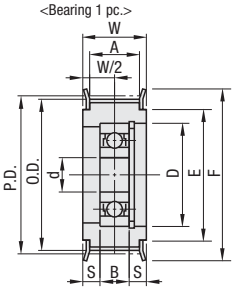
Ⓨ The shaft bore spec. Ⓨ for Timing Pulleys can also be selected. P.1115~1120, 1141~1146
Ⓨ Idler shafts (cantilever shafts) can be selected from P.795~818



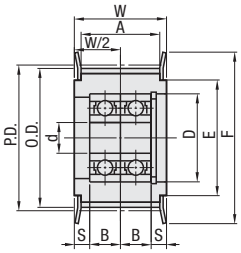
Type				Material			Surface Treatment
P2M / P3M / P5M / P8M		2GT / 3GT / 5GT / 8YU					
Center Bearing	Both Sides Bearing	Center Bearing	Both Sides Bearing	Main Body	Flange	Bearing	
APTF	APTFW	AGTF	AGTFW	(*1) EN AW-2017/ AlCu4MgSi	EN AW-5052/ AlMg2,5	Steel	Clear Anodize
-	KPTFW	-	-				Hard Clear Anodize**
BPTF	BPTFW	BGTF	BGTFW	(*2) 1.1191/ C45E	1.0330/DC01		Black Oxide

**Hard Anodize Treatment: Film Hardness 300HV~
*Bearing Accuracy JIS B1514 Class 0
Ⓨ Bearings are press-fitted.
(*1) Body material of P8M is 7075 Aluminum Alloy.
(*2) Material of P_M is equivalent in 1035 Carbon Steel.

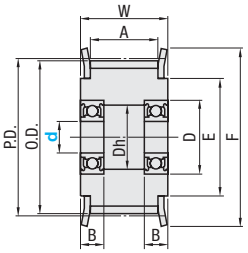
·Center Bearing Type
<Bearing 1 pc.>



<Bearing 2 pcs.>



·Both Sides Bearing Type



■P2M / P3M / P5M / P8M Type (Center Bearing Type)
*E and F dimensions in ( ) are for BPTF.

Part Number			Shaft Ø d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price	
Type	Teeth	Applicable belt									No.	D	B	APTF	BPTF
APTF BPTF	40	P2M060	6	25.46	24.96	32	21.2	7.5	11.5	3.25	696ZZx1	15	5		
	30	P3M100	6	28.65	27.89	34	23	12	16	5	626ZZx1	19	6		
		P3M150						17	21	4.5	626ZZx2				
	20	P5M100	8	31.83	30.69	35	25	11.6	16	5	698ZZx1	19	6		
		P5M150						16.6	21	5	698ZZx2				
	28	P5M100	10	44.56	43.42	50 (52)*	38 (37.5)*	11.6	16	3.5	6200ZZx1	30	9		
		P5M150						16.6	21	6					
	20	P8M150	12	50.93	49.56	55	40	16.8	22	6	6201ZZx1	32	10		
		P8M250	15					27.8	33	5.5	6202ZZx2	35	11		
	24	P8M250	12	61.12	59.74	67	50	27.8	33	6.5	6201ZZx2	32	10		
	30	P8M150	15	76.39	75.02	83 (82)*	63 (67)*	16.8	22	5.5	6202ZZx1	35	11		
		P8M250						27.8	33	5.5	6202ZZx2				

■P5M / P8M Type (Both Sides Bearing Type)
* E and F dimensions in ( ) are for BPTFW.

Part Number			Shaft Ø d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price		
Type	Teeth	Applicable belt									No.	D	B	APTFW	KPTFW	BPTFW
APTFW KPTFW BPTFW	25	P5M100	6	39.79	38.65	44 (45)*	32 (33.5)*	11.6	16	13	696ZZx2	15	5			
		P5M150						16.6	21							
		P5M100	8					11.6	16	16.5	698ZZx2	19	6			
		P5M150						16.6	21							
	28	P5M100	10	44.56	43.42	50 (52)*	38 (37.5)*	11.6	16	19.5	6900ZZx2	22	6			
		P5M150						16.6	21							
	30	P5M150	12	47.75	46.60	55	42.5	16.6	21	24	6001ZZx2	28	8			
	36	P5M150	15	57.30	56.15	64	50	16.6	21	28	6002ZZx2	32	9			
	26	P8M150	12	66.21	64.84	74 (73)*	58 (56)*	16.8	22	24	6001ZZx2	28	8			
		P8M250						27.8	33							
	30	P8M150	15	76.39	75.02	83 (82)*	63 (67)*	16.8	22	28	6002ZZx2	32	9			
		P8M250						27.8	33							
		P8M250	20					27.8	33	36	6004ZZx2	42	12			

Alterations

Part Number	-	(FC / NFC / LFC / RFC)
APTF30P8M250	-	NFC

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC / RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment ⊗Not applicable to all types of P2M, P3M and Steel Type of P5M, P8M. (No surface treatment applied on flange circumference.) ⓎFC≥(O.D.)+2 ⓎFC≤F-2 Ordering Code FC35	Shipped without flanges pre-attached. (Flange included)	Flange swage attached on the retaining ring side (RFC) or the opposite side (LFC) only prior o shipping.
Price Adder	3,00	Free of charge (3,00)	Free of charge (3,00)

Ⓨ For AGTF, BGTF, AGTFW and BGTFW, alterations of NFC, LFC or RFC applied with 3,00 EUR each.

CAD Data

■2GT / 3GT / 5GT / 8YU (Center Bearing Type)

Part Number			Shaft Ø	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price Qty.1~9	
Type	Teeth	Applicable belt	d								No.	D	B	AGTF	BGTF
AGTF BGTF	40	GT2060	6	25.46	24.96	30	21	7.0	10.3	3.65	676ZZx1	10	3		
		GT2090	6				21	10.0	13.3	5.15	676ZZx1	10	3		
	30	GT3060	6	28.65	27.89	32	23	7.3	11.0	3.00	686ZZx1	13	5		
		GT3090	6				23	10.3	14.0	4.50	686ZZx1	13	5		
	20	GT5090	8	31.83	30.69	35	24	10.3	14.0	5.25	678ZZx1	12	3.5		
		GT5120	8				24	13.3	17.0	5.00	678ZZx2	12	3.5		
	24	GT5090	10	38.20	37.06	42	30	10.3	14.0	4.50	6800ZZx1	19	5		
		GT5120	10				30	13.3	17.0	3.50	6800ZZx2	19	5		
	28	GT5090	10	44.56	43.42	48	36	10.3	14.0	4.50	6800ZZx1	19	5		
		GT5120	10				36	13.3	17.0	6.00	6800ZZx1	19	5		
	30	GT5090	12	47.75	46.61	51	39	10.3	14.0	4.50	6801ZZx1	21	5		
		GT5120	12				39	13.3	17.0	6.00	6801ZZx1	21	5		
	20	YU8150	20	50.93	49.56	62	40	16.7	23.0	8.00	6804ZZx1	32	7		
		YU8200	20				40	21.7	28.0	7.00	6804ZZx2	32	7		
	30	YU8150	25	76.39	75.02	85	64	16.7	23.0	8.00	6805ZZx1	37	7		
		YU8200	25				64	21.7	28.0	7.00	6805ZZx2	37	7		
		YU8250	25				64	26.7	33.0	9.50	6805ZZx2	37	7		

■2GT / 3GT / 5GT / 8YU (Both Sides Bearing Type)

For orders larger than indicated quantity, please request a quotation.

Part Number			Shaft Ø	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price Qty.1~9	
Type	Teeth	Applicable belt	d								No.	D	B	AGTFW	BGTFW
AGTFW BGTFW	30	GT2040	5	19.10	18.59	24	15	5.0	8.3	7	675ZZx2	8	2.5		
		GT2060	5				15	7.0	10.3	7	675ZZx2	8	2.5		
		GT2090	5				15	10.0	13.3	7	675ZZx2	8	2.5		
	20	GT3090	5	19.10	18.34	23	14	10.3	14.0	7	675ZZx2	8	2.5		
		GT3150	5				14	16.3	20.0	7	675ZZx2	8	2.5		
	24	GT3090	6	22.92	22.16	26	18	10.3	14.0	9	676ZZx2	10	3		
		GT3150	6				18	16.3	20.0	9	676ZZx2	10	3		
	30	GT3090	8	28.65	27.89	32	23	10.3	14.0	11	678ZZx2	12	3.5		
		GT3150	8				23	16.3	20.0	11	678ZZx2	12	3.5		
	20	GT5120	8	31.83	30.69	35	24	13.3	17.0	11	678ZZx2	12	3.5		
		GT5150	8				24	16.3	20.0	11	678ZZx2	12	3.5		
	30	GT5120	8	47.75	46.61	51	39	13.3	17.0	11	678ZZx2	12	3.5		
		GT5150	12				39	16.3	20.0	18.5	6801ZZx2	21	5		
	32	GT5120	12	50.93	49.79	55	42	13.3	17.0	18.5	6801ZZx2	21	5		
		GT5150	12				42	16.3	20.0	18.5	6801ZZx2	21	5		
	36	GT5120	15	57.30	56.16	61	49	13.3	17.0	21.5	6802ZZx2	24	5		
		GT5150	15				49	16.3	20.0	21.5	6802ZZx2	24	5		
	30	YU8200	25	76.39	75.02	85	64	21.7	28.0	34.5	6805ZZx2	37	7		
		YU8250	25				64	26.7	33.0	34.5	6805ZZx2	37	7		

For orders larger than indicated quantity, please request a quotation.

Order Example

·Center Bearing Type

Part Number		
Type	Teeth	Applicable belt
APTF	20	P5M100
AGTF	30	GT5090

·Both Sides Bearing Type

Part Number					
Type	Teeth	-	Applicable belt	-	d
APTFW	25	-	P5M150	-	6
AGTFW	20	-	GT3090	-	4

Days to Ship

- APTF / BPTF / APTFW / BPTFW

8 Days | Express A | 2,00 EUR/ piece | P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

- AGTF / BGTF / AGTFW / BGTFW

8 Days

- KPTFW

10 Days

Price

- APTF / BPTF / APTFW / BPTFW / KPTFW

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Flanged Idlers with Teeth

-T5 / T10 / AT5 / AT10 Type-

The shaft bore specification [Y] for the Timing Pulleys is applicable to the Idlers. P.1147~1152
Idler shafts (cantilever shafts) can be selected from P.795~818

RoHS

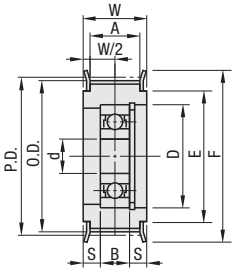


Type		Material			S
Center Bearing	Both Sides Bearing	Main Body	Flange	Bearing	Surface Treatment
AHTF	AHTFW	EN AW-2017/ AlCu4MgSi	EN AW-5052/ AlMg2,5	Steel	Clear Anodize
-	KHTFW				Hard Clear Anodize*

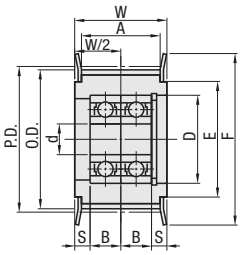
*Hard Anodize Treatment: Film Hardness 300HV~

·Center Bearing Type

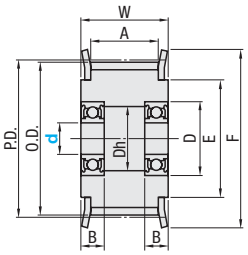
<Bearing 1 pc.>



<Bearing 2 pcs.>



·Both Sides Bearing Type



Bearings are press-fitted. *Bearing Accuracy JIS B1514 Class 0

■T5 Type (Center Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price
Type	Teeth	Applicable belt									No.	D	B	
AHTF	18	T5100	8	28.65	27.80	33	22	11	16	5	698ZZx1	19	6	
	20	T5100	8	31.83	31.00	36	24	11	16	5	698ZZx1	19	6	
		T5150						17	22	5	698ZZx2			
	22	T5100	10	35.01	34.25	40	27	11	16	5	6900ZZx1	22	6	
	24	T5100	10	38.20	37.40	45	30	11	16	4	6000ZZx1	26	8	
	25	T5100	10	39.79	39.00	45	30	11	16	4	6000ZZx1	26	8	
	28	T5100	10	44.56	43.75	48	35	11	16	3.5	6200ZZx1	30	9	
		T5150						17	22	6.5				
	30	T5100	12	47.75	46.95	52	36	11	16	3	6201ZZx1	32	10	
		T5150						17	22	6				

■T5 Type (Both Sides Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions			€ Unit Price
Type	Teeth	Applicable belt									No.	D	B	
AHTFW	18	T5100	6	28.65	27.80	33	22	11	16	13	696ZZx2	15	5	
		T5150						17	22					
		T5200	8					22	27	16.5	698ZZx2	19	6	
		T5250						27	32					
	20	T5100	8	31.83	31.00	36	24	11	16	16.5	698ZZx2	19	6	
		T5150						17	22					
		T5200						22	27					
		T5250						27	32					
	22	T5150	10	35.01	34.25	40	27	17	22	19.5	6900ZZx2	22	6	
		T5200						22	27					
		T5250						27	32					
	24	T5100	10	38.20	37.40	45	30	11	16	19.5	6900ZZx2	22	6	
		T5150						17	22					
		T5200						22	27	23	6000ZZx2	26	8	
		T5250						27	32					
	25	T5150	10	39.79	39.00	45	30	17	22	23	6000ZZx2	26	8	
		T5200						22	27					
		T5250						27	32					
	28	T5150	10	44.56	43.75	48	35	17	22	25	6200ZZx2	30	9	
		T5200						22	27					
		T5250						27	32					
	30	T5150	12	47.75	46.95	52	36	17	22	25	6001ZZx2	28	8	
		T5200						22	27	27	6201ZZx2	32	10	
		T5250						27	32					

■T10 Type (Center Bearing Type)

Part Number			Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions			€ Unit Price
Type	Teeth	Applicable belt									No.	D	B	
AHTF	16	T10150	12	50.93	49.05	58	40	17	22	6	6201ZZx1	32	10	
		T10250	15					27	32	5	6202ZZx2	35	11	
	18	T10150	12	57.30	55.45	61	45	17	22	6	6201ZZx1	32	10	
	20	T10150	12	63.66	61.80	67	50	17	22	6				
		T10250	15					27	32	5	6202ZZx2	35	11	
	22	T10150	15	70.03	68.15	80	60	17	22	5.5	6202ZZx1	35	11	
	24	T10150	15	76.39	74.55	87	67	17	22	5.5	6202ZZx1	35	11	
	26	T10150	15	82.76	80.90	87	67	17	22	5.5	6202ZZx1	35	11	

Order Example

·Center Bearing Type

Part Number		
Type	Teeth	Applicable belt
AHTF	25	T5100

·Both Sides Bearing Type

Part Number				
Type	Teeth	-	Applicable belt	- d
AHTFW	24	-	T5200	- 10

Days to Ship

- AHTF: 8 Days — Express A 2,00 EUR/ piece P.88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

- AHTFW: 8 Days — Express A 8,00 EUR/ piece P.88
A Express Charge of 21,60 EUR for 3 or more identical pieces.

- KHTFW: 10 Days

■T10 Type (Both Sides Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions No.	D	B	€ Unit Price
AHTFW	16	T10150	12	50.93	49.05	58	40	17	22	25	6001ZZx2	28	8	
		T10200						22	27					
		T10250						27	32					
		T10300						32	37	27	6201ZZx2	32	10	
		T10150	15					17	22	29	6002ZZx2	32	9	
		T10200						22	27					
		T10250						27	32					
		T10300						32	37	30	6202ZZx2	35	11	
		T10400						43	48					
		T10500						53	58					
	18	T10200	15	57.30	55.45	61	45	22	27	29	6002ZZx2	32	9	
		T10250						27	32	30	6202ZZx2	35	11	
		T10300						32	37					
	20	T10200	15	63.66	61.80	67	50	22	27	29	6002ZZx2	32	9	
		T10250						27	32	30	6202ZZx2	35	11	
		T10300						32	37					
		T10400						43	48					
		T10500						53	58					
	22	T10200	20	70.03	68.15	80	60	22	27	37	6004ZZx2	42	12	
		T10250						27	32					
		T10300						32	37	41	6204ZZx2	47	14	
	24	T10200	20	76.39	74.55	87	67	22	27	37	6004ZZx2	42	12	
		T10250						27	32	41	6204ZZx2	47	14	
		T10300						32	37					
	26	T10200	20	82.76	80.90	87	67	22	27	37	6004ZZx2	42	12	
		T10250						27	32	41	6204ZZx2	47	14	
		T10300						32	37					

■AT5 Type (Center Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions No.	D	B	€ Unit Price
AHTF	20	AT5100	8	31.83	30.60	36	24	11.6	16.5	5.25	698ZZx1	19	6	
		AT5150						16.6	21.5	4.75	698ZZx2			
	28	AT5100	10	44.56	43.35	48	35	11.6	16.5	3.75	6200ZZx1	30	9	
		AT5150						16.6	21.5	6.25				
	30	AT5100	12	47.75	46.55	55	40	11.6	16.5	3.25	6201ZZx1	32	10	
		AT5150						16.6	21.5	5.75				

■AT5 Type (Both Sides Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions No.	D	B	€ Unit Price AHTFW	€ Unit Price KHTFW
AHTFW KHTFW	18	AT5100	6	28.65	27.40	33	22	11.6	16.5	13	696ZZx2	15	5		
	20	AT5100	8	31.83	30.60	36	24	11.6	16.5	16.5	698ZZx2	19	6		
		AT5150						16.6	21.5						
	24	AT5100	10	38.20	37.00	45	30	11.6	16.5	19.5	6900ZZx2	22	6		
		AT5150						16.6	21.5						
	25	AT5150	10	39.79	38.60	45	30	16.6	21.5	23	6000ZZx2	26	8		
	30	AT5150	12	47.75	46.55	55	40	16.6	21.5	27	6201ZZx2	32	10		

■AT10 Type (Center Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	S	Bearing Dimensions No.	D	B	€ Unit Price
AHTF	16	AT10150	12	50.93	49.05	58	40	16.5	22.5	6.25	6201ZZx1	32	10	
		AT10250	15					26.5	32.5	5.25	6202ZZx2	35	11	
	20	AT10150	12	63.66	61.80	67	50	16.5	22.5	6.25	6201ZZx1	32	10	
		AT10250	15					26.5	32.5	5.25	6202ZZx2	35	11	
	22	AT10150	15	70.03	68.15	80	60	16.5	22.5	5.75	6202ZZx1	35	11	

■AT10 Type (Both Sides Bearing Type)

Part Number Type	Teeth	Applicable belt	Shaft Diameter d	P.D.	O.D.	F	E	A	W	Dh	Bearing Dimensions No.	D	B	€ Unit Price
AHTFW	16	AT10150	12	50.93	49.05	58	40	16.5	22.5	25	6001ZZx2	28	8	
		AT10200						21.5	27.5					
		AT10250						26.5	32.5					
		AT10150	15					16.5	22.5	29	6002ZZx2	32	9	
		AT10200						21.5	27.5					
		AT10250						26.5	32.5					
	18	AT10250	15	57.30	55.45	61	45	26.5	32.5	30	6202ZZx2	35	11	
	20	AT10200	15	63.66	61.80	67	50	21.5	27.5	29	6002ZZx2	32	9	
		AT10250						26.5	32.5	30	6202ZZx2	35	11	
	26	AT10250	20	82.76	80.90	87	67	26.5	32.5	41	6204ZZx2	47	14	

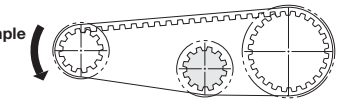
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Be sure to use the idler on the loose side.
Install the idler as close as possible to the larger pulley.

Alterations

Part Number - (FC / NFC / LFC / RFC)
AHTF30T5150 - NFC

Alterations	Flange Cut	Flange not Attached	Flange Attached on One Side Only
Code	FC	NFC	LFC · RFC
Spec.	Lowers flange by cutting. FC: 0.5mm Increment (No surface treatment applied on flange circumference.) FC≥(O.D.)+2 FC≤F-2 Ordering Code FC35	Flange is not attached. (Flange included)	Flange attached on the retaining ring side (RFC) or the opposite side (LFC). LFC RFC
Price Adder	3,00	Free of Charge	Free of Charge

Idlers
-Belt Backside Tensioning Type-

Price Reduction
20% Max.

CAD Data

Idler shafts (cantilever shafts) can be selected from P.795~818
Tensioners can be selected from P.1271~1272

RoHS



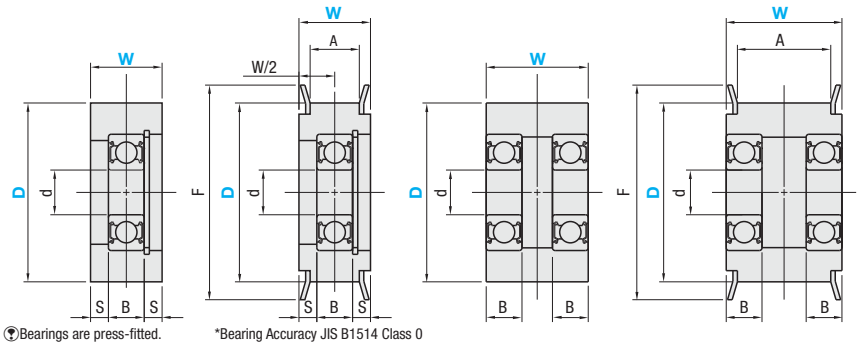
Type		Material			Surface Treatment
No Flange	Flanged	Main Body	Flange	Bearing	
AFBD	AFDF	EN AW-2017 Aluminum Alloy	EN AW-5052/AlMg2,5	Steel	Clear Anodize
BFBD	BFDF	1.1191/C45E	1.0330/DC01		Black Oxide
MFBD	MFDF				Electroless Nickel Plating
SFBD	SFDF	1.4301/X5CrNi18-10		Stainless Steel	-

Center Bearing Type

No Flange: AFBD BFBD MFBD SFBD
Flanged: AFDF BFDF MFDF SFDF

Both Sides Bearing Type

No Flange: AFBD
Flanged: AFDF



Bearings are press-fitted.
*Bearing Accuracy JIS B1514 Class 0

■Center Bearing Type

Part Number Type	W	D	F	A	Applicable Belt Nominal Width Inch	Applicable Belt Nominal Width mm	S	Bearing Dimensions No.	d	B	Retaining Ring AFBD MFBD SFBD AFDF MFDF SFDF	Retaining Ring BFBD BFDF	€ Unit Price No Flange AFBD	BFBD	MFBD	SFBD	Flanged AFDF	BFDF	MFDF	SFDF
No Flange AFBD BFBD MFBD SFBD Flanged AFDF BFDF MFDF SFDF	9	20	25	5	-	040	2.5	695ZZ	5	4	RTWS13	RTWN13								
		25	30																	
	10	25	30	6	019	-	2.5	696ZZ	6	5	RTWS15	RTWN15								
	11	25	30	7	-	060	3.0	696ZZ	6	5	RTWS15	RTWN15								
	11.5	25	30	7.5	025	-	3.25	696ZZ	6	5	RTWS15	RTWN15								
	14	30	35	9	031		4	698ZZ	8	6	RTWS19	RTWN19								
	15	30	35	11	037	100	4.5	698ZZ	8	6	RTWS19	RTWN19								
	16	40	48				4	6000ZZ	10	8	RTWS26	RTWN26								
	19	30	36	14	050	-	6.5	698ZZ	8	6	RTWS19	RTWN19								
		35	45				5.5	628ZZ	8	8	RTWS24	RTWN24								
		45	55				5	6200ZZ	10	9	RTWS30	RTWN30								
	22	35	45	17	-	150	7	6000ZZ	10	8	RTWS26	RTWN26								
		45	55				6.5	6200ZZ	10	9	RTWS30	RTWN30								
	26	40	48	21	075	-	9	6000ZZ	10	8	RTWS26	RTWN26								
		45	55				8.5	6200ZZ	10	9	RTWS30	RTWN30								
		50	58				8.5		10											

■Both Sides Bearing Type

Part Number Type	W	Nominal	D	F	A	Applicable Belt Nominal Width Inch	Applicable Belt Nominal Width mm	Bearing Dimensions No.	d	B	€ Unit Price No Flange AFBD	Flanged AFDF
No Flange AFBD Flanged AFDF	9	15	15	18	5	-	040	675ZZx2	5	2.5		
		20W	20	25				676ZZx2	6	3		
	11	15	15	18	7		060	675ZZx2	5	2.5		
		20	20	25				676ZZx2	6	3		
	11.5	15	15	18	7.5	025	-	675ZZx2	5	2.5		
		20	20	25				676ZZx2	6	3		
	15	20	20	25	11	037	100	686ZZx2	6	5		
		25	25	30				688ZZx2	8	5		
	19	25	25	32	14	050	-	688ZZx2	8	5		
		30W	30	36				688ZZx2	8	5		
	22	25	25	32	17	-	150	688ZZx2	8	5		
		35W	35	45				6000ZZx2	10	8		
	26	40W	40	48	21	075	-	6000ZZx2	10	8		
		45W	45	55				6201ZZx2	12	10		
	27	60	60	67	22	-	200	6201ZZx2	12	10		
	32	45	45	55	27	100	250					
		65	65	74	27							
	37	55	55	67	32	-	300					
		65	65	74	32							
	45	70	70	80	40	150	-	6202ZZx2	15	11		
	49	60	60	67	44	-	400					
		70	70	80	44							
	58	60	60	67	53		500					
	59	70	70	80	54	200	-					

Order Example

■Center Bearing Type
Part Number - D
AFBD9 - 20

■Both Sides Bearing Type
Part Number - Nominal
AFBD11 - 15

Days to Ship

8 Days

Express A 2,00 EUR/ piece

P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	15%

For detailed Bearing dimensions, refer to P.897-907, while the details of Retaining Rings, refer to P.2-254

Idlers / Idler Shafts
-Resin Type-

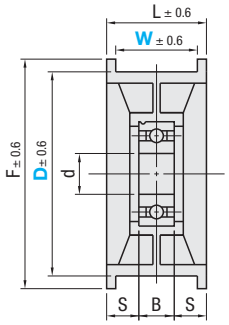
CAD Data

■Idler Plastic Type

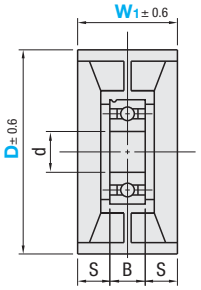
RoHS



TPBSN(Flanged Idler)



TPCFN(Flat Idler)



*Bearing Accuracy JIS B1514 Class 0
Operating Ambient Temperature: 80°C or Less

M Material: Glass Reinforced Nylon (Engineered Plastic)

Part Number		TPBSN	TPCFN	F	L	S	Bearing Dimensions			Applicable Idler Shaft	TPBSN		TPCFN	
Type	D	W	W1				No.	d	B		€ Unit Price Qty. 1~10	Volume Discount Qty. 11~29	€ Unit Price Qty. 1~10	Volume Discount Qty. 11~29
TPBSN TPCFN	38	15	18	42	18	4.5	6200ZZ	10	9	WS010S				
	40	20	26	48	26	8	6201ZZ	12	10	WS116S / WS122S				
	45		25	50	25	7	6202ZZ	15	11	WS216S				
	46			52		7.5	6201ZZ	12	10	WS112S / WS116S				
	50	25	31	62	31	10.5				WS116S / WS122S				
	60	30	-	66	36	13								
	70	28	-	80	35	12	6202ZZ	15	11	WS216S / WS222S				

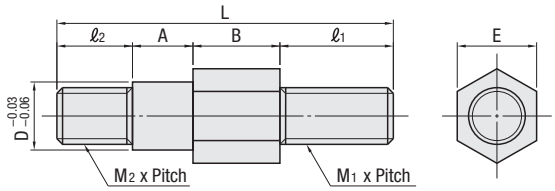
For orders larger than indicated quantity, please request a quotation.

■Idler Shafts

RoHS



WS



For idler shafts of different sizes, refer to cantilever shafts (P.795~818)

M Material: 1.1191/C45E
S Surface Treatment: Black Oxide
A Accessories: Nut 2 pcs. Spring Washer 2 pcs.

Part Number		A	B	D	ℓ1	M1xPitch	ℓ2	M2xPitch	E	L	€ Unit Price Qty. 1~10	Volume Discount Qty. 11~29
WS	010S	8.5	10	10	17	M10x1.5	12	M8x1.25	14	47.5		
	112S	9.5	12	12	20		14	M10x1.5		55.5		
	116S		16							59.5		
	122S		22							65.5		
	216S	10.5	16	15					17	60.5		
	222S		22							66.5		

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	W (W1)
TPCFN50	-	31
WS222S		

Days to Ship: 6 Days P.87

High Torque Timing Belts -2GT, 3GT Type-

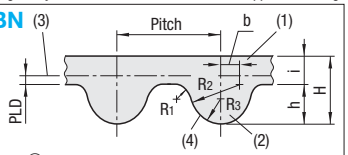
■**Features:** Suitable for linear motion drives since circular-arc tooth profile causes little backlash.
■2GT is applicable to High Torque Timing Pulleys 2GT on ☞P.1113, while 3GT is applicable to High Torque Timing Pulleys 3GT on ☞P.1115.



RoHS

Features and Cautions☞P.1112
Selecting Method☞P.1923

GBN



Operating Temperature -10~80°C (Reference Value)

Type	Material	
GBN	(1) Back Rubber	Chloroprene Rubber
	(2) Tooth Rubber	
	(3) Core Wire	Glass Fiber Cord
	(4) Tooth Fabric	Nylon Cloth

Type	Pitch	R_1	R_2	R_3	b	H	h	i	PLD	Unit Mass g/m (Width: 10mm)
2GT	2	0.15	1.00	0.555	0.40	1.38	0.75	0.63	0.254	13.0
3GT	3	0.25	1.52	0.85	0.61	2.40	1.14	1.26	0.381	25.0

■Type 2GT (Pitch: 2mm)

Part Number Type	Belt No.	Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1~5 GBN 40	60	90
GBN (Rubber)	66 2GT	40 (4mm) 60 (6mm) 90 (9mm)	33	66			
	72 2GT		36	72			
	74 2GT		37	74			
	76 2GT		38	76			
	78 2GT		39	78			
	80 2GT		40	80			
	82 2GT		41	82			
	84 2GT		42	84			
	86 2GT		43	86			
	88 2GT		44	88			
	90 2GT		45	90			
	92 2GT		46	92			
	94 2GT		47	94			
	96 2GT		48	96			
	98 2GT		49	98			
	100 2GT		50	100			
	102 2GT		51	102			
	106 2GT		53	106			
	108 2GT		54	108			
	110 2GT		55	110			
	112 2GT		56	112			
	114 2GT		57	114			
	116 2GT		58	116			
	118 2GT		59	118			
	120 2GT		60	120			
	122 2GT		61	122			
	124 2GT		62	124			
	126 2GT		63	126			
	128 2GT		64	128			
	130 2GT		65	130			
	132 2GT		66	132			
	134 2GT		67	134			
	136 2GT		68	136			
	138 2GT		69	138			
	140 2GT		70	140			
	142 2GT		71	142			
	144 2GT		72	144			
	146 2GT		73	146			
	148 2GT		74	148			
	150 2GT		75	150			
	152 2GT		76	152			
	154 2GT		77	154			
	156 2GT		78	156			
	158 2GT		79	158			
	160 2GT		80	160			
	162 2GT		81	162			
	164 2GT		82	164			
	166 2GT		83	166			
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	202 2GT		101	202			
	204 2GT		102	204			
	208 2GT		104	208			
	210 2GT		105	210			
	212 2GT		106	212			
	214 2GT		107	214			
	216 2GT		108	216			
	220 2GT		110	220			
	224 2GT		112	224			
	226 2GT		113	226			
	228 2GT		114	228			
	230 2GT		115	230			
	232 2GT		116	232			
	236 2GT		118	236			
	240 2GT		120	240			
	242 2GT		121	242			
	244 2GT		122	244			
	248 2GT		124	248			
	250 2GT		125	250			
	252 2GT		126	252			
	254 2GT		127	254			
	256 2GT		128	256			
GBN (Rubber)	258 2GT	40 (4mm) 60 (6mm) 90 (9mm)	129	258			
	260 2GT		130	260			
	264 2GT		132	264			
	266 2GT		133	266			
	268 2GT		134	268			
	270 2GT		135	270			
	278 2GT		139	278			
	280 2GT		140	280			
	282 2GT		141	282			
	284 2GT		142	284			
	286 2GT		143	286			
	288 2GT		144	288			
	290 2GT		145	290			
	292 2GT		146	292			
	294 2GT		147	294			
	300 2GT		150	300			
	302 2GT		151	302			
	304 2GT		152	304			
	308 2GT		154	308			
	310 2GT		155	310			
	314 2GT		157	314			
	318 2GT		159	318			
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	394 2GT		197	394			
	400 2GT		200	400			
	406 2GT		203	406			
	412 2GT		206	412			
	420 2GT		210	420			
	426 2GT		213	426			
	430 2GT		215	430			
	436 2GT		218	436			
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	446 2GT		223	446			
	448 2GT		224	448			
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	606 2GT		303	606			
	616 2GT		308	616			
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	634 2GT		317	634			
	646 2GT		323	646			
	660 2GT		330	660			
	670 2GT		335	670			
	676 2GT		338	676			
	690 2GT		345	690			
	696 2GT		348	696			
	702 2GT		351	702			
	726 2GT		363	726			
	742 2GT		371	742			
	752 2GT		376	752			
	760 2GT		380	760			
	772 2GT		386	772			
	782 2GT		391	782			
	800 2GT		400	800			
	810 2GT		405	810			
	852 2GT		426	852			
	860 2GT		430	860			
	866 2GT		433	866			
	892 2GT		446	892			
	900 2GT		450	900			
	930 2GT		465	930			
	950 2GT		475	950			
	976 2GT		488	976			
	994 2GT		497	994			

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number		
Type	Belt No.	Belt Nominal Width
GBN	200 2GT	- 60

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Type 3GT (Pitch:3mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1~5 GBN		
Type	Belt No.	Belt Nominal Width			60	90	150
GBN (Rubber)	102 3GT	60 (6mm) / 90 (9mm) / 150 (15mm)	34	102			
	105 3GT		35	105			
	108 3GT		36	108			
	111 3GT		37	111			
	114 3GT		38	114			
	117 3GT		39	117			
	120 3GT		40	120			
	123 3GT		41	123			
	126 3GT		42	126			
	129 3GT		43	129			
	132 3GT		44	132			
	135 3GT		45	135			
	138 3GT		46	138			
	141 3GT		47	141			
	144 3GT		48	144			
	147 3GT		49	147			
	150 3GT		50	150			
	156 3GT		52	156			
	159 3GT		53	159			
	162 3GT		54	162			
	168 3GT		56	168			
	174 3GT		58	174			
	177 3GT		59	177			
	180 3GT		60	180			
	186 3GT		62	186			
	189 3GT		63	189			
	192 3GT		64	192			
	195 3GT		65	195			
	198 3GT		66	198			
	201 3GT		67	201			
	204 3GT		68	204			
	207 3GT		69	207			
	210 3GT		70	210			
	213 3GT		71	213			
	216 3GT		72	216			
	222 3GT		74	222			
	225 3GT		75	225			
	228 3GT		76	228			
	231 3GT		77	231			
	234 3GT		78	234			
	237 3GT		79	237			
	240 3GT		80	240			
	243 3GT		81	243			
	246 3GT		82	246			
	249 3GT		83	249			
	252 3GT		84	252			
	255 3GT		85	255			
	258 3GT		86	258			
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	267 3GT		89	267			
	270 3GT		90	270			
	273 3GT		91	273			
	276 3GT		92	276			
	282 3GT		94	282			
	285 3GT		95	285			
	288 3GT		96	288			
	291 3GT		97	291			
	297 3GT		99	297			
	300 3GT		100	300			
	303 3GT		101	303			
	309 3GT		103	309			
	312 3GT		104	312			
	315 3GT		105	315			
	318 3GT		106	318			
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	327 3GT		109	327			
	330 3GT		110	330			
	333 3GT		111	333			
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	453 3GT		151	453			
	456 3GT		152	456			
	459 3GT		153	459			
	462 3GT		154	462			
	471 3GT		157	471			
	480 3GT		160	480			

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1~5 GBN		
Type	Belt No.	Belt Nominal Width			60	90	150
GBN (Rubber)	486 3GT	60 (6mm) / 90 (9mm) / 150 (15mm)	162	486			
	489 3GT		163	489			
	495 3GT		165	495			
	501 3GT		167	501			
	504 3GT		168	504			
	510 3GT		170	510			
	513 3GT		171	513			
	522 3GT		174	522			
	525 3GT		175	525			
	531 3GT		177	531			
	537 3GT		179	537			
	540 3GT		180	540			
	543 3GT		181	543			
	549 3GT		183	549			
	552 3GT		184	552			
	558 3GT		186	558			
	561 3GT		187	561			
	564 3GT		188	564			
	570 3GT		190	570			
	576 3GT		192	576			
	579 3GT		193	579			
	582 3GT		194	582			
	588 3GT		196	588			
	591 3GT		197	591			
	597 3GT		199	597			
	600 3GT		200	600			
	603 3GT		201	603			
	609 3GT		203	609			
	612 3GT		204	612			
	618 3GT		206	618			
	624 3GT		208	624			
	633 3GT		211	633			
	639 3GT		213	639			
	642 3GT		214	642			
	651 3GT		217	651			
	654 3GT		218	654			
	666 3GT		222	666			
	672 3GT		224	672			
	675 3GT		225	675			
	681 3GT		227	681			
	687 3GT		229	687			
	690 3GT		230	690			
	693 3GT		231	693			
	699 3GT		233	699			
	702 3GT		234	702			
	705 3GT		235	705			
	708 3GT		236	708			
	720 3GT		240	720			
	729 3GT		243	729			
	741 3GT		247	741			
	744 3GT		248	744			
	750 3GT		250	750			
	756 3GT		252	756			
	765 3GT		255	765			
	774 3GT		258	774			
	783 3GT		261	783			
	789 3GT		263	789			
	810 3GT		270	810			
	822 3GT		274	822			
	840 3GT		280	840			
	852 3GT		284	852			
	858 3GT		286	858			
	870 3GT		290	870			
	882 3GT		294	882			
	900 3GT		300	900			
	912 3GT		304	912			
	924 3GT		308	924			
	927 3GT		309	927			
	936 3GT		312	936			
	948 3GT		316	948			
	960 3GT		320	960			
	963 3GT		321	963			
	966 3GT		322	966			
	972 3GT		324	972			
	981 3GT		327	981			
	993 3GT		331	993			
	996 3GT		332	996			
	1005 3GT		335	1005			
	1008 3GT		336	1008			
	1014 3GT		338	1014			
	1050 3GT		350	1050			
	1059 3GT		353	1059			
	1068 3GT		356	1068			
	1071 3GT		357	1071			
	1086 3GT		362	1086			
	1098 3GT		366	1098			
	1113 3GT		371	1113			
	1137 3GT		379	1137			
	1170 3GT		390	1170			
	1188 3GT		396	1188			
	1212 3GT		404	1212			
	1215 3GT		405	1215			
	1260 3GT		420	1260			
	1290 3GT		430	1290			
	1299 3GT		433	1299			
	1305 3GT		435	1305			
	1326 3GT		442	1326			
	1335 3GT		445	1335			
	1374 3GT		458	1374			
	1386 3GT		462	1386			
	1422 3GT		474	1422			
	1446 3GT		482	1446			
	1521 3GT		507	1521			

For orders larger than indicated quantity, please request a quotation.

Super High Torque Timing Belts (EV5GT / EV8YU)

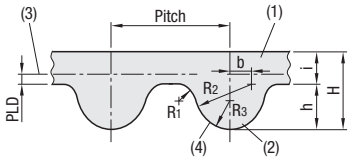
■**Features:**Suitable for linear motion drives since circular-arc tooth profile causes little backlash.
■EV5GT is compatible with the High Torque Timing Pulley 5GT on P.1117, while EV8YU is compatible with the High Torque Timing Pulley 8YU on P.1119.



RoHS

Features and Cautions P.1112
Selecting Method P.1923

GBN



Operating Temperature -10~80°C (Reference Value)

Type	Material		
GBN	(1)Back Rubber	High Modulus Rubber	
	(2)Tooth Rubber		
	(3)Core Wire	Glass Fiber Cord	
	(4) Tooth Fabric	Nylon Cloth	

Order Example

Part Number		
Type	Belt No.	Belt Nominal Width
GBN	300 EV5GT	- 120

Days to Ship

8 Days

Express A 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Type	Pitch	R_1	R_2	R_3	b	H	h	i	PLD	Unit Mass g/m (Width: 10mm)
EV5GT	5	0.51	2.54	1.37	1.03	3.80	1.93	1.87	0.5715	40.0
EV8YU	8	1.08	3.80	2.10	1.43	5.0	3.02	1.98	0.686	51.0

■Type EV5GT(Pitch: 5mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1~5 GBN		
Type	Belt No.	Belt Nominal Width			90	120	150
GBN (High Modulus Rubber)	185 EV5GT	90 (9mm) 120 (12mm) 150 (15mm)	37	185			
	225 EV5GT		45	225			
	230 EV5GT		46	230			
	240 EV5GT		48	240			
	245 EV5GT		49	245			
	250 EV5GT		50	250			
	255 EV5GT		51	255			
	260 EV5GT		52	260			
	270 EV5GT		54	270			
	275 EV5GT		55	275			
	295 EV5GT		59	295			
	300 EV5GT		60	300			
	315 EV5GT		63	315			
	320 EV5GT		64	320			
	340 EV5GT		68	340			
	350 EV5GT		70	350			
	360 EV5GT		72	360			
	365 EV5GT		73	365			
	370 EV5GT		74	370			
	375 EV5GT		75	375			
	385 EV5GT		77	385			
	390 EV5GT		78	390			
	400 EV5GT		80	400			
	405 EV5GT		81	405			
	410 EV5GT		82	410			
	415 EV5GT		83	415			
	420 EV5GT		84	420			
	430 EV5GT		86	430			
	435 EV5GT		87	435			
	440 EV5GT		88	440			
	450 EV5GT		90	450			
	460 EV5GT		92	460			
	465 EV5GT		93	465			
	470 EV5GT		94	470			
	475 EV5GT		95	475			
	485 EV5GT		97	485			
	490 EV5GT		98	490			
	500 EV5GT		100	500			
	505 EV5GT		101	505			
	510 EV5GT		102	510			
	520 EV5GT		104	520			
	525 EV5GT		105	525			
	530 EV5GT		106	530			
	540 EV5GT		108	540			
	545 EV5GT		109	545			
	550 EV5GT		110	550			
	560 EV5GT		112	560			
	565 EV5GT		113	565			
	570 EV5GT		114	570			
	575 EV5GT		115	575			
	580 EV5GT		116	580			
	595 EV5GT		119	595			
	600 EV5GT		120	600			
	610 EV5GT		122	610			
	615 EV5GT		123	615			
	625 EV5GT		125	625			
	635 EV5GT		127	635			
	645 EV5GT		129	645			
	655 EV5GT		131	655			
	670 EV5GT		134	670			
	675 EV5GT		135	675			
	695 EV5GT		139	695			
	700 EV5GT		140	700			
	710 EV5GT		142	710			
	720 EV5GT		144	720			
	730 EV5GT		146	730			
	740 EV5GT		148	740			
	750 EV5GT		150	750			
	770 EV5GT		154	770			
	775 EV5GT		155	775			
	800 EV5GT		160	800			
	810 EV5GT		162	810			
	815 EV5GT		163	815			
	825 EV5GT		165	825			
	830 EV5GT		166	830			
	840 EV5GT		168	840			
	845 EV5GT		169	845			
	850 EV5GT		170	850			
	860 EV5GT		172	860			
	870 EV5GT		174	870			
	880 EV5GT		176	880			
	895 EV5GT		179	895			
	900 EV5GT		180	900			
	920 EV5GT		184	920			
	935 EV5GT		187	935			
	960 EV5GT		192	960			
	970 EV5GT		194	970			
	1000 EV5GT		200	1000			
	1015 EV5GT		203	1015			
	1025 EV5GT		205	1025			
	1050 EV5GT		210	1050			
	1080 EV5GT		216	1080			
	1090 EV5GT		218	1090			
	1145 EV5GT		229	1145			
	1155 EV5GT		231	1155			
	1165 EV5GT		233	1165			
	1170 EV5GT		234	1170			
	1180 EV5GT		236	1180			
	1190 EV5GT		238	1190			
	1210 EV5GT		242	1210			
	1225 EV5GT		245	1225			
	1250 EV5GT		250	1250			
	1270 EV5GT		254	1270			
	1290 EV5GT		258	1290			
	1315 EV5GT		263	1315			
	1330 EV5GT		266	1330			
	1390 EV5GT		278	1390			
	1400 EV5GT		280	1400			
	1440 EV5GT		288	1440			
	1475 EV5GT		295	1475			
	1500 EV5GT		300	1500			
	1530 EV5GT		306	1530			
	1535 EV5GT		307	1535			
	1550 EV5GT		310	1550			
	1585 EV5GT		317	1585			
	1615 EV5GT		323	1615			
	1630 EV5GT		326	1630			
	1675 EV5GT		335	1675			
	1690 EV5GT		338	1690			
	1715 EV5GT		343	1715			
	1800 EV5GT		360	1800			
	1875 EV5GT		375	1875			
	1960 EV5GT		392	1960			

For orders larger than indicated quantity, please request a quotation.

■Type EV8YU(Pitch: 8mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1~5 GBN		
Type	Belt No.	Belt Nominal Width			150	200	250
GBN (High Modulus Rubber)	408 EV8YU	150 (15mm) 200 (20mm) 250 (25mm)	51	408			
	416 EV8YU		52	416			
	432 EV8YU		54	432			
	440 EV8YU		55	440			
	464 EV8YU		58	464			
	472 EV8YU		59	472			
	480 EV8YU		60	480			
	488 EV8YU		61	488			
	504 EV8YU		63	504			
	512 EV8YU		64	512			
	520 EV8YU		65	520			
	536 EV8YU		67	536			
	544 EV8YU		68	544			
	552 EV8YU		69	552			
	560 EV8YU		70	560			
	576 EV8YU		72	576			
	600 EV8YU		75	600			
	608 EV8YU		76	608			
	616 EV8YU		77	616			
	624 EV8YU		78	624			
	632 EV8YU		79	632			
	640 EV8YU		80	640			
	656 EV8YU		82	656			
	664 EV8YU		83	664			
	680 EV8YU		85	680			
	704 EV8YU		88	704			
	720 EV8YU		90	720			
	728 EV8YU		91	728			
	744 EV8YU		93	744			
	752 EV8YU		94	752			
	760 EV8YU		95	760			
	768 EV8YU		96	768			
	776 EV8YU		97	776			
	784 EV8YU		98	784			
	792 EV8YU		99	792			
	800 EV8YU		100	800			
	808 EV8YU		101	808			
	816 EV8YU		102	816			
	824 EV8YU		103	824			
	832 EV8YU		104	832			
	840 EV8YU		105	840			
	848 EV8YU		106	848			
	856 EV8YU		107	856			
	864 EV8YU		108	864			
	872 EV8YU		109	872			
	880 EV8YU		110	880			
	888 EV8YU		111	888			
	896 EV8YU		112	896			
	904 EV8YU		113	904			
	912 EV8YU		114	912			
	920 EV8YU		115	920			
	928 EV8YU		116	928			
	936 EV8YU		117	936			
	944 EV8YU		118	944			
	952 EV8YU		119	952			
	960 EV8YU		120	960			
	968 EV8YU		121	968			
	976 EV8YU		122	976			
	984 EV8YU		123	984			
	992 EV8YU		124	992			
	1000 EV8YU		125	1000			
	1008 EV8YU		126	1008			
	1016 EV8YU		127	1016			
	1032 EV8YU		129	1032			
	1040 EV8YU		130	1040			
	1064 EV8YU		133	1064			
	1072 EV8YU		134	1072			
	1080 EV8YU		135	1080			
	1088 EV8YU		136	1088			
	1096 EV8YU		137	1096			
	1112 EV8YU		139	1112			
	1120 EV8YU		140	1120			
	1128 EV8YU		141	1128			
	1136 EV8YU		142	1136			
	1144 EV8YU		143	1144			
	1152 EV8YU		144	1152			
	1160 EV8YU		145	1160			
	1168 EV8YU		146	1168			
	1176 EV8YU		147	1176			
	1184 EV8YU		148	1184			
	1192 EV8YU		149	1192			
	1200 EV8YU		150	1200			
	1208 EV8YU		151	1208			
	1216 EV8YU		152	1216			

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1~5 GBN		
Type	Belt No.	Belt Nominal Width			150	200	250
GBN (High Modulus Rubber)	1224 EV8YU	150 (15mm) 200 (20mm) 250 (25mm)	153	1224			
	1232 EV8YU		154	1232			
	1240 EV8YU		155	1240			
	1248 EV8YU		156	1248			
	1256 EV8YU		157	1256			
	1264 EV8YU		158	1264			
	1272 EV8YU		159	1272			
	1280 EV8YU		160	1280			
	1288 EV8YU		161	1288			
	1296 EV8YU		162	1296			
	1304 EV8YU		163	1304			
	1312 EV8YU		164	1312			
	1320 EV8YU		165	1320			
	1328 EV8YU		166	1328			
	1336 EV8YU		167	1336			
	1344 EV8YU		168	1344			
	1352 EV8YU		169	1352			
	1360 EV8YU		170	1360			
	1376 EV8YU		172	1376			
	1384 EV8YU		173	1384			
	1392 EV8YU		174	1392			
	1400 EV8YU		175	1400			
	1408 EV8YU		176	1408			
	1416 EV8YU		177	1416			
	1424 EV8YU		178	1424			
	1432 EV8YU		179	1432			
	1440 EV8YU		180	1440			
	1448 EV8YU		181	1448			
	1456 EV8YU		182	1456			
	1464 EV8YU		183	1464			
	1480 EV8YU		185	1480			
	1496 EV8YU		187	1496			
	1520 EV8YU		190	1520			
	1544 EV8YU		193	1544			
	1568 EV8YU		196	1568			
	1576 EV8YU		197	1576			
	1600 EV8YU		200	1600			
	1608 EV8YU		201	1608			
	1616 EV8YU		202	1616			
	1640 EV8YU		205	1640			
	1656 EV8YU		207	1656			
	1680 EV8YU		210	1680			
	1688 EV8YU		211	1688			
	1696 EV8YU		212	1696			
	1720 EV8YU		215	1720			
	1728 EV8YU		216	1728			
	1736 EV8YU		217	1736			
	1752 EV8YU		219	1752			
	1760 EV8YU		220	1760			
	1768 EV8YU		221	1768			
	1776 EV8YU		222	1776			
	1784 EV8YU		223	1784			
	1808 EV8YU		226	1808			
	1816 EV8YU		227	1816			
	1824 EV8YU		228	1824			
	1856 EV8YU		232	1856			
	1864 EV8YU		233	1864			
	1872 EV8YU		234	1872			
	1888 EV8YU		236	1888			
	1896 EV8YU		237	1896			
	1912 EV8YU		239	1912			
	1928 EV8YU		241	1928			
	1944 EV8YU		243	1944			
	1952 EV8YU		244	1952			
	1976 EV8YU		247	1976			
	2000 EV8YU		250	2000			
	2056 EV8YU		257	2056			
	2072 EV8YU		259	2072			
	2120 EV8YU		265	2120			
	2136 EV8YU		267	2136			
	2160 EV8YU		270	2160			
	2240 EV8YU		280	2240			
	2248 EV8YU		281	2248			
	2264 EV8YU		283	2264			
	2280 EV8YU		285	2280			
	2296 EV8YU		287	2296			
	2304 EV8YU		288	2304			
	2328 EV8YU		291	2328			
	2400 EV8YU		300	2400			
	2456 EV8YU		307	2456			
	2600 EV8YU		325	2600			
	2800 EV8YU		350	2800			
	3200 EV8YU		400	3200			
	3440 EV8YU		430	3440			

For orders larger than indicated quantity, please request a quotation.

Timing Belts (MXL, XL, L, H Type)

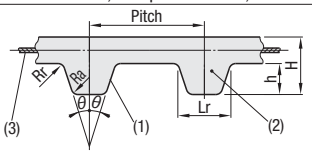
Although some tooth fabrics for MXL and XL rubber belts (TBN) are change from black to brown (bear-back specifications) for preventing rubber-dust, it does not affect the performance.

■For Long Timing Belts No. of Teeth Configurable Type, refer to P.1203, for Open End Belts, refer to P.1205



TBN(Rubber)
TUN(Polyurethane)

Operating Temp.Rubber: -30 ~90°C
Polyurethane: 0~80°C



Features and Cautions P.1112

Type	Material	
TBN	(1)Tooth Cover	Nylon Cloth
	(2)Tooth Rubber	Chloroprene Rubber
	(3)Core Wire	Glass Fiber Cord S and Z Twist Alternative Series
TUN	(1)(2)Body	Polyurethane
	(3)Core Wire	MXL: Kevlar XL / L Steel Cord

Type	Pitch	2	Lr	h	H	Rr	Ra	Unit Mass g/m (Width: 10mm)
MXL(Rubber)	2.032	40°	1.14	0.51	1.11	0.13	0.13	11.0
MXL(Polyurethane)	2.032	60°	-	0.46	1.22	-	-	10.0
XL	5.08	50°	2.57	1.27	2.27	0.38	0.38	22.0 (20.0)
L	9.525	40°	4.65	1.91	3.61	0.51	0.51	32.0 (30.0)
H	12.7	40°	6.12	2.29	4.59	1.00	1.00	40.0

Values in ( ) are the unit mass of polyurethane.

Days to Ship - TBN: **8 Days** | Express A | 5,00 EUR/ piece P.88

Days to Ship - TUN: **10 Days** | Express B | 3,00 EUR/ piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Order Example

Part Number		
Type	Belt No.	Belt Nominal Width
TBN	210MXL	025
TUN	210L	050

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Note: The figures of belt No. have different meanings depending on type.
*For MXL, Belt No. is the number of belt teeth, and for XL, L and H, belt circum. length.

■Type MXL (Pitch: 2.032mm)

Part Number Type	Belt No.	Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price TBN 019	TBN 025	TBN 037	TBN 050	TUN 025	TUN 037
	45MXL		45	91.44						
	48MXL		48	97.54						
	50MXL		50	101.60						
	52MXL		52	105.66						
	53MXL		53	107.70						
	54MXL		54	109.73						
	55MXL		55	111.76						
	56MXL		56	113.79						
	57MXL		57	115.82						
	59MXL		59	119.89						
	60MXL		60	121.92						
	61MXL		61	123.95						
	63MXL		63	128.02						
	65MXL		65	132.08						
	67MXL		67	136.14						
	68MXL		68	138.18						
	70MXL		70	142.24						
	71MXL		71	144.27						
	72MXL		72	146.30						
	73MXL		73	148.34						
	75MXL		75	152.40						
	76MXL		76	154.43						
	77MXL		77	156.46						
	78MXL		78	158.50						
	79MXL		79	160.53						
	80MXL		80	162.56						
	82MXL	019	82	166.62						
	83MXL	(4.8mm)	83	168.66						
	85MXL		85	172.72						
	87MXL		87	176.78						
	88MXL		88	178.82						
	89MXL		89	180.85						
	90MXL		90	182.88						
	91MXL		91	184.91						
	92MXL		92	186.94						
	93MXL	025	93	188.98						
	94MXL		94	191.01						
TBN	95MXL	(6.4mm)	95	193.04						
	96MXL		96	195.07						
(Rubber)	97MXL		97	197.10						
	98MXL		98	199.14						
	99MXL		99	201.17						
TUN	100MXL		100	203.20						
	101MXL		101	205.23						
(Polyurethane)	102MXL	037	102	207.26						
	103MXL		103	209.30						
	104MXL	(9.5mm)	104	211.33						
	105MXL		105	213.36						
	106MXL		106	215.39						
	108MXL		108	219.46						
	110MXL		110	223.52						
	112MXL		112	227.58						
	114MXL		114	231.65						
	115MXL	050	115	233.68						
	118MXL		118	239.78						
	120MXL	(12.7mm)	120	243.84						
	121MXL		121	245.87						
	122MXL		122	247.90						
	123MXL		123	249.94						
	124MXL		124	251.97						
	125MXL		125	254.00						
	126MXL		126	256.03						
	127MXL		127	258.06						
	128MXL		128	260.10						
	129MXL		129	262.13						
	130MXL		130	264.16						
	131MXL		131	266.19						
	132MXL		132	268.22						
	134MXL		134	272.29						
	135MXL		135	274.32						
	138MXL		138	280.42						
	140MXL		140	284.48						
	142MXL		142	288.54						
	144MXL		144	292.61						
	145MXL		145	294.64						
	146MXL		146	296.67						
	148MXL		148	300.74						
	150MXL		150	304.80						
	155MXL		155	314.96						
	158MXL		158	321.06						
	160MXL		160	325.12						
	162MXL		162	329.18						

Part Number Type	Belt No.	Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price TBN 019	TBN 025	TBN 037	TBN 050	TUN 025	TUN 037
	165MXL		165	335.28						
	170MXL		170	345.44						
	175MXL		175	355.60						
	180MXL		180	365.76						
	184MXL		184	373.89						
	190MXL		190	386.08						
	192MXL		192	390.14						
	195MXL		195	396.24						
	200MXL		200	406.40						
	210MXL		210	426.72						
	212MXL		212	430.78						
	221MXL		221	449.07						
	222MXL		222	451.10						
	224MXL		224	455.17						
	226MXL		226	459.23						
	228MXL		228	463.30						
	230MXL		230	467.36						
	232MXL		232	471.42						
	235MXL		235	477.52						
	236MXL		236	479.55						
	239MXL		239	485.65						
	240MXL		240	487.68						
	245MXL		245	497.84						
	248MXL		248	503.94						
	249MXL		249	505.97						
	250MXL		250	508.00						
	256MXL		256	520.19						
	260MXL	019	260	528.32						
	262MXL	(4.8mm)	262	532.38						
	265MXL		265	538.48						
	273MXL		273	554.74						
	275MXL		275	558.80						
	277MXL		277	562.86						
	280MXL		280	568.96						
	281MXL		281	570.99						
	285MXL	025	285	579.12						
	288MXL	(6.4mm)	288	585.22						
TBN	290MXL		290	589.28						
	295MXL		295	599.44						
(Rubber)	296MXL		296	601.47						
	297MXL		297	603.50						
	300MXL		300	609.60						
TUN	305MXL		305	619.76						
	310MXL		310	629.92						
(Polyurethane)	312MXL	037	312	633.98						
	315MXL		315	640.08						
	318MXL	(9.5mm)	318	646.18						
	320MXL		320	650.24						
	330MXL		330	670.56						
	332MXL		332	674.62						
	334MXL		334	678.69						
	336MXL		336	682.75						
	337MXL		337	684.78						
	340MXL	050	340	690.88						
	347MXL		347	705.10						
	350MXL	(12.7mm)	350	711.20						
	355MXL		355	721.36						
	358MXL		358	727.46						
	359MXL		359	729.49						
	360MXL		360	731.52						
	364MXL		364	739.65						
	365MXL		365	741.68						
	370MXL		370	751.84						
	372MXL		372	755.90						
	380MXL		380	772.16						
	390MXL		390	792.48						
	397MXL		397	806.70						
	400MXL		400	812.80						
	405MXL		405	822.96						
	420MXL		420	853.44						
	434MXL		434	881.89						
	435MXL		435	883.92						
	448MXL		448	910.34						
	453MXL		453	920.50						
	464MXL		464	942.85						
	487MXL		487	989.56						
	498MXL		498	1011.94						
	500MXL		500	1016.00						
	516MXL		516	1048.51						
	525MXL		525	1066.80						
	535MXL		535	1087.12						
	550MXL		550	1117.60						

Reduced Delivery Time

Price Reduction
Up to 15%

CAD Data

Type XL (Pitch: 5.08mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price							
					TBN				TUN			
Type	Belt No.	Belt Nominal Width			025	031	037	050	025	031	037	050
TBN (Rubber) / TUN (Polyurethane)	60XL	025 (6.4mm)	30	152.40								
	68XL		34	172.72								
	70XL		35	177.80								
	76XL		38	193.04								
	78XL		39	198.12								
	80XL		40	203.20								
	84XL		42	213.36								
	88XL		44	223.52								
	90XL		45	228.60								
	92XL		46	233.68								
	94XL		47	238.76								
	96XL		48	243.84								
	98XL		49	248.92								
	100XL		50	254.00								
	102XL		51	259.08								
	104XL		52	264.16								
	108XL		54	274.32								
	110XL		55	279.40								
	112XL		56	284.48								
	114XL		57	289.56								
	116XL		58	294.64								
	118XL		59	299.72								
	120XL		60	304.80								
	122XL		61	309.88								
	124XL		62	314.96								
	126XL		63	320.04								
	128XL		64	325.12								
	130XL		65	330.20								
	134XL		67	340.36								
	136XL		68	345.44								
	138XL		69	350.52								
	140XL		70	355.60								
	142XL		71	360.68								
	144XL		72	365.76								
	146XL		73	370.84								
	148XL		74	375.92								
	150XL		75	381.00								
	152XL		76	386.08								
	154XL		77	391.16								
	156XL		78	396.24								
	158XL		79	401.32								
	160XL	031 (7.9mm)	80	406.40								
	162XL		81	411.48								
	164XL		82	416.56								
	166XL		83	421.64								
	168XL		84	426.72								
	170XL		85	431.80								
	172XL		86	436.88								
	174XL		87	441.96								
	176XL		88	447.04								
	178XL		89	452.12								
	180XL		90	457.20								
	182XL	037 (9.5mm)	91	462.28								
	184XL		92	467.36								
	188XL		94	477.52								
	190XL		95	482.60								
	194XL		97	492.76								
	196XL		98	497.84								
	198XL		99	502.92								
	200XL		100	508.00								
	202XL	050 (12.7mm)	101	513.08								
	206XL		103	523.24								
	210XL		105	533.40								
	212XL		106	538.48								
	220XL		110	558.80								
	228XL		114	579.12								
	230XL		115	584.20								
	234XL		117	594.36								
	240XL		120	609.60								
	250XL		125	635.00								
	260XL		130	660.40								
	270XL		135	685.80								
	276XL		138	701.04								
	280XL		140	711.20								
	282XL		141	716.28								
	290XL		145	736.60								
	300XL		150	762.00								
	310XL		155	787.40								
	314XL		157	797.56								
	320XL		160	812.80								
	330XL		165	838.20								
	340XL		170	863.60								
	348XL		174	883.92								
	352XL		176	894.08								
	360XL		180	914.40								
	370XL		185	939.80								
	376XL		188	955.04								
	384XL		192	975.36								
	388XL		194	985.52								
	390XL		195	990.60								
	396XL		198	1005.84								
	424XL		212	1076.96								
	460XL		230	1168.40								
	490XL		245	1244.60								
	564XL		282	1432.56								
	592XL		296	1503.68								
	630XL		315	1600.20								
	828XL		414	2103.12								
	860XL		430	2184.40								

Type L (Pitch: 9.525mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price						
					TBN				TUN		
Type	Belt No.	Belt Nominal Width			050	075	100	150	050	075	100
TBN (Rubber) / TUN (Polyurethane)	109L	050 (12.7mm)	29	276.23							
	124L		33	314.33							
	135L		36	342.90							
	150L		40	381.00							
	165L		44	419.10							
	187L		50	476.25							
	210L		56	533.40							
	225L		60	571.50							
	240L		64	609.60							
	255L		68	647.70							
	270L		72	685.80							
	277L		74	704.85							
	285L		76	723.90							
	300L		80	762.00							
	320L		85	809.63							
	322L		86	819.15							
	334L		89	847.73							
	337L	075 (19.1mm)	90	857.25							
	345L		92	876.30							
	360L		96	914.40							
	367L		98	933.45							
	375L	100 (25.4mm)	100	952.50							
	382L		102	971.55							
	390L		104	990.60							
	394L		105	1000.13							
	420L	150 (38.1mm)	112	1066.80							
	427L		114	1085.85							
	450L		120	1143.00							
	480L		128	1219.20							
	510L		136	1295.40							
	525L		140	1333.50							
	540L		144	1371.60							
	548L		146	1390.65							
	581L		155	1476.38							
	600L		160	1524.00							
	630L		168	1600.20							
	653L		174	1657.35							
	660L		176	1676.40							
	697L		186	1771.65							
	731L		195	1857.38							

Type H (Pitch: 12.700mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price			
					TBN			
Type	Belt No.	Belt Nominal Width			075	100	150	200
TBN (Rubber)	225H	075 (19.1mm)	45	571.50				
	230H		46	584.20				
	240H		48	609.50				
	245H		49	622.30				
	270H		54	685.80				
	280H		56	711.20				
	300H		60	762.00				
	310H		62	787.40				
	315H		63	800.10				
	320H		64	812.80				
	330H		66	838.20				
	340H		68	863.60				
	350H		70	889.00				
	360H		72	914.40				
	370H		74	939.80				
	375H		75	952.50				
	390H		78	990.60				
	400H		80	1016.00				
	410H		82	1041.40				
	420H		84	1066.80				
	430H		86	1092.20				
	450H		90	1143.00				
	465H		93	1181.10				
	480H		96	1219.20				
	490H		98	1244.60				
	510H	100 (25.4mm)	102	1295.40				
	530H		106	1346.20				
	540H		108	1371.60				
	560H		112	1422.40				
	570H		114	1447.80				
	600H	150 (38.1mm)	120	1524.00				
	605H		121	1536.70				
	630H		126	1600.20				
	640H		128	1625.60				
	650H		130	1651.00				
	660H		132	1676.40				
	680H		136	1727.20				
	700H		140	1778.00				
	750H		150	1905.00				
	770H		154	1955.80				
	800H		160	2032.00				
	810H		162	2057.40				
	840H		168	2133.60				
	850H		170	2159.00				
	860H		172	2184.40				
	880H		176	2235.20				
	900H		180	2286.00				
	950H		190	2413.00				
	1000H		200	2540.00				
	1100H		220	2794.00				
	1130H		226	2870.20				
	1250H		250	3175.00				
	1325H		265	3365.50				
	1350H		270	3429.00				
	1400H		280	3556.00				
	1700H		340	4318.00				

High Torque Timing Belts (S2M, S3M, S5M, S8M, S14M)

Although some tooth fabrics for MXL and XL rubber belts (TBN) are change from black to brown (bear-back specifications) for preventing rubber-dust, it does not affect the performance.

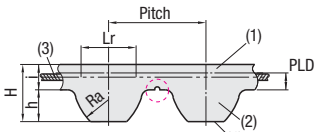
For Long Timing Belts No. of Teeth Configurable Type, refer to P.1203



Operating Temp.
Rubber: -30~90°C
Polyurethane: 0~80°C

RoHS

Type	Material	
HTBN	(1)Back Rubber	Chloroprene Rubber
	(2)Tooth Rubber	
	(3)Core Wire	Glass Fiber Cord S and Z Twist Alternative Series
	(4)Base Cloth	Nylon Cloth
HTUN	(1)(2)(4)Body	Polyurethane
	(3)Core Wire	Aramid Fiber



Features and Cautions P.1112

Selecting Method P.1923 *HTBN has no groove between teeth.

Type	Pitch	Ra	Lr	H	h	i	PLD	Unit Mass g/m (Width: 10mm)
S2M	2	1.3	1.3	1.36	0.76	0.6	0.254	13.0 (11.0)
S3M	3	1.95	1.95	1.94	1.14	0.8	0.381	19.0 (15.0)
S5M	5	3.25	3.25	3.41	1.91	1.5	0.480	34.0
S8M	8	5.2	5.2	5.3	3.05	2.25	0.686	52.0
S14M	14	9.1	9.1	10.2	5.3	4.9	1.397	100.0

Type S2M(Pitch: 2mm)

Values in ( ) are the unit mass of polyurethane.

Type	Part Number: Belt No.	Part Number: Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price HTBN 40	HTBN 60	HTBN 100	HTUN 40	HTUN 60	HTUN 100
HTBN (Rubber) / HTUN (Polyurethane)	76 S2M	40 (4mm)	38	76						
	78 S2M		39	78						
	80 S2M		40	80						
	88 S2M		44	88						
	90 S2M		45	90						
	100 S2M		50	100						
	112 S2M		56	112						
	116 S2M		58	116						
	118 S2M		59	118						
	122 S2M		61	122						
	124 S2M		62	124						
	126 S2M		63	126						
	128 S2M		64	128						
	130 S2M		65	130						
	132 S2M		66	132						
	134 S2M		67	134						
	138 S2M		69	138						
	140 S2M		70	140						
	142 S2M		71	142						
	144 S2M		72	144						
	152 S2M		76	152						
	160 S2M		80	160						
	164 S2M		82	164						
	166 S2M		83	166						
	172 S2M		86	172						
	176 S2M		88	176						
	180 S2M		90	180						
	186 S2M		93	186						
	190 S2M		95	190						
	194 S2M		97	194						
	200 S2M		100	200						
	204 S2M		102	204						
	210 S2M		105	210						
	212 S2M		106	212						
	214 S2M		107	214						
	218 S2M		109	218						
	220 S2M		110	220						
	224 S2M		112	224						
	230 S2M		115	230						
	234 S2M	60 (6mm)	117	234						
	236 S2M		118	236						
	240 S2M		120	240						
	242 S2M		121	242						
	244 S2M		122	244						
	246 S2M		123	246						
	250 S2M	100 (10mm)	125	250						
	256 S2M		128	256						
	260 S2M		130	260						
	266 S2M		133	266						
	280 S2M		140	280						
	290 S2M		145	290						
	300 S2M		150	300						
	320 S2M		160	320						
	324 S2M		162	324						
	328 S2M		164	328						
	330 S2M		165	330						
	340 S2M		170	340						
	360 S2M		180	360						
	370 S2M		185	370						
	380 S2M		190	380						
	396 S2M		198	396						
	400 S2M		200	400						
	436 S2M		218	436						
	448 S2M		224	448						
	486 S2M		243	486						
	488 S2M		244	488						
	500 S2M		250	500						
	520 S2M		260	520						
	560 S2M		280	560						
	572 S2M		286	572						
	580 S2M		290	580						
	600 S2M		300	600						
	630 S2M		315	630						
	710 S2M		355	710						
	800 S2M		400	800						
	900 S2M		450	900						
	984 S2M		492	984						
	1196 S2M		598	1196						
	1250 S2M		625	1250						
	1274 S2M		637	1274						
	1290 S2M		645	1290						

Type S3M(Pitch:3mm)

Type	Part Number: Belt No.	Part Number: Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price HTBN 60	HTBN 100	HTBN 150	HTUN 60	HTUN 100	HTUN 150
HTBN (Rubber) / HTUN (Polyurethane)	120 S3M	60 (6mm)	40	120						
	123 S3M		41	123						
	129 S3M		43	129						
	141 S3M		47	141						
	144 S3M		48	144						
	150 S3M		50	150						
	162 S3M		54	162						
	171 S3M		57	171						
	174 S3M		58	174						
	177 S3M		59	177						
	180 S3M		60	180						
	186 S3M		62	186						
	189 S3M		63	189						
	192 S3M		64	192						
	195 S3M		65	195						
	201 S3M		67	201						
	207 S3M		69	207						
	210 S3M		70	210						
	213 S3M		71	213						
	219 S3M		73	219						
	222 S3M		74	222						
	225 S3M		75	225						
	234 S3M		78	234						
	237 S3M		79	237						
	246 S3M		82	246						
	249 S3M		83	249						
	252 S3M		84	252						
	255 S3M		85	255						
	264 S3M		88	264						
	273 S3M		91	273						
	276 S3M		92	276						
	279 S3M		93	279						
	285 S3M		95	285						
	288 S3M		96	288						
	291 S3M		97	291						
	300 S3M		100	300						
	312 S3M		104	312						
	318 S3M		106	318						
	327 S3M		109	327						
	339 S3M		113	339						
	345 S3M		115	345						
	354 S3M		118	354						
	360 S3M		120	360						
	363 S3M		121	363						
	369 S3M		123	369						
	375 S3M		125	375						
	384 S3M		128	384						
	387 S3M		129	387						
	396 S3M		132	396						
	402 S3M	100 (10mm)	134	402						
	405 S3M		135	405						
	408 S3M		136	408						
	420 S3M		140	420						
	423 S3M	150 (15mm)	141	423						
	432 S3M		144	432						
	453 S3M		151	453						
	456 S3M		152	456						
	459 S3M		153	459						
	474 S3M		158	474						
	480 S3M		160	480						
	483 S3M		161	483						
	486 S3M		162	486						
	501 S3M		167	501						
	507 S3M		169	507						
	519 S3M		173	519						
	525 S3M		175	525						
	537 S3M		179	537						
	540 S3M		180	540						
	564 S3M		188	564						
	591 S3M		197	591						
	600 S3M		200	600						
	612 S3M		204	612						
	633 S3M		211	633						
	645 S3M		215	645						
	660 S3M		220	660						
	681 S3M		227	681						
	741 S3M		247	741						
	750 S3M		250	750						
	804 S3M		268	804						
	810 S3M		270	810						
	852 S3M		284	852						
	900 S3M		300	900						
	918 S3M		306	918						
	1050 S3M		350	1050						
	1080 S3M		360	1080						
	1119 S3M		373	1119						
	1170 S3M		390	1170						
	1203 S3M		401	1203						
	1221 S3M		407	1221						
	1236 S3M		412	1236						
	1245 S3M		415	1245						
	1260 S3M		420	1260						
	1290 S3M		430	1290						
	1299 S3M		433	1299						
	1332 S3M		444	1332						
	1401 S3M		467	1401						
	1596 S3M		532	1596						
	1680 S3M		560	1680						
	1788 S3M		596	1788						
	2100 S3M		700	2100						

Type S5M (Pitch: 5mm)

Part Number Type	Belt No.	Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price HTBN 100	150	250
	225 S5M		45	225			
	230 S5M		46	230			
	255 S5M		51	255			
	260 S5M		52	260			
	295 S5M		59	295			
	300 S5M		60	300			
	305 S5M		61	305			
	320 S5M		64	320			
	325 S5M		65	325			
	340 S5M		68	340			
	350 S5M		70	350			
	360 S5M		72	360			
	370 S5M		74	370			
	375 S5M		75	375			
	380 S5M		76	380			
	390 S5M		78	390			
	400 S5M		80	400			
	415 S5M		83	415			
	425 S5M		85	425			
	435 S5M		87	435			
	440 S5M		88	440			
	450 S5M		90	450			
	475 S5M		95	475			
	490 S5M		98	490			
	500 S5M		100	500			
	520 S5M		104	520			
	525 S5M		105	525			
	530 S5M		106	530			
	545 S5M		109	545			
	550 S5M		110	550			
	560 S5M		112	560			
	575 S5M		115	575			
	590 S5M		118	590			
	595 S5M		119	595			
	600 S5M		120	600			
	625 S5M		125	625			
	640 S5M		128	640			
	650 S5M		130	650			
	665 S5M		133	665			
	670 S5M		134	670			
	675 S5M		135	675			
	690 S5M		138	690			
	695 S5M		139	695			
	700 S5M		140	700			
	710 S5M		142	710			
	720 S5M	100 (10mm)	144	720			
	725 S5M		145	725			
	730 S5M		146	730			
HTBN (Rubber)	740 S5M	150 (15mm)	148	740			
	750 S5M		150	750			
	765 S5M		153	765			
	780 S5M		156	780			
	800 S5M	250 (25mm)	160	800			
	810 S5M		162	810			
	830 S5M		166	830			
	845 S5M		169	845			
	850 S5M		170	850			
	870 S5M		174	870			
	890 S5M		178	890			
	900 S5M		180	900			
	930 S5M		186	930			
	950 S5M		190	950			
	975 S5M		195	975			
	1000 S5M		200	1000			
	1025 S5M		205	1025			
	1050 S5M		210	1050			
	1055 S5M		211	1055			
	1085 S5M		217	1085			
	1090 S5M		218	1090			
	1100 S5M		220	1100			
	1105 S5M		221	1105			
	1115 S5M		223	1115			
	1120 S5M		224	1120			
	1125 S5M		225	1125			
	1135 S5M		227	1135			
	1145 S5M		229	1145			
	1160 S5M		232	1160			
	1165 S5M		233	1165			
	1195 S5M		239	1195			
	1225 S5M		245	1225			
	1250 S5M		250	1250			
	1270 S5M		254	1270			
	1295 S5M		259	1295			
	1350 S5M		270	1350			
	1420 S5M		284	1420			
	1475 S5M		295	1475			
	1500 S5M		300	1500			
	1505 S5M		301	1505			
	1530 S5M		306	1530			
	1595 S5M		319	1595			
	1605 S5M		321	1605			
	1680 S5M		336	1680			
	1715 S5M		343	1715			
	1800 S5M		360	1800			
	2000 S5M		400	2000			
	2145 S5M		429	2145			
	2255 S5M		451	2255			
	2480 S5M		496	2480			

Order Example

Part Number: Type | Belt No. - Belt Nominal Width

HTBN 2800 S14M - 400

HTUN 225 S3M - 100

- S2M / S3M / S5M / S8M

Days to Ship: 8 Days — Express A — 5,00 EUR/ piece P.88

- S14M

10 Days — Express B — 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for orders of 5 or more identical pieces of S14M.

Type S8M (Pitch: 8mm)

Part Number Type	Belt No.	Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price HTBN 150	250	300	400
	480 S8M		60	480				
	520 S8M		65	520				
	560 S8M		70	560				
	584 S8M		73	584				
	600 S8M		75	600				
	632 S8M		79	632				
	656 S8M		82	656				
	712 S8M		89	712				
	720 S8M		90	720				
	760 S8M		95	760				
	800 S8M		100	800				
	824 S8M		103	824				
	848 S8M		106	848				
	880 S8M		110	880				
	896 S8M		112	896				
	920 S8M		115	920				
	944 S8M		118	944				
	960 S8M		120	960				
	976 S8M		122	976				
	1000 S8M		125	1000				
	1040 S8M		130	1040				
	1056 S8M	150 (15mm)	132	1056				
	1080 S8M		135	1080				
	1120 S8M	250 (25mm)	140	1120				
HTBN (Rubber)	1136 S8M		142	1136				
	1160 S8M		145	1160				
	1200 S8M	300 (30mm)	150	1200				
	1248 S8M		156	1248				
	1280 S8M	400 (40mm)	160	1280				
	1304 S8M		163	1304				
	1360 S8M		170	1360				
	1400 S8M		175	1400				
	1440 S8M		180	1440				
	1480 S8M		185	1480				
	1520 S8M		190	1520				
	1600 S8M		200	1600				
	1680 S8M		210	1680				
	1760 S8M		220	1760				
	1776 S8M		222	1776				
	1800 S8M		225	1800				
	1912 S8M		239	1912				
	2000 S8M		250	2000				
	2240 S8M		280	2240				
	2304 S8M		288	2304				
	2400 S8M		300	2400				
	2496 S8M		312	2496				
	2600 S8M		325	2600				
	2800 S8M		350	2800				
	3200 S8M		400	3200				
	3680 S8M		460	3680				
	4400 S8M		550	4400				

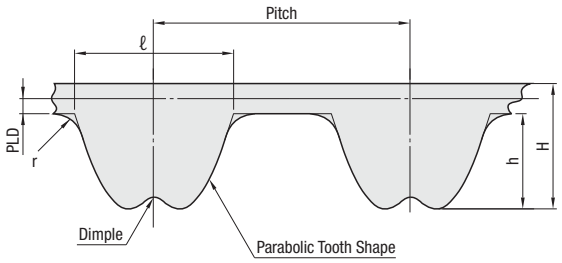
Type S14M (Pitch: 14mm)

Part Number Type	Belt No.	Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price HTBN 400	600
	1008 S14M		72	1008		
	1120 S14M		80	1120		
	1190 S14M		85	1190		
	1246 S14M		89	1246		
	1400 S14M		100	1400		
	1540 S14M		110	1540		
	1610 S14M		115	1610		
	1652 S14M		118	1652		
	1778 S14M		127	1778		
	1806 S14M		129	1806		
	1890 S14M	400 (40mm)	135	1890		
	2002 S14M		143	2002		
	2100 S14M		150	2100		
HTBN (Rubber)	2240 S14M		160	2240		
	2310 S14M		165	2310		
	2380 S14M		170	2380		
	2450 S14M	600 (60mm)	175	2450		
	2506 S14M		179	2506		
	2590 S14M		185	2590		
	2660 S14M		190	2660		
	2800 S14M		200	2800		
	3150 S14M		225	3150		
	3500 S14M		250	3500		
	3556 S14M		254	3556		
	3850 S14M		275	3850		
	4004 S14M		286	4004		
	4508 S14M		322	4508		
	5012 S14M		358	5012		

High Torque Timing Belts (P2M, P3M, P5M, P8M)



PTBN



Operating Temperature: -25~80°C

Type	Material	
PTBN	Main Body	Chloroprene Rubber (Tooth Surface: Nylon Tooth Cloth)
	Core Wire	Glass Fiber

Features and Cautions P.1112
Selecting Method P.1923

Type	Pitch	ℓ	H	h	PLD	r	Unit Mass g/m (Width: 10mm)
P2M	2	1.30	1.3	0.73	0.254	0.2	14.0
P3M	3	1.95	2.1	1.09	0.381	0.3	22.0
P5M	5	3.25	3.6	1.81	0.571	0.5	41.0
P8M	8	5.20	5.5	2.90	0.686	0.8	56.0

Order Example

Part Number		
Type	Belt No.	Belt Nominal Width
PTBN	200	P2M - 060

Days to Ship 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Type P2M (Pitch: 2mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price Nominal Width 060
Type	Belt No.	Nominal Width			
PTBN	80 P2M	060 (6mm)	40	80	
	84 P2M		42	84	
	88 P2M		44	88	
	98 P2M		49	98	
	100 P2M		50	100	
	112 P2M		56	112	
	116 P2M		58	116	
	118 P2M		59	118	
	124 P2M		62	124	
	126 P2M		63	126	
	132 P2M		66	132	
	134 P2M		67	134	
	136 P2M		68	136	
	140 P2M		70	140	
	142 P2M		71	142	
	144 P2M		72	144	
	146 P2M		73	146	
	152 P2M		76	152	
	154 P2M		77	154	
	160 P2M		80	160	
	162 P2M		81	162	
	166 P2M		83	166	
	170 P2M		85	170	
	172 P2M		86	172	
	176 P2M		88	176	
	180 P2M		90	180	
	186 P2M		93	186	
	190 P2M		95	190	
	196 P2M		98	196	
	200 P2M		100	200	
	204 P2M		102	204	
	208 P2M		104	208	
	212 P2M		106	212	
	214 P2M		107	214	
	216 P2M		108	216	
	220 P2M		110	220	
	224 P2M		112	224	
	230 P2M		115	230	
	234 P2M	060 (6mm)	117	234	
	236 P2M		118	236	
	240 P2M		120	240	
	244 P2M		122	244	
	246 P2M		123	246	
	250 P2M		125	250	
	258 P2M		129	258	
	262 P2M		131	262	
	266 P2M		133	266	
	270 P2M		135	270	
	274 P2M		137	274	
	280 P2M		140	280	
	284 P2M		142	284	
	290 P2M		145	290	
	300 P2M		150	300	
	302 P2M		151	302	
	310 P2M		155	310	
	318 P2M		159	318	
	320 P2M		160	320	
	324 P2M		162	324	
	328 P2M		164	328	
	330 P2M		165	330	
	334 P2M		167	334	
	340 P2M		170	340	
	348 P2M		174	348	
	354 P2M		177	354	
	360 P2M		180	360	
	370 P2M		185	370	
	378 P2M		189	378	
	380 P2M		190	380	
	390 P2M		195	390	
	400 P2M		200	400	
	408 P2M		204	408	
	416 P2M		208	416	
	420 P2M		210	420	
	424 P2M		212	424	
	426 P2M		213	426	
	434 P2M		217	434	
	440 P2M	060 (6mm)	220	440	
	448 P2M		224	448	
	464 P2M		232	464	
	488 P2M		244	488	
	490 P2M		245	490	
	500 P2M		250	500	
	516 P2M		258	516	
	520 P2M		260	520	
	530 P2M		265	530	
	560 P2M		280	560	
	576 P2M		288	576	
	590 P2M		295	590	
	600 P2M		300	600	
	630 P2M		315	630	
	638 P2M		319	638	
	656 P2M		328	656	
	676 P2M		338	676	
	680 P2M		340	680	
	704 P2M		352	704	
	710 P2M		355	710	
	754 P2M		377	754	
	764 P2M		382	764	
	774 P2M		387	774	
	788 P2M		394	788	
	800 P2M		400	800	
	808 P2M		404	808	
	824 P2M		412	824	
	846 P2M		423	846	
	866 P2M		433	866	
	898 P2M		449	898	
	900 P2M		450	900	
	940 P2M		470	940	
	956 P2M		478	956	
	992 P2M		496	992	
	1040 P2M		520	1040	
	1242 P2M		641	1242	

Type P3M(Pitch:3mm)

Part Number				Belt Circum. Length (mm)	€ Unit Price	
Type	Belt No.	Nominal Width	Teeth		Nominal Width 100	Nominal Width 150
PTBN	120 P3M	100 (10mm)	40	120		
	123 P3M		41	123		
	138 P3M		46	138		
	141 P3M		47	141		
	144 P3M		48	144		
	147 P3M		49	147		
	150 P3M		50	150		
	153 P3M		51	153		
	159 P3M		53	159		
	162 P3M		54	162		
	171 P3M		57	171		
	174 P3M		58	174		
	177 P3M		59	177		
	183 P3M		61	183		
	186 P3M		62	186		
	192 P3M		64	192		
	195 P3M		65	195		
	198 P3M		66	198		
	201 P3M		67	201		
	207 P3M		69	207		
	210 P3M	150 (15mm)	70	210		
	213 P3M		71	213		
	219 P3M		73	219		
	222 P3M		74	222		
	225 P3M		75	225		
	231 P3M		77	231		
	234 P3M		78	234		
	237 P3M		79	237		
	240 P3M		80	240		
	243 P3M		81	243		
	246 P3M		82	246		
	252 P3M		84	252		
	255 P3M		85	255		
	264 P3M		88	264		
	270 P3M		90	270		
	273 P3M		91	273		

Part Number				Belt Circum. Length (mm)	€ Unit Price	
Type	Belt No.	Nominal Width	Teeth		Nominal Width 100	Nominal Width 150
PTBN	276 P3M	100 (10mm)	92	276		
	279 P3M		93	279		
	285 P3M		95	285		
	288 P3M		96	288		
	291 P3M		97	291		
	294 P3M		98	294		
	300 P3M		100	300		
	303 P3M		101	303		
	306 P3M		102	306		
	309 P3M		103	309		
	312 P3M		104	312		
	318 P3M		106	318		
	330 P3M		110	330		
	339 P3M		113	339		
	345 P3M		115	345		
	354 P3M		118	354		
	360 P3M		120	360		
	363 P3M		121	363		
	369 P3M		123	369		
	372 P3M		124	372		
	384 P3M	150 (15mm)	128	384		
	387 P3M		129	387		
	393 P3M		131	393		
	399 P3M		133	399		
	402 P3M		134	402		
	411 P3M		137	411		
	420 P3M		140	420		
	423 P3M		141	423		
	432 P3M		144	432		
	447 P3M		149	447		
	450 P3M		150	450		
	453 P3M		151	453		
	459 P3M		153	459		
	477 P3M		159	477		
	483 P3M		161	483		
	486 P3M		162	486		

Part Number				Belt Circum. Length (mm)	€ Unit Price	
Type	Belt No.	Nominal Width	Teeth		Nominal Width 100	Nominal Width 150
PTBN	489 P3M	100 (10mm)	163	489		
	501 P3M		167	501		
	504 P3M		168	504		
	507 P3M		169	507		
	510 P3M		170	510		
	525 P3M		175	525		
	537 P3M		179	537		
	552 P3M		184	552		
	561 P3M		187	561		
	588 P3M		196	588		
	600 P3M		200	600		
	633 P3M		211	633		
	660 P3M		220	660		
	675 P3M		225	675		
	681 P3M		227	681		
	693 P3M		231	693		
	699 P3M		233	699		
	738 P3M		246	738		
	753 P3M		251	753		
	756 P3M		252	756		
	789 P3M	150 (15mm)	263	789		
	804 P3M		268	804		
	852 P3M		284	852		
	861 P3M		287	861		
	879 P3M		293	879		
	891 P3M		297	891		
	918 P3M		306	918		
	933 P3M		311	933		
	948 P3M		316	948		
	957 P3M		319	957		
	1005 P3M		335	1005		
	1023 P3M		341	1023		
	1041 P3M		347	1041		
	1050 P3M		350	1050		
	1191 P3M		397	1191		

Type P5M(Pitch: 5mm)

Part Number				Belt Circum. Length (mm)	€ Unit Price	
Type	Belt No.	Nominal Width	Teeth		Nominal Width 100	Nominal Width 150
PTBN	215 P5M	100 (10mm)	43	215		
	225 P5M		45	225		
	255 P5M		51	255		
	260 P5M		52	260		
	275 P5M		55	275		
	295 P5M		59	295		
	300 P5M		60	300		
	310 P5M		62	310		
	320 P5M		64	320		
	325 P5M		65	325		
	340 P5M		68	340		
	350 P5M		70	350		
	370 P5M		74	370		
	375 P5M		75	375		
	400 P5M		80	400		
	420 P5M		84	420		
	425 P5M		85	425		
	430 P5M		86	430		
	440 P5M		88	440		
	450 P5M	150 (15mm)	90	450		
	475 P5M		95	475		
	490 P5M		98	490		
	500 P5M		100	500		
	515 P5M		103	515		
	520 P5M		104	520		
	525 P5M		105	525		
	530 P5M		106	530		
	550 P5M		110	550		
	555 P5M		111	555		
	560 P5M		112	560		
	565 P5M		113	565		
	570 P5M		114	570		
	575 P5M		115	575		
	595 P5M		119	595		

Part Number				Belt Circum. Length (mm)	€ Unit Price	
Type	Belt No.	Nominal Width	Teeth		Nominal Width 100	Nominal Width 150
PTBN	600 P5M	100 (10mm)	120	600		
	605 P5M		121	605		
	625 P5M		125	625		
	635 P5M		127	635		
	645 P5M		129	645		
	650 P5M		130	650		
	670 P5M		134	670		
	675 P5M		135	675		
	690 P5M		138	690		
	695 P5M		139	695		
	700 P5M		140	700		
	710 P5M		142	710		
	725 P5M		145	725		
	730 P5M		146	730		
	740 P5M		148	740		
	750 P5M		150	750		
	765 P5M		153	765		
	780 P5M		156	780		
	800 P5M		160	800		
	810 P5M	150 (15mm)	162	810		
	830 P5M		166	830		
	835 P5M		167	835		
	850 P5M		170	850		
	865 P5M		173	865		
	900 P5M		180	900		
	905 P5M		181	905		
	940 P5M		188	940		
	950 P5M		190	950		
	965 P5M		193	965		
	985 P5M		197	985		
	1000 P5M		200	1000		
	1025 P5M		205	1025		
	1050 P5M		210	1050		

Type P8M(Pitch: 8mm)

Part Number				Belt Circum. Length (mm)	€ Unit Price	
Type	Belt No.	Nominal Width	Teeth		Nominal Width 150	Nominal Width 250
PTBN	376 P8M	150 (15mm)	47	376		
	392 P8M		49	392		
	440 P8M		55	440		
	480 P8M		60	480		
	512 P8M		64	512		
	520 P8M		65	520		
	536 P8M		67	536		
	560 P8M		70	560		
	584 P8M		73	584		
	600 P8M		75	600		
	632 P8M		79	632		
	640 P8M		80	640		
	656 P8M		82	656		
	680 P8M		85	680		
	712 P8M		89	712		
	720 P8M		90	720		
	752 P8M		94	752		
	760 P8M		95	760		
	800 P8M		100	800		
	832 P8M		104	832		
	840 P8M		105	840		
	848 P8M		106	848		
	856 P8M		107	856		
	880 P8M		110	880		
	896 P8M	250 (25mm)	112	896		
	912 P8M		114	912		
	920 P8M		115	920		
	936 P8M		117	936		
	944 P8M		118	944		
	960 P8M		120	960		
	984 P8M		123	984		
	1000 P8M		125	1000		
	1040 P8M		130	1040		
	1056 P8M		132	1056		
	1080 P8M		135	1080		
	1192 P8M		149	1192		
	1440 P8M		180	1440		
	2064 P8M		258	2064		
	2496 P8M		312	2496		
	2600 P8M		325	2600		
	2800 P8M		350	2800		
	3048 P8M		381	3048		
	3200 P8M		400	3200		

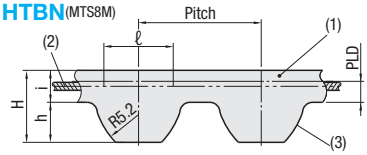
Super High Torque Timing Belts (MTS8M / UP5M / UP8M)

CAD Data

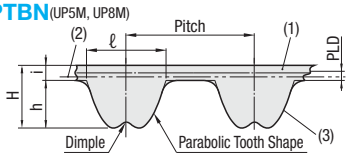
Features: As having nearly doubled transmission capacity compared to standard timing belts, higher-load transmission and limited space design can be realized.



HTBN (MTS8M)



PTBN (UP5M, UP8M)



Features and Cautions P.1112
Selecting Method P.1923

Type	Material	
HTBN	(1) Rubber	High Hardness Synthetic Rubber Hardness 88°
	(2) Core Wire	Glass Core Wire
	(3) Cloth	Nylon Cloth

Operating Temperature: -30~90°C
Applicable to the Timing Pulley S8M type. P.1135
Backside color of MTS8M is black.

Type	Material	
PTBN	(1) Rubber	Chloroprene Rubber
	(2) Core Wire	Glass Core Wire
	(3) Cloth	Nylon Cloth

Operating Temperature: -25~80°C
Applicable to Timing Pulleys P5M and P8M types. P.1143~1146
Rubber color of UP5M on the back side is black and that of LP8M is blue.

Type	Pitch	ℓ	H	h	i	PLD	Unit Mass g/m (Width: 10mm)
MTS8M	8	5.2	5.3	3.05	2.25	0.686	45.0

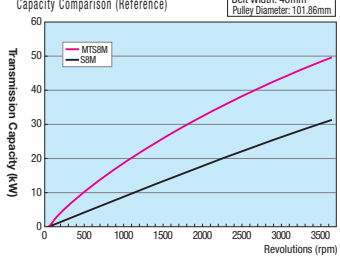
Type	Pitch	ℓ	H	h	i	PLD	Unit Mass g/m (Width: 10mm)
UP5M	5	3.25	3.60	1.81	1.79	0.571	41.0
UP8M	8	5.2	5.20	2.90	2.30	0.686	50.8

Type MTS8M (Pitch: 8mm)

Type	Part Number: Belt No.	Part Number: Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price: Belt Nominal Width 150	250	300	400
HTBN (Rubber)	528-MTS8M	150 (15mm)	66	528				
	560-MTS8M		70	560				
	584-MTS8M		73	584				
	600-MTS8M		75	600				
	632-MTS8M		79	632				
	640-MTS8M		80	640				
	656-MTS8M		82	656				
	712-MTS8M		89	712				
	720-MTS8M		90	720				
	760-MTS8M		95	760				
	800-MTS8M		100	800				
	824-MTS8M		103	824				
	848-MTS8M		106	848				
	856-MTS8M		107	856				
	880-MTS8M		110	880				
	896-MTS8M		112	896				
	920-MTS8M		115	920				
	928-MTS8M		116	928				
	944-MTS8M		118	944				
	960-MTS8M		120	960				
	976-MTS8M		122	976				
	1000-MTS8M		125	1000				
	1024-MTS8M		128	1024				
	1056-MTS8M		132	1056				
	1080-MTS8M	250 (25mm)	135	1080				
	1120-MTS8M		140	1120				
	1136-MTS8M		142	1136				
	1152-MTS8M		144	1152				
	1160-MTS8M	300 (30mm)	145	1160				
	1200-MTS8M		150	1200				
	1216-MTS8M		152	1216				
	1248-MTS8M		156	1248				
	1280-MTS8M	400 (40mm)	160	1280				
	1304-MTS8M		163	1304				
	1320-MTS8M		165	1320				
	1352-MTS8M		169	1352				
	1360-MTS8M		170	1360				
	1400-MTS8M		175	1400				
	1440-MTS8M		180	1440				
	1480-MTS8M		185	1480				
	1520-MTS8M		190	1520				
	1600-MTS8M		200	1600				
	1640-MTS8M		205	1640				
	1680-MTS8M		210	1680				
	1696-MTS8M		212	1696				
	1760-MTS8M		220	1760				
	1792-MTS8M		224	1792				
	1800-MTS8M		225	1800				
	1880-MTS8M		235	1880				
	1960-MTS8M		245	1960				
	2000-MTS8M		250	2000				
	2064-MTS8M		258	2064				
	2400-MTS8M		300	2400				
	2600-MTS8M		325	2600				
	2800-MTS8M		350	2800				

S8M / MTS8M Transmission Capacity Comparison (Reference)

Evaluation Conditions
Belt Width: 40mm
Pulley Diameter: 101.86mm



Type UP5M (Pitch: 5mm)

Type	Part Number: Belt No.	Part Number: Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1-4: Belt Nominal Width 100	150
PTBN (Rubber)	215-UP5M	100 (10mm)	43	215		
	225-UP5M		45	225		
	255-UP5M		51	255		
	260-UP5M		52	260		
	275-UP5M		55	275		
	295-UP5M		59	295		
	300-UP5M		60	300		
	310-UP5M		62	310		
	320-UP5M		64	320		
	325-UP5M		65	325		
	340-UP5M		68	340		
	350-UP5M		70	350		
	370-UP5M		74	370		
	375-UP5M		75	375		
	400-UP5M		80	400		
	420-UP5M		84	420		
	425-UP5M		85	425		
	430-UP5M		86	430		
	440-UP5M		88	440		
	450-UP5M		90	450		
	475-UP5M		95	475		
	490-UP5M		98	490		
	500-UP5M		100	500		
	515-UP5M	150 (15mm)	103	515		
	520-UP5M		104	520		
	525-UP5M		105	525		
	530-UP5M		106	530		
	550-UP5M		110	550		
	560-UP5M		112	560		
	575-UP5M		115	575		
	595-UP5M		119	595		
	600-UP5M		120	600		
	605-UP5M		121	605		
	635-UP5M		127	635		
	650-UP5M		130	650		
	670-UP5M		134	670		
	675-UP5M		135	675		
	690-UP5M		138	690		
	725-UP5M		145	725		
	740-UP5M		148	740		
	750-UP5M		150	750		
	780-UP5M		156	780		
	800-UP5M		160	800		
	835-UP5M		167	835		
	850-UP5M		170	850		
	900-UP5M		180	900		
	1000-UP5M		200	1000		
	1050-UP5M		210	1050		

For orders larger than indicated quantity, please request a quotation.

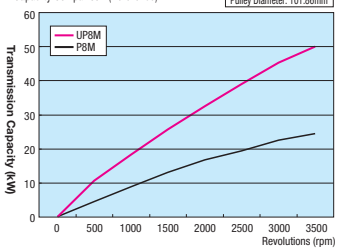
Type UP8M (Pitch: 8mm)

Type	Part Number: Belt No.	Part Number: Belt Nominal Width	Teeth	Belt Circum. Length (mm)	€ Unit Price Qty. 1-4: Belt Nominal Width 150	250
PTBN (Rubber)	480-UP8M	150 (15mm)	60	480		
	512-UP8M		64	512		
	520-UP8M		65	520		
	536-UP8M		67	536		
	560-UP8M		70	560		
	584-UP8M		73	584		
	600-UP8M		75	600		
	632-UP8M		79	632		
	640-UP8M		80	640		
	680-UP8M		85	680		
	712-UP8M		89	712		
	720-UP8M	250 (25mm)	90	720		
	760-UP8M		95	760		
	800-UP8M		100	800		
	832-UP8M		104	832		
	840-UP8M		105	840		
	856-UP8M		107	856		
	880-UP8M		110	880		
	960-UP8M		120	960		
	1040-UP8M		130	1040		
	1080-UP8M		135	1080		

For orders larger than indicated quantity, please request a quotation.

P8M / UP8M Transmission Capacity Comparison (Reference)

Evaluation Conditions
Belt Width: 40mm
Pulley Diameter: 101.86mm



Order Example

Part Number		
Type	Belt No.	Belt Nominal Width
HTBN	1800-MTS8M	- 400
PTBN	960-UP8M	- 250

Days to Ship

10 Days — P.88

Express B 5,00 EUR/ piece

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price - HTBN

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Timing Belts (T5, T10)

Reduced Delivery Time

CAD Data

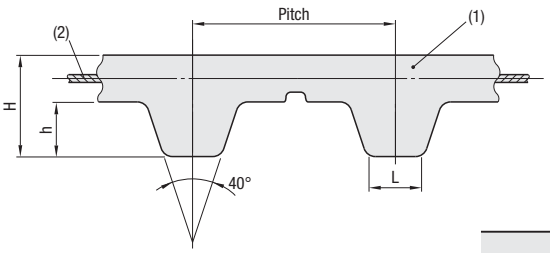
For Long Timing Belts No. of Teeth Configurable Type, refer to P.1203



RoHS

TTBU

Selecting Method P.1923



Material	
(1) Body	Polyurethane
(2) Core Wire	Steel Cord

⊗ Cannot be used with tension from back side.
Operating Temperature: 0~80°C

Type	Pitch	H	h	L	Unit Mass g/m (Width: 10mm)
T5	5	2.2	1.2	1.8	20.0
T10	10	4.5	2.5	3.5	42.0

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece P.88

Express ServiceT is available up to 5 pieces.

Order Example

Part Number		
Type	Belt No.	Belt Nominal Width
TTBU	550	T5 - 100

Belt Nominal Width
Type
Belt Circumference Length (mm)
Type

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Type T5(Pitch: 5mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price			
Type	Belt No.	Belt Nominal Width			Belt Nominal Width			
					100	150	200	250
TTBU	185T5	100 (10mm)	37	185				
	200T5		40	200				
	225T5		45	225				
	250T5		50	250				
	275T5		55	275				
	280T5		56	280				
	295T5		59	295				
	300T5		60	300				
	325T5		65	325				
	350T5		70	350				
	375T5		75	375				
	400T5		80	400				
	425T5		85	425				
	440T5		88	440				
	450T5		90	450				
	475T5		95	475				
	500T5		100	500				
	525T5		105	525				
	550T5	150 (15mm)	110	550				
	575T5		115	575				
	590T5		118	590				
	600T5		120	600				
	625T5	200 (20mm)	125	625				
	630T5		126	630				
	650T5		130	650				
	675T5		135	675				
	690T5	250 (25mm)	138	690				
	700T5		140	700				
	725T5		145	725				
	750T5		150	750				
	780T5		156	780				
	800T5		160	800				
	850T5		170	850				
	900T5		180	900				
	1000T5		200	1000				
	1075T5		215	1075				
	1090T5		218	1090				
	1100T5		220	1100				
	1115T5		223	1115				
	1215T5		243	1215				
	1350T5		270	1350				
	1380T5		276	1380				

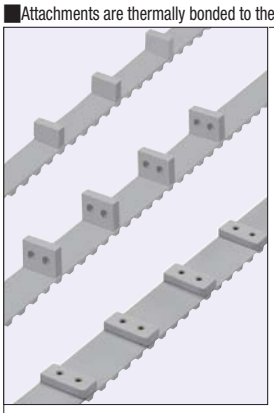
Type T10(Pitch: 10mm)

Part Number			Teeth	Belt Circum. Length (mm)	€ Unit Price					
Type	Belt No.	Belt Nominal Width			Belt Nominal Width					
					150	200	250	300	400	500
TTBU	400T10	150 (15mm)	40	400						
	450T10		45	450						
	500T10		50	500						
	530T10		53	530						
	550T10		55	550						
	560T10		56	560						
	600T10		60	600						
	630T10		63	630						
	650T10		65	650						
	700T10		70	700						
	720T10		72	720						
	750T10		75	750						
	800T10	200 (20mm)	80	800						
	850T10		85	850						
	900T10		90	900						
	910T10		91	910						
	920T10	250 (25mm)	92	920						
	950T10		95	950						
	960T10		96	960						
	980T10	300 (30mm)	98	980						
	1000T10		100	1000						
	1050T10		105	1050						
	1100T10	400 (40mm)	110	1100						
	1150T10		115	1150						
	1200T10		120	1200						
	1250T10		125	1250						
	1300T10	500 (50mm)	130	1300						
	1320T10		132	1320						
	1350T10		135	1350						
	1400T10		140	1400						
	1450T10		145	1450						
	1500T10		150	1500						
	1600T10		160	1600						
	1700T10		170	1700						
	1750T10		175	1750						
	1800T10		180	1800						
	1880T10		188	1880						

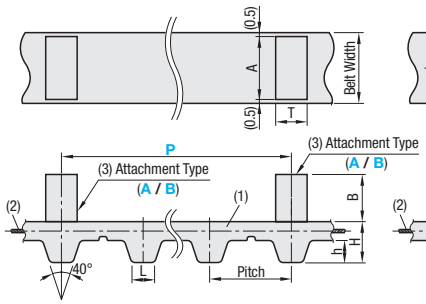
Timing Belts with Attachments (T5 / T10)

- Joint Processed -

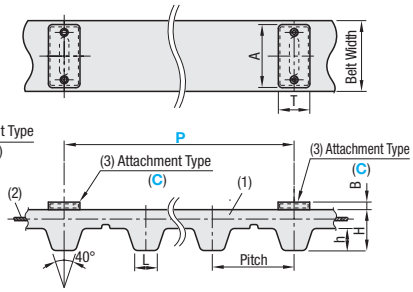
■Attachments are thermally bonded to the backside of the Timing Belt. It enables a constant pitch conveyance of various work pieces. For Timing Pulleys, refer to P.1147-P.1149



ATBT -Attachment A B

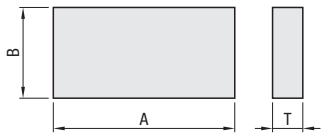


-Attachment C (with Tapped Holes)

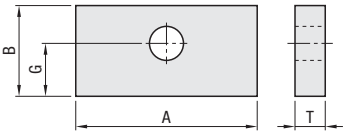


Attachment Shape Details

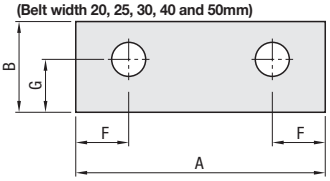
-Attachment A



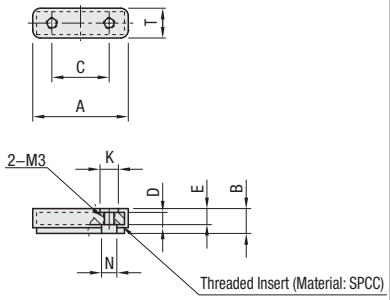
-Attachment B (Belt width 10 and 15mm)



(Belt width 20, 25, 30, 40 and 50mm)



-Attachment C (with Tapped Holes)



Operating Temperature -20~70°C

	Material
(1) Body	Polyurethane (for joint process)
(2) Core Wire	Aramid Core Wire
(3) Attachment	Polyurethane (for joint process)

Type	Pitch	H	h	L
T5	5	2.2	1.2	1.8
T10	10	4.5	2.5	3.5

-Attachment A Dimensions

Type	Belt Width	A	B	T	Belt Unit Mass g/m (Width: 10mm)	Attachment Mass (g)
T5	10mm	9	10	3	20.0	0.34
	15mm	14				0.52
	20mm	19				0.71
	25mm	24				0.89
T10	15mm	14	10	5	40.0	0.86
	20mm	19				1.17
	25mm	24				1.47
	30mm	29	15			2.67
	40mm	39				3.59
	50mm	49	20			6.02

*B dimension is a dimension after adhesion.

-Attachment B Dimensions

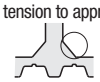
Type	Belt Width	A	B	Through Hole	G	F	T	Belt Unit Mass g/m (Width: 10mm)	Attachment Mass (g)
T5	10mm	9	10	3.5	5.5	-	3	20.0	0.30
	15mm	14	15	4.5	9				0.72
	20mm	19		2-4.5		5			0.94
	25mm	24	20	2-5.5	13	6			1.61
T10	15mm	14	15	4.5	9	-	5	40.0	1.19
	20mm	19		2-4.5		5			1.55
	25mm	24	20	2-5.5	13	6			2.66
	30mm	29		2-6.5		7			3.15
	40mm	39							4.38
	50mm	49							5.61

*B and G dimensions are dimensions after adhesion.

-Attachment C Dimensions

Type	Belt Width	A	B	T	C	D	E	K	N	Belt Unit Mass g/m (Width: 10mm)	Attachment Mass (g)
T10	25mm	25.0	6.5	7.8	15.0	3.2	5.0	4.8	4.0	40.0	3.9
	30mm										
	40mm										
	50mm										

- The attachment is mounted on the backside above the belt teeth.
- Attachmentis mounted on the center of the belt.
- Jointing process reduces allowable tension to approx. 50% of open end belts.
- Adhesion burrs occur at the base of the adhered attachment.



- For material properties of polyurethane for joint process, refer to P.1200
- For allowable tension of belts and documents for design, refer to P.1940
- If the attachments are to receive vibrations or large loads, test the applicability before using.

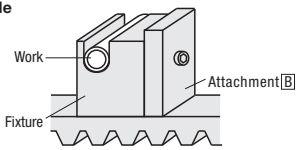
•Tolerance of Mounting Pitch Attachment (mm)

Mounting Pitch	Tolerance of Mounting Pitch
30~200	±0.5
300~	±1.0

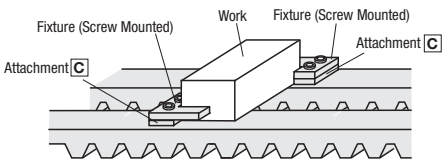
•Attachment Dimension Tolerance (mm)

Dimensions	Dimension Tolerance
A	±0.5
B	±0.5
T	±0.5
C	±0.1

Example



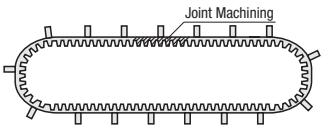
Attachment B allows mounting of work-piece specific fixtures.



Attachment C allows screw-mounting of fixtures/brackets from above, providing freedom in work-piece heights and shapes.

■Joint process

The Open End Belt can be changed to an endless belt by heat-sealing the ends of the Open End Belt.
Core wires of the joint part are not connected.



CAD Data

Type T5 (Pitch: 5mm)

Part Number Type	Belt No.	Belt Nominal Width	Attachment Type	Attachment Mounting Pitch P	Teeth	Circum. Length (mm)	€ Unit Price Qty. 1 ~ 4 Belt Nominal Width 100	150	200	250
ATBT	700T5	100 (10mm)	A	30	140	700				
	750T5				150	750				
	800T5				160	800				
	850T5				170	850				
	900T5				180	900				
	950T5			50~1200 (50mm Increment)	190	950				
	1000T5				200	1000				
	1050T5				210	1050				
	1100T5				220	1100				
	1150T5				230	1150				
	1200T5				240	1200				
	1250T5				250	1250				
	1300T5				260	1300				
	1350T5				270	1350				
	1400T5				280	1400				
	1450T5				290	1450				
	1500T5				300	1500				
	1550T5			50~1950 (50mm Increment)	310	1550				
	1600T5				320	1600				
	1650T5				330	1650				
	1700T5				340	1700				
	1750T5				350	1750				
	1800T5				360	1800				
	1850T5				370	1850				
	1900T5				380	1900				
	1950T5				390	1950				
	2000T5				400	2000				
	2050T5				410	2050				
	2100T5				420	2100				
	2150T5				430	2150				
	2200T5				440	2200				
	2250T5	150 (15mm)			450	2250				
	2300T5				460	2300				
	2350T5				470	2350				
	2400T5	200 (20mm)			480	2400				
	2450T5				490	2450				
	2500T5				500	2500				
	2550T5	250 (25mm)			510	2550				
	2600T5				520	2600				
	2650T5				530	2650				
	2700T5		B		540	2700				
	2750T5				550	2750				
	2800T5				560	2800				
	2850T5				570	2850				
	2900T5				580	2900				
	2950T5			100~4000 (50mm Increment)	590	2950				
	3000T5				600	3000				
	3050T5				610	3050				
	3100T5				620	3100				
	3150T5				630	3150				
	3200T5				640	3200				
	3250T5				650	3250				
	3300T5				660	3300				
	3350T5				670	3350				
	3400T5				680	3400				
	3450T5				690	3450				
	3500T5				700	3500				
	3550T5				710	3550				
	3600T5				720	3600				
	3650T5				730	3650				
	3700T5				740	3700				
	3750T5				750	3750				
	3800T5				760	3800				
	3850T5				770	3850				
	3900T5				780	3900				
	3950T5				790	3950				
	4000T5				800	4000				

Attachments are available from one piece.

Type T10 (Pitch: 10mm)

Part Number Type	Belt No.	Belt Nominal Width	Attachment Type	Attachment Mounting Pitch P	Teeth	Circum. Length (mm)	€ Unit Price Qty. 1 ~ 4 Belt Nominal Width 150	200	250	300	400	500
ATBT	700T10	150 (15mm)	A	50~2400 (50mm Increment)	70	700						
	750T10				75	750						
	800T10				80	800						
	850T10				85	850						
	900T10				90	900						
	950T10				95	950						
	1000T10				100	1000						
	1050T10				105	1050						
	1100T10				110	1100						
	1150T10				115	1150						
	1200T10				120	1200						
	1250T10				125	1250						
	1300T10				130	1300						
	1350T10				135	1350						
	1400T10				140	1400						
	1450T10				145	1450						
	1500T10				150	1500						
	1550T10				155	1550						
	1600T10				160	1600						
	1650T10				165	1650						
	1700T10				170	1700						
	1750T10				175	1750						
	1800T10				180	1800						
	1850T10				185	1850						
	1900T10	200 (20mm)			190	1900						
	1950T10				195	1950						
	2000T10				200	2000						
	2050T10				205	2050						
	2100T10				210	2100						
	2150T10				215	2150						
	2200T10	250 (25mm)			220	2200						
	2250T10				225	2250						
	2300T10				230	2300						
	2350T10		B		235	2350						
	2400T10				240	2400						
	2450T10	300 (30mm)			245	2450						
	2500T10				250	2500						
	2550T10				255	2550						
	2600T10				260	2600						
	2650T10				265	2650						
	2700T10				270	2700						
	2750T10	400 (40mm)	C		275	2750						
	2800T10				280	2800						
	2850T10				285	2850						
	2900T10				290	2900						
	2950T10				295	2950						
	3000T10	500 (50mm)			300	3000						
	3050T10				305	3050						
	3100T10				310	3100						
	3150T10				315	3150						
	3200T10			100~4000 (50mm Increment)	320	3200						
	3250T10				325	3250						
	3300T10				330	3300						
	3350T10				335	3350						
	3400T10				340	3400						
	3450T10				345	3450						
	3500T10				350	3500						
	3550T10				355	3550						
	3600T10				360	3600						
	3650T10				365	3650						
	3700T10				370	3700						
	3750T10				375	3750						
	3800T10				380	3800						
	3850T10				385	3850						
	3900T10				390	3900						
	3950T10				395	3950						
	4000T10				400	4000						

For orders larger than indicated quantity, please request a quotation.

Attachment Machining Charge (T5)

Belt Nominal Width	Attachment Adhesion Charge (€ Body Price +) A	B
100		
150		
200		
250		

Attachment Machining Charge (T10)

Belt Nominal Width	Attachment Adhesion Charge (€ Body Price +) A	B	C
150			
200			
250			
300			
400			
500			

Price

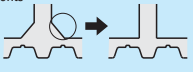
Body Price + Attachment Adhesion Charge = Sales Price
(Ex.)ATBT -900T5150 - B - P50
Attachment adhesion: 900/50=18→18 places

Body Price	+	Attachment Adhesion Charge (5,20x18 places)	=	Body Price 158,40 EUR

Alterations

Part Number	-	Types of attachments	-	P	-	(NB)
ATBT-1200T10200	-	A		- P100	-	NB

15 Days

Alteration Code	Removal of adhesion burrs NB
Spec.	Removes adhesion burrs at the base of attachments 
Price Adder	No. of belt teeth 70~150: 45,00 155~240: 60,00 245~500: 75,00 510~800: 90,00

Order Example

Part Number Type	Belt No.	Belt Nominal Width	-	Attachment Type (A / B / C)	-	Attachment Mounting Pitch P
ATBT	- 1200T10	200	-	A	-	P100
ATBT	- 2450T10	300	-	C	-	P2450

When specifying one attachment, select a mounting pitch of the same No. as Belt No.
Select a mounting pitch for attachment that belt circumferential length is divisible by integral numbers.

(Ex.)T5 type, when belt circumferential length is 1050
O 1050/30=35
O 1050/50=21
X 1050/100=10.5
O 1050/150=7

Mounting pitch for attachment 30, 50 and 150 are selectable.
100 is not selectable.

Days to Ship

13 Days

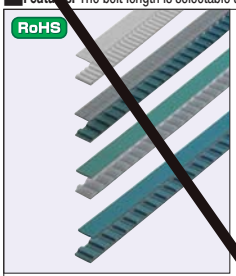
NEW

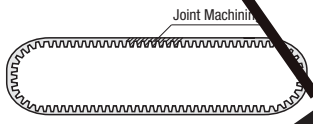
Long Timing Belts -Iron Rubber®-

-No. of Teeth Configurable Joint Process-

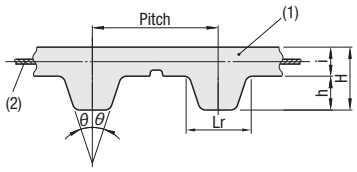
■**Features:** The belt length is selectable as desired and suitable for a long span synchronous conveyance. The Iron Rubber® Type with good allowable tension.®For Timing Pulleys, refer to P.1123~1152

RoHS

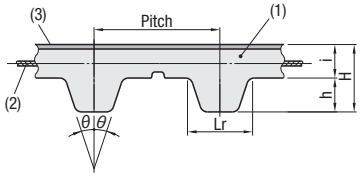




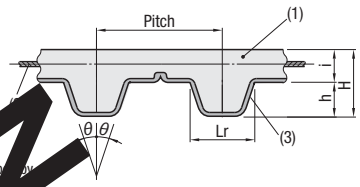
(Standard)



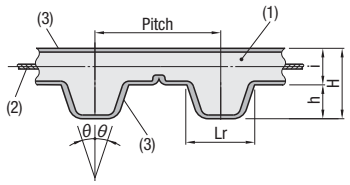
(Backside Upholstered)



(Teeth-side Cloth Lined)



(Both Sides Upholstered)



■**Joint process**
The Open-ended Belt can be changed to an endless b… thermally bonding the ends of the Open-ended Belt. Core wires of the joint part are not connected.

■**Feature of Cloth Lined Belts**
Teeth-side Fabric Lined: Reduces friction coefficient of Pulleys a… Guide Ra… nd cuts noise.
Backside Cloth Lined: Reduces friction coefficient of conveyed items and … suitable … cumulation conveyance.
Both Sides Cloth Lined: Reduces friction coefficient of conveyed ma… nd Pul… cut noise.

Operating … perature 0 ~ 80°C (Reference Value)

Type	Type	Material (1) Body	Material (2) Core Wire	Material (3) Cloth
	Standard	Iron Rubber® (Polyurethane)	High Tensile Strength Steel Cord	-
	Teeth-side Upholstered			Nylon Cloth
	Backside Upholstered			
	Both Sides Upholstered			

Type of Belt	Pitch	28(°)	H	h	i	Lr	Belt Unit Weight g/m (Width: …mm) Standard / Tooth Surface / B… / …Cloth Lined
	5.08	50°	2.3	1.27	1.03	2.57	22.0
	9.525	40°	3.6	1.69	1.91	4.65	36.2
	12.7	40°	4.3	2.29	2.01	6.12	41.7
	5	40°	2.2	1.2	1.0	2.67	20.8
	10	40°	4.5	2.5	2.0	5.32	40.0
	5	50°	2.7	1.2	1.5	-	36.0
	10	50°	4.5	2.5	2.0	-	60.0

For the belt designing, refer to P.1943, and for Material Properties, refer to P.1208 Iron Rubber® is a registered trademark of NOK Corp.

■**Comparison of Friction Coefficient (Reference Value)**

Belt Type / Matching Material	Tooth Surface / Backside Cloth Lined: Cloth Lined Type	Tooth Surface / Backside Cloth Lined: Standard Type
Stainless Steel	0.3	0.6
Polyamide	0.2	0.3
Ultra High-Molecular-Weight Polyethylene	0.2	0.3

…gures in the chart are examples of actual measurement, not standard values.

Part Number: Type	Type of Belt	Belt Nominal Width	Teeth Lower to Upper Limit	Belt Width (mm)	Allowable Tension (N)	€ Body Price Qty.1~4	Joint Process Charge (€ Body Price +)
(Standard)		025	118~9900	6.4	90		
		037		9.5	135		
		050		12.7	175		
		050	70~6299	12.7	320		
		075		19.1	480		
		100		25.4	640		
		150		38.1	950		
(Teeth-side Cloth Lined)		075	56~3938	19.1	480		
		100		25.4	640		
		150		38.1	960		
		200		50.8	1280		
(Backside Upholstered)		100	120~9900	10	150		
		150		15	200		
		200		20	270		
		250		25	350		
(Both Sides Upholstered)		150	70~5000	15	320		
		200		20	440		
		250		25	640		
		400		40	960		
		500		50	1280		
		100	140~9900	10	210		
		150		15	350		
		150	70~4000	15	710		
		200		20	890		
		250		25	1070		

Full Length: Number of Teeth x Pitch. Kgf=Nx0.101972
Allowable tension shows the allowable value of tensile load.

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number: Type	Type of Belt	Belt Nominal Width	-	Teeth
-	AT5	150	-	800
-	H	200	-	300

Days to Ship: 10 Days — Express B — 5,00 EUR/piece — P.88

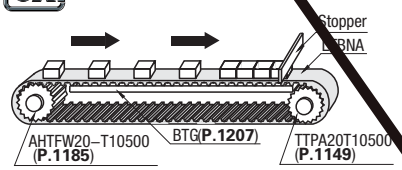
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

(Ex.) LTBJA-XL050-200

Body Price: Teeth	X	Tooth € Unit Price	+	Joint Process Charge	=	€ Unit Price
200	X	0,08 EUR	+	4,60 EUR	=	20,60 EUR

Example



For other examples of use, P.1208

Not Available

NEW

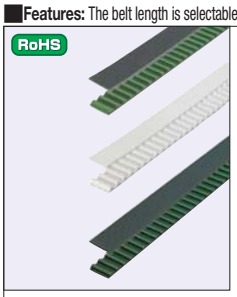
Long Timing Belts -Polyurethane-

-No. of Teeth Configurable Joint Process-

Price Reduction 5%

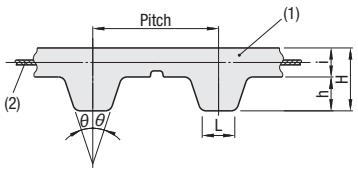
Features: The belt length is selectable as desired, and suitable for a long span synchronous conveyance. For belts with backside attachment, refer to P.1201 For Timing Pulleys, refer to P.1125~1152

RoHS

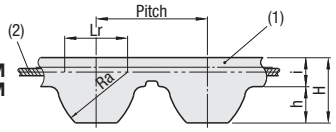


LTBJ(Standard)

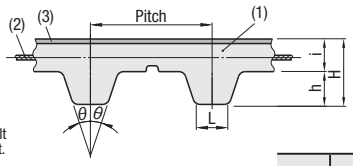
L
H
T5
T10
AT5
AT10



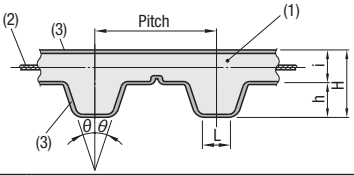
S5M
S8M

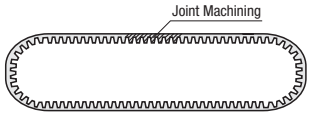


LTBN(Backside Upholstered)



LTBR(Both Sides Upholstered)





Joint process
The Open-ended Belt can be changed to an endless belt by thermally bonding the ends of the Opena-ended Belt. Core wires of the joint part are not connected.

Feature of Cloth Lined Belts
Backside Cloth Lined: Reduces friction coefficient of conveyed items and is suitable for accumulation conveyance.
Both Sides Cloth Lined: Reduces friction coefficient of conveyed materials and Pulleys and cut noise.

Type	Type	Material (M)		
		(1) Body	(2) Core Wire	(3) Cloth
LTBJ	Standard	Polyurethane (for joint process)	T5 / T10 / L / H / S5M / S8M: Aramid Core Wire AT5 / AT10: Steel Cord	-
LTBN	Backside Upholstered			Nylon Cloth
LTBR	Both Sides Upholstered			

Operating Temperature: -20 ~ 70°C

For the belt designing, refer to P.1940, and for Material Properties, refer to P.1208

Type of Belt	Pitch	2θ(°)	H	h	i	L	Unit Mass g/m (Width: 10mm)		
							Standard	Backside Upholstered	Both Sides Upholstered
L	9.525	40°	3.6	1.91	1.69	3.25	29.1	28.8	-
H	12.7	40°	4.36	2.29	2.07	4.4	36.2	33.8	-
T5	5	40°	2.2	1.2	1.0	1.8	19.0	-	20.0
T10	10	40°	4.5	2.5	2.0	3.5	37.7	34.5	32.5
AT5	5	50°	2.7	1.2	1.5	2.5	32.0	-	-
AT10	10	50°	4.5	2.5	2.0	5.0	58.6	-	-

Type of Belt	Pitch	Ra	Lr	H	h	i	Unit Mass g/m (Width: 10mm)
							Standard
S5M	5	3.25	3.25	3.31	1.81	1.5	29.0
S8M	8	5.2	5.2	5.3	2.95	2.35	45.2

Comparison of Friction Coefficient (Reference Value)

Matching Material \ Belt Type	Tooth Surface		Back Surface	
	Cloth Lined Type	Standard Type	Cloth Lined Type	Standard Type
Steel	0.34	0.65	0.29	0.75
Stainless Steel	0.22	0.68	0.17	0.69
Aluminum	0.19	0.42	0.15	0.50
Ultra High-Molecular-Weight Polyethylene	0.18	0.31	0.17	0.32
Teflon	0.12	0.21	0.12	0.28

*Figures in the chart are examples of actual measurement, not standard values.

Part Number			Teeth Lower to Upper Limit	Belt Width (mm)	Allowable Tension (N)	€ Body Price Qty.1~4			Joint Process Charge (€ Body Price +)	
Type	Type of Belt	Belt Nominal Width				LTBJ	LTBN	LTBR	Standard	Upholstered
LTBJ (Standard) LTBN (Backside Upholstered) LTBR (Both Sides Upholstered)	L	050	74~1049	12.7	92					
		075		19.1	138					
		100		25.4	184					
		150		38.1	276					
	H	075	56~787	19.1	163					
		100		25.4	216					
		150		38.1	324					
		200		50.8	432					
	S5M	100	140~2000	10	60					
		150		15	90					
		250		25	150					
	S8M	150	88~1250	15	117					
		250		25	196					
		300		30	235					
		400		40	313					
	T5	100	140~2000	10	29					
		150		15	43					
		200		20	58					
		250		25	72					
	T10	150	70~1000	15	90					
		200		20	120					
		250		25	150					
		300		30	180					
		400		40	240					
		500		50	300					
	AT5	100	140~2000	10	37					
		150		15	55					
	AT10	150	70~1000	15	117					
		200		20	156					
		250		25	195					

Full Length: Number of Teeth x Pitch. Kgf=Nx0.101972

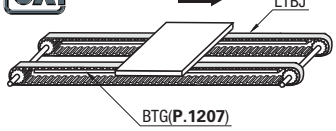
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number						Teeth
Type		Type of Belt		Belt Nominal Width		
LTBJ	-	AT5		150	-	800
LTBR	-	H		200	-	300

Days to Ship 10 Days

Example



For other examples of use, see P.1208

Price

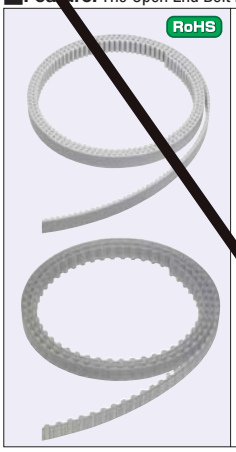
(Ex.) LTBJ-T5 100-600

Body Price				Joint Process Charge		€ Unit Price
Teeth	x	Tooth € Unit Price	+		=	
600	X	0,15 EUR	+	5,10 EUR	=	95,10 EUR

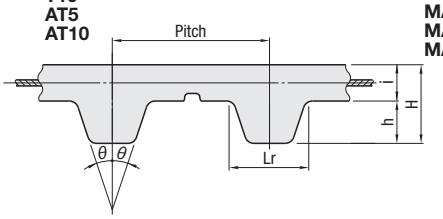
Open End Belts -Iron Rubber®-

CAD Data

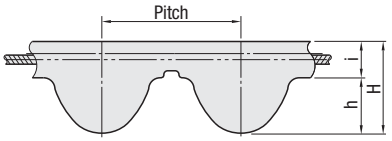
Feature: The Open End Belt Iron Rubber® Type with good tensile strength. For connection fittings, refer to P.1209 For examples of use, refer to P.1208

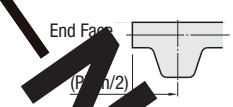


XL T5
L T10
H AT5
AT10



MA3
MA5
MA8





Operating Temperature 0 ~ 80°C (Reference Value)

Type	Material	
	Main Body	Core Wire
TBOA / TTBOA MTBOA	Iron Rubber® (Polyurethane)	High Tensile Strength Steel Cord

Type of Belt	Pitch	28(°)	H	h	i		Unit Mass g/m (Width: 10mm)
	5.08	50°	2.3	1.27	1.03	2.57	22.0
	9.525	40°	3.6	1.69	1.91	4.65	36.2
	12.7	40°	4.3	2.29	2.01		41.7
	5	40°	2.2	1.2	1.0	2.67	20.8
	10	40°	4.5	2.5	2.0	5.3	40.0
	5	50°	2.7	1.2	1.5	-	36.0
	10	50°	4.5	2.5	2.0	-	

For the belt designing, refer to P.1943refer to
Iron Rubber® is the trademark of NOK Corp.

Type of Belt	Pitch	H	h	i	Unit Mass g/m (Width: 10mm)
	3	2	1.1	0.9	20.8
	5	3.2	1.7	1.5	38.4
	8	4.6	2.8	1.8	59.2

MA Type has little backlash and is suitable for positioning.
MA Type Timing Pulleys are available on our website.

Part Number			Te	Belt Width	Allowable Tension	Applicable Metal	€ Unit Price
Type	Type of Belt	Belt Nominal Width	Lower to U er Limit	(mm)	(N)	Joint	Qty.1~4
		025		6.4	180	TBCK-XL025	
		037	30~99	9.5	270	TBCK-XL037	
		050		12.7	350	TBCK-XL050	
		050		12.7	640	TBCK-L050	
		075	30~6299	19.1	960	TBCK-L075	
(Iron Rubber®)		100			1280	TBCK-L100	
		075		19.1	960	TBCK-H075	
		100			1280	TBCK-H100	
		150	45~3938	38.1	1920	TBCK-H150	
		200		5	2560	TBCK-H200	
		070		7	200	TBCK-MA3070	
		100	40~9900	10	300	TBCK-MA3100	
		150		15	00	TBCK-MA3150	
		100		10	470	TBCK-MA5100	
		150	50~9900	15		TBCK-MA5150	
(Iron Rubber®)		250		25		TBCK-MA5250	
		150		15		TBCK-MA8150	
		200		20	60	TBCK-MA8200	
		250	60~5000	25	27	TBCK-MA8250	
		400		40	4320	TBCK-MA8400	
		100		10	300	TBCK-T5100	
		150		15	400	TBCK-T5150	
		200	40~9900	20	550	TBCK-T5200	
		250		25	700	TBCK-T5250	
		150		15	640	TBCK-T10150	
		200		20	880	TBCK-T10200	
		250	40~5000	25	1280	TBCK-T10250	
(Iron Rubber®)		400		40	1920	TBCK-T10400	
		500		50	2560	TBCK-T10500	
		100	40~9900	10	470	TBCK-AT5100	
		150		15	740	TBCK-AT5150	
		150		15	1620	TBCK-AT10150	
		200	40~4000	20	2160	TBCK-AT10200	
		250		25	2700	TBCK-AT10250	

Full Length: Number of Teeth x Pitch. kgf=Nx0.101972
Allowable tension shows the allowable value of tensile load.

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number				
Type	Type of Belt	Belt Nominal Width	-	Teeth
-	H	100	-	1100
-	MA5	100	-	500
-	AT5	150	-	1200

Days to Ship: 8 Days
Express A 5,00 EUR/ piece P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price
(Ex.) TTBOA-T10150-300

Teeth	x	Tooth € Unit Price	=	€ Unit Price
300	x	0,23 EUR	=	69,00 EUR

Not Available

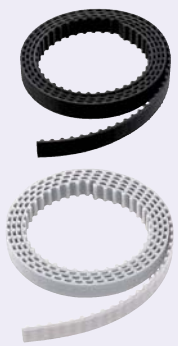
Open End Belts -Polyurethane, Chloroprene Rubber-

CAD Data

For fittings, refer to P.1209

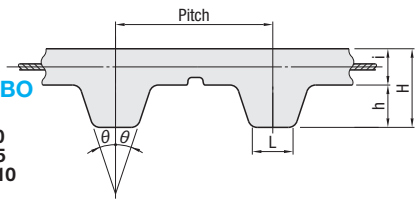
For examples of use, refer to P.1208

RoHS



TBOG / TBO

XL
L
H

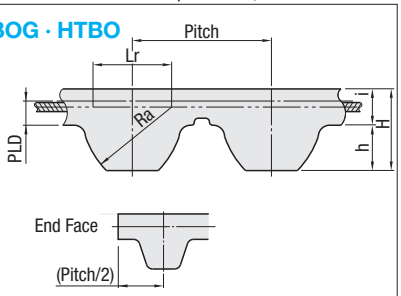


TTBO

T5
T10
AT5
AT10

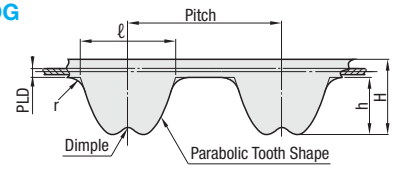
HTBOG · HTBO

S3M
S5M
S8M



PTBOG

P5M
P8M



Operating Temperature -20°C~80°C

Type	Material	
	Main Body	Core Wire
TBOG / HTBOG / PTBOG	Chloroprene Rubber (Black)	Glass Cord
TBO / HTBO / TTBO	Polyurethane (White)	Steel Cord

Type of Belt	Pitch	2θ(°)	H	h	i	L	Unit Mass g/m (Width: 10mm)	
							Chloroprene Rubber	Polyurethane
XL	5.08	50°	2.25	1.25	1.0	1.35	26.77	22.17
L	9.525	40°	3.5	1.9	1.6	3.2	37.8	36.22
H	12.7	40°	4.3	2.3	2.0	4.4	52.36	41.22
T5	5	40°	2.2	1.2	1.0	1.8	-	22.1
T10	10	40°	4.5	2.5	2.0	3.5	-	47.6
AT5	5	50°	2.7	1.2	1.5	2.5	-	32.0
AT10	10	50°	4.5	2.5	2.0	5	-	58.6

For the belt designing, refer to P.1940

Type of Belt	Pitch	Ra	Lr	H	h	i	PLD	Unit Mass g/m (Width: 10mm)	
								Chloroprene Rubber	Polyurethane
S3M	3	1.95	1.95	2.10 (2.00)	1.14	0.96 (0.86)	0.381	-	24.3
S5M	5	3.25	3.25	3.61 (3.20)	1.91 (1.77)	1.70 (1.43)	0.480	38.8	34.6
S8M	8	5.20	5.20	5.30 (5.00)	3.05 (2.85)	2.25 (2.15)	0.686	55.2	57.6

Dimensions in ( ) are for Polyurethane

Type of Belt	Pitch	ℓ	H	h	PLD	r	Unit Mass g/m (Width: 10mm)
							Chloroprene Rubber
P5M	5	3.25	3.6	1.81	0.571	0.5	41.0
P8M	8	5.2	5.5	2.9	0.686	0.8	56.0

Part Number			Teeth	Belt Width	Allowable Tension (N)		Applicable	€ Unit Price Qty. 1~29	
Type	Type of Belt	Belt Nominal Width	Lower to Upper Limit	(mm)	Chloroprene Rubber	Polyurethane	Metal Joint	Chloroprene Rubber	Polyurethane
TBOG (Chloroprene Rubber) TBO (Polyurethane)	XL	025	30~3937	6.4	-	66	TBCK-XL025		
		037		9.5	47	102	TBCK-XL037		
		050		12.7	70	142	TBCK-XL050		
	L	050	30~2099	12.7	95	259	TBCK-L050		
		075		19.1	165	387	TBCK-L075		
		100		25.4	-	519	TBCK-L100		
	H	075	45~1574	19.1	-	397	TBCK-H075		
		100		25.4		529	TBCK-H100		
		150		38.1	-	799	TBCK-H150		
		200		50.8	-	1093	TBCK-H200		
HTBOG (Chloroprene Rubber) HTBO (Polyurethane)	S3M	060	40~6666	6	-	127	TBCK-S3M060		
		100		10	-	106	TBCS-S3M100		
		150		15	-	159	TBCS-S3M150		
	S5M	100	50~4000	10	310	215	TBCK-S5M100		
		150		15	490	323	TBCK-S5M150		
		250		25	-	539	TBCK-S5M250		
	S8M	150	60~2500	15	-	647	TBCK-S8M150		
		250		25	950	1176	TBCK-S8M250		
		300		30	-	1412	TBCK-S8M300		
		400		40	-	1882	TBCK-S8M400		
PTBOG (Chloroprene Rubber)	P5M	100	50~4000	10	287	-	TBCK-S5M100		
		150		15	456	-	TBCK-S5M150		
		250		25	817	-	TBCK-S5M250		
	P8M	150	60~2500	15	606	-	TBCK-S8M150		
		250		25	1060	-	TBCK-S8M250		
TTBO (Polyurethane)	T5	100	40~4000	10	-	112	TBCK-T5100		
		150		15	-	166	TBCK-T5150		
		200		20	-	225	TBCK-T5200		
		250		25	-	284	TBCK-T5250		
	T10	150	40~2000	15	-	299	TBCK-T10150		
		200		20	-	397	TBCK-T10200		
		250		25	-	529	TBCK-T10250		
		300		30	-	627	TBCK-T10300		
		400		40	-	862	TBCK-T10400		
		500		50	-	1064	TBCK-T10500		
	AT5	100	40~4000	10	-	147	TBCK-AT5100		
		150		15	-	221	TBCK-AT5150		
	AT10	150	40~2000	15	-	469	TBCK-AT10150		
		200		20	-	625	TBCK-AT10200		
		250		25	-	781	TBCK-AT10250		

Full Length: Number of Teeth x Pitch. kgf=Nx0.101972

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number						
Type		Type of Belt		Belt Nominal Width	-	Teeth
TBO	-	H		100	-	1100
HTBOG	-	S5M		100	-	500
TTBO	-	AT5		150	-	1200

Days to Ship 8 Days

Price

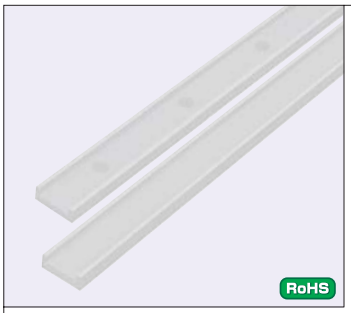
(Ex.) TTBO-T10200-300

Teeth	x	Tooth € Unit Price	=	€ Unit Price
300	x	0,31 EUR	=	93,00 EUR

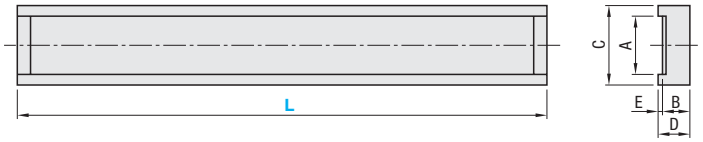
Timing Belts Guides

CAD Data

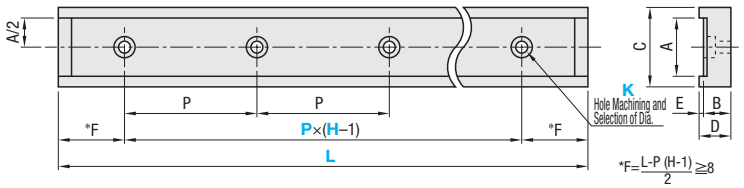
Features: A guide to prevent belts from flexure and meandering during conveying.



BTG (No Hole Type)

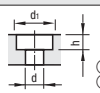


BTGZ (1 row of counterbored holes type)



Details of Hole Dimensions

Counterbored Holes



A≥d1+6
A≥d+6

Screw Nominal Diameter	4	5	6
d	4.5	5.5	6.5
d1	8	9.5	11
h	5	6	7

Accuracy Standards

Dimensions	Tolerance
A / B / C / D / E	±0.2
L	±1.0

M Material: Ultra High-Molecular-Weight Polyethylene

Thermal Expansion Coefficient: 1.7×10^{-4}/°C

Machining conditions: 3mm thickness from a hole to the end face is required.

Part Number Type	Nominal	L 10mm Increment	P (Hole pitch) 5mm Increment	H No. of Holes	K Hole Machining and Selection of Dia.	Applicable Belt Type	A	B	C	D	E
BTG (No Hole) / BTGZ (1 row of counterbored holes)	100	200~1800	-	-	-	T5100 / AT5100	12	8.6	20	10	1.4
	150		50~500	2~10	4, 5, 6	T5150 / AT5150	17		23		
	150A					T10150 / AT10150		9		12	3
	200					T5200	22	8.6	30	10	1.4
	200A					T10200 / AT10200		9		12	3
	250					T10250 / AT10250	27		35		
	250B					T5250		8.6		10	1.4
	300					T10300	32	9	42	12	3
	400					T10400	43		53		
	500					T10500	53		63		

Applicable to belts not listed in "Applicable Belt Type". Make sure of the width and no. of teeth before use.

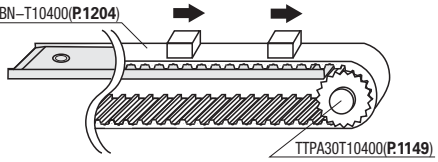
Belt Nominal Width 100 is not available for BTGZ.

Order Example

Part Number Type	Nominal	-	L	-	P	-	H	-	K Hole Machining Nominal Dia.
BTG	150	-	300						
BTGZ	200A	-	1200	-	P160	-	H8	-	K5

Example

LTBN–T10400(P.1204)



TTPA30T10400(P.1149)

Days to Ship

10 Days

Express B | 5,00 EUR/ piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Volume discount rate is not applicable to hole machining charge.

Product price is the sum of body and shaft bore machining charge.

For BTG, shaft bore machining is free of charge.

(Ex.)BTGZ150-800-P200-H4-K5

Body Price + Hole Machining Charge = Body Price

+ 8,00 = 40,90 EUR

Body Price

Part Number Type	Nominal	€ Unit Price L200~400	L410~600	L610~900	L910~1200	L1210~1500	L1510~1800
BTG	100						
	150						
	150A						
	200						
BTGZ (+ Hole Machining Charge)	200A						
	250						
	250B						
	300						
	400						
	500						

Hole Machining Charge

No. of Holes	BTGZ (1 row of counterbored holes)
2	
3	
4	
5	
6	
7	
8	
9	
10	

Material Properties and Usage Examples of Long Timing Belts

■Long Timing Belts (P.1203, 1204) Material Properties

■Chemical Resistance (Long Timing Belts Iron Rubber® P.1203)

O: With resistibility
Δ: With limited resistibility
X: Non-resistant

Chemicals	Resistibility	Chemicals	Resistibility	Chemicals	Resistibility
Acetic Acid 5%	X	Aqueous Sodium Hydroxide Solution 5%	X	N-Hexane	Δ
Glacial Acetic Acid (38°C)	X	Aqueous Sodium Hydroxide Solution 10%	X	Hydrazine	X
Non-Glacial Acetic Acid	X	Aqueous Potassium Hydroxide Solution	X	N-Methylpyrrolidone	X
Acidum Hydrochloricum 5%	X	Sodium Dichromate 20%	Δ	Isooctane	Δ
Nitric Acid 10%	X	Seawater	Δ	Isopropyl Alcohol	Δ
Sulfuric Acid	X	Acetone	X	Kerosene	Δ
Fuming Sulfuric Acid 20%	X	Methyl Ethyl Ketone	X	Gasoline	Δ
Sulfurous Acid	X	Ethyl Alcohol	X	Jet Fuel	Δ
Formic Acid	X	Methyl Alcohol	X	Linseed Oil	O
Hydro Cyanic Acid	X	Ethyl Acetate	X	Ricinus	O
Hydrofluoric Acid 10%	X	Carbon Tetrachloride	X	Naphthaline	Δ
Hydrogen Sulfide	X	Benzene	X	Soybean Oil	O
Chlorine Gas	X	Carbon Bisulfide	X	Beer	O
Aqueous Trisodium Phosphate Solution	O	Dioctyl Phthalate	O	Phenol	X
Aqueous Citric Acid Solution	O	Chloroethane	X	Ethylene Tetrachloride	X
Anhydrous Bromine (Solution)	X	Ethylene Glycol	Δ	Xylene	X
Aqueous Acidum Boricum Solution	O	Ethylene Oxide	Δ	Fuel Oil A	Δ
Aqueous Ammonium Chloride Solution	Δ	Fluosilicic Acid	Δ	Fuel Oil B	X
Aqueous Calcium Chloride Solution	O	Formaldehyde 40%	X	Fuel Oil C	X
Aqueous Calcium Hypochlorite Solution	O	Chlorobenzene	X	Dimethylformamide	X
Aqueous Sodium Chloride Solution	O	Cyclohexane	Δ	Tetrahydrofuran	X
Aqueous Ammonium Sulphate Solution	Δ	Dibutyl Phthalate	O	Toluene	X
Aqueous Ammonium Hydroxide Solution	X	Glycerin	O	Hydrogen Peroxide Solution	X

※The effects are just for reference and tests are required before actual use.
Check compatibility before using as belts.

■Chemical Resistance (Long Timing Belts Polyurethane P.1204)

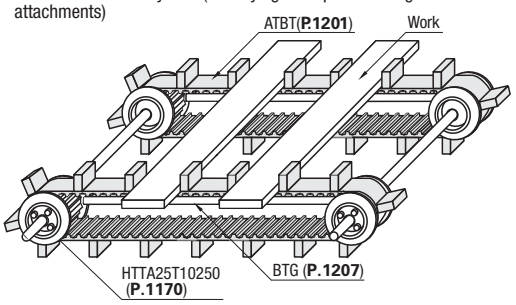
O: With resistibility
Δ: With limited resistibility
X: Non-resistant

Chemicals	Resistibility	Chemicals	Resistibility
Acetic Acid	Δ	Kerosene	O
Acetone	Δ	Grease	O
Aluminum Chloride (5% Moisture)	O	Methanol	Δ
Ammonia Water (10%)	O	Methanol / Gasoline (15 / 85)	Δ
Aniline	X	Methylethylketone	Δ
Astm No.1 Oil	O	Chloromethane	Δ
Astm No.2 Oil	O	Mineral oil	O
Astm No.3 Oil	Δ	Nitric Acid 20%	X
Benzene	Δ	Regular gasoline	Δ
Butyl alcohol	Δ	Super gasoline	Δ
Butyl Acetate	X	Saline Solution	O
Carbon Tetrachloride	X	Seawater	O
Cyclohexanol	Δ	Aqueous Sodium Chloride Solution	O
Diesel Oil	O	Sodium Hydroxide	Δ
Dimethylformamide	X	Tetraphydrafuran	X
Ethanol	Δ	Toluene	X
Ethyl Acetate	X	Trichloethylene	X
Ethylether	O	Water	O
n-Heptane	O		
20% Hydrochloric Acid	Δ		
Iron Chloride (Moisture 5%)	Δ		
Isopropanol	Δ		

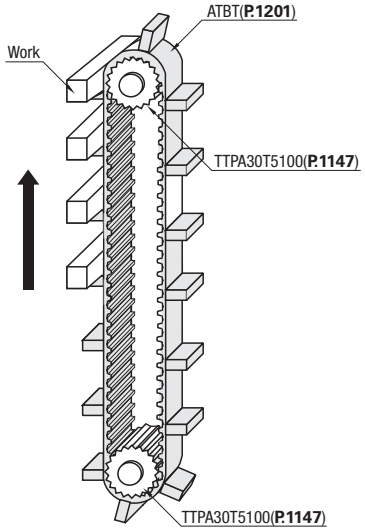
※Not applicable when temperature is above 40°C or belts are immersed in solution / liquid.

■Long Timing Belts / Open End Belts (P.1201-1206) Example of Use

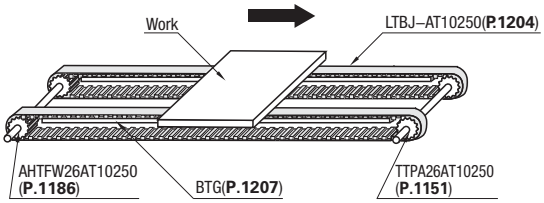
- Simultaneous Conveyance (Conveying work pieces at regular intervals using attachments)



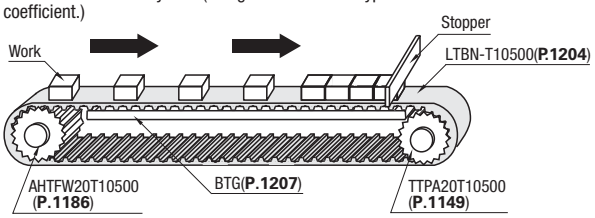
- Vertical Conveyance (Conveying with light work pieces on attachments)



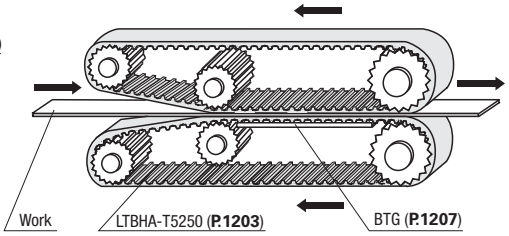
- Circuit Board Conveyance (Conveying boards on two timing belts)



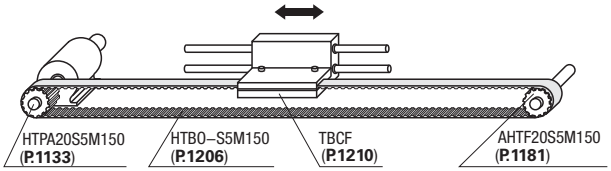
- Accumulation Conveyance (Using the Cloth Lined type to reduce friction coefficient.)

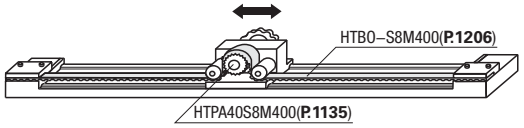


- Tractor Conveyance (Sandwiching work pieces between belts)



- Linear Drive (Reciprocating motion with open end belts)





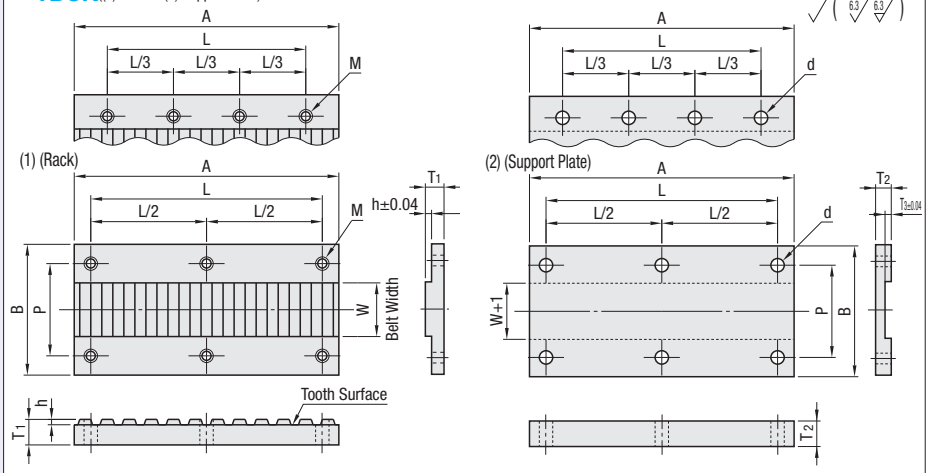
Metal Fittings for Timing Belts

-Overpressure Prevention Type-

RoHS



TBCK((1) Rack + (2) Support Plate)



M Materials: EN AC-51400-T5/AlMgSi0,7 S Surface Treatment: Clear Anodize

A Accessory: Hexagon Socket Head Cap Screw

Part Number			W	A	B	T_1	T_2	T_3	h	L	P	M	d	Included Screw	Mounting No. of Holes	€ Unit Price
Type	Type of Belt	Belt Nominal Width														
TBCK ((1)+(2))	XL	025	6.4	66	24	6	4.5	2.10	1.30	56	13	M4	4.5	M4-10	6	
		037	9.5		26						16					
		050	12.7		30						20					
	L	050	12.7	124	32	8	5.5	3.33	2.05	111	21	M5	5.5	M5-12	8	
		075	19.1		38						27					
		100	25.4		46						34					
	H	075	19.1	165	38	10	6.5	4.15	2.55	147	27			M5-14		
		100	25.4		46						34					
		150	38.1		58						46					
		200	50.8		70						59					
	S3M	060	6	39	18	4	3.5	1.94	1.25	31	11	M3	3.4	M3-6	6	
	S5M	100	10	65	26	6	5.5	3.14	2.00	51	17	M4	4.5	M4-10		
		150	15		32						22					
		250	25		42						32					
	S8M	150	15	104	34	8	6.5	4.72	3.00	84	23	M5	5.5	M5-12	8	
		250	25		44						33					
		300	30		50						38					
		400	40		60						48					
	MA3	070	7	39	20	4	3.5	1.8	1.1	31	13	M3	3.4	M3-6	6	
		100	10		24						16					
		150	15		29						21					
	MA5	100	10	65	26	6	5.5	2.9	1.7	51	17	M4	4.5	M4-10		
		150	15		32						22					
		250	25		37						32					
	MA8	150	15	104	34	8	6.5	4.3	2.8	84	23	M5	5.5	M5-12	8	
		200	20		39						28					
		250	25		45						33					
		400	40		60						48					
	T5	100	10	65	26	6	4.5	2.20	1.40	51	17	M4	4.5	M4-10	6	
		150	15		32						22					
		200	20		38						27					
		250	25		43						32					
	T10	150	15	130	34	8	6.5	4.30	2.70	111	23	M5	5.5	M5-12	8	
		200	20		40						28					
		250	25		44						33					
		300	30		50						38					
		400	40		60						48					
		500	50		70						58					
	AT5	150	15	65	32	6	4.5	2.6	1.40	51	22	M4	4.5	M4-10	6	
	AT10	200	20	130	40	8	6.5	4.30	2.70	111	28	M5	5.5	M5-12	8	
		250	25		44						33					

(?)This product is designed to be applied to the Open-ended Belts (Urethane Type).
When using this product for other types of belts, check the back thickness of the belts and dimensions of this product before using.

(?)The tooth profile complies with the Timing Belts and the Open-ended Belts.
(?)A Dimension is set for engaging 6 teeth (fitting).

Order Example

Part Number		
Type	Type of Belt	Belt Nominal Width
TBCK	-XL	025

Days to Ship 6 Days P.87

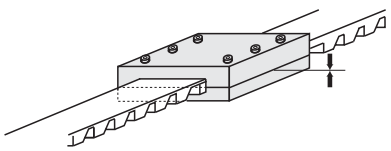
Price

Volume Discount ((?)Round down to one Cent.) P.87

Quantity	1~9	10~15	16~20
Rate	€ Unit Price	5%	10%

(?)For orders larger than indicated quantity, please request a quotation.

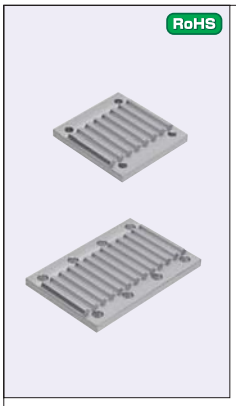
Features: Alteration of plate shape prevents belts from tightened too hard.



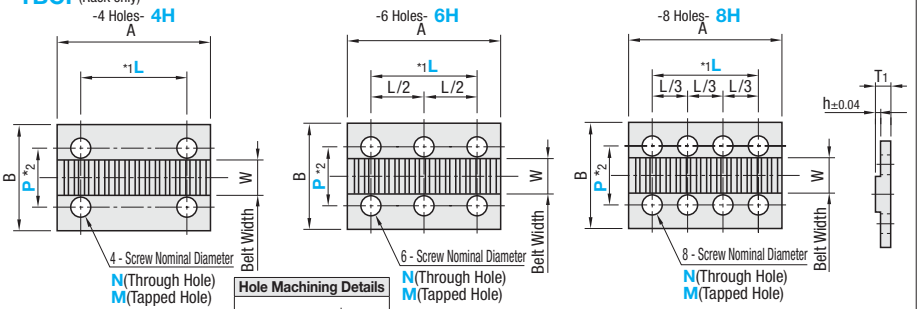
Metal Fittings for Timing Belts

-Overpressure Prevention Metal Fittings Hole Position Configurable Type-

■**Features**:Fitting for timing belts can specify the hole positions for parts to be mounted.



TBCF(Rack only)

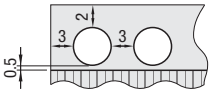


Hole Machining Details



Screw Nominal Diameter	3	4	5
d	3.5	4.5	5.5

■Machining Limits



*1 L Dimension : A≥L+M(d)+6
L(/2, L/3)≥M(d)+3
*2 P Dimension : B≥P+M(d)+4
P≥W+M(d)+1

M Materials: EN AC-51400-T5/AlMgSi0,7
S Surface Treatment: Clear Anodize

Ⓨ Side faces of the Metal Fitting and holes may not be clear anodized.
Ⓨ Mating part needs to be designed that back thickness compression amount is to be around 20% of back thickness of the belt.

Part Number			No. of Holes	Selection		L (1mm Increment)	P (0.5mm Increment)	W	A	B	T1	h	€ Body Price	Hole Machining Charge (€ Body Price+)		
Type	Type of Belt	Belt Nominal Width		Hole Specifications	Nominal Diameter									4H	6H	8H
TBCF	MXL	025	4H 6H 8H	N(Through Hole) M(Tapped Hole)	3 4 5	6~17	11	6.4	26	18	4	0.60				
		037					14~15	9.5		22						
		050					17~19	12.7		26						
	XL	025				6~57	11~17	6.4	66	24	6	1.30				
		031					12~18	7.9		25						
		037					14~19	9.5		26						
		050					17~23	12.7		30						
	L	050				6~115	17~25	12.7	124	32	8	2.05				
		075					24~31	19.1		38						
		100					30~39	25.4		46						
		150					43~51	38.1		58						
	H	075				6~156	24~31	19.1	165	38	10	2.55				
		100					30~39	25.4		46						
		150					43~51	38.1		58						
		200					55~63	50.8		70						
	S2M	040				6~17	8~9	4	26	16	4	0.90				
		060					10~11	6		18						
		100					14~17	10		24						
	S3M	060				6~30	10~11	6	39	18		1.25				
		100					14~15	10		22						
		150					19~21	15		28						
	S5M	100				6~56	14~19	10	65	26	6	2.00				
		150					19~25	15		32						
		250					29~35	25		42						
	S8M	150				6~95	19~27	15	104	34	8	3.00				
		250					29~37	25		44						
		300					34~43	30		50						
		400					44~53	40		60						
	MA3	070				6~30	11~13	7	39	20	4	1.1				
		100					14~17	10		24						
		150					19~22	15		29						
	MA5	100				6~56	14~19	10	65	26	6	1.7				
		150					19~25	15		32						
		250					29~35	25		42						
	MA8	150				6~95	19~27	15	104	34	8	2.8				
		200					24~32	20		39						
		250					29~38	25		45						
		400					44~53	40		60						
	T5	100				6~56	14~19	10	65	26	6	1.40				
		150					19~25	15		32						
		200					24~31	20		38						
		250					29~36	25		43						
	T10	150				6~121	19~27	15	130	34	8	2.70				
		200					24~33	20		40						
		250					29~37	25		44						
		300					34~43	30		50						
		400					44~53	40		60						
		500					54~63	50		70						
	AT5	100				6~56	14~19	10	65	26	6	1.40				
		150					19~25	15		32						
	AT10	150				6~121	19~27	15	130	34	8	2.70				
		200					24~33	20		40						
		250					29~37	25		44						

Ⓨ Metal fitting of S_M Type can be used with a P_M Type belt. Ⓨ The tooth profile complies with the Timing Belts and the Open-ended Belts.
Ⓨ When selecting No. of holes 8H, specify L dimension in multiples of 3.

Order Example

Part Number									
Type	-	Type of Belt	Belt Nominal Width	-	No. of Holes	-	Hole Specifications / Nominal Diameter	- L -	P
TBCF	-	S5M	250	-	4H	-	M4	- L48 -	P31.5

Days to Ship

10 Days

Ⓨ Product price is the sum of body price and shaft bore machining charge.
(Ex.) TBCF-T5150-6H-M4-L50-P22

Body price	+	Hole Machining Charge	=	€ Unit Price
9,80	+	4,80	=	4,60 EUR

Price

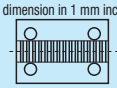
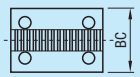
■**Volume Discount** (Ⓨ Round down to one Cent.) P.87

Quantity	1~9	10~15	16~20
Rate	€ Unit Price	5%	10%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Alterations

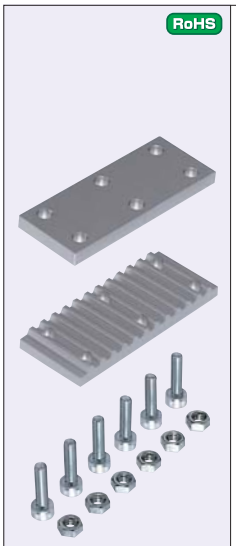
Part Number	-	No. of Holes	-	Hole Specification / Nominal Diameter	-	L	-	P	- (AC / BC)
TBCF-S5M150	-	6H	-	M4	-	L30	-	P22	- AC45

Alterations	A Dimension cut	B Dimension cut
Code	AC	BC
Spec.	Cuts A dimension in 1 mm increment.  AC≥L+M(d)+6	Cuts B dimension in 1 mm increment.  BC≥P+M(d)+4
Price Adder	3,00	3,00

Metal Fittings for Timing Belts

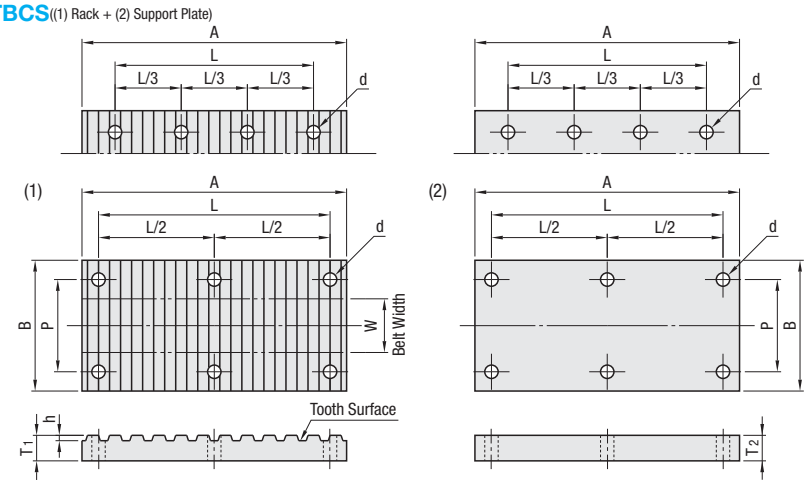
-Nut Fitting Type-

CAD Data



RoHS

TBCS((1) Rack + (2) Support Plate)



The tooth profile is complied with open end belts and timing belts.
Belt width is complied with timing belts.

M Materials: EN AC-51400-T5/AlMgSi0,7
S Surface Treatment: Clear Anodize
A Accessories: Hexagon Socket Head Cap Screws / Nuts

Part Number			W	A	B	T_1	T_2	h	L	P	Included Screw	d	No. of Mounting Holes	€ Unit Price
Type	Type of Belt	Belt Nominal Width												
TBCS ((1)+(2))	MXL	*025	6.4	26	18	4	4	0.51	19	11	M3-12	3.4	6	
		037	9.5		22					14				
		050	12.7		26					18				
	XL	025	6.4	66	24	6	5	1.25	56	12	M4-15	4.5		
		031	7.9		25					14				
		037	9.5		26					16				
		050	12.7		30					20				
	L	050	12.7	124	32	8		1.90	111	20	M5-20	5.5	8	
		075	19.1		38					26				
		100	25.4		46					33				
	H	075	19.1	165	38	10		2.30	147	26				
		100	25.4		46					33				
		150	38.1		58					45				
		200	50.8		70					58				
	S2M	040	4	26	16	4	4	0.76	18	8	M3-12	3.4	6	
		060	6		18					10				
		100	10		24					15				
	S3M	060	6	39	18			1.14	31	10				
		100	10		22					14				
		150	15		28					20				
	S5M	100	10	65	26	6	5	1.81	51	16	M4-15	4.5		
		150	15		32					21				
		250	25		42					31				
	S8M	150	15	104	34	8		2.85	84	22	M5-20	5.5	8	
		250	25		44					32				
		300	30		50					37				
		400	40		60					47				
	T5	100	10	65	26	6	5	1.2	51	16	M4-15	4.5	6	
		150	15		32					21				
		200	20		38					26				
		250	25		43					31				
	T10	150	15	130	34	8		2.5	111	22	M5-20	5.5	8	
		200	20		40					27				
		250	25		44					32				
		300	30		50					37				

*Metal fitting of S_M Type can be used with a P_M Type belt.
*MXL025 is available for belt of MXL019.

Do not machine mounting holes in a belt.
A Dimension is set for engaging 6 teeth (fitting).

Order Example

Part Number		
Type	Type of Belt	Belt Nominal Width
TBCS	- XL	025

Days to Ship

6 Days P.87

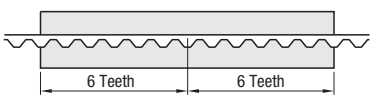
Price

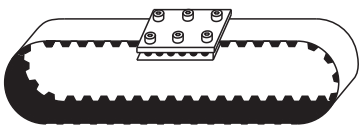
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example





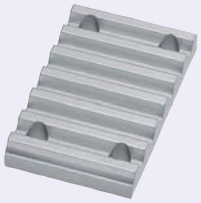
Also can be used as metal fittings for the Open End Belts.

Metal Fittings for Timing Belts

-Bottom Metal Short Type-

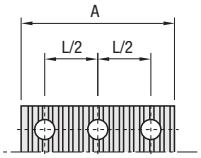
CAD Data

RoHS

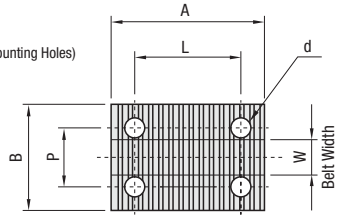


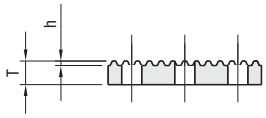
TBCR

(6 Mounting Holes)

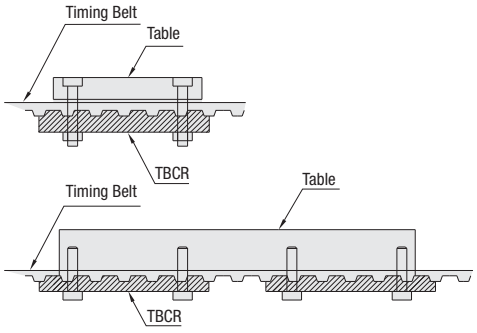


(4 Mounting Holes)





-Installation Example



The tooth profile is complied with open end belts and timing belts.
Belt width is complied with timing belts.

M Materials: EN AC-51400-T5/AlMgSi0,7

S Surface Treatment: Clear Anodize

Part Number			W	A	B	T	h	L	P	d	No. of Mounting Holes	€ Unit Price
Type	Type of Belt	Belt Nominal Width										
TBCR	XL	025	6.4	36	24	6	1.25	25	12	4.5	4	
		031	7.9		25				14			
		037	9.5		26				16			
		050	12.7		30				20			
	L	050	12.7	66	32	8	1.9	50	20	5.5	4	
		075	19.1		38				26			
		100	25.4		46				33			
		150	38.1		58				46			
	H	075	19.1	89	38	10	2.3	70	26	5.5	6	
		100	25.4		46				33			
		150	38.1		58				45			
		200	50.8		70				58			
	S3M	060	6	21	20	4	1.14	15	11	3.4	4	
		100	10		25				15			
		150	15		30				20			
	S5M	100	10	35	26	6	1.81	25	16	4.5	4	
		150	15		32				21			
		250	25		42				31			
	S8M	150	15	56	34	8	2.85	40	22	5.5	4	
		250	25		44				32			
		300	30		50				37			
		400	40		60				47			
	T5	100	10	35	26	6	1.2	25	16	4.5	4	
		150	15		32				21			
		200	20		38				26			
		250	25		43				31			
	T10	150	15	70	34	8	2.5	50	22	5.5	6	
		200	20		40				27			
		250	25		44				32			
		300	30		50				37			

*Metal fitting of S_M Type can be used with a P_M Type belt.

Order Example

Part Number		
Type	Type of Belt	Belt Nominal Width
TBCR	- XL	025

Days to Ship

6 Days P.87

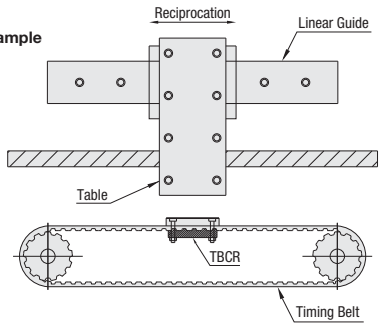
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~2	3~4	5~19	20~29
Rate	€ Unit Price	20%	25%	30%

For orders larger than indicated quantity, please request a quotation.

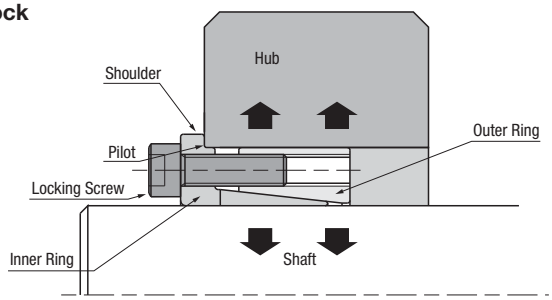
Example



MechaLock
-Overview-

Features of MechaLock
- The Mecha-Lock is a fastening tool to tightly fasten a hub to a shaft by using friction. This is accomplished by converting screw tightening power into pressure on the tapered inner diameter surface of the hub, and the tapered outer diameter of the shaft.
  A hub (such as pulleys, gears and sprockets) can be easily connected with a shaft by screwing.
- It is well suited to applications with repeated forward / backward rotation as it virtually eliminates backlash.
- It can also handle some thrust.
- Design allows for infinite phase adjustment after installation.
- It saves complex key machining on shafts and hubs as well as polishing in assembling, which leads to total cost reduction.

Structure of MechaLock



Installation
(1) Wipe off the shaft surface and apply oil or grease.
(Do not use any oil or grease containing molybdenum type elimination agent.)
(2) Wipe off and apply oil and grease on contact surfaces of MechaLock and Hub.
Apply oil or grease to the thread and seat of lock screws.
(3) Please insert the shaft after assembling the MechaLock and Hubs temporarily.
(Please do not tighten the screws before inserting the shaft.)
(4) After locating, tighten the lock screws using a torque wrench in the diagonal line order, beginning lightly (approx. 1/4 of the predetermined tightening torque).
(5) Tighten the screws further to an increased torque (approximately 1/2 specified torque).
(6) Tighten the screws up to specified torque.
(7) Finally tighten the lock screws in circumferential order.

Note
-Be sure to apply oil or grease at mounting. If not, the MechaLock may not be tightened firmly; the shaft may slip at rotation.
-Tapered portion of Inner ring and outer ring will get into each other even with a little shock from conveyance. Loosen the screw and nut and disassemble parts to release tapered parts before installation.
-Please insert the shaft after assembling the MechaLock and Hubs temporarily. (Please do not tighten the screw before inserting the shaft. MechaLock may deform.)
-Use torque wrench to tighten screws.
-Do not use lock screws other than those included.

Removal
- Be sure to work after the system is completely shut down.
- Loosen the lock screws in circumferential order.
- Insert a screw in a hole for removal and tighten evenly.
- Repeat "Installation" process for re-installation.

Selection Table

Part Number	MLSL	MLR · MLRP MLRS	MLM · MLMB MLMP · MLHS	MLA · MLAP MLAT	MLN · MLNB MLNP
Page	P.1214	P.1215	P.1217	P.1219-1220	P.1220
Series	Thin Type	Compact Type	Standard Type	Straight Type for High Torque	Nut Type
					
Allowable Torque	Δ	0	0	00	0
Thin (Inner and Outer Dia. Difference)	00	00	0	0	0
Lightness	00	0	0	0	0
Centering Function	X	0	00	X	X
Installation	Δ	0	0	0	00
Price	00	00	00	0	0
Features	Because the screw is installed directly on the hub, the inner and outer diameter difference is small and thin. Applicable to installation on a small hub, also. Best suitable for the aluminum belt pulley, etc.	Because mounting tap of the screw is built in the flange, the inner and outer diameter difference is small and thin. Applicable to installation on a small hub, also. Centering function is equipped.	Most widely used locking mechanism. High-performance centering function. Available in wide range of sizes, materials and types of surface treatment.	Has larger maximum allowable torque than Standard Type, and locks the shaft and hub firmly. Compact Straight Type for high torque is also available.	Installation can be completed by tightening one nut and is much easier than the conventional lock screw type.

In the case of shafts with keyway, the MechaLock can be installed on such shafts if the groove width is within JIS Standard. However, allowable torque and allowable thrust load will become 15~20 % smaller.

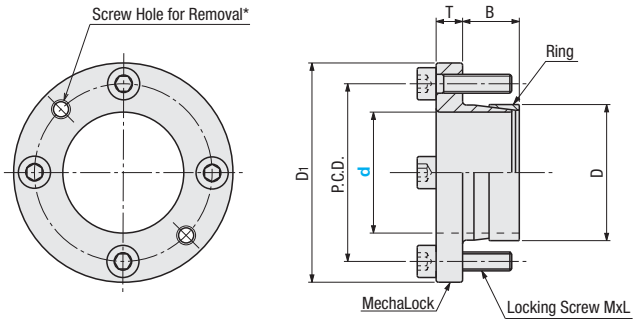
MechaLock
-Thin Type-

Reduced Delivery Time

RoHS



MLSL



*Thread diameter of screw hole for removal is the same as that of locking screw.

Main Body M Material : 1.1191/C45E

Part Number Type	d	D	D1	P.C.D.	T	B	Locking Screw MxL	Locking Screw Qty.	Locking Screw Tightening Torque (Nm)	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Mass (g)	€ Unit Price
MLSL	5	8	21.5	15	4	9.5	M3x10	3	1.9	4.2	1.69	13	
	6	9	22.5	16						5.6	1.87	15	
	8	11	24.5	18						8.5	2.12	17	
	10	13	29	21	5	11.5	M4x18	4	3.9	18	3.59	28	
	12	15	31	23						23	3.76	31	
	14	18	36	26	6	14				37	5.21	52	
	15	19	37	27						39	5.10	55	
	16	20	38	28						42	5.17	57	
	17	21	39	29						45	5.23	59	
	19	24	42	32						49	5.12	71	
	20	25	46	36	7	15	M5x20		7.8	97	9.68	103	
	22	26	47	37						110	9.98	101	
	24	28	49	39						121	10.0	106	
	25	30	51	41						124	9.90	119	
	28	32	53	43						141	10.0	118	
	30	35	56	46						149	9.89	135	

kgf=Nx0.101972

Order Example: Part Number MLSL10

Days to Ship: 6 Days P.87

Price

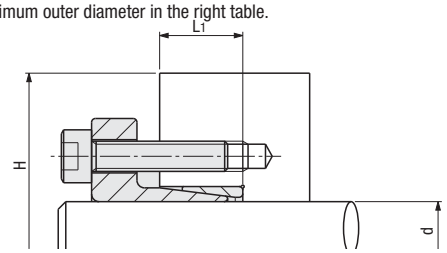
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

How to Determine Hub Outer Diameter

After selecting MechaLock size as well as hub size and material, confirm that the selected values meet the conditions H≤hub minimum outer diameter in the right table.



Recommended Tolerance of Shaft and Hub

Shaft Outer Diameter	h7 (g6)
Hub Inner Diameter	H7

Finish surface roughness at or below 1.6a in shaft and 3.2a in hub.

Hub Minimum Outer Diameter Table

kgf/mm²=MPax0.101972

d	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa) 206 EN-JL 1060 1.0038 1.0301	294 EN-JS 1040 1.1181	392 EN-JS 1060 1.1203	Hub Machining Depth L1
5	134	21.5	21.5	21.5	8
6	132	23	22.5	22.5	
8	123	25	24.5	24.5	
10	153	38	29	29	9.5
12	139	39	31	31	
14	161	56	38	36	11
15	149	52	38	37	
16	143	52	39	38	
17	138	52	39	39	
19	118	51	42	42	
20	198	-*	62	49	12
22	196		64	51	
24	184		64	52	
25	169	101	63	53	
28	160	96	64	55	
30	145	89	66	57	

*Not available.

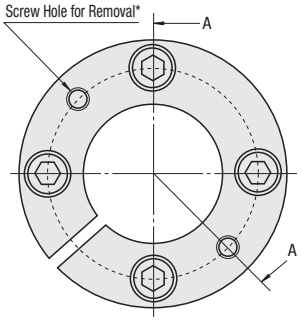
MechaLock

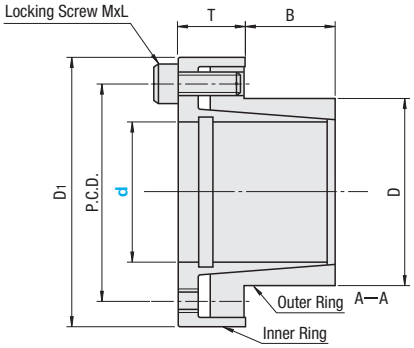
-Compact Type (Centering Function)-



MLR
MLRP (Electroless Nickel Plating)
MLRS (Stainless Steel)

Type	Main Body	
	M Material	S Surface Treatment
MLR	1.1191/C45E	-
MLRP	1.1191/C45E	Electroless Nickel Plating
MLRS	1.4301/X5CrNi18-10	-





*Thread diameter of screw hole for removal is the same as that of locking screw.

Lock screw of MLR and MLRP is tinted in red due to coating agent.

Part Number Type	d	D	D1	P.C.D.	T	B	Locking Screw MxL	Locking Screw Qty.	€ Unit Price MLR	MLRP	MLRS
MLR MLRP (Electroless Nickel Plating) MLRS (Stainless Steel)	5	12	23	15.5	9	10	M3x8	4			
	6										
	8	15	28	19.5	11	12	M4x10	4			
	10	18	31.5	22.5				5			
	12	20	33.5	24.5							
	14	22	35.5	26.5							
	15	23	38.5	28.5	13	14	M5x12	4			
	16	24	39.5	29.5							
	17	25	40.5	30.5							
	18	26	46	33	16		M6x14	4			
	19	27	47	34							
	20	28	48	35							
	22	32	52	39		16					
	24	34	54	41							
	25										
	28	39	59	46		20		6			
	30	41	61	48							
	32	43	63	50							
	35	47	67	54		22		8			
	38	50	70	57							
	40	53	73	60							
	42	55	75	62							
	45	59	84	69	20.5	30	M8x18				
	48	62	87	72							
	50	65	90	75							

Order Example — Part Number: MLR10

Days to Ship

- MLR: 6 Days P.87
- MLRP / MLRS: 8 Days — Express A — 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces .

Price

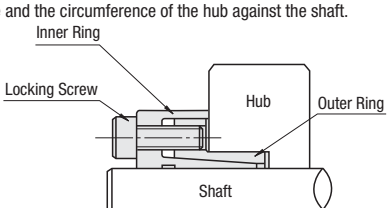
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~20
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Features

- Small difference between the inner and outer diameters makes it possible for compact design.
- Hub does not move when tightened because the inner ring touches the end face of the hub.
- It has a function (centering function) to control pendulum of the end face and the circumference of the hub against the shaft.



Recommended Tolerance of Shaft and Hub

Shaft Outer Diameter	h7 (g6)
Hub Inner Diameter	H7

Finish surface roughness at or below 1.6a in shaft and 3.2a in hub.

Reduced Delivery Time

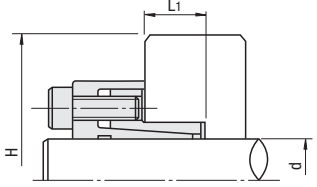
CAD Data

Type	MLR			MLRP			MLRS			Mass
d	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Tightening Torque (Nm)	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Tightening Torque (Nm)	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Tightening Torque (Nm)	(g)
5	9	3.45	1.7	9	3.45	1.7	3	1.05	1.1	36
6	11			11			4			34
8	25	6.09	4.0	25	6.09	4.0	8	1.92	2.7	61
10	44	8.71		44	8.71		14	2.75		78
12	53			53			17			86
14	61			61			20			94
15	115	15.3	8.0	115	15.3	8.0	38	5.0	5.6	135
16	123			123			41			140
17	131			131			43			146
18	210	23.2	14.0	210	23.2	14.0	68	7.4	9.6	221
19	221			221			71			228
20	233			233			75			235
22	256			256			83			287
24	279			279			90			302
25	291			291			94			293
28	488	34.8		488	34.8		157	11.1		378
30	523			523			168			396
32	558			558			180			414
35	813	46.4		813	46.4		262	14.9		484
38	883			883			284			512
40	929			929			299			560
42	976			976			314			580
45	1910	84.5	34.0	1910	84.5	34.0	620	27.5	23.6	962
48	2040			2040			670			1000
50	2120			2120			690			1090

How to Determine Hub Outer Diameter

kgf=Nx0.101972

After selecting MechaLock size, hub size and material, confirm that the selected values meet the conditions H≤hub minimum outer diameter in the right table.



Hub Minimum Outer Diameter Table

kgf/mm²=MPax0.101972

Type	MLR					MLRP					MLRS				
d	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa) 206 EN-JL 1060 1.0038 1.0301	294 EN-JS 1040 1.1181	392 EN-JS 1060 1.1203	Hub Machining Depth L1	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa) 206 1.4301 1.0038 1.0301	294 EN-JS 1040 1.1181	392 1.4000 1.1203	Hub Machining Depth L1	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa) 206 1.4301 1.0038 1.0301	294 EN-JS 1040 1.1181	392 1.4000 1.1203	Hub Machining Depth L1
5	99	23	23	23	12	99	23	23	23	12	30	23	23	23	12
6	99	23	23	23		99	23	23	23		30	23	23	23	
8	116	29	28	28	14	116	29	28	28	14	37	28	28	28	14
10	134	40	31.5	31.5		134	40	31.5	31.5		43	31.5	31.5	31.5	
12	121	40	33.5	33.5		121	40	33.5	33.5		39	33.5	33.5	33.5	
14	110	40	35.5	35.5		110	40	35.5	35.5		35	35.5	35.5	35.5	
15	150	58	41	38.5	16	150	58	41	38.5	16	49	38.5	38.5	38.5	16
16	144	58	42	39.5		144	58	42	39.5		47	39.5	39.5	39.5	
17	138	57	42	40.5		138	57	42	40.5		46	40.5	40.5	40.5	
18	198	-*	59	46		198	-*	59	46		64	46	46	46	
19	191		59	47		191		59	47		62	47	47	47	
20	184		59	48		184		59	48		59	48	48	48	
22	141	74	54	52	18	141	74	54	52	18	46	52	52	52	18
24	133	74	56	54		133	74	56	54		43	54	54	54	
25	133	74	56	54		133	74	56	54		43	54	54	54	
28	139	89	56	59	22	139	89	56	59	22	45	59	59	59	22
30	132	88	67	61		132	88	67	61		43	61	61	61	
32	126	88	68	63		126	88	68	63		41	63	63	63	
35	140	108	79	69	24	140	108	79	69	24	45	67	67	67	24
38	131	106	81	71		131	106	81	71		42	70	70	70	
40	124	107	84	74		124	107	84	74		40	73	73	73	
42	119	107	85	76		119	107	85	76		39	75	75	75	
45	148	146	103	88	32	148	146	103	88	32	49	84	84	84	32
48	141	144	105	91		141	144	105	91		46	87	87	87	
50	135	143	107	94		135	143	107	94		44	90	90	90	

*Not available.

MechaLock

-Standard Type (Centering Function)-

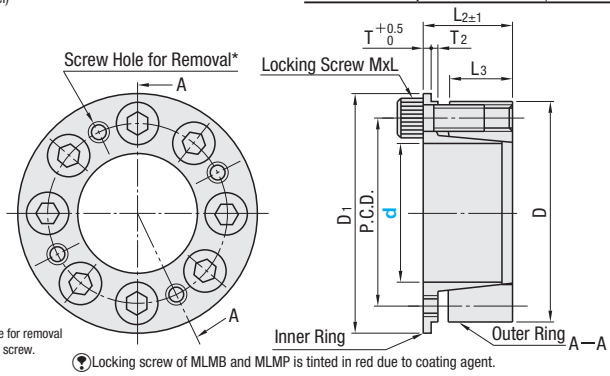
■For Timing Pulleys which incorporated MechaLock Standard Type, refer to P.1156~P.1170

RoHS



MLM
MLMB(Black Oxide)
MLMP(Electroless Nickel Plating)
MLHS(Stainless Steel)

Type	Main Body	
	M Material	S Surface Treatment
MLM	1.1191/C45E	-
MLMB		Black Oxide
MLMP		Electroless Nickel Plating
MLHS	1.4301/X5CrNi18-10	-



*Thread diameter of screw hole for removal is the same as that of locking screw.

Locking screw of MLMB and MLMP is tinted in red due to coating agent.

Part Number Type	d	D	D1	P.C.D.	L2	L3	T	T2	Locking Screw MxL	Locking Screw Qty.	€ Unit Price MLM	MLMB	MLMP	MLHS
MLM MLMB (Black Oxide) MLMP (Electroless Nickel Plating) MLHS (Stainless Steel)	5	16	18.5	11.7	13	8	1.8	1.2	M3x10	4				
	6	19	21.5	14	14.3	9	2	1.3	M4x12					
	8	21	23.5	15.4	14.6	9.3	2.0	1.3						
	10	23	25.5	17.5	14.8	9.5								
	11	24	26.5	18.4	15.8									
	12	26	28.5	20.2	18.0	10.5	2.5	1.5	M4x15	6				
	14	28	30.5	22.2										
	15	29	31.5	23.2	19.0	11.5								
	16	30	33.0	24.2	19.6	12.0		1.6		8				
	17	31	33.5	25.2	20.1	12.5								
	18	32	34.5	26.2										
	19	33	35.5	27.2										
	20	38	42.0	30.8	24.1	15.3	3.0	1.8	M5x18					
	22	40	44.0	32.8										
	24	42	46.0	34.8	25.1	16.3								
	25	43	47.0	35.8	26.1	17.3								
	28	46	50.0	38.8	26.6		3.5			10				
	30	48	52.0	40.8										
	32	50	54.0	42.8	27.6	18.3								
	35	57	62.0	48.4	30.0	19.5	4.0	2.0	M6x20	8				
	38	60	65.0	51.4	30.5	20.0				10				
	40	62	67.0	53.4	31.0	20.5								
	42	64	69.0	55.4										
	45	67	72.0	58.4	31.5	21.0								
	48	70	75.0	61.4	32.0		4.5			12				
	50	72	77.0	63.4	32.5	21.5				14				
	55	77	83.0	68.4										
	60	82	87.0	73.4	33.5	22.0	5.0			15				
	65	87	92.0	78.4										
	70	97	103.0	86.2	36.1	24.0			M8x25	14				

Order Example — Part Number: MLM35

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~20
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Features

(1) With pilot on flange of the inner diameter, the tightening lock screw presses hub inner diameter. This generates effect to control instability on the hub end face and outer diameter (centering effect).
(2) Free phase adjustment and positioning.
(3) No hub movement in axial direction when tightened with lock screw.
(4) No backlash after tightening.

■Recommended Tolerance of Shaft and Hub

Shaft Outer Diameter	h7 (g6)
Hub Inner Diameter	H7

Finish surface roughness at or below 1.6a in shaft and 3.2a in hub.

Reduced Delivery Time

Price Reduction 6% Max.

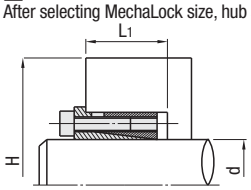
CAD Data

Type	MLM / MLMB				MLMP			MLHS			Mass
d	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Tightening Torque (Nm)		Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Tightening Torque (Nm)	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Screw Tightening Torque (Nm)	(g)
			MLM	MLMB							
5	6.8	2.64	1.9	1.6	4.6	1.84	1.9	2.8	1.13	0.88	18
6	12.7	2.94			10.7	2.49		7.8	2.54		26
8	19.6	4.83			16.6	4.1		10.7	2.64		35
10	27.5	5.10			19.6	3.9		12.7	2.55		40
11	29.4	5.30			22.5	4.0		14.7	2.64		45
12	44.1	7.36			36.2	5.9		24.5			53
14	63.7	9.02	3.9	3.2	50.9	7.2	3.9	28.4	4.02	2.7	61
15	80.4	9.91			54.8			30.4			66
16	83.3	10.00			58.8	7.3		32.3			75
17	92.2	10.10			76.4			46.1			75
18	95.1	10.20			80.3	8.9		49.0	5.39		80
19	98.1	10.30			85.2			51.9			81
20	216.0	21.60			183.0	18.3		121.6	12.16		144
22	255.0	22.60			201.0			133.4	12.06		165
24	363.0	29.90			252.0	21.0		146.1	12.16		180
25	392.0	31.40	8.8	7.5	264.0	21.1	8.8	153.0		5.6	188
28	441.0				295.0			213.8	15.20		195
30	500.0	33.30			396.0	26.4		229.5	15.30		208
32	530.0				423.0			244.2	15.20		219
35	883.0	47.60			548.0	31.3		301.1	17.16		325
38	1020.0	49.40			741.0	39.0		409.0			362
40	1079.0	50.30			779.0			430.6	21.48		380
42	1157.0	51.50			823.0	39.2		452.2			405
45	1285.0	56.90	15.7	12.7	882.0		15.7	484.6		9.6	435
48	1402.0	58.40			1117.0	46.5		620.9	25.80		460
50	1706.0	68.20			1362.0	54.4		754.3	30.11		485
55	1883.0	68.50			1512.0	55.0					520
60	2108.0	68.70			1768.0	58.9		-	-	-	560
65	2236.0				1915.0						610
70	3285.0	93.20	37.3	31.0	2920.0	83.6	37.3				845

How to Determine Hub Outer Diameter

kgf=Nx0.101972

After selecting MechaLock size, hub size and material, confirm that the selected values meet the conditions H≤hub minimum outer diameter in the right table.



Hub Minimum Outer Diameter Table

kgf/mm²=MPax0.101972

Type	MLM / MLMB					MLMP					MLHS				
d	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa)			Hub Machining Depth L1	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa)			Hub Machining Depth L1	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa)			Hub Machining Depth L1
		206	294	392			206	294	392			206	294	392	
		EN-JL 1060 1.0038 1.0301	EN-JS 450 1.1181	EN-JS 1060 1.1203			1.4301 1.0038 1.0301	1.1181	1.4301 1.1203			1.4301 1.0038 1.0301	1.1181	1.4301 1.1203	
5	57	22	20.5	20.5	13	51	21	20	19	13	42.0	20	19	18	13
6	65	27	24	23.5	14	59	26	24	23	14	58.0	26	24	22	14
8	127	35	31	29	15	92	35	29	27	15	62.6	28	26.0	25.5	15
10	114	37	33	32	16	77		31	29	16	55.9	29	27.5	27.5	16
11	109	39	35	33		73	36		30		53.6	30	28.5	28.5	
12	136	46	38	35	17	91	43	36	33	17	67.1	35	32.0	30.5	17
14	127	49	41	38		84	44	38	35		62.3	36	34.0	32.5	
15	112	52	44	41	18	90	47	40	37	18	55.0	37		33.5	18
16	103	53	46	43		87	48	41	38		50.9	38	35.0	35.0	
17	128	54	47	44		97	53	44	40		63.1	40	37.0	36.0	
18	124	55	48	45	19	93	54	45	41	19	61.2				19
19	115					91	55	46	42		59.2	42	39.0	38.0	
20	130	69	57	51	23	97	64	54	49	23	69.8	51	47.0	44.0	23
22	117	72	60	54		92	65	56	51		66.3	53	49.0	46.0	
24	111	75	64	60	24	105	74	61	56	24	59.2	54	50.0	48.0	24
25	102	77	66	61		102	75	62	57		54.5		51.0	49.0	
28	119	83	70	63	25	107	82	68	61	25	63.7	60	55.0	53.0	25
30	114	90	75	66		102	86	69	63		61.1	62	57.0	55.0	
32	104	91	76	67	26	103	87	73	66	26	55.4	63	59.0	57.0	26
35	114	112	91	82	28	105	100	83	75	28	51.4	72	67.0	67.0	28
38	132	120	105	88		110	109	89	80		59.5	79	73.0	70.0	
40	124	127	107	92	29		113	92	83	29	56.2	80	74.0	72.0	29
42	120	133	110	95		106	114	94	85		54.4	82	76.0	74.0	
45	112	139	111	96		104	117	97	88		50.8	85	79.0	77.0	
48	129	141	116	99	30	118	135	108	96	30	58.4	91	84.0	81.0	30
50	143	147	120	105		119	140	111	99		64.6	97	88.0	84.0	
55	133	154	126	109		106	137	113	102						
60	131	155	129	113	31	104	143	119	108	31	-	-	-	-	-
65	124	160	131	118		98	146	124	113						
70	169	190	180	156	34	119	188	150	133	34					

MechaLock
-Straight Type-

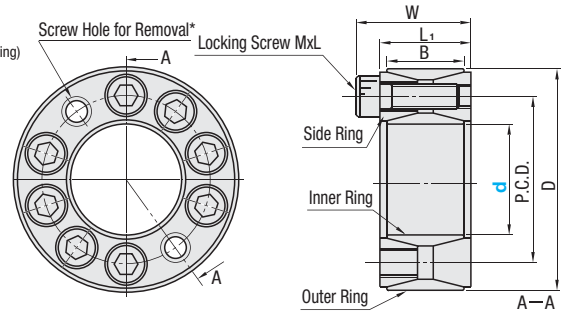
Reduced Delivery Time

CAD Data



RoHS

MLA
MLAP(Electroless Nickel Plating)



*Thread diameter of screw hole for removal is the same as that of locking screw.

Locking screw of MLA and MLAP is tinted in red due to coating agent.
When installation, press down side rings strongly and tighten with screws.

Type	Main Body	
	M Material	S Surface Treatment
MLA	1.1191/C45E	-
MLAP		Electroless Nickel Plating

Part Number Type	d	D	W	P.C.D.	L_1	B	Locking Screw MxL	Qty.	Hexagonal Wrench Nominal	Tightening Torque (Nm)	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Mass (g)	€ Unit Price MLA	€ Unit Price MLAP
MLA MLAP	20	47	26	34.5	20	18	M6x18	8	5	12.7	294	29.4	240		
	22			34.5							323		230		
	24	50		37.5							362		250		
	25										372		240		
	28	55		42.5				10			490	34.3	290		
	30										529	35.3	280		
	32	60		47.5				12			676	42.1	340		
	35										696	39.2	310		
	38	65		52.5				14			882	46.1	370		
	40										931		350		
	42	75	32	60	24	21	M8x22	12	6	29.4	1451	68.6	600		
	45										1657	73.5	570		
	48	80		65							1775		630		
	50										1736	68.6	610		
	55	85		70				14			2374	86.3	660		
	60	90		75							2746	91.2	700		
	65	95		80							2982	91.2	710		

kgf=Nx0.101972

Order Example — Part Number: MLA30

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~20
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Recommended Tolerance of Shaft and Hub

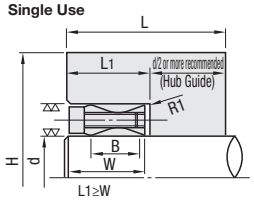
Shaft Outer Diameter	h7 (g6)
Hub Inner Diameter	H7

Finish surface roughness at or below 1.6a in shaft and 3.2a in hub.

How to Determine Hub Outer Diameter

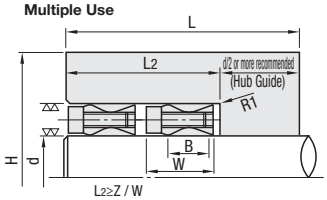
After selecting the MechaLock size, hub size and material, confirm that the selected values meet the conditions H≥hub minimum outer diameter in the right table.

Single Use



L1≥W
L≥2B(L≥L1+d/2)

Multiple Use



L2≥Z / W
L≥L2+W(L≥L2+d/2)
Z: Quantity

Hub Minimum Outer Diameter Table

kgf/mm²=MPax0.101972

Machined Inner Diameter of Hub Bore d	Side Surface Pressure of Hub MPa	1 Hub: H Hub Minimum Outer Diameter, Yield Point Stress of Hub Material (MPa) 147 EN-JL 1040	206 EN-JL 1060 1.0038	294 EN-JS 1040 1.1181	392 EN-JS 1060 1.1203	1 Hub: Hub Machining Depth L_1	2 Hubs: H Hub Minimum Outer Diameter, Yield Point Stress of Hub Material (MPa) 147 EN-JL 1040	206 EN-JL 1060 1.0038	294 EN-JS 1040 1.1181	392 EN-JS 1060 1.1203	2 Hubs: Hub Machining Depth L_2
20	100	73	64	58	55	28	87	72	63	58	55
22	94.1	71	63				83	69	62		
24	89.2	74	66	61	58		85	72	65	61	
25											
28	95.1	83	74	67	64		98	82	72	67	
30											
32	104.9	95	83	75	71		115	93	81	75	
35	98.1	92	81	74	70		109	90	79	74	
38	105.9	104	90	81	77		126	101	88	81	
40											
42	116.7	126	107	96	90	34	159	123	105	96	67
45	124.5	132	110	98	91		171	128	107	98	
48	116.7	135	114	102	96		170	131	112	102	
50	108.8	130	112	101	95		159	127	109	101	
55	127.5	152	126	111	104		200	147	123	111	
60	128.5	162	134	118	110		214	156	130	118	
65	121.6	164	138	123	115		211	159	134	123	

MechaLock

-Easy Mounting (Nut) Type / Straight Type for High Torque-

Reduced Delivery Time

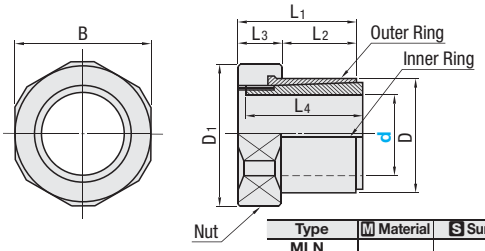
CAD Data

■Easy Mounting (Nut) Type

RoHS



MLN
MLNB(Black Oxide)
MLNP(Electroless Nickel Plating)



Type	M Material	S Surface Treatment
MLN	1.1191/C45E	-
MLNB		Black Oxide
MLNP		Electroless Nickel Plating

Nut of MLNP is tinted in red due to coating agent.

Part Number Type	d	D	B	D1	L1	L2	L3	L4	Max. Allowable Torque (Nm) MLN / MLNP	Max. Allowable Torque (Nm) MLNB	Allowable Thrust Load (kN) MLN / MLNP	Allowable Thrust Load (kN) MLNB	Tightening (Nm)	Mass (g)	Side Surface Pressure of Hub MPa MLN / MLNP	Side Surface Pressure of Hub MPa MLNB	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa) 206 1.0038 1.0301 MLN / MLNP	206 1.0038 1.0301 MLNB	294 EN-JS 1040 1.1181 MLN / MLNP	294 EN-JS 1040 1.1181 MLNB	392 EN-JS 1060 1.1203 MLN / MLNP	392 EN-JS 1060 1.1203 MLNB	Hub Machining Depth L	€ Unit Price MLN	MLNB	MLNP
MLN MLNB MLNP	8	14	22	23.5	19	11	8	19	29.4	21	6.9	5.2	24.5	34	178	128	31	24	24	21	22	19	13			
	10	17			21	12	9	21	34.3	24		4.8	29.4	43	128	89	33	28	26	23	24	21	14			
	11	18	24	26	22		10	22	39.2	28		5.1	34.3	46	132	92	38	30	29	25	25	23				
	12	20			23	13		23	49.0	34	7.3	5.7	44.1	50	122	82	40	32	31	27	28	25	15			
	14	23			26	15	11	26	88.3	62	12.3	8.9	58.8	80	106	73	41	34	34	30	31	28	17			
	15	24	30	32.5	27	16		27	108	76	13.7	10.1	68.6	85			43	36	35	31	32	29	18			
	17	26			31	19	12	31	186	130	19.6	15.3	98.1	96	107	74	50	41	40	35	36	33	21			
	20	29	36	39	33	20	13	33	245	172	24.5	17.2	137	135	114	80	52	44	45	39	40	37	22			
	22	32			35	22		35	275	193		17.6	147	147	90	62	54	46		41	41	38	24			
	24	34	41	44	37	24		37	314	220	25.5	18.3	167	185	83	58	55	48	47	42	43	40	26			
	25	35			38	25		38	353	247	27.5	19.8	186	187	85.1	60		49	48	44	44	41	27			
	28	40	50	54	43	28	15	43	378	265	26.5	18.9	226	320	68.9	48	57	52	51	48	48	45	30			
	30	42	55	60	46	30	16	46	392	274	25.5	18.3	255	398	66.3	46	61	55	54	50	50	48	32			
	35	48	60	66	52	35	17	52	461	323		18.5	294	521	50	35	64	59	58	55	55	53	37			

kgf=Nx0.101972 kgf/mm²=MPax0.101972

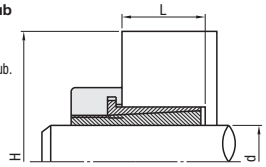
Order Example — Part Number: MLN25

Days to Ship: 6 Days P.87

■Recommended Tolerance of Shaft and Hub

Shaft Outer Diameter	h7 (g6)
Hub Inner Diameter	H7

Finish surface roughness at or below 1.6a in shaft and 3.2a in hub.



■How to Determine Hub Outer Diameter

After selecting the MechaLock size, hub size and material, confirm that the selected values meet the conditions H≤hub minimum outer diameter in the table.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~20
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Straight Type for High Torque

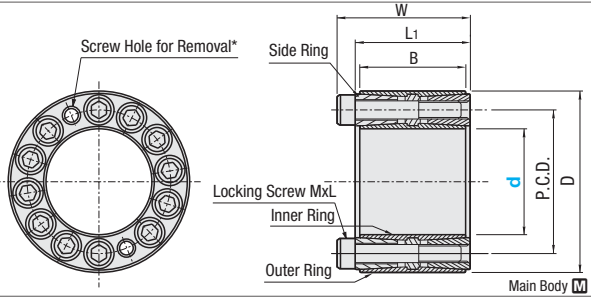
RoHS



MLAT

*Thread diameters of the screw hole for removal is the same as that of the lock screw.

Weight of side ring itself may shrink or enlarge the inner or outer rings. When installation, loosen side rings on both sides and insert a shaft into the hub.



Main Body M Material : 1.1191/C45E

Part Number Type	d	D	W	P.C.D.	L1	B	Locking Screw MxL	Locking Screw Qty.	Locking Screw Tightening Torque (Nm)	Max. Allowable Torque (Nm)	Allowable Thrust Load (kN)	Mass (g)	Side Surface Pressure of Hub MPa	H Hub Minimum Outer Diameter Yield Point Stress of Hub Material (MPa) 206 EN-JL 1060 1.0038 1.0301	294 EN-JS 1040 1.1181	392 EN-JS 1060 1.1203	Hub Machining Depth L	€ Unit Price
MLAT	30	55		42.5				10		1110	74	490	136	122	91	80		
	35	60	44	47.5	38	35	M6x35	12	15.7	1550	88.8	560	150	151	106	90	44	
	40	65		52.5				14		2070	103	620	161	187	121	101		
	45	75		60						3800		1090	166	229	143	118		
	50	80		65				12		4220	168	1170	156	215	145	122		
	55	85	58	70	50	45	M8x45		37.3	4640		1250	147	207	147	126	59	
	60	90		75						5060		1340	138	204	151	131		
	65	95		80				14		6400	197	1430	153	247	170	144		

kgf=Nx0.101972 kgf/mm²=MPax0.101972

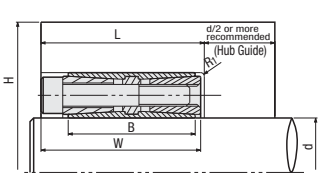
Order Example — Part Number: MLAT35

Days to Ship: 6 Days P.87

■Recommended Tolerance of Shaft and Hub

Shaft Outer Diameter	h7 (g6)
Hub Inner Diameter	H7

Finish surface roughness at or below 1.6a in shaft and 3.2a in hub.



■How to Determine Hub Outer Diameter

After selecting the MechaLock size, hub size and material, confirm that the selected values meet the conditions H≤hub minimum outer diameter in the table.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Gears

Gears






Product Name	Induction Hardening & Ground Spur Gears -Module 1.0/1.5/2.0/2.5/3.0	-Spur Gears–Module 0.5–	–Module 0.8–
Page	1223	1225	1226





–Module 1.0–	–Module 1.5–	–Module 2.0–
1227	1229	1231





–Module 2.5–	–Module 3.0–	Bonded Plastic Spur Gears-Module 1.0 · 1.5 · 2.0 · 2.5 · 3.0-
1233	1235	1237




Resin Spur Gears-Module 0.5 · 0.8 · 1.0 · 1.5 · 2.0 · 2.5 · 3.0-	Spur Gears- Tooth Width · Hub Dimension Configurable Type-
1239	1241



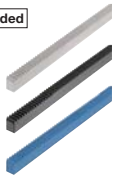


Keyless Hub Spur Gears–Module 1.0/1.5/2.0/2.5/3.0 (Steel)–	Spur Gears Bearing Built-in Type–Module 1.0/1.5/2.0–	Round Rack Gears -L Dimension Fixed / L Dimension Configurable-
1243	1245	1246





Worm	Worm Wheel	Bevel Gears–Module 1.0/1.5/2.0–
1246	1246	1247


Newly Added



Helical Gears-Module 1.0 · 1.5 · 2.0 · 2.5 · 3.0-	Rack Gears - L Dimension Fixed	Rack Gears -L Dimension Configurable (One End Machined)
1248	1249	1250

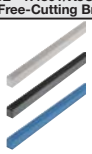
Gears -Overview / Technical Data-

MISUMI gears have machine finished shaft bores and treated surfaces.
The lineup includes: general purpose spur gears, high performance gears such as induction hardened gears and bonded plastic gears, original products such as keyless hub gears and bearing integrated gears.
Various types of gears like bevel, helical and rack gears are also available.

■Spur Gears

Module	Spur Gears				Keyless Hub Spur Gears	Spur Gears Bearing Built-in Type
	1.1191/C45E · 1.4301/X5CrNi18-10 · Free-cutting Brass Bar	1.1191/C45E Induction Hardening Ground Tooth	Plastic	Plastic Bonded	1.1191/C45E	1.1191/C45E · Plastic
						
	Standard spur gears most widely used.	Excels in strength and friction resistance.	Plastic Type relatively quiet when engaged.	Plastic spur gears that can be mounted tightly to shafts.	Spur gears that don't require machining to shafts. Easy phase matching.	Gears with integrated bearings, suitable for rotation reversing idler gear.
0.5	P.1225	-	P.1239	-	-	-
0.8	P.1226					
1.0	P.1227	P.1223		P.1237	P.1243	P.1245
1.5	P.1229					
2.0	P.1231					
2.5	P.1233					-
3.0	P.1235					

■Other Gears

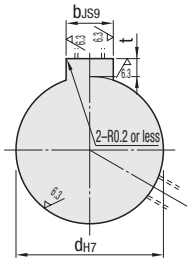
Module	Rack Gears	Round Rack Gears	Bevel Gears	Helical Gears	Worm · Worm Wheel
	1.1191/C45E · 1.4301/X5CrNi18-10 · Plastic · Free-Cutting Brass Bar	1.1191/C45E · 1.4301/ X5CrNi18-10	1.1191/C45E · 1.4301/ X5CrNi18-10	1.1191/C45E · 1.4301/ X5CrNi18-10 · Plastic	1.1191/C45E · CC480K/CuSn10-C
					
	Convert between rotating motion and linear motion. Length and mounting hole machining can be specified.	Convenient for reciprocal motion of the rack side.	Used for perpendicular transmission.	Used for perpendicular transmission of unparalleled shafts.	Perpendicular transmission of unparalleled shafts makes these gears suitable for power transmission of large deceleration and high torque.
0.5	P.1249 · 1250	P.1246	-	-	-
0.8					P.1246
1.0			P.1247	P.1248	
1.5					
2.0					-
2.5			-		
3.0					

■Calculation Conditions of Spur Gears' Allowable Transmission Power (Bending Strength)

Material	1.1191/C45E -	1.1191/C45E Tooth Surface Induction Hardening	1.4301/ X5CrNi18-10	Free-Cutting Brass Bar	MC Nylon	Polyacetal
Formula	JGMA401-01				Lewis Formula	
Mating Gear	Same Material, Same No. of Teeth				-	Metal Material
Speed	100rpm	500rpm	100rpm		100rpm	
Lubrication Type	-	-	-	-	Non-lubricated	
Ambient Temperature	-	-	-	-	40°C	20°C
Stress Cycles	More than 10^7 times				-	10^7
Impact from Motor	Equal Load					Equal Load
Impact from the Mating Gear	Equal Load					Equal Load
Load Direction	Bidirectional					-
Allowable Tooth Root Bending Stress (kgf/mm²) *	18.4	23.0	10.5	4.0		
Safety Factor	1.2					

* Allowable Tooth Root Bending Stress is 2/3 of a fatigue limit because of the load is bidirectional.

■Keyway Dimensions



N: New JIS (B1301) Keyway Dimensions

Number	dH7		bJS9		t	Tolerance
8N	8	+0.015 0	3	±0.0125	1.4	+0.1 0
10N	10					
10K	10		4	±0.0150	1.8	
11N	11	+0.018 0				
12N	12					
13N	13		5		2.3	
14N	14					
15N	15					
16N	16					
17N	17		6		2.8	
18N	18					
19N	19	+0.021 0				
20N	20					
21N	21					
22N	22					

Number	dH7		bJS9		t	Tolerance
23N	23	+0.021 0	8	±0.0180	3.3	+0.2 0
24N	24					
25N	25					
26N	26					
27N	27					
28N	28					
29N	29					
30N	30					
31N	31	+0.025 0	10			
32N	32					
33N	33					
34N	34					
35N	35					
36N	36					
37N	37					
38N	38					

Number	dH7		bJS9		t	Tolerance
39N	39	+0.025 0	12	±0.0215	3.3	+0.2 0
40N	40					
41N	41					
42N	42					
43N	43					
44N	44		14		3.8	
45N	45					
46N	46					
47N	47					
48N	48					
49N	49					
50N	50					

Induction Hardening Spur Gears Ground Type

-Pressure Angle 20° Module 1.0/1.5/2.0/2.5/3.0-

Features: Spur gears with hardened teeth which provides excellent strength, abrasion resistance and high precision.

RoHS



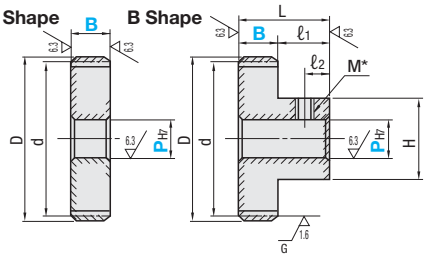


Type			M Material	S Surface Treatment	H Hardness	A Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap				
GEAHBH	GEABH	GEAKBH	1.1191/C45E	Black Oxide	Induction Hardening on Teeth 51~55HRC (Depth 1mm or more)	Set Screw * Except Straight Bore Type.

Shaft Bore Specifications

Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Tooth Shape A Shape B Shape



part has no surface treatment. *Straight Bore Type does not have tapped holes.

End surface of A Shape may not be surface treated as A Shape is made by cutting the hub of B Shape.

Keyway Dimension Details P.1222

Positioning of keyway and teeth are not fixed.

Straight Bore + Tap is not applicable to A Shape.

A shape with Key groove hole + tap has neither tapped holes nor set screws.

Female Thread Hole Dimension List

Shaft Bore Dia. PH7	M (Coarse Thread)	Accessory Set Screw
6~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~56	M10	M10x8

Accuracy JIS B 1702(Class 2)

Accuracy before shaft bore machining

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Hole Dia PH7 (1mm Increment) Straight Bore / Straight Bore+Tap	Shaft Hole Dia PH7 (1mm Increment) Keyway + Tap	d	D	H	L	ℓ1	ℓ2	* Allowable Transmission Force (N·m) Bending Strength	€ Unit Price Qty. 1~10 GEAHBH	GEABH	GEAKBH
Straight Bore GEAHBH	1.0	18	8	A B	6~10	-	18	20	15	18	10	5	4.76			
		20			6~11	8N or 10N	20	22	17				5.57			
		24			8~14	8N~12N	24	26	20				7.27			
		25					25	27					7.69			
		26					26	28					8.12			
		28					28	30					9.02			
		30			10~17	10N~15N	30	32	25				9.87			
		35					35	37					12.13			
		36					36	38					12.52			
		40			10~21	10N~18N	40	42	30				13.07			
		48					48	50					16.44			
		50			12~24	12N~18N	50	52	35				17.23			
		60			12~28	12N~25N	60	62	40				21.50			
		70					70	72					25.74			
		80			15~35	15N~30N	80	82	50				29.98			
		100					100	102					38.72			
Straight Bore+Tap GEABH Keyway + Tap GEAKBH	1.5	15	15		10~12	10N	22.5	25.5	18	29	14	7	15.11			
		16			10~13	10N or 11N	24	27	19.5				16.74			
		18			10~15	10N~13N	27	30	22				20.08			
		20			10~16	10N~14N	30	33	24				23.51			
		24			12~19	12N~17N	36	39	28				30.56			
		25			12~21	12N~18N	37.5	40.5	30				32.39			
		26			12~22	12N~19N	39	42	32				31.16			
		28			15~25	15N~19N	42	45	36				34.58			
		30			15~26	15N~23N	45	48	38				37.84			
		32			15~28	15N~24N	48	51	40				41.03			
		35			15~29	15N~26N	52.5	55.5	42				46.51			
		36			15~31	15N~28N	54	57	45				48.00			
		40			15~35	15N~31N	60	63	50				54.90			
		45			18~35	18N~31N	67.5	70.5					63.90			
		48					72	75					69.20			
		50			18~42	18N~38N	75	78	60				72.69			
		60			20~42	20N~38N	90	93					90.68			
		70					105	108					108.59			

Shaft bore diameter 6.35 is available for Straight Bore and Straight Bore + Tap. Shaft bore diameter 9N is not available for Keyway Bore + Tap.

Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222

For orders larger than indicated quantity, please request a quotation.

* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

CAD Data

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Hole Dia PH7 (1mm Increment) Straight Bore / Straight Bore+Tap	Keyway + Tap	d	D	H	L	ℓ1	ℓ2	* Allowable Transmission Force (Nm) Bending Strength	€ Unit Price Qty. 1~10 GEAHBH	GEABH	GEAKBH
Straight Bore GEAHBH	2.0	15	20	A	12~17	12N~14N	30	34	24	36	16	8	35.81			
		16			12~18	12N~15N	32	36	26				39.67			
		18			12~21	12N~18N	36	40	30				47.59			
		20			15~22	15N~19N	40	44	32				50.67			
		24			15~26	15N~23N	48	52	38				65.86			
		25			15~28	15N~24N	50	54	40				69.81			
		28			15~31	15N~28N	56	60	45				81.96			
		30			18~35	18N~31N	60	64	50				89.70			
		32					64	68					97.27			
		36					72	76					113.78			
		40			20~42	20N~38N	80	84	60				130.13			
		45					90	94					151.46			
		48					96	100					164.04			
		50			25~42	25N~38N	100	104					172.31			
		60			25~45	25N~42N	120	124	65				205.60			
Straight Bore+Tap GEABH	2.5	16	25	A	15~22	15N~19N	40	45	32	43	18	9	70.43			
		20			18~28	18N~24N	50	55	40				98.97			
Keyway + Tap GEAKBH		24		B	18~33	18N~30N	60	65	48				128.63			
		25			20~35	20N~31N	62.5	67.5	50				136.34			
		28			20~42	20N~38N	70	75	60				160.07			
		30			20~45	20N~42N	75	80	65				175.19			
		36			20~49	20N~45N	90	95	70				222.23			
		40			25~49	25N~45N	100	105					254.16			
		45			25~52	25N~49N	112.5	117.5	75				295.82			
		48					120	125					306.46			
		50			25~56	25N~50N	125	130	80				321.92			
	3.0	16	30		16~26	16N~23N	48	54	38	50	20	10	121.71			
		20			20~35	20N~31N	60	66	50				171.01			
		24			20~40	20N~37N	72	78	58				222.27			
		25			20~42	20N~38N	75	81	60				235.60			
		30			25~52	25N~49N	90	96	75				302.72			
		32					96	102					328.27			
		36			25~56	25N~50N	108	114	80				384.01			
		40					120	126					420.10			

* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

For orders larger than indicated quantity, please request a quotation.

Order Example

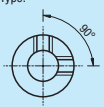
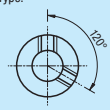
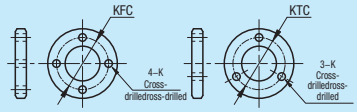
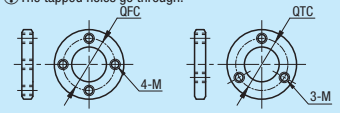
Part Number	-	No. of Teeth	-	B	-	Tooth Shape	-	P
GEAKBH2.0	-	30	-	20	-	A	-	25N
GEABH1.0	-	30	-	8	-	B	-	15

Tooth shape will be "B" when not specified.

Days to Ship 10 Days

Alterations

Part Number	-	No. of Teeth	-	B	-	Gears Shape	-	P	-	(KC90 · KC120…etc.)
GEAKBH2.0	-	40	-	20	-	B	-	30N	-	KC90

Alterations Code	Set Screw KC90	Set Screw KC120	Side Through Holes KFC · KTC	Side Female Thread Holes QFC · QTC
Spec.	Adds another set screw at the position of 90°. ⊗Not applicable to Straight Bore Type. 	Adds another set screw at position 120°. ⊗Not applicable to Straight Bore Type. 	Machines through holes on the side surface (KFC / KTC: 1mm Increment K: 0.5mm Increment) ⓟApplicable to A Shape only.ⓟP+K+4≤KFC(KTC)≤d−K−4 K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Increment) ⓟApplicable to A Shape only.ⓟP+M+4≤QFC(QTC)≤d−M−4 M Selection M3 / M4 Ordering Code QFC25-M3 ⓟThe tapped holes go through. 
Price Adder	2,00	2,00	7,00	5,00

Spur Gears
–Pressure Angle 20° Module 0.5–

CAD Data



RoHS

Part Number
No. of teeth 42 and 45 are not applicable to these spur gears.

Type		Material	Surface Treatment	Accessory
Straight Bore	Straight Bore+Tap			
-	GEABN	1.1191/C45E	-	Set Screw * Except Straight Bore Type.
-	GEABB		Black Oxide	
-	GEABG		Electroless Nickel Plating	
GEAHB	GEAB	Free-Cutting Brass Bar	-	
-	GEABS	1.4301/X5CrNi18-10	-	

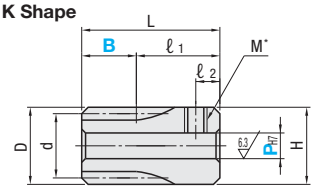
Shaft Bore Specifications

Straight Bore	Straight Bore+Tap
	

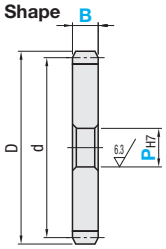
⊗Straight Bore + Tap is not applicable to A Shape.

Gear Shape

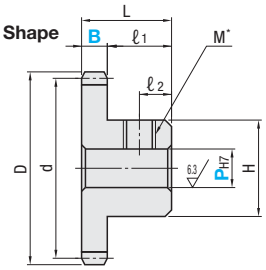
K Shape



A Shape



B Shape



* Straight Bore Type has neither tapped holes nor set screws.

Accuracy JISB 1702 (Class 4)

For alterations on tooth width and hub dimensions, P.1241

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia. PH7 1mm Increment: Straight Bore Straight Bore+Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	* Allowable Transmission Force (Nm) Bending Strength: 1.1191/C45E	Free-cutting Brass Bar	1.4301/X5CrNi18-10	€ Unit Price: Straight Bore GEAHB	Straight Bore+Tap GEABN (x1.0) GEABB (x1.1) GEABG (x1.2)	Straight Bore+Tap GEAB	Straight Bore+Tap GEABS
		15			3~5	7.5	8.5	9					0.72	0.16	0.41				
		16	8	K		8	9		18	10	3		0.79	0.17	0.45				
		18			3 ~ 6 or 6.35	9	10	10					0.95	0.21	0.54				
		20				10	11	11					1.12	0.24	0.64				
		20			3~5	10	11	8.5					0.42	0.09	0.24				
		24				12	13						0.54	0.12	0.31				
Straight Bore		25				12.5	13.5						0.58	0.13	0.33				
		26				13	14						0.61	0.13	0.35				
GEAHB		28	3			14	15		8				0.68	0.15	0.39				
		30				15	16						0.74	0.16	0.42				
		32				16	17						0.80	0.17	0.46				
Straight Bore+Tap		35			3 ~ 6 or 6.35	17.5	18.5	10					0.91	0.20	0.52				
GEABN GEABB GEABG GEAB GEABS	0.5	36		A		18	19					M3	0.94	0.20	0.54				
		40				20	21			5	2.5		0.72	0.16	0.41				
		42				21	22						0.76	0.17	0.43				
		45		B		22.5	23.5						0.83	0.18	0.48				
		48				24	25						0.90	0.20	0.51				
		50				25	26						0.95	0.21	0.54				
		*52	2			26	27		7				0.99	0.22					
		*60				30	31						1.18	0.26					
		*70			5~12	35	36	20					1.42	0.31	-				
		*80				40	41						1.65	0.36					
		*100				50	51						2.13	0.46					
		*120				60	61						2.59	0.56					

Part Number * marked No. of teeth is not available for GEABS. Shaft Bore Diameter 6.35 is available.
* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

For the price of GEABB, multiply the unit price in the table by 1.1.

For the price of GEABG, multiply the unit price in the table by 1.2. (Round down to ten Cent.)

Ex.) When GEABB0.5-30-3-B-6
€ Unit Price in Table 10,80 x Multiplier 1.1 =11,88→ € 11,80

Order Example

Part Number	No. of Teeth	B	Tooth Shape	P
GEAB0.5	20	3	B	3
GEAHB0.5	30	3	A	6
GEABS0.5	16	8	K	5

When tooth shape is not specified, No. of teeth 15~20 (B=8) will be K shape, 20 (B=3)~120 will be B shape.

Days to Ship: 8 Days — Express A 5,00 EUR/ piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces

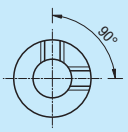
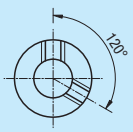
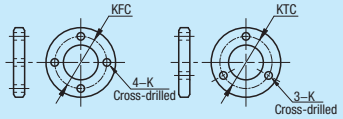
Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Alterations

Part Number	No. of Teeth	B	Gears Shape	P	(KC90 · KTC…etc.)
GEAB0.5	20	3	B	3	KC120
GEAHB0.5	50	2	A	5	KFC15-K3.0

Alterations	Set Screw		Side Through Holes	Female Thread Hole Dim.
Code	KC90	KC120	KFC · KTC	TPC
Spec.	Adds another set screw at position 90°. Applicable to B shape only. ⊗Not applicable to Straight Bore Type. 	Adds another set screw at position 120°. Applicable to B shape only. ⊗Not applicable to Straight Bore Type. 	Machines through holes on the side surface (KFC / KTC: 1mm Increment: 0.5mm Increment) Applicable to A shape only. P+K+4≤KFC(KTC)≤d–K–4 K Selection K3.0~K6.0 Ordering Code KFC15-K3.5 	Changes the tapped hole dimension to M4. Ordering Code TPC4 Applicable to B shape only. ⊗Not applicable to Straight Bore Type.
Price Adder	2,00	2,00	7,00	Free of Charge

Spur Gears
–Pressure Angle 20° Module 0.8–

CAD Data



Type		M Material	S Surface Treatment	A Accessory
Straight Bore	Straight Bore+Tap			
-	GEABN	1.1191/C45E	-	Set Screw * Except Straight Bore Type.
-	GEABB		Black Oxide	
-	GEABG		Electroless Nickel Plating	
GEAHB	GEAB	Free-Cutting Brass Bar	-	
-	GEABS	1.4301/X5CrNi18-10	-	

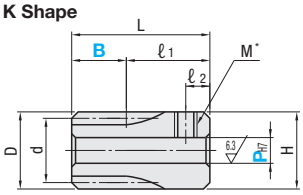
Shaft Bore Specifications	
Straight Bore	Straight Bore+Tap
	

⊗Straight Bore + Tap is not applicable to A Shape.

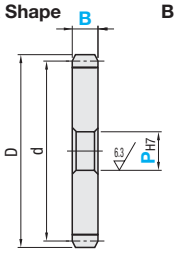
RoHS

Gear Shape

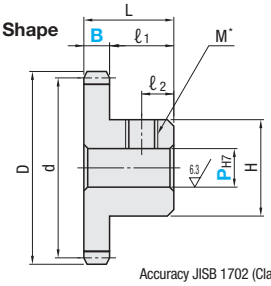
K Shape



A Shape



B Shape



* Straight Bore Type has neither tapped holes nor set screws.

Accuracy JISB 1702 (Class 4)

For alterations on tooth width and hub dimensions, P.1241

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia. PH7 1mm Increment: Straight Bore / Straight Bore+Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	* Allowable Transmission Force (Nm) Bending Strength: 1.1191/C45E	Free-Cutting Brass Bar	1.4301/X5CrNi18-10	€ Unit Price: Straight Bore GEAHB	Straight Bore+Tap GEABN (x1.0) GEABB (x1.1) GEABG (x1.2)	Straight Bore+Tap GEAB	Straight Bore+Tap GEABS
Straight Bore GEAHB Straight Bore+Tap GEABN GEABB GEABG GEAB GEABS	0.8	12	7	K	4 or 5	9.6	11.2	11.2	20	13	3	M3	1.11	0.24	0.63				
		14				11.2	12.8	12.8					1.43	0.31	0.82				
		15				12	13.6	13.6					1.60	0.35	0.92				
		16	5	A	4 ~ 6 or 6.35	12.8	14.4	10	14	9			1.27	0.28	0.72				
		16	7							7			1.78	0.39	1.01				
		18	5			14.4	16			9			1.52	0.33	0.87				
		18	7							7			2.13	0.46	1.22				
		20	5			16	17.6			9			1.78	0.39	1.02				
		20	7							7			2.50	0.54	1.42				
		24	5		5~8	19.2	20.8	12.5		9			2.32	0.50	1.32				
		24	7							7			3.25	0.71	1.85				
		25	5			20	21.6			9			2.46	0.53	1.40				
		25	7							7			3.44	0.75	1.96				
		28	5	B		22.4	24			9			2.89	0.63	1.65				
		28	7							7			4.04	0.88	2.30				
		30	5			24	25.6			9			3.16	0.69	1.80				
		30	7							7			4.42	0.96	2.52				
		32	5			25.6	27.2			9	4		3.42	0.74	1.95				
		36			6~8	28.8	30.4	14				M4	4.01	0.87	2.29				
		40				32	33.6						4.58	1.00	2.61				
		45				36	37.6						5.33	1.16	3.04				
		48				38.4	40						5.77	1.26	3.30				
		50				40	41.6						6.07	1.32	3.46				

* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions.
For conditions, P.1222 ⓟShaft Bore Diameter 6.35 is available.

Order Example

Part Number	No. of Teeth	B	Gears Shape	P
GEAB0.8	25	5	B	6
GEAHB0.8	30	7	A	8
GEABS0.8	15	7	K	5

ⓟWhen tooth shape is not specified, No. of teeth 12 ~ 15 will be K shape, 16~50 will be B shape.

Alterations

Part Number	No. of Teeth	B	Gears Shape	P	(KC90 · TPC · DHL · WDH...etc.)
GEAB0.8	30	7	B	6	KC120
GEAHB0.8	40	5	A	8	QTC16-M4

Days to Ship 8 Days — Express A 5,00 EUR/piece P. 88

ⓟA Express Charge of 13,50 EUR for 4 or more identical pieces

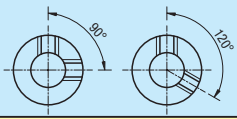
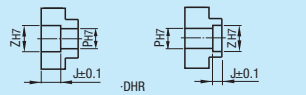
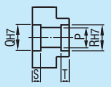
ⓟFor the price of GEABB, multiply the unit price in the table by 1.1. (Round down to ten Cent.)
ⓟFor the price of GEABG, multiply the unit price in the table by 1.2. (Round down to ten Cent.)

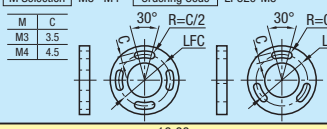
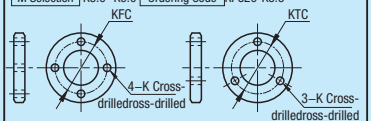
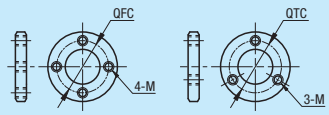
Ex.) When GEABB0.8–30–5–A-6 € Unit Price in Table 13,50 x Multiplier 1.1 =14,85→14,80 €

Price

Volume Discount (ⓟRound down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Alterations	Set Screw	Female Thread Hole Dim.	Stepped Hole	Both Ends Stepped Bore
Code	KC90 · KC120	TPC	DHL · DHR	WDH
Spec.	KC90:Adds another set screw at position 90°. KC120:Adds another set screw at position 120°. ⓟApplicable to B shape only. ⊗Not applicable to Straight Bore Type. 	Changes the tapped hole dimension. Ordering Code TPC4 ⓟApplicable to B shape only. ⊗Not applicable to Straight Bore Type. No. of Teeth: 16~32 → M4; 36~50 → M3 M5	Changes shaft bores to stepped bores. (Z: 1mm Increment J: 0.1mm Increment) Ordering Code DHL-Z20-J2.0 ⓟApplicable to Straight Bore Type Only.  ⓟA Shape: P+2≤Z≤d–4,2≤J≤B–3 ⓟB Shape: P+2≤Z≤H–4,2≤J≤ℓ1 ⓟB Shape: P+2≤Z≤d–4,2≤J≤11	Changes shaft bores to both ends stepped hole. (Q,R,S,T: 1mm Increment) ⓟS, T≥3 Ordering Code WDH-Q10-R10-S5-T5  ⓟP+2≤Q,R≤H–4 ⓟS+T≤L–3 ⓟApplicable to Straight Bore Type Only. ⓟShaft Bore Ø P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

Alterations	Side Slotted Holes	Side Through Holes	Side Female Thread Holes
Code	LFC · LTC	KFC · KTC	QFC · QTC
Spec.	Machines slotted holes on the side surface (30°) (LFC,LTC 1mm Increment) ⓟApplicable to A shape only. ⓟP+C+4≤LFC(LTC)≤d–C–4 M Selection M3 M4 Ordering Code LFC20-M3 	Machines through holes on the side surface (KFC / KTC: 1mm Increment K: 0.5mm Increment) ⓟApplicable to A shape only. ⓟP+K+4≤KFC(KTC)≤d–K–4 M Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Incr.) ⓟApplicable to A shape only. ⓟP+M+4≤QFC(QTC)≤d–M–4 M Selection M3 M4 Ordering Code QFC25-M3 ⓟThe tapped holes go through. 
Price Adder	10,00	7,00	5,00

Spur Gears
- Pressure Angle 20° Module 1.0 -

Features: Standard Type and Thin Type are available.

RoHS



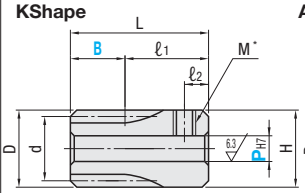
Type			M Material	S Surface Treatment	A Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap			
GEAHB	GEAB	GEAKB	1.1191/C45E	-	Set Screw *Except Straight Bore Type.
GEAHBB	GEABB	GEAKBB		Black Oxide	
GEAHBG	GEABG	GEAKBG		Electroless Nickel Plating	
GEAHS	GEAS	GEAKS	1.4301/X5CrNi18-10	-	

Shaft Bore Specifications

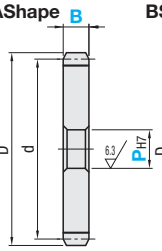
Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Gear Shape

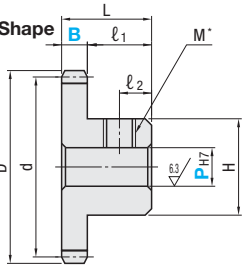
KShape



AShape



BShape



Keyway Dimension Details P.1222

Positioning of keyway and teeth are not fixed.

Straight Bore+Tap is not applicable to A shape.

A shape with Key groove hole+ tap has neither tapped holes nor set screws.

* Straight Bore Type does not have tapped holes.

Precision JISB 1702 (Class 4)

Standard Type

For alterations on tooth width and hub dimensions, P.1241

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia. PH7 1mm Increment: Straight Bore Straight Bore+Tap	Shaft Bore Dia. PH7 1mm Increment: Keyway + Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	* Allowable Transmission Force (Nm) Bending Strength: 1.1191/C45E	1.4301/X5CrNi18-10	€ Unit Price: Straight Bore GEAHB	GEAHBB	GEAHBG	GEAHS	Straight Bore+Tap GEAB	GEABB	GEABG	GEAS	Keyway + Tap GEAKB	GEAKBB	GEAKBG	GEAKS
Straight Bore GEAHB GEAHBB GEAHBG GEAHS / Straight Bore+Tap GEAB GEABB GEABG GEAS / Keyway + Tap (⚲19 teeth or more) GEAKB GEAKBB GEAKBG GEAKS	1.0	12	10	K	6~8	-	12	14	14	30	20 (When B=10)	5	M4	2.47	1.41												
		*13					13	15	15					2.83	-				⊗				⊗				
		14		A	6~10		14	16	16				M5	3.20	1.83												
		15					15	17	17					3.58	2.04												
		*16			8~12		16	18	18		18 (When B=12)			3.97	-				⊗				⊗				
		*17		K			17	19	19					4.36	-				⊗				⊗				
		*18					18	20	20					4.76	-				⊗				⊗				
		*19			8~10	8N	19	21	16				M4	5.16	-				⊗				⊗				⊗
		20	10		6~10		20	22						5.57	3.18												
		21				8N	21	23						5.98	3.41												
		*22	12		6~12	8N or 10N	22	24	18		10 (When B=10)	4		6.41	-				⊗				⊗				⊗
		*23					23	25						6.82	-				⊗				⊗				⊗
		24					24	26	20					7.24	4.13												
		*25					25	27			8 (When B=12)			7.68	-				⊗				⊗				⊗
		26			6~15	8N~12N	26	28	22					8.12	4.64												
		*27					27	29	24					8.55	-				⊗				⊗				⊗
		28			8~17	10N~12N	28	30						9.02	5.14												
		*29			6~17	8N~15N	29	31	26					9.42	-				⊗				⊗				⊗
		30			8~17		30	32	27					9.87	5.63												
		32			8~18	10N~15N	32	34	28					10.70	6.11												
		*34					34	36						11.69	-				⊗				⊗				⊗
		35			8~20	10N~17N	35	37	30					12.13	6.92												
		36					36	38						12.52	7.14												
		38					38	40						13.46	7.68												
		40					40	42						14.31	8.17												
		42					42	44						15.24	8.70												
		*44					44	46						16.18	-				⊗				⊗				⊗
		45					45	47						16.66	9.51												
		*46					46	48						17.14	-				⊗				⊗				⊗
		48		A	8~30	10N~27N	48	50	44					18.04	10.30												
		50			8~32	10N~28N	50	52	46	20				18.95	10.82												
		52		B			52	54						19.87	11.34												
		54					54	56						20.80	11.87												
		55					55	57						21.32	12.16												
		56					56	58						21.84	12.46												
		58					58	60						22.69	12.95												
		60	10		10~35	12N~31N	60	62	50		10	5	M5	23.64	13.49												
		62					62	64						24.50	13.98												
		64					64	66						25.47	14.54												
		65					65	67						25.90	14.78												
		66					66	68						26.45	15.10												
		68					68	70						27.44	15.66												
		70			10~39	12N~35N	70	72	56					28.31	16.16												
		72					72	74						29.19	16.66												
		75					75	77						30.63	17.48												
		80			10~42	12N~38N	80	82	60					32.98	18.82												
		84					84	86						34.90	19.92												
		85				15N~38N	85	87						35.35	20.17												
		90					90	92						37.74	21.53												
		95					95	97						40.15	22.91												
		96					96	98						40.60	23.17												
		100			17~42	17N~38N	100	102	70					42.59	24.31												
		110			17~49	17N~45N	110	112						47.11	26.88												
		120					120	122						51.87	29.60												

⊗* marked No. of teeth is not available for stainless type (GEAHS, GEAS and GEAKS).

⊗Shaft bore diameter 9N is not available for Keyway Bore + Tap.

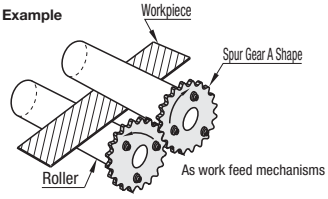
⚲Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222

⚲Shaft bore diameter 6.35 is available for Straight Bore and Straight Bore + Tap.

*Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

Tooth width is calculated as 10mm.

Example



Thin Type

Part Number Type	Module	No. of ATeeth	B	Gears Shape	Shaft Bore Dia. PH7 1mm Increment: Straight Bore Straight Bore+Tap	Shaft Bore Dia. PH7 1mm Increment: Keyway + Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	* Allowable Transmission Force (Nm) Bending Strength: 1.1191/ C45E	1.4301/ X5CrNi18-10	€ Unit Price: Straight Bore GEAHB	GEAHBB	GEAHBG	GEAHS	Straight Bore+Tap GEAB	GEABB	GEABG	GEAS	Keyway + Tap GEAKB	GEAKBB	GEAKBG	GEAKS
Straight Bore GEAHB GEAHBB GEAHBG GEAHS / Straight Bore+Tap GEAB GEABB GEABG GEAS / Keyway + Tap (⚲19 teeth or more) GEAKB GEAKBB GEAKBG GEAKS	1.0	*14	6	K	6~10	-	14	16	16	25	19 (When B=6)	4	M4	1.92	-				⊗				⊗	⊗	⊗	⊗	⊗
		15					15	17	17					2.15	1.23												
		16			6~12		16	18	18					2.38	1.36												
		*17		A			17	19	19		17 (When B=8)			2.62	-				⊗				⊗	⊗	⊗	⊗	⊗
		18			8~12		18	20	20					2.86	1.63												
		19			6~10	8N	19	21	16					3.09	1.77												
		20					20	22						3.34	1.91												
		21			6~12	8N or 10N	21	23	18					3.59	2.05												
		22					22	24						3.85	2.19												
		*23	8				23	25			10 (When B=6)			4.09	-				⊗				⊗				⊗
		24					24	26	20					4.35	2.48												
		25					25	27			8 (When B=8)			4.61	2.63												
		26			6~15	8N~12N	26	28	22					4.87	2.78												
		*27					27	29	24					5.13	-				⊗				⊗				⊗
		28					28	30						5.41	3.09												
		29			6~17		29	31	26					5.65	3.23												
		30					30	32	25					5.92	3.38												
		32					32	34						6.42	3.66												
		*34					34	36	28					7.01	-				⊗				⊗				⊗
		35					35	37						7.28	4.15												
		36				8N~15N	36	38	25			5	M5	7.51	4.29												
		*38					38	40						8.08	-				⊗				⊗				⊗
		40			8~17		40	42	28					8.59	4.90												
		42					42	44						9.14	5.22												
		*44					44	46						9.71	-				⊗				⊗				⊗
		*45					45	47						10.00	-				⊗				⊗				⊗
		*46			8~20	8N~17N	46	48	30					10.29	-				⊗				⊗				⊗
		48		A		8N~24N	48	50		16				10.83	6.18												
		50					50	52						11.37	6.49												
		*52		B			52	54						11.92	-				⊗				⊗				⊗
		54			8~25	10N~24N	54	56	40					12.48	7.12												
		55					55	57						12.79	7.30												
		56					56	58						13.10	7.48												
		58					58	60						13.61	7.77												
		60	6		8~30	10N~27N	60	62			10			14.19	8.10												
		62					62	64						14.70	8.39												
		64			10~30	12N~27N	64	66	44					15.28	8.72												
		65					65	67						15.54	8.87												
		66					66	68						15.87	9.06												
		68					68	70						16.47	9.40												
		70			10~35	12N~30N	70	72	48					16.99	9.69												
		72					72	74						17.51	9.99												
		75					75	77						18.38	10.49												
		80			10~35	12N~31N	80	82	50					19.79	11.29												
		84			15~35	15N~31N	84	86						20.94	11.95												
		85					85	87						21.21	12.10												
		90					90	92						22.64	12.92												
		95					95	97						24.09	13.75												
		96					96	98						24.36	13.90												
		100					100	102						25.56	14.58												
		110					110	112						28.27	16.13												
		120				15N~34N	120	122	54					31.12	17.76												

⊗* marked No. of teeth is not available for stainless type (GEAHS, GEAS and GEAKS). ⊗Shaft bore diameter 9N is not available for Keyway Bore + Tap.
⚲Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. ☞P.1222 ⚲Shaft bore diameter 6.35 is available for Straight Bore and Straight Bore + Tap.
* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, ☞P.1222 Tooth width is calculated as 6mm.

Order Example

Part Number	-	No. of Teeth	-	B	-	Tooth Shape	-	P
GEAB1.0	-	25	-	12	-	B	-	8
GEAKB1.0	-	38	-	10	-	A	-	10N
GEAS1.0	-	18	-	6	-	K	-	10

⚲When tooth shape is not specified, No. of teeth 12~18 will be K Shape, 16~120 will be B Shape.

Price

Volume Discount (⚲Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

Days to Ship

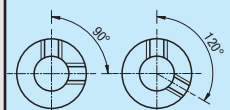
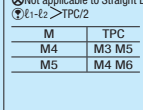
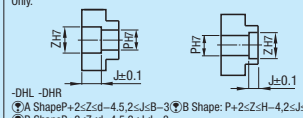
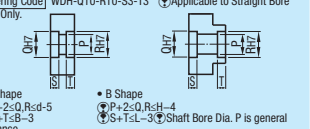
8 Days

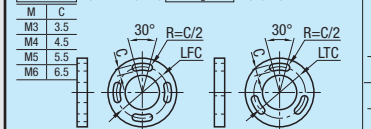
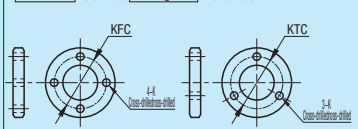
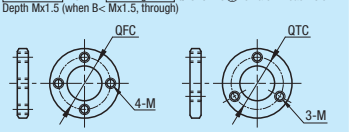
Express A 5,00 EUR/piece ☞P.88

⚲A Express Charge of 13,50 EUR for 5 or more identical pieces

Alterations

Part Number	-	No. of Teeth	-	B	-	Tooth Shape	-	P	-	(KC90, KC120, QFC, QTC…etc.)
GEAB1.0	-	25	-	12	-	B	-	8	-	KC120
GEAHB1.0	-	40	-	6	-	A	-	10	-	KTC20-K4.0

Alterations	Set Screw	Female Thread Hole Dimensions	Stepped Hole	Both Ends Stepped Bore
Code	KC90 · KC120	TPC	DHL · DHR	WDH
Spec.	KC90:Adds another set screw at position 90°. KC120:Adds another set screw at position 120°. ⚲Applicable to B shape only. ⊗Not applicable to Straight Bore Type. 	Changes the tapped hole dimension. Ordering Code TPC4 ⚲Applicable to B shape only. ⊗Not applicable to Straight Bore Type. ⚲ℓ1-ℓ2 ＞TPC/2 	Changes shaft bores to stepped bores. ⊗Not applicable to K shape. (Z: 1mm Increment J: 0.1mm Increment) Ordering Code DHL-Z20-J4.0 ⚲Applicable to Straight Bore Type Only.  -DHL -DHR ⚲A ShapeP+2≤Z≤d−4.5,2≤J≤B−3 ⚲B Shape: P+2≤Z≤H−4,2≤J≤ℓ1 ⚲B ShapeP+2≤Z≤d−4.5,2≤J≤L−3	Changes shaft bores to both ends stepped hole. ⊗Not applicable to K shape. (Q,R,S,T: 1mm Increment) ⚲S, T≥3 Ordering Code WDH-Q10-R10-S3-T3 ⚲Applicable to Straight Bore Type Only.  • A Shape ⚲P+2≤Q,R≤d-5 ⚲S+T≤B−3 • B Shape ⚲P+2≤Q,R≤H−4 ⚲S+T≤L−3 ⚲Shaft Bore Dia. P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

Alterations	Side Slotted Holes	Side Through Holes	Side Female Thread Holes
Code	LFC · LTC	KFC · KTC	QFC · QTC
Spec.	Machines slotted holes on the side surface (30°) (LFC,LTC 1mm Increment) ⚲Applicable to A shape only.⚲P+C+4≤LFC(LTC)≤d−C−5 M Selection M3 · M4 · M5 · M6 Ordering Code LFC20-M3 	Machines through holes on the side surface (KFC · KTC: 1mm Increment K: 0.5mm Increment) ⚲Applicable to A shape only.⚲P+K+4≤KFC(KTC)≤d−K−5 K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Increment) ⚲Applicable to A Shape only.⚲P+M+4≤QFC(QTC)≤d−M−5 M Selection M3 · M4 Ordering Code QFC25-M3 ⚲Female Thread Hole Depth M×1.5 (when B< M×1.5, through) 
Price Adder	10,00	7,00	5,00

Spur Gears

-Pressure Angle 20° Module 1.5 -

RoHS



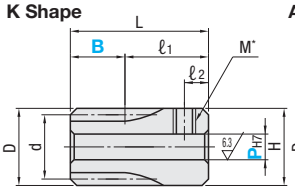
Type			Material	Surface Treatment	Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap			
GEAHB	GEAB	GEAKB	1.1191/C45E	-	Set Screw *Except Straight Bore Type.
GEAHBB	GEABB	GEAKBB		Black Oxide	
GEAHBG	GEABG	GEAKBG		Electroless Nickel Plating	
GEAHS	GEAS	GEAKS	1.4301/X5CrNi18-10	-	

Shaft Bore Specifications

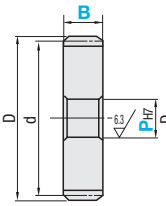
Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Gear Shape

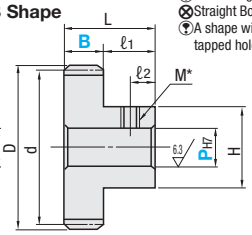
K Shape



A Shape



B Shape



*Straight Bore type does not have tapped holes.

Keyway Dimension Details P.1222
Positioning of keyway and teeth are not fixed.
Straight Bore + Tap is not applicable to A shape.
A shape with keywayed bore + tap has neither tapped holes nor set screws.

Precision JISB 1702 (Class 4)

For alterations on tooth width and hub dimensions. P.1241

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia. PH7 1mm Increment: Straight Bore	Shaft Bore Dia. PH7 1mm Increment: Straight Bore+Tap	Shaft Bore Dia. PH7 1mm Increment: Keyway + Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	** Allowable Transmission Force (Nm) Bending Strength: 1.1191/C45E	1.4301/X5CrNi18-10
Straight Bore GEAHB GEAHBB GEAHBG GEAHS Straight Bore+Tap GEAB GEABB GEABG GEAS Keyway + Tap GEAKB GEAKBB GEAKBG GEAKS	1.5	12	15	A K	6~12		8N	18	21	21	30	15	4	M4	8.33	4.76
		13						19.5	22.5	22.5					9.55	5.45
		14			6~8			21	24	16					10.79	6.16
		*15			6~12		8N~12N	22.5	25.5	18	24	9			12.09	-
		16						24	27	20					13.39	7.64
		17						25.5	28.5	21					14.72	8.40
		18			6~13			27	30	22	27	12	5		16.06	9.17
		19			6~15			28.5	31.5	24					17.41	9.94
		20			6~16			30	33	25					18.81	10.74
		21						31.5	34.5						20.20	11.52
		22			6~17			33	36	26					21.63	12.34
		23			6~18		8N~13N	34.5	37.5	27					23.02	13.14
		24			6~20		8N~15N	36	39	30					24.45	13.95
		25						37.5	40.5					M5	25.92	14.79
		26			6~22		8N~17N	39	42	32					27.42	15.65
		27			6~23		8N~18N	40.5	43.5	34					28.85	16.46
		28						42	45						30.43	17.36
		29			6~24		8N~19N	43.5	46.5	35					31.79	18.14
		30						45	48						33.30	19.00
		*32			6~28		8N~24N	48	51	40					36.11	-
		34						51	54						39.45	22.51
		35						52.5	55.5						40.93	23.35
		36						54	57						42.24	24.10
		38			6~31		8N~28N	57	60	45					45.44	25.93
		40		A	8~31		10N~28N	60	63						48.31	27.57
		42						63	66						51.43	29.35
		44						66	69						54.62	31.17
		45						67.5	70.5						56.23	32.09
		46		B				69	72						57.86	33.02
		48			8~35		10N~31N	72	75	50					60.90	34.75
		50						75	78					M6	63.97	36.51
		52						78	81						67.07	38.28
		54			12~35		12N~31N	81	84						70.21	40.07
		55						82.5	85.5						71.94	41.06
		56						84	87						73.70	42.05
		58						87	90						76.57	43.70
		60			12~38		12N~35N	90	93	55					79.80	45.54
		62						93	96						82.69	47.19
		64						96	99						85.97	49.06
		65						97.5	100.5						87.43	49.89
		66						99	102						89.28	50.95
		68						102	105						92.62	52.85
		70			12~45		12N~42N	105	108	65					95.56	54.53
		72						108	111						98.50	56.21
		75						112.5	115.5						103.39	59.00
		*80						120	123						111.30	-
		84						126	129						117.79	67.22
		85						127.5	130.5						119.29	68.07
		90						135	138						127.36	72.68
		95						142.5	145.5						135.52	77.33
		100						150	153						143.75	82.03
		120			12~49		12N~45N	180	183	70					175.06	99.90

⊗* marked No. of teeth are not available for GEAHS, GEAS and GEAKS. ⊗Shaft bore diameter 9N is not available for Keyway Bore + Tap.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222 Shaft bore diameter 6.35 is available for Straight Bore and Straight Bore + Tap.
* **Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

Order Example

Part Number		No. of Teeth		B		Tooth Shape		P
GEAB1.5	-	20	-	15	-	B	-	8
GEAKBG1.5	-	30	-	15	-	A	-	10N
GEAS1.5	-	12	-	15	-	K	-	8

When tooth shape is not specified, No. of teeth 12 or 13 will be K Shape, 14~120 will be B Shape.

Days to Ship

•No. of Teeth 12~80: 8 Days (Express A, 5,00 EUR/piece) P.88
A Express Charge of 13,50 EUR for 6 or more identical pieces

•No. of Teeth 84~120: 8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

No. of Teeth	€ Unit Price											
	Straight Bore				Straight Bore+Tap				Keyway + Tap			
	GEAHB	GEAHBB	GEAHBG	GEAHS	GEAB	GEABB	GEABG	GEAS	GEAKB	GEAKBB	GEAKBG	GEAKS
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
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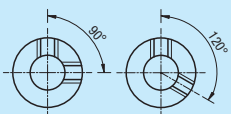
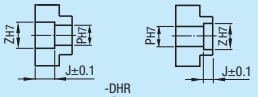
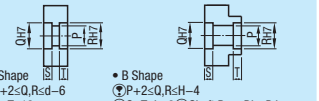
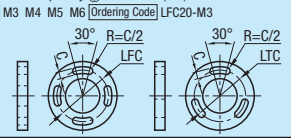
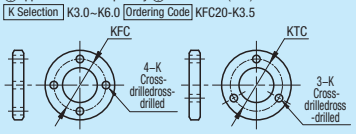
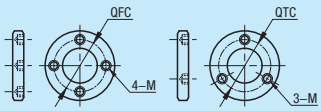
72												
75												
80												
84												
85												
90												
95												
100												
120												

Alterations

Part Number - No. of Teeth - B - Gears Shape - P - (KC90 · KC120 · TPC · DHL · DHR · WDH · LFC · LTC · KFC · KTC · QFC · QTC)

GEAKBG1.5 - 30 - 15 - B - 10N - KC120
GEAHBG1.5 - 60 - 15 - A - 30 - KTC60-K6.0

Alterations	Set Screw	Female Thread Hole Dimensions	Stepped Hole	Both Ends Stepped Bore
Code	KC90 · KC120	TPC	DHL · DHR	WDH
Spec.	KC90:Adds another set screw at position 90°. KC120:Adds another set screw at position 120°. Applicable to B shape only. Not applicable to Straight Bore Type. 	Changes the tapped hole dimension. Ordering Code TPC4 Applicable to B shape only. Not applicable to Straight Bore Type. M: M4 / TPC: M3 M5; M5: M4 M6; M6: M5 M8	Changes shaft bores to stepped bores. (Z: 1mm Increment J: 0.1mm Increment) Ordering Code DHL-Z20-J4.0 Applicable to Straight Bore Type Only.  -DHL A Shape: P+2≤Z≤d−6,2≤J≤12 B Shape: P+2≤Z≤d−6,2≤J≤L−3 -DHR B Shape: P+2≤Z≤H−4,2≤J≤ℓ_1	Changes shaft bores to both ends stepped hole. (Q,R,S,T: 1mm Increment) S, T≥3 Ordering Code WDH-Q10-R10-S5-T5 Applicable to Straight Bore Type Only.  • A Shape P+2≤Q,R≤d−6 S+T≤12 • B Shape P+2≤Q,R≤H−4 S+T≤L−3 Shaft Bore Dia. P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

Alterations	Side Slotted Holes	Side Through Holes	Side Female Thread Holes
Code	LFC · LTC	KFC · KTC	QFC · QTC
Spec.	Machines slotted holes on the side surface (30°) (LFC,LTC 1mm Increment) Applicable to A Shape only. P+C+4≤LFC(LTC)≤d−C−6 M Selection M3 M4 M5 M6 Ordering Code LFC20-M3 M: C / M3: 3.5; M4: 4.5; M5: 5.5; M6: 6.5 	Machines through holes on the side surface (KFC / KTC: 1mm Increment K: 0.5mm Increment) Applicable to A Shape only. P+K+4≤KFC(KTC)≤d−K−6 K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Increment) Applicable to A Shape only. P+M+4≤QFC(QTC)≤d−M−6 M Selection M3 M4 Ordering Code QFC25-M3 Female Thread Hole Depth Mx1.5 
Price Adder	10,00	7,00	5,00

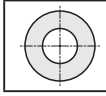
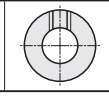
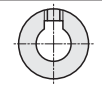
Spur Gears
- Pressure Angle 20° Module 2.0 -

RoHS



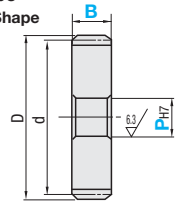
Type			M Material	S Surface Treatment	A Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap			
GEAHB	GEAB	GEAKB	1.1191/ C45E	-	Set Screw *Except Straight Bore Type.
GEAHBB	GEABB	GEAKBB		Black Oxide	
-	GEABG	GEAKBG		Electroless Nickel Plating	
GEAHS	-	GEAKS	1.4301	-	

Shaft Bore Specifications

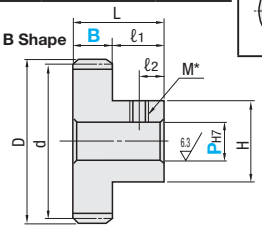
Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Gear Shape

A Shape



B Shape



Keyway Dimension Details P.1222
Positioning of keyway and teeth are not fixed.
Straight Bore + Tap is not applicable to A shape.
A shape with keywayed bore + tap has neither tapped holes nor set screws.

*Straight Bore type does not have tapped holes.

Precision JISB 1702 (Class 4)

For alterations on tooth width and hub dimensions. P.1241

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia. PH7 1mm Increment: Straight Bore Straight Bore+Tap	Shaft Bore Dia. PH7 1mm Increment: Keyway + Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	** Allowable Transmission Force (Nm) Bending Strength: 1.1191/C45E	1.4301/ X5CrNi18-10
Straight Bore GEAHB GEAHBB GEAHS	2.0	12	20	A	8	8N	24	28	18	30	10	5	M5	19.75	11.27
		13			8~11		26	30	20					22.65	12.92
		14					28	32						25.58	14.60
		15			8~15	8N~12N	30	34	24	34	14	7		28.65	16.35
		16			8~16		32	36	25					31.73	18.11
		17			8~19	8N~14N	34	38	28					34.89	19.91
		18			8~21	8N~16N	36	40	30					38.07	21.73
		19				8N~17N	38	42	31					41.27	23.55
		20			8~23	8N~18N	40	44	33					44.59	25.45
		21				8N~19N	42	46	34					47.87	27.32
		22			8~25	8N~21N	44	48	36					51.27	29.26
		23				8N~22N	46	50	37					54.57	31.14
		24			8~28	8N~23N	48	52	40					57.96	33.07
		25					50	54					M6	61.43	35.05
		26			8~29	8N~25N	52	56	42					64.99	37.09
		27			8~31	8N~28N	54	58	45					68.39	39.02
		28					56	60						72.12	41.16
		29			8~32	8N~29N	58	62	47					75.35	43.00
		30			8~33	8N~30N	60	64	48					78.93	45.04
		32			8~35	8N~31N	64	68	50					85.59	48.84
		34			10~35	10N~31N	68	72						93.52	53.37
		35			10~36	10N~33N	70	74	52					97.01	55.36
Straight Bore+Tap GEAB GEABG GEABB		36			10~38	10N~35N	72	76	55					100.13	57.14
		38					76	80						107.70	61.46
		40		B	10~42	10N~38N	80	84	60					114.52	65.35
		42					84	88						121.92	69.57
		44					88	92						129.46	73.88
		45					90	94						133.29	76.06
		46					92	96						137.15	78.26
		48			10~43	10N~40N	96	100	62					144.35	82.38
		50					100	104						151.64	86.53
Keyway + Tap GEAKB GEAKBG GEAKBB GEAKS		52			12~45	12N~42N	104	108	65					158.99	90.73
		54					108	112						166.42	94.97
		55					110	114						170.54	97.32
		56					112	116						174.69	99.69
		58					116	120						181.50	103.58
		60					120	124						189.16	107.94
		62			15~45	15N~42N	124	128						196.02	111.86
		64					128	132						203.78	116.29
		65					130	134						207.23	118.26
		68					136	140						219.54	125.28
		70					140	144						226.51	129.26
		*72					144	148						233.49	
		*75			20~45	20N~42N	150	154						245.07	
		*80					160	164						263.82	
		*85			20~49	20N~45N	170	174	70					282.76	-
		*90					180	184						301.90	
		*95					190	194						321.22	
		*100					200	204						262.11	

No. of teeth with * are not available for GEAHS and GEAKS.
Shaft bore diameter 9N is not available for Keyway Bore + Tap.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222
** Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

Order Example

Part Number		No. of Teeth		B		Tooth Shape		P
GEAKBG2.0	-	15	-	20	-	B	-	10N
GEAHB2.0	-	30	-	20	-	A	-	8

Tooth shape will be "B" when not specified.

Days to Ship

•1.1191/C45E (No. of Teeth 12~60)
8 Days
Express A 5,00 EUR/ piece P88
A Express Charge of 13,50 EUR for 6 or more identical pieces

•1.1191/C45E (No. of Teeth 62~100) • 1.4301/X5CrNi18-10
8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	Price List	5%	10%

For orders larger than indicated quantity, please request a quotation.

No. of Teeth	€ Unit Price									
	Straight Bore			Straight Bore+Tap			Keyway + Tap			
	GEAHB	GEAHBB	GEAHS	GEAB	GEABB	GEABG	GEAKB	GEAKBB	GEAKBG	GEAKS
12										
13										
14										
15										
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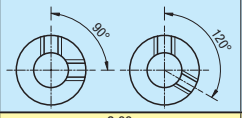
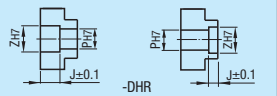
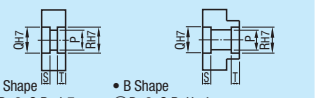
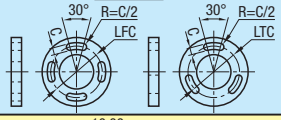
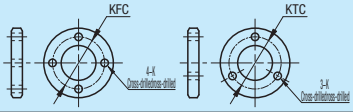
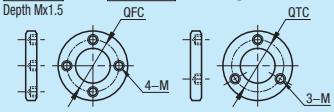
Alterations

Part Number	-	No. of Teeth	-	B	-	Gears Shape	-	P	- (KC90 • KC120 • TPC • DHL • DHR • WDH • LFC • LTC • KFC • KTC • QFC • QTC)
GEAB2.0	-	15	-	20	-	B	-	8	- KC120
GEAHS2.0	-	50	-	20	-	A	-	20	- WDH - Q25 - R25 - S6 - T5

Alterations	Set Screw	Female Thread Hole Dimensions	Stepped Hole	Both Ends Stepped Bore
Code	KC90 • KC120	TPC	DHL • DHR	WDH
Spec.	KC90: Adds another set screw at position 90°. KC120:Adds another set screw at position 120°. Applicable to B shape only. Not applicable to Straight Bore Type. 	Changes the tapped hole dimension. Ordering Code TPC4 Applicable to B shape only. Not applicable to Straight Bore Type. M / TPC M5 / M4 M6 M6 / M5 M8	Changes shaft bores to stepped bores. (Z: 1mm Increment J: 0.1mm Increment) Ordering Code DHL-Z20-J4.0 Applicable to Straight Bore Type Only.  -DHL A Shape P+2≤Z≤d-7, 2≤J≤17 B Shape P+2≤Z≤d-7, 2≤J≤L-3 -DHR B Shape: P+2≤Z≤H–4,2≤J≤ℓ1	Changes shaft bores to both ends stepped hole. (Q, R, S and T =1mm Increment) S, T≥3 Ordering Code WDH-Q10-R10-S5-T5 Applicable to Straight Bore Type Only.  • A Shape P+2≤Q,R≤d-7 S+T≤17 • B Shape P+2≤Q,R≤H–4 S+T≤L–3 Shaft Bore Dia. P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

Alterations	Side Slotted Holes	Side Through Holes	Side Female Thread Holes
Code	LFC • LTC	KTC • KFC	QFC • QTC
Spec.	Machines slotted holes on the side surface (30°) (LFC,LTC 1mm Increment) Applicable to A shape only. P+C+4≤LFC (LTC) ≤d-C-7 M Selection M3 M4 M5 M6 Ordering Code LFC20-M3 M / C M3 / 3.5 M4 / 4.5 M5 / 5.5 M6 / 6.5 	Machines through holes on the side surface (KFC / KTC: 1mm Increment K: 0.5mm Increment) Applicable to A Shape only. P+K+4≤KFC (KTC) ≤d-K-7 K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Increment) Applicable to A shape only. P+M+4≤QFC (QTC) ≤d-M-7 M Selection M3 M4 Ordering Code QFC25-M3 Female Thread Hole Depth Mx1.5 
Price Adder	10,00	7,00	5,00

Spur Gears

–Pressure Angle 20° Module 2.5–



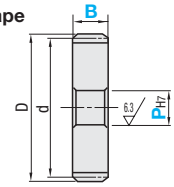
Type			M Material	S Surface Treatment	A Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap			
GEAHB	GEAB	GEAKB	1.1191/ C45E	-	Set Screw * Except Straight Bore Type.
GEAHBB	GEABB	GEAKBB		Black Oxide	

Shaft Bore Specifications

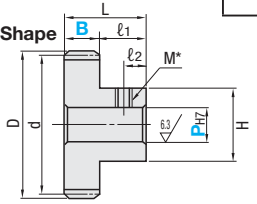
Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Gear Shape

AShape



BShape



Keyway Dimension Details P.1222
Positioning of keyway and teeth are not fixed.
Straight Bore + Tap is not applicable to A shape.
A shape with keyawyed bore + tap has neither tapped holes nor set screws.

*Straight Bore type does not have tapped holes.

Precision JISB 1702 (Class 4)

For alterations on tootth width and hub dimensions, refer to P.1241

Part Number Type	Module	No. of Teeth	B	Tooth Shape	Shaft Bore Dia. PH7 1mm Increment: Straight Bore Straight Bore+Tap	Shaft Bore Dia. PH7 1mm Increment: Keyway + Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	* Allowable Transmission Force (Nm) Bending Strength 1.1191/C45E
Straight Bore GEAHB GEAHBB Straight Bore+Tap GEAB GEABB Keyway + Tap GEAKB GEAKBB	2.5	12	25	A B	8 ~ 13	8N	30	35	23	37	12	6	M5	38.58
		14			8 ~ 15	8N ~ 12N	35	40	25	41	16	8		49.96
		15			8 ~ 20	8N ~ 15N	37.5	42.5	30					55.96
		16			8 ~ 22	8N ~ 17N	40	45	32					61.98
		17			8 ~ 24	8N ~ 19N	42.5	47.5	35					68.13
		18			8 ~ 26	8N ~ 22N	45	50	38					74.36
		19			8 ~ 27		47.5	52.5	39					80.60
		20			8 ~ 28	8N ~ 23N	50	55	40					87.09
		21			8 ~ 29	8N ~ 25N	52.5	57.5	42					93.50
		22			8 ~ 30	8N ~ 27N	55	60	44					100.13
		23			8 ~ 32	8N ~ 28N	57.5	62.5	46					106.58
		24			8 ~ 33	8N ~ 30N	60	65	48					113.19
		25			8 ~ 35	8N ~ 31N	62.5	67.5	50				M6	119.98
		26			8 ~ 38	8N ~ 35N	65	70	55					126.94
		27			8 ~ 42	8N ~ 38N	67.5	72.5	60					133.57
		28					70	75						140.86
		29			8 ~ 43	8N ~ 39N	72.5	77.5	62					147.18
		30			8 ~ 45	8N ~ 41N	75	80	65					154.16
		32			8 ~ 49	8N ~ 45N	80	85	70					167.17
		34			10 ~ 49	10N ~ 45N	85	90						182.65
		35					87.5	92.5						189.48
		36			10 ~ 52	10N ~ 48N	90	95	75					195.56
		38					95	100						210.35
		40			10 ~ 56	10N ~ 50N	100	105	80					223.66
		42					105	110						238.12
		44					110	115						252.85
		45					112.5	117.5						260.32
		46					115	120						267.86
		48			10 ~ 59		120	125	85					281.94
		50			12 ~ 59	12N ~ 50N	125	130						296.17
		52			15 ~ 59	15N ~ 50N	130	135						310.53
		54					135	140						325.04
		55					137.5	142.5						333.08
		56					140	145						341.19
		58					145	150						354.50
		60			25 ~ 59	25N ~ 50N	150	155						369.44
		62					155	160						382.84
		64					160	165						398.01
		65					162.5	167.5						404.75
		68					170	175						428.78
		70					175	180						442.41
		72					180	185						456.04
		75					187.5	192.5						478.65
		80					200	205						396.36

Shaft bore diameter 9N is not available for Keyway Bore + Tap.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222
* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

Order Example

Part Number	-	No. of Teeth	-	B	-	Gears Shape	-	P
GEAB2.5	-	15	-	25	-	B	-	8
GEAKB2.5	-	30	-	25	-	A	-	10N

Tooth shape will be "B" when not specified.

Days to Ship

•1.1191/C45E (No. of Teeth 12~50)
8 Days
Express A 5,00 EUR/ piece P.88
A Express Charge of 13,50 EUR for 6 or more identical pieces

-1.1191/C45E (No. of Teeth 52 ~ 80)
8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

No. of Teeth	€ Unit Price					
	Straight Bore		Straight Bore+Tap		Keyway + Tap	
	GEAHB	GEAHBB	GEAB	GEABB	GEAKB	GEAKBB
12						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
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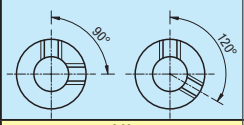
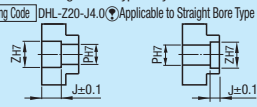
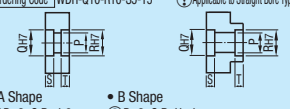
75						
80						

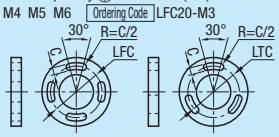
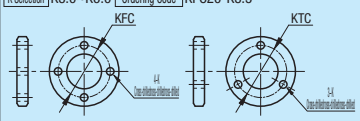
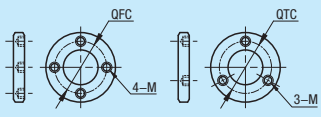
Alterations

Part Number - No. of Teeth - B - Tooth Shape - P - (KC90 · KC120 · TPC · DHL · DHR · WDH · LFC · LTC · KFC · KTC · QFC · QTC)

GEAB2.5 - 15 - 25 - B - 8 - TPC4

GEAHBB2.5 - 30 - 25 - A - 15 - DHL -Z30 -J10

Alterations	Set Screw	Female Thread Hole Dimensions	Stepped Hole	Both Ends Stepped Bore
Code	KC90 · KC120	TPC	DHL · DHR	WDH
Spec.	KC90:Adds another set screw at position 90°. KC120:Adds another set screw at position 120°. Applicable to B shape only. Not applicable to Straight Bore Type. 	Changes the tapped hole dimension. Ordering Code TPC4 Applicable to B shape only. Not applicable to Straight Bore Type. M: TPC M5: M4 M6 M6: M5 M8	Changes shaft bores to stepped bores. Applicable to Straight Bore Type Only. Ordering Code DHL-Z20-J4.0 Applicable to Straight Bore Type Only.  -DHL -DHR A Shape: P+2≤Z≤d-9, 2≤J≤22 B Shape: P+2≤Z≤H−4,2≤J≤ℓ1 B Shape: P+2≤Z≤d-9, 2≤J≤L-3	Changes shaft bores to both ends stepped hole. (Q,R,S,T: 1mm Increment) S, T≥3 Ordering Code WDH-Q10-R10-S5-T5 Applicable to Straight Bore Type Only.  • A Shape P+2≤Q,R≤d-9 S+T≤22 • B Shape P+2≤Q,R≤H−4 S+T≤L-3 Shaft Bore Dia. P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

Alterations	Side Slotted Holes	Side Through Holes	Side Female Thread Holes
Code	LFC · LTC	KFC · KTC	QFC · QTC
Spec.	Machines slotted holes on the side surface (30°) (LFC, LTC:1mm Increment) Applicable to A shape only. P+C+4≤LFC(LTC)≤d−C−9 M Selection M3 M4 M5 M6 Ordering Code LFC20-M3 M: C M3: 3.5 M4: 4.5 M5: 5.5 M6: 6.5 	Machines through holes on the side surface (KFC / KTC: 1mm Increment K: 0.5mm Increment) Applicable to A shape only. P+K+4≤KFC(KTC)≤d−K−9 K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Increment) Applicable to A shape only. P+M+4≤QFC(QTC)≤d−M−9 M Selection M3 / M4 Ordering Code QFC25-M3 Female Thread Hole Depth M×1.5 
Price Adder	10,00	7,00	5,00

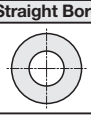
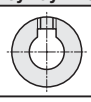
Spur Gears

–Pressure Angle 20° Module 3.0–



Type		M Material	S Surface Treatment	A Accessory
Straight Bore	Keyway + Tap			
GEAHB	GEAKB	1.1191/C45E	-	Set Screw * Except Straight Bore Type.
GEAHBB	GEAKBB		Black Oxide	
GEAHBG	GEAKBG		Electroless Nickel Plating	
GEAHS	GEAKS	1.4301/X5CrNi18-10	-	

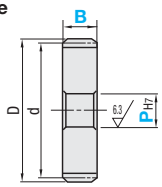
Shaft Bore Specifications

Straight Bore	Keyway + Tap
	

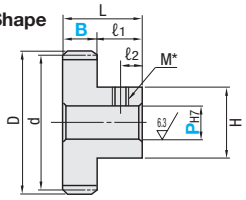
Keyway Dimension Details P.1222
Positioning of keyway and teeth are not fixed.
A shape with Key groove hole + tap has neither tapped holes nor set screws.

Gear Shape

A Shape



B Shape



*Straight Bore type does not have tapped holes.

Precision JISB 1702 (Class 4)

For alterations on tooth width and hub dimensions, refer to P.1241

Part Number Type	Module	No. of Teeth	B	Tooth Shape	Shaft Bore Diameter PH7 1mm Increment Straight Bore	Keyway + Tap	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	** Allowable Transmission Force (Nm) Bending Strength 1.1191/C45E	1.4301/X5CrNi18-10
Straight Bore GEAHB GEAHBG GEAHBB GEAHS Keyway + Tap GEAKBG GEAKB GEAKBB GEAKS	3.0	12	30	A B	8~17	8N~12N	36	42	27	48	18	9	M5	66.66	38.04
		14			8~22	8N~16N	42	48	32					86.33	49.27
		15			8~24	8N~19N	45	51	35					96.70	55.18
		16			8~28	8N~23N	48	54	40					107.10	61.12
		17					51	57						117.74	67.19
		18			8~30	8N~25N	54	60	44				M6	128.50	73.33
		19			8~31	8N~26N	57	63	45					139.28	79.48
		20			8~35	8N~31N	60	66	50					150.49	85.88
		21			8~36	8N~33N	63	69	52					161.57	92.20
		22			8~37	8N~34N	66	72	54					173.02	98.74
		23			8~39	8N~35N	69	75	56					184.17	105.09
		24			8~40	8N~37N	72	78	58					195.60	111.62
		25			8~42	8N~38N	75	81	60					207.33	118.31
		26			10~45	10N~42N	78	84	65					219.36	125.18
		27					81	87						230.80	131.71
		28			10~49	10N~45N	84	90	70					243.41	138.90
		29					87	93						254.32	145.13
		30			10~52	10N~48N	90	96	75					266.40	152.02
		32					96	102						288.88	164.85
		34			12~56	12N~50N	102	108	80					315.62	180.11
		35					105	111						327.41	186.84
		36					108	114						337.93	192.84
		38					114	120						363.48	207.42
		40			12~59		120	126	85					386.49	220.55
		42			20~59	20N~50N	126	132						411.47	234.81
		44					132	138						436.93	249.34
		45					135	141						449.84	256.70
		46			25~59	25N~50N	138	144						462.87	264.14
		48					144	150						487.20	278.02
		50					150	156						511.77	292.04
		52					156	162						536.60	306.21
		54					162	168						561.67	320.52
		55					165	171						575.63	328.44
		56					168	174						589.57	336.44
		58					174	180						612.58	349.57
		60					180	186						638.40	364.31
		*62					186	192						661.55	
		*64					192	198						529.05	
		*65					195	201						538.00	-
		*68			25~63		204	210	90					569.95	
		*70					210	216						588.06	

⊗No. of teeth with * are not available for GEAHS and GEAKS.
⊗Shaft bore diameter 9N is not available for Keyway Bore + Tap.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222
** Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

Order Example

Part Number	-	No. of Teeth	-	B	-	Gears Shape	-	P
GEAHB3.0	-	15	-	30	-	B	-	8
GEAKBG3.0	-	30	-	30	-	A	-	10N

Tooth shape will be "B" when not specified.

Days to Ship

•1.1191/C45E (No. of Teeth 12~40)
8 Days | Express A | 5,00 EUR/ piece | P. 88
A Express Charge of 13,50 EUR for 6 or more identical pieces

•1.1191/C45E (No. of Teeth 42~70) • 1.4301/X5CrNi18-10
8 Days

Price

■Volume Discount (Ⓟ Round down to one Cent.) P 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Ⓟ For orders larger than indicated quantity, please request a quotation.

No. of Teeth	€ Unit Price							
	Straight Bore				Keyway + Tap			
	GEAHB	GEAHBB	GEAHBG	GEAHS	GEAKB	GEAKBB	GEAKBG	GEAKS
12								
14								
15								
16								
17								
18								
19								
20								
21								
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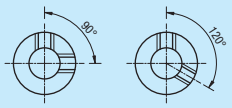
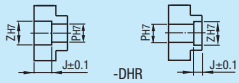
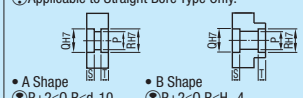
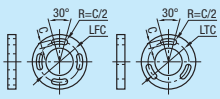
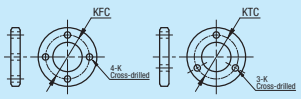
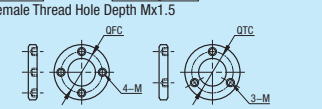
Alterations

Part Number - No. of Teeth - B - Tooth Shape - P - (KC90 · KC120 · TPC · DHL · DHR · WDH · LFC · LTC · KFC · KTC · QFC · QTC)

GEAHB3.0 - 30 - 30 - A - 20 - KFC40 -K6.0

Alterations	Set Screw	Fem. Thread Hole Dim.	Stepped Hole	Both Ends Stepped Bore
Code	KC90 · KC120	TPC	DHL · DHR	WDH
Spec.	KC90: Adds another set screw at position 90°. KC120: Adds another set screw at pos. 120°. Ⓟ Applicable to B shape only. ⊗ Not applicable to Straight Bore Type. 	Changes the tapped hole dimension. Ordering Code TPC4 Ⓟ Applicable to B shape only. ⊗ Not applicable to Straight Bore Type. M / TPC M5 / M4 M6 M6 / M5 M8	Changes shaft bores to stepped bores. Applicable to Straight Bore Type Only. Ordering Code DHL-Z20-J4.0 Ⓟ Applicable to Straight Bore Type Only.  -DHL -DHR Ⓟ A Shape P+2≤Z≤d-9.5, 2≤J≤27 Ⓟ B Shape P+2≤Z≤H-4,2≤J≤18 Ⓟ B Shape P+2≤Z≤d-9.5,2≤J≤45	Changes shaft bores to both ends stepped hole. (Q,R,S,T: 1mm Increment) Ⓟ S, T≥3 Ordering Code WDH-Q10-R10-S5-T5 Ⓟ Applicable to Straight Bore Type Only.  • A Shape Ⓟ P+2≤Q,R≤d-10 Ⓟ S+T≤27 • B Shape Ⓟ P+2≤Q,R≤H-4 Ⓟ S+T≤45 Ⓟ Shaft Bore Dia. P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

Alterations	Side Slotted Holes	Side Through Holes	Side Female Thread Holes
Code	LFC · LTC	KFC · KTC	QFC · QTC
Spec.	Machines slotted holes on the side surface (30°) (LFC, LTC:1mm Increment) Ⓟ Applicable to A shape only. Ⓟ P+C+4≤LFC(LTC)≤d−C−10 M Selection M3 M4 M5 M6 Ordering Code LFC20-M3 M / C M3 / 3.5 M4 / 4.5 M5 / 5.5 M6 / 6.5 	Machines through holes on the side surface (KFC / KTC: 1mm Increment K: 0.5mm Increment) Ⓟ Applicable to A shape only. Ⓟ P+K+4≤KFC(KTC)≤d−K−10 K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Increment) Ⓟ Applicable to A shape only. Ⓟ P+M+4≤QFC(QTC)≤d−M−10 M Selection M3 / M4 Ordering Code QFC25-M3 Ⓟ Female Thread Hole Depth Mx1.5 
Price Adder	10,00	7,00	5,00

Bonded Plastic Spur Gears

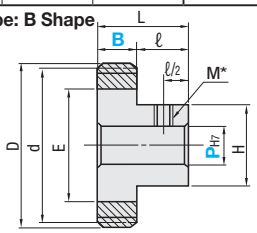
-Pressure Angle 20° Module 1.0/1.5/2.0/2.5/3.0-

Features: Plastic gears with metal cores and MC nylon teeth are fusion bonded. Best suited when strong mounting to shafts is desired.



Type			Material		Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap	Teeth	Core	
GEYH	GEYT	GEYK	MC Nylon	1.1158/ C25E	Set Screw * Except Straight Bore Type.

Gear Shape: B Shape



*Straight Bore type does not have tapped holes.
MC nylon may shrink due to its water-absorbing property.

Shaft Bore Specifications		
Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Keyway Dimension Details P.1222
Positioning of keyway and teeth are not fixed.

Female Thread Hole Dimension List

Shaft Bore Dia. PH7	M (Coarse Thread)	Accessory Set Screw
8~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5

Accuracy JIS B 1702 (Class 5)

Part Number		No. of Teeth	B	Gears Shape	Shaft Bore Dia. PH7 (1mm Increment)		d	D	H	E	L	ℓ	* Allowable Transmission Force (Nm) Bending Strength	€ Unit Price Qty. 1~4		
Type	Module				Straight Bore Straight Bore+Tap	Keyway + Tap								Straight Bore	Straight Bore+Tap	Keyway + Tap
														GEYH	GEYT	GEYK
Straight Bore GEYH Straight Bore+Tap GEYT Keyway + Tap GEYK	1.0	30	10	B	8~12	8N~10N	30	32	18	20	20	10	1.03			
		32					32	34					1.11			
		34					34	36					1.20			
		35					35	37					1.25			
		36					36	38					1.30			
		38			8~16	8N~13N	38	40	23	25			1.39			
		40			10~16	10N~13N	40	42					1.48			
		42					42	44					1.57			
		45					45	47					1.71			
		48			10~19	10N~17N	48	50	28	30			1.86			
		50					50	52					1.96			
		52					52	54					2.05			
		56			10~26	10N~23N	56	58	38	40			2.24			
		60					60	62					2.44			
		70			10~28	10N~24N	70	72	40	45			2.88			
		75					75	77					3.11			
	1.5	28	15		10~16	10N~13N	42	45	23	25	27	12	3.18			
		30					45	48					3.46			
		32			10~19	10N~17N	48	51	28	30			3.76			
		34					51	54					4.06			
		35			10~23	10N~20N	52.5	55.5	33	40			4.22			
		36					54	57					4.38			
		40			10~26	10N~23N	60	63	38				5.00			
		42			10~28	10N~24N	63	66	40	45			5.31			
		45					67.5	70.5					5.78			
		48					72	75					6.27			
		50			12~28	12N~24N	75	78					6.60			
	2.0	20	20		10~15	10N~13N	40	44	22	25	34	14	4.91			
		22			10~16		44	48	23				5.55			
		24			10~19	10N~17N	48	52	28	30			6.19			
		25					50	54					6.54			
		28			10~24	10N~21N	56	60	35	40			7.54			
		30					60	64					8.20			
		32			12~28	12N~24N	64	68	40	45			8.91			
		34					68	72					9.63			
		35					70	74					9.99			
		36					72	76					10.38			

Shaft bore diameter 9N is not available for Keyway Bore + Tap.
For orders larger than indicated quantity, please request a quotation.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222
* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia. PH7 (1mm Increment) Straight Bore Straight Bore+Tap	Keyway + Tap	d	D	H	E	L	ℓ	* Allowable Transmission Force (Nm) Bending Strength	€ Unit Price Qty. 1~4 Straight Bore GEYH	Straight Bore+Tap GEYT	Keyway + Tap GEYK
Straight Bore GEYH / Straight Bore+Tap GEYT	2.5	18	25	B	12~17	12N~15N	45	50	25	30	40	15	8.28			
		20			12~19	12N~17N	50	55	28	40			9.59			
		22			12~24	12N~21N	55	60	35	45			10.84			
		24					60	65					12.10			
		25					62.5	67.5					12.78			
		26			12~28	12N~24N	65	70	40				13.47			
		28					70	75					14.73			
Keyway + Tap GEYK	3.0	16	30		12~16	12N~14N	48	54	24	30	47	17	12.25			
		18			12~21	12N~18N	54	60	30	40			14.31			
		20			12~23	12N~20N	60	66	33	45			16.56			
		22			12~26	12N~23N	66	72	38				18.72			
		24			12~30	12N~26N	72	78	43				20.90			

* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

For orders larger than indicated quantity, please request a quotation.

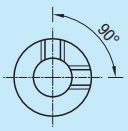
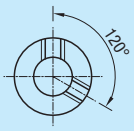
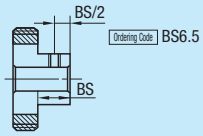
Order Example

Part Number	-	No. of Teeth	-	B	-	Tooth Shape	-	P
GEYT1.5	-	40	-	15	-	B	-	18
GEYK2.0	-	30	-	20	-	B	-	15N

Days to Ship 10 Days

Alterations

Part Number	-	No. of Teeth	-	B	-	Tooth Shape	-	P	-	(KC90 · KC120 · BS)
GEYK3.0	-	20	-	30	-	B	-	20N	-	BS12.5

Alterations	Set Screw		Hub Cut
Code	KC90	KC120	BS
Spec.	Adds another set screw at the position of 90°. ⊗Not applicable to Straight Bore Type. 	Adds another set screw at position 120°. ⊗Not applicable to Straight Bore Type. 	Cuts the hub length in 0.5mm increments. ?Straight Bore Type: 0≤BS≤ℓ ?Straight Bore + Tap Type: M+3≤BS≤ℓ ?Keyway + Tap Type: M+3≤BS≤ℓ 
Price Adder	2,00	2,00	5,00

■Bonding Strength and Safety Factor

(1)The fusion bonding strength of MC nylon and cores vary depending on bonded areas.
See Fig.1 for the relations between bonded diameter and radial strength (torque), and Fig.2 for bonded diameter and thrust strength.

(2)For the bonded strength obtained in (1), apply 4 ~ 5 as safety factor.
If ambient temperature rises, multiply the correction coefficient in Fig. 3.

(3) Allowable strength is as follows:

Tal = Tmax. x 1 / Safety Factor x T

Tal: Allowable Fusion Bonded Strength
Tmax.: Fusion Bonded Strength in Fig. 1 or 2

Fig.1 Relation of Fusion Bonded Diameter (E Dimension) and Radial Strength

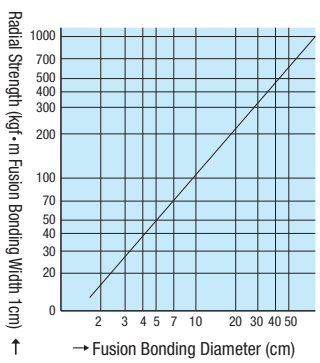


Fig.2 Relation of Fusion Bonded Diameter (E Dimension) and Thrust Strength

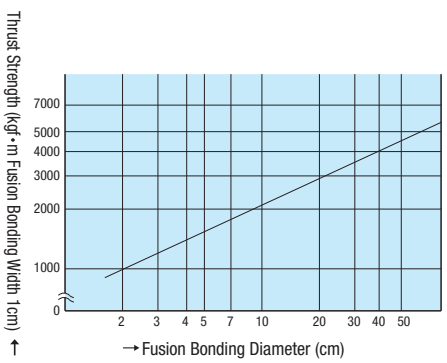
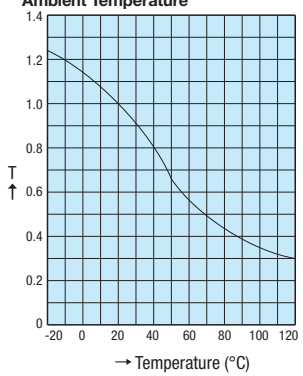
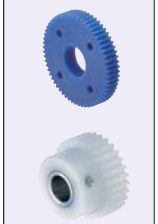


Fig. 3 Modification Coefficient T of Ambient Temperature



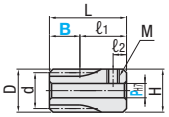
Plastic Spur Gears

-Pressure Angle 20 Module 0.5·0.8·1.0·1.5·2.0·2.5·3.0-

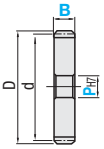


Type	Material: Gears	Material: Core Rod
GEABM	MC Nylon	-
GEABMS	MC Nylon	1.1191/C45E
GEABMT	MC Nylon	1.4301/ X5CrNi18-10
GEABP	Polyacetal	-
GEABPS	Polyacetal	1.1191/C45E
GEABPT	Polyacetal	1.4301/ X5CrNi18-10

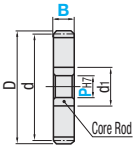
Gear Shape: K Shape



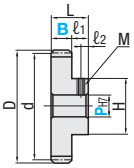
Gear Shape: A Shape



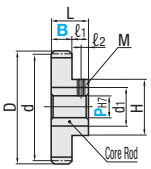
(With Core Rod)



Gear Shape: B Shape



(With Core Rod)



Adhesive is applied to core rod and press-fitted.

P dimension of GEABM (MC Nylon) may shrink due to its water-absorbing property.

Precision JISB 1702 (Class 5)

Part Number: Type	Part Number: Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia PH7: w/o Core Rod	Shaft Bore Dia PH7: With Core Rod	d	D	H	L	ℓ1	ℓ2	M (Coarse Thread)	d1	** Allowable Transmission Force (N•m) Bending Strength: MC Nylon	** Allowable Transmission Force (N•m) Bending Strength: Polyacetal	€ Unit Price: GEABM · GEABP	€ Unit Price: GEABMS · GEABPS	€ Unit Price: GEABMT · GEABPT
GEABM (MC Nylon) GEABP (Polyacetal) GEABMS (With Core Rod / MC Nylon) GEABPS (With Core Rod / Polyacetal)	0.5	*15	8	K	3~6		7.5	8.5	9	18	10	3			0.08	0.33			
		*16					8	9							0.09	0.36			
		*18			3~7		9	10	10						0.11	0.42			
		*20					10	11	11						0.12	0.49			
		*20	3	B	3~5		10	11	8.5	8 (B=3) 7 (B=2)	5	2.5	M3	-	0.05	0.18			
		*24			3~7	-	12	13	10						0.06	0.23			
		*25					12.5	13.5							0.06	0.24			
		*28					14	15							0.07	0.28			
		*30					15	16							0.08	0.31			
		*32					16	17							0.08	0.33			
		*36					18	19							0.10	0.39			
		*40	2				20	21	10						0.11	0.44			
		*45					22.5	23.5							0.13	0.51			
		*48	3				24	25							0.14	0.55			
		*50					25	26							0.15	0.58			
		*56					28	29							0.17	0.67			
		*60					30	31							0.18	0.73			
		*64					32	33							0.20	0.78			
		*70					35	36							0.22	0.86			
		*72	3		3~8		36	37	12						0.22	0.89			
		*80					40	41							0.25	0.99			
		*90			3~9		45	46	14						0.28	1.13			
		*100					50	51							0.32	1.27			
		*120					60	61							0.39	1.54			
	0.8	*12	7	K	4~7	-	9.6	11.2	11.2	20	13	3	M3	-	0.13	0.50			
		*14			4~8		11.2	12.8	12.8						0.17	0.66			
		*15			4~9		12	13.6	13.6						0.18	0.73			
		*16	5	B	4~7		12.8	14.4	10	14	9				0.15	0.58			
		*18					14.4	16							0.17	0.67			
		*20					16	17.6							0.20	0.78			
		*24			5~8		19.2	20.8	12.5						0.25	0.98			
		*25					20	21.6							0.26	1.04			
		*28					22.4	24							0.30	1.20			
		*30					24	25.6							0.33	1.30			
		*32					25.6	27.2							0.36	1.42			
		*36			6~9		28.8	30.4	14			4	M4		0.42	1.65			
		*40					32	33.6							0.47	1.88			
		*45					36	37.6							0.55	2.18			
		*48					38.4	40							0.59	2.36			
		*50					40	41.6							0.63	2.49			
		*56					44.8	46.4							0.72	2.85			
		*60					48	49.6							0.78	3.11			
		*64					51.2	52.8							0.84	3.33			
		*70			6~11		56	57.6	16						0.92	3.66			
		*72					57.6	59.2							0.95	3.78			
		*80					64	65.6							1.07	4.24			
		*90			6~14		72	73.6	20						1.21	4.83			
		*100			6~16		80	81.6	24						1.37	5.43			
		*120			6~21		96	97.6	30						1.66	6.58			
GEABMT (JIS SUS With Core Rod / MC Nylon) GEABPT (JIS SUS With Core Rod - Polyacetal)	1.0	15	12	A	6~10	6	15	17	-	-	-	-	-	P+4	0.49	1.71			
		*16		K	8~12	-	16	18	18	25	13	3	M3	-	0.54	1.89			
		18	10	A B	8~10	8	18	20	15	20	10	4	M4	P+4	0.53	1.84			
		20			8~11		20	22	16						0.61	2.13			
		22			8~12		22	24	18						0.69	2.41			
		24			8~14	8 · 10	24	26	20						0.77	2.69			
		25					25	27							0.82	2.84			
		26			8~15		26	28	22						0.86	3.00			
		28					28	30							0.94	3.28			
		30			10~17	10 · 12	30	32	25						1.03	3.56			
		32			10~18		32	34	26						1.11	3.87			
		35					35	37							1.25	4.34			
		36			10~19	10 · 12 · 15	36	38	28						1.30	4.51			
		40			10~21		40	42	30						1.48	5.15			
		45					45	47							1.71	5.95			
		48					48	50							1.86	6.45			
		50			10~24	10 · 12 · 15 · 20	50	52	35						1.96	6.80			
		55					55	57							2.20	7.63			
		60					60	62							2.44	8.49			
		70			10~28		70	72	40						2.88	10.02			
		75					75	77							3.11	10.80			
		80					80	82							3.33	11.59			
		90					90	92							3.80	13.19			
		100					100	102							4.27	14.84			
		120					120	122							5.18	17.99			
	1.5	15	15	A B	8~12	8	22.5	25.5	18	24	9	3	M3	P+4	1.38	3.16			
		16			8~14	8 · 10	24	27	20	27	12	4	M4		1.53	3.50			
		18			8~15		27	30	22						1.79	4.08			
		20			8~17	8 · 10 · 12	30	33	25						2.07	4.73			
		24			8~21	8 · 10 · 12 · 15	36	39	30						2.61	5.97			
		25			8~21		37.5	40.5							2.76	6.30			
		26			8~22		39	42	32						2.91	6.65			
		28			8~23		42	45	34						3.18	7.27			
		30			8~24	8 · 10 · 12 · 15 · 20	45	48	35						3.46	7.90			
		32			8~28		48	51	40						3.76	8.58			
		35			8~28		52.5	55.5							4.22	9.63			
		36			8~28		54	57							4.38	10.00			
		40			10~31	10 · 12 · 15 · 20 · 25	60	63	45						5.00	11.42			
		45			10~31		67.5	70.5							5.78	13.20			
		48			10~31		72	75							6.27	14.31			
		50			10~31		75	78							6.60	15.08			
		60			10~35		90	93	50						8.24	18.83			
		70			12~35	12 · 15 · 20 · 25	105	108							9.72	22.21			
		80			12~38		120	123	55						11.25	25.70			

⊗No. of teeth marked with * are not available for With Core Rod Type.

**Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222
Module 0.5 with 40 ~ 50 teeth are calculated as tooth width 3mm.

Part Number Type	Module	No. of Teeth	B	Gears Shape	Shaft Bore Dia P_{H7} w/o Core Rod	Shaft Bore Dia P_{H7} With Core Rod	d	D	H	L	ℓ_1	ℓ_2	M (Coarse Thread)	d_1	** Allowable Transmission Force (N•m) Bending Strength MC Nylon	** Allowable Transmission Force (N•m) Bending Strength Polyacetal	€ Unit Price GEABM · GEABP	€ Unit Price GEABMS · GEABPS	€ Unit Price GEABMT · GEABPT
GEABM (MC Nylon) GEABP (Polyacetal) GEABMS (With Core Rod / MC Nylon) GEABPS (With Core Rod / Polyacetal) GEABMT (JIS SUS With Core Rod / MC Nylon) GEABPT (JIS SUS With Core Rod / Polyacetal)	2.0	*12	20	A B	10~12	-	24	28	18	34	14	4	M4	-	2.25	2.45			
		14			10~14	10	28	32	20					P+4	2.96	3.23			
		15			10~16	10 · 12	30	34	24						3.28	3.59			
		16			10~17		32	36	25						3.63	3.97			
		18			10~21	10 · 12 · 15	36	40	30						4.24	4.63			
		20			10~23		40	44	33						4.91	5.36			
		24			10~28	10 · 12 · 15 · 20	48	52	40						6.19	6.77			
		25					50	54							6.54	7.15			
		28			10~31	10 · 12 · 15 · 20	56	60	45						7.54	8.24			
		30			10~33	· 25	60	64	48						8.20	8.96			
		32			12~35		64	68							8.91	9.73			
		35			12~35		70	74	50						9.99	10.92			
		36			12~35		72	76							10.38	11.34			
		40				12 · 15 · 20 · 25 · 30	80	84							11.86	12.95			
		45					90	94							13.70	14.97			
		48			12~42		96	100	60						14.85	16.23			
		50					100	104							15.65	17.1			
		60					120	124							19.54	21.35			
GEABM (MC Nylon) GEABMS (With Core Rod / MC Nylon) GEABMT (JIS SUS With Core Rod / MC Nylon)	2.5	12	25	A B	10~16	10	30	35	23	37	12	6	M5	P+6	4.39	-			
		14			10~17	10	35	40	25						5.77				
		15			12~21	10 · 12 · 15	37.5	42.5	30						6.41				
		16			12~22		40	45	32						7.09				
		18			12~26	10 · 12 · 15 · 20	45	50	38						8.28				
		20			12~28		50	55	40						9.59				
		22			12~30	12 · 15 · 20	55	60	44				M6	P+8	10.84				
		24			12~33	12 · 15 · 20 · 25	60	65	48						12.10				
		25			12~35		62.5	67.5	50						12.78				
		28			12~42	12 · 15 · 20 · 25 · 30	70	75	60						14.73				
		30			12~45		75	80	65						16.02				
		32			15~49	15 · 20 · 25 · 30 · 35	80	85	70						17.40				
		35					87.5	92.5							19.52				
		36					90	95							20.27				
		40					100	105							23.15				
		45					112.5	117.5							26.76				
		48					120	125							29.01				
		50					125	130							30.57				
GEABMT (JIS SUS With Core Rod / MC Nylon)	3.0	12	30	A B	12~19	12	36	42	28	45	15	7.5	M5	P+6	7.58	-			
		14			12~22	12 · 15	42	48	32						9.98				
		15			14~25		45	51	36						11.08				
		16			14~26	12 · 15 · 20	48	54	38						12.25				
		18			14~28		54	60	40						14.31				
		20			14~35	15 · 20 · 25	60	66	50				M6	P+8	16.56				
		22			14~37		66	72	54						18.72				
		24			14~40	15 · 20 · 25 · 30	72	78	58						20.90				
		25			14~42		75	81	60						22.08				
		28			14~49	15 · 20 · 25 · 30 · 35	84	90	70						25.45				
		30			14~52		90	96	75						27.68				
		32			18~52		96	102							30.06				
		35			18~56	20 · 25 · 30 · 35 · 40	105	111	80						33.73				
		36					108	114							35.02				
		40					120	126							40.01				
		45					135	141							46.25				

⊗No. of Teeth with * is not With Core Rod Type.

** Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, ☞P.1222

Order Example

Part Number	No. of Teeth	B	Gears Shape	P
GEABM1.0	20	10	A	8
GEABPS2.0	40	20	B	20
GEABM0.5	20	8	K	7

When tooth shape is not specified, Module 1.0 with 18 or more No. of teeth and Module 1.5, 2.0, 2.5, 3.0 will be B shape.

Days to Ship

- Module 0.5/0.8/1.0/1.5: **8 Days** — Express A: 5,00 EUR/piece ☞P. 88
  - A Express Charge of 13,50 EUR for 6 or more identical pieces
- Module 2.0: **8 Days**
- Module 2.5/3.0: **10 Days**

Price

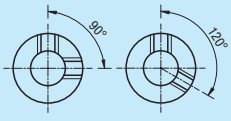
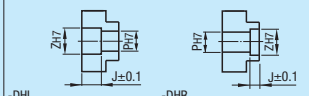
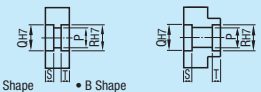
Volume Discount (Round down to one Cent.) P. 87

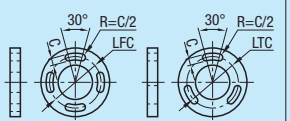
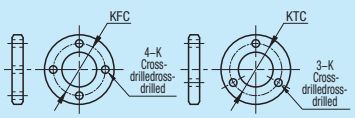
Quantity	1~9	10~12	13~14	15~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	No. of Teeth	B	Tooth Shape	P	(KC90 · KC120...etc.)
GEABM1.0	25	10	B	8	KC120
GEABPS2.0	40	20	A	15	KTC20-K4.0

Alterations	Set Screw	Female Thread Hole Dimensions	Stepped Hole	Both Ends Stepped Bore
Code	KC90 · KC120	TPC	DHL · DHR	WDH
Spec.	KC90:Adds another set screw at position 90°. KC120:Adds another set screw at position 120°. Applicable to B shape only. 	Changes the tapped hole dimension. Ordering Code TPC4 Applicable to B shape only. M: TPC; M3: M4; M4: M3 M5; M5: M4 M6; M6: M5 M8	Changes shaft bores to stepped bores. ⊗Not applicable to K shape. (Z: 1mm Increment J: 0.1mm Increment) ⊗Not applicable to With Core Rod Type Applicable to B shape only. ⊗No tapped holes for B Shape. Ordering Code DHL-Z20-J4.0  A Shape: P+2≤Z≤d-8,2≤J≤B-3 B Shape: P+2≤Z≤H-4,2≤J≤L-B B ShapeP+2≤Z≤d-8,2≤J≤L-3	Changes shaft bores to both ends stepped hole. ⊗Not applicable to K shape. (Q,R,S,T: 1mm Increment) S, T≥3 ⊗Not applicable to With Core Rod Type ⊗No tapped holes for B Shape. Ordering Code WDH-Q10-R10-S3-T3  • A Shape • B Shape P+2≤Q,R≤d-5 P+2≤Q,R≤H-4 S+T≤B-3 S+T≤L-3 Shaft Bore Dia. P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

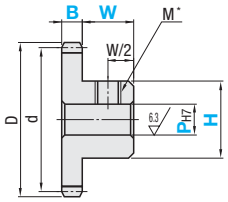
Alterations	Side Slotted Holes	Side Through Holes
Code	LFC · LTC	KFC · KTC
Spec.	Machines slotted holes on the side surface (30°) (LFC,LTC 1mm Increment) Applicable to A shape only. w/o Core Rod P+C+4≤LFC(LTC)≤d−C−5 With Core Rod d1P+C+4≤LFC (LTC) ≤d-C-5 M Selection M3 M4 M5 M6 Ordering Code LFC20-M3 	Machines through holes on the side surface (KFC KTC / 1mm Increment K: 0.5mm Increment) Applicable to A shape only. w/o Core Rod P+K+4≤KFC(KTC)≤d−K−5 With Core Rod d1P+K+4≤KFC (KTC) ≤d-K-5 K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 
	M: C; M3: 3.5; M4: 4.5; M5: 5.5; M6: 6.5	
Price Adder	10,00	7,00

Spur Gears Tooth Width • Hub Dimensions Configurable

-Pressure Angle 20 Module 0.5/0.8/1.0/1.5/2.0/2.5/3.0-

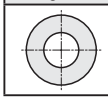
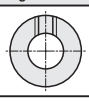
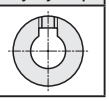


Type			Material	Surface Treatment	Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap			
GEFHB	GEFB	GEFKB	1.1191/C45E	-	Set Screw *Except Straight Bore Type.
GEFHBB	GEFBB	GEFKBB		Black Oxide	
GEFHBG	GEFBG	GEFKBG		Electroless Nickel Plating	
GEFHBS	GEFBS	GEFKBS	1.4301/X5CrNi18-10	-	



* Straight Bore Type does not have tapped holes.

Shaft Bore Specifications

Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Keyway Dimension Details P.1222
Positioning of keyway and teeth are not fixed.

Female Thread Hole Dimension List

Shaft Bore Dia. PH7	M (Coarse Thread)	Accessory Set Screw
3~5	M3	M3x3
6~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~40	M8	M8x6

Accuracy JIS B 1702 (Class 4)

Module 0.5/0.8/1.0/1.5

Part Number Type	Module	No. of Teeth	B 1mm Increment	Shaft Bore Ø PH7 1mm Increment: Straight Bore Straight Bore+Tap	Shaft Bore Ø PH7 1mm Increment: Keyway + Tap	Hub 1mm Increment: W	Hub 1mm Increment: H	d	D	€ Unit Price: Straight Bore GEFHB	GEFHBB	GEFHBG	GEFHBS	Straight Bore+Tap GEFB	GEFBB	GEFBG	GEFBS	Keyway + Tap GEFKB	GEFKBB	GEFKBG	GEFKBS
	0.5	20	2~5	3 4 5	-	0~10	P+2≤H≤d-2	10	11												
		24		3~6				12	13												
		25						12.5	13.5												
		26						13	14												
		30						15	16												
		32						16	17												
		36		3~12				18	19												
		40						20	21												
		48						24	25												
		50						25	26												
		60		5~25				30	31												
		70						35	36												
		80						40	41												
		100						50	51												
Straight Bore GEFHB GEFHBB GEFHBG GEFHBS	0.8	15	3~10	5	-	0~10	P+2≤H≤d-2	12	13.6												
		16		6				12.8	14.4												
		18		6.35				14.4	16												
		20						16	17.6												
		24		5~8				19.2	20.8												
		25						20	21.6												
		28						22.4	24												
		30						24	25.6												
		32						25.6	27.2												
		36		6.35 8				28.8	30.4												
		40						32	33.6												
		45						36	37.6												
		48						38.4	40												
		50						40	41.6												
Straight Bore+Tap GEFB GEFBB GEFBG GEFBS Keyway + Tap GEFKB GEFKBB GEFKBG GEFKBS	1.0	20	5~15	6~12	8N	0~15	P+4≤H≤d-3 (Straight Bore, Straight Bore +Tap) P+6≤H≤d-3 (Keyway + Tap)	20	22												
		21			8N~10N			21	23												
		22						22	24												
		23						23	25												
		24						24	26												
		25						25	27												
		26		6~18	8N~12N			26	28												
		28						28	30												
		30					P+10≤H≤d-3 (Straight Bore, Straight Bore +Tap) P+13≤H≤d-3 (Keyway + Tap)	30	32												
		32						32	34												
		35		8~20	8N~20N			35	37												
		36						36	38												
		40						40	42												
		48		8~35	10N~30N			48	50												
		50						50	52												
		60						60	62												
		70		10~40	12N~35N			70	72												
		80						80	82												
		100		15~40	15N~35N			100	102												
		120						120	122												
	1.5	16	10~20	6~12	8N~12N	0~20	P+6≤H≤d-4	24	27												
		18						27	30												
		20						30	33												
		24		6~18	8N~15N			36	39												
		25						37.5	40.5												
		26					P+13≤H≤d-4 (Straight Bore, Straight Bore +Tap) P+15≤H≤d-4 (Keyway + Tap)	39	42												
		28						42	45												
		30		6~25	8N~25N			45	48												
		35						52.5	55.5												
		36						54	57												
		40		8~40	8N~30N			60	63												
		48						72	75												
		50						75	78												
		60		12~40	12N~35N		P+15≤H≤d-4 (Straight Bore, Straight Bore+Tap) P+20≤H≤d-4 (Keyway + Tap)	90	93												
		70						105	108												
		80						120	123												

■Module 2.0/2.5/3.0

Part Number Type	Module	No. of Teeth	B 1mm Increment	Shaft Bore Ø PH7 1mm Increment: Straight Bore Straight Bore+Tap	Shaft Bore Ø PH7 1mm Increment: Keyway + Tap	Hub 1mm Increment: W	Hub 1mm Increment: H	d	D	€ Unit Price: Straight Bore GEFHB	GEFHBB	GEFHBG	GEFHBS	Straight Bore+Tap GEFB	GEFBB	GEFBG	GEFBS	Keyway + Tap GEFKB	GEFKBB	GEFKBG	GEFKBS
Straight Bore GEFHB GEFHBB GEFHBG GEFHBS	2.0	15	15~25	8~15	8N~12N	0~25	P+10≤H≤d–5 (Straight Bore, Straight Bore+Tap) P+12≤H≤d-5 (Keyway + Tap)	30	34												
		16						32	36												
		18						36	40												
		20						40	44												
		24		8~20	8N~17N			48	52												
		25						50	54												
		26						52	56												
		30		8~25	8N~20N			60	64												
		32						64	68												
		36		10~30	10N~25N		P+12≤H≤d-5 (Straight Bore, Straight Bore+Tap) P+14≤H≤d-5 (Keyway + Tap)	72	76												
		40						80	84												
Straight Bore+Tap GEFB GEFBB GEFBG GEFBS		48		10~35	10N~30N			96	100												
		50						100	104												
		52		12~40	12N~35N			104	108												
		60						120	124												
	2.5	18	20~30	8~15	8N~12N	0~30	P+10≤H≤d-6 (Straight Bore, Straight Bore+Tap) P+12≤H≤d-6 (Keyway + Tap)	45	50												
		20						50	55												
		25		8~20	8N~17N			62.5	67.5												
		28		8~25	8N~20N			70	75												
Keyway + Tap GEFKB GEFKBB GEFKBG GEFKBS		36		8~30	8N~25N		P+12≤H≤d-6 (Straight Bore, Straight Bore+Tap) P+14≤H≤d-6 (Keyway + Tap)	90	95												
		40						100	105												
		50		12~40	12N~35N			125	130												
	3.0	12	25~35	8~15	8N~12N	0~35	P+10≤H≤d-7 (Straight Bore, Straight Bore+Tap) P+12≤H≤d-7 (Keyway + Tap)	36	42												
		15						45	51												
		18		8~20	8N~20N			54	60												
		20		8~25	8N~25N			60	66												
		30		10~30	10N~30N		P+12≤H≤d-7 (Straight Bore, Straight Bore+Tap) P+14≤H≤d-7 (Keyway + Tap)	90	96												
		36		12~40	12N~35N			108	114												
		40						120	126												

⊗Shaft bore diameter 9N is not available for Keyway Bore + Tap. ⊗When hub length (W)<M+3, Straight Bore +Tap and Keyway +Tap are not available. ⓟ When the tooth width is smaller, the transmitting torque is smaller. ⓟShaft bore diameter 6.35 is available for Straight Bore and Straight Bore + Tap. ⓟSelect 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. ☞P.1222 ⓟWhen requesting A shape (no hub), Specify W=0 ⓟWhen W=0, specification for H dimension is not required.

Order Example

Part Number	No. of Teeth	B	P	W	H
GEFHB1.0	30	8	15	W10	H26
GEFKBG2.0	32	15	20N	W0	

Price

■Volume Discount (ⓟRound down to one Cent.) P. 87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

ⓟFor orders larger than indicated quantity, please request a quotation.

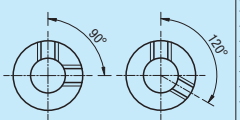
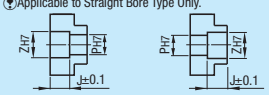
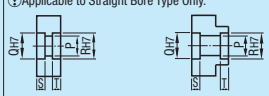
Days to Ship

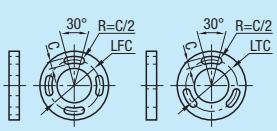
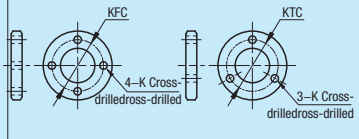
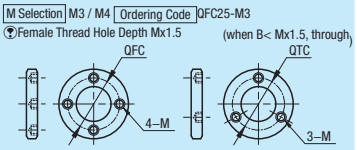
10 Days | Express B | 5,00 EUR/ piece ☞P. 88

ⓟA Express Charge of 13,50 EUR for 6 or more identical pieces

Alterations

Part Number	No. of Teeth	B	P	W	H	(KC90 · KC120…etc.)
GEFBB1.5	30	20	8	W15	H30	KC90
GEFHBB1.0	40	8	10	W0		KTC20-K5.0

Alterations Code	Set Screw KC90 · KC120	Female Thread Hole Dimensions TPC	Stepped Hole DHL · DHR	Both Ends Stepped Bore WDH
Spec.	KC90:Adds another set screw at 90° position. KC120:Adds another set screw at 120° position. ⊗Not applicable to Straight Bore Type. 	Changes the tapped hole dimension. Ordering Code TPC4 ⓟOnly when W>0 ⊗Not applicable to Straight Bore Type. M / TPC: M3 / M4; M4 / M3 M5; M5 / M4 M6; M6 / M5 M8; M8 / M6	Changes shaft bores to stepped bores. (Z: 1mm Increment J: 0.1mm Increment) Ordering Code DHL-Z20-J4.0 ⓟApplicable to Straight Bore Type Only.  -DHL-DHR ⓟP+2≤Z≤d–(2.5x Module) ⓟ2≤J≤B+W–3 ⓟP+2≤Z≤H–4 ⓟ2≤J≤W	Changes shaft bores to both ends stepped hole. (Q,R,S,T: 1mm Increment) ⓟS, T≥3 Ordering Code WDH-Q10-R10-S5-T5 ⓟApplicable to Straight Bore Type Only.  • A Shape (W=0) ⓟP+2≤Q,R≤d–(2.5x Module) ⓟS+T≤B–3 • B Shape (W>0) ⓟP+2≤Q,R≤H–4 ⓟS+T≤B+W–3 ⓟShaft Bore Dia. P is general tolerance.
Price Adder	2,00	Free of Charge	5,00	10,00

Alterations Code	Side Slotted Holes LFC · LTC	Side Through Holes KFC · KTC	Side Female Thread Holes QFC · QTC
Spec.	Machines slotted holes on the side surface (30°) (LFC,LTC 1mm Increment) ⓟApplicable to W=0 only ⓟP+C+4≤LFC(LTC)≤d–C–(2.5x Module) M Selection M3 / M4 / M5 / M6 Ordering Code LFC20-M3 M / C: M3 / 3.5; M4 / 4.5; M5 / 5.5; M6 / 6.5 	Machines through holes on the side surface (KFC / KTC K: 1mm Increment: 0.5mm Increment) ⓟApplicable to W=0 only ⓟP+K+4≤KFC(KTC)≤d–K–(2.5x Module) K Selection K3.0~K6.0 Ordering Code KFC20-K3.5 	Machines tapped holes on the side surface of the gear (QFC,QTC: 1mm Increment) ⓟApplicable to W=0 only ⓟP+M+4≤QFC(QTC)≤d–M–(2.5x Module) M Selection M3 / M4 Ordering Code QFC25-M3 ⓟFemale Thread Hole Depth Mx1.5 (when B< Mx1.5, through) 
Price Adder	10,00	7,00	5,00

Keyless Hub Spur Gears

-Pressure Angle 20° Module 1.0/1.5/2.0/2.5/3.0–

CAD Data

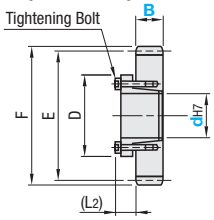
Features: Additional machining to shafts (such as keyway) is not required, and the strength of shafts is not compromised. Easy positioning.

RoHS

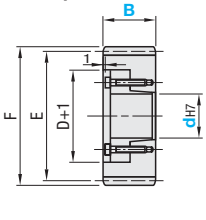


Type	Material		Surface Treatment		Accessory
	Gears	Bushing	Gears	Bushing	
GEAL	1.1191/ C45E	1.1191/ C45E	-	-	Hexagon Socket Head Cap Screw 1.7220/34CrMo4 Black Oxide
GEALB			Black Oxide		
GEALG			Electroless Nickel Plating		

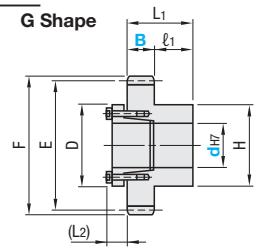
Gear Shape E Shape



F Shape



G Shape



* Standard type bushings (ST) and Short Type bushings (SH) are available. Refer to right page.

Accuracy JIS B 1702 (Class 4)

Part Number Type	Module	No. of Teeth	B	Tooth Shape	Shaft Bore dia. dH7 (select from Table 1 on P.2136) E · G Shape ST Bushings	F Shape ST Bushings	F Shape SH Bushings	E	F	ℓ1	L1	H	* Allowable Transmission Force (Nm) Bending Strength	€ Unit Price GEAL E	GEAL F	GEAL G	GEALB E	GEALB F	GEALB G	GEALG E	GEALG F	GEALG G
GEAL GEALB GEALG	1.0	35	10	G	8~10	-	-	35	37	10	20	30	12.13									
		36						36	38				12.52									
		38						38	40				13.46									
		40			8~12			40	42				14.31									
		42						42	44				15.24									
		45						45	47				16.66									
		48			8~18			48	50			44	18.04									
		50						50	52			46	18.95									
		52						52	54				19.87									
		60			10~18			60	62			50	23.64									
		70			12~32			70	72			56	28.31									
		80			15~32			80	82			60	32.98									
		100						100	102				42.59									
		120			17~32			120	122			70	51.87									
	1.5	20	15	E G	8	-	-	30	33	12	27	25	18.81									
		24						36	39			30	24.45									
		25						37.5	40.5				25.92									
		26						39	42			32	27.42									
		28			8~12			42	45			34	30.43									
		30						45	48			35	33.30									
		32			8~17			48	51				36.11									
		35			8~18			52.5	55.5			40	40.93									
		36						54	57				42.24									
		40			8~30			60	63			45	48.31									
		48			8~32			72	75			50	60.90									
		50						75	78				63.97									
		52						78	81				67.07									
		60			12~32			90	93			55	79.80									
		70						105	108			65	95.56									
		80						120	123				111.30									
	2.0	15	20	E F G	8	-	-	30	34	14	34	24	28.65									
		18						36	40			30	38.07									
		20					8	40	44			33	44.59									
		24			8~17		8~12	48	52			40	57.96									
		25						50	54				61.43									
		26			8~18			52	56			42	64.99									
		30						60	64			48	78.93									
		32						64	68			50	85.59									
		36			10~32			72	76			55	100.13									
		40						80	84			60	114.52									
		48						96	100			62	144.35									
		50						100	104				151.64									
		52			12~32			104	108			65	158.99									
		60						120	124				189.16									
	2.5	14	25	E F G	8	-	-	35	40	16	41	25	49.96									
		15						37.5	42.5			30	55.96									
		16					8	40	45			32	61.98									
		18			8~14			45	50			38	74.36									
		20				8~12	-	50	55			40	87.09									
		24			8~22		14~19	60	65			48	113.19									
		25			8~25			62.5	67.5			50	119.98									
		28						70	75			60	140.86									
		30						75	80			65	154.16									
		32			10~28			80	85			70	167.17									
		36			10~35			90	95			75	195.56									
		40			10~42			100	105			80	223.66									
		48			12~50			120	125			85	281.94									
		50						125	130				296.17									
	3.0	12	30	E F G	8	-	-	36	42	18	48	27	66.66									
		14			8 · 10	-	-	42	48			32	86.33									
		15			8~12	8	-	45	51			35	96.70									
		16				8~10	11	48	54			40	107.10									
		18			8~17	8~15	-	54	60			44	128.50									
		20				8~17	18 · 19	60	66			50	150.49									
		24			8~25		28	72	78			58	195.60									
		25					28 · 30	75	81			60	207.33									
		28						84	90			70	243.41									
		30			10~35	8~25	28~35	90	96			75	266.40									
		32						96	102				288.88									
		36			12~42			108	114			80	337.93									
		40			12~45			120	126			85	386.49									

* Allowable Transmission Forces in the table are reference values calculated with prescribed conditions. For conditions, P.1222

Order Example

Part Number	-	No. of Teeth	-	B	-	Tooth Shape	-	Shaft Bore Dia. d
GEAL1.0	-	40	-	10	-	G	-	10

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: **10 Days**

Express B: 5,00 EUR/ piece P.88

A Express Charge of 13,50EUR for 3 or more identical pieces.

<Bushings>

Notes on Installation

- When installation, be sure to apply oil or grease.
  When oil or grease is not applied, shaft may slip because of inadequate tightening.
- Tighten the bushing screws only after the shaft has been inserted. (The bushing will be deformed if tightened without a shaft inserted.)
- Use a torque wrench to tighten the screws.
- Do not use screws other than those included.

Installation

(1)Wipe dusts off shaft surface and apply oil or grease. (Do not use any oil or grease containing molybdenum type wear reduction agents.)

(2)Wipe off and apply oil or grease on contact surfaces of spur gear and bushing. Apply oil or grease to thread and seat of screws as well.

(3)Temporarily assemble spur gear and bushing and insert the shaft. (Do not tighten the bushing before inserting the shaft.)

(4)After locating the gear on the shaft, tighten the clamping screws using a torque wrench in the diagonal pattern order, beginning lightly (approx. 1/4 of the prescribed tightening torque).

(5)Tighten the screws further to an increased torqu (approximately 1/2 specified torque).

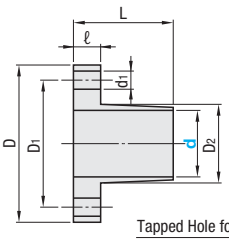
(6)Tighten to the prescribed full tightening torque.

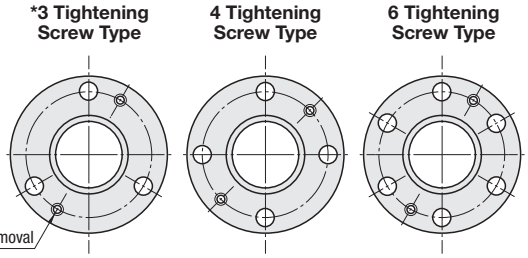
(7)Finally, tighten the screws to the listed torque values in a circular order.

Removal

- Be sure to work after the system is completely shut down and stopped.
- Loosen the tightening screws in circular order.
- Insert screws into removal holes and tighten evenly.
- Repeat "Installation" process for re-installation.







Operation Temperature: –20~ +80°C * SH bushings have tapped holes for removal in 3 places. Material: Body 1.1191/C45E
Screws 1.7220/34CrMo4 (Black Oxide)

Table 1: Bushing Dimension Table

• Standard Type (ST)

Shaft Bore Dia. d	Bolt Qty.	Bolt Size	Female Thread Holes for Removal	Max. Allowable Torque Nm	Allowable Thrust Load kN	Screws Tightening Torque Nm	(L2)	D	D1	D2	d1	L	ℓ
8	4	M3x12	M3x2	16	4.0	2.0	8.5	25.5	19	10	3.3	15.5	4
10				39				30	22	12			
11	3	M4x16	M4x2	43	5.34	4.0	10.5	31	23	13	4.5	16.5	5
12				48				32	24	14			
14				73			12	35	27	16.6		22	6
15				78				36	28	17.6			
16	4	M4x18	M4x2	83	5.34	4.0	13	37	29	18.6	4.5	23	7
17				88				38	30	19.6			
18				154				43	33	20.6			
19				163				45	35	22.4			
20				171				46	36	23.4			
22	4	M5x20	M5x2	186	8.74	8.3	14	48	38	24.6	5.5	23	7
24				206				50	40	26.6			
25				216				52	42	28.4			
28				353			15.5	54	44	30.6		24	8
30				382				57	47	33.4			
32	6	M5x25	M5x2	412	8.74	8.3	16.5	59	49	34.7	5.5	25	9
35				451				63	53	38.4		26.5	
38				686			19	70	58	42		28	10
40	6	M6x28	M6x2	725	12.3	13.7		71	59	43.5	6.6	30.5	
42				757			20	74	62	46		31.5	11
45				1490				84	69	49.5			
48	6	M8x35	M8x2	1600	22.7	34.3	24.5	87	72	52.5	8.8	38.5	13
50				1660				89	74	54.5			

- Shaft tolerance g6, shaft surface roughness Ra6.3 are standard.
- When there is a keyway machining or a D cut on the shaft, transmitting torque is reduced by approximately 15% or more.

Electroless nickel plating reduces maximum allowable torque and thrust load capacities by 20% - 30% .

kgf=Nx0.101972

• Short Type (SH)

Shaft Bore Dia. d	Bolt Qty.	Bolt Size	Female Thread Holes for Removal	Max. Allowable Torque Nm	Allowable Thrust Load kN	Screws Tightening Torque Nm	D	D1	D2	d1	L	ℓ
6	3	M3x10	M3x3	5.6	1.87	1.9	22.5	16	8.5	3.3	10.5	3
8				8.5	2.12		24.5	18	10.5			
10				18	3.59		29	21	12.75			
11	3	M4x12	M4x3	20	3.63	3.9	30	22	13.75	4.4	13	4
12				23	3.76		31	23	14.75			
14				37	5.21		36	26	17.65			
15				39	5.10		37	27	18.65			
16	4	M4x18	M4x2	42	5.17	3.9	38	28	19.65	4.4	17	5
17				45	5.23		39	29	20.65			
18				48	5.28		40	30	21.85			
19				49	5.12		42	32	22.85			
20				97	9.68		46	36	24.1			
22				110	9.98		47	37	25.75			
24				121	10.00		49	39	27.75			
25	4	M5x18	M5x2	124	9.90	7.8	51	41	28.75	5.5	19	6
28				141	10.00		53	43	31.75			
30				149	9.89		56	46	33.75			
32				163	10.12		58	47	35.75			
35				173	9.88		61	50	39.1		20	

kgf=Nx0.101972

Spur Gears Bearing Built-in Type

-Pressure Angle 20° Module 1.0/1.5/2.0-

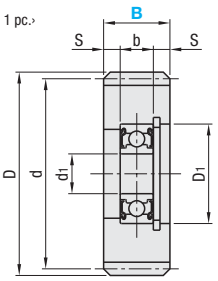
CAD Data

Features: Bearing integrated spur gears can be used for reversing rotations and synchronizing.

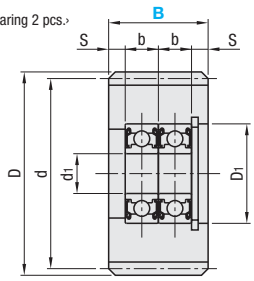


Type	Material		Surface Treatment
	Main Body	Bearings	
GEABD	1.1191/C45E	Steel	-
GEABDB			Black Oxide
GEABDG			Electroless Nickel Plating
GEABDM	MC Nylon		-

‹For bearing 1 pc.›



‹For bearing 2 pcs.›



*Bearing Accuracy ABEC 1

Bearings are press-fit

For shafts for idler gears, refer to cantilever shafts. (**P.795~818**)

Part Number		No. of Teeth	B	d1	d	D	GEABD / GEABDB / GEABDG				GEABDM				€ Unit Price			
Type	Module						Bearing No.	D1	b	S	Bearing No.	D1	b	S	GEABD	GEABDB	GEABDG	GEABDM
GEABD GEABDB GEABDG GEABDM	1.0	15	12	3	15	17	693ZZx1	8	4	4	-	-	-	-				
		20		5	20	22	695ZZx1	13	4	4	-	-	-	-				
		24		8	24	26	688ZZx1	16	5	3.5	-	-	-	-				
		25		8	25	27	698ZZx1	19	6	3	678ZZx1	12	3.5	4.25				
		30		10	30	32	6900ZZx1	22	6	3	6700ZZx1	15	4	4				
		35		10	35	37	6900ZZx1	22	6	3	6900ZZx1	22	6	3				
		40		12	40	42	6901ZZx1	24	6	3	6901ZZx1	24	6	3				
		48		12	48	50	6901ZZx1	24	6	3	6901ZZx1	24	6	3				
		50		12	50	52	6901ZZx1	24	6	3	6901ZZx1	24	6	3				
		60		12	60	62	6901ZZx1	24	6	3	6901ZZx1	24	6	3				
	1.5	15	15	5	22.5	25.5	695ZZx2	13	4	3.5	675ZZx2	8	2.5	5				
		16		8	24	27	688ZZx1	16	5	5	-	-	-	-				
		20		10	30	33	6900ZZx1	22	6	4.5	6700ZZx2	15	4	3.5				
		24		10	36	39	6000ZZx1	26	8	3.5	6900ZZx1	22	6	4.5				
		25		10	37.5	40.5	6000ZZx1	26	8	3.5	6900ZZx1	22	6	4.5				
		26		10	39	42	6000ZZx1	26	8	3.5	6900ZZx1	22	6	4.5				
		28		12	42	45	6001ZZx1	28	8	3.5	6001ZZx1	28	8	3.5				
		30		12	45	48	6001ZZx1	28	8	3.5	6001ZZx1	28	8	3.5				
		40		12	60	63	6001ZZx1	28	8	3.5	6001ZZx1	28	8	3.5				
		48		15	72	75	6002ZZx1	32	9	3	6002ZZx1	32	9	3				
		50		15	75	78	6002ZZx1	32	9	3	6002ZZx1	32	9	3				
		60		15	90	93	6002ZZx1	32	9	3	6002ZZx1	32	9	3				
	2.0	15	20	8	30	34	698ZZx2	19	6	4	678ZZx2	12	3.5	6.5				
		20		10	40	44	6200ZZx1	30	9	5.5	6900ZZx2	22	6	4				
		24		12	48	52	6201ZZx1	32	10	5	6201ZZx1	32	10	5				
		25		12	50	54	6201ZZx1	32	10	5	6201ZZx1	32	10	5				
		30		15	60	64	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5				
		32		15	64	68	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5				
		36		15	72	76	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5				
		40		15	80	84	6202ZZx1	35	11	4.5	6202ZZx1	35	11	4.5				
		48		20	96	100	6004ZZx1	42	12	4	6004ZZx1	42	12	4				
		50		20	100	104	6004ZZx1	42	12	4	6004ZZx1	42	12	4				
		60		25	120	124	6005ZZx1	47	12	4	6005ZZx1	47	12	4				

Order Example

Part Number	-	No. of Teeth	-	B
GEABD1.0	-	20	-	12

Days to Ship

8 Days

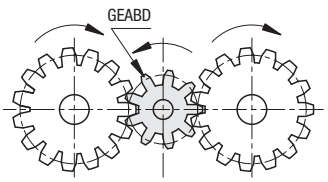
Price

Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



Insert the Bearing Built-in Gear between two gears to synchronize rotation direction.

Round Rack Gears · Worm · Worm Wheel

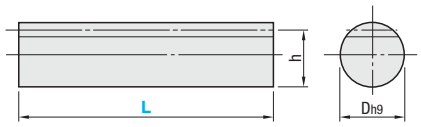
-L Dimension Standard · L Configurable Pressure Angle 20°-

CAD Data

■Round Rack Gears



Type		M Material	S Surface Treatment
L Dimension Fixed	L Dimension Configurable		
RGMA	RGMAL	1.1191/C45E	Black Oxide
RGMAS	RGMASL	1.4305/ X10CrNiS18-9	-



Precision RGMA / RGMAL JIS B1702 Class 4
RGMAS / RGMASL JIS B1702 Class 5

■L Dimension Fixed

Part Number Type	Module	Number	# of Effective Teeth (Z)	D (h9)	(L)	h	€ Unit Price
RGMA (1.1191/C45E)	0.5	300	192	8	301.6	7.5	
		0.8	300	120			7.2
	1.0	300	95	10	298.4	9	
		500	159		499.5		
	1.5	300	63	15	300	13.5	
		500	106		500		
	2.0	300	47	20	300	18	
		500	79		500		
	2.5	300	38	25	300	22.5	
		500	63		500		
	3.0	300	31	30	300	27	
		500	53		500		
RGMAS (1.4305/ X10CrNiS18-9)	0.5	300	192	8	301.6	7.5	
		0.8	300	120			7.2
	1.0	300	95	10	298.4	9	
		500	159		499.5		
	1.5	300	63	15	300	13.5	
		500	106		500		
	2.0	300	47	20	300	18	
		500	79		500		
	2.5	300	38	25	300	22.5	
		500	63		500		
	3.0	300	31	30	300	27	
		500	53		500		

■L Dimension Configurable

Part Number Type	Module	Full Length L 1mm Increment	D (h9)	h	€ Unit Price L50~99	L100~199	L200~300	L301~500
RGMAL (1.1191/C45E)	0.5	50~300	8	7.5				
	0.8			7.2				
	1.0	50~500	10	9				
	1.5		15	13.5				
	2.0		20	18				
	2.5		25	22.5				
	3.0		30	27				
RGMASL (1.4305/ X10CrNiS18-9)	0.5	50~300	8	7.5				
	0.8			7.2				
	1.0	50~500	10	9				
	1.5		15	13.5				
	2.0		20	18				
	2.5		25	22.5				
	3.0		30	27				

Alterations	One End Female Thread	Both Ends Female Thread
Code	MC	WMC
Spec.	Ordering Code MC5	Ordering Code WMC5
	Module / M Selection: 0.5 — 3 4 5; 0.8 — 3; 1.0 — 4 5; 1.5~3.0 — 4 5 6	Module / M Selection: 0.5 — 3 4 5; 0.8 — 3; 1.0 — 4 5; 1.5~3.0 — 4 5 6
Price Adder	4,00	8,00

Order Example

Part Number	-	Length L
RGMA1.0	-	500
RGMAL0.8	-	205

Days to Ship: 8 Days — Express A 5,00 EUR/ piece — P.88

(?)A Express Charge of 13,50 EUR for 6 or more identical pieces

Price

■Volume Discount ((?)Round down to one Cent.) P.87

Quantity	1~9	10~12	13 or 14	15~19
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

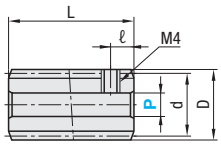
Alterations

Part Number	-	Length L	-	(MC · WMC)
RGMA1.0	-	500	-	MC5

■Worm



WGEAU

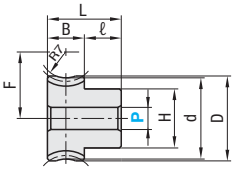


M Material: 1.1191/C45E
H Tooth Surface Hardness: 12HRC or less
Accuracy Class JIS B 1702 Class 4 or equivalent (Tooth Surface Finish: Rolled)
S Surface Treatment: Black Oxide
A Accessory: Set Screw M4

■Worm Wheel



WGEAH



M Material: Phosphor Bronze (CC 480K/CuSN10-C)
Accuracy Class JIS B 1702 Class 4 or equivalent (Tooth Surface: Machined)

■Worm

Part Number Type	Module	Number of Starts	Shaft Bore Dia. PH7 Straight Bore+Tap	Twisting Direction	Advance Angle	d	D	L	ℓ	€ Unit Price 1 ~ 5 pcs.
WGEAU	0.8	1	6	R (Right)	3°17	14	15.6	30	5	
		2	6		6°34					
	1.0	1	6		3°35	16	18	32	5	
		2	6		7°11					

■Datum Section of Gears: Normal to tooth / Datum Plane for Gear Cutting: Bore

■Cautions on usage
- As high thrust load is applied to worm, be sure to fix it tightly when attaching to shaft. Avoid using with the worm gear pushed against the wheel or axially offset condition.

■Worm Wheel

(?)For orders larger than indicated quantity, please request a quotation.

Part Number Type	Module	No. of Teeth	Number of Starts	Shaft Bore Dia. PH7 Straight Bore	Twisting Direction	d	D	B	H	L	ℓ	F Engagement Center Distance	Allowable Torque (Nm) Tooth Surface Strength	Backlash (mm)	Reduction Ratio	€ Unit Price 1 ~ 5 pcs.
WGEAH	0.8	20	2	5	R (Right)	16.11	17.6	9	12	18	9	15	0.86	0.04~022	1/10	
		30	1	5		24.04	25.6		18			19	1.89		1/30	
			2			24.16	25.6		18			19	1.87		1/15	
		40	1	6		32.05	33.6		20			23	3.24		1/40	
		50	1	8		40.06	41.6		25			27	4.90		1/50	
	1.0	20	1	6		20.05	23	10	16	20	10	18	1.58	0.06~0.24	1/20	
			2			20.16	23		16			18	1.54		1/10	
		30	1	6		30.07	33		20			23	3.38		1/30	
			2			30.24	33		20			23	3.35		1/15	
		40	1	8		40.08	43		26			28	5.79		1/40	
		50	1	8		50.10	53		30			33	8.76		1/50	

Days to Ship: 10 Days

(?)As Worm Wheels are modified according to F (engagement center distance), spiral bevel gears from different manufacturers may not mesh correctly.

Order Example

Part Number	-	No. of Teeth	-	Number of Starts	-	Shaft Bore Dia. P	-	Handedness
WGEAU1.0				1		6		R
WGEAH1.0	-	20	-	2	-	6	-	R

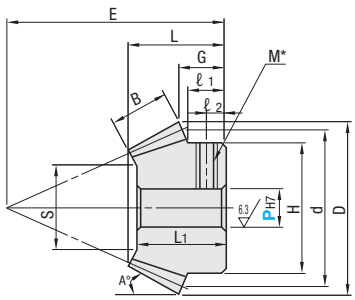
Bevel Gears

-Pressure Angle 20 Straight · Spiral Type Module 1.0/1.5/2.0-

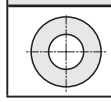
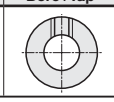
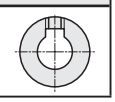
CAD Data



Type					M Material	S Surface Treatment	A Accessory
Straight Type			Spiral Type				
Straight Bore	Straight Bore+Tap	Keyway + Tap	Straight Bore+Tap	Keyway + Tap			
KGEASH	KGEAST	KGEASK	KGEAPT	KGEAPK	1.1191/C45E	-	Set Screw *Except Straight Bore Type.
KGEASHB	KGEASTB	KGEASKB	KGEAPTB	KGEAPKB		Black Oxide	
KGEASHG	KGEASTG	KGEASKG	KGEAPTG	KGEAPKG		Electroless Nickel Plating	
KGHS	KGTS	KGKS	-	-	1.4301/X5CrNi18-10	-	



Shaft Bore Specifications

Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Keyway Dimension Details ☞ P.1222
Positioning of keyway and teeth are not fixed.
* Straight Bore Type does not have tapped holes.

Accuracy JIS B 1702 (Class 4)

Straight Type

Part Number Type	Module	Number	Shaft Bore Dia. PH7 1mm Increment: Straight Bore / Straight Bore+Tap	Shaft Bore Dia. PH7 1mm Increment: Keyway + Tap	No. of Teeth	R (No. of Teeth)	Mating #	B	H	d	D	S	E	L	G	ℓ1	ℓ2	L1	A°	M (Coarse Thread)
Straight Bore KGEASH KGEASHB KGEASHG KGHS	1.0	2020	6 · 8	8	20	1:1	2020	4.3	16	20	21.41	11.8	21	14.53	11.71	9	4.5	13	49°3'	M4
		2525	6 · 8 · 10	8 · 10	25		2525	5.3	20	25	26.41	15	23	14.7	11.21	8	4	13	48°51'	M4
		3030	8 · 10 · 12	8 · 10 · 12	30		3030	6.2	22	30	31.41	19.4	26	15.89	11.71	8.9	4.5	14.5	47°42'	M4 (M5)
		2040	6 · 8	8	20	1:2	4020	5.7	16	20	21.79	12.1	29.6	15.03	10.05	8.6	4	14	29°8'	M4
		4020	8 · 10 · 12	8 · 10 · 12	40		2040	5.7	25	40	40.89	28.4	21.8	15.02	12.69	8	4	13	66°0'	M4 (M5)
Straight Bore+Tap KGEAST KGEASTB KGEASTG KGTS	1.5	2020	10 · 12	10 · 12	20	1:1	2020	6.8	24	30	32.12	17.7	28	18.53	14.06	10	5	16.5	49°3'	M4
		2525	10~14	10~14	25		2525	7.5	30	37.5	39.62	23.7	34	21.26	16.31	11.5	5	19	48°51'	M4
		3030	12~16	12~16	30		3030	9.3	33	45	47.12	29.6	38	22.83	16.56	12.34	6	21	47°42'	M5
		1836	8 · 10 · 12	8	18	1:2	3618	9.8	22	27	29.68	12.2(12.1)	40.74	22.96	14.41	12.5	6	21	29°25'	M4
		3618	10~15	10~15	36		1836	9.8	30	54	55.34	34.3	26.75	18.54	14.59	10	5	15.5	66°17'	M5
Keyway + Tap KGEASK KGEASKB KGEASKG KGKS	2.0	2020	12~14	12~14	20	1:1	2020	8.5	34	40	41.32	23.9	37	24	18.41	14	7	21	49°3'	M5
		*2525			25		2525	10.5	42	50	51.33	32.3	40	23.34	16.41	10.99	5	21	48°51'	M5
		3030	16~18	16~18	30		3030	12.4	44	60	61.36	38.9	51	30.77	22.41	16.79	8	28	47°42'	M6
		1836	10	10	18	1:2	3618	12.6	28	36	37.81	19.1	53.12	29	18.01	15.12	7	27	29°25'	M4
		3618	12~14	12~14	36		1836	12.6	36	72	72.15	47.6	35.21	24.07	19	13	6.5	21	66°17'	M5

Sizes marked with * are only applicable to 1.1191/C45E. Sizes in ( ) are for 1.4301/X5CrNi18-10. Module 1.0 is not available for 1.4301/1.4301/X5CrNi18-10rNi18-10 (Round Shaft Bore of 1.4301/X5CrNi18-10)
Spiral bevel gears from different manufacturers may not mesh correctly. Always select mating sets from MISUMI. Note: The gears are sold in each piece qty, not as sets.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. ☞ P.1222

Spiral Type (Spiral Angle 35°)

Part Number Type	Module	Number	Shaft Bore Dia. PH7 1mm Increment: Straight Bore+Tap	Shaft Bore Dia. PH7 1mm Increment: Keyway + Tap	Twisting Direction	No. of Teeth	R (No. of Teeth)	Mating Gear Number	B	H	d	D	S	E	L	G	ℓ1	ℓ2	L1	A°	M (Coarse Thread)
Straight Bore+Tap KGEAPT KGEAPTB KGEAPTG	1.0	2020	6 · 8	8	L R	20	1:1	2020	4.5	16	20	21.12	11.3	21	14.43	11.56	9	4.5	13	50°31'	M4
		3030	10 · 12	10 · 12	(Left) (Right)	30		3030	6.2	22	30	31.09	19.4	26	15.67	11.54	9	4.5	14.5	48°21'	M5
		2040	8 · 10 · 12	8	L(Left)	20	1:2	4020	5.7	16	20	21.87	12.1	29.6	15	10.07	8.6	4	14	30°13'	M4
		4020	10 · 12	10 · 12	R(Right)	40		2040	5.7	25	40	40.41	28.4	21.8	14.57	12.21	8	4	13	65°36'	M5
Keyway + Tap KGEAPK KGEAPKB KGEAPKG	1.5	2020	10 · 12	10 · 12	L R	20	1:1	2020	7	24	30	31.85	17.2	28	18.44	13.93	10	5	16.5	50°5'	M4
		3030	12~16	12~16	(Left) (Right)	30		3030	9.3	33	45	46.79	29.7	38	22.64	16.4	12	6	21	47°54'	M5
		1836	8 · 10 · 12	8	L(Left)	18	1:2	3618	9.8	22	27	30.09	12.2	40.74	22.96	14.51	12.49	6	21	30°44'	M4
		3618	10~15	10~15	R(Right)	36		1836	9.8	30	54	54.76	34.3	26.75	18.01	14.01	9	4.5	15.5	65°57'	M5

Use Spiral Type in L and R sets.
Spiral bevel gears from different manufacturers may not mesh correctly. Always select mating sets from MISUMI. Note: The gears are sold in each piece qty, not as sets.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. ☞ P.1222

Order Example

Part Number	-	Number (# of teeth · mating #)	-	Shaft Bore Dia. PH7	-	Handedness
KGEASH1.0	-	2020	-	6		
KGEAPTG1.5	-	3618	-	10	-	R

Days to Ship: 8 Days

Module	Number	€ Unit Price Qty. 1~10											
		Straight Type											
		Straight Bore				Straight Bore+Tap				Keyway + Tap			
		KGEASH	KGEASHB	KGEASHG	KGHS	KGEAST	KGEASTB	KGEASTG	KGTS	KGEASK	KGEASKB	KGEASKG	KGKS
1.0	2020												
	2525												
	3030												
	2040												
	4020												
1.5	2020												
	2525												
	3030												
	1836												
	3618												
2.0	2020												
	2525												
	3030												
	1836												
	3618												

For orders larger than indicated quantity, please request a quotation.

Module	Number	€ Unit Price Qty. 1~10					
		Spiral Type					
		Straight Bore+Tap			Keyway + Tap		
		KGEAPT	KGEAPTB	KGEAPTG	KGEAPK	KGEAPKB	KGEAPKG
1.0	2020						
	3030						
	2040						
	4020						
1.5	2020						
	3030						
	1836						
	3618						

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	Number	-	Shaft Bore Dia. PH7	-	Handedness	-	(KC90 · KC120)
KGEAPTB1.0	-	3030	-	10	-	R	-	KC90

Alterations	Set Screw	
Code	KC90	KC120
Spec.	 Adds another set screw at position 90°. ⊗Not applicable to Straight Bore Type.	 Adds another set screw at position 120°. ⊗Not applicable to Straight Bore Type.
Price Adder	2,00	2,00

Helical Gears

-Pressure Angle 20° Helix Angle 45° Module 1.0/1.5/2.0/2.5/3.0-

CAD Data

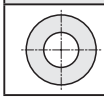
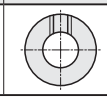
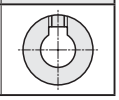
Feature: Spur gears used for the power transmission between unparallel shafts.

RoHS

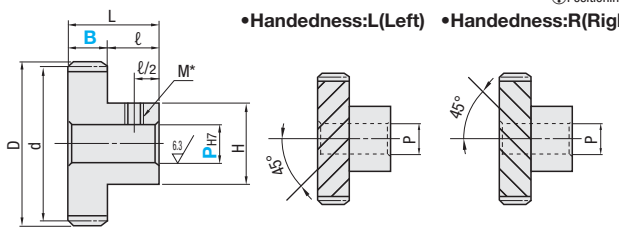


Type			M Material	S Surface Treatment	A Accessory
Straight Bore	Straight Bore+Tap	Keyway + Tap			
NEGHN	NEGTN	NEGKN	1.1191/C45E	-	Set Screw *Except Straight Bore Type.
NEGHB	NEGTB	NEGKB		Black Oxide	
NEGHG	NEGTG	NEGKG		Electroless Nickel Plating	
NEGHS	NEGTS	NEGKS	1.4301/ X5CrNi18-10	-	
NEGHM	NEGTM	-	MC Nylon	-	

Shaft Bore Specifications

Straight Bore	Straight Bore+Tap	Keyway + Tap
		

Keyway Dimension Details P.1222
Positioning of keyway and teeth are not fixed.



•Handedness:L(Left) •Handedness:R(Right)

Female Thread Hole Dimension List

Shaft Bore Dia. PH7	M (Coarse Thread)	Accessory Set Screw
6~12	M4	M4x3
13~17	M5	M5x4
18~30	M6	M6x5
31~45	M8	M8x6
46~65	M10	M10x8

* Rectangular tooth Module * Straight Bore Type has no tapped hole.

Accuracy JIS B 1702 (Class 5)

Part Number Type	Module	No. of Teeth	Shaft Bore Dia. PH7 (1mm Increment) Straight Bore Straight Bore+Tap	Shaft Bore Dia. PH7 (1mm Increment) Keyway + Tap	Twisting Direction	d	D	B	H	L	ℓ
Straight Bore NEGHN NEGHB NEGHG NEGHS NEGHM	1.0	13	6~7	-	L(Left) R(Right)	18.38	20.38	10	15	20	10
		15	6~10	8		21.21	23.21		18		
		20	8~16	8~13		28.28	30.28		25		
		26	10~20	10~17		36.77	38.77		30		
		30	10~25	10~22		42.43	44.43		35		
	1.5	10	8	-		21.21	24.21	15	16	25	10
		13	10~14	10~12		27.58	30.58		23		
		15	10~16	10~13		31.82	34.82		25		
		20	12~20	12~17		42.43	45.43		30		
		26	12~30	12~26		55.15	58.15		40		
		30	12~33	12~30		63.64	66.64		45		
Straight Bore+Tap NEGTN NEGTB NEGTG NEGTS NEGTM	2.0	10	12~13	12		28.28	32.28	20	22	35	15
		13	12~20	12~17		36.77	40.77		30		
		15	12~25	12~22		42.43	46.43		35		
		20	15~33	15~30		56.57	60.57		45		
		26	20~46	20~44		73.54	77.54		60		
		30	20~51	20~47		84.85	88.85		65		
	2.5	10	12~17	12~14		35.36	40.36	22	26	38	16
		13	15~25	15~22		45.96	50.96		35		
		15	15~30	15~26		53.03	58.03		40		
		20	20~46	20~44		70.71	75.71		60		
		26	20~56	20~50		91.92	96.92		70		
		30	20~65	20~50		106.07	111.07		80		
Keyway + Tap NEGKN NEGKB NEGKG NEGKS	3.0	10	15~24	15~21		42.43	48.43	25	34	43	18
		13	20~33	20~30		55.15	61.15		45		
		15	20~38	20~34		63.64	69.64		50		
		20	20~46	20~44		84.85	90.85		60		
		26	20~65	20~50		110.31	116.31		80		
		30	20~65	20~50		127.28	133.28		90		

Shaft Bore diameter 6.35 is available for Straight Bore and Straight Bore + Tap.
Shaft bore dia. 9 is not available for Keyway + Tap.
Select 10K as P dimension if you request keyway width of 4.0mm (height 1.8mm) for Keyway + Tap with shaft bore diameter of 10. P.1222
Combine the same handedness (L and L or R and R) for unparallel shafts and different handedness (L and R) for parallel shafts.
Helical gears generate axial thrust on shafts. Choose bearings that can withstand the axial thrust s generated by the gears.

Order Example: Part Number NEGHN1.0 - No. of Teeth 20 - Shaft Bore Dia. P 10 - Handedness L

Days to Ship: 10 Days

Module	No. of Teeth	€ Unit Price Qty. 1~10 Straight Bore NEGHN	NEGHB	NEGHG	NEGHS	NEGHM	Straight Bore+Tap NEGTN	NEGTB	NEGTG	NEGTS	NEGTM	Keyway + Tap NEGKN	NEGKB	NEGKG	NEGKS
1.0	13														
	15														
	20														
	26														
	30														
1.5	10														
	13														
	15														
	20														
	26														
	30														
2.0	10														
	13														
	15														
	20														
	26														
	30														
2.5	10														
	13														
	15														
	20														
	26														
	30														
3.0	10														
	13														
	15														
	20														
	26														
	30														

For orders larger than indicated quantity, please request a quotation.

Alterations Left Page

Rack Gears - L Dimension Fixed

-Pressure Angle 20 Module 0.5 / 0.8 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0-

CAD Data

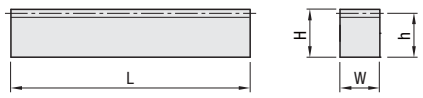


Type		Material	Surface Treatment
Both Ends Machined	Economy		
RGEA	RGEAR	1.1191/C45E	Black Oxide
RGEAB	-	Free-Cutting Brass Bar	-
RGEAS	-	1.4301/X5CrNi18-10	-
RGEAM	RGEAMR	MC Nylon	-

RGEAM and RGEAMR (MC Nylon) may expand or shrink depending on the operating environment.

■Economy Type

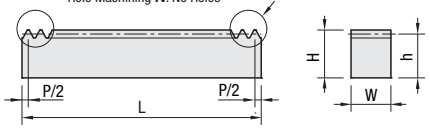
Hole Machining **N**: No Holes



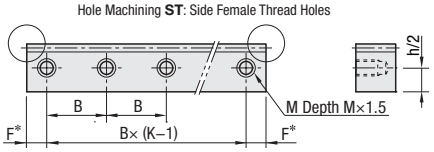
■Both Ends Machined Type

Hole Machining **N**: No Holes

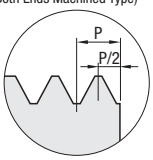
End Face Machining



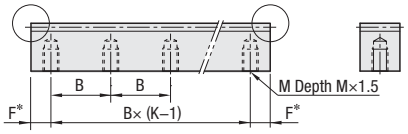
Hole Machining **ST**: Side Female Thread Holes



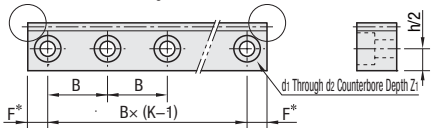
Enlarged View of End Face (Both Ends Machined Type)



Hole Machining **A**: Bottom Female Thread Holes



Hole Machining **Z**: Side Counterbored Holes



Module	P Tolerance
0.5~2.0	$^{-0.1}_{-0.3}$
2.5 or 3.0	$^{-0.1}_{-0.4}$

$$F^* = \frac{L - B(K-1)}{2}$$

Accuracy: RGEA · RGEAR · RGEAB — JIS B 1702 Class 4 or equivalent; RGEAS · RGEAM · RGEAMR — JIS B 1702 Class 5 or equivalent

Part Number Type	Module	Number	Hole Machining	Effective No. of Teeth	L	P (Pitch)	W	H	h	B (Hole pitch)	M (Coarse Thread)	d_1	d_2	Z_1	K (# of Holes)	€ Unit Price Economy Type N	Both Ends Machined Type N	A	ST	Z
(1.1191/C45E) Both Ends Machined Type RGEA / Economy Type RGEAR	1.0	100	N (No Hole Machining)	30 (29)	98.43 (98)	3.142	10	12	11	180	M3	3.5	6.5	3.5	-					
		300		95 (94)	298.45 (303)										2					
		500		159	499.51(505)										3					
	1.5	100		21 (20)	97.64 (101)	4.712	15	20	18.5	180	M4	4.5	8	4.5	-					
		300		63 (62)	296.88 (303)										2					
		500		106 (105)	499.51 (505)										3					
	2.0	100	A (Bottom Female Thread)	15 (14)	96.85 (98)	6.283	20	25	23	180	M5	5.5	9.5	5.5	-					
		300		47 (46)	296.85 (303)										2					
		500	ST (Side Female Thread)	79	496.37 (505)										3					
	2.5	100		12 (11)	96 (100)	7.854	25	30	27.5	180	M5	5.5	9.5	5.5	-					
		300		38 (37)	296 (303)										2					
		500	Z (Side Counterbored)	63	494.8 (505)										3					
	3.0	100		10 (9)	95.29 (101)	9.424	30	35	32	180	M5	5.5	9.5	5.5	-					
		300		31 (30)	295.29 (303)										2					
		500		53 (52)	499.51 (505)										3					
(Free-Cutting Brass Bar) RGEAB	0.5	300	N	192	301.59	1.571	3	9	8.5	-	-	-	-	-	-					
	0.8	300		120	301.59	2.513	4	10	9.2											
(1.4301/X5CrNi18-10) RGEAS	0.5	300	N	192	301.59	1.571	3	9	8.5	-	-	-	-	-	-					
	0.8	300		120	301.59	2.513	4	10	9.2											
	1.0	300	N (No Hole Machining)	95	298.45	3.142	10	10	9	180	M3	3.5	6.5	3.5	2					
		500		159	499.51										3					
	1.5	300	A (Bottom Female Thread)	63	296.88	4.712	15	15	13.5		M4	4.5	8	4.5	2					
		500		106	499.51										3					
	2.0	500	ST (Side Female Thread)	79	496.37	6.283	20	20	18		M5	5.5	9.5	5.5	3					
		1000		159	999.02										6					
	2.5	500		63	494.8	7.854	25	25	22.5		M6	6.5	11	6.5	3					
		1000		127	997.45										6					
	3.0	500	Z (Side Counterbored)	53	499.51	9.424	30	30	27		M8	9	14	9	3					
		1000		106	999.03										6					
(MC Nylon) Both Ends Machined Type RGEAM / Economy Type RGEAMR	0.5	300	N	192	301.59	1.571	3	9	8.5	-	-	-	-	-	-					
	0.8	300		120	301.59	2.513	4	10	9.2											
	1.0	300	N · A ST · Z	95	298.45	3.142	10	12	11	180	M3	3.5	6.5	3.5	2					
		500		159	499.51 (505)										3					
	1.5	500	N	105	(505)	4.712	15	20	18.5	-	-	-	-	-	-					
	2.0	500		79	(505)	6.283	20	25	23	-	-	-	-	-	-					
	2.5	500		63	(505)	7.854	25	30	27.5	-	-	-	-	-	-					
	3.0	500		52	(505)	9.424	30	35	32	-	-	-	-	-	-					

Economy Type is only available for Hole Machining N (No Hole Machining).
No. of Effective Teeth ( ) and L( ) are the value of Economy Type.

Order Example

Part Number	-	Number	-	Hole Machining
RGEA1.0	-	500	-	A
RGEAR1.0	-	500	-	N

Days to Ship

• Both Ends Machined Type: 8 Days — Express A: 5,00 EUR/piece — P.88

• Economy Type: 10 Days

A Express Charge of 13,50EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13 or 14	15~19
Rate	€ Unit Price	5%	10%	18%

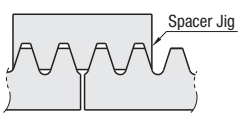
For orders larger than indicated quantity, please request a quotation.
Please request a quotation for orders of 6 or more pieces of Economy Type.

Alterations

Next Page

■How to connect Rack Gears (Both Ends Machined Type)

MISUMI rack gears (both ends machined type) are end machined with negative pitch tolerance in length. When connecting the racks, use a piece of rack as a spacer jig as shown below to properly adjust the pitch.



Rack Gears - L Dimension Configurable (One End Machined)

-Pressure Angle 20 Module 0.5 / 0.8 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0-

Features: Configurable to desired lengths. One end is machined for connecting with other rack gears.

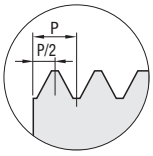


Type		M Material	S Surface Treatment
Hole Position Configurable Type	Hole Qty. Configurable Type		
RGEAL	LRGEA	1.1191/C45E	Black Oxide
RGEABL	-	Free-Cutting Brass Bar	-
RGEASL	LRGEAS	1.4301/X5CrNi18-10	-
RGEAML	-	MC Nylon	-

※RGEAML (MC Nylon) may expand or shrink depending on the operating environment.

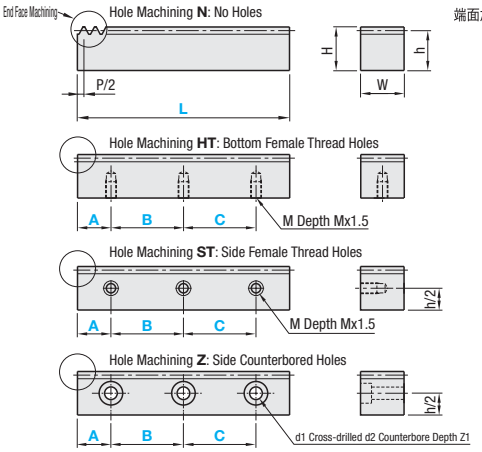
Accuracy RGEAL · RGEABL · LRGEA JIS B 1702 (Class 4)
RGEASL · RGEAML · LRGEAS JIS B 1702 (Class 5)

Enlarged View of End Face



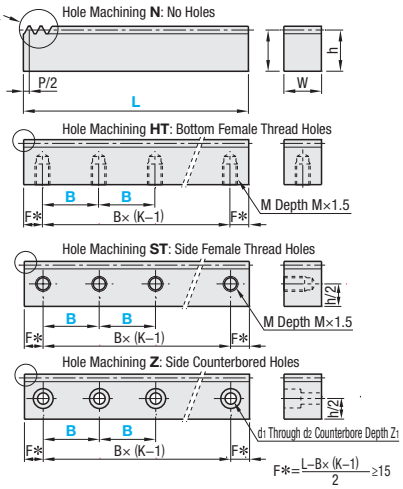
Module	P Tolerance
0.5~2.0	-0.1 -0.3
2.5 or 3.0	-0.1 -0.4

• Hole Position Configurable Type (No. of Holes is up to 3, L Dimension 20 ~ 480)



※Up to three holes can be specified. ※A+B+C≤L-5

• Hole Qty. Configurable Type (B Hole Pitch Selectable, L Dimension 500~980 or 1980)



■Hole Position Configurable Type (No. of Holes is up to 3, L Dimension 20 ~ 480)

Part Number Type	Module	Hole Machining	Full Length L 1mm Increment	Hole Position ABC 1mm Increment	P (Pitch)	W	H	h	d1	d2	Z1	M (Coarse Thread)	€ Body Price L=20 ~100	L=101 ~200	L=201 ~300	L=301 ~400	L=401 ~480	Hole Machining Charge (€+Body Price) (HT · ST)	Counterbored Hole (Z)
RGEAL (1.1191/C45E)	1.0	N (No Hole Machining)	20 ~ 480	5 ~ 475	3.142	10	12	11	3.5	6.5	3.5	M3							
	1.5	HT (Bottom Female Thread)			4.712	15	20	18.5	4.5	8	4.5	M4							
	2.0	ST (Side Female Thread)			6.283	20	25	23	5.5	9.5	5.5	M5							
	2.5	Z (Side Counterbored)			7.854	25	30	27.5	6.5	11	6.5	M6							
	3.0				9.424	30	35	32	9.0	14	9	M8							
RGEABL (Free-Cutting Brass Bar)	0.5	N	20 ~ 280	-	1.571	3	9	8.5	-	-	-	-							
	0.8				2.513	4	10	9.2											
RGEASL (1.4301/ X5CrNi18-10)	0.5	N	20 ~ 280	-	1.571	3	9	8.5	-	-	-	-							
	0.8				2.513	4	10	9.2											
	1.0	N,HT,ST	20 ~ 480	5 ~ 475	3.142	10	10	9	-	-	-	M3							
	1.5	N (No Hole Machining)			4.712	15	15	13.5	4.5	8	4.5	M4							
	2.0	HT (Bottom Female Thread)			6.283	20	20	18	5.5	9.5	5.5	M5							
	2.5	ST (Side Female Thread)			7.854	25	25	22.5	6.5	11	6.5	M6							
	3.0	Z (Side Counterbored)			9.424	30	30	27	9.0	14	9	M8							
RGEAML (MC Nylon)	0.5	N	20 ~ 280	-	1.571	3	9	8.5	-	-	-	-							
	0.8				2.513	4	10	9.2											
	1.0	N, HT, ST, Z	20 ~ 480	5 ~ 475	3.142	10	12	11	3.5	6.5	3.5	M3							

■No. of Holes Configurable Type (B Hole Pitch Selectable, L Dimension 500 ~ 980 or 1980)

Part Number Type	Module	Hole Machining	Full Length L 1mm Increment	K (# of Holes)	B (Hole pitch) 1mm Increment	P (Pitch)	W	H	h	d1	d2	Z1	M (Coarse Thread)	€ Unit Price L=500 ~750	L=751 ~1000	L=1001 ~1500	L=1501 ~1980	Hole Machining Charge (€+Body Price) (HT · ST)	Counterbored Hole (Z)
LRGEA (1.1191/ C45E)	1.0	N (No Hole Machining)	500 ~ 980	2 ~ 6	50 ~ 500	3.142	10	12	11	3.5	6.5	3.5	M3						
	1.5		500 ~ 1980	2 ~ 12		4.712	15	20	18.5	5.5	9.5	5.5	M5						
	2.0	HT (Bottom Female Thread)				6.283	20	25	23	6.5	11	6.5	M6						
	2.5					7.854	25	30	27.5	9	14	9	M8						
	3.0					9.424	30	35	32	11	17.5	11	M10						
LRGEAS (1.4301/ X5CrNi18-10)	1.5	ST (Side Female Thread)	500 ~ 980	2 ~ 12		4.712	15	15	13.5	5.5	9.5	5.5	M5						
	2.0					6.283	20	20	18	6.5	11	6.5	M6						
	2.5	Z (Side Counterbored)				7.854	25	25	22.5	9	14	9	M8						
	3.0					9.424	30	30	27	11	17.5	11	M10						

※Product price is the sum of rack and hole machining charge.
※Hole Machining N is Body Price only.
(Calculation Example) RGEAL1.0HT-450-A50-B150-C150

Order Example

Part Number	L (Length)	Hole Position (First)	Hole Position (Second)	Hole Position (Third)
RGEAML1.0Z	450	A50	B150	C150

Part Number	L (Length)	K (No. of Holes)	B (Hole pitch)
LRGEA2.0ST	1800	K8	B200

Body Price	+	Hole Machining Charge: Hole Machining € Unit Price	X	No. of Holes	=	Total Price
	+	3,00	X	3	=	37,50 EUR

Days to Ship 8 Days

Price

■Volume Discount (※Round down to one Cent.) P.87

Quantity	1~9	10~12	13 or 14	15~19
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.
⊗Volume Discount is not applicable to Hole Machining Charge.

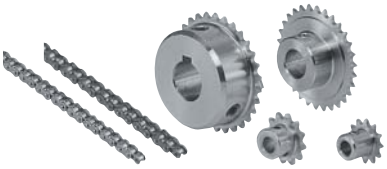
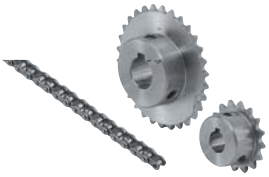
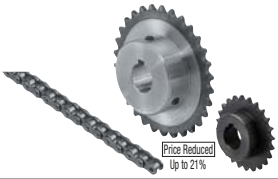
Alterations

Part Number	Number	Hole Machining	(MC · WMC)
RGEAS1.5	500	N	MC4

Alterations	One End Female Thread	Both Ends Female Thread
Code	MC	WMC
Spec.	Ordering Code MC5 Module: 1.0 → M Selection 3 4; 1.5~3.0 → 4 5 6 ※A≥30, F≥30 for L Dimension Configurable Type. ⊗For RGEAS and RGEASL, M4 is not available for module 1.0.	Ordering Code WMC5 Module: 1.0 → M Selection 3 4; 1.5~3.0 → 4 5 6 ※A≥30, L-A-B-C≥30 and F≥30 for L Dimension Configurable Type. ⊗For RGEAS and RGEASL, M4 is not available for module 1.0.
Price Adder	4,00	8,00

Sprockets · Chains

Sprockets/ Chains

Product Name	Sprockets/Chains–11B/15B Series–	–25B Series–	–35B Series–
Page	1253	1254	1255







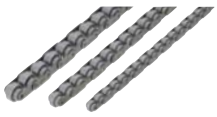



–40B Series–	–50B Series–	–60B Series–	–80B Series–	Joint / Off-set Links
1256	1257	1258	1259	1259









Keyless Sprockets	Sprockets 2-Row Type	Chains / Sprockets for Small Conveyors	– Double Pitch Type –	Joint Link	Chains for Small Conveyors – with Attachments –	Joint LinkDouble Speed Chains
1260	1260	1261	1261	1262	1262	1263







Sprocket for Double Speed Chain	Frames for Double Speed Chain	Return Guides	Engineered Plastic Block Chains 1-Row Type	Engineered Plastic Block Chains 2-Row Type
1263	1264	1264	1265	1265








Sprockets for Engineered Plastic Block Chains 2-Row Type	Top Chains	Idler Sprockets	Idler Pins	Idler Sprockets with Hub	Small Idlers
1265	1266	1267	1268	1269•1270	1270

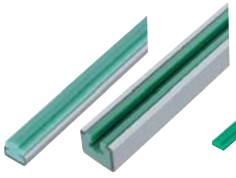
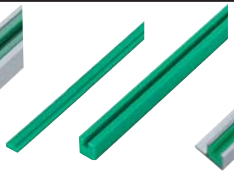
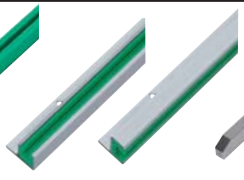

•Idler is optional.


•Idler is optional.





Tensioner Units	Tensioners–Link Bar Type–	Slide Plates for Tension	Chain Tensioners–idler Set Type–	Chain Guide Tensioners
1271	1272	1272	1273	1274




Chain Guides -C-Channel Raised Track / Channel-	-Raised Track, Channel-	–Mount Flange–	Steel Chain Guides	Turnbuckles	Turnbuckle Components
1275	1275	1276	1276	1277	1278

Sprockets · Chains -Overview-

■Sprockets, Idler Sprockets

Shaft bores are machined on MISUMI Sprockets.
Idler sprockets with embedded bearings are also available in a wide variety.

Sprockets		Idler Sprockets		
Standard Sprockets	Keyless Sprockets	Idler Sprockets	Idler Sprockets with Hub	Small Idlers
P.1253~1259	P.1260	P.1267	P.1269·1270	P.1270
				
Sprockets with shaft bore and keyway. Sizes 11B ~ 80B are available.	Sprocket which doesn't require machining to shafts. Easy phase matching. 35B and 40B are available.	Idler Sprockets for tension adjustments. Available in Steel, Stainless Steel and Nylon 6.	Bearings are embedded on both sides of general purpose sprockets. Suitable for adjusting tension on driving side.	Tooth-less Idler usable in space limited areas.

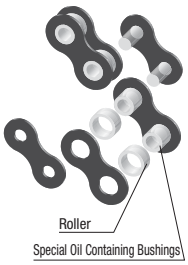
■Chains

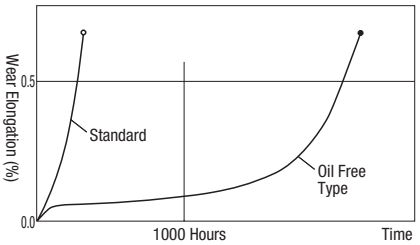
A wide selection of Chains are offered for the purposes of both driving force transmission and transfer.

Roller Chains	
Standard Chains	Oilless Chains
P.1253~1259	P.1256~1258
	
The most widely used Roller Chains. Sizes 11B ~ 80B are available.	Roller Chains with special oil-impregnated bushing provides self-lubrication and reduced maintenance.

■Oil-free Chain Features

• Structure • Wear Elongation Data





Operation Temperature -10 ~ 150°C
Use with chain velocity of 150m/min or less.

Small Conveyor Chains			Plastic Chains	
Double Pitch Chains	Chains with Attachments	Double Speed Chains	Engineered Plastic Block Chains	Top Chains
P.1261	P.1262	P.1263	P.1265	P.1266
				
Twice longer pitches than those of general roller chains. Flat plate enables direct mount for transfer.	General Roller Chains come with Attachment, suitable for short distance transfer.	Pallets can be transferred at a speed of 2.5 times faster than chains. Suitable for Free Flow Conveyors.	Made with blocks smaller in width. Suitable for conveyance of small work pieces. Possible to convey pallets when used in parallel.	Work-pieces are directly placed on flat and wide plates to transfer. Suitable for accumulating transfers.

■Related Components

Wide variety of tensioners and guides for chain mechanism are available.

Tensioners		Chain Guides		Others
Slotted Holes, Adjusting Screws Type	Link Bar Type	Plastic Type	Steel Type	Turnbuckles
P.1271	P.1272	P.1275·1276	P.1276	P.1277
 •Idler is optional.	 •Idler is optional.			
Tensioner units applicable on both driven side and middle section.	Easy Mounting Middle Section Tensioners	Chain Guides consist of ultrahigh molecular weight polyethylene with low friction coefficient. The length is configurable. Mounting holes can be machined.	Chain Guides are hard chrome plated suitable for usage where heavy load is applied.	Used for adjusting chain tension. Added Long type offers longer adjustment allowance.

Sprockets • Chains
-11B • 15B Series-

Reduced Delivery Time

CAD Data

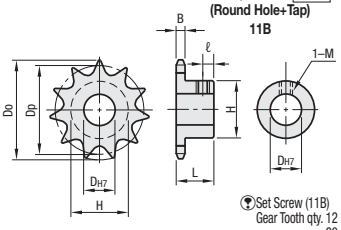
■Sprocket 11B · 15B

RoHS

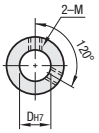


Type	Material	Accessory
SSP11B	1.4305/X10CrNiS18-9	Set Screw
SP15B	1.1181/C35E	

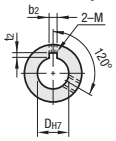
Shaft Bore Specifications P (Round Hole+Tap) 11B



Shaft Bore Specifications P (Round Hole+Tap) 15B



Shaft Bore Specifications N (New JIS Key+Tap) 15B Only



Set Screw (11B)
Gear Tooth qty. 12 ~ 18 M3
20 ~ 48 M4

Differences between tooth tip and keyway are ±0.5.

■Bore Specifications (15B)

Shaft Bore Dia. D	Keyway b2xt2	Set Screw M
5,6	-	3
8	-	4
10	3x1.4	4
12	4x1.8	5
15	5x2.3	6
16	5x2.3	6

Part Number Type	No. of Teeth	Shaft Bore Dia. P Specification DH7	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	B	ℓ	Mass (g)	€ Unit Price
SSP11B	12	5		14.475	16.2	9.4	10.5	1.6	4	6	
	15	5 6		18.020	19.9	13				12	
	16	5 6 8		19.204	21.1	14				14	
	18	6 8		21.575	23.5	16				18	
	20	8 10		23.949	25.9	19				23	
	24	8 10		28.703	30.7					26	
	28	8 10	-	33.462	35.5					29	
	30	8 10		35.842	37.9					30	
	34	8 10		40.604	42.7					38	
	36	8 10		42.986	45.1					41	
	40	8 10		47.751	49.8					47	
	48	8 10		57.283	59.4					61	
SP15B	11	5		16.90	19.0	11	10	2.0	4	9	
	12	5 6		18.40	20.5	12				10	
	13	5 6 8		19.90	22.0	14				14	
	14	8		21.40	23.5	15	12		5	17	
	15	8	-	22.91	25.0	17				22	
	16	10		24.41	26.5	18				23	
	17	10		25.92	28.0	20	14		6	32	
	18	10		27.43	29.5	22				40	
	20	10		30.44	32.5	24				49	
	24		10 12 15	36.49	39.0	30	16		7	88	
	26		12 15 16	39.51	42.0	33				104	
	28	-	12 15 16	42.54	45.0	37				131	
	30		12 15 16	45.56	48.0	39				147	
	33		12 15 16	50.10	52.5	40	18		8	178	
	35		12 15 16	53.13	55.5	40				182	

Shaft bore tolerance of P5 to P6 is H8.

Order Example

Part Number	-	Bore Specification	-	Shaft Bore Dia.
SSP11B15	-	P	-	6
SP15B16	-	P	-	10

Days to Ship: 8 Days — Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

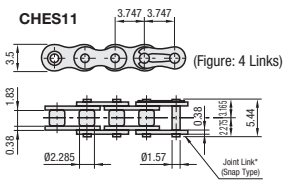
■Chain 11B·15B

RoHS



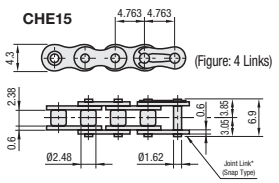
Type	Material
CHES11	1.4301/X5CrNi18-10
CHE15	Steel

CHES11



*The last link is the Joint Link..

CHE15



*The last link is the Joint Link.

■Link Counts Configurable

Part Number	No. of Links Specification (Specify Even No.)	Max. Allowable Tension (kN)	€ Unit Price: Less Than 210 Links	€ Unit Price: 210 or More Links	Cutting Charge
CHES11	4~	0.05			
CHE15	4~	0.31			

*(1) Specify links by even numbers. (1 joint link included)
(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHES11-200, 2 separate packages: 134 links+66 links.
(3) Price Calculation Example
CHES11-200 0,47 EUR(1 Link € Unit Price) x 200(No. of Links) + 4,70 EUR(Cutting Charge) = 98,70 EUR

■Unit Type

Part Number	Max. Allowable Tension (kN)	€ Unit Price
CHES11-U (134 Links, Circum. Length 502mm)	0.05	
CHE15-U (210 Links, Circum. Length 1000mm)	0.31	

•Link Counts Configurable

Days to Ship: 8 Days — Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

•Unit Type

Days to Ship: 6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Volume discount rate is not applicable to cutting charge of chains.

When ordering additional joint links as single item, please refer to P.1259

Order Example (Link Count Configurable) (Unit Type)

Part Number	-	No. of Links
CHES11	-	200
CHE15-U		

Sprockets • Chains
-25B Series-

Reduced Delivery Time

CAD Data

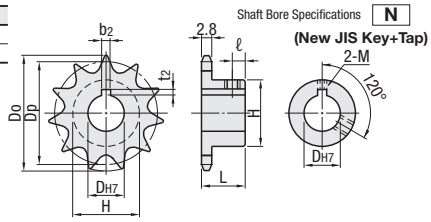
■Sprocket 25B

RoHS



Type	Material
SP25B	1.1191/C45E
SSP25B	1.4301/X5CrNi18-10

A Accessories: Set Screw



Differences between tooth tip and keyway are ±0.5.

■Bore Specifications

Shaft Bore Dia. D	Keyway b2xt2	Set Screw M
10	3x1.4	4
10K,12	4x1.8	5
15,16	5x2.3	6
20	6x2.8	6

Part Number Type	No. of Teeth	Shaft Bore Dia. N	Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SP25B
SP25B	16	10 10K	12	32.55	36	25	15	6	60	
	17	10 10K	12	34.56	38				70	
	18	10 10K	12	36.57	40					
	19	10 10K	12	38.58	42	28			90	
	20	10 10K	12	40.59	44					
	21	10 10K	12	42.61	46				100	
	22		12 15	44.62	48	30			110	
	23		12 15	46.63	50				120	
	24		12 15	48.65	52				140	
	25		12 15 16	50.66	54	35				
	26		12 15 16	52.68	56					
	28		12 15 16	56.71	60				150	
	30		12 15 16	60.75	64				160	
	32		15 16 20	64.78	68	40	20	8	200	
	34		15 16 20	68.82	72				210	
	35		15 16 20	70.84	74					
	36		15 16 20	72.86	76				220	
	38		15 16 20	76.90	80				260	
	40		15 16 20	80.93	84				270	

Part Number Type	No. of Teeth	Shaft Bore Dia. N	Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SSP25B
SSP25B	16	10		32.55	36	21	16	6	60	
	17	10		34.56	38	23			70	
	18	10		36.57	40	25				
	19	10	12	38.58	42	26			90	
	20	10	12	40.59	44	28				
	21		12 15	42.61	46	30	18	7	100	
	22		12 15	44.62	48				110	
	23		12 15	46.63	50				120	
	24		12 15	48.65	52					
	25		12 15	50.66	54				140	
	26		12 15	52.68	56					
	28		12 15	56.71	60				150	
	30		12 15	60.75	64				160	
	32		12 15	64.78	68			8	200	

When selecting 10K, shaft bore diameter is Ø10 and keyway width is 4mm (1.8mm in height).

Order Example: Part Number SP25B16 - Bore Specification N - Shaft Bore Dia. 10

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

Price

• SP25B

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	15%	25%	40%

For orders larger than indicated quantity, please request a quotation.

• SSP25B

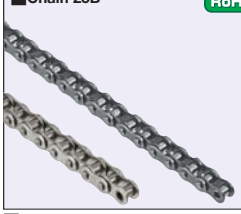
■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

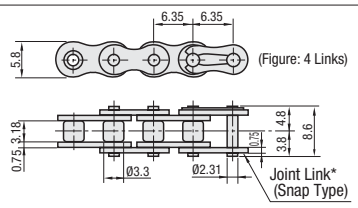
For orders larger than indicated quantity, please request a quotation.

■Chain 25B

RoHS



Type	Material
CHE25	Steel
CHES25	1.4301/X5CrNi18-10



*The last link is the Joint Link.

■Link Counts Configurable

Part Number	No. of Links Specification (Specify Even No.)	Max. Allowable Tension (kN)	€ Unit Price Less Than 480 Links	€ Unit Price 480 or More Links	Cutting Charge
CHE25	4~	0.64			
CHES25	4~	0.12			

*(1) Specify links by even numbers.(1 joint link included)
(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHE25-600, 2 separate packages: 480 links+120 links.
(3) Price Calculation Example
CHE25-600 0,04 EUR(1 Link € Unit Price) x 600(No. of Links) + 4,70 EUR(Cutting Charge) = 28,70 EUR

■Unit Type

Part Number	Max. Allowable Tension (kN)	€ Unit Price
CHE25-U (480 Links, Circumference Length 3,048mm)	0.64	
CHES25-U (480 Links, Circumference Length 3,048mm)	0.12	

Order Example (Link Count Configurable) (Unit Type): Part Number CHE25 / CHE25-U - No. of Links 600

Days to Ship

•Link Counts Configurable: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

•Unit Type: 6 Days — P. 87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Volume discount rate is not applicable to cutting charge of chains.

When ordering additional joint links as single item, please refer to P.1259

Sprockets · Chains
-35B Series-

Reduced Delivery Time

Price Reduction
Up to 21%

CAD Data

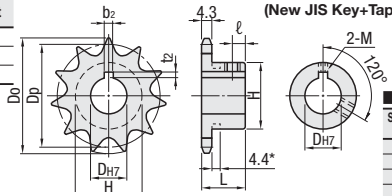
Sprocket 35B

RoHS



Type	M Material	S Surface Treatment
SP35B	1.1191/C45E (Induction Hardening Teeth Tip)	-
BSP35B		Black Oxide
SSP35B	1.4301/X5CrNi18-10	-

A Accessories: Set Screw



Shaft Bore Specifications N
(New JIS Key+Tap)

Differences between tooth tip and keyway are ±0.5.

Bore Specifications

Shaft Bore Dia. D	Keyway b2xt2	Set Screw M
10	3x1.4	4
10K,12	4x1.8	5
14~17	5x2.3	6
18~22	6x2.8	6
24~30	8x3.3	8

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SP35B	€ Unit Price BSP35B
SP35B BSP35B	9	10 10K	27.85	32	*21.5	20	6	60		
	10	10 10K 12	30.82	34	*24.5			80		
	11	10 10K 12	33.81	38	*27			90		
	12	10 10K 12 14 15 16 17	36.80	41	*30.5			120		
	13	10 10K 12 14 15 16 17	39.80	44	*32					
	14	10 10K 12 14 15 16 17	42.81	47	32					
	15	10 10K 12 14 15 16 17 18 19 20	45.81	51	35			160		
	16	10 10K 12 14 15 16 17 18 19 20 22	48.82	54	37			190		
	17	12 14 15 16 17 18 19 20 22 24 25*	51.84	57	41			220		
	18	12 14 15 16 17 18 19 20 22 24 25	54.85	60	44			250		
	19	12 14 15 16 17 18 19 20 22 24 25	57.87	63	47			280		
	20	12 14 15 16 17 18 19 20 22 24 25 28 30	60.89	66	50			320		
	21	12 14 15 16 17 18 19 20 22 24 25 28 30	63.91	69	53			360		
	22	12 14 15 16 17 18 19 20 22 24 25 28 30	66.93	72	56			370		
	23	12 14 15 16 17 18 19 20 22 24 25 28 30	69.95	75	60			380		
	24	12 14 15 16 17 18 19 20 22 24 25 28 30	72.97	78				430		
	25	15 16 17 18 19 20 22 24 25 28 30	76.00	81				440		
	26	15 16 17 18 19 20 22 24 25 28 30	79.02	84				450		
	28	15 16 17 18 19 20 22 24 25 28 30	85.07	90				480		
	30	15 16 17 18 19 20 22 24 25 28 30	91.12	96	53	22	8	510		
	32	15 16 17 18 19 20 22 24 25 28 30	97.18	102				540		
	34	20 22 24 25 28 30	103.23	109				570		
	35	20 22 24 25 28 30	106.26	112				590		
	36	20 22 24 25 28 30	109.29	115				610		
	38	20 22 24 25 28 30	115.34	121	63	25	10	820		
	40	20 22 24 25 28 30	121.40	127				850		

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SSP35B
SSP35B	10	10 12	30.82	34	*24.5	20	6	80	
	11	10 12	33.81	38	*27			90	
	12	10 12 15	36.80	41	*30.5			120	
	13	10 12 15 16	39.80	44	*32				
	14	10 12 15 16	42.81	47	32				
	15	10 12 15 16	45.81	51	35			160	
	16	10 12 15 16 18 20	48.82	54	37			190	
	17	12 15 16 18 20	51.84	57	41			220	
	18	12 15 16 18 20	54.85	60	44			250	
	20	12 15 16 18 20	60.89	66	50			320	
	21	12 15 16 18 20	63.91	69	53			360	
	22	12 15 16 18 20	66.93	72	56			370	
	23	12 15 16 18 20	69.95	75	60			380	
	24	12 15 16 18 20 22 25	72.97	78				430	
	30	15 16 18 20 22 25	91.12	96	53	22	8	510	
	32	15 16 18 20 22 25	97.18	102				540	
	40	18 20 22 25	121.40	127	63	25	10	850	

Set Screws of M6 are included for sprockets with * mark.

Sprockets marked with * have grooves on hub outer diameter.

When selecting 10K, shaft bore diameter is Ø10 and keyway width is 4mm (1.8mm in height).

Order Example

Part Number	-	Bore Specification	-	Shaft Bore Dia.
SP35B16	-	N	-	10

Price

- BSP35B

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	15%	25%	40%

For orders larger than indicated quantity, please request a quotation.

- SP35B / SSP35B

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

- SP35B / SSP35B

8 Days — Express A — 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

- BSP35B

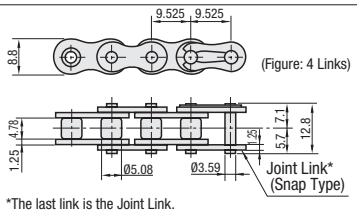
10 Days

Chain 35B

RoHS



Type	M Material
CHE35	Steel
CHES35	1.4301/X5CrNi18-10



*The last link is the Joint Link.

Link Counts Configurable

Part Number	No. of Links Specification (Specify Even No.)	Max. Allowable Tension (kN)	€ Unit Price Less Than 320 Links	€ Unit Price 320 or More Links	Cutting Charge
CHE35	4~	2.16			
CHES35	4~	0.26			

*(1) Specify links by even numbers.(1 joint link included)
(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHE35-500, 2 separate packages: 320 links+180 links.
(3) Price Calculation Example
CHE35-500 0,06 EUR(1 Link € Unit Price) x 500(No. of Links) + 4,70 EUR(Cutting Charge) = 34,70 EUR

Unit Type

Part Number	Max. Allowable Tension (kN)	€ Unit Price
CHE35-U (320 Links, Circumference Length 3048mm)	2.16	
CHES35-U (320 Links, Circumference Length 3048mm)	0.26	

Order Example (Link Count Configurable) (Unit Type)

Part Number	-	No. of Links
CHE35 CHE35-U	-	500

Days to Ship

- Link Quantity Specified Type

8 Days — Express A — 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

- Unit Type

6 Days — P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Volume discount rate is not applicable to cutting charge of chains.

When ordering additional joint links as single item, please refer to P.1259

NEW

Sprockets · Chains · Oil-free Chains
-40B Series-

Reduced Delivery Time

Price Reduction
Up to 16%

CAD Data

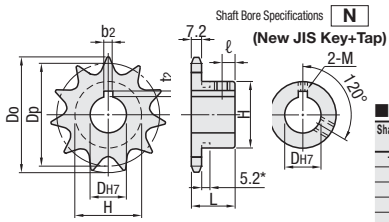
■ Sprocket 40B

RoHS



Type	M Material	S Surface Treatment
SP40B	1.1191/C45E (Induction Hardening Teeth Tip)	-
BSP40B		Black Oxide
SSP40B	1.4301/X5CrNi18-10	-

A Accessories: Set Screw



Differences between tooth tip and keyway are ±0.5.

■Bore Specifications

Shaft Bore Dia. D	Keyway b2xt2	Set Screw M
10K,12	4x1.8	5
14~17	5x2.3	6
18~22	6x2.8	6
24~30	8x3.3	8
32,35	10x3.3	8
40	12x3.3	8

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SP40B	€ Unit Price BSP40B
SP40B BSP40B	9	10K 12 14	37.13	42	*28	22	5	110		
	10	10K 12 14 15 16 17	41.10	46	*32			140		
	11	10K 12 14 15 16 17 18 19 20	45.08	51	*36			190		
	12	10K 12 14 15 16 17 18 19 20 22	49.07	55	*40			220		
	13	12 14 15 16 17 18 19 20 22	53.07	59	37		6	230		
	14	12 14 15 16 17 18 19 20 22 24 25*	57.07	63	42			280		
	15	12 14 15 16 17 18 19 20 22 24 25 28 30*	61.08	67	46			340		
	16	14 15 16 17 18 19 20 22 24 25 28 30 32	65.10	71	50			400		
	17	14 15 16 17 18 19 20 22 24 25 28 30 32 35	69.12	76	54			460		
	18	14 15 16 17 18 19 20 22 24 25 28 30 32 35	73.14	80	57			510		
	19	14 15 16 17 18 19 20 22 24 25 28 30 32 35 40	77.16	84	62			590		
	20	14 15 16 17 18 19 20 22 24 25 28 30 32 35 40	81.18	88	67			760		
	21	14 15 16 17 18 19 20 22 24 25 28 30 32 35 40	85.21	92	71			850		
	22	14 15 16 17 18 19 20 22 24 25 28 30 32 35 40	89.24	96	75			950		
	23	14 15 16 17 18 19 20 22 24 25 28 30 32 35 40	93.27	100	77			1000		
	24	14 15 16 17 18 19 20 22 24 25 28 30 32 35 40	97.30	104		25	7	840		
	25	14 17 18 19 20 22 24 25 28 30 32 35 40	101.33	108				880		
	26	18 19 20 22 24 25 28 30 32 35 40	105.36	112	63			920		
	28	20 22 24 25 28 30 32 35 40	113.43	120				1000		
	30	20 22 24 25 28 30 32 35 40	121.50	128				1100		
	32	20 22 24 25 28 30 32 35 40	129.57	137				1300		
	34	20 22 24 25 28 30 32 35 40	137.64	145						
	35	20 22 24 25 28 30 32 35 40	141.68	149	68	28	10	1400		
	36	20 22 24 25 28 30 32 35 40	145.72	153				1500		
	38	24 25 28 30 32 35 40	153.79	161				1600		
	40	25 28 30 32 35 40	161.87	169				1700		

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SSP40B
SSP40B	10	12 15 16	41.10	46	*32	22	5	140	
	11	15 16 18 20	45.08	51	*36			190	
	12	15 16 18 20	49.07	55	*40			220	
	13	15 16 18 20	53.07	59	37		6	230	
	14	15 16 18 19 20 22 24 25*	57.07	63	42			280	
	15	15 16 18 19 20 22 24 25 28	61.08	67	46			340	
	16	15 16 18 19 20 22 24 25 28 30	65.10	71	50			400	
	17	15 16 18 19 20 22 24 25 28 30	69.12	76	54			460	
	18	15 16 18 19 20 22 24 25 28 30	73.14	80	57			510	
	19	15 16 18 19 20 22 24 25 28 30	77.16	84	62			590	
	20	15 16 18 19 20 22 24 25 28 30	81.18	88	67			760	
	21	18 20 22 24 25 28 30	85.21	92	71			850	
	22	18 20 22 24 25 28 30	89.24	96	75			950	
	23	18 20 22 24 25 28 30	93.27	100	77			1000	
	24	18 20 22 24 25 28 30	97.30	104		25	7	840	
	25	18 20 22 24 25 28 30	101.33	108				880	
	26	20 22 25 30	105.36	112	63			920	
	28	20 22 25 30	113.43	120				1000	
	30	20 22 25 30	121.50	128				1100	
	32	20 22 25 30	129.57	137				1300	
	34	20 22 25 30	141.68	149					
	35	20 22 25 30	145.72	153	68	28	10	1500	
	36	20 22 25 30	161.87	169				1700	
	40	20 22 25 30							

Set Screws of M6 are included for sprockets with * mark.

Sprockets marked with * have grooves on hub outer diameter.

When selecting 10K, shaft bore diameter is Ø10 and keyway width is 4mm (1.8mm in height).

Order Example

Part Number	-	Bore Specification	-	Shaft Bore Dia.
SP40B16	-	N	-	16

Price

- BSP40B

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	15%	25%	40%

For orders larger than indicated quantity, please request a quotation.

- SP40B / SSP40B

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

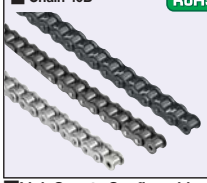
Days to Ship

- SP40B / SSP40B: 8 Days — Express A (2,00 EUR/ piece) P.88
- BSP40B: 10 Days

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

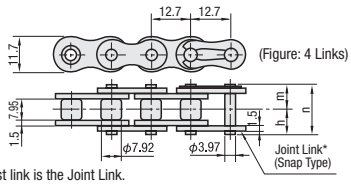
■ Chain 40B

RoHS



Type	M Material
CHE40	Steel
CHEM40	Oil Free (Steel / Oil Contained Bushings)
CHES40	1.4301/X5CrNi18-10

For details of Oil-free Chains, refer to P.1252.
For Small Conveyors Chains, refer to P.1262.



*The last link is the Joint Link.

■Link Counts Configurable

Part Number	No. of Links Specification (Specify Even No.)	h	m	n	Max. Allowable Tension (kN)	€ Unit Price Less Than 240 Links	€ Unit Price 240 or More Links	Cutting Charge
CHE40	4~	8.02	9.53	17.55	3.63			
CHEM40	4~	8.55	10.05	18.60	3.63			
CHES40	4~	8.02	9.53	17.55	0.44			

■Unit Type

Part Number	Max. Allowable Tension (kN)	€ Unit Price
CHE40-U(240 Links, Circumference Length 3,048mm)	3.63	
CHEM40-U(240 Links, Circumference Length 3,048mm)	3.63	
CHES40-U(240 Links, Circumference Length 3,048mm)	0.44	

*(1) Specify links by even numbers. (1 joint link included)
(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHE40-400, 2 separate packages: 240 links+160 links.
(3) Price Calculation Example
CHE40-400 0,07 EUR(1 Link € Unit Price) x 400(No. of Links) + 4,70 EUR(Cutting Charge) = 32,70 EUR

Order Example

(Link Count Configurable) (Unit Type)	Part Number	-	No. of Links
	CHE40	-	400
	CHE40-U		

Days to Ship

- Link Quantity Specified Type: 8 Days — Express A (2,00 EUR/ piece) P.88
- Unit Type: 6 Days P.87

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Volume discount rate is not applicable to cutting charge of chains. Please request a quotation for ordering 20 or more CHEM40.

For ordering additional Joint Links by a single unit, P.1259

Sprockets · Chains · Oil-free Chains
-50B Series-

NEW

Reduced Delivery Time

Price Reduction Up to 8%

CAD Data

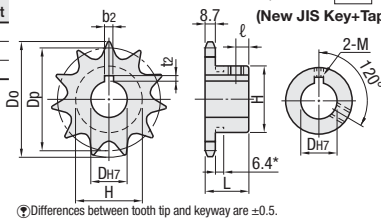
■Sprocket 50B

RoHS



Type	Material	Surface Treatment
SP50B	1.1191/C45E (Induction Hardening Teeth Tip)	Black Oxide
BSP50B	1.4301/X5CrNi18-10	-
SSP50B		

A Accessories: Set Screw



Shaft Bore Specifications N

Differences between tooth tip and keyway are ±0.5.

■Bore Specifications

Shaft Bore Dia. D	Keyway bxtz	Set Screw M
15~17	5x2.3	6
18~22	6x2.8	6
24~30	8x3.3	8
32~38	10x3.3	8
40	12x3.3	8
45	14x3.8	10

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SP50B	€ Unit Price BSP50B
SP50B BSP50B	9	16 17 18 19	46.42	53	*34	25	5	200		
	10	15 16 17 18 19 20 22	51.37	58	*40			270		
	11	15 16 17 18 19 20 22 24* 25*	56.35	64	*45.5			330		
	12	15 16 17 18 19 20 22 24* 25* 28* 30* 32*	61.34	69	*50			410		
	13	15 16 17 18 19 20 22 24* 25* 28* 30* 32*	66.34	74	*51			460		
	14	15 16 17 18 19 20 22 24 25 28 30 32	71.34	79	52		7	520		
	15	15 16 17 18 19 20 22 24 25 28 30 32 35 38	76.35	84	57			620		
	16	15 16 17 18 19 20 22 24 25 28 30 32 35 38 40	81.37	89	62			720		
	17	15 16 17 18 19 20 22 24 25 28 30 32 35 38 40	86.39	94	67			830		
	18	15 16 17 18 19 20 22 24 25 28 30 32 35 38 40 45	91.42	100	72	28	8	1000		
	19	15 16 17 18 19 20 22 24 25 28 30 32 35 38 40 45	96.45	105	73			1100		
	20	15 16 17 18 19 20 22 24 25 28 30 32 35 38 40 45	101.48	110				1200		
	21	20 22 24 25 28 30 32 35 38 40 45	106.51	115						
	22	20 22 24 25 28 30 32 35 38 40 45	111.55	120				1300		
	23	20 22 24 25 28 30 32 35 38 40 45	116.58	125						
	24	20 22 24 25 28 30 32 35 38 40 45	121.62	130				1400		
	25	24 25 28 30 32 35 38 40 45	126.66	135				1500		
	26	25 28 30 32 35 38 40 45	131.70	140						
	28	25 28 30 32 35 38 40 45	141.79	150				1600		
	30	25 28 30 32 35 38 40 45	151.87	161				1800		
	32	25 28 30 32 35 38 40 45	161.96	171				1900		
	34	25 28 30 32 35 38 40 45	172.05	181				2100		
	35	25 28 30 32 35 38 40 45	177.10	186				2200		

Set Screws of M6 are included for sprockets with * mark.

Sprockets marked with * have grooves on hub outer diameter.

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SSP50B
SSP50B	10	20 22	51.37	58	*40	25	5	270	
	11	20 22 24* 25*	56.35	64	*45.5			330	
	12	20 22 24* 25*	61.34	69	*50			410	
	13	20 22 24* 25*	66.34	74	*51			460	
	14	20 22 24 25 28 30	71.34	79	52		7	520	
	15	20 22 24 25 28 30 32	76.35	84	57			620	
	16	20 22 24 25 28 30 32 38	81.37	89	62			720	
	17	20 22 24 25 28 30 32 35 38	86.39	94	67			830	
	18	20 22 24 25 28 30 32 35 38 40	91.42	100	72	28	8	1000	
	19	20 22 24 25 28 30 32 35 38 40	96.45	105	73			1100	
	20	20 22 24 25 28 30 32 35 38 40	101.48	110				1200	
	21	20 25 30 35 40	106.51	115					
	22	20 25 30 35 40	111.55	120				1300	
	23	20 25 30 35	116.58	125					
	24	20 25 30 35	121.62	130				1400	
	25	20 25 30 35 40	126.66	135				1500	
	26	20 25 30 35	131.70	140					
	28	20 25 30 35 40	141.79	150				1600	
	30	20 25 30 35 40	151.87	161				1800	
	32	25 30 35	161.96	171				1900	
	35	25 30 35	177.10	186				2200	

Order Example

Part Number	-	Bore Specification	-	Shaft Bore Dia.
SP50B16	-	N	-	25

Price

• BSP50B

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	15%	25%	40%

For orders larger than indicated quantity, please request a quotation.

• SP50B · SSP50B

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

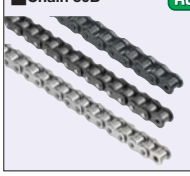
• SP50B · SSP50B: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

• BSP50B: 10 Days

■Chain 50B

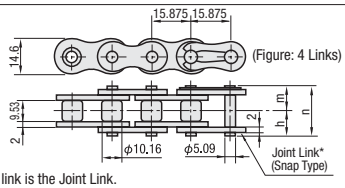
RoHS



Type	Material
CHE50	Steel
CHEM50	Oil Free (Steel · Oil Contained Bushings)
CHES50	1.4301/X5CrNi18-10

For details of Oil-free Chains, refer to P.1252.

For Small Conveyors Chains, refer to P.1252.



*The last link is the Joint Link.

■Link Counts Configurable

Part Number	No. of Links Specification (Specify Even No.)	h	m	n	Max.Allowable Tension (kN)	€ Unit Price Less Than 192 Links	€ Unit Price 192 or More Links	Cutting Charge
CHE50	4~	10.15	11.6	21.75	6.37			
CHEM50	4~	10.57	12.03	22.60	6.37			
CHES50	4~	10.15	11.6	21.75	0.69			

■Unit Type

Part Number	Max. Allowable Tension (kN)	€ Unit Price
CHE50-U(192 Links, Circumference Length 3048mm)	6.37	
CHEM50-U(192 Links, Circumference Length 3048mm)	6.37	
CHES50-U(192 Links, Circumference Length 3048mm)	0.69	

*(1) Specify links by even numbers. (1 joint link included)

(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHE50-300, 2 separate packages: 192 links+108 links.

(3) Price Calculation Example
CHE50-300 0,11 EUR (1 Link Unit price)x300(Link qty.)+4,70 EUR(Cut Cost)=37,70 EUR

Order Example

(Link Count Configurable) (Unit Type)

Part Number	-	No. of Links
CHE50 CHE50-U	-	300

Days to Ship

• Link Quantity Specified Type: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

• Unit Type: 6 Days — P.87

Price

■Volume Discount (Round down to one Cent.) P.88

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Volume discount rate is not applicable to cutting charge of chains.

Please request a quotation for orders of 20 or more pieces of CHEM50.

When ordering additional joint links as single item, please refer to P.1259

Sprockets · Chains · Oil-free Chains
-60B Series-

NEW

Reduced Delivery Time

Price Reduction 12%

CAD Data

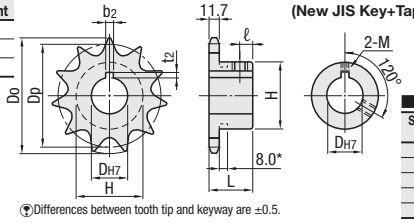
■ Sprocket 60B

RoHS



Type	M Material	S Surface Treatment
SP60B	1.1191/C45E (Induction Hardening Teeth Tip)	-
BSP60B		Black Oxide
SSP60B	1.4301/X5CrNi18-10	-

A Accessories: Set Screw



Shaft Bore Specifications N (New JIS Key+Tap)

Differences between tooth tip and keyway are ±0.5.

■ Bore Specifications

Shaft Bore Dia. D	Keyway bxt2	Set Screw M
19~22	6x2.8	6
24~30	8x3.3	8
32~38	10x3.3	8
40,42	12x3.3	8
45,50	14x3.8	10

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SP60B	€ Unit Price BSP60B
SP60B BSP60B	9	19 20 22	55.70	63	*43	32	6	400		
	10	19 20 22 24 25	61.65	68	*49			490		
	11	19 20 22 24 25 28 30	67.62	76	*51			600		
	12	19 20 22 24 25 28 30 32 35*	73.60	83	51		8	690		
	13	19 20 22 24 25 28 30 32 35 38	79.60	89	57			810		
	14	19 20 22 24 25 28 30 32 35 38 40	85.61	95	62			960		
	15	19 20 22 24 25 28 30 32 35 38 40 42 45	91.62	101	68			1100		
	16	19 20 22 24 25 28 30 32 35 38 40 42 45 50	97.65	107	73			1300		
	17	19 20 22 24 25 28 30 32 35 38 40 42 45 50	103.67	113				1400		
	18	19 20 22 24 25 28 30 32 35 38 40 42 45 50	109.71	119	83	40	12	2000		
	19	19 20 22 24 25 28 30 32 35 38 40 42 45 50	115.74	126				2100		
	20	19 20 22 24 25 28 30 32 35 38 40 42 45 50	121.78	132				2200		
	21	20 22 24 25 28 30 32 35 38 40 42 45 50	127.82	138				2300		
	22	20 22 24 25 28 30 32 35 38 40 42 45 50	133.86	144				2500		
	23	20 22 24 25 28 30 32 35 38 40 42 45 50	139.90	150				2500		
	24	20 22 24 25 28 30 32 35 38 40 42 45 50	145.95	156				2600		
	25	20 22 24 25 28 30 32 35 38 40 42 45 50	151.99	162				2700		
	26	20 22 24 25 28 30 32 35 38 40 42 45 50	158.04	168				2900		
	27	22 24 25 28 30 32 35 38 40 42 45 50	164.09	174				3000		
	28	22 24 25 28 30 32 35 38 40 42 45 50	170.14	180				3100		
	30	22 24 25 28 30 32 35 38 40 42 45 50	182.25	193				3400		

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SSP60B
SSP60B	10	20 22 25	61.65	68	*49	32	6	490	
	11	20 22 25	67.62	76	*51			600	
	12	20 22 25	73.60	83	51		8	690	
	13	20 22 25 28	79.60	89	57			810	
	14	20 22 25 28	85.61	95	62			960	
	15	20 22 25 28 30 32 35 38	91.62	101	68			1100	
	16	25 28 30 32 35 38	97.65	107	73			1300	
	17	25 28 30 32 35 38	103.67	113				1400	
	18	25 28 30 32 35 38 40	109.71	119	83	40	12	2000	
	19	25 28 30 32 35 38 40	115.74	126				2100	
	20	25 28 30 32 35 38 40	121.78	132				2200	
	21	30 35 40	127.82	138				2300	
	22	30 35 40	133.86	144				2500	
	23	30 35 40	139.90	150				2500	
	24	30 35 40	145.95	156				2600	
	25	30 35 40	151.99	162				2700	
	30	30 35 40	182.25	193				3400	

Set Screws of M6 are included for sprockets with * mark.

Sprockets marked with * have grooves on hub outer diameter.

Order Example: Part Number SP60B24 - N - 30 (Bore Specification - Shaft Bore Dia.)

Price

• SP60B · BSP60B

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	15%	25%	35%

For orders larger than indicated quantity, please request a quotation.

• SSP60B

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

• SP60B · SSP60B: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

• BSP60B: 10 Days

■ Chain 60B

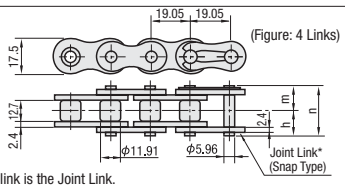
RoHS



Type	M Material
CHE60	Steel
CHEM60	Oil Free (Steel · Oil Contained Bushings)
CHES60	1.4301/X5CrNi18-10

For details of Oil-free Chains, refer to P.1252.

For Small Conveyors Chains, refer to P.1262.



(Figure: 4 Links)

*The last link is the Joint Link.

■ Link Counts Configurable

Part Number	No. of Links Specification (Specify Even No.)	h	m	n	Max. Allowable Tension (kN)	€ Unit Price Less Than 160 Links	€ Unit Price 160 or More Links	Cutting Charge
CHE60	4~	12.65	14.15	26.80	8.83			
CHEM60	4~	13.45	14.95	28.40	8.83			
CHES60	4~	12.65	14.15	26.80	1.03			

■ Unit Type

Part Number	Max. Allowable Tension (kN)	€ Unit Price
CHE60-U (160 Links, Circumference Length 3048mm)	8.83	
CHEM60-U (160 Links, Circumference Length 3048mm)	8.83	
CHES60-U (160 Links, Circumference Length 3048mm)	1.03	

*(1) Specify links by even numbers.(1 joint link included)

(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHE60-200, 2 separate packages: 160 links+40 links.

(3) Price Calculation Example
CHE60-200 0,19 EUR (1 Link Unit price)x200(Link qty.)+4,70 EUR(Cut Cost)=42,70 EUR

Order Example (Link Count Configurable / Unit Type): Part Number CHE60 / CHE60-U - No. of Links 200

Days to Ship

• Link Quantity Specified Type: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

• Unit Type: 6 Days — P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

When ordering additional joint links as single item, please refer to P.1259

For orders larger than indicated quantity, please request a quotation.

Volume discount rate is not applicable to cutting charge of chains.

Please request a quotation for orders of 20 or more pieces of CHEM60.

NEW

Sprockets · Chains · Joint Links · Off-set Links
-80B Series-

Reduced Delivery Time

Price Reduction
Up to 70%

CAD Data

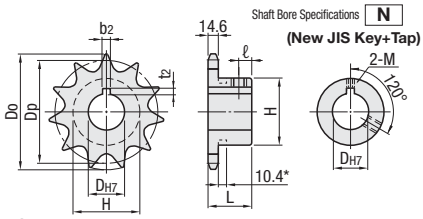
■ Sprocket 80B

RoHS



Type	M Material
SP80B	1.1191/C45E (Induction Hardening Teeth Tip)

A Accessories: Set Screw



Differences between tooth tip and keyway are ±0.5.

■ Bore Specifications

Shaft Bore Dia. D	Keyway b2xt2	Set Screw M
25~30	8x3.3	8
32~38	10x3.3	8
40,42	12x3.3	8
45,50	14x3.8	10

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	ℓ	Mass (g)	€ Unit Price SP80B
SP80B	9	25 28 30 32	74.27	85	*58	40	7	870	
	10	25 28 30 32	82.19	93	52		12	1020	
	11	25 28 30 32 35 38	90.16	102	60			1250	
	12	25 28 30 32 35 38 40 42	98.14	110	67			1600	
	13	25 28 30 32 35 38 40 42 45 50	106.14	118	77			1900	
	14	25 28 30 32 35 38 40 42 45 50	114.15	127				2150	
	15	25 28 30 32 35 38 40 42 45 50	122.17	135				2300	
	16	25 28 30 32 35 38 40 42 45 50	130.20	143				2500	
	17	25 28 30 32 35 38 40 42 45 50	138.23	151				2950	
	18	25 28 30 32 35 38 40 42 45 50	146.27	159	93			3150	
	19	25 28 30 32 35 38 40 42 45 50	154.32	167				3400	
	20	25 28 30 32 35 38 40 42 45 50	162.37	176				3600	
	21	25 28 30 32 35 38 40 42 45 50	170.42	184				3850	

Sprockets marked with * have grooves on hub outer diameter.

Order Example: Part Number SP80B20 - Bore Specification N - Shaft Bore Dia. 42

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

■ Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

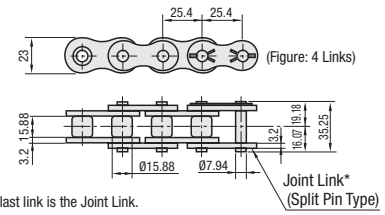
For orders larger than indicated quantity, please request a quotation.

■ Chain 80B

RoHS



Type	M Material
CHE80	Steel



*The last link is the Joint Link.

■ Link Counts Configurable

Part Number	No. of Links Specification (Specify Even No.)	Max. Allowable Tension (kN)	€ Unit Price	Cutting Charge
CHE80	4~	14.71		

*(1) Specify links by even numbers.(1 joint link included)
(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHE80-200, 2 separate packages: 120 links+80 links.
(3) Price Calculation Example
CHE60-200 0,46 EUR(1 Link € Unit Price) x 200(No. of Links) + 4,70 EUR(Cutting Charge) = 96,70 EUR

■ Unit Type

Part Number	Max. Allowable Tension (kN)	€ Unit Price
CHE80-U (120 Links, Circumference Length 3048mm)	14.71	

Order Example: (Link Count Configurable) Part Number CHE80 - No. of Links 200
(Unit Type) CHE80-U

Days to Ship / Price

- Link Quantity Specified Type

8 Days — Express A 2,00 EUR/piece

A Express Charge of 5,40 EUR for 3 or more identical pieces. P.88

■ Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Volume discount rate is not applicable to cutting charge of chains.

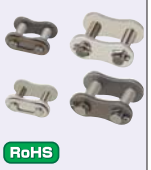
- Unit Type

6 Days P.87

For Small Conveyors Chains, refer to P.1262.

For ordering additional Joint Links as single item, see below.

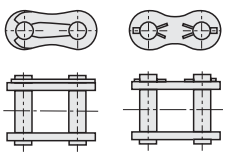
■ Joint Link



RoHS

JNTC (Steel)
JMTC (Steel Oil Contained Bushing)
JNTS (Stainless Steel)

Snap Type Applicable to No.11 ~ 60
Split Pin Type Applicable to No.80



* JMTC is used for oil-free chains.

Part Number Type	No.	JNTC € Unit Price 1 ~ 50 Link	JMTC € Unit Price 1 ~ 50 Link	JNTS € Unit Price 1 ~ 50 Link
JNTC JMTC JNTS	11			
	15			
	25			
	35			
	40			
	50			
	60			
	80			

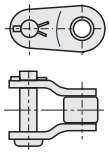
For orders larger than indicated quantity, please request a quotation.

■ Offset Link



RoHS

JNOC (Steel)
JMOC (Steel Oil Contained Bushing)
JNOS (Stainless Steel)



* JMOC is used for oil-free chains.
* Use offset links when an odd number of links is required.

Part Number Type	No.	JNOC € Unit Price 1 ~ 50 Link	JMOC € Unit Price 1 ~ 50 Link	JNOS € Unit Price 1 ~ 50 Link
JNOC JMOC JNOS	35			
	40			
	50			
	60			
	80			

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number JNTC25
Days to Ship: 6 Days P.87

Keyless Sprockets · Sprockets-2 Rows-

-35B / 40B Series- -40B / 50B Series-

Reduced Delivery Time

CAD Data

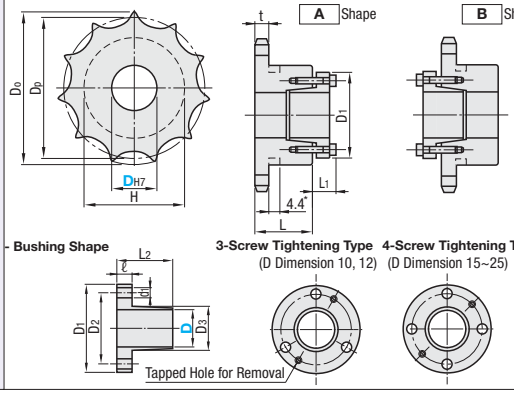
Features: The strength of shafts is not deteriorated as machining to shafts is not required. Positioning is easy.

Keyless Sprockets



RoHS

Type	Sprockets		Bushing	
	M Material	S Surface Treatment	M Material	Operating Temp.
LFSP35B / LFSP40B	1.1191/C45E (Induction Hardening Teeth Tip)	-	1.1191/C45E	-20~80°C
BLFSP35B / BLFSP40B		Black Oxide		



Note on Installation

- Tighten the bushing screws after inserting the shaft. (Bushing may deform if the screws are tightened before inserting the shaft.)
- Use torque wrench to tighten screws.
- Do not use tightening screws other than included.

Installation

(1) Wipe off the shaft surface and apply oil or grease. (Do not use any oil or grease containing molybdenum type elimination agent.)
(2) Please completely wipe off sprocket and bushing contact surfaces also before lubricating with oil or grease. Please lubricate screw and seating surfaces in the same manner.
(3) Subassemble sprocket and bushing before inserting into shaft. (Do not tighten the screws on the bushing before inserting into shaft)
(4) After locating, tighten the lock screws using a torque wrench in the diagonal line order, beginning lightly (approx. 1/4 of the predetermined tightening torque).
(5) Tighten the screws further to an increased torque (approximately 1/2 specified torque).
(6) Tighten with the predetermined tightening torque.
(7) Finally, tighten the screws to the listed torque values in a circumferential order.

Removal

- Be sure the system is completely shut down before starting work.
- Loosen the tightening screws in circumferential order.
- Insert a screw in a screw hole for removal and tighten evenly.
- Repeat "Installation" process for re-installation.

35B Series

For Chains, P.1255

Part Number Type	No. of Teeth	Shaft Bore Dia. DH7	Shape	Dp	Do	H	L	t	€ Unit Price LFSP35B	€ Unit Price BLFSP35B
LFSP35B BLFSP35B	12	10*	A	36.80	41	*30.5	20	4.3		
	13	10		39.80	44	*32				
	14	10 12		42.81	47	32				
	15	10 12		45.81	51	35				
	16	10 12 15 16		48.82	54	37				
	18	12 15 16 17	B	54.85	60	44				
	20	12 15 16 17 18 20 22		60.89	66	50				

* marked for A shape only. Sprockets marked with * have grooves on hub outer diameter.

Bushing Performance

Shaft Bore Dia. D	Maximum Allowable Torque Nm{kgf-m}	Allowable Thrust Load kN {kgf}	Screws Qty.	Screws Size	Screw Tightening Torque Nm{kgf-m}	Detaching Female Thread Hole
10	39{4.0}	5.34 {545}	3	M4x16	4.0{0.41}	M4x2
12	48{4.9}					
15	78{7.95}		4	M4x18		
16	83{8.5}					
17	88{9.0}					
18	154{15.7}	8.74 {895}		M5x20	8.3{0.85}	M5x2
20	171{17.4}					
22	186{19.16}					
25	216{21.8}					

In the event that transmissible torque exceeds values in the above table, shaft could slip, resulting in serious danger. Make sure that it is used within the allowable torque range.

40B Series

For Chains, P.1256

Part Number Type	No. of Teeth	Shaft Bore Dia. DH7	Shape	Dp	Do	H	L	t	€ Unit Price LFSP40B	€ Unit Price BLFSP40B
LFSP40B BLFSP40B	12	12 15 16 17	A	49.07	55	*40	22	7.2		
	13	12 15 16		53.07	59	37				
	14	12 15 16 17		57.07	63	42				
	15	12 15 16 17 18 20		61.08	67	46				
	16	15 16 17 18 20 22		65.10	71	50				
	17	15 16 17 18 20 22	B	69.12	76	54				
	18	15 16 17 18 20 22 25		73.14	80	57				
	19	15 16 17 18 20 22 25		77.16	84	62				
	20	15 16 17 18 20 22 25		81.18	88	67	25			

Sprockets marked with * have grooves on hub outer diameter.

Bushing Dimension Table

Shaft Bore Dia. D	D1	D2	D3	d1	(1)	L2	ℓ
10	30	22	12	4.5	10.5	16.5	5
12	32	24	14		12	22	6
15	36	28	17.6		13	23	7
16	37	29	18.6				
17	38	30	19.6				
18	43	33	20.6	5.5	14		
20	46	36	23.4				
22	48	38	24.6				
25	52	42	28.4				

- Shaft tolerance g6, shaft surface roughness Ra6.3 are standard.
- When there is key groove machining or D cut on the installation shaft, transmitting torque is reduced by approximately 15% or more.

Order Example: Part Number LFSP35B16 - 15 - A (Part Number - D - Shape)

Days to Ship: 10 Days — Express B 8,00 EUR/piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~10	11~20
Rate	€ Unit Price	5%

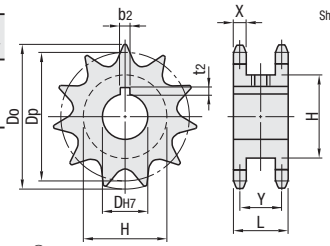
For orders larger than indicated quantity, please request a quotation.

Sprockets 2-Row Type



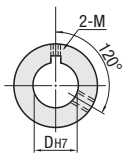
RoHS

Type	M Material	A Accessory
SP40SD SP50SD	1.1191/C45E (Induction Hardening Teeth Tip)	Set Screw



Differences between tooth tip and keyway are ±0.5.

Shaft Bore Specifications: N (New JIS Key+Tap)



Bore Specifications

Shaft Bore Dia. D	Keyway b2xt2	Set Screw M
15	5x2.3	6
18,20	6x2.8	6
25~30	8x3.3	8
35	10x3.3	8
40	12x3.3	8

40B Series

For Chains, P.1256

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	X	Y	Mass (kg)	€ Unit Price
SP40SD	12	15 18	49.07	55	34	35	7.2	27.8	0.33	
	13	18 20	53.07	59	38				0.40	
	14	18 20	57.07	63	42				0.49	
	15	20 25	61.08	67	46				0.57	
	16	20 25	65.10	71	50				0.66	
	17	25 28 30	69.12	76	54				0.76	
	18	25 28 30 35	73.14	80	59				0.89	
	19	25 28 30 35	77.16	84	63				1.00	
	20	25 28 30 35	81.18	88	67				1.14	
	21	25 28 30 35	85.21	92	71				1.23	

50B Series

For Chains, P.1257

Part Number Type	No. of Teeth	Shaft Bore Dia. N Specification DH7	Dp	Do	Hub H	Hub L	X	Y	Mass (kg)	€ Unit Price
SP50SD	12	18 20	61.34	69	43	40	8.7	31.3	0.63	
	13	20 25 28	66.34	74	48				0.75	
	14	20 25 28 30	71.34	79	53				0.90	
	15	20 25 28 30 35	76.35	84	58				1.04	
	16	25 28 30 35 40	81.37	89	63				1.22	
	17	25 28 30 35 40	86.39	94	68				1.41	
	18	25 28 30 35 40	91.42	100	73				1.61	
	19	25 28 30 35 40	96.45	105	79				1.80	
	20	25 28 30 35 40	101.48	110	84				1.95	
	21	28 30 35 40	106.51	115	89				2.27	

Order Example: Part Number SP40SD16 - Bore Specification N - Shaft Bore Dia. 20

Days to Ship: 8 Days — Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.
Express T is not available for delivery on Saturday, Sunday and public holidays. Next business day shipping is applied.
Up to 5 pcs. can be shipped by

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Small Conveyor Chains · Sprockets · Joint Links
-Double Pitch Type-

Reduced Delivery Time

CAD Data

Features: Flat plate allows work to be put directly on plate for conveyance.

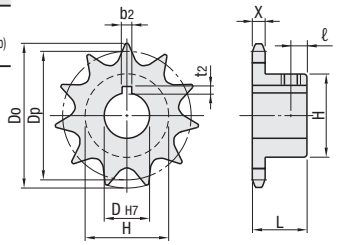
Small Conveyor Sprockets



RoHS

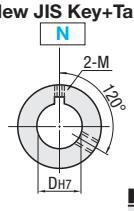
Type	Material
SP2040B SP2050B	1.1191/C45E (Induction Hardening Teeth Tip)

A Accessories: Set Screw



Differences between tooth tip and keyway are ±0.5.

(New JIS Key+Tap)



Bore Specifications

Shaft Bore Dia. D	Keyway $b_2 x t_2$	Set Screw M
20	6x2.8	6
25 · 30	8x3.3	8
35	10x3.3	8

For double pitch chains Idlers, refer to **P.1270**.

Part Number Type	Allocated Tooth Quantity	Shaft Bore Dia. N	Specification DH7			No. of Operating Teeth		Dp	Do	Hub H	Hub L	X	ℓ	Mass (kg)	€ Unit Price
SP2040B	19	20	25	30	35	9	1/2	78.23	84	60	25	7.2	8.9	0.64	
	21	20	25	30	35	10	1/2	86.17	92	69				0.93	
	23	20	25	30	35	11	1/2	94.15	100	77				0.99	
	25	20	25	30	35	12	1/2	102.14	108	63				1.06	
SP2050B	19	20	25	30	35	9	1/2	97.78	105	73	28	8.7	9.6	1.10	
	21	20	25	30	35	10	1/2	107.72	115					1.62	
	23	20	25	30	35	11	1/2	117.68	125					1.74	
	25		25	30	35	12	1/2	127.67	135					1.87	

Order Example: Part Number SP2040B21 - Bore Specification N - Shaft Bore Dia. 20

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

Price — Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

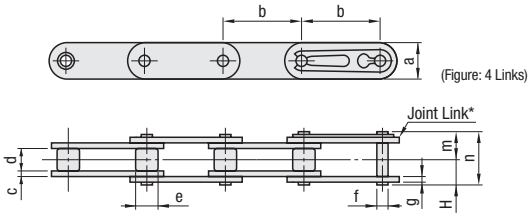
For orders larger than indicated quantity, please request a quotation.

Chains for Small Conveyors -Double Pitch Type-



RoHS

Type	Material
CHEW40 CHEW50	Steel



(Figure: 4 Links)

*The last link is the Joint Link.

Part Number	No. of Links (Specify Even No.)	Max. Allowable Tension (kN)	1 Unit (No. of Links)	€ Unit Price	Cutting Charge
CHEW40	4~	2.75	120 (Circumference Length 3048mm)		
CHEW50	4~	4.41	96 (Circumference Length 3048mm)		

*(1) Specify links by even numbers.(1 joint link included)
(2) A roller chain longer than the unit length (number of unit links) is divided into separate packages per unit.
Ex.) CHEW40-200, 2 separate packages: 120 links+80 links.
(3) Price Calculation Example
CHEW40-200 0,15 EUR(1 Link € Unit Price) x 200(No. of Links) + 4,70 EUR(Cutting Charge) = 34,70 EUR
(4) No cutting charge is required when 1 unit link is ordered.

• **Detailed Chain Dimension**

Type	a	b	c	d	e	f	g	h	m	n
CHEW40	11.7	25.4	1.5	7.95	7.95	3.97	1.5	8.02	9.53	17.55
CHEW50	14.6	31.75	2	9.53	10.16	5.09	2	10.15	11.6	21.75

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

Order Example: Part Number CHEW40 - No. of Links 200

Price — Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For ordering additional Joint Links as single item, see below.

For orders larger than indicated quantity, please request a quotation.

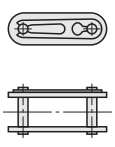
Volume discount rate is not applicable to cutting charge of chains.

Joint Link

JNTWC



RoHS



Material: Steel

Part Number Type	No.	€ Unit Price 1 ~ 20 Link	Volume Discount 21 ~ 50 Link
JNTWC (Steel)	40		
	50		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number JNTWC40

Days to Ship: 6 Days — P. 87

Small Conveyor Chains · Joint Links
-Attachment Type-

Reduced Delivery Time

CAD Data

Features: Conventional chains with attachments. Suitable for a short distance conveyance.

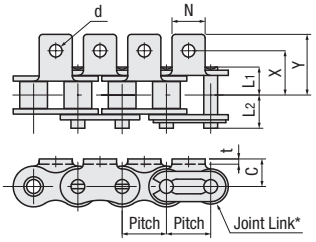
Chains for Small Conveyors -Attachment Type-



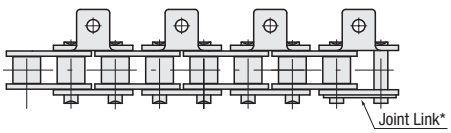
RoHS

• Attachment on One Side Type

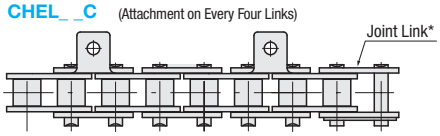
CHEL_ _A (Attachment on All Links)



CHEL_ _B (Attachment on Every Two Links)

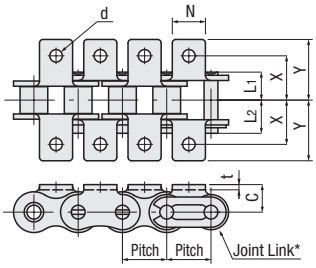


CHEL_ _C (Attachment on Every Four Links)

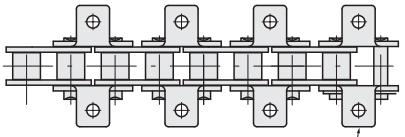


• Attachment on Both Sides Type

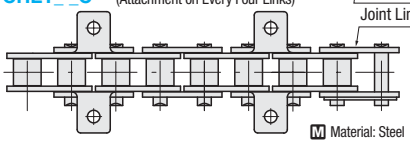
CHET_ _A (Attachment on All Links)



CHET_ _B (Attachment on Every Two Links)



CHET_ _C (Attachment on Every Four Links)



*The last link is the Joint Link.

Only No.80 is split pin shape.

M Material: Steel

Part Number Type	No.	Nominal	*No. of Links	Pitch	Pins L_1	Pins L_2	Plate t	Attachment C	Attachment X	Attachment Y	Attachment N	Attachment d	Max. Allowable Tension kN (kgf)	
CHEL (One Side Type)	40	A (All Links)	4~	12.7	8.07	9.48	1.5	7.9	12.7	17.4	9.5	3.6	2.75	(280)
	50	B (Every Two Links)	4~	15.875	10.17	11.63	2	10.3	15.9	22.3	12.7	5.2	4.41	(450)
CHET (Both Sides Type)	60	C (Every Four Links)	4~	19.05	12.7	14.2	2.4	11.9	19.05	27.2	15.9	5.2	6.28	(640)
	80		4~	25.4	16.15	19.25	3.2	15.9	25.4	35.2	19.1	6.8	10.69	(1090)

*Specify the number of links in a multiples of 2 for attachment on all links and attachment on every two links, in a multiples of 4 for attachment on every four links.

Order Example: Part Number CHEL40A - No. of Links 200

Days to Ship: 8 Days — Express A 2,00 EUR/ piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Volume discount rate is not applicable to cutting charge of chains.

No.	€ Unit Price: Attachment on One Side Type CHEL_ _A	CHEL_ _B	CHEL_ _C	Attachment on Both Sides Type CHET_ _A	CHET_ _B	CHET_ _C	Cutting Charge
Specified No. of Links	Multiple of 2	Multiple of 2	Multiple of 4	Multiple of 2	Multiple of 2	Multiple of 4	
40							
50							
60							
80							

No. of Links per Unit

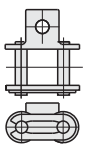
Part Number Type	No.	1 Unit No. of Links
CHEL CHET	40	240 (Circumference Length 3048mm)
	50	192 (Circumference Length 3048mm)
	60	160 (Circumference Length 3048mm)
	80	120 (Circumference Length 3048mm)

(1) A roller chain longer than the unit length (unit number of links) is divided into separate packages per unit.
(Ex.) For CHEL50A-300, it contains two separate packages of 192 Links(Joint Links Included)+108 Links(Joint Links Included).
(Each package includes Joint Links)
(2) Price Calculation Example
CHEL50A-300 0,35 EUR (1 Link Unit price) x 300(Link qty.) + 4,70 EUR(Cut Cost) = 109,70 EUR
(3) No cutting charge is required when 1 unit link is ordered.

Joint Link

JNT-L
JNT-T





RoHS

M Material: Steel

Part Number Type	No.	JNT-L € Unit Price 1 ~ 20 Link	JNT-T € Unit Price 1 ~ 20 Link
JNT-L (One Side Type) JNT-T (Both Sides Type)	40		
	50		
	60		
	80		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number JNT-L40

Days to Ship: 6 Days — P. 87

Double Speed Chains & Sprockets/ Aluminum Frames·Return Guides

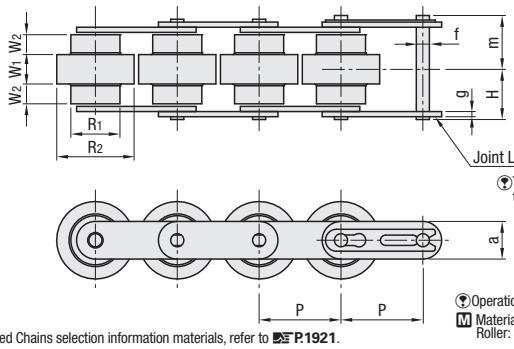
Features: Mixed structure of Small and Large Diameter Roller enables work to be conveyed approx. 2.5 times faster than the chain speed. Suitable for Free Flow Conveyors.

Double Speed Chains



RoHS

WCHE



(Figure: 4 Links)

The final links are attached as the joint links.

Operation Temperature: -10 ~ 80°C

M Material: Plate · Pin : Steel
Roller: Specialty Engineered Plastic

For Double Speed Chains selection information materials, refer to P.1921.

Part Number Type	Part Number Nominal	No. of Links Specification (Specify Even No.)	Pitch P	Roller R1	Roller R2	Roller W1	Roller W2	Plate a	Plate g	Pins f	Pins h	Pins m	Max. Allowable Tension (kN)	Speed Multiplier	Unit No. of Links
(Chain) WCHE	3	4~550	19.05	11.91	18.3	7.0	4.1	8.8	1.2	3.28	11.2	12.95	0.55	2.54	160 (Circumference Length 3048mm)
	4	4~410	25.40	15.88	24.6	9.0	6.0	11.7	1.5	3.97	15.2	16.75	0.88	2.55	120 (Circumference Length 3048mm)
	5	4~350	31.75	19.05	30.0	11.4	7.0	14.6	2.0	5.08	19.45	20.90	1.37	2.57	96 (Circumference Length 3048mm)

kgf=Nx0.101972

Part Number Type	Part Number Nominal	€ Unit Price Qty. 1 ~ 2 No. of links less than 1 unit	€ Unit Price Qty. 1 ~ 2 No. of Links 1 Unit or more	Cutting Charge (€ Unit Price)
(Chain) WCHE	3			
	4			
	5			

No cutting charge when placing orders by No. of Links.

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number - No. of Links: WCHE3 - 200

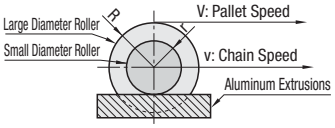
Days to Ship 8 Days — Express A 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

The Package of Chain

A roller chain longer than the unit length (unit number of links) is divided into separate packages per unit.
Ex. 1) :WCHE3-280, 2 separate packages: 160 links+120 links.
Ex. 2) :WCHE5-260, 3 separate packages: 96 linksx2+68 links.

Principle of the double speed chain



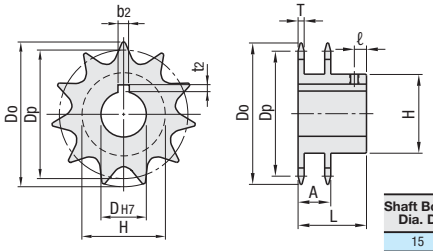
v: Chain Speed
V: Pallet Speed
r: Radius of Small Diameter Roller
R: Radius of Large Diameter Roller

When a chain runs at v speed, circumferential velocity of the small diameter roller is v. At this time circumferential velocity of the large diameter roller becomes (R/r) * v due to ratio of radius.
therefore, Pallet speed V becomes a value that chain speed V and (R/r) * v are combined.
V=(R/r) * v+v
=(R/r+1) * v
for ratio of radius of the large diameter and the small diameter roller is approximately 1.5:1.
V≈(1.5+1) * v
≈2.5v

Sprocket for Double Speed Chain RoHS



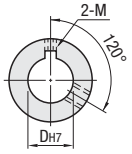
WESP



Shaft Bore Specs. H (Round Bore)



Shaft Bore Specs. N (New JIS Key+Tap)



Shaft Bore Dia. D	Keyway Hole b2xt2	Set Screw M
15	5x2.3	6
20	6x2.8	6
25,30	8x3.3	8

For Nominal 3 - 9 teeth, Set Screw is M5.

M Material: 1.1191/C45E
A Accessories: Set Screw
(Only for shaft bore specification N)

* Shaft Bore Specifications do not include tap holes and set screws. H

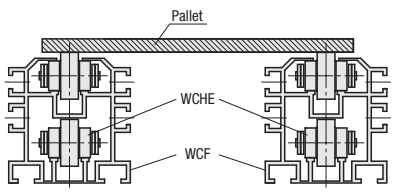
Part Number Type	Part Number Nominal	No. of Teeth	Shaft Bore Dia. H Specification DH7	Shaft Bore Dia. N Specification DH7	Dp	Do	T	H	L	ℓ	A	€ Unit Price Qty. 1~10 Shaft Bore Specifications H	€ Unit Price Qty. 1~10 Shaft Bore Specifications N
(Sprocket) WESP	3	9	15 20	15 20	55.70	63	3	33	22	4	15.3		
		10	15 20	15 20	61.65	68	3	37	25	5	15.3		
	4	10	20 25	20 25	82.20	93	4	52	40	8	21.5		
	5	10	25 30	25 30	102.75	117	5	66	45	9	27.0		

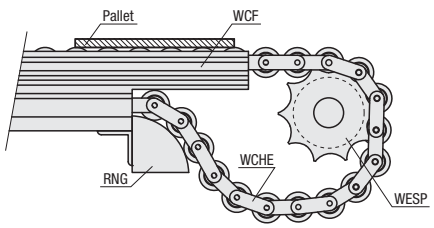
For orders larger than indicated quantity, please request a quotation.

Order Example Part Number - No. of Teeth - Shaft Bore Specifications, Inner Diameter: WESP3 - 10 - H15

Days to Ship 8 Days

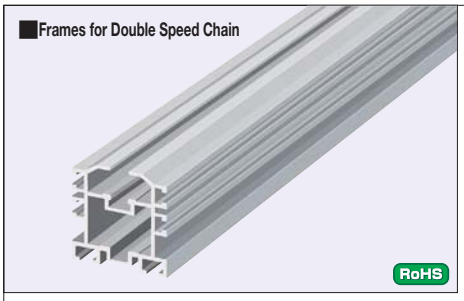
Example



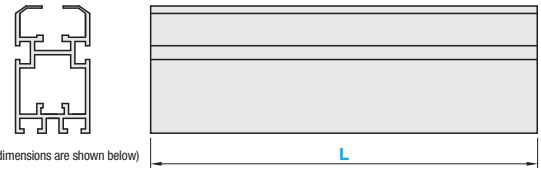


NEW

Frames for Double Speed Chain

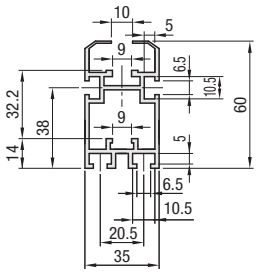


WCF

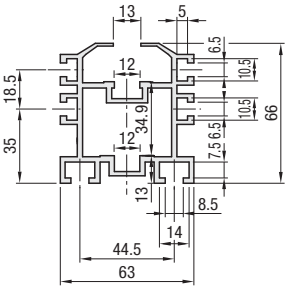


(Details of dimensions are shown below)

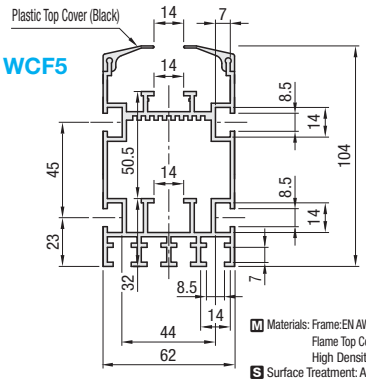
WCF3



WCF4



WCF5



M Materials: Frame:EN AW-6063/AlMg0,7Si
Flame Top Cover:
High Density Polyethylene
S Surface Treatment: Anodize

General purpose hexagon nut is applicable.

Part Number		L	Approx. Mass	€ Unit Price/m
Type	Nominal	10mm Increment	kg/m	Qty. 1~4
WCF	3	500~3000	1.39	
	4		2.49	
	5		3.17	

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number - L
WCF3 - 1000

Days to Ship 8 Days

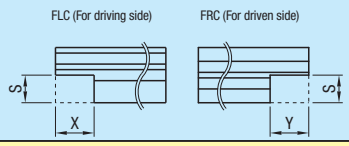
Express A 5,00 EUR/ piece P.88

A Express Charge of13,50 EUR for 3 or more identical pieces.

Alterations Part Number - L - (FLC · FRC · ZA · ZB)
WCF3 - 1000 - FLC

<Price Calculation Example>
WCF3-1300:
27,10 x 1.3 = 35,20 EUR
(Rounded down to the nearest ten cent.)

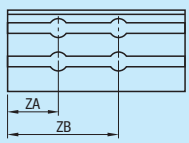
Alterations	Extrusion Cut	Counterbore on the side groove
Code	FLC · FRC	ZA · ZB
Spec.	The Frame edges are cut.	Adds counterbored holes for nuts on desired positions of the side groove.



Nominal	X	Y	S
3	210	80	25
4	300	100	25
5	340	120	45

Ordering Code FLC · FRC

L-X-Y≥10



1mm Increment

Ordering Code ZA150
ZA100-ZB250

ZA≥10
L-ZA≥10
L-ZB≥10
ZB-ZA≥10

Price Adder	FLC			FRC		
	WCF3	WCF4	WCF5	WCF3	WCF4	WCF5
	14,00	17,00	21,00	7,00	9,00	11,00

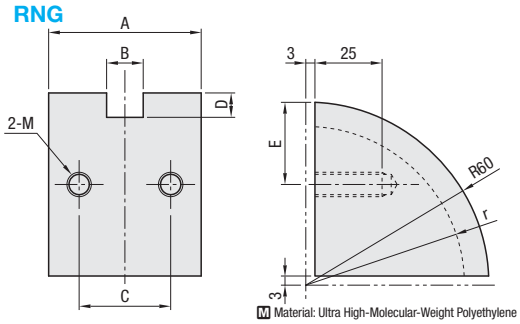
ZA: 3,00 ZB: 3,00

Return Guides

RoHS



RNG

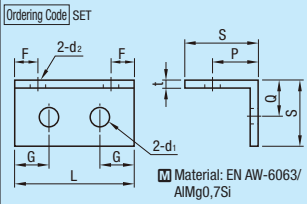


M Material: Ultra High-Molecular-Weight Polyethylene

Alterations Part Number - (SET)
RNG3 - SET

Alterations	Bracket set
Code	SET
Spec.	Bracket set is shipped with Return Guide.

Ordering Code SET



M Material: EN AW-6063/ AlMg0,7Si

Nominal	L	F	G	d1	d2	S	P	Q	t
3	34	6.75	6	6.5	6.5	25	18	17	3
4	60	7.75	15	8.5	10.5	30	20	17	3
5	76	10.25	20.5	8.5	10.5	35	24	17	4

Price Adder	RNG3: 6,50 RNG4: 7,00 RNG5: 8,00

For orders larger than indicated quantity, please request a quotation.

Part Number		A	B	C	D	E	M	r	€ Unit Price
Type	Nominal								Qty.1-10
RNG	3	34	9	22	6	31	M6	54	
	4	50	12	30	8	30	M8	52	
	5	56	14	35	10	32	M8	50	

Order Example Part Number
RNG3

Days to Ship 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Engineered Plastic Block Chains / Dedicated Sprockets

-1-Row Type • 2-Row Type-

Features: Made with blocks smaller in width. Suitable for conveyance of small work pieces. Possible to convey pallets when used in parallel.

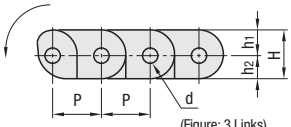
Engineered Plastic Chains -1-Row Type-



RoHS

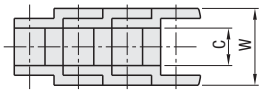
CHEEP

Select 40B Series/60B Series as sprockets.
P.1256 · P.1258



(Figure: 3 Links)

Chains only bend in the arrow direction but not in the opposite direction.



M Material:
Chain : Polyacetal
Pin : 1.4301/X5CrNi18-10

Engineered Plastic Chains -1-Row Type-

Part Number Type	No.	No. of Links Specified	P	C	W	H	h_1	h_2	d	1 Unit No. of Links
CHEEP	40	4~	12.7	7.95	20	12.7	6.7	6	4	240 (Circumference Length 3048mm)
	60		19.05	12.7	30	17.3	8.8	8.5	6	160 (Circumference Length 3048mm)

*(1) Specify No. of links.
(2) When a chain is longer than 1 unit link, the package is as follows.
Ex.1) CHEEP40-300 2 separate packages: 240 links + 60 links
Ex.2) CHEEP40-500 3 separate packages: 240 links x 2 + 20 links

Part Number Type	No.	€ Unit Price Qty. 1~9 No. of links less than 1 unit	No. of Links 1 Unit or more
CHEEP	40		
	60		

Chain Price Calculation Example CHEEP40-300
0,62 EUR (1 Link € Unit Price) x 300 (No. of Links) = 186,00 EUR

For orders larger than indicated quantity, please request a quotation.

Part Number Type	No.	Allowable Chain Speed (m / min)	Allowable Tension (N)	Sliding Friction Coefficient f1	Reference Mass (kg/m)	Operating Temp. (°C)
CHEEP	40	60	45	0.25	0.32	-5~65
	60		90		0.72	

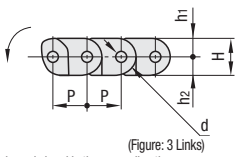
Engineered Plastic Chains -2-Row Type-



RoHS

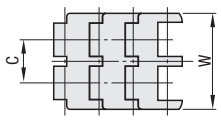
CHEE

Select CHEES as sprockets.



(Figure: 3 Links)

Chains only bend in the arrow direction but not in the opposite direction.



M Material
Chain : Polyacetal
Pin : JIS STKM Bright Chromate

Engineered Plastic Chains -2-Row Type-

Part Number	No. of Links Specified	P	C	W	H	h_1	h_2	d	1 Unit No. of Links
CHEE	4~	12.7	14.4	32	12.7	6.4	6.3	4	240 (Circumference Length 3048mm)

*(1) Specify No. of links.
(2) When a chain is longer than 240 links, the package is as follows.
Ex.1) CHEE-300 2 separate packages: 240 links + 60 links
Ex.2) CHEE-500 3 separate packages: 240 links x 2 + 60 links

Part Number	€ Unit Price Qty. 1~9 No. of links less than 1 unit	No. of Links 1 Unit or more
CHEE		

For orders larger than indicated quantity, please request a quotation.

Part Number	Allowable Chain Speed (m / min)	Allowable Tension (N)	Sliding Friction Coefficient f1	Reference Mass (kg/m)	Operating Temp. (°C)
CHEE	60	441	0.25	0.55	-5~65

Order Example: Part Number CHEEP40 - 250 / CHEE - 300

Days to Ship: 8 Days | Express A 2,00 EUR/ piece P.88

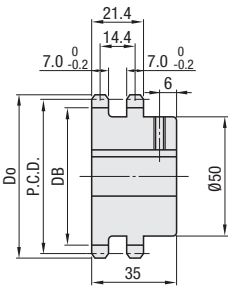
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Engineered Plastic Block Chains 2-Row Type Dedicated Sprockets

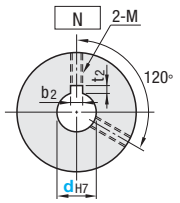
RoHS



CHEES



Shaft Bore Specifications (New JIS Key+Tap)



Differences between tooth tip and keyway are ±0.5.

M Material: 1.1191/C45E
S Surface Treatment: STKM Bright Chromate Plating

Part Number Type	dH7	Do	P.C.D.	Root Diameter DB	No. of Teeth	Reference Mass (kg)	€ Unit Price
CHEES	20	68	65.1	57.15	16	0.6	
	25						
	30						

• Specifications of Shaft Bore N Machining

Shaft Bore Dia. d	Keyway $b_2 \times t_2$	Set Screw M
20	6x2.8	6
25	8x3.3	8
30	8x3.3	8

Set screws are included.

Order Example: Part Number CHEES20

Days to Ship: 8 Days | Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Volume Discount is applicable to purchase of sprockets only.
For orders larger than indicated quantity, please request a quotation.

Top Chains • Sprockets • Idler Sprockets

Features: Plate is flat and wide. Work can be put directly on plate for conveyance. Suitable for accumulation conveyance.

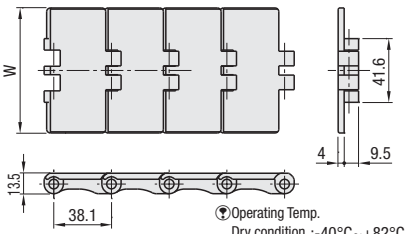
Top Chains



RoHS

TPCH

(Figure: 4 Links)



Pins for connection are attached.

Material: Chain : Low Friction Polyacetal
Pins : 1.4016/X6(8)Cr17

Operating Temp.
Dry condition :-40°C~+82°C
Wet condition :-40°C~+66°C

Chains

Part Number Type	Part Number Nominal	No. of Links Specified	W	Max. Allowable Tension (kN)	Mass (kg/m)	1 Unit No. of Links	€ Unit Price Qty. 1~4
TPCH	826	20~360	82.6	1.65	0.85	160 (Circumference Length 6,096mm)	
	1143		114.3		1.03		

For orders larger than indicated quantity, please request a quotation.

The chain can be made longer than 360 links by connecting them with a pin included.
Sprockets and Idlers are common for either types of Chains.
For Top Chain selection information materials and Frictional Coefficient Table, refer to **P.1921**.

When a chain is longer than 160 links, the package is as follows.
Ex.) TPCH826-240, 2 separate packages: 160 links+80 links.
Ex.) TPCH826-350, 3 separate packages: 160 links x 2 + 60 links.

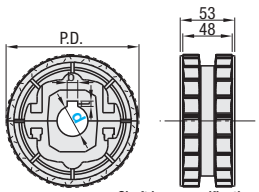
Chain Price Calculation Example
TPCH826-100
1,90 EUR (1 Link € Unit Price) x 100 (No. of Links) = 190,00 EUR

Sprockets for Top Chains



RoHS

TPSP



•Shaft bore specification for Sprocket

Shaft bore nominal	d	b	t	Recommended shafts
25	24.9	8	3.4	Ø25h9
30	29.9			Ø30h9
40	39.9	12		Ø40h9

Material: Sprockets : Glass Reinforced Nylon

Sprockets

Part Number Type	Part Number No. of Teeth	Shaft bore diameter d	P.D.	€ Unit Price Qty.1-10
TPSP	21	25 30 40	129.9	
	23		141.2	
	25		153.2	

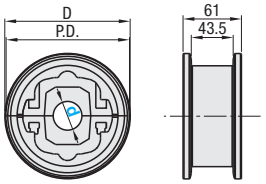
For orders larger than indicated quantity, please request a quotation.

Idlers for Top Chains



RoHS

TPDR



•Shaft bore specification for Idler

Shaft bore nominal	d	Recommended shafts
25	25.3	Ø25h9
30	30.3	Ø30h9
40	40.3	Ø40h9

Material: Idler : Glass Reinforced Nylon

Idlers

Part Number Type	Part Number Nominal	Shaft bore diameter d	P.D.	D	€ Unit Price Qty.1-10
TPDR	21	25 30 40	129.9	130.0	
	23		141.2	142.5	
	25		153.2	154.5	

For orders larger than indicated quantity, please request a quotation.

Order Example

•Chain — Part Number: TPCH826 - No. of Links: 100
• Sprocket — Part Number: TPSP21 - Shaft Bore Dia.: 25
•Idler — Part Number: TPDR23 - Shaft Bore Dia.: 30

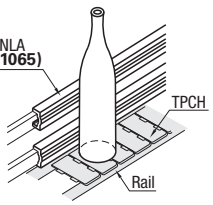
Days to Ship

8 Days

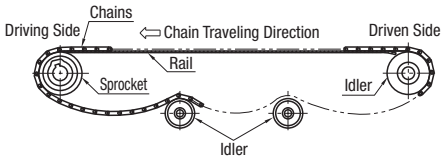
Express A 5,00 EUR/ piece P.88

A Express Charge of13,50 EUR for 3 or more identical pieces.

Example



How to attach



Chemical Resistance

O: Resistant Δ: Partly Resistant X: Not Resistant

Chemical Name	Ambient Temperature (20°C)	Ambient Temperature (60°C)
Acetic Acid: 5% or more	Δ	X
Acetic Acid: Less than 5%	O	-
Acetone	Δ	Δ
Alcohol (All Types)	O	Δ
Ammonia	O	O
Aniline	-	Δ
Beer	O	-
Benzene	Δ	Δ
Soft drinks	O	O
Salt water 10%	O	O
Butter	O	-
Carbon tetrachloride	O	Δ
Cheese	O	-
Chlorine gas	X	X
Liquefied chlorine	X	X
Chlorine water 0.4%	X	X
Chlorobenzene	Δ	Δ
Chloroform	X	X
Chocolate	O	-

Chemical Name	Ambient Temperature (20°C)	Ambient Temperature (60°C)
Chromic acid 50%	X	X
Chromic acid 3%	Δ	Δ
Citric acid	O	X
Orange Juice	O	-
Coconut oil	O	-
Corn Oil	O	-
Cotton oil	O	-
Neutral detergent	O	-
Diethyl Ether	Δ	Δ
Acetic ether	Δ	X
Ethylene Glycol	O	Δ
Iron compounds	Δ	X
Formaldehyde	O	O
Chlorofluorocarbon	Δ	Δ
Heavy oil	Δ	Δ
Fruit Juice	O	-
Gasoline	O	O
Glucose	O	O
Heptane	O	O

Chemical Name	Ambient Temperature (20°C)	Ambient Temperature (60°C)
Hexane	O	-
Hydrobromic acid	X	X
Hydroflouric acid	X	X
Oxygenated water 3%	O	O
Oxygenated water 90%	Δ	X
Crystal of iodine	X	X
Isopropyl Alcohol	O	O
Jet fuel	O	O
Kerosene	O	O
Methyl isobutyl ketone	Δ	Δ
Petroleum	O	O
Mineral spirits	O	O
Naphth	O	O
Nitric Acid	X	X
Nitrobenzene	X	X
Olive Oil	O	O
Palmitin hydrochloric acid	X	X
Peanut oil	O	O
Phenol 5% or less	X	X

Chemical Name	Ambient Temperature (20°C)	Ambient Temperature (60°C)
Phosphoric acid less than 30%	X	X
Potassium hydrate	O	O
Potassium iodide 3%	O	O
Seawater	Δ	-
Sodium hydroxide 60%	O	O
Stearic acid	X	X
Sulfuric acid less than 20%	Δ	-
Solution of sulfate	X	X
Dilute sulfuric acid less than 10%	X	X
Acidum tartaricum	X	X
Toluene	Δ	Δ
Transformer oil	Δ	X
Cresyl phosphate	Δ	Δ
Urea	O	-
Wine	O	O
Whiskey	O	-
Xylene	O	O

Idler Sprockets

-Single Bearing · Double Bearing Type-

Reduced Delivery Time

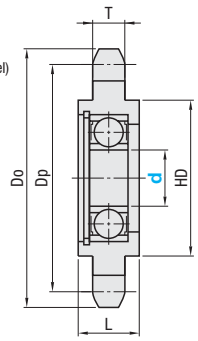
CAD Data

For Cantilever Shafts, please see **P.795~818** For tension adjustments on driven side, please see **P.1271**. For Small Idler, please see **P. 1270**.

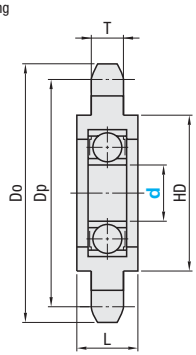
RoHS



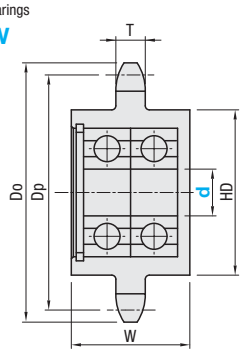
Single Bearing
DRC
DRCS
(Stainless Steel)



Single Bearing
DRCJ
(Nylon)



Double Bearings
DRCW



The bearing is located at the center of the sprocket.
Nylon 6 (Black) Operation Temperature: -10~80°C

Type		Material		Surface Treatment
Single Bearing	Double Bearings	Main Body	Bearings	
DRC	DRCW	1.1181/C35E(Induction Hardening Tooth Tip)	Steel	Black Oxide
DRCS	-	Stainless Steel	Stainless Steel	-
DRCJ	-	Nylon 6 (Black)	Steel	-

Part Number		No. of Teeth	d	Dp	Do	T	HD	L	W	Bearings Part No.	Single Bearing		Double Bearings		€ Unit Price			
Type	No.										Idler Pins Applicable Type	Approx. Mass (kg)	Idler Pins Applicable Type	Approx. Mass (kg)	DRC	DRCS	DRCJ	DRCW
Single Bearing DRC DRCS DRCJ Double Bearings DRCW	35	16	10	48.82	54	4.3	38	14	-	6000ZZ	IDP6000S	0.11	-	-				
			12							6001ZZ	IDP6001S	0.10						
		18	15	54.85	60		44	17		6202ZZ	IDP6202S	0.16						
		21	17	63.91	69		53	19		6203ZZ	IDP6203S	0.24						
		25	20	76	81		60	21		6204ZZ	IDP6204S	0.33						
	40	13	10	53.07	59	7.2	38	14	-	6000ZZ	IDP6000S	0.15	-	-				
			12						22	6001ZZ	IDP6001S	0.14	IDP6001W	0.19				
		15	15	61.08	67		44	17	28	6202ZZ	IDP6202S	0.19	IDP6202W	0.29				
		17	17	69.12	76		53	19	31	6203ZZ	IDP6203S	0.30	IDP6203W	0.45				
		19	20	77.16	84		60	21	35	6204ZZ	IDP6204S	0.40	IDP6204W	0.62				
	50	12	12	61.34	69	8.7	43	16	26	6201ZZ	IDP6201S	0.21	IDP6201W	0.31				
		13	15	66.34	74		44	17	28	6202ZZ	IDP6202S	0.23	IDP6202W	0.34				
		15	17	76.35	84		53	19	31	6203ZZ	IDP6203S	0.37	IDP6203W	0.51				
		17	20	86.39	94		60	21	35	6204ZZ	IDP6204S	0.49	IDP6204W	0.72				
	60	11	12	67.62	76	11.7	44	16	-	6201ZZ	IDP6201S	0.26	-	-				
			15				44	17		6202ZZ	IDP6202S	0.27						
		13	17	79.6	89		53	19		6203ZZ	IDP6203S	0.46						
		14	20	85.61	95		60	21		6204ZZ	IDP6204S	0.56						
	80	9	15	74.27	85	14.6	44	17	-	6202ZZ	IDP6202S	0.38	-	-				
		10	17	82.2	93		52	19		6203ZZ	IDP6203S	0.57						
		11	20	90.16	102		60	21		6204ZZ	IDP6204S	0.69						

Order Example

Part Number	-	No. of Teeth	-	d
DRC50	-	13	-	15

Days to Ship

•DRC
6 Days P.87

•DRCS · DRCJ · DRCW
8 Days Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.
Express T is not available for delivery on Saturday, Sunday and public holidays. Next business day shipping is applied.
Up to 5 pcs. can be shipped by

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

When Using Idlers

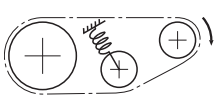
Chain elongation decreases transmission efficiency and accelerates wear, resulting in short life.
Adjustment mechanism is required for the following power transmission conditions.

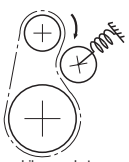
1.The center distance between shafts is long.
(In the case that the shaft center distance exceeds 30 to 50 times greater than used chain pitch, or 20 times or greater than chain pitch under pulsating loads)
2.Relative positioning of the two sprocket shafts is exactly, or nearly, perpendicular to each other.
3.Distance between both shaft centers is short, and the upper side is the chain's loose side.
4.The chain length is long on multi-shaft transmission.
5.The chain causes strong vibration.

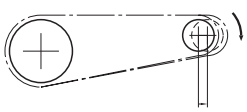
There are 2 ways to adjust for stretch of chain.

1.Installing an idler or a tensioner (when (1) the both sprocket shaft centers are fixed; (2) transmission is in vertical direction; or (3) the chain causes vibration)
2.Moving either of the shafts (It may be the easiest way for regular transmission applications)

(1) When both sprocket shaft centers are fixed (2) Vertical Transmission







Moving

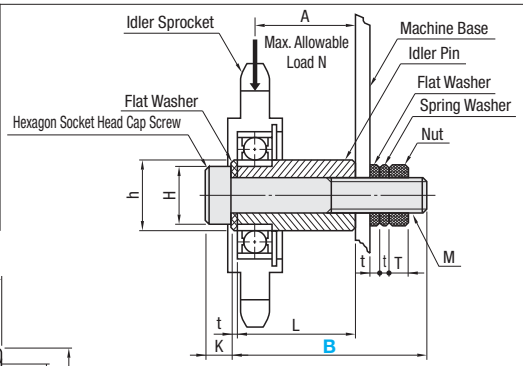
Rollers or guide rails are used as idlers in very low speed operations while sprockets are commonly used for power transmitting chains. The idler should be installed on the chain's loose side span rather than on the tense side, except otherwise needed or in applications that require reversing operation. Installing the idler on the tension side unnecessarily increases the chain tension and makes its service life shorter. Ensure that No. of teeth of idler is designed so the idler does not exceed the max. allowable speed (Note when No. of teeth is smaller than a small sprocket, speed increases). At least 3 teeth of the idler should contact with chain. There are several ways of idler adjustment: 1.eccentric shaft system, 2. arm system, 3. sliding system. (Please also refer to "Chain Drive Mechanism"**P.1913**)

Idler Pins

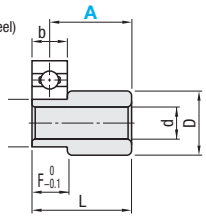
Reduced Delivery Time

CAD Data

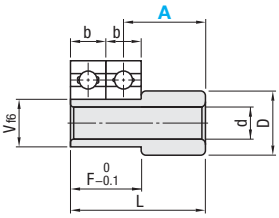




IDP
IDPS (Stainless Steel)



Type **S**



Type **W**

Part Names	Type		
	IDP		IDPS
	M Material	S Surface Treatment	M Material
Idler Pins	1.1191/C45E	Black Oxide	Stainless Steel
Hexagon Socket Head Cap Screw	1.7220/34CrMo4		
Nut, Flat Washer	1.0038/S235JR		
Spring Washer	JIS SWRH57 ~C43		

Part Number			A Selection	B Selection 5mm Increment	Applicable Bearings	Pin Body Size					Size of Screws / Washers							Max. Allowable Load N (kgf)	€ Unit Price	
Type	Bearings No.	Type				L	F	V f6	D	d	M	K	H	T	t	t'	h		IDP	IDPS
IDP IDPS (Stainless Steel)	6000	S	12	30~40	6000ZZ (b=8)	A+3.8	7.8	10	16	6.2	M6	6	10	5.0	1.6	1.5	12.5	323 (33)		
			14•16	35~45																
			18•20	40~50																
		W	12•14	40~50		A+11.8	15.8											274 (28)		
			16•18	45~55																
			20	50~60																
	6001	S	14	35~45	6001ZZ (b=8)	A+3.8	7.8	12	16	8.2	M8	8	13	6.5	1.6	2.0	17.0	548 (56)		
			16•18•20	40~50																
			22	45~55																
		W	14•16	45~55		A+11.8	15.8											441 (45)		
			18•20•22	50~60																
	6201	S	14	35~45	6201ZZ (b=10)	A+4.8	9.8	12	16	8.2	M8	8	13	6.5	1.6	2.0	17.0	548 (56)		
			16•18	40~50																
			20•22	45~55																
		W	14	45~55		A+14.8	19.8											441 (45)		
			16•18	50~60																
			20•22	55~65																
	6202	S	16•18•20	45~55	6202ZZ (b=11)	A+5.3	10.8	15	20	10.5	M10	10	16	8.0	2.0	2.5	21.0	999 (102)		
			22•24	50~60																
		W	16•18	55~65		A+16.3	21.8											803 (82)		
			20•22	60~70																
			24	65~75																
	6203	S	16•18	45~55	6203ZZ (b=12)	A+5.8	11.8	17	25	10.5	M10	10	16	8.0	2.0	2.5	21.0	1244 (127)		
			20•22•24	50~60																
		W	16	55~65		A+17.8	23.8											990 (101)		
			18•20•22	60~70																
			24	65~75																
	6204	S	20•22	55~65	6204ZZ (b=14)	A+6.8	13.8	20	25	14.5	M14	14	21	11.0	2.5	3.5	28.0	1989 (203)		
			24•26	60~70																
			28•30	65~75																
		W	20•22	70~80		A+20.8	27.8											1617 (165)		
			24•26•28	75~85																
			30	80~90																

Order Example

Part Number	-	A	-	B
IDP6000S	-	16	-	35

Days to Ship: 8 Days

Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

- Ensure that load applied to the idler does not exceed max allowable load.
- This idler pin is not designed for applications that have impact load or reversing operation.
- For Cantilever Shaft under large load, refer to P.795~818.

Idler Sprockets with Hub

-35B·40B·50B·60B Series-

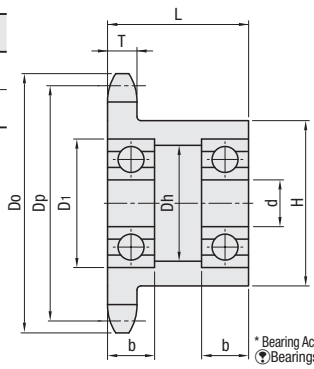
CAD Data

Features: The Idlers which bearings are built-in on both sides of general purpose sprockets.



Type	Material		Surface Treatment
	Main Body	Bearings	
DRCBW	1.1191/C45E (Induction Hardening Teeth Tip)	Steel	Black Oxide
DRCSBW	1.4301/X5CrNi18-10	Stainless Steel	-

- For Cantilever Shaft, refer to **P.795~818**.
- For driven shaft side tension adjustments, please see Tensioner Unit **P.1271.**



* Bearing Accuracy JIS B1514 Class 0
Bearings are press-fit.

Part Number Type	Part Number No.	No. of Teeth	d	Dp	Do	Dh	Hub H	Hub L	T	Bearing Dimension No.	Bearing Dimension D1	Bearing Dimension b	€ Unit Price DRCBW	€ Unit Price DRCSBW
DRCBW (1.1191/C45E Induction Hardening Teeth Tip) DRCSBW (1.4301/X5CrNi18-10)	35	10	10	30.82	34	13	24.5	20	4.3	6700ZZ	15	4		
		12	12	36.80	41	18	30.5			6801ZZ	21	5		
		13	12	39.80	44	18	32			6801ZZ	21	5		
		14	12	42.81	47	21	32			6901ZZ	24	6		
		15	12	45.81	51	24	35			6001ZZ	28	8		
		16	12	48.82	54	24	37			6001ZZ	28	8		
		18	15	54.85	60	28	44			6002ZZ	32	9		
		20	15	60.89	66	28	50			6002ZZ	32	9		
		21	15	63.91	69	28	53			6002ZZ	32	9		
		25	20	76	81	34	53	22		6904ZZ	37	9		
		32	20	97.18	102	34	53			6904ZZ	37	9		
	40	10	12	41.10	46	18	32	22	7.2	6801ZZ	21	5		
		11	12	45.08	51	21	36			6901ZZ	24	6		
		12	12	49.07	55	24	40			6001ZZ	28	8		
		13	12	53.07	59	24	37			6001ZZ	28	8		
		14	12	57.07	63	24	42			6001ZZ	28	8		
		15	15	61.08	67	28	46			6002ZZ	32	9		
		16	15	65.1	71	28	50			6002ZZ	32	9		
		17	20	69.12	76	34	54			6904ZZ	37	9		
		18	20	73.14	80	34	57			6904ZZ	37	9		
		19	20	77.16	84	34	62			6904ZZ	37	9		
		20	25	81.18	88	36	67	25		6905ZZ	42	9		
		24	25	97.3	104	36	63			6905ZZ	42	9		
		25	25	101.33	108	36	63			6905ZZ	42	9		
		26	25	105.36	112	36	63			6905ZZ	42	9		
	50	12	15	61.34	69	29	50	25	8.7	6202ZZ	35	11		
		14	15	71.34	79	29	52			6202ZZ	35	11		
		15	20	76.35	84	34	57			6904ZZ	37	9		
		17	20	86.39	94	34	67			6904ZZ	37	9		
		18	25	91.42	100	41	72	28		6005ZZ	47	12		
		20	25	101.48	110	41	73			6005ZZ	47	12		
		24	30	121.62	130	48	73			6006ZZ	55	13		
		28	35	141.79	150	49	73			6907ZZ	55	10		
	60	12	15	73.6	83	29	51	32	11.7	6202ZZ	35	11		
		14	20	85.61	95	40	62			6204ZZ	47	14		
		15	20	91.62	101	40	68			6204ZZ	47	14		
		17	25	103.67	113	45	73			6205ZZ	52	15		
		19	30	115.74	126	55	83	40		6206ZZ	62	16		
		20	30	121.78	132	55	83			6206ZZ	62	16		
		22	30	133.86	144	55	83			6206ZZ	62	16		
		25	35	151.99	162	60	83			6207ZZ	72	17		
		30	35	182.25	193	60	83			6207ZZ	72	17		

Order Example

Part Number	-	No. of Teeth
DRCBW50	-	20
DRCSBW40	-	25

Days to Ship

8 Days

Price

Volume Discount (Round down to one Cent.) **P. 87**

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Idler Sprockets with Hub / Small Idlers

-Double Pitch Type- -35B·40B·50B·60B Series-

CAD Data

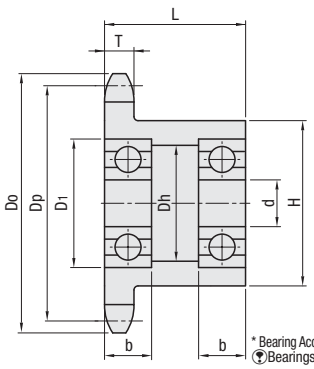
Features: The Idlers which bearings are built-in on both sides of Double Pitch Sprockets.

-Double Pitch Type- RoHS



Type	Material		Surface Treatment
	Main Body	Bearings	
DRCBW	1.1191/C45E (Induction Hardening Teeth Tip)	Steel	Black Oxide

- For Cantilever Shaft, refer to **P.795~818**.
- For driven shaft side tension adjustments, please see Tensioner Unit **P.1271**.



* Bearing Accuracy JIS B1514 Class 0
Bearings are press-fit.

Part Number Type	No.	No. of Teeth	d	Dp	Do	Dh	Hub H	Hub L	T	Bearing Dimension No.	Bearing Dimension D1	Bearing Dimension b	€ Unit Price
DRCBW	2040	21	20	86.17	92	34	69	25	7.2	B6904ZZ	37	9	
		23	25	94.15	100	36	77			B6905ZZ	42	9	
		25	25	102.14	108	36	63			B6905ZZ	42	9	
	2050	19	25	97.78	105	41	73	28	8.7	B6005ZZ	47	12	
		21	30	107.72	115	48				B6006ZZ	55	13	
		25	30	127.67	135	48				B6006ZZ	55	13	
	2060	19	30	117.34	126	55	83	40	11.7	B6206ZZ	62	16	
		25	30	153.2	162	55	80	45		B6206ZZ	62	16	

Order Example: Part Number - No. of Teeth → DRCBW2040 - 23

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent.) **P. 87**

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

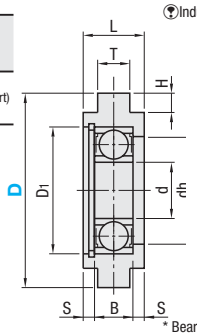
Features : Up to 37% smaller than the standard idler sprockets on **P.1267**. Usable in space limited applications.

Small Idlers RoHS



Type	Material		Surface Treatment	Hardness
	Main Body	Bearings	Main Body	
SDRCH	1.1191/C45E (Induction Hardening)	Steel	Black Oxide	55~60HRC (Hardening on T part) (Depth 1~2mm)

Induction hardening on T part only



For Idler Shafts, please see Cantilever Shafts **P.795~818**.

* Bearing Accuracy JIS B1514 Class 0

Part Number Type	No.	D	d	L	T	dh	H	S	Bearing Dimension No.	Bearing Dimension D1	Bearing Dimension B	Applicable Ring	€ Unit Price
SDRCH	35	30	6	12	4.4	13	2.2	3	606ZZ	17	6	RTWN17	
		40	10	15		22		3.5	6000ZZ	26	8	RTWN26	
		50	12	16		26		3	6201ZZ	32	10	RTWN32	
	40	40	10	15	7.5	22	2.2	3.5	6000ZZ	26	8	RTWN26	
		50	12	16		26		3	6201ZZ	32	10	RTWN32	
		60	15	19		29		4	6202ZZ	35	11	RTWN35	
	50	50	10	19	9	22	2.7	5.5	6000ZZ	26	8	RTWN26	
		60	12	19		26		4.5	6201ZZ	32	10	RTWN32	
		70	15	19		29		4	6202ZZ	35	11	RTWN35	
	60	60	12	23	11.8	26	3.5	6.5	6201ZZ	32	10	RTWN32	
		70	15	23		29		6	6202ZZ	35	11	RTWN35	

Order Example: Part Number - D → SDRCH40 - 60

Days to Ship: 8 Days

Express A: 2,00 EUR/ piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) **P. 87**

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Tensioner Units
-Slotted Holes · Adjusting Screws Type-

CAD Data

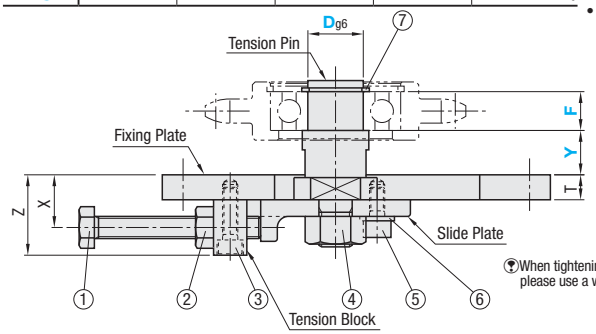
Features: Tensioner unit with easy assembly. Can be used by chain or belt drive.



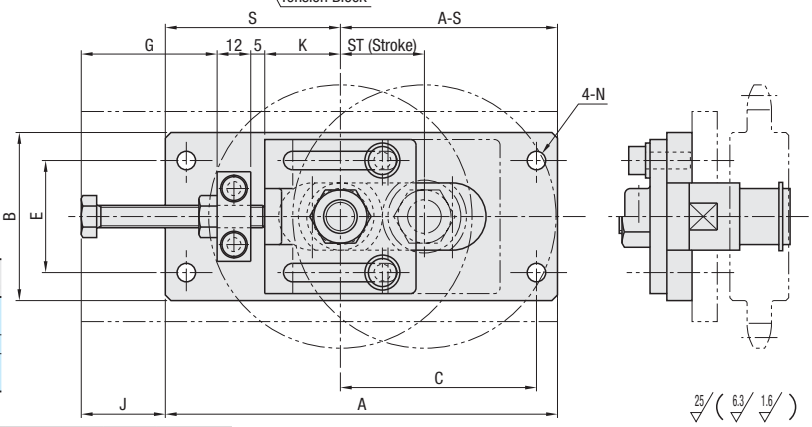
Idler is optional.

Type	Material: Attachment Plate	Material: Tension Pins	Material: Slide Plates	Material: Tension Blocks	Surface Treatment
TNSR TNSN	1.0038/S235JR	1.1191/C45E	1.1191/C45E (Precision Casting)	1.0038/S235JR	Black Oxide Electroless Nickel Plating

‹Applicable idlers›
- Chain Idlers P.1267~1270
- Idlers with teeth for timing belts P.1175~1186
- Idlers for Timing Belts P.1187
- Idlers for Flat Belts P.1090,1092



When tightening or loosening nuts (4), please use a wrench for the width across flats W.



Tension Pin Dimension Details

Dg6	V	d	t	P	H	W	M (Coarse Thread)
10	13	9.6	5	13	15	11	M8
12	15	11.5				13	
15	20	14.3	8	16	20	17	M10
17	22	16.2		17	24	19	M12
20	24	19			24	22	

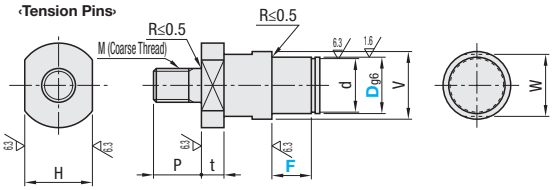
TNSR Accessories

Dg6	(1) Adjustment Screw	(2) Nut	(3) (2 pcs.) Hexagon Socket Head Cap Screw	(4) Nut	(5) (2 pcs.) Hexagon Socket Head Cap Screw	(6) (2 pcs.) Flat Washer	(7) C Type Retaining Ring
10	M6x55	LBNR6	CB4-16	LBNR8	CB5-10	PWF5	STWN10
12							STWN12
15	M8x60	LBNR8	CB5-22	LBNR10	CB5-14		STWN15
17				LBNR12	CB6-16	PWF6	STWN17
20							STWN20

TNSN Accessories

Dg6	(1) Adjustment Screw	(2) Nut	(3) (2 pcs.) Stainless Steel Hexagon Socket Head Cap Screw	(4) Nut	(5) (2 pcs.) Stainless Steel Hexagon Socket Head Cap Screw	(6) (2 pcs.) Flat Washer	(7) C Type Retaining Ring
10	M6x55	SLBNR6	M4x16	SLBNR8	M5x10	SPWF5	STWS10
12							STWS12
15	M8x60	SLBNR8	M5x22	SLBNR10	M5x14		STWS15
17				SLBNR12	M6x16	SPWF6	STWS17
20							STWS20

‹Tension Pins›



Part Number Type	Dg6	1mm Increment Y	1mm Increment F	ST (Stroke)	A	B	T	J	C	E	G	K	S	X	Z	N	€ Unit Price TNSR	€ Unit Price TNSN
TNSR TNSN	10	10~50	8~50	25	120	50	6	24	55	35	42.0	22.5	57.5	14	21	5.5		
	12																	
	15	12~60	10~50	25	125	55	9	31	57.5	40	48.5	25.5	60	19	29	6.6		
	17			30	140	60		30	70			27	62.5					
	20																	

When D=10 and 12, Y+F≤80
When D=15 ~ 20, Y+F≤120

Order Example

Part Number	-	Y	-	F
TNSR20	-	Y15	-	F12
TNSN15	-	Y20	-	F32

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Days to Ship 10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of13,50 EUR for 3 or more identical pieces.

Tensioners · Slide Plates for Tension
-Link Bar Type-

CAD Data

Features: Tensioners for intermediate tensioning which can be easily mounted with holes on the side of plate.

Tensioners Link Bar Type

RoHS

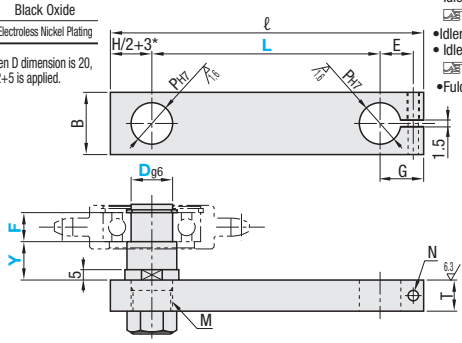


Idler is optional.

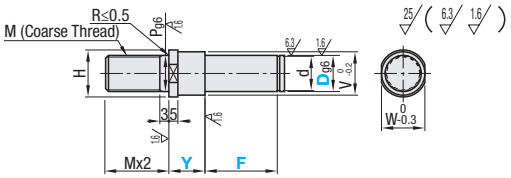
Type	M Material	S Surface Treatment
TNSRL	1.1191/ C45E	Black Oxide
TNSNL		Electroless Nickel Plating

* When D dimension is 20, H/2+5 is applied.

‹Applicable idlers›
- Chain Idlers P.1267~1270
- Idlers with teeth for timing belts P.1175~1186
- Idlers for Timing Belts P.1187
- Idlers for Flat Belts P.1090,1092
- Fulcrum Pins P.835~837



‹Tension Pins›



Tension Pin Dimension Details

Dg6	V	d	H	W	P	M (Coarse)
6	8	5	10	8	6	M6
8	10	7	12	10	8	M8
10	13	9.6	15	13	10	M10
12	15	11.5	17	14	12	M12
15	18	14.3	20	17	12	M12
17	20	16.2	23	20	16	M16
20	24	19	26	24	20	M20

Accessory

Type	A Accessory	M Material
TNSRL	Retaining Ring C Type, Hexagon Socket Head Cap Screw Nuts, Washers	Steel
TNSNL		Stainless Steel

Part Number Type	Part Number Dg6	1mm Increment Y	1mm Increment F	1mm Increment L	ℓ	B	T	E	G	N	Included Screws	€ Unit Price TNSRL	€ Unit Price TNSNL
TNSRL TNSNL	6	7~50	6~75	30~200	L+20	25	10	7	12	6.6	M6x25		
	8				L+23			8	14				
	10				L+25.5			9	15				
	12		10~75		L+27.5			10	16		M6x30		
	15				L+31	30	12	12	18				
	17				L+34.5			14	20				
	20				L+40	35	15	15	22	9	M8x35		

Order Example: Part Number - Y - F - L → TNSRL15 - Y12 - F10 - L50

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Price

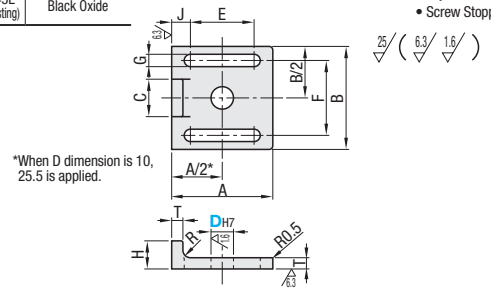
Slide Plates for Tension

RoHS



Type	M Material	S Surface Treatment
SDPT	1.1191/C45E (Precision Casting)	Black Oxide

Features: Slide Plates for Tensioner Unit (TNSR)
Possible to use by directly installing on the side plates.
- Adjustment Screws P.1418
- Screw Stopper Blocks P.1421



Part Number Type	Part Number DH7	A	B	H	F	E	G	T	C	J	€ Unit Price
SDPT	8	45	44	12	30	28	5.5	5	15	8.5	
	10	50	50	15	35	29	5.5	6	20	11	
	12	54	55	15	40	34	6.6	6	20	10	

Order Example: Part Number SDPT8

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

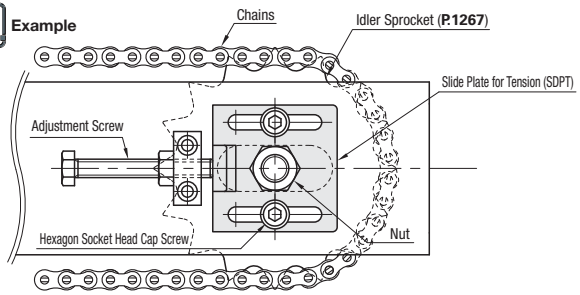
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9
€ Unit Price	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Example



Install directly on the side of plates.

Chain Tensioners
-Idler Set Type-

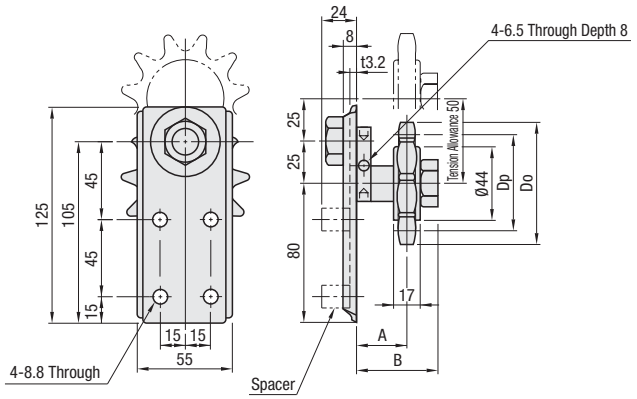
Reduced Delivery Time

CAD Data

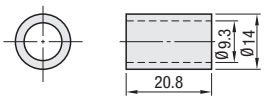
RoHS



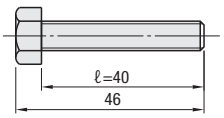
THBS



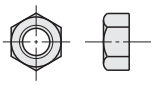
• **Spacer** (4 pcs.)



• **M8 Screw** (4 pcs.)



•**M8 Nut** (4 pcs.)



Type	M Material	S Surface Treatment
Idler Sprocke	1.1181/C35E (Tooth Surface: Induction Hardening)	Black Oxide
Base Plate	1.0330/DC01	
Spacer	1.0038/S235JR	

Part Number		Applicable Roller Chain	Idler Sprockets				A	B	Mass (kg)	€ Unit Price
Type	No.		Part No.	No. of Teeth	Do	Dp				
THBS	35	JIS35	DRC35-18	18	60	54.85	26	47	0.89	
	40	JIS40	DRC40-15	15	67	61.08			0.92	
	50	JIS50	DRC50-13	13	74	66.34			0.96	
	60	JIS60	DRC60-11	11	76	67.62			1.00	
	80	JIS80	DRC80-9	9	85	74.26	30	51	1.11	

Order Example

Part Number
THBS35

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

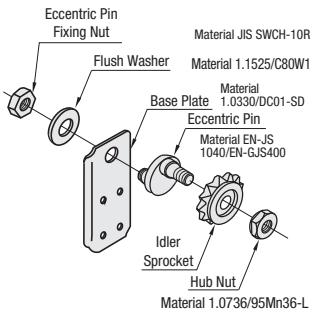
Days to Ship

8 Days

Express A | 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

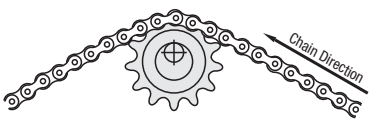
When adjusting tension at the chain driven side, refer to **P.1271**.



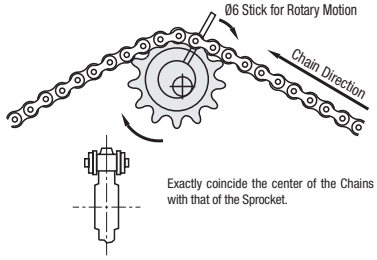
Tension Adjustment Method

By inserting a Ø6 rod in a hole of the eccentric pin and rotating, tension adjustment of max. 50mm can be obtained. Fix base plate so that idler and chain engage each other at a position of max. tension tolerance (Fig. 1), and tighten the eccentric pin nut in chain driving direction.

(Fig.1)

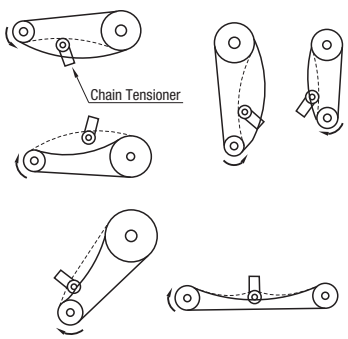


(Fig.2)



Chain Tensioner Position

Install a chain tensioner on the loose side as shown in the figure below.



(Note) Do not use the Chain Tensioner under the conditions where it is located on the side of adjusting tensions, such as forward reverse rotary drive.

Chain Guide Tensioners

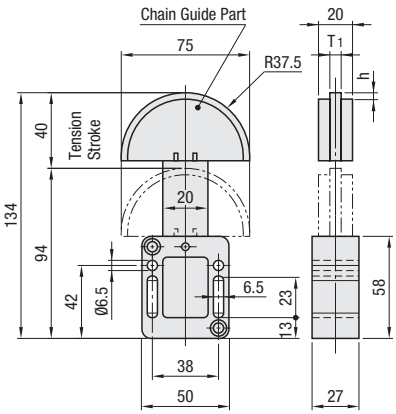
Reduced Delivery Time

CAD Data

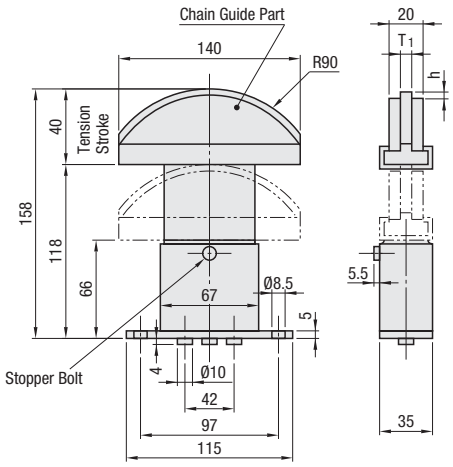
RoHS



TSBXA (Standard Type)



TSBXB (Tension Adjusting Type)



Operation Temperature -10 ~ 60°C

Never remove the stopper screw.

Type	Material	
	Chain Guide Part	Main Body
TSBXA	Ultra High-Molecular-Weight Polyethylene (Green)	Plastic
TSBXB		Steel

Part Number			T_1	h	Applicable Chain	€ Unit Price
Type	No.	Load Type (Refer to Fig.1)				Qty. 1~19
TSBXA (Standard Type)	35	L	4	2.6	CHE35	
	35	H				
	40	L	7	2.6	CHE40/CHE50	
	40	H				
	60	H	11	3.5	CHE60	
TSBXB (Tension Adjusting Type)	40	L	6.3	2.6	CHE40	
	40	H				
	50	L	8	2.6	CHE50	
	50	H				

Order Example

Part Number
TSBXA40H
TSBXB50L

Days to Ship

8 Days

Express A 2,00 EUR/ piece

For orders larger than indicated quantity, please request a quotation.

P. 88

A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

Features:

Ultrahigh molecular weight polyethylene with excellent abrasion resistance is used for the guide part of the Chain Guide Tensioner. Force of built-in spring constantly maintains appropriate tension automatically, and enhance the performance and extend life without maintenance.

How to Install

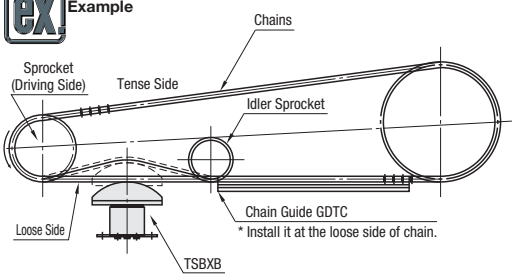
Install by putting the guide onto the chain, firmly push until reaching a location where the tension stroke does not exceed 50% of that during empty load (40mm).
If necessary, adjust location by using shims or spacers.

Tension Adjusting Method (TSBXB)

For TSBXB, it is possible to adjust tension load in 3 stages by loosening the spring retention screw. During shipment, all 3 pieces of springs are not released. Loosen the center screw when required to release only one maintaining screw, loosen screws on both sides when 2 springs need to be released.
Provide enough free space below the retention screw to allow access for tension adjustments, after installation.
The springs can be returned to retained state by turning the retention screws while pressing the guide down.

* There is no spring retention screw in TSBXA.

Example



•Example of installation with Bracket (Bracket is not included.)

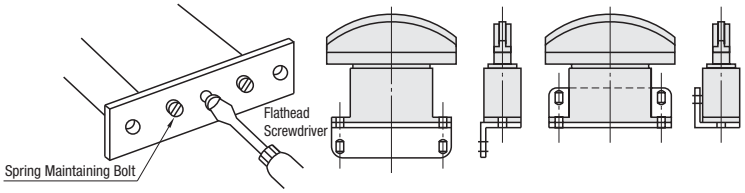


Table1: Load Type

Type	Loosening Retaining Screw Qty.	Tension Load (N)			
		Load Type L		Load Type H	
		min.	max.	min.	max.
TSBXA	(Not Provided)	37	64	64	137
TSBXB	1 pc.	37	64	64	137
	2 pcs.	75	127	127	274
	3 pcs.	112	191	191	412

NEW

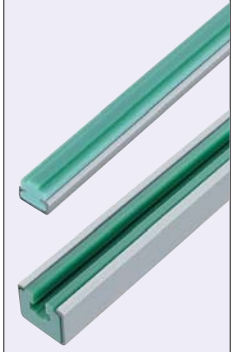
Chain Guides with C-Channel · Chain

-L Dimension Selectable Type · L Dimension Configurable Type-

Reduced Delivery Time

CAD Data

■C-Channel Raised Track / Channel

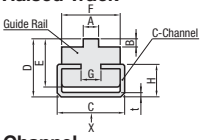


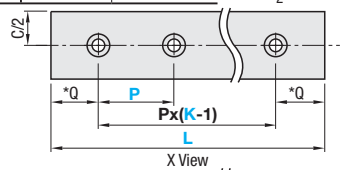
RoHS

Type				Material	
L Dimension Selectable w/o Hole Machining		L Dimension Configurable with Hole Machining			
Raised Track	Channel	Raised Track	Channel	Guide Rail	C-Channel
GDTC	GDCC	LGTC	LGCC	Ultra High-Molecular-Weight Polyethylene	Steel (Trivalent Chromate)
GDTS	GDCS	LGTS	LGCS		Stainless Steel

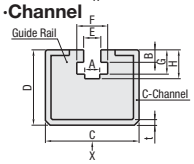
*Q= L-P(K-1)/2 ≥7

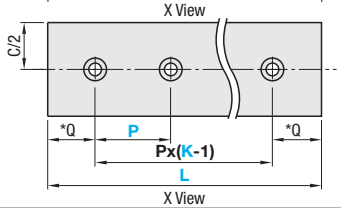
·Raised Track





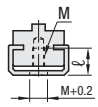
·Channel



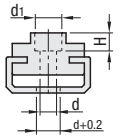


Hole Machining Shape for Raised Track

No.35 / No.40

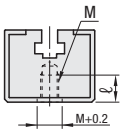


No.50 / No.60

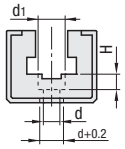


Hole Machining Shape for Channel

No.35



No.40 / No.50



?C-Channels can be pulled out.

■L Dimension Selectable w·o Hole Machining

Part Number Type	No.	L (mm)	A	B	C	D	E	F	G	H	t	Mass (kg/m)	€ Unit Price GDTC · GDCC L=450	GDTC · GDCC L=950	GDTC · GDCC L=2000	GDTS · GDCS L=450	GDTS · GDCS L=950	GDTS · GDCS L=2000
Raised Track GDTC (Steel) GDTS (Stainless Steel)	35	450	4.4	2.3	20	17	14	17	10	10	1.5	0.67						
	40	950	7.4	2.4								0.69						
	50	2000	8.8	2.8								0.69						
	60		11.8	3.5	28	20		24	14	12	2	1.12						
Channel GDCC (Steel) GDCS (Stainless Steel)	35	450	4.5	4.4	30	24	5.3	9.9	7.8	9.3	1.5	1.46						
	40	950	5.0	7.4			8.3	13.2	11.7	13.4		1.40						
	50	2000	6.4	8.8			10.7	16.5	14.5	16.2		1.34						
	60		7.4	11.8			12.5	19.8	18.5	20.5		1.28						

■L Dimension Configurable with Hole Machining

Part Number Type	No.	L 10mm Increment	K No. of Holes	P Hole Pitch 5mm Increment	A	B	C	D	E	F	G	H	t	M	ℓ	d	d1	h	Mass (kg/m)
Raised Track LGTC (Steel) LGTS (Stainless Steel)	35	200~2000	0~10 ⊗Hole=1 cannot be specified.	50~500	4.4	2.3	20	17	14	17	10	10	1.5	M4	6	-	-	-	0.67
	40				7.4	2.4								M5	7.5	-	-	-	0.69
	50				8.8	2.8								-	-	4.5	7.5	5	0.69
	60				11.8	3.5	28	20		24	14	12	2	-	-	5.5	9	6	1.12
Channel LGCC (Steel) LGCS (Stainless Steel)	35	200~2000	0-10 ⊗Hole=1 cannot be specified.	50~500	4.5	4.4	30	24	5.3	9.9	7.8	9.3	1.5	M6	9	-	-	-	1.46
	40				5.0	7.4			8.3	13.2	11.7	13.4		-	-	4.5	7.5	5	1.40
	50				6.4	8.8			10.7	16.5	14.5	16.2		-	-	5.5	9	6	1.34
	60		0		7.4	1.18			12.5	19.8	18.5	20.5		-	-	-	-	-	1.28

?P selection is unnecessary when No. of hole is 0. ⊗Hole machining is not applicable to Channel No. 60. ?Ultrahigh molecular weight polyethylene may change in dimensions as its stretch rate changes by temperature.

Order Example

Part Number	-	L	-	K	-	P
GDCC50	-	450				
LGTC40	-	860	-	K8	-	P100
LGCS60	-	1600	-	K0		

Days to Ship

- GDTC GDTS · GDCC · GDCS: 8 Days — Express A 2,00 EUR/piece

- LGTC · LGTS · LGCC · LGCS: 10 Days

?A Express Charge of 5,40 EUR is applied to 3 or more identical pieces.

Price

■Volume Discount (?Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

?Calculation Example: LGTC40-860-K4-P200

Body Price	+	Hole Machining Charge	=	Total Price
27,50 €	+	4x2,00 €	=	35,50 €

?For orders larger than indicated quantity, please request a quotation.

?Volume Discount is not applicable to Hole Machining Charge.

No.	€ Body Price LGTC L200~450	LGTC L460~950	LGTC L960~1400	LGTC L1410~2000	LGTS L200~450	LGTS L460~950	LGTS L960~1400	LGTS L1410~2000	Hole Machining Charge € (Body Price +)
35									No. of Holes x 2,00
40									
50									
60									

No.	€ Body Price LGCC L200~450	LGCC L460~950	LGCC L960~1400	LGCC L1410~2000	LGCS L200~450	LGCS L460~950	LGCS L960~1400	LGCS L1410~2000	Hole Machining Charge € (Body Price +)
35									No. of Holes x 2,00
40									
50									
60									

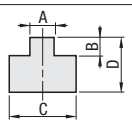
■Raised Track / Channel



RoHS

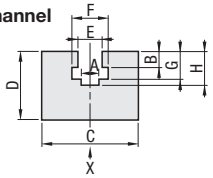
Type		Material
Raised Track	GDT	Ultra High-Molecular-Weight Polyethylene
Channel	GDC	

·Raised Track

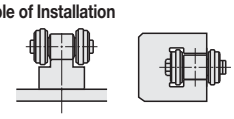




·Channel



■Example of Installation



■L Dimension Configurable Type

Part Number Type	No.	L (mm)	A	B	C	D	E	F	G	H	Mass (kg/m)	€ Unit Price L=450	L=950	L=2000
Raised Track GDT	40	450	7.4	2.4	20	10	-	-	-	-	0.16			
	50	950	8.8	2.8							0.16			
	60	2000	11.8	3.5	25						0.36			
Channel GDC	40	450	5.0	7.4	25	30	8.3	13.2	11.7	13.4	0.58			
	50	950	6.4	8.8	30	35	10.7	16.5	14.5	16.2	0.80			
	60	2000	7.4	11.8	35	40	12.5	19.8	18.5	20.5	1.04			

?Ultrahigh molecular weight polyethylene may change in dimensions as its stretch rate changes by temperature.

Order Example

Part Number	-	L
GDT50	-	450
GDC60	-	2000

Days to Ship: 8 Days — Express A 2,00 EUR/piece

?A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (?Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

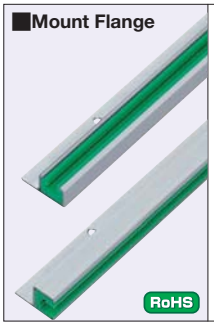
?For orders larger than indicated quantity, please request a quotation.

Flanged Chain Guides · Steel Chain Guides
-L Dimension Selectable Type-

Reduced Delivery Time

CAD Data

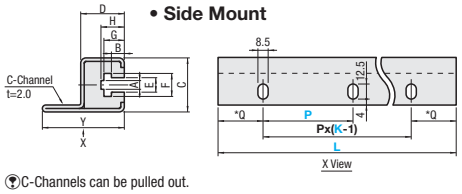
■Mount Flange



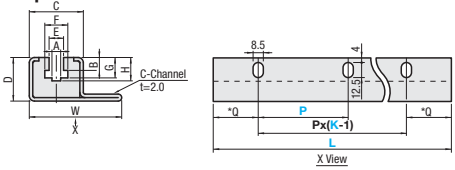
Type		Material	
L Dimension Selectable • Hole Pitch Fixed Type			
Side Mount	Up Mount	Guide Rail	C-Channel
GDYC	GDRC	Ultra High-Molecular-Weight Polyethylene	Steel (Trivalent Chromate)
GDYS	GDRS		Stainless Steel

$*Q = \frac{L-P(K-1)}{2} \geq 7$

• Side Mount



• Up Mount



Ⓨ C-Channels can be pulled out.

■L Dimension Configurable / Hole Pitch Configurable Type

Part Number Type	No.	L (mm)	K No. of Holes	P Hole Pitch	A	B	C	D	E	F	G	H	W	Y	Mass (kg/m)	€ Unit Price GDYC · GDRC	€ Unit Price GDYS · GDRS
Side Mount GDYC (Steel) GDYS (Stainless Steel)	35	2000	10	200	4.5	4.4	31	25	5.3	10.0	7.8	9.3	-	47	2.37		
	40				5.0	7.4			8.3	13.2	11.7	13.4	-		2.31		
	50				6.4	8.8			10.7	16.5	14.5	16.2	-		2.24		
	60				7.4	11.8			12.5	19.8	18.5	20.5	-		2.18		
Up Mount GDRC (Steel) GDRS (Stainless Steel)	35	2000	10	200	4.5	4.4	31	25	5.3	10.0	7.8	9.3	53	-	2.4		
	40				5.0	7.4			8.3	13.2	11.7	13.4		-	2.34		
	50				6.4	8.8			10.7	16.5	14.5	16.2		-	2.27		
	60				7.4	11.7			12.4	19.8	18.5	20.6		-	2.21		

Ⓨ Ultrahigh molecular weight polyethylene may change in dimensions as its stretch rate changes by temperature.

Order Example: Part Number GDYC50 - L 2000

Days to Ship: 8 Days | Express A 2,00 EUR/piece | P.88

Ⓨ A Express Charge of 5,40 EUR for 3 or more identical pieces.

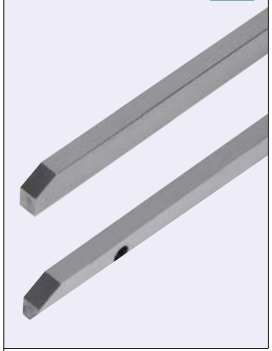
Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.
Ⓨ Volume Discount is not applicable to Hole Machining Charge.

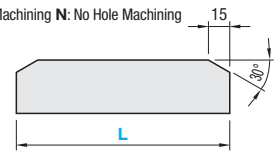
■Steel Chain Guides RoHS



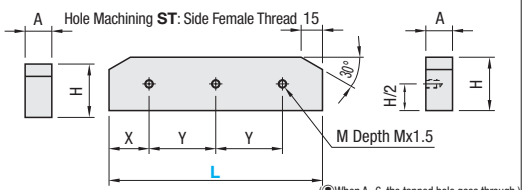
SGDT

■**Features :** Suitable when large loads rest on the chain such as chain conveyance.

Hole Machining **N**: No Hole Machining

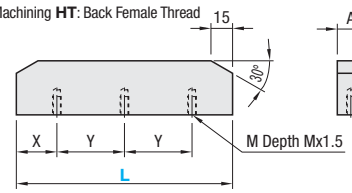


Hole Machining **ST**: Side Female Thread

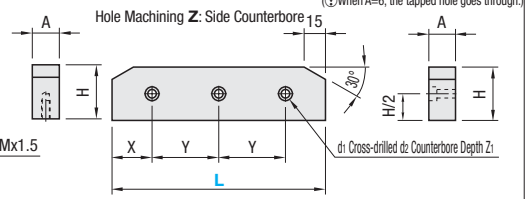


Ⓨ When A=6, the tapped hole goes through.

Hole Machining **HT**: Back Female Thread



Hole Machining **Z**: Side Counterbore



■Mounting Holes

L	No. of Holes	X	Y
300	2	100	100
500	3	150	100
1000	5	200	150

M Material	S Surface Treatment
1.1191/C45E	Hard Chrome Plating

Ⓨ No surface treatment on machined holes.

For Small Conveyors Chains, refer to **P.1261, 1262.**

■L Dimension Configurable Type

Part Number Type	No.	Hole Machining	L (mm)	A	H	d1	d2	Z1	M	L=300 € Unit Price N	ST	HT	Z	L=500 € Unit Price N	ST	HT	Z	L=1000 € Unit Price N	ST	HT	Z
SGDT	40	N (No Hole Machining) ST (Side Female Thread) HT (Back Female Thread) Z (Side Counterbored)	300	6	13	4.5	8	4.5	4												
	50		500	9	16	5.5	9.5	5.5	5												
	60		1000	12	22	6.5	11	6.5	6												

Order Example: Part Number SGDT50ST - L 500

Days to Ship: 8 Days | Express A 2,00 EUR/piece | P.88

Ⓨ A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Turnbuckles

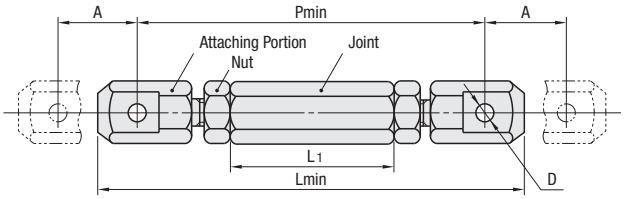
-Standard Type / Long Type / Male Thread Type-

CAD Data

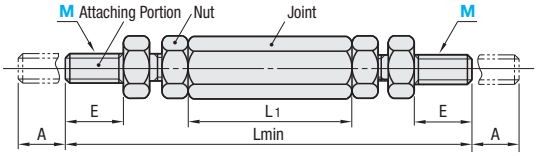


Type			Parts	Material	Surface Treatment	Hardness
Standard	Long Type	Male Thread Type				
STRT	LSTRT	STBT	Joints	1.0715/9SMn28	Black Oxide	-
			Attaching Portion	1.1191/C45E		35~40HRC
			Nut	1.0038/S235JR		-
STRTS	-	-	Joints	1.4305/ X10CrNiS18-9	-	-
			Attaching Portion			
			Nut			

-Standard Type
-Long Type



-Male Thread



■Standard Type

Part Number Type	Applicable Roller Chain Nominal	Lmin	Pmin	A	L1	D	Mass (g)	€ Unit Price STRT	€ Unit Price STRTS
STRT STRTS	11	40	36.4	4	20	1.7	6.6		
	15	46	41.6	5	22		9.6		
	*25	62	56	7.5	33	2.4	18		
	*35	85	76	10	43	3.7	44		
	*40	110	98	13	55	4	105		
	*50	135	120	16	67	5.2	215		
	60	161	143	20	81	6	330		
	80	201	177	21	95	8	680		

STRTS is available for sizes marked with * only.

■Long Type

Part Number Type	Applicable Roller Chain Nominal	Lmin	Pmin	A	L1	D	Mass (g)	€ Unit Price
LSTRT	25	102.6	96.6	22.4	69	2.4	57	
	35	143	134	33.0	95	3.7	134	
	40	175	163	39.0	115	4	283	
	50	200	185	40.0	126	5.2	411	
	60	275	257	66.0	185	6	918	
	80	335	311	80.0	225	8	1741	

■Male Thread Type

Part Number Type	M (Coarse)	Lmin	E	A	L1	Mass (g)	€ Unit Price
STBT	3	46	6	5	22	7.6	
	4	64	8	7.5	33	16	
	6	89	12	10	43	40	
	8	116	16	13	55	115	
	10	143	20	16	67	185	
	12	171	24	20	81	290	
	16	217	32	21	95	600	

Order Example

Part Number
STRT40

Days to Ship

6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

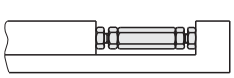
• Refer to the right page for ordering turnbuckle parts in single unit.

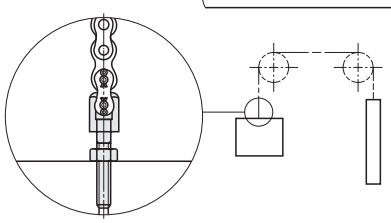
Example

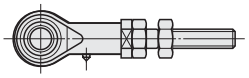
STRT / STRTS / LSTRT



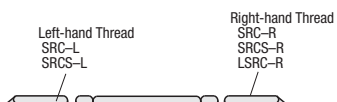
STBT

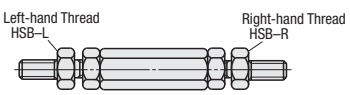






For adjustment of a rod end bearing.





Turnbuckle Components

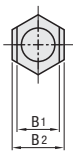
CAD Data

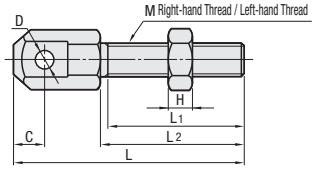
Standard Type / Long Type

RoHS



Type			Parts	M Material	S Surface Treatment	H Hardness
Standard		Long Type				
Right-hand Thread	Left-hand Thread	Right-hand Thread				
SRC-R	SRC-L	LSRC-R	Main Body	1.1191/C45E	Black Oxide	35~40HRC
			Nut	1.0038/S235JR		-
SRCS-R	SRCS-L	-	Main Body	1.4305/X10CrNiS18-9	-	-
			Nut			





Standard Type

Part Number Type	Applicable Roller Chain Nominal	M (Coarse Thread)	L1	L2	L	C	D	B1	B2	H	Max.Load (kN) SRC-R / L	Max.Load (kN) SRCS-R / L	Mass (g)	€ Unit Price SRC-R / L	€ Unit Price SRCS-R / L
SRC-R (Right-hand Thread)	15	3	10	12	20.6	2.2	1.7	3.4	6	1.8	0.44	-	2.8		
SRC-L (Left-hand Thread)	*25	4	16.5	18	28.2	3	2.4	4.8	7	2.4	0.78	0.68	5		
SRCS-R (Right-hand Stainless Steel Thread)	*35	6	23.5	25	40	4.5	3.7	7.4	10	3.6	1.96	1.57	12		
SRCS-L (Left-hand Stainless Steel Thread)	*40	8	31	33	52.5	6	4	11.2	13	5	3.53	2.84	30		
	*50	10	39	41	65	7.5	5.2	13.8	17	6	5.68	4.51	60		
	60	12	47	49	78	9	6	17.8	19	7	8.23	6.57	100		
	80	16	57	60	98	12	8	22.6	24	10	15.4	12.3	210		

SRCS–R has no 15. SRCS–L is available for sizes marked with * only.

Long Type

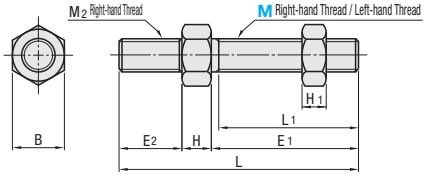
Part Number Type	Applicable Roller Chain Nominal	M (Coarse Thread)	L1	L2	L	C	D	B1	B2	H	Max. Load (kN)	Mass (g)	€ Unit Price
LSRC-R (Right-hand Thread)	25	6	35	38	48.2	3	2.4	4.8	7	3.6	0.78	11	
	35	8	50	54	69	4.5	3.7	7.4	10	5	1.96	27	
	40	10	60	64.5	84	6	4	11.2	13	6	3.53	56	
	50	12	65	71	95	7.5	5.2	13.8	17	7	5.68	94	
	60	16	100	106	135	9	6	17.8	19	10	8.23	218	
	80	20	119	127	165	12	8	22.6	24	12	15.4	414	

Male Thread Type

RoHS



Type		Parts	M Material	S Surface Treatment	H Hardness
Male Thread Type					
Right-hand Thread	Left-hand Thread				
HSB-R	HSB-L	Main Body	1.1191/C45E	Black Oxide	35~40HRC
		Nut	1.0038/S235JR		-

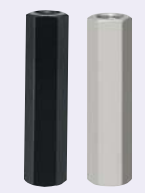


Male Thread Type

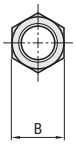
Part Number Type	M (Coarse)	L1	E1	M2	E2	H	H1	L	B	Mass (g)	€ Unit Price
HSB-R (Right-hand Thread) HSB-L (Left-hand Thread)	4	16.5	18	M 4	8	3.2	2.4	29.2	7	4	
	6	23.5	25	M 6	12	5	3.6	42	10	10	
	8	31	33	M 8	16	6.5	5	55.5	13	25	
	10	39	41	M10	20	8	6	69	17	45	
	12	47	49	M12	24	10	7	83	19	80	
	16	57	60	M16	32	13	10	105	24	170	

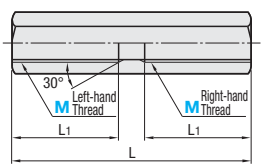
Female Thread Type

RoHS



Type Female Thread Type	M Material	S Surface Treatment
SJN	1.0715/9SMn28	Black Oxide
SJNS	1.4305/X10CrNiS18-9	-





Female Thread Type

Part Number Type	M (Coarse)	L	L1	B	Mass (g)	€ Unit Price SJN	€ Unit Price SJNS
SJN SJNS (Stainless Steel)	3	22	9	6	4		
	4	33	14	7	8		
	*6	43	19	10	20		
	*8	55	25	13	45		
	*10	67	31	17	95		
	12	81	38	19	130		
	16	95	45	24	260		

SJNS is available for sizes marked with * only.

Order Example — Part Number: SRC-R40, HSB-R8, SJN10

Days to Ship: 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Locating Pins / Bushings for Jigs

Locating Pins/ Bushings for Jigs



Product Name	Locating Pins Large Head Tapered -Standard-	-Female Thread Shank-	-Male Thread-	-Configurable Taper Angle / D and P Tolerance Selectable-	-Male Thread / With Hexagon Socket-	-Screw Mount Standard / Compact-	Small Head Tapered -Standard-
Page	1283	1285	1287	1289	1291	1292	1293



-Female Thread Shank-	-Configurable Taper Angle / D and P Tolerance Selectable-	-Large / Small Head - Set Screw-	Large Head Round Tapered	-D and P Tolerance / Taper R Selectable-	Small Head Round Tapered	-D and P Tolerance / Taper R Selectable-	Cannonball Shaped Compact Type
1295	1297	1298	1299	1301	1303	1304	1305



Spherical Large Head -Standard-	-Female Thread Shank-	-Male Thread-	-D and P Tolerance Selectable-	Spherical Small Head -Standard-	-Female Thread Shank-	-D and P Tolerance Selectable-	-Spherical Large / Small Head - Set Screw-	Large Flat Head -Standard-
1307	1309	1311	1313	1315	1317	1319	1320	1321



-Female Thread Shank-	-Male Thread-	-D and P Tolerance Selectable-	-Side Locating-	Small Flat Head -Standard-	-Female Thread Shank-	-D and P Tolerance Selectable-	Tip Shape Selectable -Standard / Standard Female Thread / Straight Female Thread-
1323	1325	1327	1328	1329	1331	1333	1335-1336



-Male Thread-	-Tip Length Configurable - Male Thread-	With Shoulder -Tapered Standard-	-Tapered Female Thread-	-Tapered/Male Thread- -Taper Angle / D and P Tolerance Selectable-	-Tapered Shoulder Thickness Configurable / Tapered Shoulder Diameter and Thickness Configurable- -Set Screw-
1337	1338	1339	1340	1341	1342	1343-1344	1345



Tip Shape Selectable -With Shoulder-	Straight Tapered Type	Straight Sphere Type	Screw Fitting Locating Pins	Marker Pins -With Hexagon Socket-	-With Flathead Slot-	Locating Pins for Height Adjusting	Small Diameter Locating Pins -Straight / Small Head / With Shoulder-
1346	1347	1348	1349	1350	1350	1351	1352~1356



-With Base-	Locating Pins -Large Head Tapered - Nonmagnetic-	Large Head Tapered -With Plastic Head-	-Large Head Plastic-	-Small Head Plastic-	-Small Head Plastic-	-Screw Mounted Plastic-	Pusher Pins -Straight / Small Head-
1354	1357	1358	1359	1360	1361	1361	1362



-With Air Vent-	Locating Pilot Pins	Locating Pins -Double Stepped-	-Screw Mounted-	-With Pilot-	-Large Diameter - Screw Mounted-	-Eccentric-	Flanged Flat Type	Flanged Mount Type
1363	1363	1364	1365	1365	1365	1366	1366	1367

Addition



-Height Adjusting Blocks-	-Seating Sensor Holes-	-For Grippers-	Plate Centering Pins	Feed Pins -Straight / With Shoulder-	Height Adjusting Pins -Male Thread-	-Press-Fit / Counterbore-	-Female Thread-
1367	1367	1368	1368	1369-1370	1371-1372	1373	1374



-Small Head-	Height Adjusting Pins / Height Adjusting Caps	Holders for Locating Pins	Support Pins -Stepped / Configurable Stepped-	-Flat / Tip Set Screw-	-Tip Shape Selectable-	Hexagonal Support Pins -Stepped-
1375	1375	1376	1377-1378	1379	1380	1381



-Flat-	Locating Pins for Jigs -Precision with Shoulder-	-Tip Shape Selectable - Precision with Shoulder-	-Precision No Shoulder-	-Tip Shape Selectable - Precision No Shoulder-	-Configurable with Shoulder-	-Configurable No Shoulder-
1382	1383	1384	1385	1386	1387	1388



-Standard with Shoulder-	-Tip Shape Selectable - Standard with Shoulder-	-Standard No Shoulder-	-Tip Shape Selectable - Standard No Shoulder-	-Standard Short Set Screw-	-Standard Long Head-
1389	1390	1391	1392	1393-1394	1395



-Screw Mounted-	-Shading Arc-	-Bullet Nose-	-Diamond Shape-	-Oval-	Alumina Coated Pins
1396	1397	1398	1399	1400	1401

Addition

Addition



Price Reduction Up to 52%

Price Reduction Up to 52%

Detecting Pins	Pedestal Pins	Height Adjusting Pins for Jigs	Height Adjusting Washers	Locating Pin Holders for Jigs	Bushings for Locating Pins -Straight-	-Flanged-
1402	1403	1403	1404	1404	1405-1406	1407-1408

Addition

NEW

NEW

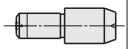
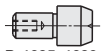
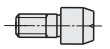
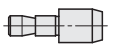
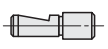
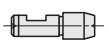
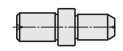
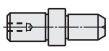
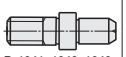
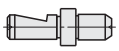
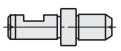
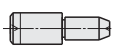
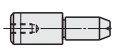
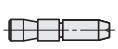
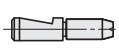
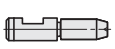
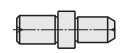
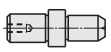
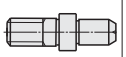
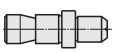
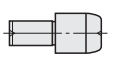
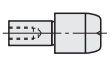
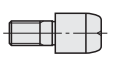
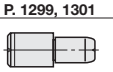
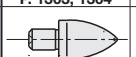
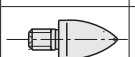
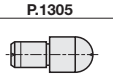
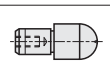
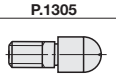
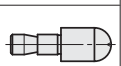
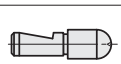
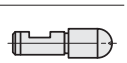
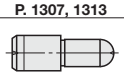
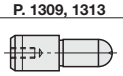
NEW



-Retaining-	-Retaining Notched-	-Oval-	-Copper Alloy Straight-	-Copper Alloy with Flange-	-Straight / Flange / Ceramic-	-Flanged-	-Economy Type-
1409	1409	1410	1411	1411	1412	1413-1414	1414

Locating Pins Selection Table

■Locating Pin Types I -Standard Shape-

Insertion Guide (Tip) Classification				How to Mount						
Shape		Shoulder	Type	Press Fit	Screws			Set Screws		
				Standard	Female Thread	Male Thread	Screw Mounted	Circumference Groove	Notch	Set Screw Flat
Tapered	Large Head	Not Provided	Round	 P.1283, 1289	 P. 1285, 1289	 P. 1287, 1289	 P.1292	 P.1298	 P.1298	 P.1298
			Diamond							
		Provided	Round	 P. 1339, 1342, 1343	 P. 1340, 1342, 1343	 P. 1341, 1342, 1343	-	-	 P.1345	 P.1345
			Diamond							
	Small Head	Not Provided	Round	 P. 1293, 1297	 P. 1295, 1297	-	-	 P.1298	 P.1298	 P.1298
			Diamond							
		Provided	Round	 P. 1339, 1342, 1343	 P. 1340, 1342, 1343	 P. 1341, 1342, 1343	-	 P.1345	 P.1345	 P.1345
			Diamond							
	Straight	Not Provided	Round	 P.1347	 P.1347	-	-	-	-	-
Round Tapered	Large Head	Not Provided	Round	 P. 1299, 1301	 P. 1299, 1301	 P. 1299, 1301	-	-	-	-
	Small Head	Not Provided	Round	 P. 1303, 1304	 P. 1303, 1304	-	-	-	-	-
Cannon Ball	Large Head	Not Provided	Round	 P.1305	-	 P.1305	-	-	-	-
Sphere	Large Head	Not Provided	Round	 P. 1307, 1313	 P. 1309, 1313	 P. 1311, 1313	-	 P.1320	 P.1320	 P.1320
			Diamond							
	Small Head	Not Provided	Round	 P. 1315, 1319	 P. 1317, 1319	-	-	P.1320	P.1320	P.1320
			Diamond							
	Straight	Not Provided	Round	P.1348	P.1348	-	-	-	-	-
Flat	Large Head	Not Provided	Round	P. 1321, 1327	P. 1323, 1327	P. 1325, 1327	-	-	-	-
			Round (Side Locating)	P.1328	P.1328	P.1328	-	-	-	-
	Small Head	Not Provided	Round	P. 1329, 1333	P. 1331, 1333	-	-	-	-	-
Tip Shape Selection	Large Head	Not Provided	Round	Tip Shape Selection P.1335	Tip Shape Selection P.1336	Tip Shape Selection P. 1337, 1338	-	-	-	-
			Diamond							
		Provided	Round	Tip Shape Selection P.1346	Tip Shape Selection P.1346	Tip Shape Selection P.1346	-	-	-	-
			Diamond							

■Locating Pin Types II -Other Shapes / Materials-

Product Name	Feature	Page
Small Diameter Locating Pins	Locating Pins with Ø4 or less diameter suitable for small works.	P.1352~P.1356
Locating Pins for Height Adjusting	Locating Pins with short head for thin PC boards.	P.1351
Nonmagnetic Locating Pins	Nonmagnetic Aluminum locating pins suitable for environments where magnetism must be avoided.	P.1357
Plastic Locating Pins	Plastic Locating Pins prevent work damages.	P.1358~P.1361
Height Adjusting Pins	Locating Pins suitable for locating in vertical direction.	P.1371~P.1375
Support Pins	Pins for use in higher position to avoid interferences.	P.1377~P.1382

■Notes on strength of under-head part of Female Thread Locating Pins

List of Female Thread Pilot Hole

Thread Diameter	M2	M2.6	M3	M4	M5	M6	M8	M10
Pilot Hole Diameter d	1.8	2.3	2.6	3.4	4.3	5.1	6.9	8.6
Pilot Hole Depth U	8	8.5	9.5	12	14.5	17	21	24

(T)Pilot hole depth is for reference.

Strength of neck under part will be decreased when the length of locating pin mounting shank is shorter than pilot hole depth U.

■Characteristics of Material ISO TC90 for Small Diameter Locating Pins

Carbon tool steels specified in JIS G 4401

<Testing Method>

Place the sample on V blocks arranged in 60mm interval, then push vertically with a load gage.

<Sample>

Ø2.0mm, ISO TC90mm
Material: (1) ISO TC90 + Hardening
(2) JIS SWRH62A ~C43 + Hardening

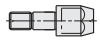
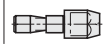
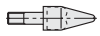
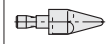
<Testing Results>

Materials	Load (kg) at Deflection 5mm	Detection of Damage	Damaging Load (kg)	Deflection (mm) at Damage
(1) ISO TC90 + Hardening	13.4	Not Provided	-	-
(2) JIS SWRH62A ~C43 + Hardening	12.8	Provided	19	14.9

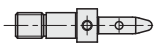
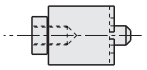
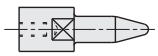
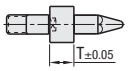
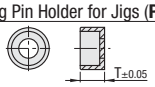
(T)Above values are for reference only, not guaranteed.

Locating Pins for Jigs Selection Table

■Types of Locating Pins for Jigs I

Insertion Guide (Tip) Classifications				How to Mount							
				Male Thread		Female Thread		Circumference Groove		Notch	
Standard / Special	Shape	Tip Shape	Accuracy	Shouldered	No Flange	Shouldered	No Flange	Shouldered	No Flange	Shouldered	No Flange
Standard	Round / Diamond	Standard (Taper R)	Precision Grade / Standard Grade	 (Precision Grade) (Standard Grade) P.1383 P.1389 P.1387 P.1395	 (Precision Grade) (Standard Grade) P.1385 P.1391 P.1388 P.1395	 (Standard Grade) P.1396	 (Standard Grade) P.1396	 (Precision Grade) (Standard Grade) P.1383 P.1389 P.1387 P.1393	 (Precision Grade) (Standard Grade) P.1385 P.1391 P.1388 P.1393 P.1393	-	-
		Tip Shape Selection	Precision Grade / Standard Grade	 (Precision Grade) (Standard Grade) P.1384 P.1390	 (Precision Grade) (Standard Grade) P.1386 P.1392	-	-	 (Precision Grade) (Standard Grade) P.1384 P.1394 P.1390	 (Precision Grade) (Standard Grade) P.1386 P.1394 P.1392	 (Standard Grade) P.1394	 (Standard Grade) P.1394
Special	Round / Diamond Shading Arc	Tip Shape Selection	Standard Grade	 P.1397	 P.1397	-	-	 P.1397	 P.1397	-	-
	Round / Diamond Cannon Ball	Standard (Taper R)	Standard Grade	 P.1398	 P.1398	 P.1398	 P.1398	 P.1398	 P.1398	-	-
	Diamond Shape	Tip Shape Selection	Standard Grade	 P.1399	 P.1399	-	-	 P.1399	 P.1399	-	-
	Oval	Tip Shape Selection	Precision Grade / Standard Grade	 P.1400	 P.1400	-	-	 P.1400	 P.1400	-	-

■Types of Locating Pins for JigsII -Other Shapes / Surface Treatment-

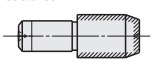
Shape Product Name	Features	Shape Product Name	Features
 Detecting Pins (Sensor Embedded) (**P.1402**)	Pins with embedded sensors for detection of nut and positioning of work.	 Pedestal Pins (**P.1403**)	The pocket is to collect dust (spatter etc.) generated during welding. Best as locating pins for arc welding processes. Often used in automotive muffler welding applications.
 Detecting Pins (For Work Detecting Unit) (**P.1402**)	Pin diameter smaller than that of pilot hole on bottom of work and larger than that of inner diameter of nut enables detection of nuts.	 Locating Pin Holder for Jigs (**P.1404**)	Can be combined with a cylinder for applications where insertion and extraction of work is difficult. Two types that are with or without pins are available.
 Height Adjusting Pins (**P.1403**)	Flange thickness tolerance as good as ± 0.05 enables positioning both horizontal and height.	 Height Adjusting Washers (**P.1404**)	By using in combination with locating pins for jigs, vertical positioning is enabled. * Shoulder Thickness Tolerance ±0.05

■TiCN Treatment

TiCN treatment is a type of coating based on PVD method (physical vapor deposition).
TiCN coating excels in high hardness and wear resistance.
In addition, as it is processed in high vacuum with original temperature 500ºC or lower, when re-hardening temperature is over 500ºC, the hardness of basic material decreases, or thermal deformation and partial coating may occur.
MISUMI conducts consistent process flow from manufacture to coating and guarantees the dimensios and accuracies after coating.

■Features of TiCN Treatment

1. Wear Resistance
The surface hardness of TiCN coating is 3000HV and excellent in wear resistance.
2. Small Friction Coefficient
Friction coefficient of TiCN is small about 0.4μ and excellent in sliding property.



Dicoat® and TiCN Treatment are applied only on the head surface.
Strength class of TiCN coated threads is 8.8. Refer to **P.1959** for tightening torque.

■Dicoat® Treatment

This treatment provides a high surface hardness of 3200 to 3800HV using the vanadium carbide (VC) layer produced by the TD process.
TD Process Treatment and Sales, licensed at Toyota Central Research Institute, enables MISUMI a consistent process flow from manufacture of locating pin to TD process treatment, thus guaranteeing the precision of dimension.
Developed by Toyota Central Research Institute, a general research institution of the Toyota Group, the TD process is a "diffusion surface hardening method" that makes a specific element (carbide) diffusely penetrate metal to form a highly wear-resistant layer on the metal surface. Since put to practical use in 1970 by the Toyota Group, it has been widely used in surface press dies, die casting molds, cutting tools, jigs and machine parts.

■Features and Effects of Dicoat®

1. Wear Resistance
The vanadium carbide layer of 4 to 70m thick provides a surface hardness as high as 3200 to 3800HV and exhibits excellent wear resistance to almost all kinds of materials.
2. Toughness
Covering with vanadium carbide does not affect the toughness of the base material. Tempered at high temperature, the base material is so tough that it is not easily broken.

■Cautions for Use of Dicoat® Treated Products

Hardness of Dicoat® treated locating pins is high for its full portion, due to the nature of the treatment process. Compared to non-coated products, these are vulnerable to shock and may be broken if not tightened in a proper manner. Please take special care.

Do not tighten in a manner that applies abrupt shock to the product, such as tightening with an impact wrench or hammering the wrench during tightening.

Recommended Torque Chart

M	Torque (N/m)
6	7.8
8	19.1
10 (10T)	37.8
12	66.1
16	163.7

Add. Spec. Locating Pins Large Head Tapered
-Standard-

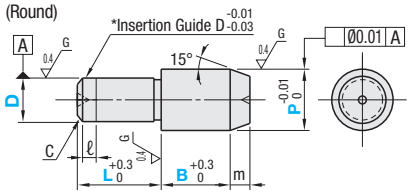
Tapping alteration (NTK) is now available.



Materials No.	Material	Surface Treatment	Hardness	P Dimension Selectable Type	P Dimension Selectable D Tolerance / Shape	P Dimension Configurable Type	P Dimension Configurable D Tolerance / Shape	P, L and B Dimension Configurable Type	P, L and B Dimension Configurable D Tolerance / Shape
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JP	<Round> BB(m6) BPB(p6)	JP	<Round> BA(m6) BPA(p6)	FP	<Round> BA(m6) BPA(p6) BG(g6)
(2)	1.2510/100MnCrW4	Hard Chrome Plating, Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GJP		GJP		GFP	
(3)	1.2510/100MnCrW4	-	-	BJP		BJP		BFP	
(4)	1.4301/X5CrNi18-10	-	-	SJP	<Diamond> DB(m6) DPB(p6)	SJP	<Diamond> BD(m6) BPD(p6)	SFP	<Diamond> BD(m6) BPD(p6) DG(g6)
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating, Plating Thickness 3µm or More	Plating Hardness 750HV~	HJP		HJP		HFP	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJP		CJP		CFP	

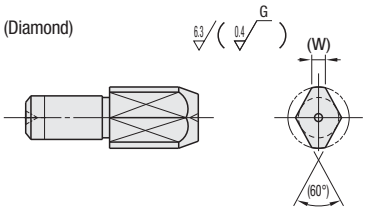
Refer to the price list to select the available combination.

(Round)



*Insertion Guide is applicable to tolerance p6 Type only.

(Diamond)



1.4125/X105CrMo17 has an identification groove on D part.

P Dimension Selectable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P Selection	L	B	C	m	ℓ	(W)
JP GJP BJP SJP HJP CJP	<Round> BB(m6) BPB(p6)	1	+0.008 +0.002	+0.012 +0.006	2	3	3	0.1	0.5	0	-
		2			3 4	4		0.5	1		1.2
		3			4 5 6	5	5		2	1	1.5
		4	+0.012 +0.004	+0.020 +0.012	5 6		6	1	3		1.8
		5			6 8	10					2.2
		6			8 10		8				3
	<Diamond> DB(m6) DPB(p6) Applicable when D≥2	8	+0.015 +0.006	+0.024 +0.015	10 12 13	15		1.5	4		3.5
		10			12 13 15		10	2			4
		12	+0.018 +0.007	+0.029 +0.018	13 15 16						5
		13			15 16	22				2	5.5
		16			20 25			3	5		7
		20	+0.021 +0.008	+0.035 +0.022	25 30	30	15				9

P Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L	B	C	m	ℓ	(W)
JP GJP BJP SJP HJP CJP	<Round> BA(m6) BPA(p6)	1	+0.008 +0.002	+0.012 +0.006	1.20~2.50	3	3	0.1	0.5	0	-
		2			2.50~4.00	4		0.5	1		1.2
		3			3.50~6.00	5	5		2	1	1.5
		4	+0.012 +0.004	+0.020 +0.012	4.50~7.00		6	1	3		1.8
		5			5.50~8.00	10					2.2
		6			6.50~10.00		8				3
	<Diamond> BD(m6) BPD(p6) Applicable when D≥2	8	+0.015 +0.006	+0.024 +0.015	9.00~13.00	15		1.5	4		3.5
		10			11.00~15.00		10	2			4
		12	+0.018 +0.007	+0.029 +0.018	13.00~16.00						5
		13			14.00~18.00	22				2	5.5
		16			17.00~25.00			3	5		7
		20	+0.021 +0.008	+0.035 +0.022	22.00~30.00	30	15				9

P, L and B Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	m	ℓ	(W)
FP GFP BFP SFP HFP CFP	<Round> BA(m6) BPA(p6) BG(g6)	1	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	1.20(1.50) ~ 2.50	2, 3	1.0~5.0	0.1	0.5	0	0.6
		2				2.50~4.00	2~6	1.0~10.0	0.5	1		1.2
		3				3.50~6.00	3~6	1.0~10.0		2	1	1.5
		4	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	4.50~7.00	4~8	1.0~10.0	1	3		1.8
		5				5.50~8.00	5~10	1.0~10.0				2.2
		6				6.50~10.00	6~12	1.0~12.0				3
	<Diamond> BD(m6) BPD(p6) DG(g6)	8	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	9.00~13.00	8~16	1.0~15.0	1.5	4		3.5
		10				11.00~15.00	10~20	3.0~20.0	2			4
		12	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	13.00~16.00	12~24	3.0~20.0				5
		13				14.00~18.00	13~26	5.0~20.0				5.5
		16				17.00~25.00	16~32	5.0~20.0			2	7
		20	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	22.00~30.00	20~40	5.0~20.0	3	5		9

P dimension in ( ) is applicable to diamond shape.

Order Example

Part Number Type	D Tolerance Shape	D	-	P	-	L	-	B
JP	BB	6	-	10				
JP	BD	8	-	11.98				
FP	BA	10	-	P12.02	-	L10	-	B3.2
FP	BD	12	-	P13.97	-	L12	-	B5

Days to Ship

- P Dimension Selectable, Material No. (1) (4) (6)

6 Days P.87

- P Dimension Selectable, Material No. (2) (3) (5) / P Dimension Configurable, Material No. (1) ~ (6) / P, L and B Dimension Configurable, Material No. (1) ~ (6)

8 Days | Express A | 5,00 EUR / piece P.88

5 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Service is not available for Material No.

(2) Hard 1.2510/100MnCr and Material No. (5) Hard 1.4301/X5CrNi18-10

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~4	5~19	20~49	50~99
Rate	€ Unit Price	5%	10%	15%

Please request a quotation for 20 or more pieces of diamond shape D=1.
Please request a quotation for 50 or more pieces of in-stock items.

P Dimension Selectable

D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510 Hardening JPBB JPBPB	(2) Hard 1.2510 GJPBB GJPBPB	(3) 1.2510 BJPBB BJPBPB	(4) 1.4301 SJPBB SJPBPB	(5) 1.4301 Hard HJPBB HJPBPB	(6) 1.4125 CJPBB CJPBPB	(1) 1.2510 Hardening JPDB JPDPB	(2) Hard 1.2510 GJPDB GJPDPB	(3) 1.2510 BJPDB BJPDPB	(4) 1.4301 SJPDB SJPDPB	(5) 1.4301 HJPDB HJPDPB	(6) 1.4125 CJPDB CJPDPB
1												
2												
3												
4												
5												
6												
8												
10												
12												
13												
16												
20												

P Dimension Configurable

D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510 Hardening JPBA JPBPA	(2) Hard 1.2510 GJPBA GJPBPA	(3) 1.2510 BJPBA BJPBPA	(4) 1.4301 SJPBA SJPBPA	(5) 1.4301 Hard HJPBA HJPBPA	(6) 1.4125 CJPBA CJPBPA	(1) 1.2510Hardening JPBD JPBPD	(2) Hard 1.2510 GJPBD GJPBPD	(3) 1.2510 BJPBD BJPBPD	(4) 1.4301 SJPBD SJPBPD	(5) 1.4301 HJPBD HJPBPD	(6) 1.4125 CJPBD CJPBPD
1												
2												
3												
4												
5												
6												
8												
10												
12												
13												
16												
20												

P, L and B Dimension Configurable

D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510 Hardening FPBA FPBPA FPBG	(2) Hard 1.2510 GFPBA GFPBPA GFPBG	(3) 1.2510 BFPBA BFPBPA BFPBG	(4) 1.4301 SFPBA SFPBPA SFPBG	(5) 1.4301 Hard HFPBA HFPBPA HFPBG	(6) 1.4125 CFPBA CFPBPA CFPBG	(1) 1.2510 Hardening FPBD FPBPD FPDG	(2) Hard 1.2510 GFPBD GFPBPD GFPDG	(3) 1.2510 BFPBD BFPBPD BFPDG	(4) 1.4301 SFPBD SFPBPD SFPDG	(5) 1.4301 Hard HFPBD HFPBPD HFPDG	(6) 1.4125 CFPBD CFPBPD CFPDG
1												
2												
3												
4												
5												
6												
8												
10												
12												
13												
16												
20												

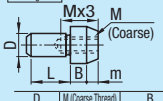
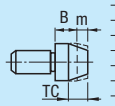
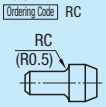
Alterations

Part Number - P - L - B - (MH / NTK / TC / RC)
FPBPA10 - P11.01 - L12 - B6.4 - TC6

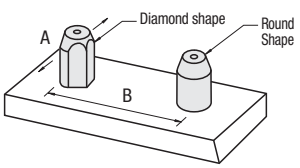
10 Days

Example

⊗P Dimension Standard is not available for alteration.

Alterations	Tapping	Tapping	Length of Tapered Point	Under neck radius alteration
Code	MH	NTK	TC	RC
Spec.	Adds tapped hole. Ordering Code MH  Applicable when D≥6 B≥ℓ2+4 D: 6 / 8~13 / 16, 20 MH (Coarse): M3 / M4 / M6 ℓ2: 4 / 6 / 9 ⊗Combination with NTK is not available.	Adds a tapped hole. Ordering Code NTK  D: 6 / 8 / 10, 12 / 13~20 M (Coarse Thread): 3 / 4 / 5 / 8 B: 1.0~4.5 / 1.0~5.9 / 3.0~8.6 / 5.0~15.2 P, L and B Dimension Configurable Applicable to D≥6 only. ⊗Combination with MH and TC is not available. Effective tap length of D depends on B dimension specifiable range. When L+B+m≤Mx3, the tapped holes go through. When L+B+m≤Mx5, the pilot holes for tapping may go through.	Changes the m dimension. Ordering Code TC8 (1mm Increment)  D: 1 / 2 / 3 / 4 / 5 / 6 / 8 / 10 / 12 / 13 / 16 / 20 TC: 1~2 / 2~5 / 3~9 / 4~11 / 4~11 / 4~13 / 5~16 / 5~22 / 5~22 / 5~22 / 6~23 / 6~23 B+m≥TC+2 (Straight Part min. 2mm) Applicable when P≥2.00. P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) B Dimension changes when TC is specified. (Changed B dimension = B+m-TC) ⊗Combination with NTK is not available.	Changes the relief to R0.5. Ordering Code RC  Applicable when P-D ≥2.
Price Adder	3,00	3,00	3,00	3,00

The combination of Round and Diamond Shape enables to locate accurately in A direction, and of mounting hole pitch errors in B direction.



Locating Pins Large Head Tapered
-Female Thread Shank-

Add. Spec.

D=5 is now available for Configurable Type.

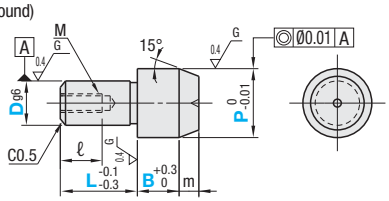
RoHS



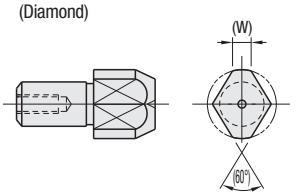
Mat. No.	M Material	S Surface Treatment	H Hardness	P Dimension Selectable Type	P Dimension Selectable Shape Code	P Dimension Configurable Type	P Dimension Configurable Shape Code	P, L and B Dimension Configurable Type	P, L and B Dimension Configurable Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JP	BTB(Round) DTB(Diamond)	JP	BTA(Round) BTD(Diamond)	FP	BTA(Round) BTD(Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GJP		GJP		GFP	
(3)	1.2510/100MnCrW4	-	-	-		BJP		-	
(4)	1.4301/X5CrNi18-10	-	-	SJP		SJP		SFP	
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV ~	HJP		-		HFP	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJP		CJP		CFP	

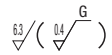
Refer to the price list to select the available combination.

(Round)



(Diamond)





1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number Type	Part Number Shape	Part Number D	D Dimension Tolerance g6	P	L	B	m	(W)	M Coarse	ℓ
JP GJP SJP HJP CJP	BTB(Round) DTB(Diamond)	6	-0.004 -0.012	8 10	10	8	3	3	M3	5
		6T		8 10					M2.6	4
		8	-0.005 -0.014	10 12 13	15		4	3.5	M5	8
		8T		10 12 13					M4	6
		10		12 13 15		10		4	M5	8
		12	-0.006 -0.017	13 15 16				5		
		13		15 16	22			5.5	M8	12
		16		20 25			5	7		
		20	-0.007 -0.020	25 30	30	15		9		

■P Dimension Configurable

Part Number Type	Part Number Shape	Part Number D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	m	(W)	M Coarse	ℓ
JP GJP BJP SJP CJP	BTA(Round) BTD(Diamond)	5	-0.004 -0.012	5.50~8.00	10	6	3	2.2	M2	3
		6		6.50~10.00		8		3	M3	5
		6T		6.50~10.00					M2.6	4
		8	-0.005 -0.014	9.00~13.00	15		4	3.5	M5	8
		8T		9.00~13.00					M4	6
		10		11.00~15.00		10		4	M5	8
		12	-0.006 -0.017	13.00~16.00				5		
		13		14.00~18.00	22			5.5	M8	12
		16		17.00~25.00			5	7		
		20	-0.007 -0.020	22.00~30.00	30	15		9		

■P, L and B Dimension Configurable

Part Number Type	Part Number Shape	Part Number D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	m	(W)	M Coarse	ℓ
FP GFP SFP HFP CFP	BTA(Round) BTD(Diamond)	5	-0.004 -0.012	5.50~8.00	5 (9) ~ 10	2.0~12.0	3	2.2	M2	3
		6		6.50~10.00	6 (9) ~ 12			3	M3	5
		6T							M2.6	4
		8	-0.005 -0.014	9.00~13.00	8 (12) ~ 16	2.0~15.0	4	3.5	M5	8
		8T			6 (12) ~ 16				M4	6
		10		11.00~15.00	10 (12) ~ 20	3.0~20.0		4	M5	8
		10T			6 (12) ~ 16				M4	6
		12	-0.006 -0.017	13.00~16.00	12 ~24	3.0~20.0		5	M5	8
		12T			8 (12) ~ 18				M4	6
		13		14.00~18.00	13 (14) ~ 26	5.0~20.0		5.5	M8	10
		13T			8 (14) ~ 20				M6	9
		16		17.00~25.00	16 ~32	5.0~20.0	5	7	M8	12
		16T			10 (14) ~ 24				M6	9
		20	-0.007 -0.020	22.00~30.00	20 ~40	5.0~20.0		9	M8	12
		20T			12 (18) ~ 30				M6	9

Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
L dimension in ( ) is applicable to diamond shape. Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281.Holes may go through.

Order Example

Part Number Type	Shape	D		P		L		B
JP	BTB	6	-	8				
JP	BTA	10	-	12.10				
FP	BTA	10	-	P11.01	-	L12	-	B6.4

Days to Ship

P Dimension Selectable Material No. (1) (4) (6)

6 Days P.87

- P Dimension Selectable, Material No. (2) (5) / P Dimension Configurable, Material No. (1) ~ (6) / P, L and B Dimension Configurable, Material No. (1) ~ (6)

8 Days — Express A — 5,00 EUR / piece P.88

5 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (5) Hard .

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.

P Dimension Selectable

D	€ Unit Price Round Shape					€ Unit Price Diamond Shape				
	(1) 1.2510 Hardening JPBTB	(2) Hard 1.2510 GJPBTB	(4) 1.4301 SJPBTB	(5) 1.4301 Hard HJPBTB	(6) 1.4125 CJPBTB	(1) 1.2510 Hardening JPDTB	(2) Hard 1.2510 GJPDTB	(4) 1.4301 SJPDTB	(5) 1.4301 Hard HJPDTB	(6) 1.4125 CJPDTB
6										
6T										
8										
8T										
10										
12										
13										
16										
20										

P Dimension Configurable

D	€ Unit Price Round Shape					€ Unit Price Diamond Shape				
	(1) 1.2510 Hardening JPBTA	(2) Hard 1.2510 GJPBTA	(3) 1.2510 BJPBTA	(4) 1.4301 SJPBTA	(6) 1.4125 CJPBTA	(1) 1.2510 Hardening JPBTD	(2) Hard 1.2510 GJPBTD	(3) 1.2510 BJPBTD	(4) 1.4301 SJPBTD	(6) 1.4125 CJPBTD
5										
6										
6T										
8										
8T										
10										
12										
13										
16										
20										

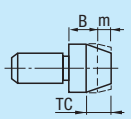
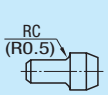
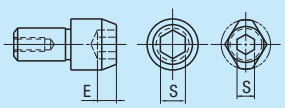
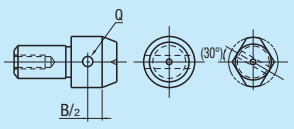
P, L and B Dimension Configurable

D	€ Unit Price Round Shape					€ Unit Price Diamond Shape				
	(1) 1.2510 Hardening FPBTA	(2) Hard 1.2510 GFPBTA	(4) 1.4301 SFPBTA	(5) 1.4301 HFPBTA	(6) 1.4125 CFPBTA	(1) 1.2510 Hardening FPBTD	(2) Hard 1.2510 GFPBTD	(4) 1.4301 SFPBTD	(5) 1.4301 HFPBTD	(6) 1.4125/ CFPBTD
5										
6										
6T										
8										
8T										
10										
10T										
12										
12T										
13										
13T										
16										
16T										
20										
20T										

Alterations

Part Number - P - L - B - (TC / RC / RAC / LAC)
FPBTA10 - P11.01 - L12 - B6.4 - TC6

10 Days

Alterations	Length of Tapered Point	Under neck radius alteration	Hexagon Socket	Wrench Hole
				
Code	**TC**	**RC**	**RAC**	**LAC**
Spec.	Changes the m dimension. Ordering Code TC8 (1mm Increment) D / TC: 5 / 4~13; 6 / 4~13; 8 / 5~16; 10 / 5~22; 12 / 5~22; 13 / 5~22; 16 / 6~23; 20 / 6~23 B+m≥TC+2 (Straight Part min.2mm) P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) B Dimension changes when TC is specified. (Changed B dimension = B+m-TC) ⊗Not applicable for P Dimension Selectable Type. ⊗Combination with RAC and LAC is not available.	Changes the relief to R0.5. Ordering Code RC Applicable when P-D≥2. ⊗Not applicable for P Dimension Selectable Type. ⊗Combination with RAC and LAC is not available.	Machines hexagonal socket. Ordering Code RAC D / Applicable Dimension P / L / B / Hexagonal Hole Dimension E / S: 5 / 6.00~ / 8~ / 6.0~ / 2 / 2 6 6T / 6.50 (8.00) ~ / 10~ / 6.0~ / 2 / 3 8 8T / 9.00 (10.00) ~ / 10~ / 10.0~ / 2.5 / 4 10 10T / 11.00 (12.00) ~ / 12~ / 10.0~ / 3 / 5 12 12T / 13.00~ / 12~ / 12.0~ / 4 / 6 13 13T / 14.00~ / 15~ / 15.0~ / 4 / 6 16 16T / 17.00~ / 16~ / 15.0~ / 5 / 8 20 20T / 22.00~ / 20~ / 15.0~ / 5 / 8 P dimension in ( ) is applicable to diamond shape. Applicable to P, L and B Dimension Configurable only. ⊗Combination with TC, RC and LAC is not available.	Machines wrench hole. Ordering Code LAC D / Applicable Dimension B: 5 / 6 6T / 8 8T / 10 10T / 12 12T = 5.0~ 13 13T / 16 16T / 20 20T = 10.0~ Wrench Hole Dimension P / Q: 5.50~9.99 / 2 10.00~16.99 / 3.5 17.00~ / 5 Orientation between diamond shape head and wrench hole is arbitrary. ⊗Combination with TC, RC and RAC is not available.
Price Adder	3,00	3,00	6,00	3,00

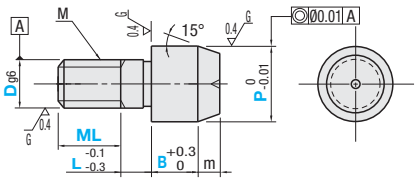
Locating Pins Large Head Tapered
-Male Thread-



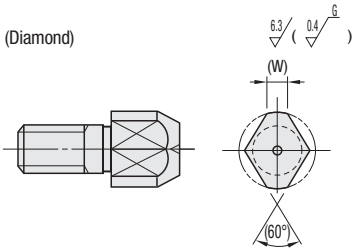
Materials No.	Material	Surface Treatment	Hardness	P Dimension Selectable		P Dimension Configurable		P, L and B Dimension Configurable		P, L, B and ML Dimension Configurable	
				Type	Shape Code	Type	Shape Code	Type	Shape Code	Type	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPN	BB (Round)	JPN	A (Round) D (Diamond)	FPN	A (Round) D (Diamond)	FPNL	A (Round) D (Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	-		GJPN		GFPN		GFPNL	
(3)	1.2510/100MnCrW4	-	-	-		-		BFPN		-	
(4)	1.4301/X5CrNi18-10	-	-	SJPN		SJPN		SFPN		SFPNL	
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV ~	-		HJPN		HFPN		-	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPN		CJPN		CFPN		CFPNL	

Refer to the price list to select the available combination.

(Round)



(Diamond)



1.4125/X105CrMo17 has an identification groove on D part.

When L< Pitchx2, the incomplete threaded portion (Pitchx2) is included in ML. Pitch. Coarse Thread Pitch Diameter P.1954

■P Dimension Selectable

Part Number Type	Shape	D	D Dimension Tolerance g6	P Selection	L	B	ML	M (Coarse)	m	(W)
JPN SJPN CJPN	BB (Round)	3	-0.002 -0.008	3.5 4 4.5 5 6	2	5	4.5	3	2	1.5
		4	-0.004 -0.012	4.5 5 6 7		6	6	4	3	1.8
		5		6 7 8	3		7.5	5		2.2
		6		7 8 9 10		8	9	6		3
		8	-0.005 -0.014	9 10 11 12 13	5		12	8	4	3.5
		10		11 12 13		10	15	10		4

■P Dimension Configurable

Part Number Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	ML	M (Coarse)	m	(W)
JPN GJPN SJPN HJPN CJPN	A (Round) D (Diamond)	3	-0.002 -0.008	3.50~6.00	2	5	4.5	3	2	1.5
		4	-0.004 -0.012	4.50~7.00		6	6	4	3	1.8
		5		5.50~8.00	3		7.5	5		2.2
		6		6.50~10.00		8	9	6		3
		8	-0.005 -0.014	9.00~13.00	5		12	8	4	3.5
		10		11.00~15.00		10	15	10		4
		12	-0.006 -0.017	13.00~18.00	8		18	12		5
		16		17.00~25.00			24	16	5	7
		20	-0.007 -0.020	22.00~30.00	10	15	30	20		9

■P, L and B Dimension Configurable

Part Number Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	ML	M (Coarse)	m	(W)
FPN GFPN BFPN SFPN HFPN CFPN	A (Round) D (Diamond)	3	-0.002 -0.008	3.50~6.00	2~6	1.0~10.0	4.5	3	2	1.5
		4	-0.004 -0.012	4.50~7.00	2~8	1.0~10.0	6	4	3	1.8
		5		5.50~8.00	3~10	1.0~10.0	7.5	5		2.2
		6		6.50~10.00	3~10	1.0~12.0	9	6		3
		8	-0.005 -0.014	9.00~13.00	5~10	1.0~15.0	12	8	4	3.5
		10		11.00~15.00	5~15	3.0~20.0	15	10		4
		12	-0.006 -0.017	13.00~18.00	8~15	3.0~20.0	18	12		5
		16		17.00~25.00	8~20	5.0~20.0	24	16	5	7
		20	-0.007 -0.020	22.00~30.00	10~20	5.0~20.0	30	20		9

■P, L, B and ML Dimension Configurable Thread length (ML) is configurable between Mx1 and Mx3 (max.).

Part Number Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	ML 1mm Increment	M (Coarse)	m	(W)
FPNL GFPNL SFPNL CFPNL	A (Round) D (Diamond)	3	-0.002 -0.008	3.50~6.00	2~6	1.0~10.0	3~9	3	2	1.5
		4	-0.004 -0.012	4.50~7.00	2~8	1.0~10.0	4~12	4	3	1.8
		5		5.50~8.00	3~10	1.0~10.0	5~15	5		2.2
		6		6.50~10.00	3~10	1.0~12.0	6~18	6		3
		8	-0.005 -0.014	9.00~13.00	5~10	1.0~15.0	8~24	8	4	3.5
		10		11.00~15.00	5~15	3.0~20.0	10~30	10		4
		12	-0.006 -0.017	13.00~18.00	8~15	3.0~20.0	12~30	12	5	5
		16		17.00~25.00	8~20	5.0~20.0	16~40	16		7
		20	-0.007 -0.020	22.00~30.00	10~20	5.0~20.0	20~40	20		9

Order Example

Part Number											
Type	Shape	D	-	P	-	L	-	B	-	ML	
JPN	A	3	-	5.20							
FPN	A	5	-	P6.00	-	L5	-	B4.0			
FPNL	A	8	-	P9.51	-	L8	-	B4.0	-	ML8	

Days to Ship

P Dimension Selectable

6 Days P.87

- P Dimension Configurable / P, L and B Dimension Configurable

8 Days | Express A | 5,00 EUR / piece P.88

Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗ Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (5) Hard 1.4301/X5CrNi18-10.

■P Dimension Selectable

D	€ Unit Price Round Shape		
	(1) 1.2510/100MnCrW4 Hardening JPNBB	(4) 1.4301/ X5CrNi18-10 SJPNBB	(6) 1.4125/ X105CrMo17 CJPNBB
3			
4			
5			
6			
8			
10			

Price

■Volume Discount (Ⓟ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.
Ⓟ Please request a quotation for 50 or more pieces of in-stock items.

■P Dimension Configurable

D	€ Unit Price										
	Round Shape					Diamond shape					
	(1) 1.2510/100MnCrW4 Hardening JPNA	(2) Hard 1.2510/100MnCrW4 GJPNA	(4) 1.4301/ X5CrNi18-10 SJPNA	(5) 1.4301/ X5CrNi18-10 Hard HJPNA	(6) 1.4125/ X105CrMo17 CJPNA	(1) 1.2510/100MnCrW4 Hardening JPND	(2) Hard 1.2510/100MnCrW4 GJPND	(4) 1.4301/ X5CrNi18-10 SJPND	(5) 1.4301/ X5CrNi18-10 Hard HJPND	(6) 1.4125/ X105CrMo17 CJPND
3										
4										
5										
6										
8										
10										
12										
16										
20										

■P, L and B Dimension Configurable

D	€ Unit Price											
	Round Shape						Diamond shape					
	(1) 1.2510/100MnCrW4 Hardening FPNA	(2) Hard 1.2510/100MnCrW4 GFPNA	(3) 1.2510/ 100MnCrW4 BFPNA	(4) 1.4301/ X5CrNi18-10 SFPNA	(5) 1.4301/ X5CrNi18-10 Hard HFPNA	(6) 1.4125/ X105CrMo17 CFPNA	(1) 1.2510/100MnCrW4 Hardening FPND	(2) Hard 1.2510/100MnCrW4 GFPND	(3) 1.2510/ 100MnCrW4 BFPND	(4) 1.4301/ X5CrNi18-10 SFPND	(5) 1.4301/ X5CrNi18-10 Hard HFPND	(6) 1.4125/ X105CrMo17 CFPND
3												
4												
5												
6												
8												
10												
12												
16												
20												

■P, L, B and ML Dimension Configurable (Unit price in table is when Mx1≤ML<Mx1.5. Refer to the table below for price calculation.)

D	€ Unit Price							
	Round Shape				Diamond shape			
	(1) 1.2510/100MnCrW4 Hardening FPNLA	(2) Hard 1.2510/100MnCrW4 GFPNLA	(4) 1.4301/ X5CrNi18-10 SFPNLA	(6) 1.4125/ X105CrMo17 CFPNLA	(1) 1.2510/100MnCrW4 Hardening FPNLD	(2) Hard 1.2510/100MnCrW4 GFPNLD	(4) 1.4301/ X5CrNi18-10 SFPNLD	(6) 1.4125/ X105CrMo17 CFPNLD
3								
4								
5								
6								
8								
10								
12								
16								
20								

Ⓟ P, L, B and ML Dimension Configurable Price

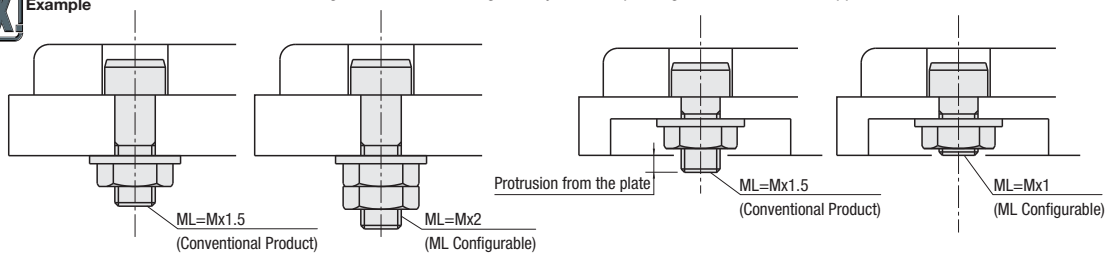
Price is determined by length of ML.

ML	Price (Round down to one Cent.)
Mx1≤ML<Mx1.5	€ Unit Price in Table
Mx1.5≤ML<Mx2	€ Unit Price in Table x 1.05
Mx2≤ML≤Mx2.5	€ Unit Price in Table x 1.1
Mx2.5≤ML≤Mx3	€ Unit Price in Table x 1.15

Examples of Price Calculation:
FPNLA10-P12.00-L5-B5-ML20 (ML=Mx2)
12,00 (FPNLA10) x1.1=13,20 EUR

Example

For P, L, B and ML Configurable, the thread length is adjustable depending on environment and application.

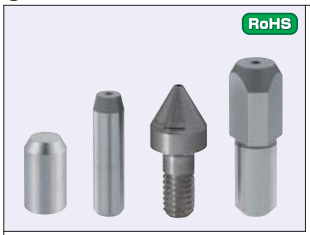


Add. Spec.

Locating Pins Large Head Tapered

-Configurable Taper Angle / D and P Tolerance Selectable-

D=5 is now available for Female Thread Type.



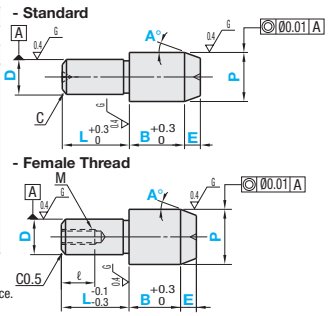
Materials No.	Material	Surface Treatment	Hardness	Type: Standard	Type: Female Thread	Type: Male Thread	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KF	KFT	KFN	A(Round)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GKF	GKFT	GKFN	A(Round)
(3)	1.2510/100MnCrW4	-	-	BKF	BKFT	BKFN	A(Round)
(4)	1.4301/X5CrNi18-10	-	-	SKF	SKFT	SKFN	A(Round)
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV ~	HKF	HKFT	HKFN	D(Diamond)
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKF	CKFT	-	D(Diamond)

Refer to the price list to select the available combination.

■Tolerance Selection

D or P	Standard Grade M	P	G	H	S	Precision Grade A	B
	m6	p6	g6	h7	-	-	-
1.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010			
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015	0 -0.01	+0.005 0	0 -0.005
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 30.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

The unit price of Precision Type is the price of Standard Type multiplying 1.1.
⊗Hard Chrome Plating is not available for Precision Grade Tolerance.
1.4125/X105CrMo17 has an identification groove on D part.
P-2EtanA≥0.73 (Tip dia. Ø0.73 or more)
Reference:tan15°≈0.267 tan30°≈0.577
tan45°= 1 tan60° ≈ 1.732



When D=P,
(1) Round Shape has no relief.
(i) When D=P and tolerances are different
L±0.3 B±0.3
(ii) When D=P and tolerances are the same
(L+B)
(L+B) is the general tolerance.
(2) Diamond-shape end has a relief.

Round type with the same diameter for which D=P is standardized is available. ☞P.1347

■Standard

Part Number: Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	C	(W)
KF, GKF*, BKF, SKF, HKF*, CKF	A(Round), D(Diamond)	M P G H *A *B	S M P G H *A *B	1	1.00~ 2.50 (1.50 ~ 2.00)	2, 3	2.0~ 5.0	0.5~10.0	15	0.1	0.6
				2	2.00~4.00	2~ 6	2.0~10.0			0.5	1.2
				3	3.00~6.00	3~ 6	2.0~10.0				1.5
				4	4.00~7.00	4~ 8	2.0~10.0		30	1	1.8
				5	5.00~8.00	5~10	2.0~10.0				2.2
				6	6.00~10.00	6~12	2.0~12.0				3
				8	8.00~13.00	8~16	2.0~15.0		45	1.5	3.5
				10	10.00~15.00	10~20	3.0~20.0		60	2	4
				12	12.00~16.00	12~24	3.0~20.0				5
				13	13.00~18.00	13~26	5.0~20.0				5.5
				16	16.00~25.00	16~32	5.0~20.0			3	7
				20	20.00~30.00	20~40	5.0~20.0				9

P dimension in ( ) is for Diamond Shape. ⊗Hard chrome plated is not available for Precision Grade * (Precision Grade A and B).

■Female Thread

Part Number: Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	(W)	M (Coarse)	ℓ
KFT, GKFT, BKFT, SKFT, HKFT, CKFT	A(Round), D(Diamond)	M P G H	S M P G H	5	5.00~8.00	5 (9) ~ 10	2.0~10.0	0.5~10.0	15	2.2	M2	3
				6	6.00~10.00	6 (9) ~ 12	2.0~12.0			3	M3	5
				6T							M2.6	4
				8	8.00~13.00	8 (12) ~ 16	2.0~15.0			3.5	M5	8
				8T		6 (12) ~ 16					M4	6
				10	10.00~15.00	10 (12) ~ 20	3.0~20.0		30	4	M5	8
				10T		6 (12) ~ 16					M4	6
				12	12.00~16.00	12~24	3.0~20.0		45	5	M5	8
				12T		8 (12) ~ 18					M4	6
				13	13.00~18.00	13 (14) ~ 26	5.0~20.0		60	5.5	M8	10
				13T		8 (14) ~ 20					M6	9
				16	16.00~25.00	16~32	5.0~20.0			7	M8	12
				16T		10 (14) ~ 24					M6	9
				20	20.00~30.00	20~40	5.0~20.0			9	M8	12
				20T		12 (18) ~ 30					M6	9

Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Note the strength of under-head part. ☞P.1281 L dimension in ( ) is for Diamond Shape. Please confirm pilot hole depth on ☞P.1281.Holes may go through.

■Male Thread

Part Number: Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	M (Coarse)	(W)
KFN, GKFN*, BKFN, SKFN, HKFN*	A(Round), D(Diamond)	M P G H *A *B	S M P G H *A *B	3	3.50~ 6.00	2~ 6	2.0~10.0	0.5~10.0	15	M 3	1.5
				4	4.50~ 7.00	2~ 8	2.0~10.0			M 4	1.8
				5	5.50~ 8.00	3~10	2.0~10.0			M 5	2.2
				6	6.50~10.00	3~10	2.0~12.0		30	M 6	3
				8	9.00~13.00	5~10	2.0~15.0			M 8	3.5
				10	11.00~15.00	5~15	3.0~20.0		45	M10	4
				12	13.00~18.00	8~15	3.0~20.0			M12	5
				16	17.00~25.00	8~20	5.0~20.0		60	M16	7
				20	22.00~30.00	10~20	5.0~20.0			M20	9

⊗Hard chrome plated is not available for Precision Grade * (Precision Grade A and B).

Order Example

Part Number					- P - L - B - E - A
Type	Shape	D Tol.	P Tol.	D	
KF	A	M	S	6	- P10.00 - L6 - B3.0 - E5.0 - A30
GKFT	A	G	S	10T	- P13.00 - L6 - B4.0 - E10.0 - A15
SKFN	D	G	B	12	- P15.00 - L12 - B5.0 - E7.0 - A45

Days to Ship

8 Days

Express A 5,00 EUR / piece P. 88

Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
Ⓧ Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr and Material No. (5) Hard 1.4301/X5CrNi18-10.

Price

Volume Discount (Ⓟ Round down to one Cent.) P.

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.
Ⓟ Please request a quotation for 20 or more pieces of diamond shape D=1.

Ⓟ Precision Grade Price
When A and B tolerance is selected, M x1.1 to the unit prices shown below.
(Round down to ten Cent.)
Examples of Price Calculation
KFAAB10-P11.05-L12-B5.5-E5.0-A30
12,60 (KFA10)x1.1 = 13,80 EUR

Standard

D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510/ Hardening KFA	(2) Hard 1.2510/ GKFA	(3) 1.2510/ BKFA	(4) 1.4301/ SKFA	(5) 1.4301/ Hard HKFA	(6) 1.4125/ CKFA	(1) 1.2510/ Hardening KFD	(2) Hard 1.2510/ GKFD	(3) 1.2510/ BKFD	(4) 1.4301/ X5CrNi18-10 SKFD	(5) 1.4301/ Hard HKFD	(6) 1.4125/ CKFD
1												
2												
3												
4												
5												
6												
8												
10												
12												
13												
16												
20												

Female Thread

D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510/ Hardening KFTA	(2) Hard 1.2510/ GKFTA	(3) 1.2510/ BKFTA	(4) 1.4301/ SKFTA	(5) 1.4301/ Hard HKFTA	(6) 1.4125/ CKFTA	(1) 1.2510/ Hardening KFTD	(2) Hard 1.2510/ GKFTD	(3) 1.2510/ BKFTD	(4) 1.4301/ SKFTD	(5) 1.4301/ Hard HKFTD	(6) 1.4125/ CKFTD
5												
6												
6T												
8												
8T												
10												
10T												
12												
12T												
13												
13T												
16												
16T												
20												
20T												

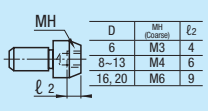
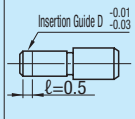
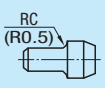
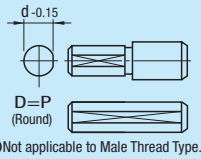
Male Thread

D	€ Unit Price Round Shape					€ Unit Price Diamond Shape				
	(1) 1.2510/ Hardening KFNA	(2) Hard 1.2510/100MnCrW4 GKFNA	(3) 1.2510/ BKFNA	(4) 1.4301/ X5CrNi18-10 SKFNA	(5) 1.4301/ X5CrNi18-10 Hard HKFNA	(1) 1.2510/ Hardening KFND	(2) Hard 1.2510/100MnCrW4 GKFND	(3) 1.2510/ BKFND	(4) 1.4301/ X5CrNi18-10 SKFND	(5) 1.4301/ X5CrNi18-10 Hard HKFND
3										
4										
5										
6										
8										
10										
12										
16										
20										

Alterations

Part Number	- P	- L	- B	- E	- A	- (MH...etc.)
KFAMS6	- P10.00	- L6	- B3.0	- E5.0	- A30	- GDC

10 Days

Alterations	Tapping	Insertion Guide Machining	Under neck radius alteration	Air Vent
Code	MH	GDC	RC	AC
Spec.	Adds tapped hole. Ordering Code MH  D / MH (Coarse) / ℓ2 6 / M3 / 4 8~13 / M4 / 6 16, 20 / M6 / 9 Ⓟ Applicable when D≥6 Ⓟ B≥ℓ2+4 Ⓧ Not applicable for tapped pins.	Adds Insertion Guide. Ordering Code GD  D / ℓ 3~12 / 1 13~20 / 2 Ⓧ Not applicable to D≤2 Ⓧ Not applicable to Male Thread Type.	Changes the relief to R0.5. Ordering Code RC  Ⓟ Applicable when P-D≥2.	Adds an air vent. Ordering Code AC  Ⓧ Not applicable to Male Thread Type.
Price Adder	3,00	2,00	3,00	2,00

Locating Pins Large Head Tapered

-Male Thread / With Hexagon Socket-

Reduced Delivery Time

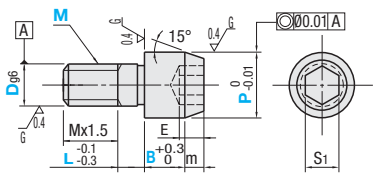
CAD Data



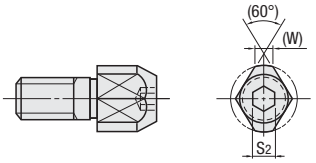
Materials No.	M Material	S Surface Treatment	H Hardness	Type	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	FPNS	A(Round) D(Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GFPNS	
(3)	1.2510/100MnCrW4	-	-	BFPNS	
(4)	1.4301/X5CrNi18-10	-	-	SFPNS	
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~	HFPNS	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CFPNS	

Refer to the price list to select the available combination.

(Round)



(Diamond)



1.4125/X105CrMo17 has an identification groove on D part.

When M<D, Mx1.5 includes the incomplete threaded portion (Pitchx2).

Part Number Type	Part Number Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	m	(W)	S_1	S_2	E
FPNS GFPNS BFPNS SFPNS HFPNS CFPNS	A(Round) D(Diamond) Applicable when D≥6	3	-0.002 -0.008	6.00~ 6.50	2~ 6	3.5~10.0	3	2	-	3	-	2
		4	-0.004 -0.012	6.50~ 7.00	2~ 8	2.5~10.0	3 4	3	-			
		5		6.50~ 8.00	3~10	2.5~10.0	3 4 5		-			
		6		(8.00)6.50~10.00	3~10	2.5~12.0	4 5 6		3		3	
		8	-0.005 -0.014	(10.00) 9.00 ~ 13.00	5~10	3.0~15.0	4 5 6 8	4	3.5	4	4	2.5
		10		(12.00) 11.00 ~ 15.00	5~15	4.5~20.0	5 6 8 10		4	5	5	3
		12	-0.006 -0.017	13.00~18.00	8~15	6.0~20.0	6 8 10 12		5	6	6	4
		16		17.00~25.00	8~20	8.0~20.0	8 10 12 16	5	7	8	8	5
		20	-0.007 -0.020	22.00~30.00	10~20	8.0~20.0	10 12 16 20		9			

P dimension in ( ) is applicable to diamond shape. When M dimension is not specified, D=M.

Order Example

Part Number Type	Shape	D	-	P	-	L	-	B	-	M
FPNS	A	10	-	P12.00	-	L5	-	B5.0		
GFPNS	D	16	-	P19.50	-	L14	-	B10.0	-	M12

Alterations

Part Number	-	P	-	L	-	B	-	M	-	(NNC)
FPNSA8	-	P10.00	-	L10	-	B10.0	-	M6	-	NNC

10 Days

Days to Ship

8 Days | Express A | 5,00 EUR / piece | P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr and Material No. (5) Hard 1.4301/X5CrNi18-10.

Alterations	Relief
Code	NNC
Spec.	Adds a relief at the thread end. Undercut length is approx. Pitchx2.
Price Adder	1,00

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~19	20~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price Round Shape (1) 1.2510/ 100MnCrW4 Hardening FPNSA	(2) Hard 1.2510/ 100MnCrW4 GFPNSA	(3) 1.2510/ 100MnCrW4 BFPNSA	(4) 1.4301/ X5CrNi18-10 SFPNSA	(5) 1.4301/ X5CrNi18-10 Hard HFPNSA	(6) 1.4125/ X105CrMo17 CFPNSA	€ Unit Price Diamond Shape (1) 1.2510/ 100MnCrW4 Hardening FPNSD	(2) Hard 1.2510/ 100MnCrW4 GFPNSD	(3) 1.2510/ 100MnCrW4 BFPNSD	(4) 1.4301/ X5CrNi18-10 SFPNSD	(5) 1.4301/ X5CrNi18-10 Hard HFPNSD	(6) 1.4125/ X105CrMo17 CFPNSD
3												
4												
5												
6												
8												
10												
12												
16												
20												

Locating Pins Large Head Tapered

-Screw Mounted Standard / Compact-

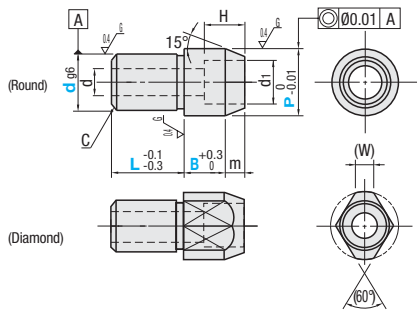
CAD Data



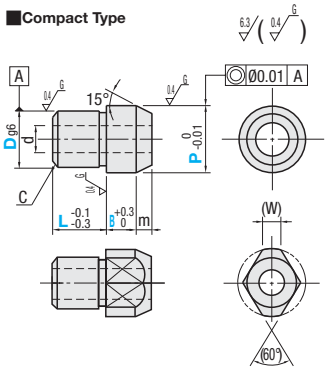
Materials No.	M Material	S Surface Treatment	H Hardness	Standard Type: P Dimension Configurable	Standard Type: P, L and B Dimension Configurable	Compact Type: P, L and B Dimension Configurable	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPT	FPT	FPTC	MA(Round) MD(Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	-	GFPT	-	
(3)	1.2510/100MnCrW4	-	-	-	BFPT	-	
(4)	1.4301/X5CrNi18-10	-	-	SJPT	SFPT	SFPTC	
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~	HJPT	HFPT	-	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPT	CFPT	-	

Refer to the price list to select the available combination.

■Standard Type



■Compact Type



1.4125/X105CrMo17 has an identification groove on D part.

■Applicable Screws

D	g6	d	d1	H	Applicable Screw M
10	-0.005 -0.014	4.5	8	5	M4
12	-0.006 -0.017	5.5	9.5	6.5	M5
13		6.6	11	7.5	M6
16		9	14	10	M8
20	-0.007 -0.020				

■Standard - P Dimension Configurable

Part Number Type	Shape	D	P 0.01mm Increment	L	B	C	m	(W)
JPT SJPT HJPT CJPT	MA(Round) MD(Diamond)	10	14.00~17.00	15	10	2	4	4
		12	15.00~18.00					5
		13	17.00~20.00	22				5.5
		16	20.00~27.00			3	5	7
		20	23.00~30.00	30	15			9

■Standard - P, L and B Dimension Configurable

Part Number Type	Shape	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	m	(W)
FPT GFPT BFPT SFPT HFPT CFPT	MA(Round) MD(Diamond)	10	14.00~17.00	5~20	4.0~20.0	2	4	4
		12	15.00~18.00	6~24	7.0~20.0			5
		13	17.00~20.00	6~26	8.0~20.0			5.5
		16	20.00~27.00	7~32	8.0~20.0	3	5	7
		20	23.00~30.00	8~40	8.0~20.0			9

When L<D, C dimension (chamfered) is 0.5.

■Compact Type

Part Number Type	Shape	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	m	(W)
FPTC SFPTC	MA(Round) MD(Diamond)	10	11.00~15.00	5~14	3.0~16.0	0.5	2	4
		12	13.00~17.00	6~15	3.0~18.0			5
		13	14.00~18.00	6~16	3.0~20.0			5.5
		16	17.00~21.00	7~18	3.0~20.0		3	7
		20	21.00~25.00	8~20	3.0~20.0			9

Order Example

Part Number Type	Shape	D	P	L	B
JPT	MA	10	14.00		
FPT	MA	10	P14.00	L15	B6.0
FPTC	MA	12	P13.00	L6	B3.0

Days to Ship: 8 Days / 5 Days

Express A: 5,00 EUR / piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr and Material No. (5) Hard 1.4301/X5CrNi18-10.

Price

■Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Standard - P Dimension Configurable

D	€ Unit Price Round Shape: (1) 1.2510/100MnCrW4 Hardening JPTMA	(4) 1.4301/X5CrNi18-10 SJPTMA	(5) 1.4301/X5CrNi18-10 Hard HJPTMA	(6) 1.4125/X105CrMo17 CJPTMA	€ Unit Price Diamond Shape: (1) 1.2510/100MnCrW4 Hardening JPTMD	(4) 1.4301/X5CrNi18-10 SJPTMD	(5) 1.4301/X5CrNi18-10 Hard HJPTMD	(6) 1.4125/X105CrMo17 CJPTMD
10								
12								
13								
16								
20								

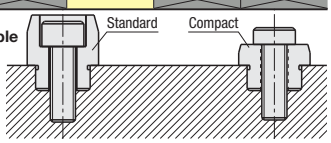
■Standard - P, L and B Dimension Configurable

D	€ Unit Price Round Shape: (1) 1.2510/100MnCrW4 Hardening FPTMA	(2) Hard 1.2510/100MnCrW4 GFPTMA	(3) 1.2510/100MnCrW4 BFPTMA	(4) 1.4301/X5CrNi18-10 SFPTMA	(5) 1.4301/X5CrNi18-10 Hard HFPTMA	(6) 1.4125/X105CrMo17 CFPTMA	€ Unit Price Diamond Shape: (1) 1.2510/100MnCrW4 Hardening FPTMD	(2) Hard 1.2510/100MnCrW4 GFPTMD	(3) 1.2510/100MnCrW4 BFPTMD	(4) 1.4301/X5CrNi18-10 SFPTMD	(5) 1.4301/X5CrNi18-10 Hard HFPTMD	(6) 1.4125/X105CrMo17 CFPTMD
10												
12												
13												
16												
20												

■Compact Type

D	€ Unit Price Round Shape: (1) 1.2510/100MnCrW4 Hardening FPTCMA	(4) 1.4301/X5CrNi18-10 SFPTCMA	€ Unit Price Diamond Shape: (1) 1.2510/100MnCrW4 Hardening FPTCMD	(4) 1.4301/X5CrNi18-10 SFPTCMD
10				
12				
13				
16				
20				

Example



Although the screw heads protrude with the compact type, head diameter P and height B are configurable to even smaller dimensions.

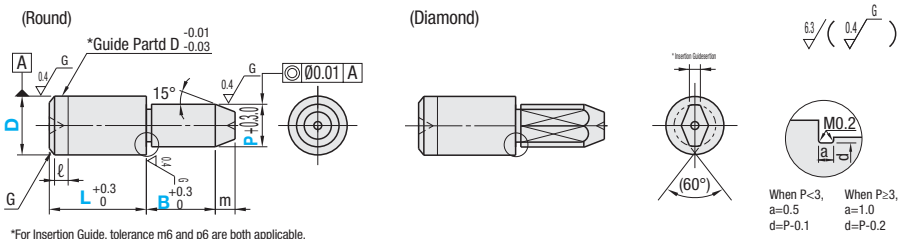
Locating Pins Small Head

-Standard-



Materials No.	Material	Surface Treatment	Hardness	P Dimension Selectable		P Dimension Configurable		P, L and B Dimension Configurable	
				Type	D Tolerance / Shape Code	Type	D Tolerance / Shape Code	Type	D Tolerance / Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JP	<Round> SB(m6) SPB(p6) <Diamond> DS(m6) DPS(p6)	JP	<Round> SA(m6) SPA(p6) <Diamond> SD(m6) SPD(p6)	FP	<Round> SA(m6) SPA(p6) <Diamond> SD(m6) SPD(p6)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GJP		GJP		GFP	
(3)	1.2510/100MnCrW4	-	-	BJP		BJP		BFP	
(4)	1.4301/ X5CrNi18-10	-	-	SJP		SJP		SFP	
(5)	1.4301/ X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~	HJP		HJP		HFP	
(6)	1.4125/ X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJP		CJP		CFP	

Refer to the price list to select the available combination.



*For Insertion Guide, tolerance m6 and p6 are both applicable.
1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P	L	B	C	m	ℓ	(W)
JP GJP BJP SJP HJP CJP	<Round> SB(m6) SPB(p6)	2	+0.008 +0.002	+0.012 +0.006	1 2	4	2	0.3	0.5	0	-
		3			1 2 3	5	3	0.5		1	
		4	+0.012 +0.004	+0.020 +0.012	2 3 4			1	1		1.0
		5			2 3 4 5	10	5		2		1.2
		6			2 3 4 5 6						1.5
	<Diamond> DS(m6) DPS(p6) Applicable when D≥4.	8	+0.015 +0.006	+0.024 +0.015	3 4 5 6 8	15	6	1.5	3	2	1.8
		10			3 4 5 6 8 10		8	2			2.2
		12	+0.018 +0.007	+0.029 +0.018	5 6 8 10 12						2.5
		13			6 8 10 12 13	22			4		3
		16			10 12 13 14 15 16		10	3			4
		20	+0.021 +0.008	+0.035 +0.022	13 14 15 16 20	30					5

■P Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L	B	C	m	ℓ	(W)
JP GJP BJP SJP HJP CJP	<Round> SA(m6) SPA(p6)	2	+0.008 +0.002	+0.012 +0.006	1.00~2.00	4	2	0.3	0.5	0	-
		3			1.00~3.00	5	3	0.5		1	
		4	+0.012 +0.004	+0.020 +0.012	2.00~4.00			1	1		1.0
		5			2.00~5.00	10	5		2		1.2
		6			2.00~6.00						1.5
	<Diamond> SD(m6) SPD(p6) Applicable when D≥4.	8	+0.015 +0.006	+0.024 +0.015	3.00~8.00	15	6	1.5	3	2	1.8
		10			3.00~10.00		8	2			2.2
		12	+0.018 +0.007	+0.029 +0.018	5.00~12.00						2.5
		13			6.00~13.00	22			4		3
		16			10.00~16.00		10	3			4
		20	+0.021 +0.008	+0.035 +0.022	13.00~20.00	30					5

■P, L and B Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	m	ℓ	(W)
FP GFP BFP SFP HFP CFP	<Round> SA(m6) SPA(p6)	2	+0.008 +0.002	+0.012 +0.006	1.00~2.00	2~4	2.0~10.0	0.3	0.5	0	-
		3			1.00 (2.00) ~ 3.00	3~6	2.0~10.0	0.5		1	1.0
		4	+0.012 +0.004	+0.020 +0.012	2.00~4.00	4~8	2.0~10.0	1	1		
		5			2.00~5.00	5~10	2.0~10.0		2		1.2
		6			2.00~6.00	6~12	2.0~12.0				1.5
	<Diamond> SD(m6) SPD(p6) Applicable when D≥3.	8	+0.015 +0.006	+0.024 +0.015	3.00~8.00	8~16	2.0~15.0	1.5	3	2	1.8
		10			3.00~10.00	10~20	3.0~20.0	2			2.2
		12	+0.018 +0.007	+0.029 +0.018	5.00~12.00	12~24	3.0~20.0				2.5
		13			6.00~13.00	13~26	5.0~20.0		4		3
		16			10.00~16.00	16~32	5.0~20.0	3			4
		20	+0.021 +0.008	+0.035 +0.022	13.00~20.00	20~40	5.0~20.0				5

P dimension in ( ) is applicable to diamond shape.

Order Example

Part Number			-		-		-	
Type	Shape	D		P		L		B
JP	SB	5	-	3				
JP	SD	6	-	2.01				
FP	SA	8	-	P6.01	-	L8	-	B5.3
FP	SPD	10	-	P5.97	-	L12	-	B3.5

Days to Ship

- P Dimension Standard, Material No. (1) (4) (6)
6 Days P.87

• P Dimension Selectable, Material No. (2) (3) (5)
• P Dimension Configurable, Material No. (1) ~ (6) / P, L and B Dimension Configurable, Material No. (1) ~ (6)
8 Days
Express A 5,00 EUR / piece P.88
5 Days
Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
Ⓧ Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4 and Material No. (5) Hard 1.4301/X5CrNi18-10.

Price

Volume Discount (Ⓟ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.
Ⓟ Please request a quotation for 50 or more pieces of in-stock items.

P Dimension Selectable

D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510/Hardening JPSB JPSPB	(2) Hard 1.2510/ GJPSB GJPSPB	(3) 1.2510/ BJPSB BJPSPB	(4) 1.4301/ SJPSB SJPSPB	(5) 1.4301/ Hard HJPSB HJPSPB	(6) 1.4125/ CJPSB CJPSPB	(1) 1.2510/Hardening JPDS JPDPS	(2) Hard 1.2510/ GJPDS GJPDPS	(3) 1.2510/ BJPDS BJPDPS	(4) 1.4301/ SJPDS SJPDPS	(5) 1.4301/ Hard HJPDS HJPDPS	(6) 1.4125/ CJPDS CJPDPS
2												
3												
4												
5												
6												
8												
10												
12												
13												
16												
20												

P Dimension Configurable

D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510/ Hardening JPSA JPSPA	(2) Hard 1.2510/ GJPSA GJPSPA	(3) 1.2510/ BJPSA BJPSPA	(4) 1.4301/ SJPSA SJPSPA	(5) 1.4301/ Hard HJPSA HJPSPA	(6) 1.4125/ CJPSA CJPSPA	(1) 1.2510/ JPSD JPSPD	(2) Hard 1.2510/ GJPSD GJPSPD	(3) 1.2510/ BJPSD BJPSPD	(4) 1.4301/ SJPSD SJPSPD	(5) 1.4301/Hard HJPSD HJPSPD	(6) 1.4125/ CJPSD CJPSPD
2												
3												
4												
5												
6												
8												
10												
12												
13												
16												
20												

P, L and B Dimension Configurable

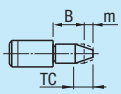
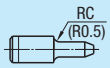
D	€ Unit Price Round Shape						€ Unit Price Diamond Shape					
	(1) 1.2510/ Hardening FPSA FPSPA	(2) Hard 1.2510/ GFPSA GFPSPA	(3) 1.2510/ BFPSA BFPSPA	(4) 1.4301/ SFPSA SFPSPA	(5) 1.4301/ Hard HFPSA HFPSPA	(6) 1.4125/ CFPSA CFPSPA	(1) 1.2510/ Hardening FPSD FPSPD	(2) Hard 1.2510/ GFPSD GFPSPD	(3) 1.2510/ BFPSD BFPSPD	(4) 1.4301/ SFPSD SFPSPD	(5) 1.4301/Hard HFPSD HFPSPD	(6) 1.4125/ CFPSD CFPSPD
2												
3												
4												
5												
6												
8												
10												
12												
13												
16												
20												

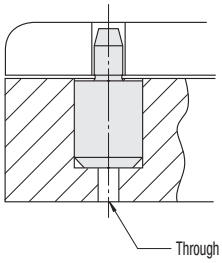
Alterations

Part Number	-	P	-	L	-	B	-	(TC / RC)
FPSPA10	-	P8.52	-	L12	-	B6.4	-	TC7

10 Days
Ⓧ P Dimension Standard is not available for alteration.

Example

Alterations	Length of Tapered Point	Radius
Code	TC	RC
Spec.	Changes the m dimension. Ordering Code TC8 (1mm Increment)  D / TC: 2 / 1; 3 / 1~3; 4 / 2~5; 5 / 3~7; 6 / 3~9; 8 / 4~13; 10 / 4~16; 12 / 4~20; 13 / 4~21; 16 / 5~22; 20 / 5~22 Ⓟ B+m≥TC+2 (Straight Part min. 2mm) Ⓟ Applicable when P≥2.00. Ⓟ P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) Ⓟ B Dimension changes when TC is specified. (Changed B dimension = B+m-TC)	Changes the relief to R0.5. Ordering Code RC  Ⓟ Applicable when D-P≥2.
Price Adder	3,00	3,00



Locating Pins Small Head
-Female Thread Shank-

NEW

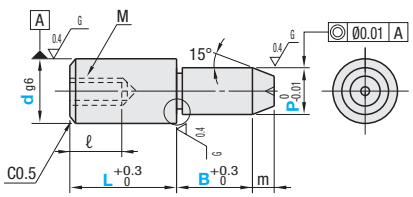
D=5 is now available for Configurable Type.



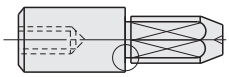
Materials No.	M Material	S Surface Treatment	H Hardness	P Dimension Selectable Type	P Dimension Selectable Shape Code	P Dimension Configurable Type	P Dimension Configurable Shape Code	P, L and B Dimension Configurable Type	P, L and B Dimension Configurable Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPS	TB (Round)	JPS	TA (Round) TD (Diamond)	FPS	TA (Round) TD (Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	-		GJPS		GFPS	
(4)	1.4301/X5CrNi18-10	-	-	SJPS		SJPS		SFPS	
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV ~	-		-		HFPS	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPS		CJPS		CFPS	

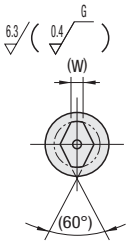
Refer to the price list to select the available combination.

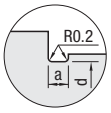
(Round)



(Diamond)







a=1.0
d=P-0.2

1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number Type	Part Number Shape	D	D Dimension Tolerance g6	P Selection	L	B	m	M (Coarse)	ℓ
JPS SJPS CJPS	TB (Round)	6	-0.004 -0.012	4 5	10	5	2	M3	5
		8	-0.005 -0.014	6 7	15	6	3	M5	8
		10		7 8 9 10		8			
		12	-0.006 -0.017	8 9 10 11 12					

■P Dimension Configurable

Part Number Type	Part Number Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	m	(W)	M (Coarse)	ℓ
JPS GJPS SJPS CJPS	TA (Round) TD (Diamond)	5	-0.004 -0.012	3.00~ 5.00	10	5	2	1.2	M2	3
		6		4.00~ 6.00				1.5	M3	5
		6T							M2.6	4
		8	-0.005 -0.014	6.00~ 8.00	15	6	3	1.8	M5	8
		8T							M4	6
		10		7.00~10.00		8		2.2	M5	8
		12	-0.006 -0.017	7.00~12.00				2.5		
		13		8.00~13.00	22	10	4	3	M8	12
		16		10.00~16.00				4		
		20	-0.007 -0.020	13.00~20.00	30			5		

■P, L and B Dimension Configurable

Part Number Type	Part Number Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	m	(W)	M (Coarse)	ℓ
FPS GFPS SFPS HFPS CFPS	TA (Round) TD (Diamond)	5	-0.004 -0.012	3.00~ 5.00	8~10	2.0~10.0	2	1.2	M2	3
		6		4.00~ 6.00	8 (9) ~ 12	2.0~12.0		1.5	M3	5
		6T							M2.6	4
		8	-0.005 -0.014	6.00~ 8.00	11 (12) ~ 16	2.0~15.0	3	1.8	M5	8
		8T							M4	6
		10		7.00~10.00	11 (12) ~ 20	3.0~20.0		2.2	M5	8
		10T			8 (12) ~ 16				M4	6
		12	-0.006 -0.017	7.00~12.00	12~24	3.0~20.0		2.5	M5	8
		12T			8 (12) ~ 18				M4	6
		13		8.00~13.00	13 (14) ~ 26	5.0~20.0	4	3	M8	10
		13T			10 (14) ~ 20				M6	9
		16		10.00~16.00	16~32	5.0~20.0		4	M8	12
		16T			10 (14) ~ 24				M6	9
		20	-0.007 -0.020	13.00~20.00	20~40	5.0~20.0		5	M8	12
		20T			12 (18) ~ 30				M6	9

L dimension in ( ) is for Diamond Shape. Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281.Holes may go through.
Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)

Order Example

Part Number								
Type	Shape	D	-	P	-	L	-	B

JPS TA 6 - P4.50
FPS TA 10 - P8.52 - L12 - B6.4

Days to Ship

P Dimension Selectable
6 Days P.87

- P Dimension Configurable / P, L and B Dimension Configurable
8 Days
5 Days
Express A 5,00 EUR / piece P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr, 1.4301/X5CrNi18-10 and Material No. (5) Hard.

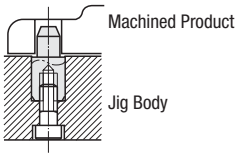
Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.

Example



P Dimension Selectable

D	€ Unit Price Round Shape		
	(1) 1.2510/100MnCrW4 Hardening JPSTB	(4) 1.4301/X5CrNi18-10 SJPSTB	(6) 1.4125/X105CrMo17 CJPSTB
6			
8			
10			
12			

P Dimension Configurable

D	€ Unit Price Round Shape				€ Unit Price Diamond Shape			
	(1) 1.2510/100MnCrW4 Hardening JPSTA	(2) Hard 1.2510/100MnCrW4 GJPSTA	(4) 1.4301/X5CrNi18-10 SJPSTA	(6) 1.4125/X105CrMo17 CJPSTA	(1) 1.2510/100MnCrW4 Hardening JPSTD	(2) Hard 1.2510/100MnCrW4 GJPSTD	(4) 1.4301/X5CrNi18-10 SJPSTD	(6) 1.4125/X105CrMo17 CJPSTD
5								
6								
6T								
8								
8T								
10								
12								
13								
16								
20								

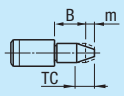
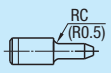
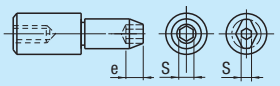
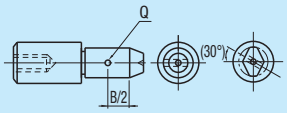
P, L and B Dimension Configurable

D	€ Unit Price Round Shape					€ Unit Price Diamond Shape				
	(1) 1.2510/100MnCrW4 Hardening FPSTA	(2) Hard 1.2510/100MnCrW4 GFPSTA	(4) 1.4301/X5CrNi18-10 SFPSTA	(5) 1.4301/X5CrNi18-10 Hard HFPSTA	(6) 1.4125/X105CrMo17 CFPSTA	(1) 1.2510/100MnCrW4 Hardening FPSTD	(2) Hard 1.2510/100MnCrW4 GFPSTD	(4) 1.4301/X5CrNi18-10 SFPSTD	(5) 1.4301/X5CrNi18-10 Hard HFPSTD	(6) 1.4125/X105CrMo17 CFPSTD
5										
6										
6T										
8										
8T										
10										
10T										
12										
12T										
13										
13T										
16										
16T										
20										
20T										

Alterations

Part Number	-	P	-	L	-	B	-	(TC / RC / RAC / LAC)
FPSTA10	-	P8.52	-	L12	-	B6.4	-	TC7

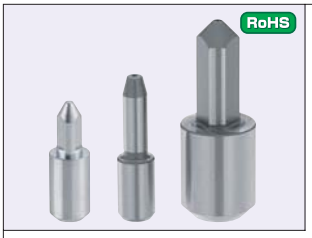
10 Days
Alteration is not available for P Dimension Selectable Type.

Alterations	Length of Tapered Point	Radius	Hexagon Socket	Wrench Hole
				
Code	**TC**	**RC**	**RAC**	**LAC**
Spec.	Changes the m dimension. Ordering Code TC8 (1mm Increment) D / TC: 5 / 3~7; 6 / 3~9; 8 / 4~13; 10 / 4~16; 12 / 4~20; 13 / 4~21; 16 / 20 / 5~22 B+m≥TC+2 (Straight Part min. 2mm) P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) B Dimension changes when TC is specified. (Changed B dimension = B+m-TC) Combination with RAC and LAC is not available.	Changes the relief to R0.5. Ordering Code RC Applicable when D-P≥2. Combination with LAC is not available.	Machines hexagonal socket. Ordering Code RAC D / Applicable Dimension P / L / B / Hexagonal Hole Dimension E / S: 8 8T: 6.50~, 13~, 6.0~, 2, 3 10 10T: 7.00~ 12 12T 13 13T: 9.00~, 15~, 2.5, 4 16 16T: 10.00~, 17~, 3, 5 20 20T: 13.00~, 22~, 4, 6 Applicable to P, L and B Dimension Configurable only. Round shape is applicable to D≥8, and diamond to D≥10. Combination with TC and LAC is not available.	Machines wrench hole. Ordering Code LAC D / Applicable Dimension P / B: 8 8T: 6.00~, 5.0~ 10 10T: 7.00 (8.00) ~ 12 12T: 7.00 (8.00) ~ 13 13T: 8.00~ 16 16T: 10.00~ 20 20T: 13.00~, 10.0~ P dimension in () is applicable to diamond shape. Wrench Hole Dimension P / Q: 6.00~9.99 / 2; 10.00~15.99 / 3.5; 16.00~ / 5 Round shape is applicable to D≥8, and diamond to D≥10. Orientation between diamond shape head and wrench hole is arbitrary. Combination with TC, RC and RAC is not available.
Price Adder	3,00	3,00	6,00	3,00

Add. Spec. Locating Pins Small Head

-Configurable Taper Angle / D and P Tolerance Selectable-

Ⓨ D=5 is now available for Female Thread Type.



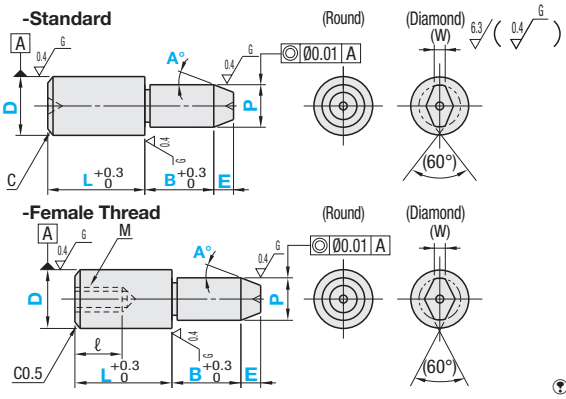
Materials No.	Material	Surface Treatment	Hardness	Standard Type	Standard Shape Code	Female Thread Type	Female Thread Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFS	A(Round) D(Diamond)	KFST	A(Round) D(Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GKFS		GKFST	
(4)	1.4301/X5CrNi18-10	-	-	SKFS		SKFST	
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~	HKFS		HKFST	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFS		CKFST	

Ⓨ Refer to the price list to select the available combination.

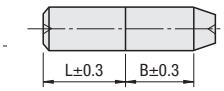
■Tolerance Selection

D or P	Standard Grade M m6	P p6	G g6	H h7	S -	Precision Grade A -	B -
1.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010	0 -0.01	+0.005 0	0 -0.005
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015			
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 20.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

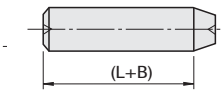
Ⓨ The unit price of Precision Type is the price of Standard Type multiplying 1.1. (Round down to ten Cent.)
⊗ Hard chrome plating is not available for Precision Grade tolerance.
Ⓨ 1.4125/X105CrMo17 has an identification groove on D part.
Ⓨ P-2EtanA≥0.73 (Tip dia. Ø0.73 or more)
Reference: tan15°≈0.267 tan30°≈0.577 tan45°=1 tan60°≈1.732



Ⓨ When D=P,
(1) Round Shape has no relief.
(i) When D=P and tolerances are different

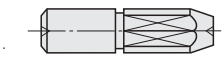


(ii) When D=P and tolerances are the same



(L+B) is the general tolerance.

(2) Diamond-shape end has a relief.



Ⓨ Straight Round Type for which D=P is standardized is available. P.1347

■Standard

Part Number Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	C	(W)	€ Unit Price Round Shape (1) KFSA	(2) GKFSA	(4) SKFSA	(5) HKFSA	(6) CKFSA	€ Unit Price Diamond Shape (1) KFSD	(2) GKFSD	(4) SKFSD	(5) HKFSD	(6) CKFSD
KFS GKFS* SKFS HKFS* CKFS	A (Round) D (Diamond)	M P G H A B	S M P G H A B	2	1.00~2.00	2~4	2.0~10.0	0.5 ~ 10.0	15 30 45 60	0.3	-										
				3	1.00 (2.00) ~ 3.00	3~6	2.0~10.0			0.5	1.0										
				4	2.00~4.00	4~8	2.0~10.0			1	1.0										
				5	2.00~5.00	5~10	2.0~10.0				1.2										
				6	2.00~6.00	6~12	2.0~12.0				1.5										
				8	3.00~8.00	8~16	2.0~15.0			1.5	1.8										
				10	3.00~10.00	10~20	3.0~20.0				2.2										
				12	5.00~12.00	12~24	3.0~20.0			2	2.5										
				13	6.00~13.00	13~26	5.0~20.0				3										
				16	10.00~16.00	16~32	5.0~20.0			3	4										
				20	13.00~20.00	20~40	5.0~20.0				5										

⊗ Hard chrome plated is not available for Precision Grade * (Precision Grade A and B). Ⓨ P dimension in ( ) is for the Diamond Type.

■Female Thread

Part Number Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	(W)	M (Coarse)	ℓ	€ Unit Price Round Shape (1) KFSTA	(2) GKFSTA	(4) SKFSTA	(5) HKFSTA	(6) CKFSTA	€ Unit Price Diamond Shape (1) KFSTD	(2) GKFSTD	(4) SKFSTD	(5) HKFSTD	(6) CKFSTD
KFST GKFST SKFST HKFST CKFST	A (Round) D (Diamond)	M P G H	S M P G H	5	3.00~5.00	8~10	2.0~10.0	0.5 ~ 10.0	15 30 45 60	1.2	M2	3										
				6	4.00~6.00	8 (9) ~ 12	2.0~12.0			1.5	M3	5										
				6T							M2.6	4										
				8	6.00~8.00	11 (12) ~ 16	2.0~15.0			1.8	M5	8										
				8T							M4	6										
				10	7.00~10.00	11 (12) ~ 20	3.0~20.0			2.2	M5	8										
				12	7.00~12.00	12~24	3.0~20.0			2.5												
				13	8.00~13.00	13 (14) ~ 26	5.0~20.0			3	M8	10										
				16	10.00~16.00	16~32	5.0~20.0			4		12										
				20	13.00~20.00	20~40	5.0~20.0			5												

Ⓨ L dimension in ( ) is for the Diamond Type. Ⓨ Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓨ Note the strength of under-head part. P.1281 Ⓨ Please confirm pilot hole depth on P.1281. Holes may go through.

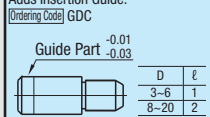
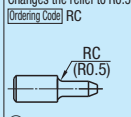
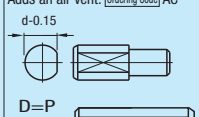
Order Example

Part Number	Type	Shape	D Tolerance	P Tolerance	D		P		L		B		E		A
	KFS	A	G	S	10	-	P8.00	-	L10	-	B8.0	-	E3.0	-	A30

Alterations

Part Number		P		L		B		E		A		(GDC / RC / AC)
KFSAGS10	-	P8.00	-	L10	-	B8.0	-	E3.0	-	A30	-	RC

10 Days

Alterations Code	Insertion Guide Machining GDC	Radius RC	Air Vent AC
Spec.	Adds Insertion Guide. Ordering Code GDC  D: 3~6 ℓ: 1; 8~20 ℓ: 2 ⊗ Not applicable to D≤2	Changes the relief to R0.5. Ordering Code RC  Ⓨ Applicable when D-P≥2.	Adds an air vent. Ordering Code AC 
Price Adder	2,00	3,00	2,00

Ⓨ Precision Grade Price
When A and B tolerance is selected, multiply 1.1 to the above unit price.
(Round down to ten Cent.)
Examples of Price Calculation
KFSAAB10-P5.01-L15-B3.5-E5.0-A45
12,60 (KFSA10) x 1.1 = 13,80 EUR

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Days to Ship 8 Days — Express A 5,00 EUR / piece P.88

Ⓨ A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗ Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (5) Hard.

Locating Pins Large Head / Small Head

-Set Screw-

Reduced Delivery Time

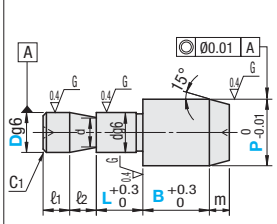
CAD Data



Materials No.	Material	Surface Treatment	Hardness	Type: Circumference Groove	Type: Notch	Type: Set Screw Flat	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPGT	JPCT	JPDT	S(Round) D(Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GJPGT	GJPCT	GJPDT	
(3)	1.4301/X5CrNi18-10	-	-	SJPGT	-	SJPDT	
(4)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV ~	HJPGT	HJPCT	-	
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPGT	CJPCT	CJPDT	

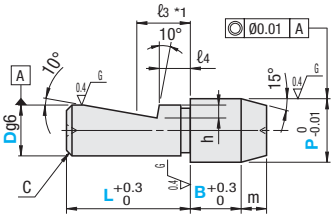
Refer to the price list to select the available combination.

- Circumference Groove Shape



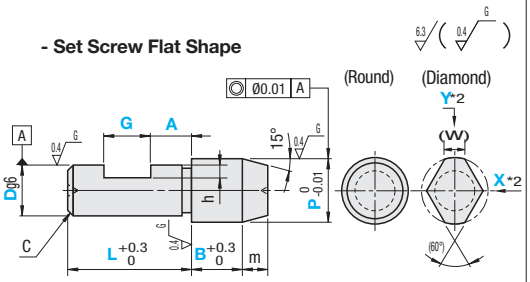
1.4125/X105CrMo17 has an identification groove on D part.

- Notch Shape



*1 ℓ3 is the recommended dimension of the position of set screw tip.

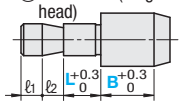
- Set Screw Flat Shape



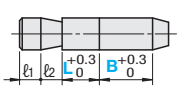
L>A+G+1

*2 Select set screw position X or Y for Diamond or Notch Set Screw Type.

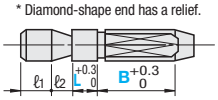
When D<P (Large head)



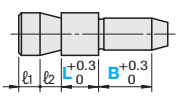
When D=P (Straight)



* Diamond-shape end has a relief.



When D>P (Small Head)



■Circumference Groove Shape

Part Number: Type	Part Number: Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	d	ℓ1	ℓ2	m	C1	(W) When D<P	(W) When D≥P
JPGT GJPGT SJPGT HJPGT CJPGT	S(Round) D(Diamond)	6	-0.004 -0.012	2.00~10.00	3~12	2.0~20.0	4.5	5	5	3	1	3	1.5
		6S			2~12			2			0.5		
		8	-0.005 -0.014	3.00~13.00	4~16		6.5	6	6		1.5	3.5	1.8
		8S			3~16			3			0.5		
		10		3.00~15.00	5~20	3.0~20.0	8	8		4	2	4	2.2
		10S			4~20			3			0.5		
		12	-0.006 -0.017	5.00~16.00	6~24		10	8	8		2	5	2.5
		12S			5~24			4			0.5		
		16		10.00~25.00	8~32	5.0~20.0	14	8		5	3	7	4
		16S			7~32			4			0.5		
		20	-0.007 -0.020	13.00~30.00	10~40		18	8			3	9	5

Pins of D dimension with S are for space-saving with shorter mounting parts (L and ℓ1). (Actual D dimension is the number without "S".)

■Notch Shape / Set Screw Flat Shape

Part Number: Type	Part Number: Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	G 1mm Increment	A 0.1mm Increment	Flat Position	ℓ3	ℓ4	h	C	m	Applicable Set Screws	(W) When D<P	(W) When D≥P
(Notched) JPCT GJPCT HJPCT CJPCT	(Set Screw Flat) JPDT GJPDT SJPDT CJPDT	6	-0.004 -0.012	5.00~10.00	12~20	5.0~20.0	3~9	2.0~8.0	X Y Applicable to diamond shape only.	5.5	2.5	1.0	1	3	M4	3	1.5
	S(Round) D(Diamond)	8	-0.005 -0.014	5.00~13.00	14~22			2.0~12.0		7.5	3.5	1.2	1.5	4	M5	3.5	1.8
		10		5.00~15.00	15~25			2.0~16.0		7.5	3.5	1.2	2	4	M6	4	2.2
		12	-0.006 -0.017	5.00~16.00	15~25			2.0~20.0		7.5	3.5	1.2	2	4	M6	5	2.5
		16		10.00~25.00	15~35			2.0~28.0		10.5	5.5	2.0	3	5	M8	7	4
		20	-0.007 -0.020	13.00~30.00	27~40			2.0~36.0		13.5	8.5	2.0	3	5	M8	9	5

Applicable set screws in the table are the recommended sizes for notched shape.

Order Example

Part Number	-	P	-	L	-	B	-	G	-	A	-	Flat Position
JPGTS10	-	P12.00	-	L6	-	B3.5						
JPDTD10	-	P10.05	-	L22	-	B7.5	-	G5	-	A14.3	-	X

Days to Ship

8 Days

5 Days

Express A 5,00 EUR / piece

P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Service is not available for Material No. (2) Hard 1.2510/100MnCr,1.4301/X5CrNi18-10 and Material No. (4) Hard

Lead time shortened: Notched Shape Material No. (2) Hard 1.2510/100MnCrW4

Price

■Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Circumference Groove Shape

D	€ Unit Price Round Shape (1) JPGTS	(2) GJPGTS	(3) SJPGTS	(4) HJPGTS	(5) CJPGTS	€ Unit Price Diamond Shape (1) JPGTD	(2) GJPGTD	(3) SJPGTD	(4) HJPGTD	(5) CJPGTD
6										
6S										
8										
8S										
10										
10S										
12										
12S										
16										
16S										
20										

■Notch Shape

D	€ Unit Price Round Shape (1) JPCTS	(2) GJPCTS	(4) HJPCTS	(5) CJPCTS	€ Unit Price Diamond Shape (1) JPCTD	(2) GJPCTD	(4) HJPCTD	(5) CJPCTD
6								
8								
10								
12								
16								
20								

■Set Screw Flat Shape

D	€ Unit Price Round Shape (1) JPDTS	(2) GJPDTS	(3) SJPDTS	(5) CJPDTS	€ Unit Price Diamond Shape (1) JPDTD	(2) GJPDTD	(3) SJPDTD	(5) CJPDTD
6								
8								
10								
12								
16								
20								

Locating Pins Large Head Round Tapered

-Standard / Female Thread / Treaded-

Features: Small boundary between guide and locating parts ("No Edge" in diagram) prevents damage of locating target. Buff Finished Products with enhanced appearance and slide are also available.

RoHS



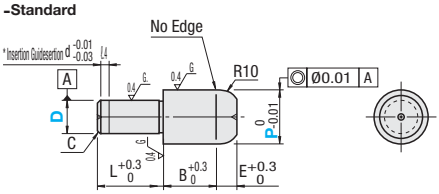


(Buffed Product)

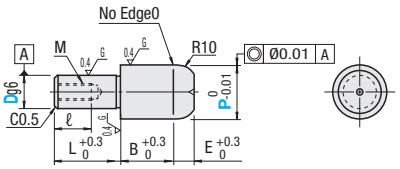


Materials No.	M Material	S Surface Treatment	H Hardness	Type	D Tolerance / Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPRB	B(Standard, m6) PB(Standard, p6) TB(Female Thread) NB(Male Thread)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GJPRB	
(3)	1.4301/X5CrNi18-10	-	-	SJPRB	
(4)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPRB	
(5)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	MJPRB	
(6)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	MGJPRB	
(7)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	MCJPRB	

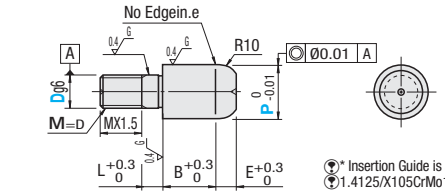
-Standard



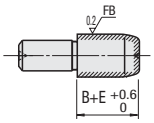
-Female Thread



-Male Thread



Buffed at ▨ part only.



The boundary between B and E dimension is indistinct.

* Insertion Guide is applicable to tolerance p6 type only.
1.4125/X105CrMo17 has an identification groove on D part.

Standard

Part Number Type	Shape Code	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P Selection	L	B	C	E	ℓ
JPRB GJPRB SJPRB CJPRB	B(m6) PB(p6)	2	+0.008 +0.002	+0.012 +0.006	3 4	4	3	0.5	3	0
		3			4 5 6	5	5			1
		4	+0.012 +0.004	+0.020 +0.012	5 6		6	1	4	
		5			6 8	10				
		6			8 10		8		5	
(Buffed Product) MJPRB		8	+0.015 +0.006	+0.024 +0.015	10 12 13	15		1.5		
MGJPRB		10			12 13 15		10	2	6	
MCJPRB		12	+0.018 +0.007	+0.029 +0.018	13 15 16					
		13			15 16	22				2
Applicable when D≥5.		16			20 25			3	7	
		20	+0.021 +0.008	+0.035 +0.022	25 30	30	15			

Female Thread

Part Number Type	Shape Code	D	D Dimension Tolerance g6	P Selection	L	B	E	M (Coarse)	ℓ
JPRB	TB	6	-0.004 -0.012	8 10	10	8	5	M3	5
GJPRB		6T		8 10				M2.6	4
SJPRB		8	-0.005 -0.014	10 12 13	15			M5	8
CJPRB		8T		10 12 13				M4	6
		10		12 13 15		10	6	M5	8
(Buffed Product) MJPRB		12	-0.006 -0.017	13 15 16					
MGJPRB		13		15 16	22			M8	12
MCJPRB		16		20 25			7		
		20	-0.007 -0.020	25 30	30	15			

Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281.Holes may go through.

Male Thread

Part Number Type	Shape Code	D	D Dimension Tolerance g6	P Selection	L	B	E	M (Coarse)
JPRB	NB	3	-0.002 -0.008	4 5 6	5	5	3	M3
GJPRB		4	-0.004 -0.012	5 6		6	4	M4
SJPRB		5		6 8	10			M5
CJPRB		6		8 10		8	5	M6
(Buffed Product)		8	-0.005 -0.014	10 12 13	15			M8
MJPRB		10		12 13 15				M10
MGJPRB		12	-0.006 -0.017	13 15 16		10	6	M12
MCJPRB		16		20 25	22		7	M16
Applicable when D≥5.		20	-0.007 -0.020	25 30	30	15		M20

CAD Data

Order Example

Part Number				
Type	Shape	D	-	P
JPRB	B	10	-	12
MJPRB	TB	12	-	16

Days to Ship

- Materials listed other than below

8 Days | Express A 5,00 EUR/ piece | P.88

Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
Ⓧ Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4 and Material No. (5) ~ (7) Buff Finished Products.

- Standard Material(6) / Female Thread Materials(5) ~ (7) Male Thread Materials(5)~(7)

10 Days | 5 Days

Price

Volume Discount (Ⓟ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.
Ⓟ Please request a quotation for orders of 20 or more pieces of buff finished products.

Standard

D	€ Unit Price						
	(1) 1.2510 Hardening JPRBB JPRBPB	(2) Hard 1.2510 GJPRBB GJPRBPB	(3) 1.4301 SJPRBB SJPRBPB	(4) 1.4125 CJPRBB CJPRBPB	(5) 1.2510 Hardening + Buffed MJPRBB MJPRBPB	(6) Hard 1.2510 + Buffed MGJPRBB MGJPRBPB	(7) 1.4125 + Buffed MCJPRBB MCJPRBPB
2							
3							
4							
5							
6							
8							
10							
12							
13							
16							
20							

Male Thread

D	€ Unit Price						
	(1) 1.2510 Hardening JPRBNB	(2) Hard 1.2510 GJPRBNB	(3) 1.4301 SJPRBNB	(4) 1.4125 CJPRBNB	(5) 1.2510 Hardening + Buffed MJPRBNB	(6) Hard 1.2510 + Buffed MGJPRBNB	(7) 1.4125 + Buffed MCJPRBNB
3							
4							
5							
6							
8							
10							
12							
16							
20							

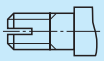
Female Thread

D	€ Unit Price						
	(1) 1.2510 Hardening JPRBTB	(2) Hard 1.2510 GJPRBTB	(3) 1.4301 SJPRBTB	(4) 1.4125 CJPRBTB	(5) 1.2510 Hardening + Buffed MJPRBTB	(6) Hard 1.2510 + Buffed MGJPRBTB	(7) 1.4125 + Buffed MCJPRBTB
6							
6T							
8							
8T							
10							
12							
13							
16							
20							

Alterations

Part Number	-	P	-	(DRC / RC)
JPRBB10	-	12	-	RC

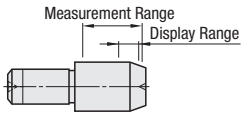
10 Days

Alterations	Screwdriver Slot	Under neck radius alteration
		
Code	DRC	RC
Spec.	Width 0.8mm Depth 1mm Ⓟ Applicable to external thread only.	Changes the relief to R0.5. Ordering Code RC Ⓟ Applicable when P-D≥2.
Price Adder	1,00	3,00

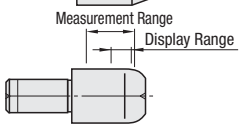
Surface Shape Measurement Result (Reference)

<Test Name> Surface Shape Measurement
<Measuring Instrument> Tokyo Seimitsu SURFCOM1800D-22
<Sample> ⓐ JPBB8-12 (**P.1283** Large Head Tapered)
ⓑ JPRBB8-12 (Large Head Round Tapered - Non Buff Finished)
ⓒ MJPRBB8-12 (Large Head Round Tapered - Buff Finished)
<Test Conditions> - Measurement Length 12mm
- Measurement Pitch 0.001mm
- Measurement Speed 0.6mm/S

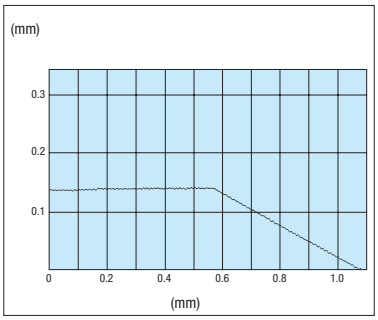
<Measuring Part>
Sample ⓐ



Sample ⓑ ⓒ

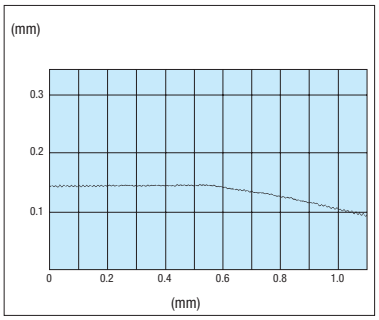


Measurement Results <Sample ⓐ>



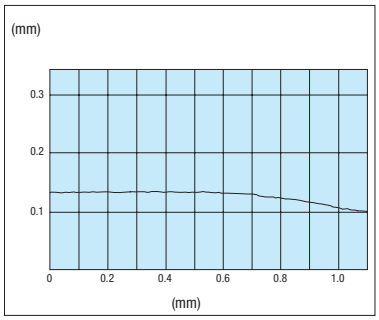
Conventional Tapered Type: The edge remains.

Measurement Results <Sample ⓑ>



Round Tapered Type: No edge.

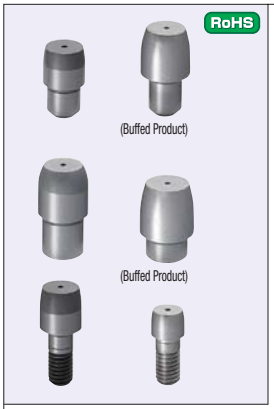
Measurement Results <Sample ⓒ>



Buffed Product: No edge and the surface is smooth.

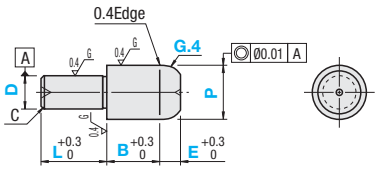
Locating Pins Large Head Round Tapered
-D and P Tolerance / Taper R Selectable-

Features: Small boundary between guide and locating parts ("No Edge" in diagram) prevents damage of locating target. Buff Finished Products with enhanced appearance and slide are also available.

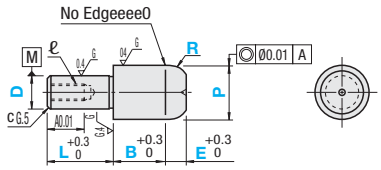


Materials No.	M Materials	S Surface Treatment	H Hardness	Type	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFPB	A(Standard) T(Female Thread) NA(Male Thread)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GKFPB	
(3)	1.4301/X5CrNi18-10	-	-	SKFPB	
(4)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFPB	
(5)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	MKFPB	
(6)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	MGKFPB	
(7)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	MCKFPB	

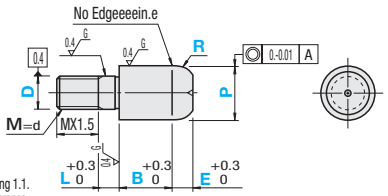
-Standard



-Female Thread



-Male Thread

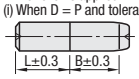


Tolerance Selection

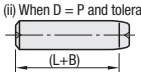
D or P	Standard Grade M	P	G	H	S	Precision Grade A	B
	m6	p6	g6	h7	-	-	-
2.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010			
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015	0 -0.01	+0.005 0	0 -0.005
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 30.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

Ⓟ The unit price of Precision Type is the price of Standard Type multiplying 1.1.
⊗ Hard Chrome Plating and Buffed is not available for Precision Grade Tolerance.
Ⓟ 1.4125/X105CrMo17 has an identification groove on D part.

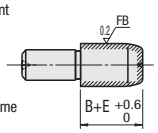
Ⓟ When D=P, no relief is applied.
(i) When D = P and tolerances are different



(ii) When D = P and tolerances are the same



Ⓟ Buff Finishing is at ▨ part only.



The boundary between B and E dimension is indistinct.

Standard

Type	Shape Code	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.5mm Increment	E 0.5mm Increment	R Selection	C
KFPB GKFPB* SKFPB CKFPB (Buffed Product) MKFPB* MGKFPB* MCKFPB*	A	M P G H *A *B	S M P G H *A *B	2	2.00~4.00	4~10	2.0~10.0	1.0~20.0	5 10 15 20 25 30 35 40	0.5
				3	3.00~6.00	5~12	2.0~10.0			1
				4	4.00~7.00	5~12	2.0~10.0			
				5	5.00~8.00	5~12	2.0~10.0			
				6	6.00~10.00	5~12	3.0~12.0			
				8	8.00~13.00	8~15	3.0~14.0			1.5
				10	10.00~15.00	8~15	3.0~16.0			2
				12	12.00~16.00	10~18	3.0~18.0			
				13	13.00~18.00	12~20	3.0~20.0	Ⓟ Specifiable value depends on P dimension. Confirm "Details of E Dimension and R Dimension Range".		
				16	16.00~25.00	14~25	3.0~20.0			3
Ⓟ Applicable when D≥5.				20	20.00~30.00	18~32	3.0~20.0			

⊗ For hard chrome plated and buffed are not available for Precision Grade * (Precision Grade A and B).

Female Thread

Type	Shape Code	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.5mm Increment	E 0.5mm Increment	R Selection	M (Coarse)	ℓ
KFPB GKFPB SKFPB CKFPB (Buffed Product) MKFPB MGKFPB MCKFPB	T	M P G H	S M P G H	6	6.00~10.00	6~12	3.0~12.0	1.0~20.0	5 10 15 20 25 30 35 40	M3	5
				6T		6~10				M2.6	4
				8	8.00~13.00	8~16	3.0~14.0			M5	8
				8T		6~12				M4	6
				10	10.00~15.00	10~20	3.0~16.0			M5	8
				10T		6~16				M4	6
				12	12.00~16.00	12~24	3.0~18.0			M5	8
				12T		8~18				M4	6
				13	13.00~18.00	13~26	3.0~20.0			M8	10
				13T		8~20				M6	9
				16	16.00~25.00	16~32	3.0~20.0			M8	12
				16T		10~24		Ⓟ Specifiable value depends on P dimension. Confirm "Details of E Dimension and R Dimension Range".		M6	9
				20	20.00~30.00	20~40	3.0~20.0			M8	12
				20T		12~30				M6	9

Ⓟ Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓟ Note the strength of under-head part. P.1281 Ⓟ Please confirm pilot hole depth on P.1281. Holes may penetrate.

Male Thread

Type	Shape Code	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.5mm Increment	E 0.5mm Increment	R Selection	M (Coarse)
KFPB GKFPB* SKFPB CKFPB (Buffed Product) MKFPB* MGKFPB* MCKFPB*	NA	M P G H *A *B	S M P G H *A *B	3	3.50~6.00	2~6	2.0~10.0	1.0~20.0	5 10 15 20 25 30 35 40	M3
				4	4.50~7.00	2~8	2.0~10.0			M4
				5	5.50~8.00	3~10	2.0~10.0			M5
				6	6.50~10.00	3~10	3.0~12.0			M6
				8	9.00~13.00	5~10	3.0~14.0			M8
				10	11.00~15.00	5~15	3.0~16.0			M10
				12	13.00~18.00	8~15	3.0~18.0			M12
				16	17.00~25.00	8~20	3.0~20.0	Ⓟ Specifiable value depends on P dimension. Confirm "Details of E Dimension and R Dimension Range".		M16
Ⓟ Applicable when D≥5.				20	22.00~30.00	10~20	3.0~20.0			M20

⊗ For hard chrome plated and buffed are not available for Precision Grade * (Precision Grade A and B).

Details of E Dimension and R Dimension Range

P 0.01mm Increment	E 0.5mm Increment	R Selection
2.00~4.00	1.0~2.0	5 10
4.01~8.00	2.5~4.0	10 15
8.01~12.00	4.5~7.0	10 15 20
12.01~16.00	5.0~10.0	15 20 25
16.01~20.00	5.0~15.0	20 25 30
20.01~25.00	5.0~15.0	25 30 35
25.01~30.00	5.0~20.0	30 35 40

Order Example

Part Number														
Type	Shape	D Tolerance	P Tolerance	D	-	P	-	L	-	B	-	E	-	R
MGKFPB	A	M	S	10	-	P12.00	-	L10	-	B4.0	-	E6.0	-	R20

Days to Ship

- Other than listed on the right: 8 Days (Express A: 5,00 EUR / piece) P88
- Buff Finished Product (Material No.(5) ~ (7)): 10 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for hard 1.2510/100MnCrW4.

Price

Volume Discount (Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for orders of 20 or more pieces of buff finished products.

Standard

D	€ Unit Price						
	(1) KFPBA	(2) GKFPBA	(3) SKFPBA	(4) CKFPBA	(5) MKFPBA	(6) MGKFPBA	(7) MCKFPBA
2							
3							
4							
5							
6							
8							
10							
12							
13							
16							
20							

Male Thread

D	€ Unit Price						
	(1) KFPBNA	(2) GKFPBNA	(3) SKFPBNA	(4) CKFPBNA	(5) MKFPBNA	(6) MGKFPBNA	(7) MCKFPBNA
3							
4							
5							
6							
8							
10							
12							
16							
20							

Female Thread

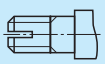
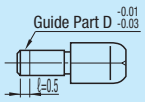
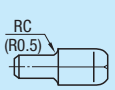
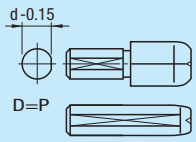
D	€ Unit Price						
	(1) KFPBT	(2) GKFPBT	(3) SKFPBT	(4) CKFPBT	(5) MKFPBT	(6) MGKFPBT	(7) MCKFPBT
6							
6T							
8							
8T							
10							
10T							
12							
12T							
13							
13T							
16							
16T							
20							
20T							

Precision Grade Price
When A and B tolerance is selected, M x1.1 to the unit prices shown below.
Examples of Price Calculation
KFPBAAB10-P12.00-L10-B5.0-E5.0-R15
13,20 (KFPBA10) x 1.1 = 14,50 EUR

Alterations

Part Number	-	P	-	L	-	B	-	E	-	R	-	(DRC / GDC / RC / AC)
KFPBAMA12	-	P14.00	-	L10	-	B3.5	-	E5.0	-	R15	-	RC

10 Days

Alterations	Screwdriver Slot	Insertion Guide Machining	Under neck radius alteration	Air Vent
				
Code	DRC	GDC	RC	AC
Spec.	Width 0.8mm Depth 1mm Applicable to external thread only.	Adds Insertion Guide. Ordering Code GDC Not applicable to D=2. Not applicable to Male Thread Type. D: 3~12 → ℓ 1; 13~20 → ℓ 2	Changes the relief to R0.5. Ordering Code RC Applicable when P-D≥2.	Adds an air vent. Ordering Code AC Not applicable to Male Thread Type.
Price Adder	1,00	2,00	3,00	2,00

Locating Pins Small Head Round Tapered

CAD Data

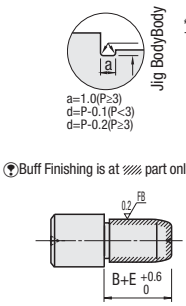
RoHS



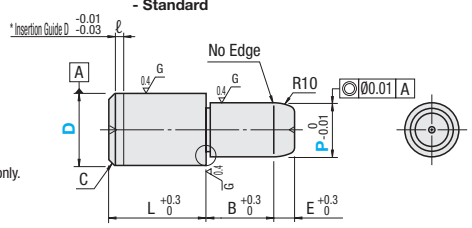
(Buffed Product)

Materials No.	M Material	S Surface Treatment	H Hardness	Type	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPRS	B(Standard, m6) PB(Standard, p6) TB(Female Thread)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GJPRS	
(3)	1.4301/X5CrNi18-10	-	-	SJPRS	
(4)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPRS	
(5)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	MJPRS	
(6)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	MGJPRS	
(7)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	MCJPRS	

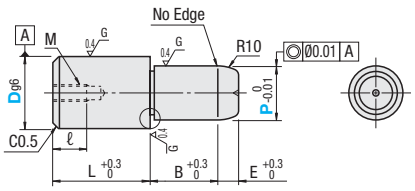




- Standard



- Female Thread



Ⓟ* Insertion Guide is applicable to tolerance m6 and p6 Type only.
Ⓟ1.4125/X105CrMo17 has an identification groove on D part.

Standard

Part Number Type	Shape Code	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P Selection	L	B	C	ℓ	E	€ Unit Price (1) JPRSB JPRSPB	(2) GJPRSB GJPRSPB	(3) SJPRSB SJPRSPB	(4) CJPRSB CJPRSPB	(5) MJPRSB MJPRSPB	(6) MGJPRSB MGJPRSPB	(7) MCJPRSB MCJPRSPB
JPRS GJPRS SJPRS CJPRS	B(m6) PB(p6)	3	+0.008 +0.002	+0.012 +0.006	2 3	5	3	0.5	1	3							
		4	+0.012 +0.004	+0.020 +0.012	2 3 4												
		5			2 3 4 5	10	5	1									
		6			3 4 5 6					4							
(Buffed Product) MJPRS MGJPRS MCJPRS Ⓟ Applicable when D≥5 and P≥5.		8	+0.015 +0.006	+0.024 +0.015	4 5 6 8	15	6	1.5		5							
		10			6 8 10		8	2									
		12	+0.018 +0.007	+0.029 +0.018	8 10 12					6							
		13			12 13	22			2								
		16			12 13 14 15 16		10	3		7							
		20	+0.021 +0.008	+0.035 +0.022	15 16 20	30											

Female Thread

Part Number Type	Shape Code	D	D Dimension Tolerance g6	P Selection	L	B	E	M (Coarse)	ℓ	€ Unit Price (1) JPRSTB	(2) GJPRSTB	(3) SJPRSTB	(4) CJPRSTB	(5) MJPRSTB	(6) MGJPRSTB	(7) MCJPRSTB
JPRS GJPRS SJPRS CJPRS	TB	6	-0.004 -0.012	4 5 6	10	5	5	M3	5							
		6T		4 5 6				M2.6	4							
		8	-0.005 -0.014	6 8	15	6		M4	6							
		8T		6 8				M3	5							
(Buffed Product) MJPRS MGJPRS MCJPRS Ⓟ		10		8 10		8	6	M5	8							
		12	-0.006 -0.017	8 10 12												
		13		12 13	22			M8	12							
		16		12 13 14 15 16		10	7									
		20	-0.007 -0.020	15 16 20	30											

Ⓟ Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓟ Note the strength of under-head part. P.1281 Ⓟ Please confirm pilot hole depth on P.1281. Holes may go through.

Order Example

Part Number Type	Shape	D	-	P
JPRS	B	10	-	6
MGJPRS	B	12	-	8

Days to Ship

- Except Those Shown Below

8 Days — Express A 5,00 EUR / piece P.88

Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗ Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4 and Material No. (5) ~ (7) Buff Finished Products.

- Standard Material(6) / Female Thread Materials(5)~(7)

10 Days — 5 Days

Price

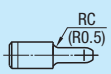
■Volume Discount (Ⓟ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.
Ⓟ Please request a quotation for orders of 20 or more pieces of buff finished products.

Alterations

Part Number - P - (RC)
JPRSB10 - 6 - RC
10 Days

Alterations Code	Under neck radius alteration RC
Spec.	Changes the relief to R0.5. Ordering Code RC  Ⓟ Applicable when D-P≥2.
Price Adder	3,00

Locating Pins Small Head Round Tapered

-D and P Tolerance / Taper R Selectable-

RoHS



(Buffed Product)

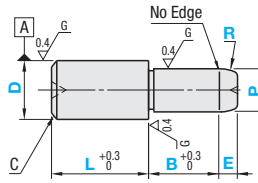
Materials No.	M Material	S Surface Treatment	H Hardness	Type	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFPS	A (Standard) T (Female Thread)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GKFPS	
(3)	1.4301/X5CrNi18-10	-	-	SKFPS	
(4)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFPS	
(5)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	MKFPS	
(6)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	MGKFPS	
(7)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	MCKFPS	

■Tolerance Selection

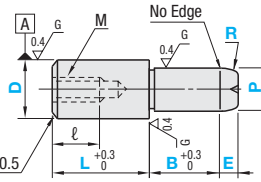
D or P	Standard Grade M	P	G	H	S	Precision Grade A	B
	m6	p6	g6	h7	-	-	-
2.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010			
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015	0 -0.01	+0.005 0	0 -0.005
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 20.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

Ⓟ The unit price of Precision Type is the price of Standard Type multiplying 1.1.
Ⓧ For hard chrome plated and buffed, Precision Grade tolerance is not available.

- Standard

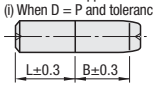


- Female Thread

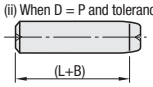


Ⓟ 1.4125/X105CrMo17 has an identification groove on D part.

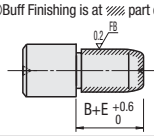
Ⓟ When D=P, no relief is applied.
(i) When D = P and tolerances are different



(ii) When D = P and tolerances are the same



Ⓟ Buff Finishing is at ▨ part only.



The boundary between B and E dimension is indistinct.

■Standard

Type	Shape Code	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.5mm Increment	E 0.5mm Increment	R Selection	C	€ Unit Price (1) KFPSA	(2) GKFPSA	(3) SKFPSA	(4) CKFPSA	(5) MKFPSA	(6) MGKFPSA	(7) MCKFPSA
KFPS GKFPS SKFPS CKFPS (Buffed Product) MKFPS* MGKFPS* MCKFPS* Ⓟ Applicable when D≥5 and P≥5.	A	M P G H *A *B	S M P G H *A *B	3	2.00~3.00	3~8	2.0~10.0	1.0~15.0	5 10 15 20 25 30	0.5							
				4	2.00~4.00	4~12	2.0~10.0			1							
				5	2.00~5.00	5~12	2.0~10.0										
				6	2.00~6.00	5~12	3.0~12.0										
				8	3.00~8.00	8~15	3.0~14.0			1.5							
				10	3.00~10.00	8~15	3.0~16.0			2							
				12	5.00~12.00	10~18	3.0~18.0										
				13	6.00~13.00	12~20	3.0~20.0										
				16	10.00~16.00	14~25	3.0~20.0			3							
				20	13.00~20.00	18~32	3.0~20.0										

Ⓟ Specifiable range depends on P dimension. Confirm "Details of E Dimension and R Dimension Range" below.

Ⓧ For hard chrome plated and buffed, * marked (Precision Grade tolerance) are not available.

■Female Thread

Type	Shape Code	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.5mm Increment	E 0.5mm Increment	R Selection	M (Coarse)	ℓ	€ Unit Price (1) KFPST	(2) GKFPST	(3) SKFPST	(4) CKFPST	(5) MKFPST	(6) MGKFPST	(7) MCKFPST
KFPS GKFPS SKFPS CKFPS (Buffed Product) MKFPS MGKFPS MCKFPS Ⓟ	T	M P G H	S M P G H	6	4.00~6.00	8~12	3.0~12.0	1.0~15.0	5 10 15 20 25 30	M3	5							
				6T						M2.6	4							
				8	6.00~8.00	11~16	3.0~14.0			M5	8							
				8T						M4	6							
				10	7.00~10.00	11~20	3.0~16.0			M5	8							
				10T		8~16				M4	6							
				12	7.00~12.00	12~24	3.0~18.0			M5	8							
				12T		8~18				M4	6							
				13	8.00~13.00	13~26	3.0~20.0			M8	10							
				13T		10~20				M6	9							
				16	10.00~16.00	16~32	3.0~20.0			M8	12							
				16T		10~24				M6	9							
				20	13.00~20.00	20~40	3.0~20.0			M8	12							
				20T		12~30				M6	9							

Ⓟ Specifiable range depends on P dimension. Confirm "Details of E Dimension and R Dimension Range" below.

Ⓟ Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓟ Note the strength of under-head part. P.1281 Ⓟ Please confirm pilot hole depth on P.1281.

Ⓟ Precision Grade Price When A and B tolerance is selected, multiply 1.1 to the above unit price. (Round down to ten Cent.)
Price Calculation Example: KFPSAAB10-P8.00-L8-B3.0-E3.0-R10
13,20 (KFPSA10) x 1.1 = 14,50 EUR

Order Example

Part Number												
Type	Shape	D Tolerance	P Tolerance	D	-	P	-	L	-	B	-	E	-	R
MKFPS	A	M	S	16	-	P12.00	-	L14	-	B4.0	-	E5.0	-	R15

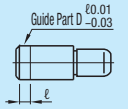
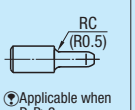
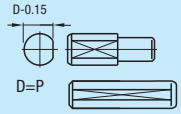
Alterations

Part Number		P		L		B		E		R		(GDC / RC / AC)
KFPSAMA12	-	P7.00	-	L10	-	B3.0	-	E3.0	-	R10	-	RC

10 Days

■Details of E Dimension and R Dimension Range

P 0.01mm Increment	E 0.5mm Increment	R Selection
2.00~4.00	1.0~2.0	5 10
4.01~8.00	2.5~4.0	10 15
8.01~12.00	4.5~7.0	10 15 20
12.01~16.00	5.0~10.0	15 20 25
16.01~20.00	5.0~15.0	20 25 30

Alterations Code	Insertion Guide Machining GDC	Radius RC	Air Vent AC
Spec.	Adds Insertion Guide. Ordering Code GDC  D: 3~6 ℓ: 1; 8~20 ℓ: 2	Changes the relief to R0.5. Ordering Code RC  Ⓟ Applicable when D-P≥2.	Adds an air vent. Ordering Code AC 
Price Adder	2,00	3,00	2,00

Days to Ship - Except Those Shown Below: 8 Days — Express A 5,00 EUR / piece P.88
Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
Ⓧ Express Serviceis not available for hard 1.2510/100MnCrW4.

- Buff Finished Product (Material No.(5) ~ (7)): 10 Days

Price

■Volume Discount (Ⓟ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Ⓟ Please request a quotation for orders of 20 or more pieces of buff finished products.

Locating Pins Large Head Bullet Nose Shaped Compact
-Standard / Treaded-

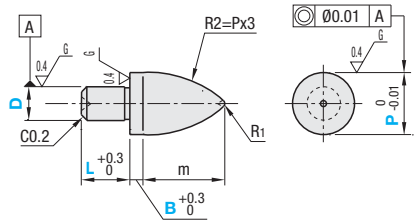
Features: R shape at insertion guide enables smooth insertion of work. Compact Type with specifiable shorter L dimension.

RoHS

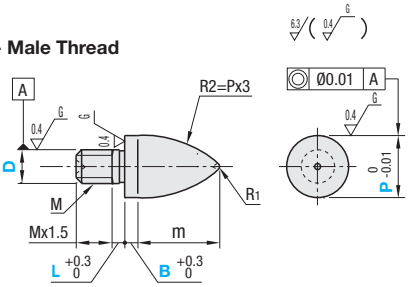


Mat. No.	M Material	S Surface Treatment	H Hardness	Type	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	FPCH	A (Standard, m6) PA (Standard, p6) NA (Male Thread)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GFPCH	
(3)	1.2510/100MnCrW4	-	-	BFPCH	
(4)	1.4301/X5CrNi18-10	-	-	SFPCH	
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV~	HFPCH	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CFPCH	

- Standard



- Male Thread



$m=\sqrt{(3P\sim R1)\,2-\left(\frac{5P}{2}\right)}\,2+R1$

m dimension is the value before grinding.
Centering holes may shorten the actual length.

Locating Pins for Height Adjusting with shorter B fixed dimension is also available. P.1351

Standard

Part Number Type	Shape Code	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	R_1
FPCH GFPCH BFPCH SFPCH HFPCH CFPCH	A (m6) PA (p6)	2	+0.008 +0.002	+0.012 +0.006	3.00~4.00	2~10	1.0~5.0	1
		3			3.50~6.00			
		4	+0.012 +0.004	+0.020 +0.012	4.50~7.00			
		5			5.50~8.00	3~10		
		6			6.50~10.00			
		8	+0.015 +0.006	+0.024 +0.015	8.50~13.00			2
		10			10.50~15.00			

Male Thread

Part Number Type	Shape Code	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	R_1	M (Coarse)
FPCH GFPCH BFPCH SFPCH HFPCH CFPCH	NA	3	-0.002 -0.008	3.50~6.00	2~10	1.0~5.0	1	M3
		4	-0.004 -0.012	4.50~7.00				M4
		5		5.50~8.00	3~10			M5
		6		6.50~10.00				M6
		8	-0.005 -0.014	9.00~13.00				M8
		10		11.00~15.00			2	M10

Order Example

Part Number Type	Shape	D	-	P	-	L	-	B
FPCH	A	3	-	P4.20	-	L6	-	B2.0
SFPCH	PA	5	-	P6.00	-	L4	-	B3.5

Days to Ship

-Material No. (1) (3) (4) (6)
8 Days

- Material No. (2) (5)
10 Days

Express B | 5,00 EUR / piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Reduced Delivery Time

CAD Data

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Standard

D	€ Unit Price					
	(1) 1.2510/100MnCrW4 Hardening FPCHA FPCHPA	(2) Hard 1.2510/100MnCrW4 GFPCHA GFPCHPA	(3) 1.2510/100MnCrW4 BFPCHA BFPCHPA	(4) 1.4301/X5CrNi18-10 SFPCHA SFPCHPA	(5) 1.4301/X5CrNi18-10 Hard HFPCHA HFPCHPA	(6) 1.4125/X105CrMo17 CFPCHA CFPCHPA
2						
3						
4						
5						
6						
8						
10						

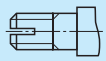
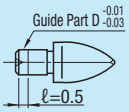
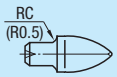
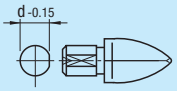
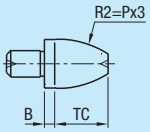
Male Thread

D	€ Unit Price					
	(1) 1.2510/100MnCrW4 Hardening FPCHNA	(2) Hard 1.2510/100MnCrW4 GFPCHNA	(3) 1.2510/100MnCrW4 BFPCHNA	(4) 1.4301/X5CrNi18-10 SFPCHNA	(5) 1.4301/X5CrNi18-10 Hard HFPCHNA	(6) 1.4125/X105CrMo17 CFPCHNA
3						
4						
5						
6						
8						
10						

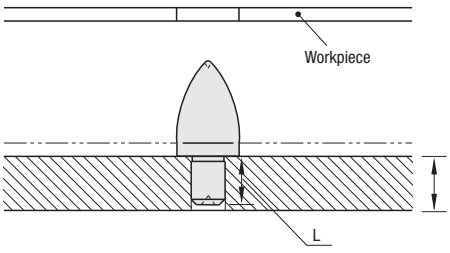
Alterations

Part Number	-	P	-	L	-	B	-	(DRC / GDC / RC / AC / TC)
CFPCHPA3	-	P4.00	-	L4	-	B1.0	-	AC

10 Days

Alterations	Screwdriver Slot	Insertion Guide Machining	Under neck radius alteration	Air Vent	Tip Length
					
Code	DRC	GDC	RC	AC	TC
Spec.	Width 0.8mm Depth 1mm Applicable to external thread only. Applicable when B≥2.0.	Adds Insertion Guide. Ordering Code GDC Not applicable when L=2. Not applicable to D=2. Not applicable to Male Thread Type.	Changes the relief to R0.5. Ordering Code RC Applicable when P-D≥2. Not applicable when L=2.	Adds an air vent. Ordering Code AC Not applicable to Male Thread Type. Applicable when L≥4 or B≥4.0.	Changes tip length. Ordering Code TC5 (1mm Increment) P/2≤TC≤P
Price Adder	1,00	2,00	3,00	2,00	3,00

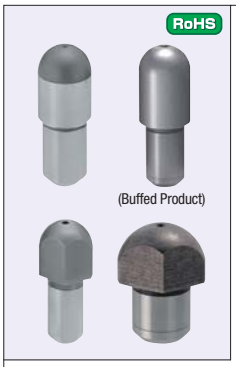
Example



Tip radius R enables smooth insertion of work.
Space-saving compact type with shorter mounting part (L dimension).

Designed to be used in limited spaces.

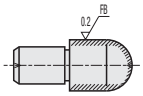
Locating Pins Spherical Large Head
-Standard-



Material No.	Material	Surface Treatment	Hardness	P Dimension Selectable		P Dim. Configurable		P, L and B Dim. Configurable	
				Type	D Tol. / Shape	Type	D Tol. / Shape	Type	D Tol. / Shape
(1)	1.2510/ 100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPQ	<Round> B (m6) PB (p6)	JPQ	<Round> A (m6) PA (p6) <Diamond> D (m6) PD (p6)	FPQ	<Round> A (m6) PA (p6) <Diamond> D (m6) PD (p6)
(2)	1.2510/ 100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC	-		GJPQ		GFPQ	
(3)	1.4301/ X5CrNi18-10	-	-	SJPQ		SJPQ		SFPQ	
(4)	1.4301/ X5CrNi18-10	Hard Chrome Plating	-	-		HJPQ		HFPQ	
(5)	1.4125/ X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPQ		CJPQ		CFPQ	
(6)	1.2510/ 100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	-		MJPQ		MFPQ	
(7)	1.2510/ 100MnCrW4	Hard Chrome Plating Buffing	Treated Hardness 60 ~ 63HRC	-		MGJPQ		MGFPQ	
(8)	1.4125/ X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	-		MCJPQ		MCFPQ	

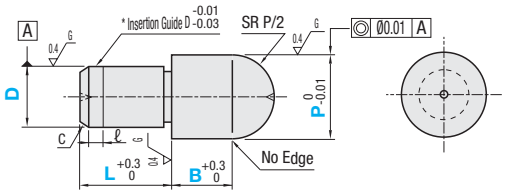
Refer to the price list to select the available combination.
Hard Chrome Plating: Plating thickness 3µm or more, plating hardness 750HV~

Buff Finishing is at ▨ part only.
(Except diamond cut surface)

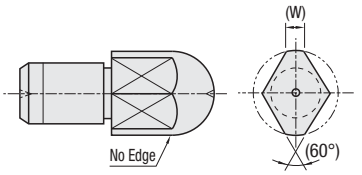


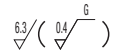
The boundary between spherical part and B dimension is indistinct.

(Round)



(Diamond)





* Insertion Guide is applicable to tolerance p6 type only.
1.4125/X105CrMo17 has an identification groove on D part.
The smaller the dimension P, the less the size of sphere, due to center hole.

Locating Pins for Height Adjusting with shorter B fixed dimension is also available.
P.1351

■P Dimension Selectable

Part Number Type	D Tolerance / Shape	D	D Tolerance m6	D Tolerance p6	P Selection	L	B	C	ℓ
JPQ SJPQ CJPQ	<Round> B (m6) PB (p6)	1	+0.008 +0.002	+0.012 +0.006	2	3	3	0.1	0
		2			3 4	4		0.5	
		3			4 5 6	5	5		1
		4	+0.012 +0.004	+0.020 +0.012	5 6 7		6	1	
		5			6 7 8	10			
		6			7 8 9 10		8		
		8	+0.015 +0.006	+0.024 +0.015	9 10 11 12	15	10	1.5	
		10			12 13			2	

■P Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Tolerance m6	D Tolerance p6	P 0.01mm Increment	L	B	C	ℓ	(W)
JPQ GJPQ SJPQ HJPQ CJPQ (Buffed Product) MJPQ MGJPQ MCJPQ ※Applicable when D≥5.	<Round> A (m6) PA (p6) <Diamond> D (m6) PD (p6) ※Applicable when D≥2	1	+0.008 +0.002	+0.012 +0.006	1.50~2.50	3	3	0.1	0	-
		2			2.50~4.00	4		0.5		1.2
		3			3.50~6.00	5	5		1	1.5
		4	+0.012 +0.004	+0.020 +0.012	4.50~7.00		6	1		1.8
		5			5.50~8.00	10				2.2
		6			6.50~10.00		8			3.0
		8	+0.015 +0.006	+0.024 +0.015	9.00~13.00	15	10	1.5		3.5
		10			11.00~15.00			2		4.0
		12	+0.018 +0.007	+0.029 +0.018	13.00~16.00					5.0
		13			14.00~18.00	22			2	5.5
		16			17.00~25.00			3		7.0
		20	+0.021 +0.008	+0.035 +0.022	22.00~30.00	30	15			9.0

■P, L and B Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Tolerance m6	D Tolerance p6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	ℓ	(W)
FPQ GFPQ SFPQ HFPQ CFPQ (Buffed Product) MFPQ MGFPQ MCFPQ ※Applicable when D≥5.	<Round> A (m6) PA (p6) <Diamond> D (m6) PD (p6) ※Applicable when D≥2	1	+0.008 +0.002	+0.012 +0.006	1.50~2.50	2, 3	2.0~5.0	0.1	0	-
		2			2.50~4.00	2~6	2.0~10.0	0.5		1.2
		3			3.50~6.00	3~6	2.0~10.0		1	1.5
		4	+0.012 +0.004	+0.020 +0.012	4.50~7.00	4~8	2.0~10.0	1		1.8
		5			5.50~8.00	5~10	2.0~10.0			2.2
		6			6.50~10.00	6~12	2.0~12.0		1	3.0
		8	+0.015 +0.006	+0.024 +0.015	9.00~13.00	8~16	2.0~15.0	1.5		3.5
		10			11.00~15.00	10~20	3.0~20.0	2		4.0
		12	+0.018 +0.007	+0.029 +0.018	13.00~16.00	12~24	3.0~20.0			5.0
		13			14.00~18.00	13~26	5.0~20.0		2	5.5
		16			17.00~25.00	16~32	5.0~20.0	3		7.0
		20	+0.021 +0.008	+0.035 +0.022	22.00~30.00	20~40	5.0~20.0			9.0

Order Example

Part Number								
Type	D Tolerance Shape	D	-	P	-	L	-	B
JPQ	A	4	-	5.00				
FPQ	A	4	-	P5.00	-	L5	-	B2.5
MFPQ	PA	12	-	P15.98	-	L12	-	B5.5

Days to Ship

P Dimension Selectable: 6 Days P. 87

- P Dimension Configurable, Material No. (1) ~ (5) / P, L and B Dimension Configurable, Material No. (1) ~ (5)

8 Days | Express A | 5,00 EUR / piece P. 88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr and Material No. (4) Hard 1.4301/X5CrNi18-10.

- Buff Finished Product (Material No.(6) ~ (8))

10 Days | 5 Days

Price

■Volume Discount (※Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.
※Please request a quotation for 50 or more pieces of in-stock items.
※Please request a quotation for orders of 20 or more pieces of buff finished products.

■P Dimension Selectable

D	€ Unit Price Round Shape		
	(1) 1.2510/100MnCrW4 Hardening	(3) 1.4301/X5CrNi18-10	(5)1.4125/X105CrMo17
	JPQB JPQPB	SJPQB SJPQPB	CJPQB CJPQPB
1			
2			
3			
4			
5			
6			
8			
10			

■P Dimension Configurable

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510/ Hardening	(2) Hard 1.2510/	(3) 1.4301/	(4) Hard 1.4301/	(5)1.4125/	(6) 1.2510/ Hardening + Buffed	(7) Hard 1.2510/ + Buffed	(8) 1.4125/ X105CrMo17 + Buffed	(1) 1.2510/ Hardening	(2) Hard 1.2510/	(3) 1.4301/	(4) Hard 1.4301/	(5)1.4125/	(6) 1.2510/ Hardening + Buffed	(7) Hard 1.2510/ + Buffed	(8) 1.4125/ + Buffed
	JPQA JPQPA	GJPQA GJPQPA	SJPQA SJPQPA	HJPQA HJPQPA	CJPQA CJPQPA	MJPQA MJPQPA	MGJPQA MGJPQPA	MCJPQA MCJPQPA	JPQD JPQPD	GJPQD GJPQPD	SJPQD SJPQPD	HJPQD HJPQPD	CJPQD CJPQPD	MJPQD MJPQPD	MGJPQD MGJPQPD	MCJPQD MCJPQPD
1																
2																
3																
4																
5																
6																
8																
10																
12																
13																
16																
20																

■P, L and B Dimension Configurable

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510/ Hardening	(2) Hard 1.2510/	(3) 1.4301/	(4) Hard 1.4301/	(5)1.4125/	(6) 1.2510/ Hardening + Buffed	(7) Hard 1.2510/ + Buffed	(8) 1.4125/ + Buffed	(1) 1.2510/ Hardening	(2) Hard 1.2510/	(3) 1.4301/	(4) Hard 1.4301/	(5)1.4125/	(6) 1.2510/ Hardening + Buffed	(7) Hard 1.2510/ + Buffed	(8) 1.4125/ + Buffed
	FPQA FPQPA	GFPQA GFPQPA	SFPQA SFPQPA	HFPQA HFPQPA	CFPQA CFPQPA	MFPQA MFPQPA	MGFPQA MGFPQPA	MCFPQA MCFPQPA	FPQD FPQPD	GFPQD GFPQPD	SFPQD SFPQPD	HFPQD HFPQPD	CFPQD CFPQPD	MFPQD MFPQPD	MGFPQD MGFPQPD	MCFPQD MCFPQPD
1																
2																
3																
4																
5																
6																
8																
10																
12																
13																
16																
20																

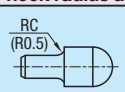
Alterations

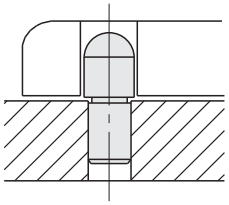
Part Number	-	P	-	L	-	B	-	(RC)
FPQA4	-	P6.50	-	L5	-	B2.5	-	RC

⊗Alteration is not available for P Dimension Selectable Type.

10 Days

Example

Alterations	Under neck radius alteration
	
Code	RC
Spec.	Changes the relief to R0.5. Ordering Code RC ※Applicable when P-D≥2.
Price Adder	3,00



Pins with spherical head prevent damages on mating parts.

Locating Pins Spherical Large Head
-Female Thread-

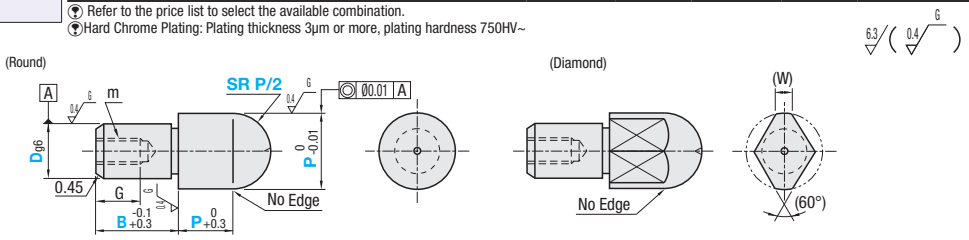
NEW

Ⓟ D=5 is now available for Configurable Type.



Material No.	M Material	S Surface Treatment	H Hardness	P Dimension Selectable Type	P Dimension Selectable Shape Code	P Dimension Configurable Type	P Dimension Configurable Shape Code	P, L and B Dimension Configurable Type	P, L and B Dimension Configurable Shape Code
(1)	1.2510/ 100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPQT	BB(Round)	JPQT	A(Round) D(Diamond)	FPQT	A(Round) D(Diamond)
(2)		Hard Chrome Plating	Treated Hardness 60 ~ 63HRC	-		GJPQT		GFPQT	
(3)	1.4301/ X5CrNi18-10	-	-	SJPQT		SJPQT		SFPQT	
(4)		Hard Chrome Plating	-	-		-		HFPQT	
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPQT		CJPQT		CFPQT	
(6)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	-		MJPQT		MFPQT	
(7)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing	Treated Hardness 60 ~ 63HRC	-		MGJPQT		MGFPQT	
(8)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	-		MCJPQT		MCFPQT	

Ⓟ Refer to the price list to select the available combination.
Ⓟ Hard Chrome Plating: Plating thickness 3μm or more, plating hardness 750HV~



Ⓟ 1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number Type	Shape	D	D Dimension Tolerance g6	P Selection	L	B	M (Coarse)	ℓ
JPQT SJPQT CJPQT	BB (Round)	6	-0.004 -0.012	7 8 9 10	10	8	M3	5
		8	-0.005 -0.014	9 10 11 12 13	15		M5	8
		10		11 12 13 15		10		
		12	-0.006 -0.017	15 16				
		16		18 19 20 24 25	22		M8	12

■P Dimension Configurable

Part Number Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	M (Coarse)	ℓ	(W)
JPQT GJPQT SJPQT CJPQT (Buffed Product) MJPQT MGJPQT MCJPQT	A (Round) D (Diamond)	5	-0.004 -0.012	5.50~8.00	10	6	M2	3	2.2
		6		6.50~10.00		8	M3	5	3.0
		6T					M2.6	4	
		8	-0.005 -0.014	9.00~13.00	15		M5	8	3.5
		8T					M4	6	
		10		11.00~15.00		10	M5	8	4.0
		12	-0.006 -0.017	13.00~16.00					5.0
		13		14.00~18.00	22		M8	10	5.5
		16		17.00~25.00				12	7.0
		20	-0.007 -0.020	22.00~30.00	30	15			9.0

■P, L and B Dimension Configurable

Part Number Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	ℓ	(W)
FPQT GFPQT SFPQT HFPQT CFPQT (Buffed Product) MFPQT MGFPQT MCFPQT	A (Round) D (Diamond)	5	-0.004 -0.012	5.50~8.00	5 (9) ~ 10	2.0~10.0	M2	3	2.2
		6		6.50~10.00	6 (9) ~ 12	2.0~12.0	M3	5	3.0
		6T					M2.6	4	
		8	-0.005 -0.014	9.00~13.00	8 (12) ~ 16	2.0~15.0	M5	8	3.5
		8T			6 (12) ~ 16		M4	6	
		10		11.00~15.00	10 (12) ~ 20	3.0~20.0	M5	8	4.0
		10T			6 (12) ~ 16		M4	6	
		12	-0.006 -0.017	13.00~16.00	12~24	3.0~20.0	M5	8	5.0
		12T			8 (12) ~ 18		M4	6	
		13		14.00~18.00	13 (14) ~ 26	5.0~20.0	M8	10	5.5
		13T			8 (14) ~ 20		M6	9	
		16		17.00~25.00	16~32	5.0~20.0	M8	12	7.0
		16T			10 (14) ~ 24		M6	9	
		20	-0.007 -0.020	22.00~30.00	20~40	5.0~20.0	M8	12	9.0
		20T			12 (18) ~ 30		M6	9	

Ⓟ Pins of D dimension with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓟ L dimension in ( ) is applicable to diamond shape.
Ⓟ Please confirm pilot hole depth on P.1281. Holes may go through.
Ⓟ Note the strength of under-head part. P.1281

Order Example

Part Number	-	P	-	L	-	B
JPQTA6	-	10.0				
MFPQTA6	-	P10.00	-	L10	-	B5.0

Days to Ship

P Dimension Selectable: 6 Days P. 87

- P Dimension Configurable Material No. (1) ~ (5)/ P, L and B Dim. Configurable Material No. (1) ~ (5): 8 Days

Express A 5,00 EUR / piece P. 88

- Buff Finished Product (Material No.(6) ~ (8)): 10 Days / 5 Days

Price (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (4) Hard 1.4301/X5CrNi18-10.

For orders larger than indicated quantity, please request a quotation.

Please request a quotation for 50 or more pieces of in-stock items.

Please request a quotation for orders of 20 or more pieces of buff finished products.

P Dimension Selectable

D	€ Unit Price Round Shape		
	(1) 1.2510/100MnCrW4 Hardening JPQTBB	(3) 1.4301/X5CrNi18-10 SJPQTBB	(5)1.4125/X105CrMo17 CJPQTBB
6			
8			
10			
12			
16			

P Dimension Configurable

D	€ Unit Price Round Shape							€ Unit Price Diamond Shape						
	(1) 1.2510/100MnCrW4 Hardening JPQTA	(2) Hard 1.2510/100MnCrW4 GJPQTA	(3) 1.4301/X5CrNi18-10 SJPQTA	(5)1.4125/X105CrMo17 CJPQTA	(6) 1.2510/100MnCrW4 Hardening + Buffed MJPQTA	(7) Hard 1.2510/100MnCrW4 + Buffed MGJPQTA	(8) 1.4125/X105CrMo17 + Buffed MCJPQTA	(1) 1.2510/100MnCrW4 Hardening JPQTD	(2) Hard 1.2510/100MnCrW4 GJPQTD	(3) 1.4301/X5CrNi18-10 SJPQTD	(5)1.4125/X105CrMo17 CJPQTD	(6) 1.2510/100MnCrW4 Hardening + Buffed MJPQTD	(7) Hard 1.2510/100MnCrW4 + Buffed MGJPQTD	(8) 1.4125/X105CrMo17 + Buffed MCJPQTD
5														
6														
6T														
8														
8T														
10														
12														
13														
16														
20														

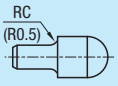
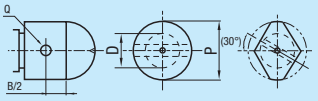
P, L and B Dimension Configurable

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510/100MnCrW4 Hardening FPQTA	(2) Hard 1.2510/100MnCrW4 GFPQTA	(3) 1.4301/X5CrNi18-10 SFPQTA	(4) Hard 1.4301/X5CrNi18-10 HFPQTA	(5)1.4125/X105CrMo17 CFPQTA	(6) 1.2510/100MnCrW4 Hardening + Buffed MFPQTA	(7) Hard 1.2510/100MnCrW4 + Buffed MGFPQTA	(8) 1.4125/X105CrMo17 + Buffed MCFPQTA	(1) 1.2510/100MnCrW4 Hardening FPQTD	(2) Hard 1.2510/100MnCrW4 GFPQTD	(3) 1.4301/X5CrNi18-10 SFPQTD	(4) Hard 1.4301/X5CrNi18-10 HFPQTD	(5)1.4125/X105CrMo17 CFPQTD	(6) 1.2510/100MnCrW4 Hardening+ Buffed MFPQTD	(7) Hard 1.2510/100MnCrW4 + Buffed MGFPQTD	(8) 1.4125/X105CrMo17 + Buffed MCFPQTD
5																
6																
6T																
8																
8T																
10																
10T																
12																
12T																
13																
13T																
16																
16T																
20																
20T																

Alterations

Part Number	-	P	-	L	-	B	- (RC / LAC)	5 Days
FPQTA6	-	P10.00	-	L10	-	B5	- RC	

Alteration is not available for P Dimension Selectable Type. Combination of RC and LAC is not available.

Alterations	Under neck radius alteration	Wrench Hole
		
Code	RC	LAC
Spec.	Changes the relief to R0.5. Ordering Code RC Applicable when P-D≥2.	Machines wrench hole. Ordering Code LAC Orientation between diamond shape head and wrench hole is arbitrary.
Price Adder	3,00	3,00

D	B Dimension
5	5.0~
6 6T	
8 8T	
10 10T	
12 12T	
13 13T	
16 16T	10.0~
20 20T	

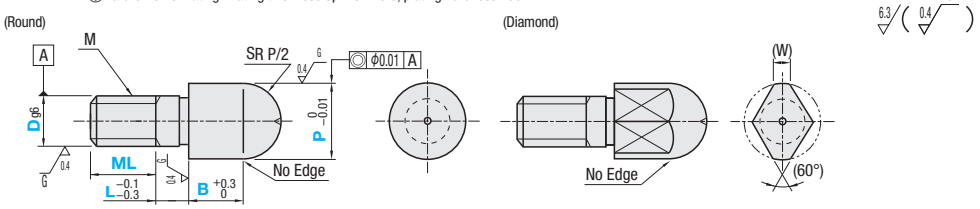
Wrench Hole Dimension	
P	Q
5.50~9.99	2
10.00~16.99	3.5
17.00~	5

Locating Pins Spherical Large Head
-Male Thread-



Material No.	Material	Surface Treatment	Hardness	Type: P Dimension Selectable	Type: P Dimension Configurable	Type: P, L and B Dimension Configurable	Type: P, L, B and ML Dimension Configurable	Shape: P Dimension Selectable	Shape: Except P Dimension Standard
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPQN	JPQN	FPQN	FPQNL	BB (Round)	A(Round) D(Diamond)
(2)		Hard Chrome Plating	Treated Hardness 60 ~ 63HRC	-	GJPQN	GFPQN	GFPQNL		
(3)	1.4301/X5CrNi18-10	-	-	SJPQN	SJPQN	SFPQN	SFPQNL		
(4)		Hard Chrome Plating	-	-	HJPQN	HFPQN	-		
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPQN	CJPQN	CFPQN	CFPQNL		
(6)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	-	MJPQN	MFPQN	MFPQNL		
(7)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing	Treated Hardness 60 ~ 63HRC	-	MGJPQN	MGFPQN	MGFPQNL		
(8)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	-	MCJPQN	MCFPQN	MCFPQNL		

Refer to the price list to select the available combination.
Hard Chrome Plating: Plating thickness 3μm or more, plating hardness 750HV~



1.4125/X105CrM017 has an identification groove on D part.

Locating Pins for Height Adjusting with shorter B fixed dimension is also available.
P.1351

P Dimension Selectable

Part Number: Type	Shape	D	D Dimension Tolerance g6	P	L	B	M (Coarse)	ML
JPQN SJPQN CJPQN	BB (Round)	3	-0.002 -0.008	4 5 6	2	5	M3	4.5
		4	-0.004 -0.012	5 6 7		6	M4	6
		5		6 7 8	3		M5	7.5
		6		7 8 9 10		8	M6	9
		8	-0.005 -0.014	9 10 11 12 13	5		M8	12
		10		11 12 13 15		10	M10	15
		12	-0.006 -0.017	15 16	8		M12	18

P Dimension Configurable

Part Number: Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	M (Coarse)	ML	(W)
JPQN GJPQN SJPQN HJPQN CJPQN (Buffed Product) MJPQN MGJPQN MCJPQN	A (Round) D (Diamond)	3	-0.002 -0.008	3.50~6.00	2	5	M3	4.5	1.5
		4	-0.004 -0.012	4.50~7.00	3	6	M4	6	1.8
		5		5.50~8.00			M5	7.5	2.2
		6		6.50~10.00		8	M6	9	3.0
		8	-0.005 -0.014	9.00~13.00	5		M8	12	3.5
		10		11.00~15.00		10	M10	15	4.0
		12	-0.006 -0.017	13.00~18.00	8		M12	18	5.0
		16		17.00~25.00			M16	24	7.0
		20	-0.007 -0.020	22.00~30.00	10	15	M20	30	9.0

P, L and B Dimension Configurable

Part Number: Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	ML	(W)
FPQN GFPQN SFPQN HFPQN CFPQN (Buffed Product) MFPQN MGFPQN MCFPQN Applicable when D≥5.	A (Round) D (Diamond)	3	-0.002 -0.008	3.50~ 6.00	2~ 6	2.0~10.0	M3	4.5	1.5
		4	-0.004 -0.012	4.50~ 7.00	2~ 8	2.0~10.0	M4	6	1.8
		5		5.50~ 8.00	3~10	2.0~10.0	M5	7.5	2.2
		6		6.50~10.00	3~10	2.0~12.0	M6	9	3
		8	-0.005 -0.014	9.00~13.00	5~10	2.0~15.0	M8	12	3.5
		10		11.00~15.00	5~15	3.0~20.0	M10	15	4
		12	-0.006 -0.017	13.00~18.00	8~15	3.0~20.0	M12	18	5
		16		17.00~25.00	8~20	5.0~20.0	M16	24	7
		20	-0.007 -0.02	22.00~30.00	10~20	5.0~20.0	M20	30	9

P, L, B and ML Dimension Configurable

Thread length (ML) is configurable between Mx1 and Mx3 (max.).

Part Number: Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	ML 1mm Increment	M (Coarse)	(W)
FPQNL GFPQNL SFPQNL CFPQNL (Buffed Product) MFPQNL MGFPQNL MCFPQNL Applicable when D≥5.	A (Round) D (Diamond)	3	-0.002 -0.008	3.50~ 6.00	2~ 6	2.0~10.0	3~ 9	M3	1.5
		4	-0.004 -0.012	4.50~ 7.00	2~ 8	2.0~10.0	4~12	M4	1.8
		5		5.50~ 8.00	3~10	2.0~10.0	5~15	M5	2.2
		6		6.50~10.00	3~10	2.0~12.0	6~18	M6	3
		8	-0.005 -0.014	9.00~13.00	5~10	2.0~15.0	8~24	M8	3.5
		10		11.00~15.00	5~15	3.0~20.0	10~30	M10	4
		12	-0.006 -0.017	13.00~18.00	8~15	3.0~20.0	12~30	M12	5
		16		17.00~25.00	8~20	5.0~20.0	16~40	M16	7
		20	-0.007 -0.02	22.00~30.00	10~20	5.0~20.0	20~40	M20	9

Order Example

Part Number	-	P	-	L	-	B	-	ML

JPQNBB3 - 5
FPQNA16 - P18.00 - L12 - B7.5
SFPQNLA10 - P11.97 - L5 - B5.0 - ML12

Days to Ship

P Dimension Selectable

6 Days P.87

- P Dimension Configurable, Material No. (1) ~ (5) / P, L and B Dimension Configurable, Material No. (1) ~ (5) / P, L, B and ML Dimension Configurable, Material No. (1) ~ (5)

8 Days | Express A | 5,00 EUR / piece P.88

- Buff Finished Product (Material No.(6) ~ (8))

10 Days | 5 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (4) Hard 1.4301/X5CrNi18-10

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.
Please request a quotation for orders of 20 or more pieces of buff finished products.

P Dimension Selectable

D	€ Unit Price Round Shape		
	(1) 1.2510/100MnCrW4 Hardening JPQNBB	(3) 1.4301/X5CrNi18-10 SJPQNBB	(5)1.4125/X105CrMo17 CJPQNBB
3			
4			
5			
6			
8			
10			
12			

P Dimension Configurable

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510/ Hardening JPQNA	(2) Hard 1.2510/ GJPQNA	(3) 1.4301/ X5CrNi18-10 SJPQNA	(4) Hard 1.4301/ X5CrNi18-10 HJPQNA	(5)1.4125/ X105CrMo17 CJPQNA	(6) 1.2510/ Hardening + Buffed MJPQNA	(7) Hard 1.2510/ + Buffed MGJPQNA	(8) 1.4125/ + Buffed MCJPQNA	(1) 1.2510/ Hardening JPQND	(2) Hard 1.2510/ GJPQND	(3) 1.4301/ X5CrNi18-10 SJPQND	(4) Hard 1.4301/ X5CrNi18-10 HJPQND	(5)1.4125/ X105CrMo17 CJPQND	(6) 1.2510/ Hardening + Buffed MJPQND	(7) Hard 1.2510/ + Buffed MGJPQND	(8) 1.4125/ + Buffed MCJPQND
3																
4																
5																
6																
8																
10																
12																
16																
20																

P, L and B Dimension Configurable

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510/ Hardening FPQNA	(2) Hard 1.2510/ GFPQNA	(4) 1.4301/ X5CrNi18-10 SFPQNA	(4) Hard 1.4301/ X5CrNi18-10 HFPQNA	(5)1.4125/ X105CrMo17 CFPQNA	(6) 1.2510/ Hardening + Buffed MFPQNA	(7) Hard 1.2510/ + Buffed MGFPQNA	(8) 1.4125/ + Buffed MCFPQNA	(1) 1.2510/ Hardening FPQND	(2) Hard 1.2510/ GFPQND	(3) 1.4301/ X5CrNi18-10 SFPQND	(4) Hard 1.4301/ X5CrNi18-10 HFPQND	(5)1.4125/ X105CrMo17 CFPQND	(6) 1.2510/ Hardening + Buffed MFPQND	(7) Hard 1.2510/ + Buffed MGFPQND	(8) 1.4125/ + Buffed MCFPQND
3																
4																
5																
6																
8																
10																
12																
16																
20																

P, L, B and ML Dimension Configurable

Price is determined by ML length. See the table below.

D	€ Unit Price Round Shape							€ Unit Price Diamond Shape						
	(1) 1.2510/ Hardening FPQNLA	(2) Hard 1.2510/ GFPQNLA	(3) 1.4301/ X5CrNi18-10 SFPQNLA	(5)1.4125/ X105CrMo17 CFPQNLA	(6) 1.2510/ Hardening + Buffed MFPQNLA	(7) Hard 1.2510/ + Buffed MGFPQNLA	(8) 1.4125/ + Buffed MCFPQNLA	(1) 1.2510/ Hardening FPQNLD	(2) Hard 1.2510/ GFPQNLD	(3) 1.4301/ X5CrNi18-10 SFPQNLD	(5)1.4125/ X105CrMo17 CFPQNLD	(6) 1.2510/ Hardening + Buffed MFPQNLD	(7) Hard 1.2510/ 100MnCrW4 + Buffed MGFPQNLD	(8) 1.4125/ + Buffed MCFPQNLD
3														
4														
5														
6														
8														
10														
12														
16														
20														

Price of P, L, B and ML Dimension Configurable Type

Price is determined by ML length.

ML	€ Price
Mx1 ≤ML<Mx1.5	Unit Price in Table
Mx1.5≤ML<Mx2	Unit Price in Table x 1.05
Mx2 ≤ML<Mx2.5	Unit Price in Table x 1.1
Mx2.5≤ML≤Mx3	Unit Price in Table x 1.15

Price Calculation Example: FPQNLA12-P13.98-L8-B6.0-ML25 (ML=Mx2.1)
1,490(FPQNLA12)x1.1=16,30 EUR

Alterations

Part Number	-	P	-	L	-	B	-	ML	-	(RC / LAC)
SFPQNLA6	-	P10.00	-	L10	-	B5	-	ML10	-	RC

10 Days

Alteration is not available for P Dimension Selectable Type. Combination of RC and LAC is not available.

Alterations	Under neck radius alteration	Wrench Hole
	RC (R0.5)	Q, B/2, (30°)
Code	RC	LAC
Spec.	Changes the relief to R0.5. Ordering Code RC Applicable when P-D≥2.	Machines wrench hole. Ordering Code LAC Not applicable to P, L, B and ML Dimension Configurable Type. Applicable when D≥6 Orientation between diamond shape head and wrench hole is arbitrary.
Price Adder	3,00	3,00

D	B Dimension
6	5.0~
8	
10	
12	
16	
20	

Wrench Hole Dimension	
P	Q
6.50~9.99	2
10.00~16.99	3.5
17.00~	5

Add. Spec. Locating Pins Spherical Large Head
- D and P Tolerance Selectable

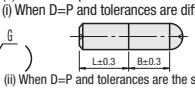
Ⓥ D=5 is now available for Female Thread Type.


(Buffed Product)

Mat. No.	Material	Surface Treatment	Hardness	Type: Standard	Type: Female Thread	Type: Male Thread	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFQ	KFQT	KFQN	A(Round)
(2)	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC	GKFQ	GKFQT	GKFQN	A(Round)
(3)	1.4301/X5CrNi18-10	-	-	SKFQ	SKFQT	SKFQN	A(Round)
(4)	1.4301/X5CrNi18-10	Hard Chrome Plating	-	HKFQ	-	-	A(Round)
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFQ	CKFQT	CKFQN	A(Round)
(7)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	MKFQ	MKFQT	MKFQN	D(Diamond)
(8)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing	Treated Hardness 60 ~ 63HRC	MGKFQ	MGKFQT	MGKFQN	D(Diamond)
(9)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	MCKFQ	MCKFQT	MCKFQN	D(Diamond)

Ⓥ Refer to the price list to select the available combination.
Ⓥ Hard Chrome Plating: Plating thickness 3μm or more, plating hardness 750HV~

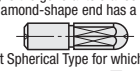
Ⓥ When D=P,
(1) Round Shape has no relief.
(i) When D=P and tolerances are different



(ii) When D=P and tolerances are the same



(L+B) is the general tolerance.
(2) Diamond-shape end has a relief.



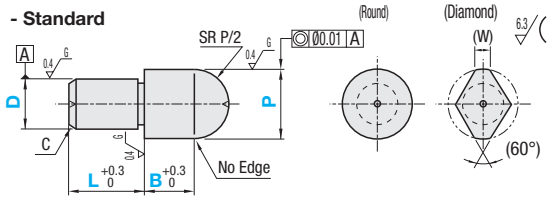
Ⓥ Straight Spherical Type for which D=P is standardized is available. P.1348

■Tolerance Selection

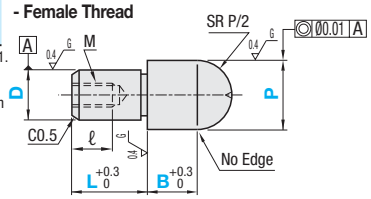
D or P	Standard Grade M	P	G	H	S	Precision Grade A	B
	m6	p6	g6	h7	-	-	-
1.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010	0 -0.01	+0.005 0	0 -0.005
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015			
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 30.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

Ⓥ Precision Type € Unit Price: Standard Type Price x 1.1.
⊗ Hard Chrome Plating and Buffed is not available for Precision Grade Tolerance.
Ⓥ 1.4125/X105CrMo17 has an identification groove on D part.
Ⓥ Pins with small P dimension will have little sphere remaining due to the centering holes.

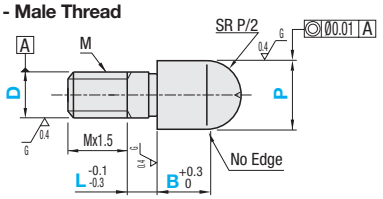
- Standard



- Female Thread



- Male Thread



■Standard

Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	(W)
KFQ, GKFQ*, SKFQ, HKFQ*, CKFQ (Buffed Product) MKFQ, MGKFQ, MCKFQ Ⓥ Applicable when D≥5.	A(Round), D(Diamond)	M, P, G, H, *A, *B	S, M, P, G, H, *A, *B	1	1.00~2.50	2, 3	2.0~5.0	0.1	-
				2	2.00~4.00	2~6	2.0~10.0	0.5	1.2
				3	3.00~6.00	3~6	2.0~10.0		1.5
				4	4.00~7.00	4~8	2.0~10.0	1	1.8
				5	5.00~8.00	5~10	2.0~10.0		2.2
				6	6.00~10.00	6~12	2.0~12.0		3.0
				8	8.00~13.00	8~16	2.0~15.0	1.5	3.5
				10	10.00~15.00	10~20	3.0~20.0	2	4.0
				12	12.00~16.00	12~24	3.0~20.0		5.0
				13	13.00~18.00	13~26	5.0~20.0		5.5
				16	16.00~25.00	16~32	5.0~20.0	3	7.0
				20	20.00~30.00	20~40	5.0~20.0		9.0

⊗ For hard chrome plated and buffed are not available for Precision Grade * (Precision Grade A and B).

■Female Thread

Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	(W)	M (Coarse)	ℓ
KFQT, GKFQT, SKFQT, CKFQT (Buffed Product) MKFQT, MGKFQT, MCKFQT	A(Round), D(Diamond)	M, P, G, H	S, M, P, G, H	5	5.00~8.00	5 (9) ~ 10	2.0~10.0	2.2	M2	3
				6	6.00~10.00	6 (9) ~ 12	2.0~12.0	3.0	M3	5
				6T					M2.6	4
				8	8.00~13.00	8 (12) ~ 16	2.0~15.0	3.5	M5	8
				8T		6 (12) ~ 16			M4	6
				10	10.00~15.00	10 (12) ~ 20	3.0~20.0	4.0	M5	8
				10T		6 (12) ~ 16			M4	6
				12	12.00~16.00	12~24	3.0~20.0	5.0	M5	8
				12T		8 (12) ~ 18			M4	6
				13	13.00~18.00	13 (14) ~ 26	5.0~20.0	5.5	M8	10
				13T		8 (14) ~ 20			M6	9
				16	16.00~25.00	16~32	5.0~20.0	7.0	M8	12
				16T		10 (14) ~ 24			M6	9
				20	20.00~30.00	20~40	5.0~20.0	9.0	M8	12
				20T		12 (18) ~ 30			M6	9

Ⓥ Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓥ L dimension in ( ) is applicable to diamond shape. Ⓥ Note the strength of under-head part. P.1281 Ⓥ Please confirm pilot hole depth on P.1281. Holes may go through.

■Male Thread

Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	(W)	M
KFQN, GKFQN*, SKFQN, CKFQN (Buffed Product) MKFQN, MGKFQN, MCKFQN Ⓥ Applicable when D≥5.	A(Round), D(Diamond)	M, P, G, H, *A, *B	S, M, P, G, H, *A, *B	3	3.50~6.00	2~6	2.0~10.0	1.5	M3
				4	4.50~7.00	2~8	2.0~10.0	1.8	M4
				5	5.50~8.00	3~10	2.0~10.0	2.2	M5
				6	6.50~10.00	3~10	2.0~12.0	3.0	M6
				8	9.00~13.00	5~10	2.0~15.0	3.5	M8
				10	11.00~15.00	5~15	3.0~20.0	4.0	M10
				12	13.00~18.00	8~15	3.0~20.0	5.0	M12
				16	17.00~25.00	8~20	5.0~20.0	7.0	M16
				20	22.00~30.00	10~20	5.0~20.0	9.0	M20

⊗ For hard chrome plated and buffed are not available for Precision Grade * (Precision Grade A and B).

Order Example

Part Number					-		-		-	
Type	Shape	D Tolerance	P Tolerance	D		P		L		B
KFQ	A	M	S	6	-	P8.00	-	L8	-	B6.0

Days to Ship

- Other than listed on the right: **8 Days** — Express A: 5,00 EUR / piece — P.88
- Buff Finished Product (Material No.(7) ~ (9)): **10 Days** / **5 Days**

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (4) Hard 1.4301/X5CrNi18-10.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for orders of 20 or more pieces of buff finished products.

Precision Grade Price
When A and B tolerance is selected, M x1.1 to the unit prices shown below.
Price Calculation Example: KFQAMA10-P11.05-L12-B5.5
11,80 (KFQA10) x 1.1 = 12,90 EUR

Standard

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510 Hardening	(2) Hard 1.2510	(3) 1.4301	(4) Hard 1.4301	(5)1.4125	(7) 1.2510 Hardening + Buffed	(8) Hard 1.2510 + Buffed	(9) 1.4125 + Buffed	(1) 1.2510 Hardening	(2) Hard 1.2510/100MnCrW4	(3) 1.4301/X5CrNi18-10	(4) Hard 1.4301	(5)1.4125	(7) 1.2510 + Buffed	(8) Hard 1.2510+ Buffed	(9) 1.4125 + Buffed
	KFQA	GKFQA	SKFQA	HKFQA	CKFQA	MKFQA	MGKFQA	MCKFQA	KFQD	GKFQD	SKFQD	HKFQD	CKFQD	MKFQD	MGKFQD	MCKFQD
1																
2																
3																
4																
5																
6																
8																
10																
12																
13																
16																
20																

Female Thread

D	€ Unit Price Round Shape							€ Unit Price Diamond Shape						
	(1) 1.2510 Hardening	(2) Hard 1.2510	(3) 1.4301	(5)1.4125	(7) 1.2510 Hardening + Buffed	(8) Hard 1.2510 + Buffed	(9) 1.4125 + Buffed	(1) 1.2510 Hardening	(2) Hard 1.2510	(3) 1.4301	(5)1.4125	(7) 1.2510 Hardening + Buffed	(8) Hard 1.2510 + Buffed	(9) 1.4125 + Buffed
	KFQTA	GKFQTA	SKFQTA	CKFQTA	MKFQTA	MGKFQTA	MCKFQTA	KFQTD	GKFQTD	SKFQTD	CKFQTD	MKFQTD	MGKFQTD	MCKFQTD
5														
6														
6T														
8														
8T														
10														
10T														
12														
12T														
13														
13T														
16														
16T														
20														
20T														

Male Thread

D	€ Unit Price Round Shape							€ Unit Price Diamond Shape						
	(1) 1.2510 Hardening	(2) Hard 1.2510	(3) 1.4301	(5)1.4125	(7) 1.2510 Hardening + Buffed	(8) Hard 1.2510+ Buffed	(9) 1.4125 + Buffed	(1) 1.2510 Hardening	(2) Hard 1.2510	(3) 1.4301	(5)1.4125	(7) 1.2510 Hardening + Buffed	(8) Hard 1.2510 + Buffed	(9) 1.4125 + Buffed
	KFQNA	GKFQNA	SKFQNA	CKFQNA	MKFQNA	MGKFQNA	MCKFQNA	KFQND	GKFQND	SKFQND	CKFQND	MKFQND	MGKFQND	MCKFQND
3														
4														
5														
6														
8														
10														
12														
16														
20														

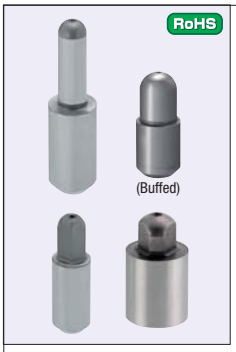
Alterations

Part Number	-	P	-	L	-	B	-	(GDC / RC / AC)		10 Days
KFQAMS6	-	P8.0	-	L8	-	B6.0	-	RC		

Alterations	Insertion Guide Machining	Under neck radius alteration	Air Vent
Code	GDC	RC	AC
Spec.	Adds Insertion Guide. Ordering Code GDC Guide Part D -0.01 -0.03 D: 3~12 → ℓ 1; 13~20 → ℓ 2 ⊗Not applicable to D≤2 ⊗Not applicable to Male Thread Type.	Changes the relief to R0.5. Ordering Code RC RC (R0.5) Applicable when P-D≥2.	Adds an air vent. Ordering Code AC D -0.15 D=P (Round) ⊗Not applicable to Male Thread Type.
Price Adder	2,00	3,00	2,00

Locating Pins Spherical Small Head

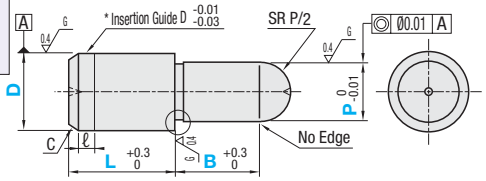
-Standard-



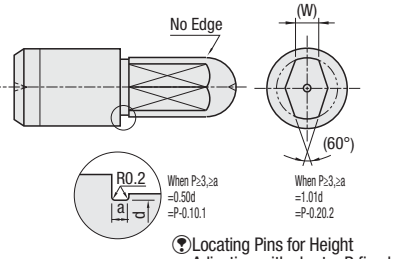
Materials No.	M Materials	S Surface Treatment	H Hardness	P Dimension Selectable Type	P Dimension Selectable D Tolerance / Shape	P Dimension Configurable Type	P Dimension Configurable D Tolerance / Shape	P, L and B Dimension Configurable Type	P, L and B Dimension Configurable D Tolerance / Shape
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPQ	<Round> SB(m6) SPB(p6)	JPQ	<Round> SA(m6) SPA(p6) <Diamond> SD(m6) SPD(p6)	FPQ	<Round> SA(m6) SPA(p6) <Diamond> SD(m6) SPD(p6)
(2)	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC	-		GJPQ		GFPQ	
(3)	1.4301/X5CrNi18-10	-	-	SJPQ		SJPQ		SFPQ	
(4)	1.4301/X5CrNi18-10	Hard Chrome Plating	-	-		HJPQ		HFPQ	
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPQ		CJPQ		CFPQ	
(6)	1.2510/100MnCrW4	Buffing	Treated Hardness 60 ~ 63HRC	-		MJPQ		MFPQ	
(7)	1.2510/100MnCrW4	Hard Chrome Plating + Buffing	Treated Hardness 60 ~ 63HRC	-		MGJPQ		MGFPQ	
(8)	1.4125/X105CrMo17	Buffing	Treated Hardness 50 ~ 55HRC	-		MCJPQ		MCFPQ	

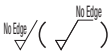
Refer to the price list to select the available combination.
Hard Chrome Plating: Plating thickness 3µm or more, plating hardness 750HV~

(Round)

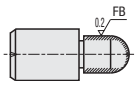


(Diamond)





Buff Finishing is at ⫽⫽ part only.
(Except diamond cut surface)



* Insertion Guide is applicable to tolerance m6 and p6 Type only.
1.4125/X105CrMo17 has an identification groove on insertion guide.
The smaller the dimension P, the less the size of sphere, due to center hole.

Locating Pins for Height Adjusting with shorter B fixed dimension is also available.
P.1351

■P Dimension Selectable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P	L	B	C	ℓ
JPQ SJPQ CJPQ	<Round> SB(m6) SPB(p6)	2	+0.008 +0.002	+0.012 +0.006	1 1.5	4	2	0.3	0
		3			2	5	3	0.5	1
		4	+0.012 +0.004	+0.020 +0.012	2 3				
		5			2 3 4	10	5	1	
		6			2 3 4 5				

■P Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L	B	C	ℓ	(W)
JPQ GJPQ SJPQ HJPQ CJPQ (Buffed Product) MJPQ MGJPQ MCJPQ ※Applicable when D≥5 and P≥5.	<Round> SA(m6) SPA(p6)	2	+0.008 +0.002	+0.012 +0.006	1.00~2.00	4	2	0.3	0	-
		3			1.00~3.00	5	3	0.5	1	
		4	+0.012 +0.004	+0.020 +0.012	2.00~4.00			1		1.0
		5			2.00~5.00	10	5			1.2
		6			2.00~6.00					1.5
	<Diamond> SD(m6) SPD(p6) ※Applicable when D≥4.	8	+0.015 +0.006	+0.024 +0.015	3.00~8.00	15	6	1.5	2	1.8
		10			3.00~10.00		8	2		2.2
		12	+0.018 +0.007	+0.029 +0.018	5.00~12.00					2.5
		13			6.00~13.00	22				3
		16			10.00~16.00		10	3		4
		20	+0.021 +0.008	+0.035 +0.022	13.00~20.00	30				5

■P, L and B Dimension Configurable

Part Number Type	D Tolerance / Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L 1mm Increment	B Specify in 0.1mm Increment	C	ℓ	(W)
FPQ GFPQ SFPQ HFPQ CFPQ (Buffed Product) MFPQ MGFPQ MCFPQ ※Applicable when D≥5 and P≥5.	<Round> SA(m6) SPA(p6)	2	+0.008 +0.002	+0.012 +0.006	1.00~2.00	2~4	2.0~10.0	0.3	0	-
		3			1.00~3.00	3~6	2.0~10.0	0.5	1	
		4	+0.012 +0.004	+0.020 +0.012	2.00~4.00	4~8	2.0~10.0	1		1.0
		5			2.00~5.00	5~10	2.0~10.0			1.2
		6			2.00~6.00	6~12	2.0~12.0			1.5
	<Diamond> SD(m6) SPD(p6) ※Applicable when D≥4.	8	+0.015 +0.006	+0.024 +0.015	3.00~8.00	8~16	2.0~15.0	1.5	2	1.8
		10			3.00~10.00	10~20	3.0~20.0	2		2.2
		12	+0.018 +0.007	+0.029 +0.018	5.00~12.00	12~24	3.0~20.0			2.5
		13			6.00~13.00	13~26	5.0~20.0			3
		16			10.00~16.00	16~32	5.0~20.0	3		4
		20	+0.021 +0.008	+0.035 +0.022	13.00~20.00	20~40	5.0~20.0			5

Order Example

Part Number Type	Shape	D	-	P	-	L	-	B
JPQ	SA	4	-	2.01				
FPQ	SA	4	-	P2.01	-	L6	-	B5.5

Days to Ship

P Dimension Selectable
6 Days P.87

- Buff Finished Product (Material No.(6) ~ (8))
10 Days
5 Days

- P Dimension Configurable, Material No. (1) ~ (5) / P, L and B Dimension Configurable, Material No. (1) ~ (5)
8 Days Express A 5,00 EUR / piece P.88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Servicels not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (4) Hard 1.4301

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.
Please request a quotation for orders of 20 or more pieces of buff finished products.

P Dimension Selectable

D	€ Unit Price Round Shape		
	(1) 1.2510/100MnCrW4 Hardening JPQSB JPQSPB	(3) 1.4301/X5CrNi18-10 SJPQSB SJPQSPB	(5)1.4125/X105CrMo17 CJPQSB CJPQSPB
2			
3			
4			
5			
6			

P Dimension Configurable

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510 Hardening JPQSA JPQSPA	(2) Hard 1.2510 GJPQSA GJPQSPA	(3) 1.4301 SJPQSA SJPQSPA	(4) Hard 1.4301 HJPQSA HJPQSPA	(5)1.4125 CJPQSA CJPQSPA	(6) 1.2510 Hardening + Buffed MJPQSA MJPQSPA	(7) Hard 1.2510 + Buffed MGJPQSA MGJPQSPA	(8) 1.4125 + Buffed MCJPQSA MCJPQSPA	(1) 1.2510 Hardening JPQSD JPQSPD	(2) Hard 1.2510 GJPQSD GJPQSPD	(3) 1.4301 SJPQSD SJPQSPD	(4) Hard 1.4301 HJPQSD HJPQSPD	(5)1.4125 CJPQSD CJPQSPD	(6) 1.2510 Hardening + Buffed MJPQSD MJPQSPD	(7) Hard 1.2510 + Buffed MGJPQSD MGJPQSPD	(8) 1.4125 + Buffed MCJPQSD MCJPQSPD
2																
3																
4																
5																
6																
8																
10																
12																
13																
16																
20																

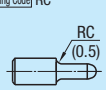
P, L and B Dimension Configurable

D	€ Unit Price Round Shape								€ Unit Price Diamond Shape							
	(1) 1.2510/ Hardening FPQSA FPQSPA	(2) Hard 1.2510 GFPQSA GFPQSPA	(3) 1.4301 SFPQSA SFPQSPA	(4) Hard 1.4301 HFPQSA HFPQSPA	(5)1.4125 CFPQSA CFPQSPA	(6) 1.2510 Hardening + Buffed MFPQSA MFPQSPA	(7) Hard 1.2510 + Buffed MGFPQSA MGFPQSPA	(8) 1.4125 + Buffed MCFPQSA MCFPQSPA	(1) 1.2510 Hardening FPQSD FPQSPD	(2) Hard 1.2510 GFPQSD GFPQSPD	(3) 1.4301 SFPQSD SFPQSPD	(4) Hard 1.4301 HFPQSD HFPQSPD	(5)1.4125 CFPQSD CFPQSPD	(6) 1.2510 Hardening + Buffed MFPQSD MFPQSPD	(7) Hard 1.2510+ Buffed MGFPQSD MGFPQSPD	(8) 1.4125 + Buffed MCFPQSD MCFPQSPD
2																
3																
4																
5																
6																
8																
10																
12																
13																
16																
20																

Alterations

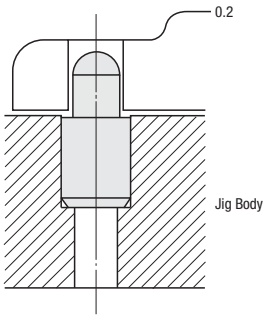
Part Number - P - L - B - (RC)
FPQSA4 - P2.00 - L6 - B5.5 - RC

10 Days ⊗Alteration is not available for P Dimension Selectable Type.

Alterations	Radius
Code	RC
Spec.	Changes the relief to R0.5. Ordering Code RC  Applicable when D-P≥2.
Price Adder	3,00

Example

Pins with spherical head prevent damages on mating parts.

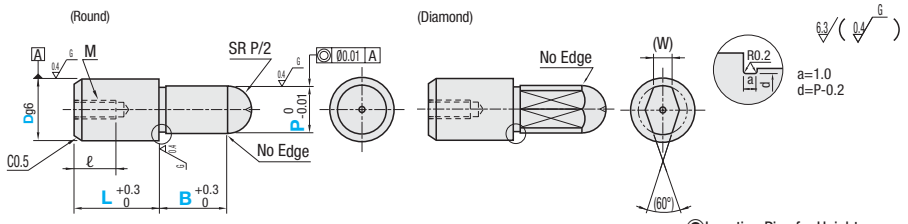


Locating Pins Spherical Small Head
-Female Thread Shank-

D=5 is now available for Configurable Type.



Material No.	M Material	S Surface Treatment	H Hardness	P Dimension Selectable		P Dimension Configurable		P, L and B Dimension Configurable	
				Type	Shape Code	Type	Shape Code	Type	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPQS	TB(Round)	JPQS	TA(Round) TD(Diamond)	FPQS	TA(Round) TD(Diamond)
(2)		Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	-		GJPQS		GFPQS	
(3)	1.4301/X5CrNi18-10	-	-	SJPQS		SJPQS		SFPQS	
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPQS		CJPQS		CFPQS	



1.4125/X105CrMo17 has an identification groove on D part.
The smaller the dimension P, the less the size of the sphere, due to center hole.

Locating Pins for Height Adjusting with shorter B fixed dimension is also available. P.1351

P Dimension Selectable

Part Number Type	Shape	D	D Dimension Tolerance g6	P	L	B	M (Coarse)	ℓ
JPQS SJPQS CJPQS	TB (Round)	6	-0.004 -0.012	4 5	10	5	M3	5
		8	-0.005 -0.014	6 7	15	6	M5	8
		10	-0.006 -0.017	7 8		8		
		13		8 10	22		M8	12
		16		10		10		

P Dimension Configurable

Part Number Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	M (Coarse)	ℓ	(W)
JPQS GJPQS SJPQS CJPQS	TA (Round) TD (Diamond)	5	-0.004 -0.012	3.00~5.00	10	5	M2	3	1.2
		6		4.00~6.00			M3	5	1.5
		6T					M2.6	4	
		8	-0.005 -0.014	6.00~8.00	15	6	M5	8	1.8
		8T					M4	6	
		10	-0.006 -0.017	7.00~10.00		8	M5	8	2.2
		12		7.00~12.00					2.5
		13		8.00~13.00	22		M8	12	3
		16		10.00~16.00		10			4
		20	-0.007 -0.020	13.00~20.00	30				5

P, L and B Dimension Configurable

Part Number Type	Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	ℓ	(W)
FPQS GFPQS SFPQS CFPQS	TA (Round) TD (Diamond)	5	-0.004 -0.012	3.00~5.00	8~10	2.0~10.0	M2	3	1.2
		6		4.00~6.00	8 (9) ~ 12	2.0~12.0	M3	5	1.5
		6T					M2.6	4	
		8	-0.005 -0.014	6.00~8.00	11 (12) ~ 16	2.0~15.0	M5	8	1.8
		8T					M4	6	
		10		7.00~10.00	11 (12) ~ 20	3.0~20.0	M5	8	2.2
		10T			8 (12) ~ 16		M4	6	
		12	-0.006 -0.017	7.00~12.00	12~24	3.0~20.0	M5	8	2.5
		12T			8 (12) ~ 18		M4	6	
		13		8.00~13.00	13 (14) ~ 26	5.0~20.0	M8	10	3
		13T			10 (14) ~ 20		M6	9	
		16		10.00~16.00	16~32	5.0~20.0	M8	12	4
		16T			10 (14) ~ 24		M6	9	
		20	-0.007 -0.020	13.00~20.00	20~40	5.0~20.0	M8	12	5
		20T			12 (18) ~ 30		M6	9	

Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
L dimension in ( ) is applicable to diamond shape. Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281. Holes may go through.

Order Example

Part Number	-	P	-	L	-	B
JPQSTA6	-	4.00				
FPQSTA6	-	P4.00	-	L10	-	B5.5

Days to Ship

P Dimension Selectable: 6 Days P.87

- P Dimension Configurable / P, L and B Dimension Configurable

8 Days | Express A | 5,00 EUR / piece P.88

5 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.

P Dimension Selectable

D	€ Unit Price Round Shape		
	(1) 1.2510/100MnCrW4 Hardening JPQSTB	(3) 1.4301/X5CrNi18-10 SJPQSTB	(5)1.4125/X105CrMo17 CJPQSTB
6			
8			
10			
13			
16			

P Dimension Configurable

D	€ Unit Price Round Shape				€ Unit Price Diamond Shape			
	(1) 1.2510/100MnCrW4 Hardening JPQSTA	(2) Hard 1.2510/ 100MnCrW4 GJPQSTA	(3) 1.4301/ X5CrNi18-10 SJPQSTA	(5) 1.4125/ X105CrMo17 CJPQSTA	(1) 1.2510/100MnCrW4 Hardening JPQSTD	(2) Hard 1.2510/ 100MnCrW4 GJPQSTD	(3) 1.4301/ X5CrNi18-10 SJPQSTD	(5) 1.4125/ X105CrMo17 CJPQSTD
5								
6								
6T								
8								
8T								
10								
12								
13								
16								
20								

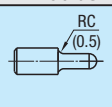
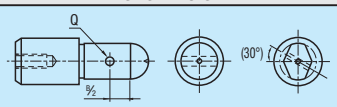
P, L and B Dimension Configurable

D	€ Unit Price Round Shape				€ Unit Price Diamond Shape			
	(1) 1.2510/100MnCrW4 Hardening FPQSTA	(2) Hard 1.2510/ 100MnCrW4 GFPQSTA	(3) 1.4301/ X5CrNi18-10 SFPQSTA	(5) 1.4125/ X105CrMo17 CFPQSTA	(1) 1.2510/100MnCrW4 Hardening FPQSTD	(2) Hard 1.2510/ 100MnCrW4 GFPQSTD	(3) 1.4301/ X5CrNi18-10 SFPQSTD	(5) 1.4125/ X105CrMo17 CFPQSTD
5								
6								
6T								
8								
8T								
10								
10T								
12								
12T								
13								
13T								
16								
16T								
20								
20T								

Alterations

Part Number	-	P	-	L	-	B	-	(RC / LAC)	10 Days
FPQSTA6	-	4.00	-	10	-	B5.5	-	RC	

⊗Alteration is not available for P Dimension Selectable Type. ⊗Combination of RC and LAC is not available.

Alterations	Radius	Wrench Hole
		
Code	RC	LAC
Spec.	Changes the relief to R0.5. Ordering Code RC Applicable when D-P≥2.	Machines wrench hole. Ordering Code LAC
Price Adder	3,00	3,00

D	Applicable Dimension P	Applicable Dimension B
8 8T	6.00~8.00	5.0~
10 10T	7.00 (8.00) ~ 10.00	
12 12T	7.00 (8.00) ~ 12.00	
13 13T	8.00~13.00	
16 16T	10.00~16.00	
20 20T	13.00~20.00	10.0~

Wrench Hole Dimension

P	Q
6.00~9.99	2
10.00~15.99	3.5
16.00~	5

P dimension in () is for the Diamond Type.
Round shape is applicable to D≥8, and diamond to D≥10.
Orientation between diamond shape head and wrench hole is arbitrary.

Locating Pins Spherical Small Head

-D and P Tolerance Selectable-



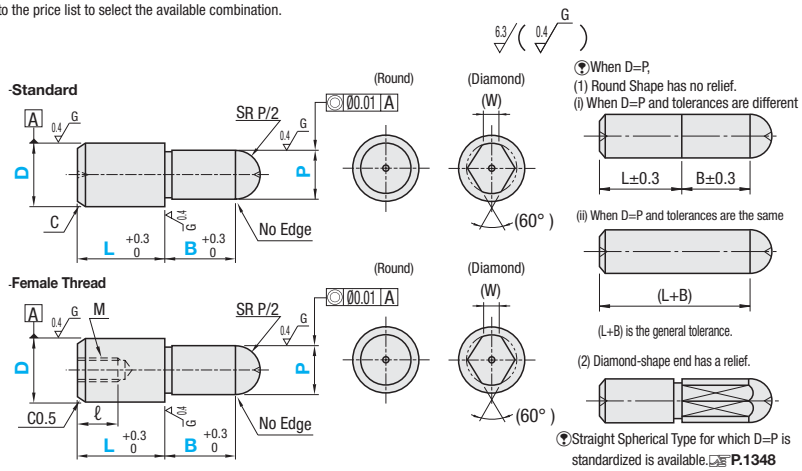
Materials No.	M Materials	S Surface Treatment	H Hardness	Type: Standard	Type: Female Thread	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFQS	KFQST	A(Round) D(Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GKFQS	GKFQST	
(3)	1.4301/X5CrNi18-10	-	-	SKFQS	SKFQST	
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFQS	-	

Refer to the price list to select the available combination.

■Tolerance Selection

D or P	Standard Grade M	P	G	H	S	Precision Grade A	B
	m6	p6	g6	h7	-	-	-
1.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010			
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015	0 -0.01	+0.005 0	0 -0.005
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 20.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

The unit price of Precision Type is the price of Standard Type multiplying 1.1.
Hard Chrome Plating is not available for Precision Grade Tolerance.
Hard chrome plating is not available for Precision Grade tolerance.



Straight Spherical Type for which D=P is standardized is available. P.1348

1.4125/X105CrMo17 has an identification groove on D part. The smaller the dimension P, the less the size of sphere, due to center hole.

■Standard

Part Number: Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P Specify in 0.01mm Increment	L Specify in 1mm Increment	B Specify in 0.1mm Increment	C	(W)	€ Unit Price Round Shape: (1) 1.2510/100MnCrW4 Hardening KFQSA	(2) Hard 1.2510/100MnCrW4 GKFQSA	(3) 1.4301/X5CrNi18-10 SKFQSA	(5)1.4125/X105CrMo17 CKFQSA	€ Unit Price Diamond Shape: (1) 1.2510/100MnCrW4 Hardening KFQSD	(2) Hard 1.2510/100MnCrW4 GKFQSD	(3) 1.4301/X5CrNi18-10 SKFQSD	(5)1.4125/X105CrMo17 CKFQSD
KFQS GKFQS* SKFQS CKFQS	A(Round) D(Diamond)	M P G H *A *B	S M P G H *A *B	2	1.00~2.00	2~4	2.0~10.0	0.3	-								
				3	1.00~3.00	3~6	2.0~10.0	0.5	1.0								
				4	2.00~4.00	4~8	2.0~10.0	1	1.0								
				5	2.00~5.00	5~10	2.0~10.0		1.2								
				6	2.00~6.00	6~12	2.0~12.0		1.5								
				8	3.00~8.00	8~16	2.0~15.0	1.5	1.8								
				10	3.00~10.00	10~20	3.0~20.0	2	2.2								
				12	5.00~12.00	12~24	3.0~20.0		2.5								
				13	6.00~13.00	13~26	5.0~20.0		3								
				16	10.00~16.00	16~32	5.0~20.0	3	4								
				20	13.00~20.00	20~40	5.0~20.0		5								

Hard chrome plated is not available for Precision Grade * (precision tolerance).*

■Female Thread

Part Number: Type	Shape	D Tolerance Selection	P Tolerance Selection	D	P Specify in 0.01mm Increment	L Specify in 1mm Increment	B Specify in 0.1mm Increment	(W)	M (Coarse)	ℓ	€ Unit Price Round Shape: (1) 1.2510/100MnCrW4 Hardening KFQSTA	(2) Hard 1.2510/100MnCrW4 GKFQSTA	(3) 1.4301/X5CrNi18-10 SKFQSTA	€ Unit Price Diamond Shape: (1) 1.2510/100MnCrW4 Hardening KFQSTD	(2) Hard 1.2510/100MnCrW4 GKFQSTD	(3) 1.4301/X5CrNi18-10 SKFQSTD
KFQST GKFQST SKFQST	A(Round) D(Diamond)	M P G H	S M P G H	6	4.00~6.00	8 (9) ~ 12	2.0~12.0	1.5	M3	5						
				8	6.00~8.00	11 (12) ~ 16	2.0~15.0	1.8	M5	8						
				10	7.00~10.00	11 (12) ~ 20	3.0~20.0	2.2								
				12	7.00~12.00	12~24	3.0~20.0	2.5								
				13	8.00~13.00	13 (14) ~ 26	5.0~20.0	3	M8	10						
				16	10.00~16.00	16~32	5.0~20.0	4		12						
				20	13.00~20.00	20~40	5.0~20.0	5								

L dimension in () is applicable to diamond shape. Note the strength of under-head part. P.1281 Please confirm pilot hole depth on Holes may go through. P.1281

Order Example

Part Number: Type	Shape	D Tolerance	P Tolerance	D	-	P	-	L	-	B
KFQS	A	G	S	10	-	P8.00	-	L10	-	B8.0

Alterations

Part Number	-	P	-	L	-	B	-	(GDC / RC / AC)
KFQSAGS10	-	P8.00	-	L10	-	B8.0	-	RC

10 Days

Alterations	Insertion Guide Machining	Under neck radius alteration	Air Vent
Code	GDC	RC	AC
Spec.	Adds Insertion Guide. Ordering Code GDC. Guide Part D -0.01 -0.03; D: 3~6 → ℓ 1, 8~20 → ℓ 2. Not applicable to D≤2	Changes the relief to R0.5. Ordering Code RC. RC (R0.5). Applicable when D-P≥2.	Adds an air vent. Ordering Code AC. D-0.15. D=P (Round)
Price Adder	2,00	3,00	2,00

Precision Grade Price
When A and B tolerance is selected, multiply 1.1 to the above unit price.
(Round down to ten Cent.)
Examples of Price Calculation
KFQSAAB5-P3.50-L7-B5.5 10,30 (KFQSA5) x 1.1 = 11,30 EUR

Days to Ship

Standard	Express
8 Days	5 Days
	Express A: 5,00 EUR / piece

P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4.

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Locating Pins Spherical Large / Small Head
-Set Screw-

Reduced Delivery Time

CAD Data



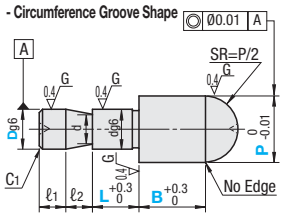
RoHS

Materials No.	Materials	Surface Treatment	Hardness	Type: Circumference Groove	Type: Notch	Type: Set Screw Flat	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPGQ	JPCQ	JPDQ	S(Round) D(Diamond)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GJPGQ	GJPCQ	-	
(3)	1.4301/X5CrNi18-10	-	-	SJPGQ	SJPCQ	-	
(4)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPGQ	-	-	

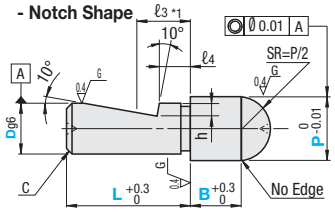
Refer to the price list to select the available combination.



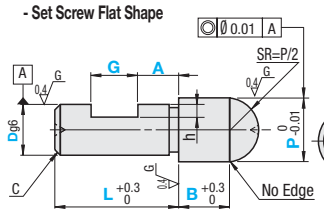
- Circumference Groove Shape



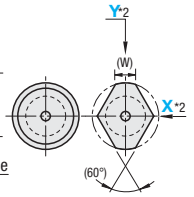
- Notch Shape



- Set Screw Flat Shape



(Round) (Diamond)



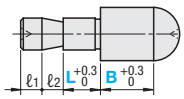
SUS440C has an identification groove on D part.

*1ℓ3 is the recommended dimension of the position of set screw tip.

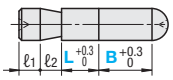
L>G+A+1

*2Select set screw position X or Y for Diamond or Notch Set Screw Type.

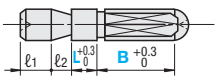
When D<P (Large head)



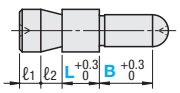
When D=P (Straight)



* Diamond-shape end has a relief.



When D>P (Small Head)



The smaller the dimension P, the less the size of the sphere, due to center hole.

■Circumference Groove Shape

Part Number: Type	Part Number: Shape	Part Number: D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	d	ℓ1	ℓ2	C1	(W) When D<P	(W) When D≥P
JPGQ GJPGQ SJPGQ CJPGQ	S(Round) D(Diamond)	6	-0.004 -0.012	2.00~10.00	3~12	2.0~20.0	4.5	5	5	1	3	1.5
		6S			2~12			2		0.5		
		8	-0.005 -0.014	3.00~13.00	4~16		6.5	6	6	1.5	3.5	1.8
		8S			3~16			3		0.5		
		10		3.00~15.00	5~20	3.0~20.0	8	8	8	2	4	2.2
		10S			4~20			3		0.5		
		12	-0.006 -0.017	5.00~16.00	6~24		10	8		2	5	2.5
		12S			5~24			4		0.5		
		16		10.00~25.00	8~32	5.0~20.0	14	8		3	7	4
		16S			7~32			4		0.5		
		20	-0.007 -0.020	13.00~30.00	10~40		18	8		3	9	5

■Notch Shape / Set Screw Flat Shape

Part Number: Type	Part Number: Shape	Part Number: D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	G 1mm Increment	A 0.1mm Increment	Flat Position	ℓ3	ℓ4	h	C	Applicable Set Screws	(W) When D<P	(W) When D≥P
(Notched) JPCQ GJPCQ SJPCQ (Set Screw Flat) JPDQ	S(Round) D(Diamond)	6	-0.004 -0.012	5.00~10.00	12~20	5.0~20.0	3~9	2.0~8.0	X Y Diamond shape	5.5	2.5	1.0	1	M4	3	1.5
		8	-0.005	5.00~13.00	14~22	5.0~20.0		2.0~12.0		7.5	3.5	1.2	1.5	M5	3.5	1.8
		10	-0.014	5.00~15.00	15~25	5.0~20.0		2.0~16.0		7.5	3.5	1.2	2	M6	4	2.2
		12	-0.006	5.00~16.00	15~25	5.0~20.0		2.0~20.0		7.5	3.5	1.2	2	M6	5	2.5
		16	-0.017	10.00~25.00	24~35	5.0~20.0		2.0~28.0		10.5	5.5	2.0	3	M8	7	4
		20	-0.007 -0.020	13.00~30.00	27~40	5.0~20.0		2.0~36.0		13.5	8.5	2.0	3	M8	9	5

Applicable set screws in the table are the recommended sizes for notch shape.

Price

■Volume Discount (Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Circumference Groove Shape

D	€ Unit Price Round Shape (1) 1.2510/100MnCrW4 Hardening JPGQS	€ Unit Price Round Shape (2) Hard 1.2510/100MnCrW4 GJPGQS	€ Unit Price Round Shape (3) 1.4301/X5CrNi18-10 SJPGQS	€ Unit Price Round Shape (4) 1.4125/X105CrMo17 CJPGQS	€ Unit Price Diamond Shape (1) 1.2510/100MnCrW4 Hardening JPGQD	€ Unit Price Diamond Shape (2) Hard 1.2510/100MnCrW4 GJPGQD	€ Unit Price Diamond Shape (3) 1.4301/X5CrNi18-10 SJPGQD	€ Unit Price Diamond Shape (4) 1.4125/X105CrMo17 CJPGQD
6								
6S								
8								
8S								
10								
10S								
12								
12S								
16								
16S								
20								

■Notch Shape

D	€ Unit Price Round Shape (1) 1.2510/100MnCrW4 Hardening JPCQS	€ Unit Price Round Shape (2) Hard 1.2510/100MnCrW4 GJPCQS	€ Unit Price Round Shape (3) 1.4301/X5CrNi18-10 SJPCQS	€ Unit Price Diamond Shape (1) 1.2510/100MnCrW4 Hardening JPCQD	€ Unit Price Diamond Shape (2) Hard 1.2510/100MnCrW4 GJPCQD	€ Unit Price Diamond Shape (3) 1.4301/X5CrNi18-10 SJPCQD
6						
8						
10						
12						
16						
20						

■Set Screw Flat Shape

D	€ Unit Price Round Shape (1) 1.2510/100MnCrW4 Hardening JPDQS	€ Unit Price Diamond Shape (1) 1.2510/100MnCrW4 Hardening JPDQD
6		
8		
10		
12		
16		
20		

Part Number	P	L	B	G	A	Flat Position
JPGQS10	P12.00	L6	B3.5			
SJPCQD8	P5.05	L15	B10.1	G4	A8.0	Y

8 Days — Express A — 5,00 EUR / piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4.

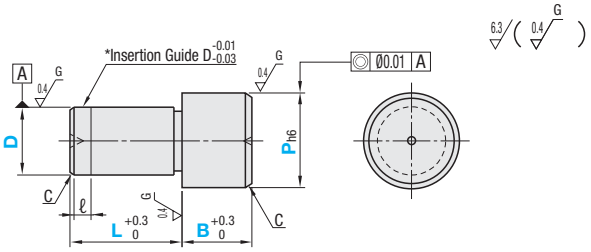
Lead time shortened: Notch Shape Material No. (2) Hard 1.2510/100MnCrW4

Locating Pins Large Flat Head
-Standard-


(Alteration CN)

Material No.	Material	Surface Treatment	Hardness	P Dimension Selectable		P Dimension Configurable		P, L and B Dimension Configurable	
				Type	D Tolerance	Type	D Tolerance	Type	D Tolerance
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JP	DA(m6)	JP	DC(m6)	FP	DC(m6)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GJP		GJP		GFP	
(3)	1.2510/100MnCrW4	-	-	BJP		BJP		BFP	
(4)	1.4301/X5CrNi18-10	-	-	SJP	DPA(p6)	SJP	DPC(p6)	SFP	DPC(p6)
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV~	HJP		HJP		HFP	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJP		CJP		CFP	

Refer to the price list to select the available combination.



■P Dimension Tolerance Table

P	h6
1.50~3.00	0 -0.006
3.01~6.00	0 -0.008
6.01~10.00	0 -0.009
10.01~18.00	0 -0.011
18.01~30.00	0 -0.013

* Insertion Guide is applicable to tolerance p6 type only. Ⓨ1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number			D Dimension Tolerance		P Selection	L	B	ℓ	C
Type	D Tolerance	D	m6	p6					
JP GJP BJP SJP HJP CJP	DA(m6)	1	+0.008 +0.002	+0.012 +0.006	2	3	2	0	0.1
		2			3	4			0.5
		3			5	5	3	1	1
		4	+0.012 +0.004	+0.020 +0.012	6, 8				
		5			8	8	4		
		6			8, 10	10	5		
	DPA(p6)	8	+0.015 +0.006	+0.024 +0.015	12	12	6	2	1.5
		10			12, 14	16	10		2
		12	+0.018 +0.007	+0.029 +0.018	16	20	20		
		13			18	22	22		
		16			25	24	25		3
		20	+0.021 +0.008	+0.035 +0.022	30	32	30		

■P Dimension Configurable

Part Number			D Dimension Tolerance		P 0.01mm Increment	L	B	ℓ	C
Type	D Tolerance	D	m6	p6					
JP GJP BJP SJP HJP CJP	DC(m6)	1	+0.008 +0.002	+0.012 +0.006	1.50~2.50	3	2	0	0.1
		2			2.50~4.00	4			0.5
		3			3.50~6.00	5	3	1	1
		4	+0.012 +0.004	+0.020 +0.012	4.50~7.00				
		5			5.50~8.00	8	4		
		6			6.50~10.00	10	5		
	DPC(p6)	8	+0.015 +0.006	+0.024 +0.015	9.00~13.00	12	6	2	1.5
		10			11.00~15.00	16	10		2
		12	+0.018 +0.007	+0.029 +0.018	13.00~16.00	20	20		
		13			14.00~18.00	22	22		
		16			17.00~25.00	24	25		3
		20	+0.021 +0.008	+0.035 +0.022	22.00~30.00	32	30		

■P, L and B Dimension Configurable

Part Number			D Dimension Tolerance		P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	ℓ	C
Type	D Tolerance	D	m6	p6					
FP GFP BFP SFP HFP CFP	DC(m6)	1	+0.008 +0.002	+0.012 +0.006	1.50~2.50	2, 3	2.0~5.0	0	0.1
		2			2.50~4.00	2~6	2.0~10.0		0.5
		3			3.50~6.00	3~6	2.0~10.0	1	1
		4	+0.012 +0.004	+0.020 +0.012	4.50~7.00	4~8	2.0~10.0		
		5			5.50~8.00	5~10	2.0~10.0		
		6			6.50~10.00	6~12	2.0~12.0		
	DPC(p6)	8	+0.015 +0.006	+0.024 +0.015	9.00~13.00	8~16	2.0~15.0	2	1.5
		10			11.00~15.00	10~20	3.0~20.0		2
		12	+0.018 +0.007	+0.029 +0.018	13.00~16.00	12~24	3.0~20.0		
		13			14.00~18.00	13~26	5.0~20.0		
		16			17.00~25.00	16~32	5.0~20.0		3
		20	+0.021 +0.008	+0.035 +0.022	22.00~30.00	20~40	5.0~20.0		

Order Example

Part Number								
Type	D Tolerance	D	-	P	-	L	-	B
JP	DA	8	-	12				
SJP	DPC	10	-	14.01				
CFP	DC	12	-	P15.97	-	L12	-	B3.5

Days to Ship

- P Dimension Standard, Material No. (1) (4) (6)

6 Days P. 87

- P Dimension Selectable, Material No. (2) (3) (5) / P Dimension Configurable, Material No. (1) ~ (6) / P, L and B Dimension Configurable, Material No. (1) ~ (6)~~(6)

8 Days | Express A | 5,00 EUR / piece P. 88

5 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.

⊗Express Service is not available for Material No.(2) Hard 01 Tool Steel and Material No.(4) Hard 1.4301/ X5CrNi18-10

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~4	5~19	20~49	50~99
Rate	€ Unit Price	5%	10%	15%

Please request a quotation for 50 or more pieces of in-stock items.

P Dimension Selectable

D	€ Unit Price					
	(1) 1.2510/100MnCrW4 Hardening	(2) Hard 1.2510/100MnCrW4	(3) 1.2510/100MnCrW4	(4) 1.4301/X5CrNi18-10	(5) 1.4301/X5CrNi18-10 Hard	(6) 1.4125/X105CrMo17
	JPDA JPDPA	GJPDA GJPDPA	BJPDA BJPDPA	SJPDA SJPDPA	HJPDA HJPDPA	CJPDA CJPDPA
1						
2						
3						
4						
5						
6						
8						
10						
12						
13				⊗		
16						
20				⊗		⊗

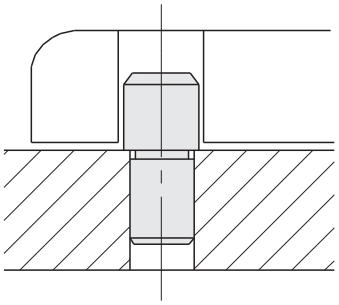
P Dimension Configurable

D	€ Unit Price					
	(1) 1.2510/100MnCrW4 Hardening	(2) Hard 1.2510/100MnCrW4	(3) 1.2510/100MnCrW4	(4) 1.4301/X5CrNi18-10	(5) 1.4301/X5CrNi18-10 Hard	(6) 1.4125/X105CrMo17
	JPDC JPDPC	GJPDC GJPDPC	BJPDC BJPDPC	SJPDC SJPDPC	HJPDC HJPDPC	CJPDC CJPDPC
1						
2						
3						
4						
5						
6						
8						
10						
12						
13						
16						
20						

P, L and B Dimension Configurable

D	€ Unit Price					
	(1) 1.2510/100MnCrW4 Hardening	(2) Hard 1.2510/100MnCrW4	(3) 1.2510/100MnCrW4	(4) 1.4301/X5CrNi18-10	(5) 1.4301/X5CrNi18-10 Hard	(6) 1.4125/X105CrMo17
	FPDC FPDPC	GFPDC GFPDPC	BFPDC BFPDPC	SFPDC SFPDPC	HFPDC HFPDPC	CFPDC CFPDPC
1						
2						
3						
4						
5						
6						
8						
10						
12						
13						
16						
20						

Example

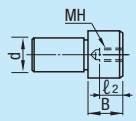
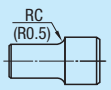
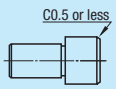


Alterations

Part Number	-	P	-	L	-	B	-	(MH / RC / CN)
JPDPC12	-	14.01					-	MH
BFPDC6	-	P8.00	-	L9	-	B5.0	-	CN

5 Days

⊗Alteration is not available for P Dimension Selectable Type.

Alterations	Tapping	Under neck radius alteration	C Chamfering
			
Code	MH	RC	CN
Spec.	Adds tapped hole. Ordering Code MH Applicable when D≥12. D: 12, 13, 16, 20 / MH (Coarse Thread): M4, M6 / ℓ2: 6, 9 B≥ℓ2+4	Changes the relief to R0.5. Ordering Code RC Applicable when P-D≥2.	Changes C Chamfering at P dimension part to 0.5 or less. ⊗Not applicable to D dimension part. Applicable when D≥3.
Price Adder	5,00	3,00	Free of Charge

Locating Pins Large Flat Head
-Female Thread Shank-

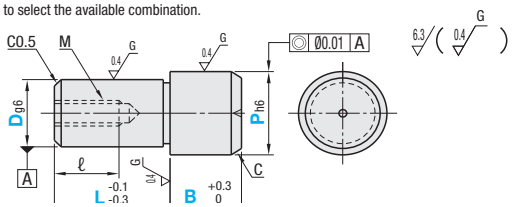
Add. Spec.

D=5 is now available for Configurable Type.



Material No.	Material	Surface Treatment	Hardness	Type: P Dimension Selectable	Type: P Dimension Configurable	Type: P, L and B Dimension Configurable
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPDTA	JPDTC	FPDTC
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GJPDTA	GJPDTC	GFPDTC
(3)	1.2510/100MnCrW4	-	-	-	-	BFPDTC
(4)	1.4301/X5CrNi18-10	-	-	SJPDTA	-	SFPDTC
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPDTA	-	-

Refer to the price list to select the available combination.



1.4125/X105CrMo17 has an identification groove on D part.

P Dimension Tolerance Table

P	h6
5.50~6.00	0 —0.008
6.01~10.00	0 —0.009
10.01~18.00	0 —0.011
18.01~30.00	0 —0.013

P Dimension Selectable

Part Number: Type	D	D Dimension Tolerance g6	P Selection	L	B	M (Coarse)	ℓ	C
JPDTA GJPDTA SJPDTA CJPDTA	6	-0.004 -0.012	8, 10	10	5	M3	5	1.0
	8	-0.005 -0.014	12	12	6	M5	8	1.5
	10		12, 14	16	10			2
	12	-0.006 -0.017	16	20	20			
	13		18	22	22	M8	12	3
	16		25	24	25			
	20	-0.007 -0.020	30	32	30			

P Dimension Configurable

Part Number: Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	M (Coarse)	ℓ	C
JPDTC GJPDTC	5	-0.004 -0.012	5.50~8.00	8	4	M2	3	1.0
	6		6.50~10.00	10	5	M3	5	
	6T					M2.6	4	
	8	-0.005 -0.014	9.00~13.00	12	6	M5	8	1.5
	8T					M4	6	
	10		11.00~15.00	16	10	M5	8	2
	12	-0.006 -0.017	13.00~16.00	20	20			
	13		14.00~18.00	22	22	M8	12	3
	16		17.00~25.00	24	25			
	20	-0.007 -0.020	22.00~30.00	32	30			

P, L and B Dimension Configurable

Part Number: Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	ℓ	C
FPDTC GFPDTC BFPDTC SFPDTC	5	-0.004 -0.012	5.50~8.00	5~10	2.0~10.0	M2	3	1.0
	6		6.50~10.00	6~12	2.0~12.0	M3	5	
	6T					M2.6	4	
	8	-0.005 -0.014	9.00~13.00	8~16	2.0~15.0	M5	8	1.5
	8T			6~16		M4	6	
	10		11.00~15.00	10~20	3.0~20.0	M5	8	2
	10T			6~16		M4	6	
	12	-0.006 -0.017	13.00~16.00	12~24	3.0~30.0	M5	8	
	12T			8~18		M4	6	
	13		14.00~18.00	13~26	5.0~30.0	M8	12	3
	13T			8~20		M6	9	
	16		17.00~25.00	16~32	5.0~35.0	M8	12	
	16T			10~24		M6	9	
	20	-0.007 -0.020	22.00~30.00	20~40	5.0~40.0	M8	12	
	20T			12~30		M6	9	

Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)

Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281 Holes may go through.

Order Example

Part Number	-	P	-	L	-	B
JPDTA10	-	14				
JPDTC10	-	14.25				
FPDTC12T	-	P14.25	-	L18	-	B8.6

Days to Ship

- P Dimension Selectable, Material No. (1) (4) (6)

6 Days P.87

- P Dimension Selectable, Material No. (2) / P Dimension Configurable, Material No. (1) (2) / P, L and B Dimension Configurable, Material No. (1) ~ (4)

8 Days

5 Days

Express A 5,00 EUR / piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Serviceis not available for Material No. (2) hard chrome plated products.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.

P Dimension Selectable

D	€ Unit Price			
	(1) 1.2510/100MnCrW4 Hardening JPDTA	(2) Hard 1.2510/100MnCrW4 GJPDTA	(4) 1.4301/X5CrNi18-10 SJPDTA	(6) 1.4125/X105CrMo17 CJPDTA
6				
8				
10				
12				
13				
16				
20				

P Dimension Configurable

D	€ Unit Price	
	(1) 1.2510/100MnCrW4 Hardening JPDTC	(2) Hard 1.2510/100MnCrW4 GJPDTC
5		
6		
6T		
8		
8T		
10		
12		
13		
16		
20		

P, L and B Dimension Configurable

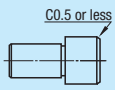
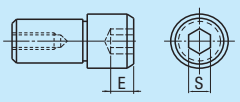
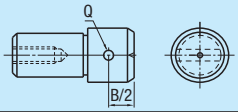
D	€ Unit Price			
	(1) 1.2510/100MnCrW4 Hardening FPDTC	(2) Hard 1.2510/100MnCrW4 GFPDTC	(3) 1.2510/100MnCrW4 BFPDTC	(4) 1.4301/X5CrNi18-10 SFPDTC
5				
6				
6T				
8				
8T				
10				
10T				
12				
12T				
13				
13T				
16				
16T				
20				
20T				

Alterations

Part Number	-	P	-	L	-	B	-	(RC / CN / RAC / LAC)
SFPDTC8	-	P10.00		L8		B5.0	-	CN

10 Days

⊗Alteration is not available for P Dimension Selectable Type.

Alterations	Under neck radius alteration	C Chamfered Size	Hexagon Socket	Wrench Hole
				
Code	RC	CN	RAC	LAC
Spec.	Changes the relief to R0.5. Ordering Code RC P-D≥2 ⊗Combination with RAC and LAC is not available.	Changes C Chamfering at P dimension part to 0.5 or less. ⊗Not applicable to D dimension part.	Machines hexagonal socket. Ordering Code RAC D / Applicable Dimension L / B / Hexagonal Hole Dimension E / S 5 / 8~ / 8.0~ / 2 / 2 6 6T / 10~ / 8.0~ / 2 / 3 8 8T / 10~ / 12.5~ / 2.5 / 4 10 10T / 12~ / 13.0~ / 3 / 5 12 12T / 12~ / 16.0~ / 4 / 6 13 13T / 15~ / 19.0~ / 4 / 6 16 16T / 16~ / 20.0~ / 5 / 8 20 20T / 20~ / 20.0~ / 5 / 8 Applicable to P, L and B Dimension Configurable only. ⊗Combination with RC and LAC is not available.	Machines wrench hole. Ordering Code LAC D / Applicable Dimension B 5 / 8.0~ 6 6T / 8.0~ 8 8T / 9.0~ 10 10T / 9.0~ 12 12T / 9.0~ 13 13T / 14.0~ 16 16T / 15.0~ 20 20T / 15.0~ Wrench Hole Dimension P / Q 5.50~9.99 / 2 10.00~16.99 / 3.5 17.00~ / 5 Applicable to P, L and B Dimension Configurable only. ⊗Combination with RC and RAC is not available.
Price Adder	3,00	Free of Charge	6,00	3,00

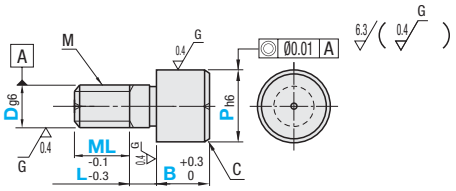
Locating Pins Large Flat Head
-Male Thread-



Material No.	M Material	S Surface Treatment	H Hardness	Type: P Dimension Selectable	P Dimension Configurable	P, L and B Dim. Configurable	P, L, B and ML Dim. Configurable
(1)	1.2510/ 100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPFNB	JPFNA	FPFNA	FPFNLA
(2)		Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	-	GJPFNA	GFPFNA	GFPFNLA
(3)		-	-	-	BJPFNA	BFPFNA	-
(4)	1.4301/	-	-	SJPFNB	SJPFNA	SFPFNA	SFPFNLA
(6)	1.4125/	-	Treated Hardness 50 ~ 55HRC	CJPFNB	CJPFNA	CFPFNA	CFPFNLA

■P Dimension Tolerance Table

P	h6
3.50~6.00	0 / —0.008
6.01~10.00	0 / —0.009
10.01~18.00	0 / —0.011
18.01~30.00	0 / —0.013



※1.4125/X105CrMo17 equivalent has an identification groove on D part.

■P Dimension Selectable

Part Number Type	D	D Dimension Tolerance g6	P Selection	L	B	C	M (Coarse)	ML
JPFNB SJPFNB CJPFNB	3	-0.002 -0.008	4 5 6	2	3	0.5	M3	4.5
	4	-0.004 -0.012	5 6 8		4	1	M4	6
	5		6 8 9	3			M5	7.5
	6		8 9 10		5		M6	9
	8	-0.005 -0.014	9 10 12 13	5	6	1.5	M8	12

■P Dimension Configurable

Part Number Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	C	M (Coarse)	ML
JPFNA GJPFNA BJPFNA SJPFNA CJPFNA	3	-0.002 -0.008	3.50~6.00	2	3	0.5	M3	4.5
	4	-0.004 -0.012	4.50~7.00		4	1	M4	6
	5		5.50~8.00	3			M5	7.5
	6		6.50~10.00		5		M6	9
	8	-0.005 -0.014	9.00~13.00	5	6	1.5	M8	12
	10		11.00~15.00		10	2	M10	15
	12	-0.006 -0.017	13.00~16.00	8	20		M12	18
	16		17.00~25.00		25	3	M16	24
	20	-0.007 -0.020	22.00~30.00	10	30		M20	30

■P, L and B Dimension Configurable

Part Number Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	M (Coarse)	ML
FPFNA GFPFNA BFPFNA SFPFNA CFPFNA	3	-0.002 -0.008	3.50~6.00	2~6	3.0~10.0	0.5	M3	4.5
	4	-0.004 -0.012	4.50~7.00	2~8	4.0~10.0	1	M4	6
	5		5.50~8.00	3~10	4.0~10.0		M5	7.5
	6		6.50~10.00	3~10	4.0~12.0		M6	9
	8	-0.005 -0.014	9.00~13.00	5~10	5.0~15.0	1.5	M8	12
	10		11.00~15.00	5~15	6.0~20.0	2	M10	15
	12	-0.006 -0.017	13.00~16.00	8~15	6.0~20.0		M12	18
	16		17.00~25.00	8~20	7.0~20.0	3	M16	24
	20	-0.007 -0.020	22.00~30.00	10~20	10.0~20.0		M20	30

■P, L, B and ML Dimension Configurable Thread length (ML) is configurable between Mx1 and Mx3 (max.).

Part Number Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	ML 1mm Increment	C	M (Coarse)
FPFNLA GFPFNLA SFPFNLA CFPFNLA	3	-0.002 -0.008	3.50~6.00	2~6	3.0~10.0	3~9	0.5	M3
	4	-0.004 -0.012	4.50~7.00	2~8	4.0~10.0	4~12	1	M4
	5		5.50~8.00	3~10	4.0~10.0	5~15		M5
	6		6.50~10.00	3~10	4.0~12.0	6~18		M6
	8	-0.005 -0.014	9.00~13.00	5~10	5.0~15.0	8~24	1.5	M8
	10		11.00~15.00	5~15	6.0~20.0	10~30	2	M10
	12	-0.006 -0.017	13.00~16.00	8~15	6.0~20.0	12~30		M12
	16		17.00~25.00	8~20	7.0~20.0	16~40	3	M16
	20	-0.007 -0.020	22.00~30.00	10~20	10.0~20.0	20~40		M20

Order Example

Part Number	-	P	-	L	-	B	-	ML
JPFNA3	-	5.20						
FPFNA5	-	P7.80	-	L8	-	B4.0		
FPFNLA8	-	P10.00	-	L5	-	B5.0	-	ML8

Days to Ship

P Dimension Selectable
6 Days P. 87

- P Dimension Configurable / P, L and B Dimension Configurable / P, L, B and ML Dimension Configurable
8 Days | Express A | 5,00 EUR / piece P. 88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4.

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.

P Dimension Selectable

D	€ Unit Price		
	(1) 1.2510/100MnCrW4 Hardening **JPFNB**	(4) 1.4301/X5CrNi18-10 **SJPFNB**	(6) 1.4125/X105CrMo17 **CJPFNB**
3			
4			
5			
6			
8			

P Dimension Configurable

D	€ Unit Price				
	(1) 1.2510/100MnCrW4 Hardening **JPFNA**	(2) Hard 1.2510/100MnCrW4 **GJPFNA**	(3) 1.2510/100MnCrW4 **BJPFNA**	(4) 1.4301/X5CrNi18-10 **SJPFNA**	(6) 1.4125/X105CrMo17 **CJPFNA**
3					
4					
5					
6					
8					
10					
12					
16					
20					

P, L and B Dimension Configurable

D	€ Unit Price				
	(1) 1.2510/100MnCrW4 Hardening **FPFNA**	(2) Hard 1.2510/100MnCrW4 **GFPFNA**	(3) 1.2510/100MnCrW4 **BFPFNA**	(4) 1.4301/X5CrNi18-10 **SFPFNA**	(6) 1.4125/X105CrMo17 **CFPFNA**
3					
4					
5					
6					
8					
10					
12					
16					
20					

P, L, B and ML Dimension Configurable (Price in table is when Mx1≤ML<Mx1.5. Refer to the table on the right for unit price calculation.)

D	€ Unit Price			
	(1) 1.2510/100MnCrW4 Hardening **FPFNLA**	(2) Hard 1.2510/100MnCrW4 **GFPFNLA**	(4) 1.4301/X5CrNi18-10 **SFPFNLA**	(6) 1.4125/X105CrMo17 **CFPFNLA**
3				
4				
5				
6				
8				
10				
12				
16				
20				

Price of Male Thread P, L, B and ML Dimension Configurable

Price is determined by ML length.

ML	Price (Round down to one Cent.)
Mx1 ≤ML<Mx1.5	€ Unit Price in Table
Mx1.5≤ML<Mx2	€ Unit Price in Table x 1.05
Mx2 ≤ML<Mx2.5	€ Unit Price in Table x 1.1
Mx2.5≤ML<Mx3	€ Unit Price in Table x 1.15

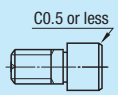
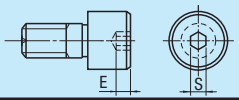
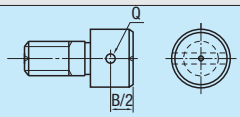
Price Calculation Example:
FPFNLA10-P12.00-L5-B6-ML20
(ML=Mx2)
12,00 (FPFNLA10) x 1.1 = 13,20 EUR

Alterations

Part Number	-	P	-	L	-	B	-	ML	-	(RC / CN / RAC / LAC)
FPFNA10	-	P12.00	-	L5	-	B9.0	-			LAC

10 Days

⊗Alteration is not available for P Dimension Selectable Type.

Alterations	Under neck radius alteration	C Chamfered Size	Hexagon Socket	Wrench Hole
				
Code	RC	CN	RAC	LAC
Spec.	Changes the relief to R0.5. Ordering Code RC P-D≥2 ⊗Combination with RAC and LAC is not available.	Changes C Chamfering at P dimension part to 0.5 or less.	Machines hexagonal socket. Ordering Code RAC Applicable when D≥6. Applicable to P, L and B Dimension Configurable only. ⊗Combination with RC and LAC is not available.	Machines wrench hole. Ordering Code LAC Applicable when D≥6. Applicable to P, L and B Dim. Configurable only. ⊗Combination with RC and RAC is not available.
Price Adder	3,00	Free of Charge	6,00	3,00

D	Applicable Dim.	Hexagonal Hole Dim.	
	B	E	S
6	8.0~	2	3
8	12.5~	2.5	4
10	13.0~	3	5
12	16.0~	4	6
16	20.0~	5	8
20	20.0~		

D	Applicable Dim.	Wrench Hole Dimension	
	B	P	Q
6	8.0~	6.50~9.99	2
8	9.0~	10.00~16.99	3.5
10	9.0~	17.00~	5
12	9.0~		
16	15.0~		
20	15.0~		

Locating Pins Large Flat Head

-D and P Tolerance Selectable-

RoHS



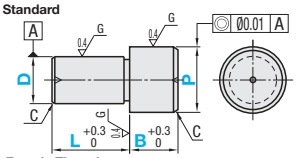
(Alteration CN)

Material No.	M Material	S Surface Treatment	H Hardness	Type		
				Standard	Female Thread	Male Thread
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFFA	KFFTA	KFFNA
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GKFFA	GKFFTA	GKFFNA
(3)	1.2510/100MnCrW4	-	-	BKFFA	BKFFTA	-
(4)	1.4301/X5CrNi18-10	-	-	SKFFA	SKFFTA	SKFFNA
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV~	-	HKFFTA	-
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFFA	CKFFTA	-

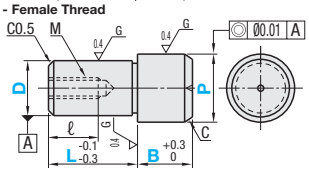
■Tolerance Selection

D or P	Standard Grade					Precision Grade	
	M	P	G	H	S	A	B
	m6	p6	g6	h7	-	-	-
1.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010	0 -0.01	+0.005 0	0 -0.005
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015			
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 30.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

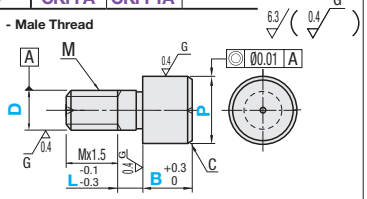
- Standard



- Female Thread



- Male Thread



1.4125/X105CrMo17 has an identification groove on D part.

■Standard

Type	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	€ Unit Price Standard Grade (1) KFFA	(2) GKFFA	(3) BKFFA	(4) SKFFA	(6) CKFFA
KFFA GKFFA BKFFA SKFFA CKFFA	M P G H A B	S M P G H A B	1	1.50~2.50	2, 3	2.0~5.0	0.1					
			2	2.50~4.00	2~6	2.0~10.0	0.5					
			3	3.50~6.00	3~6	2.0~10.0	1					
			4	4.50~7.00	4~8	2.0~10.0						
			5	5.50~8.00	5~10	2.0~10.0						
			6	6.50~10.00	6~12	2.0~12.0						
			8	9.00~13.00	8~16	2.0~15.0	1.5					
			10	11.00~15.00	10~20	3.0~20.0	2					
			12	13.00~16.00	12~24	3.0~30.0						
			13	14.00~18.00	13~26	5.0~30.0						
			16	17.00~25.00	16~32	5.0~35.0	3					
			20	22.00~30.00	20~40	5.0~40.0						

⊗Hard chrome plated is not available for Precision Grade * (Precision Grade A and B).

■Female Thread

Type	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	ℓ	C	€ Unit Price (1) KFFTA	(2) GKFFTA	(3) BKFFTA	(4) SKFFTA	(5) HKFFTA	(6) CKFFTA
KFFTA GKFFTA BKFFTA SKFFTA HKFFTA CKFFTA	M P G H	S M P G H	6	6.50~10.00	6~12	2.0~12.0	M3	5	1						
			6T				M2.6	4							
			8	9.00~13.00	8~16	2.0~15.0	M5	8	1.5						
			8T		6~12		M4	6							
			10	11.00~15.00	10~20	3.0~20.0	M5	8	2						
			10T		6~16		M4	6							
			12	13.00~16.00	12~24	3.0~30.0	M5	8							
			12T		8~18		M4	6							
			13	14.00~18.00	13~26	5.0~30.0	M8	10	3						
			13T		8~20		M6	9							
			16	17.00~25.00	16~32	5.0~35.0	M8	12							
			16T		10~24		M6	9							
			20	22.00~30.00	20~40	5.0~40.0	M8	12							
			20T		12~30		M6	9							

Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)

Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281 Holes may go through.

■Male Thread

Type	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	M (Coarse)	€ Unit Price Standard Grade (1) KFFNA	(2) GKFFNA	(4) SKFFNA
KFFNA GKFFNA SKFFNA	M P G H A B	S M P G H A B	3	3.50~6.00	2~6	3.0~10.0	0.5	M3			
			4	4.50~7.00	2~8	4.0~10.0	1	M4			
			5	5.50~8.00	3~10	4.0~10.0		M5			
			6	6.50~10.00	3~10	4.0~12.0		M6			
			8	9.00~13.00	5~10	5.0~15.0	1.5	M8			
			10	11.00~15.00	5~15	6.0~20.0	2	M10			
			12	13.00~18.00	8~15	6.0~20.0		M12			
			16	17.00~25.00	8~20	7.0~20.0	3	M16			
			20	22.00~30.00	10~20	10.0~20.0		M20			

⊗Hard chrome plated is not available for Precision Grade * (Precision Grade A and B).

Order Example

Part Number: Type (KFFA) - D Tolerance (M) - P Tolerance (S) - D (6) - P (P8.00) - L (L8) - B (B6.0)

Alterations

Part Number (KFFAMS6) - P (P8.0) - L (L8) - B (B6.0) - (GDC / RC / AC / CN) (RC) — 5 Days

Days to Ship: 8 Days / 5 Days

Express A: 5,00 EUR / piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

⊗Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (5) Hard 1.4301/X5CrNi18-10.

Precision Grade Price

When A and B tolerance is selected, multiply 1.1 to the above unit price. (Round down to ten Cent.)

Examples of Price Calculation

KFFAAB6-P8.20-L8-B5.2

12,10 (KFFA6) x 1.1 = 13,30 EUR

Alterations Code	Insertion Guide Machining GDC	Under neck radius alteration RC	Air Vent AC	C Chamfered Size CN
Spec.	Adds Insertion Guide. Ordering Code GDC Guide Part D -0.01 -0.03	Changes the relief to R0.5. Ordering Code RC	Adds an air vent. Ordering Code AC	Changes C Chamfering at P dimension part to 0.5 or less. Ordering Code CN
	D: 3~12 ℓ: 1; 13~20 ℓ: 2	RC (R0.5)	d -0.15	C0.5or less
	⊗Not applicable to D≤2	Applicable when P-D≥2.		Standard D≥3 Applicable to Male Thread Type when D≥4. ⊗Not applicable to D dimension part.
Price Adder	2,00	3,00	2,00	Free of Charge

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Locating Pins Large Flat Head

-Side Locating-

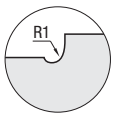
CAD Data

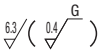
Features: Grinding undercut shape and the pin material have been changed to give higher immunity against breaking in anticipation for lateral load applications.



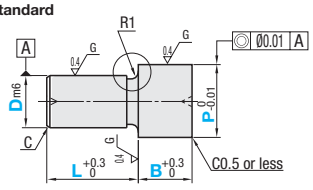
Materials No.	M Materials	S Surface Treatment	H Hardness	Type		
				Standard	Female Thread	Male Thread
(1)	1.7242/16CrMo4	-	Carburized 55HRC ~ (Depth 0.7 ~ 0.8)	FPYT	FPYTM	FPYN
(2)	1.4301/X5CrNi18-10	-	-	SFPYT	SFPYTM	SFPYN

Surface Finish Relief

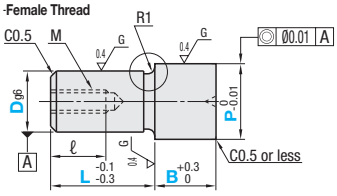




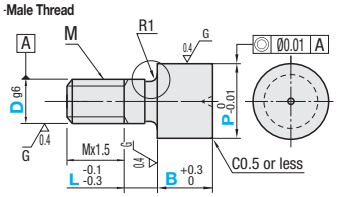
-Standard



-Female Thread



-Male Thread



■Standard

Part Number Type	D	D Dimension Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	€ Unit Price (1) 1.7242/16CrMo4 Carburized FPYT	€ Unit Price (2) 1.4301/ X5CrNi18-10 SFPYT
FPYT SFPYT	6	+0.012 +0.004	10.00~13.00	6~12	2.0~15.0	1		
	8	+0.015 +0.006	12.00~15.00	8~16	3.0~20.0	1.5		
	10		14.00~16.00	10~20	3.0~30.0	2		
	12	+0.018 +0.007	16.00~18.00	12~24	5.0~30.0			
	13		17.00~20.00	13~26	5.0~30.0			
	16		20.00~25.00	16~32	5.0~35.0	3		
	20	+0.021 +0.008	24.00~30.00	20~40	5.0~40.0			

■Female Thread

Part Number Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	ℓ	€ Unit Price (1) 1.7242/16CrMo4 Carburized FPYTM	€ Unit Price (2) 1.4301/ X5CrNi18-10 SFPYTM
FPYTM SFPYTM	6	-0.004 -0.012	10.00~13.00	9~12	2.0~15.0	M2.6	4		
	8	-0.005 -0.014	12.00~15.00	12~16	3.0~20.0	M4	6		
	10		14.00~16.00	12~20	3.0~30.0	M5	8		
	12	-0.006 -0.017	16.00~18.00	12~24	5.0~30.0				
	13		17.00~20.00	16~26	5.0~30.0	M8	12		
	16		20.00~25.00	16~32	5.0~35.0				
	20	-0.007 -0.020	24.00~30.00	20~40	5.0~40.0				

Note the strength of under-head part. P.1281

■Male Thread

Part Number Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	€ Unit Price (1) 1.7242/16CrMo4 Carburized FPYN	€ Unit Price (2) 1.4301/ X5CrNi18-10 SFPYN
FPYN SFPYN	6	-0.004 -0.012	10.00~13.00	3~10	2.0~15.0	M6		
	8	-0.005 -0.014	12.00~15.00	5~10	3.0~15.0	M8		
	10		14.00~16.00	5~15	3.0~20.0	M10		
	12	-0.006 -0.017	16.00~18.00	8~15	5.0~20.0	M12		
	16		20.00~25.00	8~20	5.0~20.0	M16		
	20	-0.007 -0.020	24.00~30.00	10~20	5.0~20.0	M20		

Order Example

Part Number	-	P	-	L	-	B
FPYT10	-	P15.00	-	L15	-	B10.0

Days to Ship

-1.4301/X5CrNi18-10

8 Days — Express A — 5,00 EUR / piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

-1.7242/16CrMo4 Carburized

10 Days — Express B — 5,00 EUR / piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

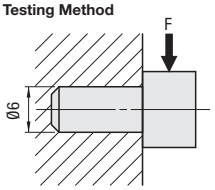
■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Static Shear Failure Data

Testing Method



Materials	Static Yield Load (KN)	
	Relief	R1
1.7242/16CrMo4 Carburized	18.8	21.3

Values are representing values, not guaranteed.

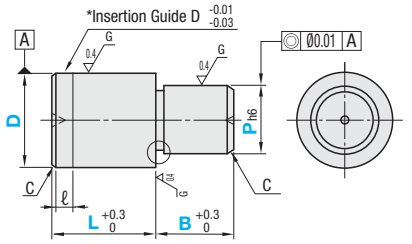
Locating Pins Small Flat Head
-Standard-

RoHS



(Alteration CN)

Material No.	M Material	S Surface Treatment	H Hardness	Type: P Dimension Selectable	Type: P Dimension Configurable	Type: P, L and B Dimension Configurable	D Tolerance Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPDB	JPDS	FPDS	C(m6) PC(p6)
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	-	GJPDS	GFPDS	
(3)	1.2510/100MnCrW4	-	-	-	BJPDS	BFPDS	
(4)	1.4301/ X5CrNi18-10	-	-	SJPDB	SJPDS	SFPDS	
(5)	1.4301/ X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV~	-	HJPDS	HFPDS	
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPDB	CJPDS	CFPDS	



■P Dimension Tolerance Table

P	h6
1.50~3.00	0 −0.006
3.01~6.00	0 −0.008
6.01~10.00	0 −0.009
10.01~18.00	0 −0.011
18.01~20.00	0 −0.013

* Insertion Guide is applicable to tolerance p6 type only. ⓟ1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number: Type	D Tolerance	D	D Dimension Tolerance: m6	D Dimension Tolerance: p6	P	L	B	ℓ	C
JPDB SJPDB CJPDB	C(m6) PC(p6)	3	+0.008 +0.002	+0.012 +0.006	2	5	3	1	0.1
		4	+0.012 +0.004	+0.020 +0.012	2 3				0.5
		5			2 3 4	8			
		6			3 4 5	10	4		
		8	+0.015 +0.006	+0.024 +0.015	4 5 6	12		2	1
		10			5 6 7 8	16	5		
		16	+0.018 +0.007	+0.029 +0.018	10 13	22	12		3

■P Dimension Configurable

Part Number: Type	D Tolerance	D	D Dimension Tolerance: m6	D Dimension Tolerance: p6	P 0.01mm Increment	L	B	ℓ	C
JPDS GJPDS BJPDS SJPDS HJPDS CJPDS	C(m6) PC(p6)	2	+0.008 +0.002	+0.012 +0.006	1.50~2.00	4	3	0	0.1
		3			1.50~3.00	5		1	
		4	+0.012 +0.004	+0.020 +0.012	2.00~4.00				0.5
		5			2.00~5.00	8			
		6			2.00~6.00	10	4		
		8	+0.015 +0.006	+0.024 +0.015	3.00~8.00	12		2	1
		10			3.00~10.00	16	5		
		12	+0.018 +0.007	+0.029 +0.018	5.00~12.00	20	6		1.5
		13			6.00~13.00	22	10		2
		16			10.00~16.00		12		3
		20	+0.021 +0.008	+0.035 +0.022	13.00~20.00	30	20		

■P, L and B Dimension Configurable

Part Number: Type	D Tolerance	D	D Dimension Tolerance: m6	D Dimension Tolerance: p6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	ℓ	C
FPDS GFPDS BFPDS SFPDS HFPDS CFPDS	C(m6) PC(p6)	2	+0.008 +0.002	+0.012 +0.006	1.50~2.00	2~4	3.0~10.0	0	0.1
		3			1.50~3.00	3~6	3.0~10.0	1	
		4	+0.012 +0.004	+0.020 +0.012	2.00~4.00	4~8	4.0~10.0		0.5
		5			2.00~5.00	5~10	4.0~10.0		
		6			2.00~6.00	6~12	4.0~12.0		
		8	+0.015 +0.006	+0.024 +0.015	3.00~8.00	8~16	6.0~15.0	2	1
		10			3.00~10.00	10~20	6.0~20.0		
		12	+0.018 +0.007	+0.029 +0.018	5.00~12.00	12~24	6.0~20.0		1.5
		13			6.00~13.00	13~26	6.0~20.0		2
		16			10.00~16.00	16~32	7.0~20.0		3
		20	+0.021 +0.008	+0.035 +0.022	13.00~20.00	20~40	7.0~20.0		

CAD Data

Order Example

Part Number	-	P	-	L	-	B
JPDSC4	-	2.55				
FPDSC4	-	P2.01	-	L6	-	B5.5

Days to Ship

P Dimension Selectable
6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.

- P Dimension Configurable / P, L and B Dimension Configurable
8 Days
5 Days
Express A 5,00 EUR / piece P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCr1.4301/X5CrNi18-10 and Material No. (5) Hard 1.4301/X5CrNi18-10.

■P Dimension Selectable

D	€ Unit Price		
	(1) 1.2510/100MnCrW4 Hardening JPDBC JPDBPC	(4) 1.4301 X5CrNi18-10 SJPDBC SJPDBPC	(6) 1.4125/X105CrMo17 CJPDBC CJPDBPC
3			
4			
5			
6			
8			
10			
16			

■P Dimension Configurable

D	€ Unit Price					
	(1) 1.2510/100MnCrW4 Hardening JPDSC JPDSPC	(2) Hard 1.2510/100MnCrW4 GJPDSC GJPDSPC	(3) 1.2510/100MnCrW4 BJPDSC BJPDSPC	(4) 1.4301/X5CrNi18-10 SJPDSC SJPDSPC	(5) 1.4301/ Hard HJPDSC HJPDSPC	(6) 1.4125/ CJPDSC CJPDSPC
2						
3						
4						
5						
6						
8						
10						
12						
13						
16						
20						

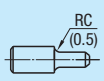
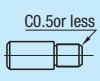
■P, L and B Dimension Configurable

D	€ Unit Price					
	(1) 1.2510/100MnCrW4 Hardening FPDSC FPDSPC	(2) Hard 1.2510/100MnCrW4 GFPDSC GFPDSPC	(3) 1.2510/100MnCrW4 BFPDSC BFPDSPC	(4) 1.4301/X5CrNi18-10 SFPDSC SFPDSPC	(5) 1.4301/Hard HFPDSC HFPDSPC	(6) 1.4125/ CFPDSC CFPDSPC
2						
3						
4						
5						
6						
8						
10						
12						
13						
16						
20						

Alterations

Part Number	-	P	-	L	-	B	-	(RC / CN)
FPDSC4	-	P2.00	-	L6	-	B5.5	-	RC

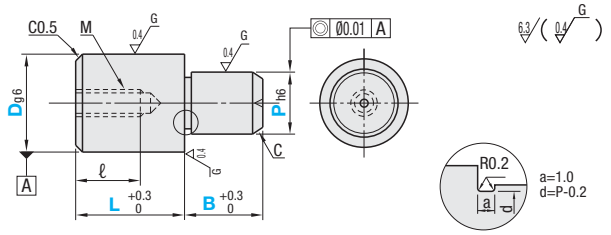
10 Days
Alteration is not available for P Dimension Selectable Type.

Alterations	Radius	C Chamfered Size
		
Code	RC	CN
Spec.	Changes the relief to R0.5. Ordering Code RC Applicable when D-P≥2.	Changes C Chamfering at P dimension part to 0.5 or less. Ordering Code CN Not applicable to D dimension part. Applicable when D≥8.
Price Adder	3,00	Free of Charge

Locating Pins Small Flat Head
-Female Thread Shank-


(Alteration CN)

Material No.	M Material	S Surface Treatment	H Hardness	Type: P Dimension Selectable	Type: P Dimension Configurable	Type: P, L and B Dimension Configurable
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPDSTB	JPDSTC	FPDSTC
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	-	-	GFPDSTC
(4)	1.4301/X5CrNi18-10	-	-	SJPDSTB	SJPDSTC	SFPDSTC
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPDSTB	CJPDSTC	CFPDSTC



■P Dimension Tolerance Table

P	h6
4.00~6.00	0 -0.008
6.01~10.00	0 -0.009
10.01~18.00	0 -0.011
18.01~20.00	0 -0.013

(P)1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number: Type	Part Number: D	D Dimension Tolerance g6	P	L	B	M (Coarse)	ℓ	C
JPDSTB SJPDSTB CJPDSTB	6	-0.004 -0.012	4	10	3	M3	5	0.5
	8	-0.005 -0.014	6	12	4	M4	6	1
	10		8	16	5	M5	8	
	12	-0.006 -0.017	10	20	6			1.5
	16		10 14	24	10	M8	12	3

■P Dimension Configurable

Part Number: Type	Part Number: D	D Dimension Tolerance g6	P 0.01mm Increment	L	B	M (Coarse)	ℓ	C
JPDSTC SJPDSTC CJPDSTC	6	-0.004 -0.012	4.00~6.00	10	3	M3	5	0.5
	6T					M2.6	4	
	8	-0.005 -0.014	6.00~8.00	12	4	M4	6	1
	10		7.00~10.00	16	5	M5	8	
	12	-0.006 -0.017	7.00~12.00	20	6			1.5
	13		8.00~13.00	22	10	M8	12	2
	16		10.00~16.00	24	10			3
	20	-0.007 -0.020	13.00~20.00	32	20			

■P, L and B Dimension Configurable

Part Number: Type	Part Number: D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M (Coarse)	ℓ	C
FPDSTC GFPDSTC SFPDSTC CFPDSTC	6	-0.004 -0.012	4.00~6.00	8~12	2.0~12.0	M3	5	0.5
	6T					M2.6	4	
	8	-0.005 -0.014	6.00~8.00	11~16	2.0~15.0	M4	6	1
	10		7.00~10.00	11~20	3.0~20.0	M5	8	
	10T			8~16		M4	6	
	12	-0.006 -0.017	7.00~12.00	12~24	3.0~20.0	M5	8	1.5
	12T			8~18		M4	6	
	13		8.00~13.00	13~26	5.0~20.0	M8	10	2
	13T			10~20		M6	9	
	16		10.00~16.00	16~32	5.0~20.0	M8	12	3
	16T			10~24		M6	9	
	20	-0.007 -0.020	13.00~20.00	20~40	5.0~20.0	M8	12	
	20T			12~30		M6	9	

(P)Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
(P)Note the strength of under-head part. P.1281 (P)Please confirm pilot hole depth on P.1281 Holes may go through.

Order Example

Part Number	-	P	-	L	-	B
JPDSTC6	-	4.00				
FPDSTC6	-	P4.00	-	L10	-	B5.5

Days to Ship

P Dimension Selectable: 6 Days P.87

- P Dimension Configurable / P, L and B Dimension Configurable: 8 Days / 7 Days

Express A: 5,00 EUR / Picec P.88

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Please request a quotation for 50 or more pieces of in-stock items.

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (2) Hard 1.2510/100MnCrW4.

P Dimension Selectable

D	€ Unit Price		
	(1) 1.2510/100MnCrW4 Hardening JPDSTB	(4) 1.4301/X5CrNi18-10 SJPDSTB	(6) 1.4125/X105CrMo17 CJPDSTB
6			
8			
10			
12			
16			

P Dimension Configurable

D	€ Unit Price		
	(1) 1.2510/100MnCrW4 Hardening JPDSTC	(4) 1.4301/X5CrNi18-10 SJPDSTC	(6) 1.4125/X105CrMo17 CJPDSTC
6			
6T			
8			
10			
12			
13			
16			
20			

P, L and B Dimension Configurable

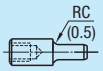
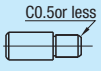
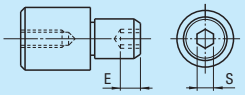
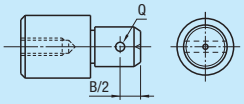
D	€ Unit Price			
	(1) 1.2510/100MnCrW4 Hardening FPDSTC	(2) Hard 1.2510/100MnCrW4 GFPDSTC	(4) 1.4301/X5CrNi18-10 SFPDSTC	(6) 1.4125/X105CrMo17 CFPDSTC
6				
6T				
8				
10				
10T				
12				
12T				
13				
13T				
16				
16T				
20				
20T				

Alterations

Part Number	-	P	-	L	-	B	-	(RC / CN / RAC / LAC)
FPDSTC6	-	P4.00	-	L10	-	B5.5	-	RC

10 Days

Alteration is not available for P Dimension Selectable Type.

Alterations	Radius	C Chamfered Size	Hexagon Socket	Wrench Hole
				
Code	RC	CN	RAC	LAC
Spec.	Changes the relief to R0.5. Ordering Code RC Applicable when D-P≥2. Combination with LAC is not available.	Changes C Chamfering at P dimension part to 0.5 or less. Ordering Code CN Not applicable to D dimension part. Applicable when D≥8.	Machines hexagonal socket. Ordering Code RAC	Machines wrench hole. Ordering Code LAC
Price Adder	3,00	Free of Charge	6,00	3,00

Machines hexagonal socket. Ordering Code RAC

D	Applicable Dimension P	Applicable Dimension B	Hexagonal Hole Dimension E	Hexagonal Hole Dimension S
8	7.00~	9.0~	2	3
10 10T				
12 12T	8.00~			
13 13T	11.00~	10.0~	2.5	4
16 16T	14.00~		3	5
20 20T	15.00~		4	6

Applicable when D≥8.
Applicable to P, L and B Dimension Configurable only.
Combination with LAC is not available.

Machines wrench hole. Ordering Code LAC

D	Applicable Dimension B
8	8.0~
10 10T	
12 12T	
13 13T	9.0~
16 16T	
20 20T	10.0~

Wrench Hole Dimension P	Wrench Hole Dimension Q
6.00~9.99	2
10.00~15.99	3.5
16.00~	5

Applicable when D≥8.
Applicable to P, L and B Dimension Configurable only.
Combination with RC and RAC is not available.

Locating Pins Small Flat Head

-D and P Tolerance Selectable-



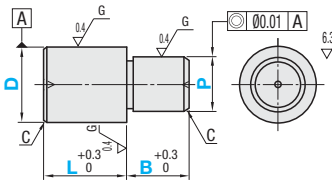
Material No.	M Material	S Surface Treatment	H Hardness	Type	
				Standard	Female Thread
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFFSA	KFFSTA
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GKFFSA	GKFFSTA
(3)	1.2510/100MnCrW4	-	-	BKFFSA	BKFFSTA
(4)	1.4301/X5CrNi18-10	-	-	SKFFSA	SKFFSTA
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV~	HKFFSA	-
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFFSA	CKFFSTA

■Tolerance Selection

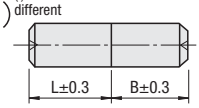
D or P	Standard Grade					Precision Grade	
	M	P	G	H	S	A	B
	m6	p6	g6	h7	-	-	-
1.50 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010	0 -0.01	+0.005 0	0 -0.005
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015			
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 30.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

Ⓟ The unit price of Precision Type is the price of Standard Type multiplying 1.1. (Round down to ten Cent.)
⊗ Hard chrome plated is not applicable to Precision Grade tolerance.

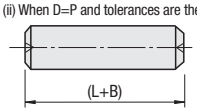
-Standard



Ⓟ When D=P, no relief is applied.
(i) When D=P and tolerances are different

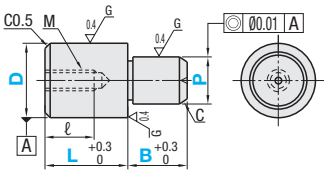


(ii) When D=P and tolerances are the same



(L+B) is the general tolerance.

-Female Thread



Ⓟ 1.4125/X105CrMo17 has an identification groove on D part.

■Standard

Part Number				P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C
Type	D Tolerance Selection	P Tolerance Selection	D				
KFFSA	M	S	2	1.50~2.00	2~4	2.0~10.0	0.1
		M	3	1.50~3.00	3~6	2.0~10.0	
GKFFSA*	P		4	2.00~4.00	4~8	2.0~10.0	0.5
BKFFSA	G	P	5	2.00~5.00	5~10	2.0~10.0	
		G	6	2.00~6.00	6~12	4.0~12.0	
SKFFSA	H		8	3.00~8.00	8~16	6.0~15.0	1
		H	10	3.00~10.00	10~20	6.0~20.0	
HKFFSA*	*A		12	5.00~12.00	12~24	6.0~20.0	1.5
CKFFSA	*B	*A	13	6.00~13.00	13~26	6.0~20.0	2
		*B	16	10.00~16.00	16~32	7.0~20.0	3
			20	13.00~20.00	20~40	7.0~20.0	

⊗ Hard chrome plated is not available for Precision Grade * (precision tolerance).

■Female Thread

Part Number				P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	M	ℓ	C
Type	D Tolerance Selection	P Tolerance Selection	D						
KFFSTA GKFFSTA BKFFSTA SKFFSTA CKFFSTA	M P G H	S M P G H	6	4.00~6.00	8~12	4.0~12.0	M3	5	0.5
			6T				M2.6	4	
			8	6.00~8.00	11~16	6.0~15.0	M5	8	1
			8T				M4	6	
			10	7.00~10.00	11~20	6.0~20.0	M5	8	1.5
			12	7.00~12.00	12~24	6.0~20.0			
			13	8.00~13.00	13~26	6.0~20.0	M8	10	2
			16	10.00~16.00	16~32	7.0~20.0		12	3
			20	13.00~20.00	20~40	7.0~20.0			

Ⓟ Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓟ Note the strength of under-head part. ☞ P.1281 Ⓟ Please confirm pilot hole depth on ☞ P.1281 Holes may go through.

Order Example

Part Number										
Type	D Tol.	P Tol.	D	-	P	-	L	-	B
KFFSA	G	S	10	-	P8.00	-	L10	-	B8.0

Days to Ship

8 Days | 5 Days

Express A | 5,00 EUR / piece P. 88

Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
Ⓧ Material No. (2)Hard 1.2510/100MnCrW4 Material No. (5)Express Serviceis not available for Hard 1.4301/X5CrNi18-10.

Price

Volume Discount (Ⓟ Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Ⓟ Precision Grade Price
When A and B tolerance is selected, multiply 1.1 to the above unit price. (Round down to one Cent.)
Examples of Price Calculation
KFFSAAA10-P8.00-L13-B15.1
13,30 (KFFSA10) x 1.1 = 14,60 EUR

Standard

D	€ Unit Price Standard Grade					
	(1) 1.2510/100MnCrW4 Hardening KFFSA	(2) Hard 1.2510/ GKFFSA	(3) 1.2510/100MnCrW4 BKFFSA	(4) 1.4301/X5CrNi18-10 SKFFSA	(5) 1.4301/X5CrNi18-10 Hard HKFFSA	(6) 1.4125/X105CrMo17 CKFFSA
2						
3						
4						
5						
6						
8						
10						
12						
13						
16						
20						

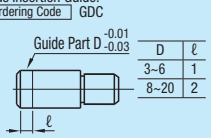
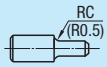
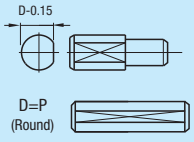
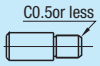
Female Thread

D	€ Unit Price Standard Grade				
	(1) 1.2510/100MnCrW4 Hardening KFFSTA	(2) Hard 1.2510/100MnCrW4 GKFFSTA	(3) 1.2510/100MnCrW4 BKFFSTA	(4) 1.4301/X5CrNi18-10 SKFFSTA	(6) 1.4125/X105CrMo17 CKFFSTA
6					
6T					
8					
8T					
10					
12					
13					
16					
20					

Alterations

Part Number	-	P	-	L	-	B	-	(GDC / RC / AC / CN)
KFFSAGS10	-	P8.00	-	L10	-	B8.0	-	RC

10 Days

Alterations	Insertion Guide Machining	Radius	Air Vent	C Chamfered Size
Code	GDC	RC	AC	CN
Spec.	Adds Insertion Guide. Ordering Code GDC  Ⓧ Not applicable to D≤2	Changes the relief to R0.5. Ordering Code RC  Ⓟ Applicable when D-P≥2.	Adds an air vent. Ordering Code AC 	Changes C Chamfering at P dimension part to 0.5 or less. Ordering Code CN  Ⓟ Standard D≥4 Female Thread D≥8 Ⓧ Not applicable to D dimension part.
Price Adder	2,00	3,00	2,00	Free of Charge

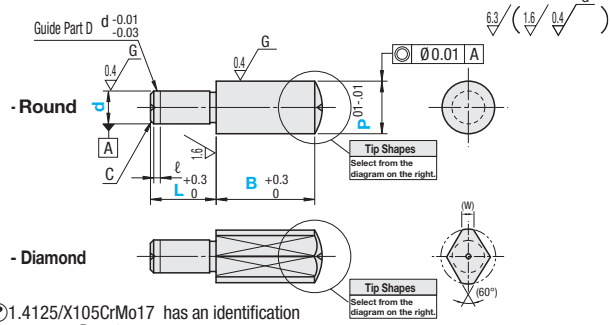
Locating Pins Tip Shape Selectable
-Standard-

CAD Data

RoHS

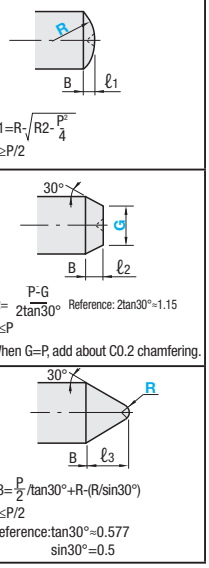


Material No.	Round d Tolerance m6	Round d Tolerance p6	Diamond d Tolerance m6	M Material	S Surface Treatment	H Hardness
(1)	LPEJ	LPPEJ	LPDEJ	1.2510/100MnCrW4	-	Treated Hardness 55 ~ 60HRC
(2)	LPEG	LPPEG	LPDEG	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 55 ~ 60HRC Plating Hardness 750HV ~
(3)	LPE	LPPE	-	1.1191/C45E	-	Treated Hardness 45 ~ 50HRC
(4)	LPEB	LPPEB	LPDEB	1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
(5)	LPER	LPPER	-	1.1191/C45E	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 45 ~ 50HRC Plating Hardness 750HV ~
(6)	LPES	LPPES	LPDES	1.4301/X5CrNi18-10	-	-
(7)	LPED	LPPED	-	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~
(8)	LPEC	LPPEC	LPDEC	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 58RC



1.4125/X105CrMo17 has an identification groove on D part.

Tip Shape



Type	Tip Shape	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	B 0.1mm Increment	R 1mm Increment (A Shape / C Shape Only)	G 1mm Increment (B Shape Only)	L 1mm Increment	C	ℓ	(W)
(Round) m6 / (Round) p6 / (Diamond) m6												
LPEJ LPPEJ LPDEJ		2	+0.008 +0.002	+0.012 +0.006	2.50~4.00	2.0 ~ 25.0 (10.0)	AShape R≥P/2	BShape G≤P	2~6	0.5	0	1.2
		3			3.50~6.00	2.0 ~ 25.0 (10.0)			3~6			1.5
LPEG LPPEG LPDEG	A	4	+0.012 +0.004	+0.020 +0.012	4.50~9.00	2.0 ~ 25.0 (10.0)			4~8	1		1.8
		5			5.50~10.00	2.0 ~ 30.0 (10.0)			5~10			2.2
LPE LPPE		6			6.50~12.00	2.0 ~ 40.0 (12.0)			6~12		1	3
LPEB LPPEB LPDEB	B	8	+0.015 +0.006	+0.024 +0.015	9.00~15.00	2.0 ~ 40.0 (15.0)			8~16	1.5		3.5
LPER LPPER		10			11.00~20.00	3.0 ~ 50.0 (20.0)			10~20	2		4
LPES LPPES LPDES	C	12	+0.018 +0.007	+0.029 +0.018	13.00~20.00	3.0 ~ 50.0 (20.0)	CShape R≤P/2		12~24			5
LPED LPPED		16			17.00~25.00	5.0 ~ 50.0 (20.0)			16~32			7
LPEC LPPEC LPDEC		20	+0.021 +0.008	+0.035 +0.022	21.00~30.00	5.0 ~ 50.0 (20.0)			20~40	3	2	9

B dimension in ( ) is for the Diamond Type.

Order Example

Part Number - P - B - R - G - L

LPEA5 - P10.00 - B12.0 - R6 - L5

LPPEJB10 - P15.00 - B27.0 - G12 - L10

Days to Ship 8 Days

Express A 5,00 EUR / piece P88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Serviceis not available for Material No. (2) (5) (7) hard chrome plated products.

Price

Volume Discount (Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	Round Shape € Unit Price (1) 1.2510/100Mn CrW4 Hardening LPEJ LPPEJ	(2) Hard 1.2510/100MnCrW4 LPEG LPPEG	(3) 1.1191/C45E LPE LPPE	(4) 1.1191/C45E Black Oxide LPEB LPPEB	(5) Hard 1.1191/ C45E LPER LPPER	(6) 1.4301/ X5CrNi18-10 LPES LPPES	(7) Hard 1.4301/ X5CrNi18-10 LPED LPPED	(8) 1.4125/ X105CrMo17 LPEC LPPEC	Diamond Shape € Unit Price (1) 1.2510/100MnCrW4 Hardening LPDEJ	(2) Hard 1.2510/100MnCrW4 LPDEG	(4) 1.1191/C45E Black Oxide LPDEB	(6) 1.4301/ X5CrNi18-10 LPDES	(8) 1.4125/ X105CrMo17 LPDEC
2													
3													
4													
5													
6													
8													
10													
12													
16													
20													

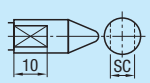
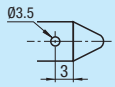
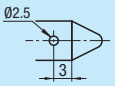
Alterations

Part Number - P - B - R - G - L - (SC / LAC / LTE)

LPEA5 - P10.0 - B12.0 - R6 - L5 - LTE

10 Days

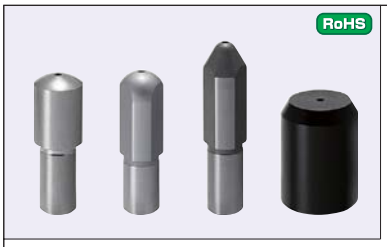
Alteration is not available for diamond shape.

Alterations	Width Across Flats	Wrench Hole (Ø3.5)	Wrench Hole (Ø2.5)
			
Code		LAC	LTE
Spec.	SC=1 mm Increment When B≤11, adds width across flats on the tip. P-3≤SC≤P-1, SC≥D	Adds a Ø3.5 hole. Applicable when B≥10 P≥8.	Adds a Ø2.5 hole. Applicable when B≥8 7≤P≤15.
Price Adder	5,00	1,00	1,00

Locating Pins Tip Shape Selectable

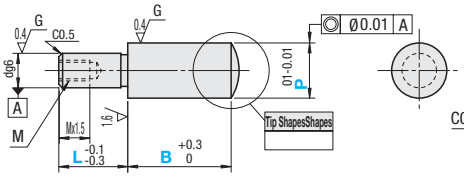
- Female Thread (Round / Diamond / Straight)

CAD Data

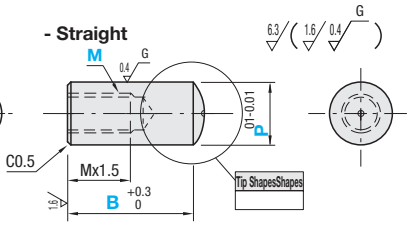


Material No.	Round	Diamond	Straight	M Materials	S Surface Treatment	H Hardness
(1)	LPGJ	LPDGJ	LPCJ	1.2510/100MnCrW4	-	Treated Hardness 55 ~ 60HRC
(2)	LPGG	LPDGG	LPCG	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 55 ~ 60HRC Plating Hardness 750HV ~
(3)	LPG	LPDG	LPC	1.1191/C45E	-	Treated Hardness 45 ~ 50HRC
(4)	LPGB	-	LPCB	1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
(5)	LPGR	-	LPCR	1.1191/C45E	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 45 ~ 50HRC Plating Hardness 750HV ~
(6)	LPGS	LPDGS	LPCS	1.4301/X5CrNi18-10	-	-
(7)	LPGD	-	LPCD	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~
(8)	LPGC	LPDGC	LPCC	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

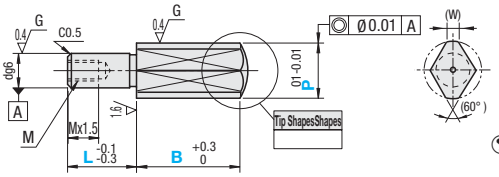
- Round



- Straight



- Diamond



Ⓨ1.4125/X105CrMo17 Round Type and Diamond Type has an identification groove on D part.

Tip Shape

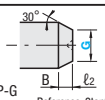
A Shape



Ⓨ R≥P/2

Ⓨ $\ell 1 = R - \sqrt{R^2 - \frac{P^2}{4}}$

B Shape

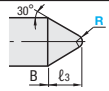


Ⓨ G≤P

Ⓨ $\ell 2 = \frac{P-G}{2\tan 30°}$ Reference: 2tan30°=1.15

Ⓨ When G=P, add about C0.2 chamfering.

C Shape



Ⓨ R≤P/2

Ⓨ $\ell 3 = \frac{P}{2}/\tan 30° + R - (R/\sin 30°)$

Ⓨ Reference:tan30°=0.577 sin30°=0.5

■Round / Diamond

Part Number Type (Round)	Type (Diamond)	Tip Shape	D	D Dimension Tolerance g6	P 0.01mm Increment	B 0.1mm Increment	R 1mm Increment A Shape / C Shape Only	G 1mm Increment B Shape Only	L 1mm Increment	M (Coarse)	(W)
			6	-0.004 -0.012	6.50~12.00	2.0 ~ 40.0 (12.0)	AShape R≥P/2 CShape R≤P/2	BShape G≤P	6~12	M3	3
			6T							M2.6	
LPGJ	LPDGJ		8	-0.005 -0.014	9.00~15.00	2.0 ~ 40.0 (15.0)			8~16	M4	3.5
LPGG	LPDGG		10		11.00~20.00	3.0 ~ 50.0 (20.0)			10 (12) ~ 20	M5	4
LPG	LPDG	A	10T						6 (12) ~ 16	M4	
LPGB		B	12	-0.006 -0.017	13.00~20.00	3.0 ~ 50.0 (20.0)			12~24	M5	5
LPGR		C	12T						8 (12) ~ 18	M4	
LPGS	LPDGS		16		17.00~25.00	5.0 ~ 50.0 (20.0)			16~32	M8	7
LPGD			16T						10 (14) ~ 24	M6	
LPGC	LPDGC		20	-0.007 -0.020	21.00~35.00	5.0 ~ 50.0 (20.0)			20~40	M8	9
			20T						12 (18) ~ 30	M6	

Ⓨ Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Ⓨ B dimension in ( ) and L dimension in () are for the Diamond Type. Ⓨ Note the strength of under-head part. ☞ P.1281 Ⓨ Please confirm pilot hole depth on ☞ P.1281 Holes may go through.

D	Round Shape € Unit Price (1) 1.2510 LPGJ	(2) Hard 1.2510 LPGG	(3) 1.1191 LPG	(4) 1.1191 LPGB	(5) Hard 1.1191 LPGR	(6) 1.4301 LPGS	(7) Hard 1.4301 LPGD	(8) 1.4125 LPGC	Diamond Shape € Unit Price (1) 1.2510 LPDGJ	(2) Hard 1.2510 LPDGG	(3) 1.1191 LPDG	(6) 1.4301 LPDGS	(8) 1.4125 LPDGC
6													
6T													
8													
10													
10T													
12													
12T													
16													
16T													
20													
20T													

■Straight

Part Number Type	Tip Shape	M	P 0.1mm Increment	B 0.1mm Increment	R 1mm Increment A Shape / C Shape Only	G 1mm Increment B Shape Only	€ Unit Price (1) 1.2510/100MnCrW4 Hardening LPCJ	(2) Hard 1.2510/100MnCrW4 LPCG	(3) 1.1191/C45E LPC	(4) 1.1191/C45E Black Oxide LPCB	(5) Hard 1.1191/C45E LPCR	(6) 1.4301/X5CrNi18-10 LPCS	(7) Hard 1.4301/X5CrNi18-10 LPCD	(8) 1.4125/X105CrMo17 LPCC
LPCJ		3	6.0~10.0	10.0~25.0										
LPCG		4	7.0~12.0	11.0~25.0										
LPC	A	5	8.0~16.0	13.0~30.0	AShape R≥P/2									
LPCB		6	9.0~20.0	15.0~40.0										
LPCR	B	8	11.0~20.0	19.0~50.0		BShape G≤P								
LPCS		10	14.0~20.0	23.0~50.0	CShape R≤P/2									
LPCD	C	12	18.0~25.0	28.0~60.0										
LPCC		16	22.0~30.0	35.0~60.0										
		20	26.0~30.0	44.0~60.0										

Order Example

Part Number	P	B	R	G	L
LPGA6	P10.0	B25.0	R6		L6
LPGB10	P16.0	B50.0		G13	L16
LPCA6	P10.0	B25.0	R6		

Days to Ship

8 Days | Express A | 5,00 EUR / piece | ☞ P.88

Ⓨ A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗ Express Serviceis not available for Material No. (2) (5) (7) hard chrome plated products.

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

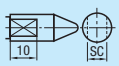
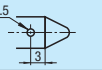
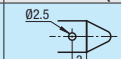
Ⓨ For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - P - B - R - G - L - (SC / LAC / LTE)
LPCA6 - P10.0 - B25.0 - R6 - LAC

10 Days

⊗ Alteration is not available for diamond shape.

Alterations	Width Across Flats	Wrench Hole (Ø3.5)	Wrench Hole (Ø2.5)
			
Code		LAC	LTE
Spec.	SC=1 mm Increment Ⓨ For Round Type: P-3≤SC≤P-1, SC≥D Ⓨ For Straight Type: M+3≤SC≤P-1 Ⓨ When B≤11, adds width across flats on the tip.	Adds a Ø3.5 hole. Ⓨ Applicable when B≥10 and P≥8.	Adds a Ø2.5 hole. Ⓨ Applicable when B≥8 and 7 ≤P≤15.
Price Adder	5,00	1,00	1,00

Locating Pins Tip Shape Selectable
-Male Thread-

CAD Data

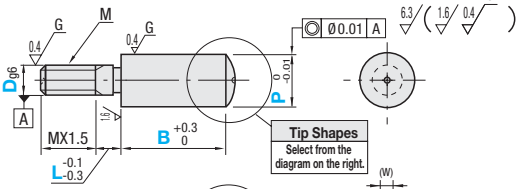
Features: Tip shape is selectable and L=0 is available.

RoHS

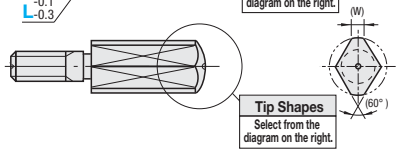

(Alteration SC)

Material No.	Round	Diamond	M Material	S Surface Treatment	H Hardness
(1)	LPAJ	LPDAJ	1.2510/ 100MnCrW4	-	Treated Hardness 55 ~ 60HRC
(2)	LPAG	LPDAG		Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 55 ~ 60HRC Plating Hardness 750HV ~
(3)	LPA	LPDA	1.1191/ C45E	-	Treated Hardness 45 ~ 50HRC
(4)	LPAB	-		Black Oxide	Treated Hardness 45 ~ 50HRC
(5)	LPAR	-		Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 45 ~ 50HRC Plating Hardness 750HV ~
(6)	LPAS	LPDAS	1.4301/ X5CrNi18-10	-	-
(7)	LPAD	LPDAD		Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~
(8)	LPAC	-	1.4125/ X105CrMo17	-	Treated Hardness 50 ~ 55HRC

- Round



- Diamond

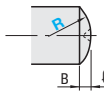


When L< Pitchx2, the incomplete thread portion (Pitchx2) is included in Mx1.5. Coarse Thread Pitch Ø P.1954

Fully Male Thread Type of L=0 w/o Pilot is available. P.1349

Tip Shape

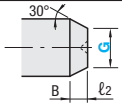
A Shape



ℓ1=R-√(R²-P²/4)

R≥P/2

B Shape

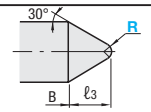


ℓ2= (P-G)/2tan30° Reference: 2tan30°=1.15

G≤P

When G=P, add about C0.2 chamfering.

C Shape



ℓ3=P-2/tan30°+R-(R/sin30°)

R≤P/2

Reference:tan30°≈0.577 sin30°=0.5

Part Number Type		Tip Shape	D	D Dim. Tol. g6	P	B 0.1mm Increment	R 1mm Increment A Shape / C Shape Only	G 1mm Increment B Shape Only	L 1mm Increment	M (Coarse)	(W)
(Round)	(Diamond)										
LPAJ	LPDAJ	A	3	-0.002 -0.008	5.00~ 6.00	5.0 ~ 25.0 (10.0)	AShape R≥P/2	BShape G≤P	0~10	M 3	1.5
LPAG	LPDAG		4	-0.004 -0.012	5.00~ 9.00	5.0 ~ 25.0 (10.0)				M 4	1.8
LPA	LPDA		5		6.00~10.00	5.0 ~ 30.0 (10.0)				M 5	2.2
LPAB		B	6		8.00~12.00	5.0 ~ 40.0 (12.0)				M 6	3
LPAR			8	-0.005 -0.014	10.00~15.00	5.0 ~ 40.0 (15.0)				M 8	3.5
LPAS	LPDAS	C	10		12.00~20.00	5.0 ~ 50.0 (20.0)	CShape R≤P/2			M10	4
LPAD			12	-0.006 -0.017	16.00~20.00	5.0 ~ 50.0 (20.0)				M12	5
LPAC	LPDAD		16		18.00~24.00	5.0 ~ 50.0 (20.0)				M16	7
			20	-0.007 -0.020	22.00~30.00	5.0 ~ 50.0 (20.0)				M20	9

B dimension in ( ) is for the Diamond Type.

Order Example

Part Number	P	B	R	G	L
LPAA5	P10.00	B12.0	R6		L5
LPAJB10	P15.00	B17.0		G10	L10

Days to Ship 8 Days — Express A 5,00 EUR / piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Serviceis not available for Material No. (2) (5) (7) hard chrome plated products.

Price

Volume Discount (Round down to one Cent.) P 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

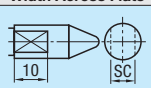
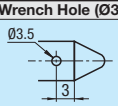
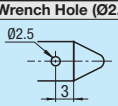
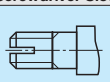
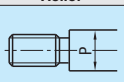
For orders larger than indicated quantity, please request a quotation.

D	Round Shape € Unit Price								Diamond Shape € Unit Price				
	(1) 1.2510/100MnCrW4 Hardening LPAJ	(2) Hard 1.2510/100MnCrW4 LPAG	(3) 1.1191/ C45E LPA	(4) 1.1191/C45E Black Oxide LPAB	(5) Hard 1.1191/ C45E LPAR	(6) 1.4301/ X5CrNi18-10 LPAS	(7) Hard 1.4301/ X5CrNi18-10 LPAD	(8) 1.4125/ X105CrMo17 LPAC	(1) 1.2510/100MnCrW4 Hardening LPDAJ	(2) Hard 1.2510/100MnCrW4 LPDAG	(3) 1.1191/ C45E LPDA	(6) 1.4301/ X5CrNi18-10 LPDAS	(7) Hard 1.4301/ X5CrNi18-10 LPDAD
3													
4													
5													
6													
8													
10													
12													
16													
20													

Alterations

Part Number	P	B	R	G	L	(SC, DRC...etc.)
LPAA5	P10.00	B12.0	R6		L5	MC3

10 Days

Alterations	Width Across Flats	Wrench Hole (Ø3.5)	Wrench Hole (Ø2.5)	Screwdriver Slot	Thread Diameter	Relief
						
Code	SC	LAC	LTE	DRC	MC	NNC
Spec.	SC=1 mm Increment When B≤11, adds width across flats on the tip. Not applicable to diamond shape. P-3≤SC≤P-1,SC≥D	Adds a Ø3.5 hole. Applicable when B≥10 P≥8. Not applicable to diamond shape.	Adds a Ø2.5 hole. Applicable when B≥8 7≤P≤15. Not applicable to diamond shape.	Width 0.8mm Depth 1mm	D/3≤M<D Mmin3 Ordering Code MC4 Incomplete Male Thread portion (Pitch x 2) included.	Adds a relief at the thread end. Applicable when L=0.
Price Adder	5,00	1,00	1,00	1,00	2,00	1,00

Locating Pins Tip Shape Selectable

Tip Length Configurable -Male Thread-

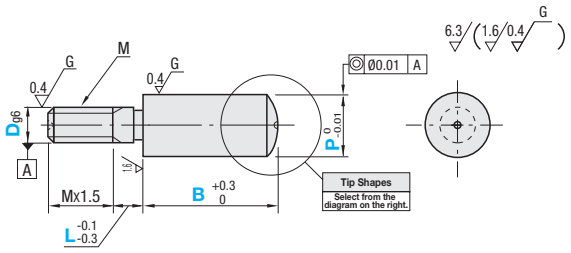
CAD Data

Features: Same shape as conventional Tip Shape Selectable type (A and C shape only), however configurable range is different. Overall length of insertion guide, R length and tapered section length are configurable.

RoHS



Material No.	Type	M Material	S Surface Treatment	H Hardness
(1)	LPALJ	1.2510/100MnCrW4	-	Treated Hardness 55 ~ 60HRC
(2)	LPALG	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 55 ~ 60HRC Plating Hardness 750HV ~
(3)	LPAL	1.1191/C45E	-	Treated Hardness 45 ~ 50HRC
(4)	LPALB	1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
(5)	LPALR	1.1191/C45E	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 45 ~ 50HRC Plating Hardness 750HV ~
(6)	LPALS	1.4301/X5CrNi18-10	-	-
(7)	LPALD	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV ~
(8)	LPALC	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

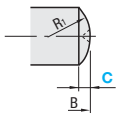


When L< Pitchx2, the incomplete thread portion (Pitchx2) is included in Mx1.5. Coarse Thread Pitch Ø P.1954

Fully Male Thread Type of L=0 w/o Pilot is available. P.1349

Tip Shape

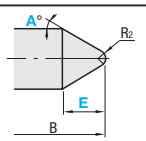
A Shape



B-C≥2

$R_1 = \frac{P^2}{8C} + \frac{C}{2}$

C Shape



B-E≥2

$R_2 = \frac{PcosA - 2EsinA}{2 - 2sinA}$

Ref.:sin15°≈ 0.259 sin30°= 0.5sin 45° tan15° ≈ 0.267 tan30°≈0.577 tan45° =1

Part Number Type	Tip Shape	D	D Dim. Tol. g6	P 0.01mm Increment	B 0.1mm Increment	C 1mm Increment Shape A Only	A Selection Shape C Only	E 1mm Increment Shape C Only	L 1mm Increment	M (Coarse)
LPALJ	A	3	-0.002 -0.008	5.00~ 6.00	5.0~30.0	A Shape 1≤C≤P/2	C Shape 15 30 45	C Shape 3~28 Configurable range depends on P dimension. Confirm "Details of E Dimension Configurable Range" in the table below.	0~10	M3
LPALG	A	4	-0.004 -0.012	5.00~ 9.00	5.0~30.0					M4
LPAL	A	5	-0.004 -0.012	6.00~10.00	5.0~35.0					M5
LPALB	A	6	-0.004 -0.012	8.00~12.00	5.0~45.0					M6
LPALR	A C	8	-0.005 -0.014	10.00~15.00	5.0~45.0					M8
LPALS	A C	10	-0.005 -0.014	12.00~20.00	5.0~55.0					M10
LPALD	C	12	-0.006 -0.017	16.00~20.00	5.0~55.0					M12
LPALC	C	16	-0.006 -0.017	18.00~24.00	5.0~60.0					M16
	C	20	-0.007 -0.020	22.00~30.00	5.0~60.0					M20

Order Example

Part Number	P	B	C	A	E	L
LPALJA10	P12.00	B6.5	C5			L0
LPALC16	P20.00	B7.0		A15	E10	L5

Days to Ship: 8 Days — Express A 5,00 EUR / piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Express Serviceis not available for Material No. (2) (5) (7) hard chrome plated products.

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Details of E Dimension Configurable Range

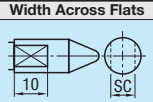
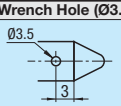
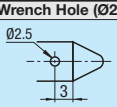
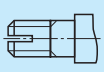
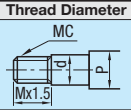
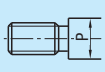
P	E 1mm Increment A 15	A 30	A 45
5.00~8.00	4~6	3	-
8.01~12.00	6~12	4, 5	3
12.01~16.00	8~16	5~9	4, 5
16.01~20.00	10~20	7~12	5~7
20.01~25.00	12~24	8~15	6~9
25.01~30.00	14~28	10~18	7~11

D	€ Unit Price (1) 1.2510/100MnCrW4 Hardening LPALJ	(2) Hard 1.2510/100MnCrW4 LPALG	(3) 1.1191/C45E LPAL	(4) 1.1191/C45E Black Oxide LPALB	(5) Hard 1.1191/C45E LPALR	(6) 1.4301/X5CrNi18-10 LPALS	(7) Hard 1.4301/ X5CrNi18-10 LPALD	(8) 1.4125/X105CrMo17 LPALC
3								
4								
5								
6								
8								
10								
12								
16								
20								

Alterations

Part Number	P	B	C	A	E	L	(SC, DRC...etc.)
LPALBA8	P10.00	B5.0	C3			L0	NNC

10 Days

Alterations	Width Across Flats	Wrench Hole (Ø3.5)	Wrench Hole (Ø2.5)	Screwdriver Slot	Thread Diameter	Relief
						
Code		LAC	LTE	DRC	MC	NNC
Spec.	SC=1 mm Increment When B-C or B-E≤11, adds width across flats on the tip. P-3≤SC≤P-1,SC≥D	Adds a Ø3.5 hole. B-C or B-E≥10 Applicable when P≥8.	Adds a Ø2.5 hole. B-C or B-E≥8 Applicable when 7≤P≤15.	Width 0.8mm Depth 1mm	Changes the thread diameter to MC. D/3≤MC<D MC≥3 Ordering Code MC4 Incomplete Male Thread portion (Pitch x 2) included.	Adds a relief at the thread end. Applicable when L=0.
Price Adder	5,00	1,00	1,00	1,00	2,00	1,00

Locating Pins Shouldered
-Tapered - Standard-

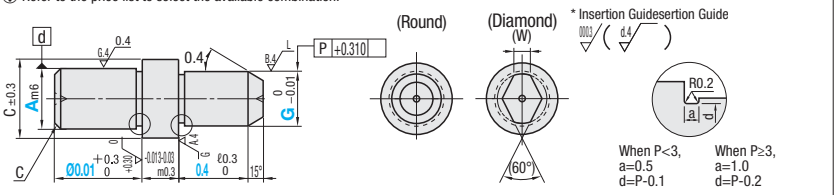
CAD Data

RoHS



Material No.	Material	Surface Treatment	Hardness	P Dimension Selectable Type	P Dimension Selectable Shape Code	P Dimension Configurable Type	P Dimension Configurable Shape Code	P, L and B Dimension Configurable Type	P, L and B Dimension Configurable Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JP	JB(Round) DJ(Diamond)	JP	JA (Round)	FP	JA(Round) JD(Diamond)
(3)	1.4301/X5CrNi18-10	-	-	SJP		SJP		SFP	
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	-		-		CFP	

Refer to the price list to select the available combination.



1.4125/X105CrMo17 has an identification groove on D part.

■P Dimension Selectable

Part Number Type	Shape	D	m6	P Selection	L	B	C	m	H	(W)	€ Unit Price Round Shape (1) 1.2510/ Hardening JPJB	€ Unit Price Round Shape (3) 1.4301/ X5CrNi18-10 SJPJB	€ Unit Price Diamond Shape (1) 1.2510/ Hardening JPDJ	€ Unit Price Diamond Shape (3) 1.4301/X5CrNi18-10 SJPDJ
JP SJP	JB(Round) DJ(Diamond) Applicable when D≥3.	2	+0.008 +0.002	1 2	4	2	0.5	0.5	6	-				
		3		2 3 4	5			1		1.0				
		4		2 3 4 5		3	1			1.2				
		5	+0.012 +0.004	3 4 5 6	10	5		2	8	1.5				
		6		4 5 6						1.8				
		8	+0.015 +0.006	5 6 8	15	6	1.5	3	11	2.2				
		10		8 10		8	2		13	3				
		12	+0.018 +0.007	8 10 12					15	3.2				
		13		8 10 12 13	22			4	16	3.5				
		16		13 14 15 16		10	3		19	4				
		20	+0.021 +0.008	16 20	30			5	23	5.5				

■P Dimension Configurable

Part Number Type	Shape	D	m6	P 0.01mm Increment	L	B	C	m	H	(W)	€ Unit Price Round Shape (1) 1.2510/100MnCrW4 Hardening JPJA	€ Unit Price Round Shape (3) 1.4301/X5CrNi18-10 SJPJA
JP SJP	JA (Round)	2	+0.008 +0.002	1.00~2.00	4	2	0.5	0.5	6	-		
		3		2.00~4.00	5			1		1.0		
		4		2.00~5.00		3	1			1.2		
		5	+0.012 +0.004	3.00~6.00	10	5		2	8	1.5		
		6		4.00~7.00						1.8		
		8	+0.015 +0.006	5.00~9.00	15	6	1.5	3	11	2.2		
		10		7.00~11.00		8	2		13	3		
		12		7.00~12.00					15	3.2		
		13	+0.018 +0.007	8.00~13.00	22			4	16	3.5		
		16		13.00~16.00		10	3		19	4		
		20	+0.021 +0.008	16.00~20.00	30			5	23	5.5		

■P, L and B Dimension Configurable

Part Number Type	Shape	D	m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	m	H	(W)	€ Unit Price Round Shape (1) 1.2510/ Hardening FPJA	€ Unit Price Round Shape (3) 1.4301/ X5CrNi18-10 SFPJA	€ Unit Price Round Shape (5)1.4125/ X105CrMo17 CFPJA	€ Unit Price Diamond Shape (1) 1.2510/ Hardening FPJD	€ Unit Price Diamond Shape (3) 1.4301/ X5CrNi18-10 SFPJD	€ Unit Price Diamond Shape (5)1.4125/ X105CrMo17 CFPJD
FP SFP CFP	JA(Round) JD(Diamond) Applicable when D≥3.	2	+0.008 +0.002	1.00~2.00	2~4	2.0~10.0	0.5	0.5	6	-						
		3		2.00~4.00	3~6	2.0~10.0		1		1.0						
		4		2.00~5.00	4~8	2.0~10.0	1			1.2						
		5	+0.012 +0.004	3.00~6.00	5~10	2.0~10.0		2	8	1.5						
		6		4.00~7.00	6~12	2.0~12.0				1.8						
		8	+0.015 +0.006	5.00~9.00	8~16	2.0~15.0	1.5	3	11	2.2						
		10		7.00~11.00	10~20	3.0~20.0			13	3						
		12		7.00~12.00	12~24	3.0~20.0	2		15	3.2						
		13	+0.018 +0.007	8.00~13.00	13~26	5.0~20.0		4	16	3.5						
		16		13.00~16.00	16~32	5.0~20.0			19	4						
		20	+0.021 +0.008	16.00~20.00	20~40	5.0~20.0	3	5	23	5.5						

Order Example

Part Number Type	Shape	D	P	L	B
JP	JB	6	4		
JP	JA	8	5.04		
FP	JD	12	P11.97	L12	B5.5

Days to Ship 8 Days — Express A 5,00 EUR/ piece — 5 Days — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

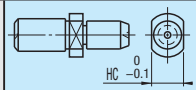
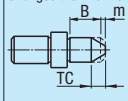
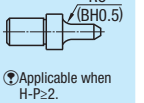
Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

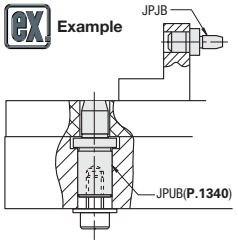
Part Number	P	L	B	(HC / TC / RC)
FPJA6	P4.01	L8	B3.5	HC7.0

10 Days — ⊗P Dimension Standard is not available for alteration.

Alterations Code	Width Across Flats HC	Length of Tapered Point TC	Radius RC
Spec.	 HC=0.5mm Increment HC>D HC>P Ordering Code HC10.0	Changes the m dimension. Ordering Code TC8 (1mm Increment)  B+m≥TC+2 (Straight Part min. 2mm) Applicable when P≥2.00. P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) B Dimension changes when TC is specified. (Changed B dimension = B+m-TC)	Changes the relief to R0.5. Ordering Code RC  Applicable when H-P≥2.
Price Adder	5,00	3,00	3,00

D	TC	D	TC	D	TC
2	1	6	3~11	13	5~22
3	2~5	8	4~14	16	
4	2~7	10	4~18	20	6~23
5	3~9	12	4~20		

Example



Add. Spec. Locating Pins Shouldered
-Tapered Female Thread-

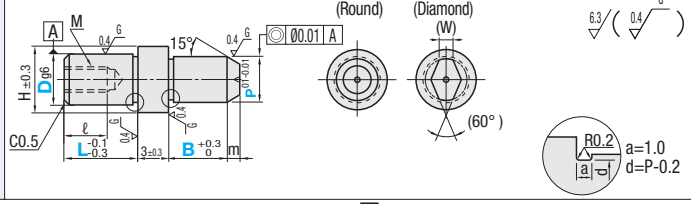
CAD Data

(?)D=5 is now available.



Material No.	Material	Surface Treatment	Hardness	P Dimension Selectable Type	P Dimension Selectable Shape	P Dimension Configurable Type	P Dimension Configurable Shape	P, L and B Dimension Configurable Type	P, L and B Dimension Configurable Shape
(1)	1.2510/	-	Treated Hardness 60 ~ 63HRC	JP	UB (Round)	JP	UA (Round)	FP	UA (Round)
(2)	1.2510/	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	-	DU (Diamond)	-	UD (Diamond)	GFP	UD (Diamond)
(3)	1.4301/	-	-	SJP		SJP		SFP	

(?) Refer to the price list to select the available combination.



D	Tolerance g6	m	H	(W)	ℓ	M (Coarse)
5	-0.004 -0.012	2	8	1.5	3	M2
6				1.8	5	M3
6T					4	M2.6
8	-0.005 -0.014	3	11	2.2	8	M5
8T					6	M4
10			13	3	8	M5
10T					6	M4
12			15	3.2	8	M5
12T					6	M4
13	-0.006 -0.017	4	16	3.5	10	M8
13T					9	M6
16			19	4	12	M8
16T					9	M6
20	-0.007 -0.020	5	23	5.5	12	M8
20T					9	M6

■P Dimension Selectable

Part Number Type	Shape	D	P Selection	L	B	€ Unit Price Round Shape (1) 1.2510 Hardening JPUB	(3) 1.4301 SJPUB	€ Unit Price Diamond Shape (1) 1.2510 Hardening JPDU	(3) 1.4301/ X5CrNi18-10 SJPDU
JP SJP	UB (Round) DU (Diamond)	5	3 4 5 6	10	5				
		6	4 5 6						
		6T							
		8	5 6 8	15	6				
		8T							
		10	8 10		8				
		12	8 10 12						
		13	8 10 12 13	22					
		16	13 14 15 16		10				
		20	16 20	30					

■P Dimension Configurable

Part Number Type	Shape	D	P 0.01mm Increment	L	B	€ Unit Price Round Shape (1) 1.2510 Hardening JPUA	(3) 1.4301 SJPUA	€ Unit Price Diamond Shape (1) 1.2510 Hardening JPUD	(3) 1.4301 SJPUD
JP SJP	UA (Round) UD (Diamond)	5	3.00~6.00	10	5				
		6	4.00~7.00						
		6T							
		8	5.00~9.00	15	6				
		8T							
		10	7.00~11.00		8				
		12	7.00~12.00						
		13	8.00~13.00	22					
		16	13.00~16.00		10				
		20	16.00~20.00	30					

■P, L and B Dimension Configurable

Part Number Type	Shape	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	€ Unit Price Round Shape (1) 1.2510 Hardening FPUA	(2) Hard 1.2510 GFPUA	(3) 1.4301 SFPUA	€ Unit Price Diamond Shape (1) 1.2510 Hardening FPUD	(2) Hard 1.2510 GFPUD	(3) 1.4301 SFPUD
FP GFP SFP	UA (Round) UD (Diamond)	5	3.00~6.00	5~10	2.0~10.0						
		6	4.00~7.00	6 (9) ~ 12							
		6T									
		8	5.00~9.00	8 (12) ~ 16	2.0~12.0						
		8T									
		10	7.00~11.00	10 (12) ~ 20	2.0~15.0						
		10T		8 (12) ~ 16							
		12	7.00~12.00	12~24	3.0~20.0						
		12T		8 (12) ~ 18							
		13	8.00~13.00	13 (14) ~ 26	3.0~20.0						
		13T		10 (14) ~ 20							
		16	13.00~16.00	16~32	5.0~20.0						
		16T		10 (14) ~ 24							
		20	16.00~20.00	20~40	5.0~20.0						
		20T		12 (18) ~ 30							

(?)Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
(?)L dimension in ( ) is for the Diamond Type. (?)Notes on strength of under-head part. P.1281 (?)Please confirm pilot hole depth on P.1281 Holes may go through.

Order Example

Part Number	-	P	-	L	-	B
JPUB8	-	6				
JPUA6	-	4.02				
FPUA6	-	P4.01	-	L8	-	B3.5

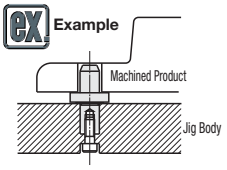
Price

■Volume Discount (?)Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

Example



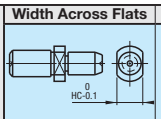
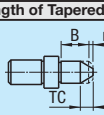
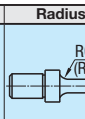
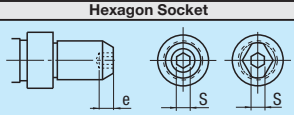
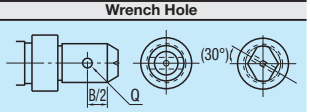
Days to Ship

- Other than listed on the right: 8 Days — Express A 5,00 EUR/ piece P.88 — (?)A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Material No. (2) Hard 1.2510/100MnCrW4: 10 Days / 5 Days

Alterations

Part Number	-	P	-	L	-	B	-	(HC / TC / RC / RAC / LAC)
FPUA6		P4.01		L8		B3.5		HC7.0

10 Days ⊗P Dimension Selectable is not available for alteration.

Alterations	Width Across Flats	Length of Tapered Point	Radius	Hexagon Socket	Wrench Hole
					
Code	HC	TC	RC	RAC	LAC
Spec.	HC=0.5mm Increment (?)HC>D HC>P Ordering Code HC10.0	Changes the m dimension. Ordering Code TC8 (1mm Increment)	Changes the relief to R0.5. Ordering Code RC (?)Applicable when H-P≥2. ⊗Combination with LAC is not available.	Machines hexagonal socket. Ordering Code RAC	Machines wrench hole. Ordering Code LAC
Price Adder	5,00	3,00	3,00	6,00	3,00

TC8 (1mm Increment)

D	TC	D	TC
5	3~9	12	4~20
6	3~11	13	5~22
8	4~14	16	
10	4~18	20	6~23

(?)B+m≥TC+2 (Straight Part min. 2mm)
(?)P/2-TC×tan15°(=0.27)>0.5 (Tip Ø1.0min.)
(?)B Dimension changes when TC is specified. (Changed B dimension = B+m-TC)
⊗Combination with RAC and LAC is not available.

RAC

D	Applicable Dimension Female Thread P	L	B	Male Thread P	B	Hexagonal Hole Dimension E	S
8 8T	6.50~	13~	6.0~	6.50~	3.5~	2	3
10 10T	7.00~	13~		7.00~			
12 12T	7.00~	13~		7.00~			
13 13T	9.00~	15~		-	-	2.5	4
16 16T	13.00~	17~		13.00~	4.5~	3	5
20 20T	16.00~	20~		16.00~	6.0~	4	6

(?)Applicable to P, L and B Dimension Configurable only.
(?)Round shape is applicable to D≥8, and diamond to D≥10.
(?)When D=8, it is applicable to P≥6.
⊗Combination with TC and LAC is not available

LAC

D	Applicable Dimension B
8 8T	5.0~
10 10T	
12 12T	
13 13T	
16 16T	
20 20T	10.0~

P	Q
6.00~9.99	2
10.00~16.99	3.5
17.00~	5

(?)Round shape is applicable to D≥8 and P≥6, and diamond to D≥10 and P≥8.
(?)Orientation between diamond shape head and wrench hole is arbitrary.
⊗Combination with TC, RC and RAC is not available.

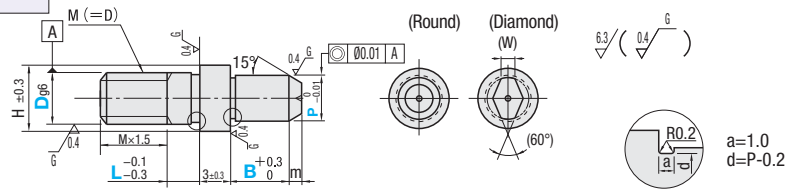
Locating Pins Shouldered

-Tapered / Male Thread-

CAD Data



Material No.	M Material	S Surface Treatment	H Hardness	P Dimension Configurable		P, L and B Dimension Configurable	
				Round	Diamond	Round	Diamond
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPTNA	JPTND	FPTNA	FPTND
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GJPTNA	GJPTND	GFPTNA	-



■P Dimension Configurable

Part Number Type	D	D Tolerance g6	P 0.01mm Increment	L	B	m	H	(W)	M (Coarse)	€ Unit Price Round Shape (1) 1.2510/100MnCrW4 Hardening JPTNA	€ Unit Price Round Shape (2) Hard 1.2510/100MnCrW4 GJPTNA	€ Unit Price Diamond Shape (1) 1.2510/100MnCrW4 Hardening JPTND	€ Unit Price Diamond Shape (2) Hard 1.2510/100MnCrW4 GJPTND
(Round) JPTNA GJPTNA (Diamond) JPTND GJPTND	3	-0.002 -0.008	2.00~4.00	2	5	1	6	1	M3				
	4	-0.004 -0.012	2.00~5.00	3	6	2	8	1.2	M4				
	5		3.00~6.00					1.5	M5				
	6		4.00~7.00		8			1.8	M6				
	8	-0.005 -0.014	5.00~9.00	5		3	11	2.2	M8				
	10		7.00~11.00		10		13	3	M10				
	12	-0.006 -0.017	7.00~12.00	8		4	15	3.2	M12				
	16		13.00~16.00				19	4	M16				
	20	-0.007 -0.020	16.00~20.00	10	15	5	23	5.5	M20				

■P, L and B Dimension Configurable

Part Number Type	D	D Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	m	H	(W)	M (Coarse)	€ Unit Price Round Shape (1) 1.2510/100MnCrW4 Hardening FPTNA	€ Unit Price Round Shape (2) Hard 1.2510/100MnCrW4 GFPTNA	€ Unit Price Diamond Shape (1) 1.2510/100MnCrW4 Hardening FPTND
(Round) FPTNA GFPTNA (Diamond) FPTND	3	-0.002 -0.008	2.00~ 4.00	2~ 6	2.0~10.0	1	6	1	M3			
	4	-0.004 -0.012	2.00~ 5.00	2~ 8	2.0~10.0	2	8	1.2	M4			
	5		3.00~ 6.00	3~10	2.0~10.0			1.5	M5			
	6		4.00~ 7.00	3~10	2.0~12.0			1.8	M6			
	8	-0.005 -0.014	5.00~ 9.00	5~10	2.0~15.0	3	11	2.2	M8			
	10		7.00~11.00	5~15	3.0~20.0		13	3	M10			
	12	-0.006 -0.017	7.00~12.00	8~15	3.0~20.0		15	3.2	M12			
	16		13.00~16.00	8~20	5.0~20.0	4	19	4	M16			
	20	-0.007 -0.020	16.00~20.00	10~20	5.0~20.0	5	23	5.5	M20			

Order Example

Part Number	-	P	-	L	-	B
JPTNA8	-	6.00				
FPTNA6	-	P4.01	-	L8	-	B3.5

Days to Ship

- Material No. 01 Tool Steel: 8 Days
- Material No. (2) Hard 01 Tool Steel: 10 Days / 5 Days
- Express A: 5,00 EUR/ piece P. 88
- A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

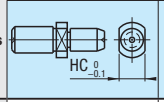
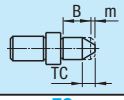
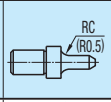
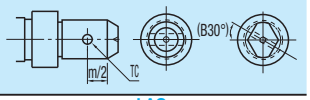
Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	L	-	B	-	(HC / TC / RC / RAC / LAC)
FPTNA6	-	P4.01	-	L8	-	B3.5	-	HC7.0

10 Days

Alterations	Width Across Flats	Length of Tapered Point	Radius	Hexagon Socket	Wrench Hole
					
Code	HC	TC	RC	RAC	LAC
Spec.	HC=0.5mm Increment HC>D HC>P Ordering Code HC10.0	Changes the m dimension. Ordering Code TC8 (1mm Increment) D: 6, 8, 10, 12 — TC: 3~11, 4~14, 4~18, 4~20 D: 13, 16, 20 — TC: 5~22, 6~23 B+m≥TC+2 (Straight Part min. 2mm) P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) B Dimension changes when TC is specified. (Changed B dimension = B+m-TC) ⊗Combination with RAC and LAC is not available.	Changes the relief to R0.5. Ordering Code RC Applicable when H-P≥2. ⊗Combination with LAC is not available.	Machines hexagonal socket. Ordering Code RAC D: 8 8T, 10 10T, 12 12T, 13 13T, 16 16T, 20 20T Applicable Dimension — Female Thread: P, L, B; Male Thread: P, B; Hexagonal Hole Dimension: E, S 8 8T: 6.50~, 13~, 6.0~, 6.50~, 3.5~, 2, 3 10 10T: 7.00~, 13~, 7.00~ 12 12T: 7.00~, 13~, 7.00~ 13 13T: 9.00~, 15~, -, -, 2.5, 4 16 16T: 13.00~, 17~, 13.00~, 4.5~, 3, 5 20 20T: 16.00~, 20~, 16.00~, 6.0~, 4, 6 Applicable to P, L and B Dimension Configurable only. Round shape is applicable to D≥8, and diamond to D≥10. When D=8, it is applicable to P≥6. ⊗Combination with TC and LAC is not available	Machines wrench hole. Ordering Code LAC D: 8 8T, 10 10T, 12 12T, 13 13T, 16 16T, 20 20T Applicable Dimension B: 5.0~, 10.0~ P: 6.00~9.99, 10.00~16.99, 17.00~ Q: 2, 3.5, 5 Round shape is applicable to D≥8 and P≥6, and diamond to D≥10 and P≥8. Orientation between diamond shape head and wrench hole is arbitrary. ⊗Combination with TC, RC and RAC is not available.
Price Adder	5,00	3,00	3,00	6,00	3,00

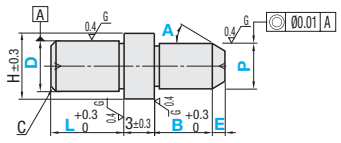
Locating Pins Shouldered

-Taper Angle / D and P Tolerance Selectable-

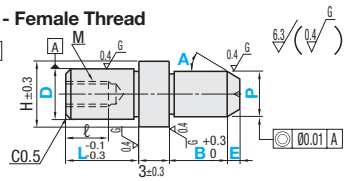


Material No.	M Material	S Surface Treatment	H Hardness	Type		
				Standard	Female Thread	Male Thread
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	KFHA	KFHTA	KFHNA
(2)	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GKFHA	GKFHTA	GKFHNA
(3)	1.4301/X5CrNi18-10	-	-	SKFHA	SKFHTA	SKFHNA
(5)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CKFHA	CKFHTA	CKFHNA

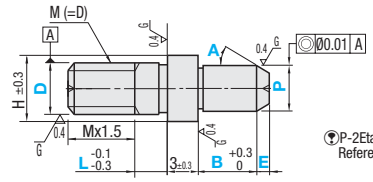
- Standard



- Female Thread



- Male Thread





P-2EtanA≥0.73 (Tip dia. Ø 0.73 or more)
Reference: tan15°≈0.267 tan30°≈0.577
tan45°= 1 tan60° ≈ 1.732

■Tolerance Selection

D or P	Standard Grade					Precision Grade	
	M	P	G	H	S	A	B
	m6	p6	g6	h7	-	-	-
1.00 ~ 3.00	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010	0 -0.01	+0.005 0	0 -0.005
3.01 ~ 6.00	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012			
6.01 ~ 10.00	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015			
10.01 ~ 18.00	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017	0 -0.018			
18.01 ~ 20.00	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020	0 -0.021			

The unit price of Precision Type is the price of Standard Type multiplying 1.1. (Round down to ten Cent.)
1.4125/X105CrMo17 has an identification groove on D part.

■Standard

Type	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	C	H	€ Unit Price (1) KFHA	(2) GKFHA	(3) SKFHA	(5) CKFHA
KFHA GKFHA SKFHA CKFHA	M P G H *A *B	S M P G H *A *B	2	1.00~2.00	2~4	2.0~10.0	0.5~10.0	15 30 45 60	0.5	6				
			3	2.00~4.00	3~6	2.0~10.0								
			4	2.00~5.00	4~8	2.0~10.0			1	8				
			5	3.00~6.00	5~10	2.0~10.0								
			6	4.00~7.00	6~12	2.0~12.0								
			8	5.00~9.00	8~16	2.0~15.0			1.5	11				
			10	7.00~11.00	10~20	3.0~20.0			2	13				
			12	7.00~12.00	12~24	3.0~20.0				15				
			13	8.00~13.00	13~26	5.0~20.0				16				
			16	13.00~16.00	16~32	5.0~20.0			3	19				
			20	16.00~20.00	20~40	5.0~20.0				23				

Hard chrome plated is not available for Precision Grade * (Precision Grade A and B).

■Female Thread

Type	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	H	M (Coarse)	ℓ	€ Unit Price (1) KFHTA	(2) GKFHTA	(3) SKFHTA	(5) CKFHTA
KFHTA GKFHTA SKFHTA CKFHTA	M P G H	S M P G H	6	4.00~7.00	6~12	2.0~10.0	0.5~10.0	15 30 45 60	8	M3	5				
			6T							M2.6	4				
			8	5.00~9.00	8~16	2.0~12.0			11	M5	8				
			8T							M4	6				
			10	7.00~11.00	10~20	2.0~15.0			13	M5	8				
			12	7.00~12.00	12~24	3.0~20.0			15						
			13	8.00~13.00	13~26	3.0~20.0			16	M8	10				
			16	13.00~16.00	16~32	5.0~20.0			19		12				
			20	16.00~20.00	20~40	5.0~20.0			23						

Pins of D dimention with Ts have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T".)
Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281 Holes may go through.

■Male Thread

Type	D Tolerance Selection	P Tolerance Selection	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	A Selection	H	M (Coarse)	€ Unit Price (1) KFHNA	(2) GKFHNA	(3) SKFHNA	(5) CKFHNA
KFHNA GKFHNA SKFHNA CKFHNA	M P G H *A *B	S M P G H *A *B	3	2.00~4.00	2~6	2.0~10.0	0.5~10.0	15 30 45 60	6	M3				
			4	2.00~5.00	2~8	2.0~10.0				M4				
			5	3.00~6.00	3~10	2.0~10.0			8	M5				
			6	4.00~7.00	3~10	2.0~12.0				M6				
			8	5.00~9.00	5~10	2.0~15.0			11	M8				
			10	7.00~11.00	5~15	3.0~20.0			13	M10				
			12	7.00~12.00	8~15	3.0~20.0			15	M12				
			16	13.00~16.00	8~20	5.0~20.0			19	M16				
			20	16.00~20.00	10~20	5.0~20.0			23	M20				

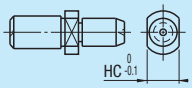
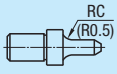
Hard chrome plated is not available for Precision Grade * (Precision Grade A and B).

Precision Grade Price
When A and B tolerance is selected, multiply 1.1 to the above unit price.
(Round down to ten Cent.)
Price Calculation Example: KFHNAAB16-P13.97-L12-B5.5
22,20 (KFHNAAB16) x 1.1 = 24,40 EUR

Alterations

Part Number - P - L - B - E - A - (HC / RC)
KFHAMS6 - P6.00 - L6 - B3.0 - E5.0 - A30 - RC

10 Days

Alterations Code	Width Across Flats HC	Radius RC
Spec.	 HC=0.5mm Increment HC>DHC>P Ordering Code HC10.0	Changes the relief to R0.5. Ordering Code RC  Applicable when H-P≥2.
Price Adder	5,00	3,00

Order Example

Part Number											
Type	D Tolerance	P Tolerance	D	-	P	-	L	-	B	-	E	-	A
KFHA	M	S	6	-	P6.00	-	L6	-	B3.0	-	E5.0	-	A30

Days to Ship

- Except Those Shown Below

8 Days | Express A | 5,00 EUR/ piece | P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

- Material No. (2) Hard 1.2510/100MnCrW4

10 Days | 5 Days

Price

■Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Add. Spec. Locating Pins Shouldered
-Tapered - Shoulder Thickness Configurable-

CAD Data

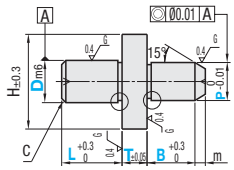
D=5 is now available for Female Thread Type.



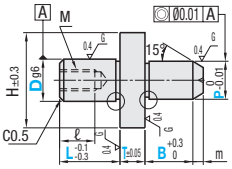
Material No.	Material	Surface Treatment	Hardness	Type: Standard	Type: Female Thread	Type: Male Thread	Shape Code
(1)	1.2510	-	Treated Hardness 60 ~ 63HRC	FPJ	FPU	FPN	AT(Round) DT(Diamond)
(2)	1.2510	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GFPJ	GFPU	GFPN	
(3)	1.4301	-	-	SFPJ	SFPU	SFPN	
(4)	1.4301	Hard Chrome Plating Plating Thickness 3µm or More	Plating Hardness 750HV~	HFPJ	HFPU	HFPN	
(5)	1.4125	-	Treated Hardness 50 ~ 55HRC	CFPJ	CFPU	CFPN	

Refer to the price list to select the available combination. 1.4125/X105CrMo17 has an identification groove on D part.

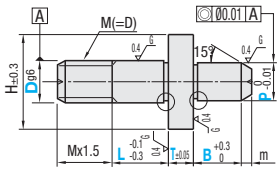
-Standard



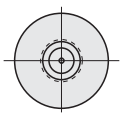
-Female Thread



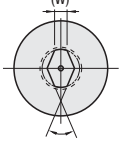
-Male Thread

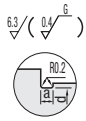


(Round)



(Diamond)





When P<3,
a=0.5
d=P-0.1
When P≥3,
a=1.0
d=P-0.2

Standard

Type	Shape	D	D Dimension Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.5mm Increment	H	C	m	(W)	€ Unit Price Round Shape (1) FPJAT	(2) GFPJAT	(3) SFPJAT	(4) HFPJAT	(5) CFPJAT	€ Unit Price Diamond Shape (1) FPJDT	(2) GFPJDT	(3) SFPJDT	(4) HFPJDT	(5) CFPJDT
FPJ GFPJ SFPJ HFPJ CFPJ	AT (Round) DT (Diamond)	2	+0.008 +0.002	1.00~2.00	2~4	2.0~10.0	1.0~10.0	7	0.5	0.5	-										
		3		2.00~4.00	3~6	2.0~10.0		8		1	1.0										
		4	+0.012 +0.004	2.00~5.00	4~8	2.0~10.0		9	1		1.2										
		5		3.00~6.00	5~10	2.0~10.0		10		2	1.5										
		6		4.00~7.00	6~12	2.0~12.0		11			1.8										
		8	+0.015 +0.006	5.00~9.00	8~16	2.0~15.0		13	1.5		2.2										
		10		7.00~11.00	10~20	3.0~20.0		15		3	3										
		12	+0.018 +0.007	7.00~12.00	12~24	3.0~20.0		17	2		3.2										
		13		8.00~13.00	13~26	5.0~20.0		18		4	3.5										
		16		13.00~16.00	16~32	5.0~20.0		21	3		4										
		20	+0.021 +0.008	16.00~20.00	20~40	5.0~20.0		25		5	5.5										

Female Thread

Type	Shape	D	D Dimension Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.5mm Increment	H	m	(W)	M Coarse	ℓ	€ Unit Price Round Shape (1) FPUAT	(2) GFPUAT	(3) SFPUAT	(4) HFPUAT	(5) CFPUAT	€ Unit Price Diamond Shape (1) FPUDT	(2) GFPUDT	(3) SFPUDT	(4) HFPUDT	(5) CFPUDT
FPU GFPU SFPU HFPU CFPU	AT (Round) DT (Diamond)	5	-0.004 -0.012	3.00~6.00	7~10	2.0~10.0	1.0~10.0	10	2	1.5	M2	3										
		6		4.00~7.00	6 (9) ~ 12			11		1.8	M3	5										
		8	-0.005 -0.014	5.00~9.00	8 (12) ~ 16	2.0~12.0		13	3	2.2	M5	8										
		10		7.00~11.00	10 (12) ~ 20	2.0~15.0		15		3												
		12	-0.006 -0.017	7.00~12.00	12~24	3.0~20.0		17		3.2												
		13		8.00~13.00	13 (14) ~ 26	3.0~20.0		18	4	3.5	M8	10										
		16		13.00~16.00	16~32	5.0~20.0		21		4		12										
		20	-0.007 -0.020	16.00~20.00	20~40	5.0~20.0		25	5	5.5												

L dimension in ( ) is for the Diamond Type. Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281 Holes may go through.

Male Thread

Type	Shape	D	D Dimension Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.5mm Increment	H	m	(W)	€ Unit Price Round Shape (1) FPNAT	(2) GFPNAT	(3) SFPNAT	(4) HFPNAT	(5) CFPNAT	€ Unit Price Diamond Shape (1) FPNDT	(2) GFPNDT	(3) SFPNDT	(4) HFPNDT	(5) CFPNDT
FPN GFPN SFPN HFPN CFPN	AT (Round) DT (Diamond)	3	-0.002 -0.008	2.00~4.00	2~6	2.0~10.0	1.0~10.0	8	1	1.0										
		4	-0.004 -0.012	2.00~5.00	2~8	2.0~10.0		9		1.2										
		5		3.00~6.00	3~10	2.0~10.0		10	2	1.5										
		6		4.00~7.00	3~10	2.0~12.0		11		1.8										
		8	-0.005 -0.014	5.00~9.00	5~10	2.0~15.0		13	3	2.2										
		10		7.00~11.00	5~15	3.0~20.0		15		3										
		12	-0.006 -0.017	7.00~12.00	8~15	3.0~20.0		17		3.2										
		16		13.00~16.00	8~20	5.0~20.0		21	4	4										
		20	-0.007 -0.020	16.00~20.00	10~20	5.0~20.0		25	5	5.5										

Order Example

Part Number: Type Shape D - P - L - B - T
FPJ AT 10 - P8.03 - L10 - B4.0 - T5

Days to Ship

- Other than listed on the right: 8 Days — Express A 5,00 EUR/ piece P.88
- Material No. (2) Hard 1.2510/100MnCrW4: 10 Days — 5 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (4) Hard 1.4301/X5CrNi18-10.

Alterations

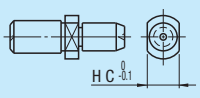
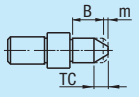
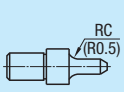
Part Number - P - L - B - T - (HC / TC / RC / TKC)
FPJAT8 - P5.03 - L9 - B6.3 - T8.5 - RC
10 Days

Price

Volume Discount (Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations	Width Across Flats	Length of Tapered Point	Radius	Shoulder Thickness Tolerance
Code	HC	TC	RC	TKC
Spec.	 HC=0.5mm Increment HC>DHC>P Ordering Code HC10.0	Changes the m dimension. Ordering Code TC8 (1mm Increment)  D TC: 2 1; 3 2~5; 4 2~7; 5 3~9; 6 3~11; 8 4~14; 10 4~18; 12 4~20; 13 5~22; 16 5~22; 20 6~23 B+m≥TC+2 (Straight Part min. 2mm) Applicable when P≥2.00. P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) B Dimension changes when TC is specified. (Changed B dimension = B+m-TC)	Changes the relief to R0.5. Ordering Code RC  Applicable when H-P≥2.	Changes shoulder thickness tolerance T±0.05 to $T^{+0.02}_{0}$. Ordering Code TKC
Price Adder	5,00	3,00	3,00	3,00

Add. Spec. Locating Pins Shouldered

-Tapered - Shoulder Diameter and Thickness Configurable-

CAD Data

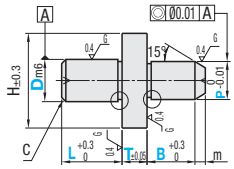
D=5 is now available for Female Thread Type.



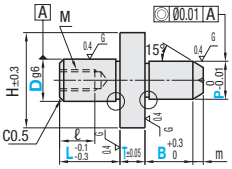
Material No.	M Material	S Surface Treatment	H Hardness	Type: Standard	Type: Female Thread	Type: Male Thread	Shape Code
(1)	1.2510	-	Treated Hardness 60 ~ 63HRC	FPJ	FPU	FPN	ATD(Round) DTD(Diamond)
(2)	1.2510	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GFPJ	GFPU	GFPN	
(3)	1.4301	-	-	SFPJ	SFPU	SFPN	
(4)	1.4301	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV~	-	HFPU	HFPN	
(5)	1.4125	-	Treated Hardness 50 ~ 55HRC	CFPJ	CFPU	CFPN	

Refer to the price list to select the available combination. 1.4125/X105CrMo17 has an identification groove on D part.

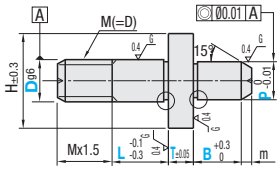
-Standard

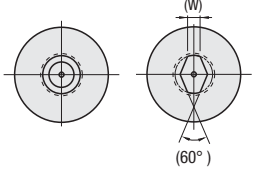


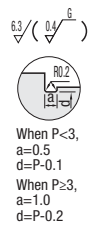
-Female Thread



-Male Thread







When P<3, a=0.5 d=P-0.1
When P≥3, a=1.0 d=P-0.2

Standard

Part Number: Type	Shape	D	D Dimension Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.1mm Increment	H 0.5mm Increment	C	m	(W)	€ Unit Price Round Shape (1) FPJATD	(2) GFPJATD	(3) SFPJATD	(5) CFPJATD	€ Unit Price Diamond Shape (1) FPJDTD	(2) GFPJDTD	(3) SFPJDTD	(5) CFPJDTD
FPJ GFPJ SFPJ CFPJ	ATD (Round) DTD (Diamond)	2	+0.008 +0.002	1.00~2.00	2~4	2.0~10.0	1.0~15.0	5.0~10.0	0.5	0.5	-								
		3		2.00~4.00	3~6	2.0~10.0		6.0~12.0		1	1.0								
		4	+0.012 +0.004	2.00~5.00	4~8	2.0~10.0		7.0~13.0	1		1.2								
		5		3.00~6.00	5~10	2.0~10.0		8.0~14.0		2	1.5								
		6		4.00~7.00	6~12	2.0~12.0		9.0~15.0			1.8								
		8	+0.015 +0.006	5.00~9.00	8~16	2.0~15.0		11.0~17.0	1.5	3	2.2								
		10		7.00~11.00	10~20	3.0~20.0		13.0~19.0	2		3								
		12	+0.018 +0.007	7.00~12.00	12~24	3.0~20.0		13.0~20.0		4	3.2								
		13		8.00~13.00	13~26	5.0~20.0		15.0~21.0			3.5								
		16		13.00~16.00	16~32	5.0~20.0		18.0~24.0	3		4								
		20	+0.021 +0.008	16.00~20.00	20~40	5.0~20.0		21.0~27.0		5	5.5								

Female Thread

Part Number: Type	Shape	D	D Dimension Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.1mm Increment	H 0.5mm Increment	m	(W)	M Coarse	ℓ	€ Unit Price Round Shape (1) FPUATD	(2) GFPUATD	(3) SFPUATD	(4) HFPUATD	(5) CFPUATD	€ Unit Price Diamond Shape (1) FPUDTD	(2) GFPUDTD	(3) SFPUDTD	(4) HFPUDTD	(5) CFPUDTD
FPU GFPU SFPU HFPU CFPU	ATD (Round) DTD (Diamond)	5	-0.004 -0.012	3.00~6.00	7~10	2.0~10.0	1.0~15.0	8.0~14.0	2	1.5	M2	3										
		6		4.00~7.00	6 (9) ~ 12			9.0~15.0		1.8	M3	5										
		8	-0.005 -0.014	5.00~9.00	8 (12) ~ 16	2.0~12.0		11.0~17.0	3	2.2	M5	8										
		10		7.00~11.00	10 (12) ~ 20	2.0~15.0		13.0~19.0		3												
		12	-0.006 -0.017	7.00~12.00	12~24	3.0~20.0		13.0~20.0		3.2												
		13		8.00~13.00	13 (14) ~ 26	3.0~20.0		15.0~21.0	4	3.5	M8	10										
		16		13.00~16.00	16~32	5.0~20.0		18.0~24.0		4		12										
		20	-0.007 -0.020	16.00~20.00	20~40	5.0~20.0		21.0~27.0	5	5.5												

L dimension in ( ) is for the Diamond Type. Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281 Holes may go through.

Male Thread

Part Number: Type	Shape	D	D Dimension Tolerance m6	P Specify in 0.01mm Increment	L Specify in 1mm Increment	B Specify in 0.1mm Increment	T 0.1mm Increment	H 0.5mm Increment	m	(W)	€ Unit Price Round Shape (1) FPNATD	(2) GFPNATD	(3) SFPNATD	(4) HFPNATD	(5) CFPNATD	€ Unit Price Diamond Shape (1) FPNDTD	(2) GFPNDTD	(3) SFPNDTD	(4) HFPNDTD	(5) CFPNDTD
FPN GFPN SFPN HFPN CFPN	ATD (Round) DTD (Diamond)	3	-0.002 -0.008	2.00~4.00	2~6	2.0~10.0	1.0~15.0	6.0~12.0	1	1.0										
		4	-0.004 -0.012	2.00~5.00	2~8	2.0~10.0		7.0~13.0		1.2										
		5		3.00~6.00	3~10	2.0~10.0		8.0~14.0	2	1.5										
		6		4.00~7.00	3~10	2.0~12.0		9.0~15.0		1.8										
		8	-0.005 -0.014	5.00~9.00	5~10	2.0~15.0		11.0~17.0	3	2.2										
		10		7.00~11.00	5~15	3.0~20.0		13.0~19.0		3										
		12	-0.006 -0.017	7.00~12.00	8~15	3.0~20.0		13.0~20.0		3.2										
		16		13.00~16.00	8~20	5.0~20.0		18.0~24.0	4	4										
		20	-0.007 -0.020	16.00~20.00	10~20	5.0~20.0		21.0~27.0	5	5.5										

Order Example

Part Number: Type Shape D - P - L - B - T - H

FPU ATD 12 - P9.98 - L15 - B5.5 - T12 - H13

Days to Ship

- Other than listed on the right: 8 Days (Express A 5,00 EUR/piece P.88)
- Material No. (2) Hard 1.2510/100MnCrW4: 10 Days
- 5 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material No. (4) Hard 1.4301/X5CrNi18-10.

Alterations

Part Number - P - L - B - T - H - (HC / TC / RC / TKC)

GFPJATD12 - P6.50 - L20 - B10.0 - T13.0 - H16.0 - RC

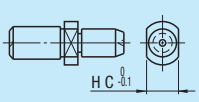
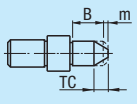
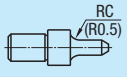
10 Days

Price

Volume Discount (Round down to one Cent.) P87

Qty.	1~10	11~20
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Alterations Code	Width Across Flats HC	Length of Tapered Point TC	Radius RC	Shoulder Thickness Tolerance TKC
Spec.	 HC=0.5mm Increment HC>DHC>P Ordering Code HC10.0	Changes the m dimension. Ordering Code TC8 (1mm Increment)  D TC: 2 1; 3 2~5; 4 2~7; 5 3~9; 6 3~11; 8 4~14; 10 4~18; 12 4~20; 13 16 20 5~22; 6~23 B+m≥TC+2 (Straight Part min. 2mm) Applicable when P≥2.00. P/2-TCxtan15°(≈0.27)>0.5 (Tip Ø1.0min.) B Dimension changes when TC is specified. (Changed B dimension = B+m-TC)	Changes the relief to R0.5. Ordering Code RC  Applicable when H-P≥2.	Changes shoulder thickness tolerance T±0.05 to T+0.02 0. Ordering Code TKC
Price Adder	5,00	3,00	3,00	3,00

Locating Pins Shouldered

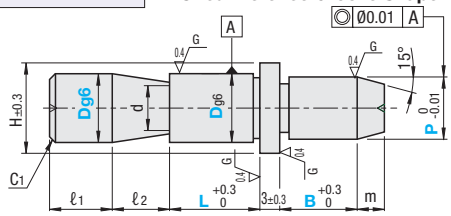
-Set Screw-

CAD Data

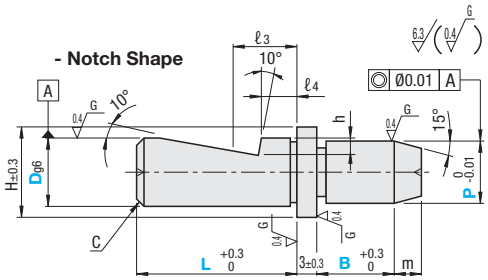


Mat. No.	M Material	S Surface Treatment	H Hardness	Type: Circumference Groove	Type: Notch	Type: Set Screw Flat	Shape Code
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPGJ	JPCJ	JPDJ	S(Round) D(Diamond)

- Circumference Groove Shape

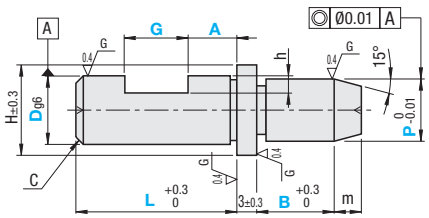


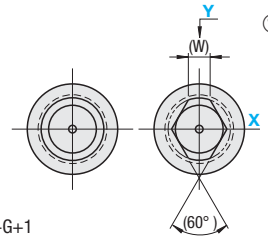
- Notch Shape



ℓ3 is the recommended dimension of the position of set screw tip.

- Set Screw Flat Shape





Select set screw position X or Y for Diamond or Notch Set Screw Type.

L>A+G+1

■Circumference Groove Shape

Part Number: Type	Shape Code	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	d	ℓ1	ℓ2	C1	m	H	(W): When D<P	(W): When D≥P
JPGJ	S(Round) D(Diamond)	6	-0.004 -0.012	2.00~6.00	3~12	2.0~20.0	4.5	5	5	1	3	8	3	1.5
		6S			2~12			2		0.5				
		8	-0.005 -0.014	3.00~8.00	4~16		6.5	6	6	1.5	4	11	3.5	1.8
		8S			3~16			3		0.5				
		10		3.00~10.00	5~20	3.0~20.0	8	8	8	2		13	4	2.2
		10S			4~20			3		0.5				
		12	-0.006 -0.017	5.00~12.00	6~24		10	8		2		15	5	2.5
		12S			5~24			4		0.5				
		16		10.00~16.00	8~32		14	8		3	5	19	7	4
		16S			7~32	5.0~20.0		4		0.5				
		20	-0.007 -0.020	13.00~20.00	10~40		18	8		3		23	9	5

Pins of D dimension with Ss are for space-saving with shorter mounting parts (L and ℓ1). (Actual D dimension is the number without "S".)

■Notch Shape / Set Screw Flat Shape

Part Number: Type		Shape Code	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	G 1mm Increment	A 0.1mm Increment	Flat Position	ℓ3	ℓ4	h	c	m	H	Applicable Set Screws	(W): When D<P	(W): When D≥P
(Notched) JPCJ	(Set Screw Flat) JPDJ	S(Round) D(Diamond)	6	-0.004 -0.012	5.00~7.00	12~20	5.0~20.0	3~9	2.0~8.0	X Y Diamond	5.5	2.5	1.0	1	3	8	M4	3	1.5
			8	-0.005 -0.014	5.00~9.00	14~22	5.0~20.0		2.0~12.0		7.5	3.5	1.2	1.5	4	11	M5	3.5	1.8
			10		5.00~11.00	15~25	5.0~20.0		2.0~16.0		7.5	3.5	1.2	2	4	13	M6	4	2.2
			12	-0.006 -0.017	5.00~12.00	15~25	5.0~20.0		2.0~20.0		7.5	3.5	1.2	2	4	15	M6	5	2.5
			16		10.00~16.00	24~35	5.0~20.0		2.0~28.0		10.5	5.5	2.0	3	5	19	M8	7	4
			20	-0.007 -0.020	13.00~20.00	27~40	5.0~20.0		2.0~36.0		13.5	8.5	2.0	3	5	23	M8	9	5

Applicable set screws in the table are the recommended sizes for notch shape.

Order Example

Part Number	-	P	-	L	-	B	-	G	-	A	-	Flat Position
JPGJS10	-	P9.05	-	L6	-	B3.5						
JPCJD8	-	P5.05	-	L20	-	B10.1	-	G5	-	A8.2	-	X

Days to Ship: 8 Days — Express A 5,00 EUR/piece — P88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Circumference Groove Shape

D	€ Unit Price Round Shape (1)1.2510/100MnCrW4 Hardening JPGJS	€ Unit Price Diamond Shape (1)1.2510/100MnCrW4 Hardening JPGJD
6		
6S		
8		
8S		
10		
10S		
12		
12S		
16		
16S		
20		

■Notch Shape

D	€ Unit Price Round Shape (1)1.2510/100MnCrW4 Hardening JPCJS	€ Unit Price Diamond Shape (1)1.2510/100MnCrW4 Hardening JPCJD
6		
8		
10		
12		
16		
20		

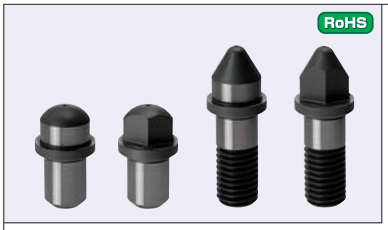
■Set Screw Flat Shape

D	€ Unit Price Round Shape (1)1.2510/100MnCrW4 Hardening JPDJS	€ Unit Price Diamond Shape (1)1.2510/100MnCrW4 Hardening JPDJD
6		
8		
10		
12		
16		
20		

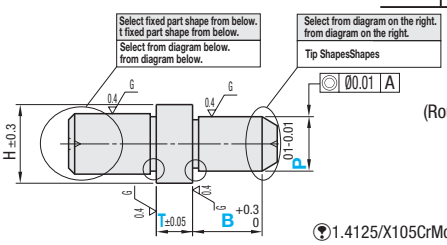
Locating Pins Shouldered

-Tip Shape Selectable-

CAD Data



Type	Mounting Shape	Materials Code	M Material	S Surface Treatment	H Hardness
LP (Round) / LPD (Diamond)	M (Standard) / U (Female Thread) / X (Male Thread)	J	(1) 1.2510/100MnCrW4	-	Treated Hardness 55 ~ 60HRC
		G	(2) 1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 55 ~ 60HRC Plating Hardness 750HV~
		Y	(3) 1.1191/C45E	-	Treated Hardness 45~50HRC or more
		B	(4) 1.1191/C45E	Black Oxide	Treated Hardness 45~50HRC or more
		R	(5) 1.1191/C45E	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 55 ~ 60HRC Plating Hardness 750HV~
		S	(6) 1.4301/X5CrNi18-10	-	-
		D	(7) 1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV~
		C	(8) 1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

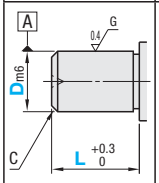


Ⓨ1.4125/X105CrMo17 has an identification groove on D part.

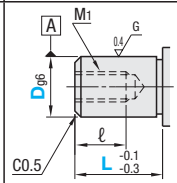
D	C	H	(W)	M1 Coarse	ℓ
2	0.5	7	-	-	-
3		8	1.0		
4	1	9	1.2		
5		10	1.5		
6		11	1.8	M3	5
8	1.5	13	2.2	M5	8
10	2	15	3		
12		17	3.2		
16	3	21	4	M8	12
20		25	5.5		

Mounting Shape

M Shape (Standard)

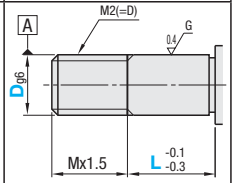


U Shape (Female Thread)



Ⓨ D≥6

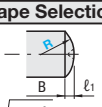
X Shape (Male Thread)



Ⓨ D≥3

Tip Shape Selection

A Shape



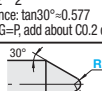
Ⓨℓ1=R-√(R2-P²/4)

B Shape



Ⓨℓ2=(P/2 - G/2)/tan30°
Reference: tan30°≈0.577
Ⓨ When G=P, add about C0.2 chamfering.

C Shape



Ⓨℓ3= P/2 /tan30°+R-(R/sin30°)
Reference: tan30°≈0.577 sin30°=0.5



When P<3, a=0.5 d=P-0.1

When P≥3, a=1.0 d=P-0.2

Part Number Type	Mounting Shape	Material Code	Tip Shape	D	P 0.01mm Increment	B 0.1mm Increment	R 1mm Increment A Shape / C Shape Only	G 1mm Increment B Shape Only	L 1mm Increment	T 0.5mm Increment
LP(Round) LPD(Diamond) Ⓨ Applicable when D≥3.	M(Standard) U(Female Thread) (D≥6) X(Male Thread) (D≥3)	J	A	2	2.50~4.00	2.0~25.0	A Shape R≥P/2 C Shape R≤P/2	B Shape G≤P	2~6	1.0~10.0
		G		3	3.50~6.00	2.0 ~ 25.0 (10.0)			3~6	
		Y		4	3.50~7.00	2.0 ~ 25.0 (10.0)			4~8	
		B		5	4.00~8.00	2.0 ~ 30.0 (10.0)			5~10	
		R	B	6	5.00~10.00	2.0 ~ 40.0 (12.0)			6 (10) ~ 12	
		S		8	6.00~11.00	2.0 ~ 40.0 (15.0)			8 (14) ~ 16	
		D	C	10	8.00~13.00	3.0 ~ 50.0 (20.0)			10 (14) ~ 20	
		C		12	10.00~15.00	3.0 ~ 50.0 (20.0)			12 (14) ~ 24	
				16	13.00~18.00	5.0 ~ 50.0 (20.0)			16~32	
				20	16.00~22.00	5.0 ~ 50.0 (20.0)			20~40	

Ⓨ B dimension in ( ) and L dimension in () are for the Diamond Type.

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

* Price in the table is for Installation Shape Selectable M.
Shape U: (Price in the Table) x 1.10 Shape X: (Price in the Table) x 1.20 (Round down to ten Cent.)
Price Calculation Example: LPXJA10-P12.00-B5.0-R5-L10-T5
1,670 (LPMJ10) x 1.20 (Shape X) = 2,004 → 20,00 EUR (Round down to ten Cent.)

Order Example

Part Number	Type	Fixed Part	Material	Tip	D	- P -	B -	R -	G -	L -	T
	LP	U	J	B	8	- P10.00	- B10.0		- G8	- L14	- T2.0
	LPD	X	J	A	10	- P11.98	- B5.0	- R10		- L10	- T5.0

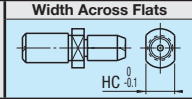
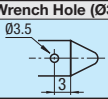
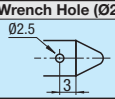
Days to Ship 8 Days

D	Round Shape € Unit Price (1) 1.2510 Hardening LPMJ	(2) Hard 1.2510 LPMG	(3) 1.1191/C45E LPMY	(4) 1.1191 Black Oxide LPMB	(5) Hard 1.1191 LPMR	(6) 1.4301 LPMS	(7) Hard 1.4301 LPMD	(8) 1.4125 LPMC	Diamond Shape € Unit Price (1) 1.2510 Hardening LPDMJ	(2) Hard 1.2510 LPDMG	(3) 1.1191 LPDMY	(4) 1.1191 Black Oxide LPDMB	(5) Hard 1.1191 LPDMR	(6) 1.4301 LPDMS	(7) Hard 1.4301 LPDMD	(8) 1.4125 LPDMC
2																
3																
4																
5																
6																
8																
10																
12																
16																
20																

Alterations

Part Number - P - B - R - G - L - T - (HC / LAC / LTE)
LPMJA6 - P10.00 - B10.0 - R6 - L6 - T3.0 - LAC

10 Days

Alterations	Width Across Flats	Wrench Hole (Ø3.5)	Wrench Hole (Ø2.5)
			
Code	HC	LAC	LTE
Spec.	HC=0.5mm Increment Ⓨ HC>D HC>P Ordering Code HC10.0	Adds a Ø3.5 hole. Ⓨ Applicable when B≥10 P≥8. ⊗ Not applicable to diamond shape.	Adds a Ø2.5 hole. Ⓨ Applicable when B≥8 7≤P≤15. ⊗ Not applicable to diamond shape.
Price Adder	5,00	1,00	1,00

Locating Pins Straight Round Type
-Standard / Female Thread-

CAD Data

Ⓨ D=5 is now available for Female Thread Type.

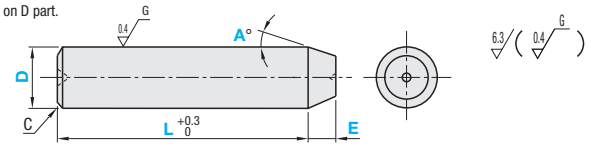
RoHS



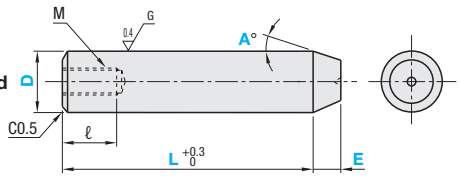
Material No.	M Material	S Surface Treatment	H Hardness	Type	
				Standard	Female Thread
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	LPSTA	LPSTTA
(2)	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GLPSTA	GLPSTTA
(3)	1.2510/100MnCrW4	-	-	BLPSTA	BLPSTTA
(4)	1.4301/X5CrNi18-10	-	-	SLPSTA	SLPSTTA
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~	HLPSTA	HLPSTTA
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CLPSTA	CLPSTTA

Ⓨ 1.4125/X105CrMo17 has an identification groove on D part.

- Standard



- Female Thread



■Tolerance Selection

D	Standard Grade			
	M	P	G	H
	m6	p6	g6	h7
1~3	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010
4~6	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012
8, 10	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015

Ⓨ D - 2EtanA ≥ 0.73 (Tip diameter ø0.73 or more)

■Standard

Part Number Type	D Tolerance	D	L 0.1mm Increment	E 0.1mm Increment	A Selection	C	€ Unit Price (1) 1.2510/100MnCrW4 Hardening LPSTA	(2) Hard 1.2510/100MnCrW4 GLPSTA	(3) 1.2510/100MnCrW4 BLPSTA	(4) 1.4301/X5CrNi18-10 SLPSTA	(5) 1.4301/X5CrNi18-10 Hard HLPSTA	(6) 1.4125/X105CrMo17 CLPSTA
LPSTA GLPSTA BLPSTA SLPSTA HLPSTA CLPSTA	M(m6) P(p6) G(g6) H(h7)	1	3.0~10.0	0.5~10.0	15 30 45 60	0.1						
		2				0.5						
		3	3.0~20.0									
		4				1						
		5	5.0~30.0									
		6										
		8	5.0~40.0			1.5						
		10				2						

■Female Thread

Part Number Type	D Tolerance	D	L 0.1mm Increment	E 0.1mm Increment	A Selection	M (Coarse)	ℓ	€ Unit Price (1) 1.2510/100MnCrW4 Hardening LPSTTA	(2) Hard 1.2510/100MnCrW4 GLPSTTA	(3) 1.2510/100MnCrW4 BLPSTTA	(4) 1.4301/X5CrNi18-10 SLPSTTA	(5) 1.4301/X5CrNi18-10 Hard HLPSTTA	(6) 1.4125/X105CrMo17 CLPSTTA
LPSTTA GLPSTTA BLPSTTA SLPSTTA HLPSTTA CLPSTTA	M(m6) P(p6) G(g6) H(h7)	5	10.0~30.0	0.5~10.0	15 30 45 60	M2	3						
		6				M3	5						
		8	15.0~40.0			M5	8						
		10				M5	8						

Order Example

Part Number Type	D Tolerance	D	-	L	-	E	-	A
LPSTA	M	6	-	L14.0	-	E2.5	-	A30
BLPSTTA	G	8	-	L29.3	-	E8.3	-	A15

Days to Ship: 8 Days

Express A: 5,00 EUR/piece P.88

Ⓨ A Express Charge of 13,50 EUR for 3 or more identical pieces.

⊗ Express Serviceis not available for Material (2) Hard 1.2510/100MnCrW4 and Material (5) Hard 1.4301/X5CrNi18-10.

Alterations

Part Number	-	L	-	E	-	A	- (MH, GDC, AC...etc.)
LPSTAP6	-	L18.5	-	E4.0	-	A45	- AC

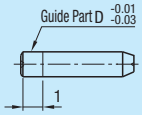
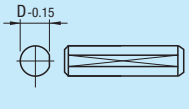
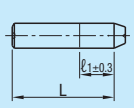
10 Days

Price

■Volume Discount (Ⓨ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	30%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Alterations	Insertion Guide Machining	Air Vent	Unilateral Tolerance Change
Code	GDC	AC	DKM/DKP/DKG/DKH
Spec.	Adds Insertion Guide. Ordering Code GDC  ⊗ Not applicable to D≤2	Adds an air vent. Ordering Code AC 	Changes outer diameter tolerance by ℓ1 distance. Ordering Code DKM18 (When changing ℓ1=18 to m6.)  Ⓨ 2≤ℓ1<L Ⓨ No relief groove.
Price Adder	2,00	2,00	2,00

D	Tolerance Code			
	DKM	DKP	DKG	DKH
	m6	p6	g6	h7
1~3	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010
4~6	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012
8, 10	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015

Locating Pins Straight Sphere Type
-Standard / Female Thread-

CAD Data

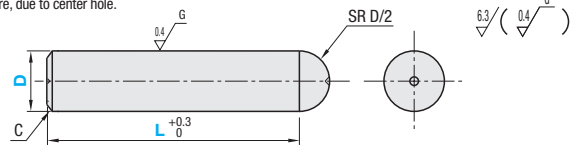
Sphere Type is now available.



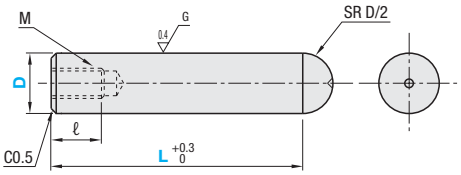
Material No.	M Material	S Surface Treatment	H Hardness	Type	
				Standard	Female Thread
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	LPSQA	LPSQTA
(2)	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	GLPSQA	GLPSQTA
(3)	1.2510/100MnCrW4	-	-	BLPSQA	BLPSQTA
(4)	1.4301/X5CrNi18-10	-	-	SLPSQA	SLPSQTA
(5)	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~	HLPSQA	HLPSQTA
(6)	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CLPSQA	CLPSQTA

1.4125/X105CrMo17 has an identification groove on D part.
The smaller the dimension P, the less the size of sphere, due to center hole.

- Standard



- Female Thread



■Tolerance Selection

D	Standard Grade			
	M	P	G	H
	m6	p6	g6	h7
1~3	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010
4~6	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012
8, 10	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015

■Standard

Part Number Type	D Tolerance	D	L 0.1mm Increment	C	€ Unit Price (1) 1.2510/100MnCrW4 Hardening LPSQA	(2) Hard 1.2510/100MnCrW4 GLPSQA	(3) 1.2510/100MnCrW4 BLPSQA	(4) 1.4301/X5CrNi18-10 SLPSQA	(5) 1.4301/X5CrNi18-10 Hard HLPSQA	(6) 1.4125/X105CrMo17 CLPSQA
LPSQA GLPSQA BLPSQA SLPSQA HLPSQA CLPSQA	M(m6) P(p6) G(g6) H(h7)	1	3.0~10.0	0.1						
		2		0.5						
		3	3.0~20.0							
		4		1						
		5	5.0~30.0							
		6								
		8	5.0~40.0	1.5						
		10		2						

■Female Thread

Part Number Type	D Tolerance	D	L 0.1mm Increment	M (Coarse)	ℓ	€ Unit Price (1) 1.2510/100MnCrW4 Hardening LPSQTA	(2) Hard 1.2510/100MnCrW4 GLPSQTA	(3) 1.2510/100MnCrW4 BLPSQTA	(4) 1.4301/X5CrNi18-10 SLPSQTA	(5) 1.4301/X5CrNi18-10 Hard HLPSQTA	(6) 1.4125/X105CrMo17 CLPSQTA
LPSQTA GLPSQTA BLPSQTA SLPSQTA HLPSQTA CLPSQTA	M(m6) P(p6) G(g6) H(h7)	5	10.0~30.0	M2	3						
		6		M3	5						
		8	15.0~40.0	M5	8						
		10		M5	8						

Order Example

Part Number				
Type	D Tolerance	D	-	L
LPSQA	M	6	-	L14.0
BLPSQTA	G	8	-	L29.3

Days to Ship

8 Days | Express A | 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Material (2) Hard 1.2510/100MnCr1.4301/ X5CrNi18-10 and Material (5) Hard 1.4301/X5CrNi18-10.

Alterations

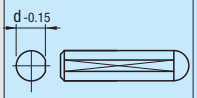
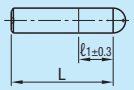
Part Number - L - (GDC,•AC...etc.)
LPSQAP6 - L18.5 - AC
10 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	30%

For orders larger than indicated quantity, please request a quotation.

Alterations	Insertion Guide Machining	Air Vent	Unilateral Tolerance Change
Code	GDC	AC	DKM/DKP/DKG/DKH
Spec.	Adds Insertion Guide. Ordering Code GDC  Not applicable to D≤2	Adds an air vent. Ordering Code AC 	Changes outer diameter tolerance by ℓ1 distance. Ordering Code DKM18 (When changing ℓ1=18 to m6.) 2≤ℓ1<L No relief groove.
Price Adder	2,00	2,00	2,00

D	Tolerance Code DKM m6	DKP p6	DKG g6	DKH h7
1~3	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008	0 -0.010
4~6	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012	0 -0.012
8, 10	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014	0 -0.015

Screw Fitting Locating Pins
-Full Thread Type-

CAD Data

Features: Screw-fitting type without pilot. Costs for hole machining on jigs can be reduced.

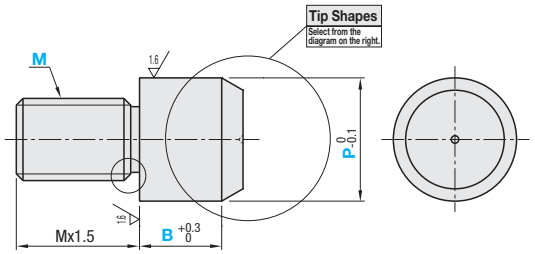


Material No.	M Material	S Surface Treatment	H Hardness	Type
(1)	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPNG
(2)	1.2510/100MnCrW4	Hard Chrome Plating: Plating thickness 3μm or more	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~	GJPNG
(3)	1.2510/100MnCrW4	-	-	BJPNG
(4)	1.4301/X5CrNi18-10	-	-	SJPNG



M	(a)	(d)
3	1.3	2.2
4	1.8	2.9
5	2	3.7
6	2.5	4.4
8	3.1	6
10	3.7	7.7
12	4.4	9.4
16	5	13
20	6.3	16.4

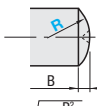
Ⓨ Above dimensions are for reference and not guaranteed.



6.3 (1.6)

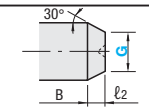
Tip Shape

A Shape



Ⓨ $\ell 1 = R - \sqrt{R^2 - \frac{P^2}{4}}$

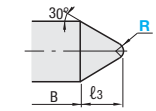
B Shape



Ⓨ $\ell 2 = \frac{P-G}{2\tan 30°}$ Reference: $2\tan 30° \approx 1.15$

Ⓨ When G=P, add about C0.2 chamfering.

C Shape



Ⓨ $\ell 3 = \frac{P}{2} / \tan 30° + R - (R / \sin 30°)$

Reference: $\tan 30° \approx 0.577$ $\sin 30° = 0.5$

Part Number: Type	Tip Shape	M (Coarse)	P 0.1mm Increment	B 0.1mm Increment	R 1mm Increment: A Shape / C Shape Only	G 1mm Increment: B Shape Only	€ Unit Price (1) 1.2510/100MnCrW4 Hardening JPNG	(2) Hard 1.2510/100MnCrW4 GJPNG	(3) 1.2510/100MnCrW4 BJPNG	(4) 1.4301/X5CrNi18-10 SJPNG
JPNG GJPNG BJPNG SJPNG	A B C	3	3.5~6.0	1.0~10.0	A Shape R≥P/2 C Shape R≤P/2	B Shape G≤P				
		4	4.5~7.0							
		5	5.5~8.0							
		6	6.5~10.0	1.0~12.0						
		8	9.0~13.0	1.0~15.0						
		10	11.0~15.0	3.0~20.0						
		12	13.0~18.0							
		16	17.0~25.0	5.0~20.0						
		20	22.0~30.0							

Order Example

Part Number	-	P	-	B	-	R	-	G
JPNGA3	-	P4	-	B2	-	R2		
JPNGB5	-	P6	-	B3			-	G3

Price

Volume Discount (Ⓨ Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓨ For orders larger than indicated quantity, please request a quotation.

Days to Ship

-JPNG / BJPNG / SJPNG: **8 Days** — Express A — 5,00 EUR/ piece — P. 88

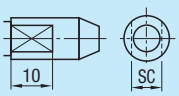
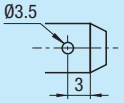
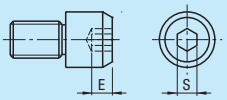
Ⓨ A Express Charge of 13,50 EUR for 3 or more identical pieces.

-GJPNG: **10 Days** — Express B — 5,00 EUR/ piece — P. 88

Ⓨ A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	P	-	B	-	R	-	G	-	(SC / LAC / RAC)	10 Days
JPNGA3	-	P6	-	B2	-	R3			-	SC5	

Alterations	Width Across Flats	Wrench Hole (Ø3.5)	Hexagon Socket
			
Code		LAC	RAC
Spec.	SC=1 mm Increment Ordering Code SC5 Ⓨ When B≤11, adds width across flats on the tip. Ⓨ P-3≤SC≤P-1, SC≥M	Adds a Ø3.5 hole. Ordering Code LAC Ⓨ Applicable when B≥10 P≥8.	Machines hexagonal socket. Ordering Code RAC3 G: 4~5, 6~7, 8~9, 10~30 B: 10~, 10~12.9, 13~ S Specifiable Range: 2, 2.5 / 2, 2.5, 3, 4 / 2, 2.5, 3, 4, 5 / 2, 2.5, 3, 4, 5, 6 / 2, 2.5, 3, 4, 5, 6, 8 S: 2, 2.5, 3, 4, 5, 6, 8 E: 2, 2, 2, 2, 2, 3, 4, 5 Ⓨ Applicable to Shape B with M≥6 only.
Price Adder	3,00	1,00	3,00

Marker Pins
-Hexagon Socket Type / With Flathead Slot-

CAD Data

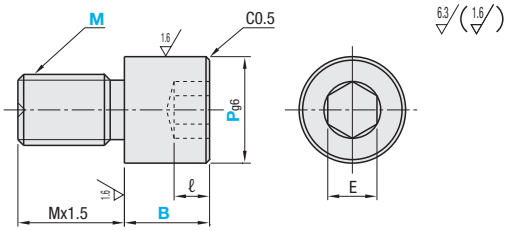
Features: Hexagonal hole enables easy mounting with a hexagonal wrench.

Hexagon Socket Type

RoHS



Type	Material	Surface Treatment	Hardness
JPLR	1.1191/C45E	-	-
JPLRM		Electroless Nickel Plating	-
JPLRK		-	Treated Hardness 50 ~ 55HRC
JPLRS	1.4301/X5CrNi18-10	-	-



P Dimension Tolerance

P	g6
5.0~6.0	-0.004 -0.012
6.1~10.0	-0.005 -0.014
10.1~15.0	-0.006 -0.017

Part Number Type	M (Coarse)	P 0.1mm Increment	B 0.1mm Increment	ℓ	E	€ Unit Price JPLR	JPLRM	JPLRK	JPLRS
JPLR JPLRM JPLRK JPLRS	3	5.0~6.0	6.5~10.0	2	2				
	4	5.0~7.0	6.5~10.0	2	2.5				
	5	6.0~8.0	6.5~10.0	2	3				
	6	6.5~10.0	6.5~12.0	2	3				
	8	8.5~12.0	7.5~12.0	2.5	4				
	10	10.5~15.0	8.5~12.0	3	5				

Note that pins with small thread diameter have thin under-head part.

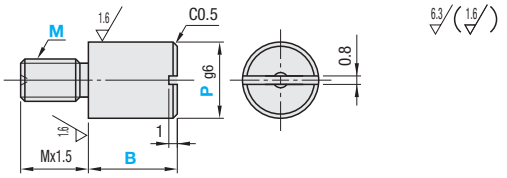
Features: Flathead slot enables easy mounting with a screwdriver.

With Flathead Slot

RoHS



Type	Materials	Surface Treatment	Hardness
JPLB	1.1191/C45E	-	-
JPLBM		Electroless Nickel Plating	-
JPLBK		-	Treated Hardness 50 ~ 55HRC
JPLBS	1.4301/X5CrNi18-10	-	-



P Dimension Tolerance

P	g6
3.0~6.0	-0.004 -0.012
6.1~10.0	-0.005 -0.014
10.1~15.0	-0.006 -0.017

Part Number Type	M (Coarse)	P 0.1mm Increment	B 0.1mm Increment	€ Unit Price JPLB	JPLBM	JPLBK	JPLBS
JPLB JPLBM JPLBK JPLBS	2	3.0~5.0	5.0~10.0				
	3	3.5~6.0	2.0~10.0				
	4	4.5~7.0	2.0~10.0				
	5	5.5~8.0	2.0~10.0				
	6	6.5~10.0	2.0~12.0				
	8	8.5~12.0	2.0~12.0				
	10	10.5~15.0	2.0~12.0				

Note that pins with small thread diameter have thin under-head part.

Order Example

Part Number	-	P	-	B	
JPLR6	-	P8.5	-	B6.5	(Hexagon Socket Type)
JPLB8	-	P9.5	-	B3.2	(With Flahead Slot)

Days to Ship: 8 Days

Express A: 3,00 EUR/ piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

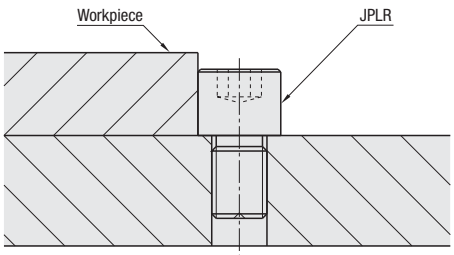
Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~4	5~19	20~49	50~99
Rate	€ Unit Price	5%	10%	15%

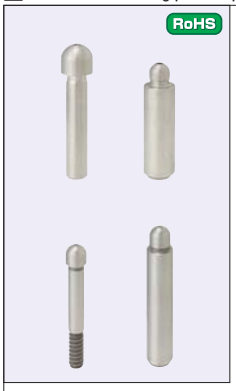
Please request a quotation for 50 or more pieces of Hexagon Socket Type.

Example Use as guides for work hitting on the side when shear load is not applied.



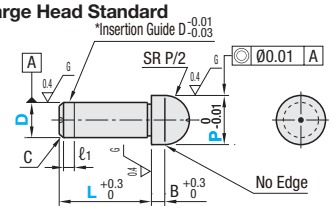
Locating Pins for Height Adjusting

Features: Locating pins for printed circuit boards. B dimension is fixed short for thin boards. Reasonably priced.

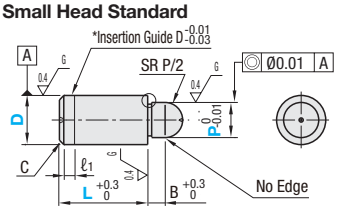


Material No.	Material	Surface Treatment	Hardness	Large Head		Small Head	
				Standard	Male Thread	Standard	Female Thread
(1)	1.4301/ X5CrNi18-10	-	-	SFPLA(m6) SFPLP(p6)	SFPLN	SFPMA(m6) SFPMP(p6)	SFPMT
(2)	1.4125/ X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CFPLA(m6) CFPLP(p6)	CFPLN	CFPMA(m6) CFPMP(p6)	CFPMT

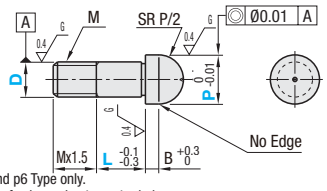
- Large Head Standard



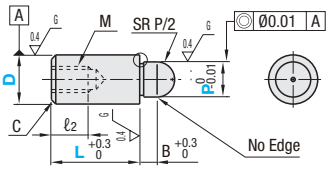
- Small Head Standard



- Large Head Male Thread



- Small Head Female Thread





a=0.5
d=P-0.1

* Insertion Guide is applicable to tolerance m6 and p6 Type only.
The smaller the dimension P, the less the size of sphere, due to center hole.

Large Head Standard

Part Number Type	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L 1mm Increment	B	C	ℓ1	€ Unit Price (1)1.4301/X5CrNi18-10 SFPLA SFPLP	€ Unit Price (2)1.4125/X105CrMo17 CFPLA CFPLP
SFPLA(m6) SFPLP(p6) CFPLA(m6) CFPLP(p6)	1	+0.008 +0.002	+0.012 +0.006	1.50~2.00	2~10	1	0.1	0		
	2			2.50~4.00	2~15		0.2	1		
	3			3.50~6.00	3~15	2				

Large Head Male Thread

Part Number Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B	M (Coarse)	€ Unit Price (1)1.4301/X5CrNi18-10 SFPLN	€ Unit Price (2)1.4125/X105CrMo17 CFPLN
SFPLN	2	-0.002 -0.008	2.50~4.00	2~12	1	M2		
CFPLN	3		3.50~6.00		2	M3		

Small Head Standard

Part Number Type	D	D Dimension Tolerance m6	D Dimension Tolerance p6	P 0.01mm Increment	L 1mm Increment	B	C	ℓ1	€ Unit Price (1)1.4301/X5CrNi18-10 SFPMA SFPMP	€ Unit Price (2)1.4125/X105CrMo17 CFPMA CFPMP
SFPMA(m6) SFPMP(p6) CFPMA(m6) CFPMP(p6)	2	+0.008 +0.002	+0.012 +0.006	1.00~1.95	2~15	1	0.3	0		
	3			1.50~2.95	3~15		0.5	1		
	4	+0.012 +0.004	+0.020 +0.012	2.50~4.00	3~20	2	1			
	5									
	6									

Small Head Female Thread

Part Number Type	D	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment	B	C	M (Coarse)	ℓ2	€ Unit Price (1)1.4301/X5CrNi18-10 SFPMT	€ Unit Price (2)1.4125/X105CrMo17 CFPMT
SFPMT	5	-0.004 -0.012	2.50~4.00	10~20	2	0.5	M2	3		
CFPMT	6						M3	5		

Order Example

Part Number Type	D	-	P	-	L
SFPLN	2	-	P2.90	-	L8
CFPMA	6	-	P3.95	-	L15

Days to Ship: 8 Days — Express A 5,00 EUR/piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

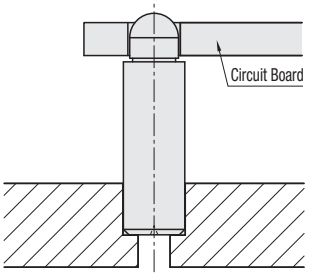
Alterations

Part Number - P - L - (RC) RC
SFPMT5 - P2.95 - L10 - RC
10 Days

Alteration	Radius
Code	RC
Spec.	Changes the relief to R0.5. Ordering Code RC  Applicable when D-P≥2.
Price Adder	3,00

Example

Sphere tip prevents damage of the circuit board. B dimension is fixed short and pins don't protrude.



Small Diameter Locating Pins
-Straight-

CAD Data

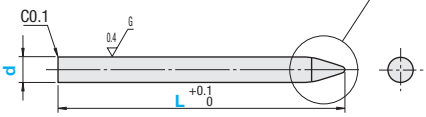
Features: Locating pins with Ø3 or less pin diameter. Selectable from 4 types of tip shape. L Dimension Selectable Type is now available.



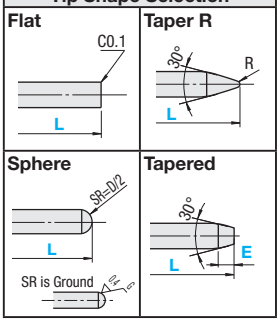
L Dimension Selectable Type			L Dimension Configurable				L Dimension Configurable and Tolerance Selectable Type				Materials	Hardness
Flat	Sphere	Tapered	Flat	Sphere	Taper R	Tapered	Flat	Sphere	Taper R	Tapered		
SFKT	SPKT	SXKT	SFST	SPST	STST	SXST	SFFPT	SPPT	STPT	SXFPT	ISO TC90	Treated Hardness 50 ~ 58HRC
SFKS	SPKS	SXKS	SFSS	SPSS	STSS	SXSS	SFPS	SPPS	STPS	SXFPS	1.4301/ X5CrNi18-10	-
-	-	-	SFSXC	SPSXC	STSXC	SXSXC	SFPXC	SPPXC	STPXC	SXFPXC	1.4125/ X105CrMo17	Treated Hardness 50 ~ 55HRC
-	-	-	-	SPSSG	-	-	-	-	-	-	1.4301/X5CrNi18-10 (SR Parts Polished)	-
-	-	-	-	SPSDG	-	-	-	-	-	-	1.2344/ (SR Parts Polished)	Treated Hardness 40 ~ 52HRC

Features of ISO TC90 P.1281

Tip Shapes (Select from the diagram on the right.)



Tip Shape Selection



L Dimension Selectable Type

Part Number	D	D Dimension Tolerance	L Selection	E
Flat: SFKT, SFKS / Sphere: SPKT, SPKS / Tapered: SXKT, SXKS	1	0 -0.005	3 4 5 6 10	0.5
	1.5		5 6 8	
	2		5 6 8 10 12 15	
	3		5 6 8 10 12 15	1

L Dimension Configurable

Part Number	D 0.1mm Increment	D Dimension Tolerance	L 0.5mm Increment	E 0.5mm Increment	R
Flat: SFST, SFSS, SFSXC / Sphere: SPST, SPSS, SPSXC, SPSSG, SPSDG / Taper R: STST, STSS, STSXC / Tapered: SXST, SXSS, SXSXC	1.0~2.0	0 -0.005	3.0~30.0	0.5~2.5	0.2
	2.1~3.0				0.4

For Taper R, L-1≥(Dx1.85)-(Rx2.75) For Tapered Type, L≥E + 1D≥E

L Dimension Configurable and Tolerance Selectable Type

Part Number Type	D Tolerance	D 0.01mm Increment	L 0.1mm Increment	E 0.5mm Increment	R
Flat: SFFPT, SFPS, SFPXC / Sphere: SPPT, SPPS, SPPXC / Taper R: STPT, STPS, STPXC / Tapered: SXFPT, SXFPS, SXFPXC	P (+0.005 0)	0.50~1.00	3.0~30.0	0.5~2.5	-
	Q (±0.002)	1.01~2.00			0.2
	R (0 -0.005)				
	H (0 -0.01)	2.01~3.00			0.4

For Taper R, L-1≥(Dx1.85)-(Rx2.75) For Tapered Type, L≥E+1 D≥E

Order Example

L Dimension Selectable Type

Part Number	-	D	-	L
SPKS	-	D1	-	L5

L Dimension Configurable

Part Number	-	D	-	L	-	E	
SPST	-	D1.5	-	L8.5			(Sphere)
SXST	-	D1.5	-	L5.0	-	E1.0	(Taper)

L Dimension Configurable and Tolerance Selectable Type

Part Number		-	D	-	L	-	E	
Type	D Tolerance							
SPPT	P	-	D0.55	-	L5.0			(Sphere)
SXFPT	P	-	D2.82	-	L5.0	-	E2.5	(Taper)

Days to Ship

-L Dimension Selectable Type: 6 Days P.87

-L Dimension Configurable Type except shown below L Dimension Configurable and Tolerance Selectable Type: 8 Days — Express A 5,00 EUR/ piece P.88

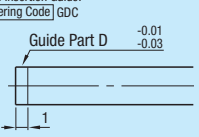
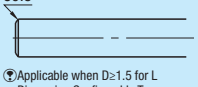
A Express Charge of 13,50 EUR for 3 or more identical pieces.

-1.4125/X105CrMo17: 10 Days

Alterations

Part Number	-	D	-	L	-	E	-	(GDC / CC)
SFST	-	D2.0	-	L10			-	CC

⊗Combination of GDC and CC is not applicable. ⊗Not applicable to L Dimension Selectable type.

Alterations Code	Insertion Guide Machining GDC	C Chamfered Size CC
Spec.	Adds Insertion Guide. Ordering Code GDC  Machines one side only for Flat Type. Applicable when D≥2.1 and L≥5.0 for L Dimension Configurable Type. Applicable when D≥2.01 and L≥5.0 for L Dimension Configurable and Tolerance Selectable Type.	D dimension C chamfering 0.1 is changed to 0.3. Ordering Code CC  Applicable when D≥1.5 for L Dimension Configurable Type. Applicable when D≥1.50 for L Dimension Configurable and Tolerance Selectable Type.
Price Adder	2,00	2,00

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

L Dimension Selectable Type

D	€ Unit Price					
	Flat Type		Sphere		Tapered Type	
	SFKT	SFKS	SPKT	SPKS	SXKT	SXKS
1						
1.5						
2						
3						

L Dimension Configurable

D	€ Unit Price												
	Flat Type			Sphere					Taper R Type			Tapered Type		
	SFST	SFSS	SFSXC	SPST	SPSS	SPSXC	SPSSG	SPSDG	STST	STSS	STSXC	SXST	SXSS	SXSXC
1.0~2.0														
2.1~3.0														

L Dimension Configurable and Tolerance Selectable Type

D	€ Unit Price											
	Flat Type			Sphere			Taper R Type			Tapered Type		
	SFFPT	SFPS	SFPXC	SPPT	SPPS	SPPXC	STPT	STPS	STPXC	SXFPT	SXFPS	SXFPXC
0.50~1.00												
1.01~2.00												
2.01~3.00												

Small Diameter Locating Pins
-Small Head-

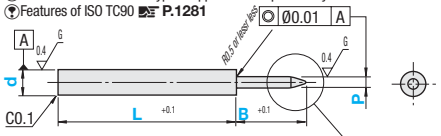
CAD Data

L Dimension Selectable Type is now available.



Part Number			Material	Hardness
Insertion Guide Shape	Type	Material Code		
SF(Flat) SP(Sphere) ST(Taper R) SX(Taper)	KH (L Dimension Selectable Type) SH (L Dimension Configurable Type) PH (L Dimension Configurable and Tolerance Selectable Type)	T	ISO TC90	Treated Hardness 50 ~ 58HRC
		S	1.4301/X5CrNi18-10	-
		SG	1.4301/X5CrNi18-10 (SR Parts Polished)	-
		DG	1.2344/X40CrMoV5-1 (SR Parts Polished)	Treated Hardness 40 ~ 52HRC
		C	1.4125/X105CrMo17	Treated Hardness 50 ~ 55HRC

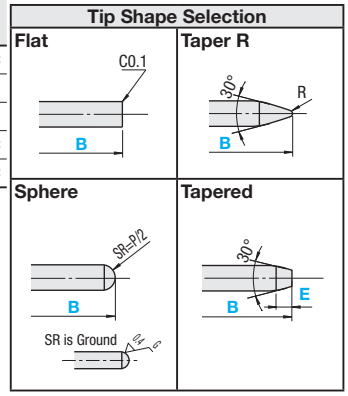
Material code SG and DG are applicable to L Dimension Configurable of Sphere only.
L Dimension Selectable Type is applicable to Sphere only.
Features of ISO TC90 P.1281



Chamfering of mounting portion and change of tolerance are available.

Tip Shapes
Select from the diagram on the right.

Tip Shape Selection



L Dimension Selectable Type

Part Number			D	D Dimension Tolerance	L Selection			P	P Dimension Tolerance	B
Insertion Guide Shape	Type	Material Code								
SP(Sphere)	KH	T	2	0 -0.005	3	5	10	0.95	0 -0.01	2
		S	3		3	8	10	1.95		4

L Dimension Configurable

Part Number			D 0.1mm Increment	D Dimension Tolerance	L 0.5mm Increment	P 0.1mm Increment	P Dimension Tolerance	B 0.5mm Increment	E 0.5mm Increment	R
Insertion Guide Shape	Type	Material Code								
SF(Flat) ST(Taper R)	SH	T	1.0~2.0	0 -0.005	3.0~20.0	0.9~1.9 (D>P)	0 -0.01	1.5~10.0 (B-P/2≥1.0)	0.5~2.5	0.2
SP(Sphere) SX(Taper)		S SG DG C	2.1~3.0			1.9~2.9 (D>P)				0.4

For Taper R: B-1≥1.85P-2.75R For Tapered Type: B≥E+1, P≥E

L Dimension Configurable and Tolerance Selectable Type

Part Number					D 0.01mm Increment	L 0.1mm Increment	P 0.01mm Increment	B 0.1mm Increment	E 0.5mm Increment	R
Insertion Guide Shape	Type	Material Code	D Tolerance	P Tolerance						
SF(Flat) ST(Taper R)	PH	T	P (+0.005 0)	P (+0.005 0)	0.51~1.00	3.0~20.0	0.50~0.99 (D>P)	1.5~5.0 (B-P/2≥1.0)	0.5~2.5	-
SP(Sphere) SX(Taper)		S	Q (±0.002)	Q (±0.002)	1.01~2.00		0.50~1.99 (D>P)	1.5~10.0 (B-P/2≥1.0)		0.2
		C	R (0 -0.005)	R (0 -0.005)	2.01~3.00		1.00~2.99 (D>P)			0.4
			H (0 -0.01)	H (0 -0.01)						

For Taper R: D≥1.01, B-1≥1.85P-2.75R For Tapered Type: D≥1.01, B≥E+1, P≥E

Order Example

L Dimension Selectable Type

Part Number	-	D	-	L
SPKHT	-	D2	-	L5

L Dimension Configurable

Part Number	-	D	-	L	-	P	-	B	-	E	
SPSHS	-	D1.5	-	L10.0	-	P0.9	-	B1.5			(Sphere)
SXSHT	-	D1.5	-	L10.0	-	P1.2	-	B2.0	-	E1.0	(Taper)

L Dimension Configurable and Tolerance Selectable Type

Part Number		D	-	L	-	P	-	B	-	E	
Type	D Tolerance / D Tolerance										
SPPHT	Q R	D1.50	-	L10.1	-	P0.95	-	B5.3			(Sphere)
SXPHS	P P	D1.50	-	L10.0	-	P1.20	-	B3.0	-	E1.0	(Taper)

Days to Ship

-Materials other than listed below

8 Days — Express A 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

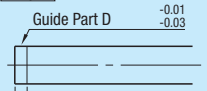
-1.4125/X105CrMo17

10 Days

Alterations

Part Number	-	D	-	L	-	P	-	B	-	E	-	(GDC / CC)
SFSHT	-	D2.5	-	L20	-	P2.0	-	B5.0			-	GDC

Combination of GDC and CC is not available. Alterations are not applicable to L Dimension Selectable Type.

Alterations Code	Insertion Guide Machining GDC	C Chamfered Size CC
Spec.	Adds Insertion Guide. Ordering Code GDC  Applicable when D≥2.1 and L≥5.0 for L Dimension Configurable Type. Applicable when D≥2.01 and L≥5.0 for L Dimension Configurable and Tolerance Selectable Type.	D dimension C chamfering 0.1 is changed to 0.3. Ordering Code CC  Applicable when D≥1.5 for L Dimension Configurable Type. Applicable when D≥1.50 for L Dimension Configurable and Tolerance Selectable Type.
Price Adder	2,00	2,00

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

L Dimension Selectable Type

D	€ Unit Price	
	Sphere	
	SPKHT	SPKHS
2		
3		

L Dimension Configurable

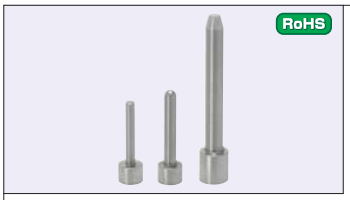
D	€ Unit Price													
	Flat Type			Sphere					Taper R Type			Tapered Type		
	SFSHT	SFSHS	SFSHC	SPSHT	SPSHS	SPSHSG	SPSHDG	SPSHC	STSHT	STSHS	STSHC	SXSHT	SXSHS	SXSHC
1.0~2.0														
2.1~3.0														

L Dimension Configurable and Tolerance Selectable Type

D	€ Unit Price											
	Flat Type			Sphere			Taper R Type			Tapered Type		
	SFPHT	SFPHS	SFPHC	SPPHT	SPPHS	SPPHC	STPHT	STPHS	STPHC	SXPHT	SXPHS	SXPHC
0.51~1.00												
1.01~2.00												
2.01~3.00												

Small Diameter Locating Pins
-With Base-

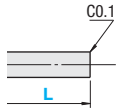
CAD Data



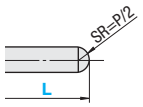
Part Number			Materials
Insertion Guide Shape	Tolerance	Material Code	
SF(Flat) SP(Sphere) SX(Taper)	SZ(Tolerance Standard) PZ(Tolerance Selectable)	S	1.4301/ X5CrNi18-10

Tip Shape Selection

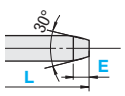
Flat

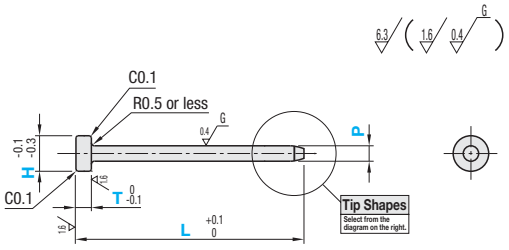


Sphere



Tapered





■Tolerance Standard

Part Number			P 0.1mm Increment	P Dimension Tolerance	L 0.5mm Increment	T 1mm Increment	H	E 0.5mm Increment
Insertion Guide Shape	Tolerance	Material Code						
SF(Flat) SP(Sphere) SX(Taper)	SZ	S	1.0~1.3	0 -0.01	13.0~30.0	3~5	2	0.5
			1.4~2.5				4	0.5~1.5
			2.6~3.5				6	0.5~2.5

Ⓥ L-T≥10 Ⓥ For tapered type, P≥E

■Tolerance Selectable

Part Number				P 0.01mm Increment	L 0.1mm Increment	T 0.1mm Increment	H 0.1mm Increment	E 0.5mm Increment
Insertion Guide Shape	Tolerance	Material Code	P Tolerance					
SF(Flat) SP(Sphere) SX(Taper)	PZ	S	P(+0.005 0)	1.00~1.40	13.0~30.0	3.0~5.0	2.0~3.0	0.5
			Q(±0.002)	1.41~2.50			2.0~4.0	0.5~1.5
			R(0 -0.005)	2.51~3.50			3.0~8.0	0.5~2.5

Ⓥ L-T≥10 Ⓥ P + 0.5 ≤ H Ⓥ For tapered type, P≥E

Order Example

■Tolerance Standard

Part Number	-	P	-	L	-	T	-	E	
SPSZS	-	P1.5	-	L18.5	-	T3			(Sphere)
SXSZS	-	P2.5	-	L20.0	-	T4	-	E1.5	(Taper)

■Tolerance Selectable

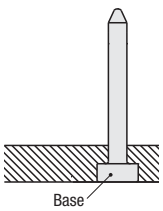
Part Number		-	P	-	L	-	T	-	H	-	E	
Type	P Tolerance											
SPPZS	P	-	P1.55	-	L15.0	-	T3.2	-	H3.8			(Sphere)
SXPZS	Q	-	P1.00	-	L19.0	-	T4.5	-	H2.5	-	E0.5	(Taper)

Days to Ship

8 Days | Express A | 5,00 EUR/ piece | P.88

Ⓥ A Express Charge of 13,50 EUR for 3 or more identical pieces.

Example



Pin with base for prevention from falling out.

Price

■Volume Discount (Ⓥ Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓥ For orders larger than indicated quantity, please request a quotation.

■Tolerance Standard

P	€ Unit Price		
	Flat Type	Sphere	Tapered Type
	SFSZS	SPSZS	SXSZS
1.0~1.3			
1.4~2.5			
2.6~3.5			

■Tolerance Selectable

P	€ Unit Price		
	Flat Type	Sphere	Tapered Type
	SFPZS	SPPZS	SXPZS
1.00~1.40			
1.41~2.50			
2.51~3.50			

Small Diameter Locating Pins

-Press Fit with Shoulder-

CAD Data

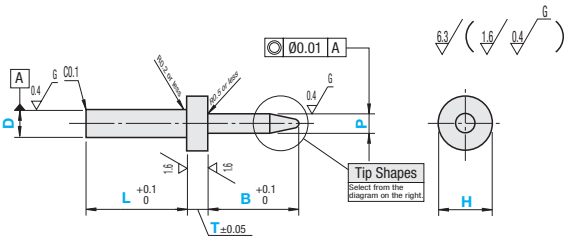
Press Fit with Shoulder

RoHS

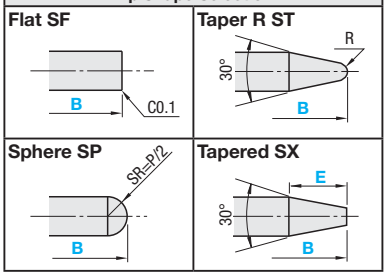


Part Number			Material	Hardness
Insertion Guide Shape	Tolerance, Mounting Method	Material Code		
SF (Flat) SP (Sphere) ST (Taper R) SX (Taper)	SS (Tolerance Standard, Press Fit) PS (Tolerance Configurable, Press Fit)	T	ISO TC90	50~58HRC
		S	1.4301/ X5CrNi18-10	-

Features of ISO TC90 P.1281 Refer to the price list to select the available combination.



Tip Shape Selection



Tolerance Standard

Part Number				D Dimension Tolerance (m6)	L 0.5mm Increment	P 0.1mm Increment	P Dimension Tolerance	B 0.5mm Increment	H 0.1mm Increment	T 0.5mm Increment	E 0.5mm Increment (Taper Only)	R
Insertion Guide Shape	Mounting Method	Material Code	D									
SF (Flat) ST (Taper R)	(Press Fit)	T	1	+0.008 +0.002	2.0~5.0	1.0~2.9	0 -0.01	1.0~10.0	1.1~3.0	1.0~10.0	0.5~5.0	0.2
			2		4.0~10.0	1.0~4.0			2.1~7.0			
SP (Sphere) SX (Taper)		S	3		6.0~10.0	1.5~6.0		1.0~30.0	3.1~8.0	1.0~20.0		0.3
			4	+0.012 +0.004	8.0~10.0	2.0~7.0			4.1~9.0			0.4

P<H D<H For sphere, B-1≥P/2 For Taper R, B-1≥1.85P-2.75R For Tapered Type: B≥E+1, P≥E

Tolerance Selectable

Part Number						L 0.1mm Increment	P 0.01mm Increment	B 0.1mm Increment	H 0.01mm Increment	T 0.1mm Increment	E 0.5mm Increment (Taper Only)	R
Insertion Guide Shape	Mounting Method	Materials Code	D Tolerance Selection	P Tolerance Selection	D							
SF (Flat) ST (Taper R)	PS (Press Fit)	T	P(+0.005 0)	P(+0.005 0)	1	2.0~5.0	1.00~2.90	1.0~10.0	1.10~3.00	1.0~10.0	0.5~5.0	0.2
			Q(±0.002)	Q(±0.002)	2	4.0~10.0	1.00~4.00		2.10~7.00			
SP (Sphere) SX (Taper)		S	R(0 -0.005)	R(0 -0.005)	3	6.0~10.0	1.50~6.00	1.0~30.0	3.10~8.00	1.0~20.0		0.3
					4	8.0~10.0	2.00~7.00		4.10~9.00			0.4

P<H D<H For sphere, B-1≥P/2 For Taper R, B-1≥1.85P-2.75R For Tapered Type: B≥E+1, P≥E

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Tolerance Standard

D	€ Unit Price							
	Flat Type (SFSS_)		Sphere Type (SPSS_)		Taper R Type (STSS_)		Tapered Type (SXSS_)	
	SFSST	SFSSS	SPSST	SPSSS	STSST	STSSS	SXSST	SXSSS
1								
2								
3								
4								

Tolerance Selectable

D	€ Unit Price							
	Flat Type (SFPS_)		Sphere Type (SPPS_)		Taper R Type (STPS_)		Tapered Type (SXPS_)	
	SFPST	SFPSS	SPPST	SPPSS	STPST	STPSS	SXPST	SXPSS
1								
2								
3								
4								

Order Example

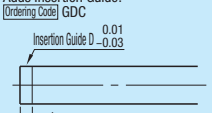
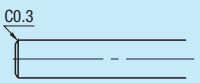
Part Number	-	L	-	P	-	B	-	H	-	T	-	E
SXSSS4	-	L10.0	-	P6.2	-	B5.0	-	H8.0	-	T3.0	-	E3.0
SPPSTPP2	-	L8.0	-	P2.0	-	B4.0	-	H3.5	-	T5.0		

Days to Ship: 8 Days — Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	L	-	P	-	B	-	H	-	T	-	E	-	(GDC / CC)
SFSST3	-	L6.0	-	P3.0	-	B6.0	-	H5.0	-	T2.0			-	CC

Alterations Code	Insertion Guide Machining GDC	C Chamfered Size CC
Spec.	Adds Insertion Guide. Ordering Code GDC  Applicable to D≥3, L≥8.0	D dimension C chamfering 0.1 is changed to 0.3. Ordering Code CC  Applicable when D≥2 ⊗Combination of GDC and CC is not available.
Price Adder	2,00	2,00

Small Diameter Locating Pins
-Male Thread with Shoulder-

CAD Data

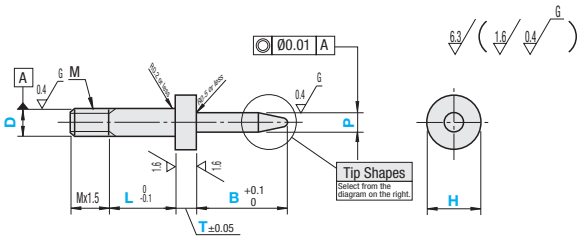
Male Thread with Shoulder

RoHS



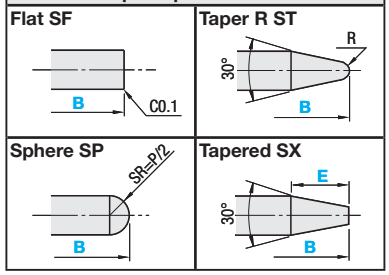
Part Number			M Material	H Hardness
Insertion Guide Shape	Tolerance, Mounting Method	Material Code		
SF(Flat) SP(Sphere) ST(Taper R) SX(Taper)	SN (Tolerance Standard - Male Thread)	T	ISO TC90	50~58HRC
	PN (Tolerance Configurable - Male Thread)	S	1.4301/ X5CrNi18-10	-

Features of ISO TC90 P.1281 Refer to the price list to select the available combination.



When L=0, a undercut will be added at the neck of the thread.

Tip Shape Selection



Tolerance Standard

Part Number				D Dimension Tolerance	L 0.5mm Increment	P 0.1mm Increment	P Dimension Tolerance	B 0.5mm Increment	H 0.1mm Increment	T 0.5mm Increment	E 0.5mm Increment (Taper Only)	R	M
Insertion Guide Shape		Mounting Method	Material Code	D									
SF(Flat)	ST(Taper R)	SN (Male Thread)	T	2	0 -0.005	0 1.0~10.0	1.0~4.0	0 -0.01	1.0~30.0	2.1~7.0	1.0~20.0	0.5~5.0	0.2	M2
				3			1.5~6.0			3.1~8.0			0.3	M3
SP(Sphere)	SX(Taper)		S	4			2.0~7.0			4.1~9.0			0.4	M4

P<H D<H For sphere, B-1≥P/2 For Taper R, B-1≥1.85P-2.75R For Tapered Type: B≥E+1, P≥E

Tolerance Selectable

Part Number				D Tolerance Selection	P Tolerance Selection	D	L 0.1mm Increment	P 0.01mm Increment	B 0.1mm Increment	H 0.01mm Increment	T 0.1mm Increment	E 0.5mm Increment (Taper Only)	R	M
Insertion Guide Shape		Mounting Method	Material Code											
SF(Flat)	ST(Taper R)	(Male Thread)	T	P (+0.005 0)	P (+0.005 0)	2	0 1.0~10.0	1.00~4.00	1.0~30.0	2.10~7.00	1.0~20.0	0.5~5.0	0.2	M2
				Q (±0.002)	Q (±0.002)	3		1.50~6.00		3.10~8.00			0.3	M3
SP(Sphere)	SX(Taper)		S	R (0 -0.005)	R (0 -0.005)	4		2.00~7.00		4.10~9.00			0.4	M4

P<H D<H For sphere, B-1≥P/2 For Taper R, B-1≥1.85P-2.75R For Tapered Type: B≥E+1, P≥E

Order Example

Part Number	-	L	-	P	-	B	-	H	-	T	-	E
SPSNT3	-	L3.5	-	P2.5	-	B10.5	-	H4.2	-	T5.5		
SXPNSQR2	-	L2.0	-	P3.2	-	B8.0	-	H4.00	-	T3.0	-	E3.0

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Tolerance Standard

D	€ Unit Price							
	Flat Type (SFSN_)		Sphere Type (SPSN_)		Taper R Type (STSN_)		Tapered Type (SXSN_)	
	SFSNT	SFSNS	SPSNT	SPSNS	STSNT	STSNS	SXSNT	SXSNS
2								
3								
4								

Tolerance Selectable

D	€ Unit Price							
	Flat Type (SFPN_)		Sphere Type (SPPN_)		Taper R Type (STPN_)		Tapered Type (SXPN_)	
	SFPNT	SFPNS	SPPNT	SPPNS	STPNT	STPNS	SXPNT	SXPNS
2								
3								
4								

Locating Pins Large Head Tapered
-Nonmagnetic Type-

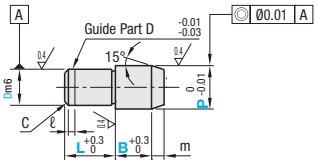
Features: Nonmagnetic (Aluminum) locating pins. Usable without magnetic effects to surroundings.



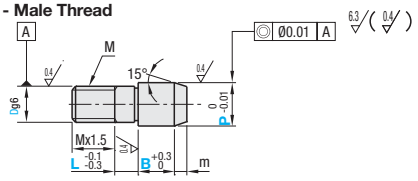
Type			Tip Shape	M Material	S Surface Treatment
Standard	Female Thread	Male Thread			
AFPMA	AFPMTA	AFPMNA	Round	EN AW-2017/ AlCu4MgSi	Clear Anodize
AFPMD	AFPMTD	AFPMND	Diamond		

Threads are prone to be crushed due to the soft material.
Refer to the recommended tightening torque in the table for mounting.

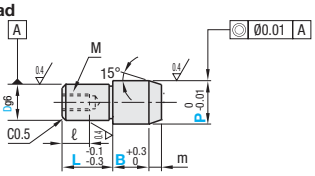
- Standard



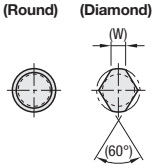
- Male Thread



- Female Thread



(Round) (Diamond)



Standard

Part Number Type	D	D Dim. Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	m	(W)	ℓ	€ Unit Price AFPMA	€ Unit Price AFPMD
AFPMA AFPMD (Diamond Shape is applicable when D≥2.)	1	+0.008 +0.002	1.50~2.50	2, 3	1.0~5.0	0.1	0.5	-	0		
	2		2.50~4.00	2~6	1.0~10.0	0.5	1	1.2			
	3		3.50~6.00	3~6	1.0~10.0		2	1.5			
	4	+0.012 +0.004	4.50~7.00	4~8	1.0~10.0			1.8	1		
	5		5.50~8.00	5~10	1.0~10.0	1	3	2.2			
	6		6.50~10.00	6~12	1.0~12.0			3			
	8	+0.015 +0.006	9.00~13.00	8~16	1.0~15.0	1.5		3.5			
	10		11.00~15.00	10~20	3.0~20.0		4	4			
	12	+0.018 +0.007	13.00~16.00	12~24	3.0~20.0	2		5			
	13		14.00~18.00	13~26	5.0~20.0			5.5	2		
	16		17.00~25.00	16~32	5.0~20.0	3	5	7			

Female Thread

Part Number Type	D	D Dim. Tol. g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	m	(W)	ℓ	M (Coarse)	Recommended Tightening Torque (kgfcm)	€ Unit Price AFPMTA	€ Unit Price AFPMTD
AFPMTA AFPMTD	6	-0.004 -0.012	6.50~10.00	6 (9) ~ 12	2.0~12.0	3	3	5	M3	6.25		
	8	-0.005 -0.014	9.00~13.00	8 (12) ~ 16	2.0~15.0	4	3.5	8	M5	10		
	10		11.00~15.00	10 (12) ~ 20	3.0~20.0		4					
	12	-0.006 -0.017	13.00~16.00	12~24	3.0~20.0		5					
	13		14.00~18.00	13 (14) ~ 26	5.0~20.0		5.5	10	M8	22.5		
	16		17.00~25.00	16~32	5.0~20.0	5	7	12				

L dimension in ( ) is applicable to diamond shape. Recommended tightening torque is the reference value.

Male Thread

Part Number Type	D	D Dim. Tol. g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	m	(W)	M (Coarse)	Recommended Tightening Torque (kgfcm)	€ Unit Price AFPMNA	€ Unit Price AFPMND
AFPMNA AFPMND	3	-0.002 -0.008	3.50~ 6.00	2~ 6	1.0~10.0	2	1.5	3	5		
	4	-0.004 -0.012	4.50~ 7.00	2~ 8	1.0~10.0	3	1.8	4	7		
	5		5.50~ 8.00	3~10	1.0~10.0		2.2	5	8.75		
	6		6.50~10.00	3~10	1.0~12.0		3	6	17.5		
	8	-0.005 -0.014	9.00~13.00	5~10	1.0~15.0	4	3.5	8	18.75		
	10		11.00~15.00	5~15	3.0~20.0		4	10	27.5		
	12	-0.006 -0.017	13.00~18.00	8~15	3.0~20.0		5	12	92.5		
	16		17.00~25.00	8~20	5.0~20.0	5	7	16	100		

Recommended tightening torque is the reference value.

Order Example

Part Number	-	P	-	L	-	B
AFPMA6	-	P8.50	-	L6	-	B3.0

Days to Ship: 8 Days

Alterations

Part Number	-	P	-	L	-	B	- (MH / RC / AC)
AFPMTA10	-	P12.00	-	L15	-	B6.0	- AC

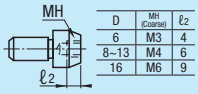
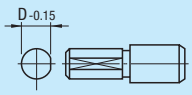
10 Days

Price

Volume Discount (Round down to one Cent.) P. 87

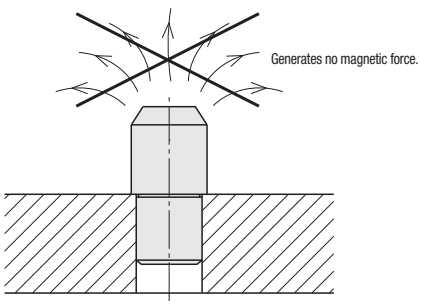
Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations	Tapping	Under neck radius alteration	Air Vent
Code	MH	RC	AC
Spec.	Adds tapped hole. Ordering Code MH	Changes the relief to R0.5. Ordering Code RC	Adds an air vent. Ordering Code AC
			
	D / MH (Coarse) / ℓ2: 6 / M3 / 4; 8~13 / M4 / 6; 16 / M6 / 9		
	Applicable when D≥6 B≥ℓ2+4 Not applicable for tapped pins.	Applicable when P-D≥2.	Not applicable to Male Thread Type.
Price Adder	3,00	3,00	2,00

Example

Since made of nonmagnetic metal, usable around small work pieces and the inside of the measuring instruments without magnetic effects.



Locating Pins Large Head Tapered
-With Plastic Head-

Reduced Delivery Time

Feature :Plastic material bonded to the tip of insertion guide prevents works from being scratched.

RoHS

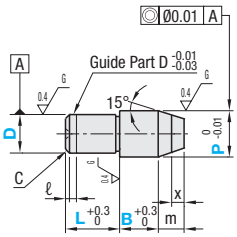


Material No.	Pin		Head	Type	D Tolerance / Shape Code
	M Material	H Hardness	M Plastic Material		
(1)	1.2510/100MnCrW4	Treated Hardness 60 ~ 63HRC	MC Nylon	JPPH	B(Standard, m6)
(2)	1.4301/X5CrNi18-10	-		SJPPH	PB(Standard, p6)
(3)	1.4125/X105CrMo17	Treated Hardness 50 ~ 55HRC		CJPPH	TA(Female Thread - g6)
					NA(Male Thread - g6)

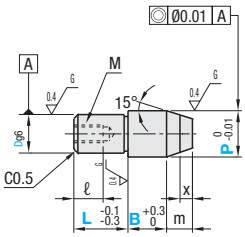
Features of MC Nylon P.2-859

1.4125/X105CrMo17 has an identification groove on D part.

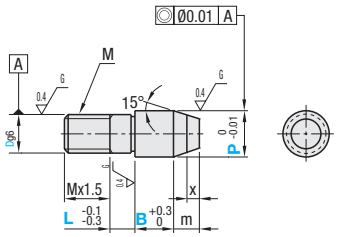
- Standard



- Female Thread



- Male Thread



* Insertion Guide is applicable to tolerance p6 type only.

Standard

Part Number Type	Shape Code	D	D Tolerance m6	D Tolerance p6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	m	x	ℓ	€ Unit Price (1) 1.2510/100MnCrW4 Hardening JPPHB JPPHPB	(2) 1.4301/X5CrNi18-10 SJPPHB SJPPHPB	(3) 1.4125/X105CrMo17 CJPPHB CJPPHPB
JPPH SJPPH CJPPH	B(m6) PB(p6)	5	+0.012 +0.004	+0.020 +0.012	5.50~8.00	5~10	2.0~10.0	1	5	4	1			
		6			6.50~10.00	6~12	2.0~12.0							
		8	+0.015 +0.006	+0.024 +0.015	9.00~13.00	8~16	2.0~15.0	1.5						
		10			11.00~15.00	10~20	3.0~20.0	2						
		12	+0.018 +0.007	+0.029 +0.018	13.00~16.00	12~24								
		13			14.00~18.00	13~26								
		16			17.00~25.00	16~32	5.0~20.0	3	6	5	2			
		20	+0.021 +0.008	+0.035 +0.022	22.00~30.00	20~40								

Female Thread

Part Number Type	Shape Code	D	D Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	m	x	M (Coarse)	ℓ	€ Unit Price (1) 1.2510 Hardening JPPHTA	(2) 1.4301 SJPPHTA	(3) 1.4125 CJPPHTA
JPPH SJPPH CJPPH	TA	5	-0.004 -0.012	5. 50~8.00	5~10	2.0~10.0	5	4	M2	3			
		6		6.50~10.00	6~12	2.0~12.0			M3	5			
		8	-0.005 -0.014	9.00~13.00	8~16	2.0~15.0			M5	8			
		10		11.00~15.00	10~20	3.0~20.0							
		12	-0.006 -0.017	13.00~16.00	12~24								
		13		14.00~18.00	13~26				M6	9			
		16		17.00~25.00	16~32	5.0~20.0	6	5					
		20	-0.007 -0.020	22.00~30.00	20~40								

When D=5, L+B≥Mx4+1 When D≥6, L+B≥Mx3+1

Male Thread

Part Number Type	Shape Code	D	D Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	m	x	M (Coarse)	€ Unit Price (1) 1.2510 Hardening JPPHNA	(2) 1.4301 SJPPHNA	(3) 1.4125 CJPPHNA
JPPH SJPPH CJPPH	NA	5	-0.004 -0.012	5.50~8.00	3~10	2.0~10.0	5	4	M5			
		6		6.50~10.00	3~10	2.0~12.0			M6			
		8	-0.005 -0.014	9.00~13.00	5~10	2.0~15.0			M8			
		10		11.00~15.00	5~15	3.0~20.0			M10			
		12	-0.006 -0.017	13.00~16.00	8~15				M12			
		16		17.00~25.00	8~20	5.0~20.0	6	5	M16			
		20	-0.007 -0.020	22.00~30.00	10~20				M20			

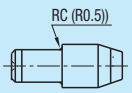
Order Example

Part Number Type	Shape	D	P	L	B
JPPH	B	8	P10.00	L10	B5.5
CJPPH	TA	16	P25.00	L22	B13.0

Alterations

Part Number - P - L - B - (RC) — SJPPHB10 - P15.00 - L12 - B6.4 - RC

10 Days

Alteration Code	Under neck radius alteration RC
Spec.	Changes the relief to R0.5. Ordering Code RC  Applicable when P-D≥2.
Price Adder	3,00

Days to Ship

10 Days — Express B 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Add. Spec. Locating Pins
-Large Head Plastic-

CAD Data

Conductive MC Nylon is now available.



RoHS

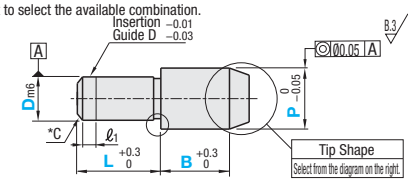
Type		Fixed Part Selection	Head Shape
P Dimension Configurable	P, L and B Dimension Configurable		
JP	FJP	Z(Standard)	A(Taper)
MJP	MFP		FA(Flat)
DJP	DFP	Y(Female Thread)	Q(Sphere)
JKP	FKP		

M Material	Recommended Operation Temperature
Polyacetal (Black)	-45 ~ 95°C
MC Nylon (Blue)	-40 ~ 120°C
Conductive MC Nylon CDR2 (Black)	-40 ~ 120°C
PEEK (Natural Ivory)	-50 ~ 250°C

Characteristics of Polyacetal, MC Nylon, Conductive MC Nylon and PEEK
P.2-859 -860
(Refer to standard grade for Polyacetal and MC Nylon.)

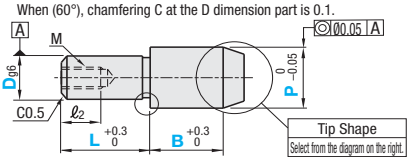
Refer to the price list to select the available combination.

- Standard



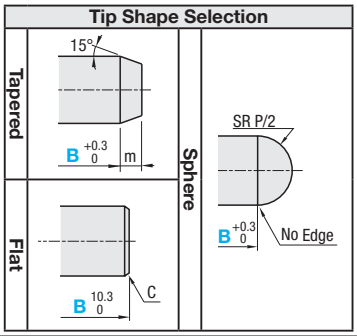
When (60°), chamfering C at the D dimension part is 0.1.

- Female Thread



The D dimension tolerance is the result of measurement at room temperature (20°C).

Tip Shape Selection



■P Dimension Configurable

Part Number: Type	Fixed Part Selection	Head Shape	D	D Dimension Tolerance m6	D Dimension Tolerance g6	P 0.01mm Increment	L: Standard	L: Female Thread	B	C	m	ℓ1	M (Coarse Thread)	ℓ2
JP	Z(Standard)	A(Taper)	1	+0.008 +0.002	-	1.50~2.50	3	-	3	0.3	0.5	0	-	-
MJP		FA(Flat)	2			2.50~4.00	4			0.5	1			
DJP	Y(Female Thread) ※Applicable when D≥6	Q(Sphere)	3			3.50~6.00	5		5		2			
JKP			4	+0.012 +0.004		4.50~7.00			6	1	3	1		
			5			5.50~8.00	10							
			6		-0.004 -0.012	6.50~10.00		10	8				M3	5
			8	+0.015 +0.006	-0.005 -0.014	9.00~13.00	15	15		1.5	4		M5	8
			10			11.00~15.00			10	2			M5	8

■P, L and B Dimension Configurable

Part Number: Type	Fixed Part Selection	Head Shape	D	D Dimension Tolerance m6	D Dimension Tolerance g6	P 0.01mm Increment	L 1mm Increment: Standard	L 1mm Increment: Female Thread	B 0.1mm Increment	C	m	ℓ1	M (Coarse Thread)	ℓ2
FJP	Z(Standard)	A(Taper)	1	+0.008 +0.002	-	1.50~2.50	2, 3	-	2.0~ 5.0	0.3	0.5	0	-	-
MFP		FA(Flat)	2			2.50~4.00	2~6		2.0~10.0	0.5	1			
DFP	Y(Female Thread) ※Applicable when D≥6	Q(Sphere)	3			3.50~6.00	3~6		2.0~10.0		2			
FKP			4	+0.012 +0.004		4.50~7.00	4~8		2.0~10.0					
			5			5.50~8.00	5~10		2.0~10.0	1	3	1		
			6		-0.004 -0.012	6.50~10.00	6~12	6~12	2.0~12.0				M3	5
			8	+0.015 +0.006	-0.005	9.00~13.00	8~16	8~16	2.0 (3.0) ~ 15.0	1.5	4		M5	8
			10		-0.014	11.00~15.00	10~20	10~20	3.0 (4.0) ~ 20.0	2			M5	8

※B dimension of Flat Type is in ( ).

Order Example

Part Number	-	P	-	L	-	B
Type		Fixed Part Selection		Head Shape		D
JP		Z		A		8 - 10.00
FJP		Y		Q		10 - P12.00 - L12 - B7.0

Days to Ship

8 Days | Express A | 5,00 EUR/ piece | P. 88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (※Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	L	-	B	-	(HSC)
JKPYA6	-	8.00					-	HSC
FKPYFA10	-	P13.00	-	L18	-	B5.0	-	HSC

10 Days

Alteration	Thread insert
Code	HSC
Spec.	Adds a thread insert on internal threads. D6:M3 D8 · 10: M5 Ordering Code HSC
Price Adder	5,00

■Standard

D	€ Unit Price Tapered								€ Unit Price Flat								€ Unit Price Sphere							
	JPZA	MJPZA	DJPZA	JKPZA	FJPZA	MFPZA	DFPZA	FKPZA	JPZFA	MJPZFA	DJPZFA	JKPZFA	FJPZFA	MFPZFA	DFPZFA	FKPZFA	JPZQ	MJPZQ	DJPZQ	JKPZQ	FJPZQ	MFPZQ	DFPZQ	FKPZQ
1																								
2																								
3																								
4																								
5																								
6																								
8																								
10																								

■Female Thread

D	€ Unit Price Tapered								€ Unit Price Flat								€ Unit Price Sphere							
	JPYA	MJPYA	DJPYA	JKPYA	FJPYA	MFPYA	DFPYA	FKPYA	JPYFA	MJPYFA	DJPYFA	JKPYFA	FJPYFA	MFPYFA	DFPYFA	FKPYFA	JPYQ	MJPYQ	DJPYQ	JKPYQ	FJPYQ	MFPYQ	DFPYQ	FKPYQ
6																								
8																								
10																								

Locating Pins
-Small Head Plastic-

CAD Data

Conductive MC Nylon is now available.



Type		Head Shape	Material	Recommended Operation Temperature
P Dimension Configurable	P, L and B Dimension Configurable			
JPZS	FJPZS	A(Taper) FA(Flat) Q(Sphere)	Polyacetal (Black)	-45 ~ 95°C
MJPZS	MFPZS		MC Nylon (Blue)	-40 ~ 120°C
DJPZS	DFPZS		Conductive MC Nylon CDR2 (Black)	-40 ~ 120°C
JKPZS	FKPZS		PEEK (Natural Ivory)	-50 ~ 250°C

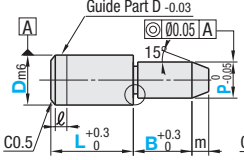
D	m	ℓ
2	0.5	0
3		
4	1	1
5	2	
6		
8	3	
10		

Refer to the price list to select the available combination.
The D dimension tolerance is the result of measurement at room temperature (20°C).

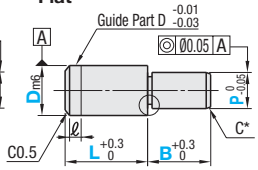
Characteristics of Polyacetal, MC Nylon, Conductive MC Nylon and PEEK P.2-859-860
(Refer to standard grade for Polyacetal and MC Nylon)

6.3

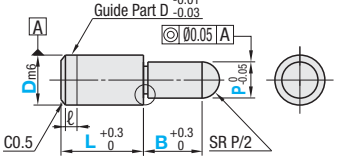
- Tapered



- Flat



- Sphere



P	C*
1.00~2.50	0.3
2.51~4.00	0.5
4.01~10.00	1



When P<3, a=0.5 d=P-0.1
When P≥3, a=1.0 d=P-0.2

RoHS

■P Dimension Configurable

Part Number: Type	Head Shape	D	D Dimension Tolerance m6	P 0.01mm Increment	L	B
JPZS MJPZS DJPZS JKPZS	A(Taper) Q(Sphere)	2	+0.008 +0.002	1.00~2.00	4	2
		3		1.00~3.00	5	3
		4	+0.012 +0.004	2.00~4.00		
		5		2.00~5.00	10	5
		6		2.00~6.00		
		8	+0.018 +0.007	3.00~8.00	15	6
		10		3.00~10.00		8

■P, L and B Dimension Configurable

Part Number: Type	Shape Selection	D	D Dimension Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment
FJPZS MFPZS DFPZS FKPZS	A(Taper) FA(Flat) Q(Sphere)	2	+0.008	1.00~2.00	2~4	2.0~10.0
		3	+0.002	1.00~3.00	3~6	2.0~10.0
		4	+0.012	2.00~4.00	4~8	2.0~10.0
		5	+0.004	2.00~5.00	5~10	2.0~10.0
		6		2.00~6.00	6~12	2.0~12.0
		8	+0.018	3.00~8.00	8~16	2.0~15.0
		10	+0.007	3.00~10.00	10~20	3.0~20.0

Order Example

Part Number	-	P	-	L	-	B
MFPZSQ6	-	P5.50	-	L10	-	B5.0

Days to Ship

8 Days | Express A | 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■P Dimension Configurable

D	€ Unit Price							
	Tapered				Sphere			
	JPZSA	MJPZSA	DJPZSA	JKPZSA	JPZSQ	MJPZSQ	DJPZSQ	JKPZSQ
2								
3								
4								
5								
6								
8								
10								

■P, L and B Dimension Configurable

D	€ Unit Price											
	Tapered				Flat				Sphere			
	FJPZSA	MFPZSA	DFPZSA	FKPZSA	FJPZSFA	MFPZSFA	DFPZSFA	FKPZSFA	FJPZSQ	MFPZSQ	DFPZSQ	FKPZSQ
2												
3												
4												
5												
6												
8												
10												

Locating Pins
-Small Diameter Plastic / Screw Mounted Plastic-

■Small Diameter Plastic

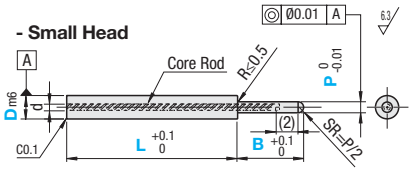


RoHS

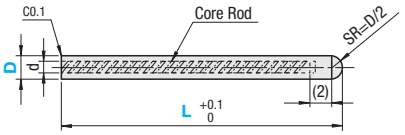
Part Number: Insertion Guide Shape, Tolerance	Material Code	Material
SNS(Sphere - Tolerance Standard)	BB	Bakelite (Black)
SNP(Sphere - Tolerance Selectable)	PM	Polyacetal (White)
SPS(Flat - Tolerance Standard)	EC	Conductive MC Nylon CDR6 (Black)
SNSH(Small Head - Tolerance Standard)	PK	PEEK (Natural Ivory)

- Refer to the price list to select the available combination.
- Core Rod material is 1.4301/X5CrNi18-10.
- There is a flat part of Ø0.2 or below at the tip of Straight Type, Spherical Type and Small Head Type.
- ⊗MC nylon of flat is not available.

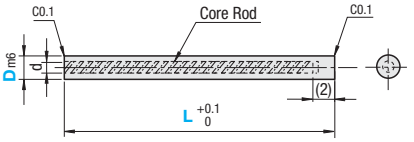
- Small Head



- Straight - Sphere



- Straight - Flat



■Feature

Since this type has a metal core, it is less prone to be broken when used for locating with sides.

Characteristic of resins P.2-859-860

- The D dimension tolerance is the result of measurement at room temperature (20°C).

■Sphere / Flat - Tolerance Standard

Part Number: Insertion Guide Shape	Material Code	D 0.1mm Increment	D Dimension Tolerance m6	L 0.5mm Increment	d	€ Unit Price SNSBB	SNSPM	SNSEC	SNSPK	SPSBB	SPSPM	SPSPK
SNS(Sphere) SPS(Flat)	BB PM EC(Sphere) PK	1.0~2.0	+0.008 +0.002	5.0~20.0	0.7							
		2.1~3.0			1.0							

■Sphere - Tolerance Selectable

Part Number: Insertion Guide Shape	Material Code	D Tolerance	D 0.01mm Increment	L 0.1mm Increment	d	€ Unit Price SNPBB	SNPPM	SNPEC	SNPPK
SNP	BB PM EC PK	M (m6) G (g6) H (h7)	1.00~2.00	5.0~20.0	0.7				
			2.01~3.00		1.0				

■Small Head - Tolerance Standard

Part Number: Insertion Guide Shape	Material Code	D 0.1mm Increment	D Dimension Tolerance m6	L 0.1mm Increment	P 0.1mm Increment	B 0.1mm Increment	d	€ Unit Price SNSHBB	SNSHPM	SNSHEC	SNSHPK
SNSH	BB PM EC PK	1.1~2.0	+0.008 +0.002	5.0~18.5	1.0~1.9 (D>P)	1.5~10.0 (B-P/2≥1.0)	0.4				
		2.1~3.0			1.0~2.9 (D>P)		0.7				

When D≤2, L+B≤15 When D>2, L+B≤20

Order Example

Part Number	-	D	-	L	-	P	-	B
SPSBB	-	D1.5	-	L7.5				
SNSHPM	-	D1.5	-	L10.0	-	P1.0	-	B1.5

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

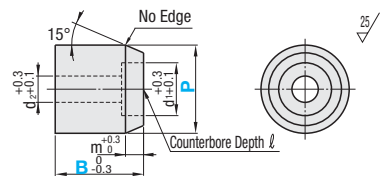
Days to Ship 8 Days

■Screw Mounted



RoHS

Type	Materials	Recommended Operation Temperature
JPAJ(Standard Grade) FPAJ(Precision Grade)	Polyacetal (White)	-45 ~ 95°C
JPEAJ(Standard Grade) FPEAJ(Precision Grade)	PEEK (Natural Ivory)	-50 ~ 250°C



Order Example

Part Number	-	P	-	B
JPAJ3	-	P8	-	B15

Days to Ship 8 Days — Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Part Number: Type	No.	P (Standard Grade) 1mm Increment	Tolerance	P (Precision Grade) 0.1mm Increment	Tolerance	B 1mm Increment	m	d1	d2	ℓ	Applicable Screw	€ Unit Price JPAJ	JPEAJ	FPAJ
JPAJ FPAJ JPEAJ FPEAJ	3	8~10	0 -0.2	8.0~10.0	0 -0.05	10~25	2	6.5	3.5	4.5	M3			
	4	10~12		10.0~12.0		15~35	3	8.0	4.5	5.5	M4			
	5	12~16		12.0~16.0		15~50	4	9.5	5.5	6.5	M5			

P Specified Standard Grade→1mm Increment Precision Grade→0.1mm Increment

Characteristics of Polyacetal P.2-859-860

Pusher Pins
-Straight / Small Head-

CAD Data

Straight Type

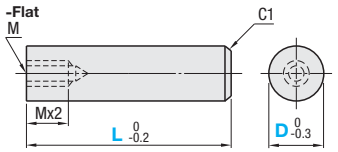


RoHS

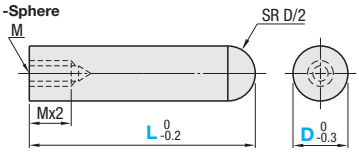
Type				Material	Recommended Operation Temperature
Flat	Sphere	Taper R	Tapered		
PPFJ	PPRJ	PPQJ	PPTJ	Polyacetal (White)	-45 ~ 95°C
				PEEK (Natural Ivory)	-50 ~ 250°C
PMPFJ	PMPRJ	PMPQJ	-	Conductive MC Nylon CDR2 (Black)	-40 ~ 120°C

Characteristics of Polyacetal, PEEK and Conductive MC Nylon
P.2-859-860

-Flat

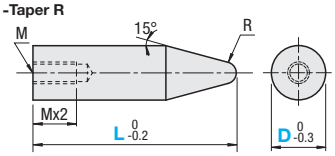


-Sphere

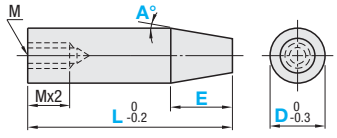


25

-Taper R



-Tapered



D-2EtanA≥1.0
(Tip diameter Ø1.0 or more)

When L<20, the thread length is Mx1.5.

Part Number Type	D	L0.5mm Increment Flat, Sphere	L0.5mm Increment Taper R	M (Coarse)	R
Flat PPFJ / Sphere PPRJ / Taper R PPQJ / PMPFJ / PMPRJ / PMPQJ	6	10.0~100.0	14.0~100.0	3	1
	8	12.0~100.0	18.0~100.0	4	1.5
	10	13.0~100.0	20.0~100.0		
	12	16.0~100.0	26.0~100.0	5	2
	15	19.0~100.0	34.0~100.0	6	
	20	20.0~100.0	40.0~100.0		3
	25		50.0~100.0		

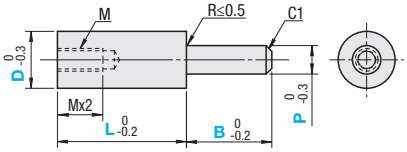
Part Number Type	D	L 0.5mm Increment	E 0.5mm Increment	A 1° Increment	M (Coarse)
Tapered PPTJ	6	14.0~100.0	5.0≤E≤40 and E≤L-Mx3	1~45	3
	8	18.0~100.0			4
	10	20.0~100.0			
	12				5
	15				6
	20				
	25				

D	€ Unit Price L10.0~59.5											L60.0~100.0									
	PPFJ	PPRJ	PPQJ	PPTJ	PEPFJ	PEPRJ	PEPQJ	PEPTJ	PMPFJ	PMPRJ	PMPQJ	PPFJ	PPRJ	PPQJ	PPTJ	PEPFJ	PEPRJ	PEPQJ	PEPTJ	PMPFJ	PMPRJ	PMPQJ
6																					
8																					
10																					
12																					
15																					
20																					
25																					

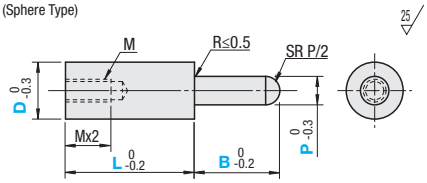
Small Head Type RoHS



PPFS
(Flat Type)



PPRS
(Sphere Type)



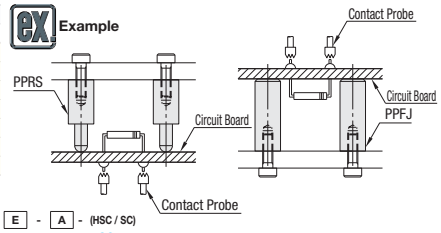
25

When L<20, the thread length is Mx1.5.

Material: Polyacetal (White)
Operating Ambient Temperature -45 ~ 95°C

Part Number Type	D	P 0.5mm Increment	L 0.5mm Increment	B 0.5mm Increment	M (Coarse)	€ Unit Price L10.0~59.5	€ Unit Price L60.0~100.0
PPFS (Flat Type) / PPRS (Sphere Type)	6	3.0~6.0	10.0~100.0	3.0~20.0 B≥P/2+1	3		
	8	4.0~8.0	11.0~100.0		4		
	10	5.0~10.0					
	12	6.0~12.0	13.0~100.0		5		
	15	8.0~15.0	14.0~100.0		6		
	20	10.0~20.0					
	25	13.0~25.0					

Example



Order Example

Straight Type

Part Number	-	L	-	E	-	A
PPFJ10	-	40.0				
PPTJ12	-	40.0	-	E10	-	A5

Small Head Type

Part Number	-	P	-	L	-	B
PPFS6	-	P3.0	-	L50.5	-	B10.5

Days to Ship

8 Days | Express A | 5,00 EUR/ piece | P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	L	-	E	-	A	- (HSC / SC)
PPFJ10	-	40.0					- SC15

10 Days

Alterations Code	Thread insert HSC	Width Across Flats SC
Spec.	Adds thread insert to M section part. Ordering Code HSC D6 : M3 D8~10 : M4 D12 : M5 D15~25 : M6	Width Across Flats SC: 1mm Increment SC+ℓ+D/2≤L SC>Mx3 Ordering Code SC15
Price Adder	5,00	4,00

D	W	ℓ
6	5	8
8	7	
10	8	10
12	10	
15	13	
20	17	
25	22	

Locating Pins

-With Air Vent Male Thread / Female Thread / Pilot Pins-

CAD Data

Features: Through hole for air vent enables easy insertion of pins.

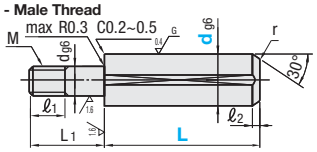
With Air Vent

RoHS

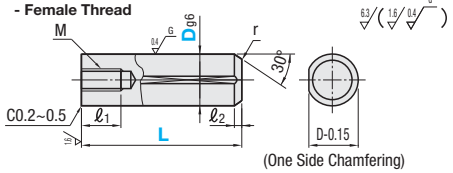


Type		Material	Hardness
Male Thread	Female Thread		
LPN	LPT	1.3505/100Cr6	Treated Hardness 45 ~ 50HRC
SLPN	SLPT	1.4301/X5CrNi18-10	-
CLPN	CLPT	1.4125/X105CrMo17	Treated Hardness 50 ~ 55HRC

- Male Thread



- Female Thread



Part Number Type		D Dimension Tolerance g6	L	L1	dg6	M (Coarse)	ℓ1 Male Thread	ℓ1 Female Thread	ℓ2	r	€ Unit Price LPN	SLPN	CLPN	LPT	SLPT	CLPT
Male Thread	Female Thread	5	10 12 15 20 25 30	12	3	M3	7	6	1.0	1.0						
		6	10 12 15 20 25 30	15	4	M4	10	8	1.5	1.5						
LPN	LPT	8	10* 12 15 20 25 30		5	M5										
SLPN	SLPT	10	15 20 25 30	20	6	M6	15	10	2.0	2.0						
CLPN	CLPT	12	15 20 25 30													

-0.004 -0.012 / -0.005 -0.014 / -0.006 -0.017 / -0.002 -0.008 / -0.004 -0.012

Male Thread: L=10 and 12 are applicable to SLPN and CLPN only. Female Thread: ℓ1=6 only when D=6 and L=10. * L=10 is not applicable when D=8. The pilot hole for tapping may go through.

Order Example

Part Number	-	L
LPN5	-	15
LPT6	-	20

Days to Ship 6 Days P.87

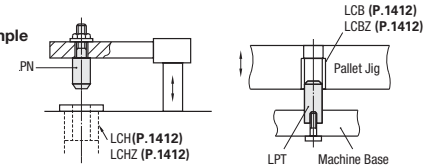
Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example

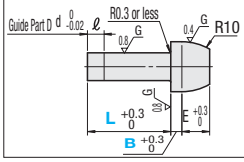


Pilot Pins

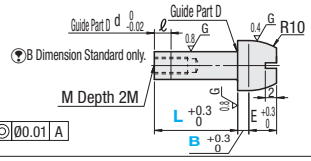
RoHS

B Dimension Standard		B Dimension Configurable			Materials	Hardness
Standard	Female Thread With Flathead Slot	Standard	Female Thread Without Flathead Slot	Female Thread With Flathead Slot		
HPST	HPSTM	HPSF	HPSFS	HPSFM	1.2510/100MnCrW4	Treated Hardness 60 ~ 63HRC
SHPST	SHPSTM	SHPSF	SHPSFS	SHPSFM	1.4301/X5CrNi18-10	-
CHPST	CHPSTM	CHPSF	CHPSFS	CHPSFM	1.4125/X105CrMo17	Treated Hardness 50 ~ 55HRC

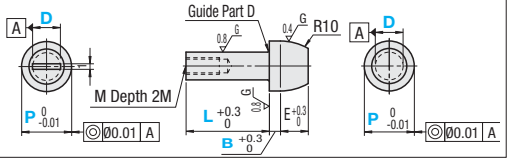
- Standard



- Female Thread with Flathead Slot



- Female Thread without Flathead Slot



B Dimension Standard - Female Thread

Part Number Type		D	D Dimension Tolerance	L Selection	P 0.01mm Increment	B	E	ℓ	M (Coarse)	€ Unit Price HPST	SHPST	CHPST	HPSTM	SHPSTM	CHPSTM
Standard	Female Thread With Flathead Slot	1	+0.012 +0.007	12	1.50~3.00	1	3	3	-						
HPST	HPSTM	2		12	2.50~4.00		4								
SHPST	SHPSTM	3		12 15	4.00~6.00										
CHPST	CHPSTM	4		12 15	5.00~7.00	2	5								
		5		12 15	6.00~8.00				M3						
		6		12 15	7.00~9.00		6								
	Applicable when D≥5.	8		15 18	9.00~13.00	3			M4						
		10		15 18	11.00~15.00				M5						

B Dimension Configurable - Standard

Part Number Type	D	D Dimension Tolerance	L Selection	P 0.01mm Increment	B 0.01mm Increment	E	ℓ	€ Unit Price HPSF	SHPSF	CHPSF
	1	+0.012 +0.007	3 4 5 6 8 10 12	1.50~3.00	1.00~5.00	3	1			
	2		4 5 6 8 10 12	2.50~4.00	1.00~10.00	4				
HPSF	3		5 6 8 10 12 15	4.00~6.00	1.00~10.00					
SHPSF	4		5 6 8 10 12 15	5.00~7.00	1.00~10.00	5				
CHPSF	5		5 6 8 10 12 15	6.00~8.00	1.00~10.00					
	6		6 8 10 12 15	7.00~10.00	1.00~12.00	6				
	8		8 10 12 15	9.00~13.00	1.00~15.00					
	10		10 12 15 18	11.00~15.00	1.00~20.00					

B Dimension Configurable - Female Thread

Part Number Type		D	D Dimension Tolerance g6	L Selection	P 0.01mm Increment	B 0.01mm Increment	E	M (Coarse)	€ Unit Price HPSFS	SHPSFS	CHPSFS	HPSFM	SHPSFM	CHPSFM
Without Flathead Slot	With Flathead Slot	5	-0.004 -0.012	6 8 10 12 15	6.00~8.00	1.00~10.00	5	M3						
HPSFS	HPSFM	6		6 8 10 12 15	7.00~10.00	1.00~12.00								
SHPSFS	SHPSFM	8	-0.005 -0.014	8 10 12 15 18	9.00~13.00	1.00~15.00	6	M4						
CHPSFS	CHPSFM	10		10 12 15 18	11.00~15.00	1.00~20.00		M5						

Order Example

Part Number	-	L	-	P	-	B
HPST5	-	15	-	P7.20		
HPSF4	-	10	-	P5.05	-	B1.20

Days to Ship 8 Days — Express A 3,00 EUR/ piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	L	-	P	-	(BC)
HPSTM5	-	15	-	P7.20	-	BC3.5

Alteration	Code	Spec.			Price Adder
B Dimension 	BC	BC=0.1mm Increment 1≤BC≤BCmax Ordering Code BC3.5 Applicable to B Standard Type only.	D	BCmax	2,00
			1, 2	3.0	
			3	4.0	
			4, 5	5.0	
			6	6.0	
			8, 10	7.0	

Locating Pins
-Double Stepped-

CAD Data

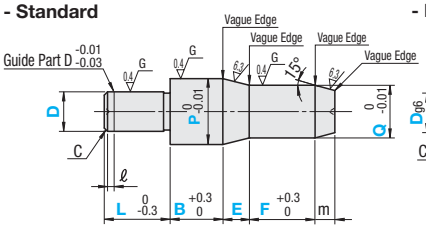
Features: Suitable for positioning works with different hole diameters.



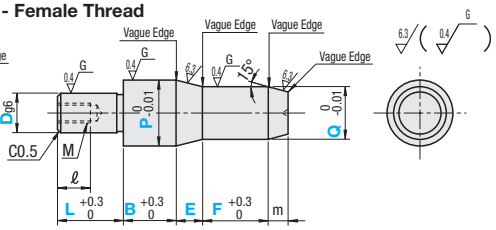
Standard		Female Thread	M	S	H
D Tolerance m6	D Tolerance p6	D Tolerance g6	Material	Surface Treatment	Hardness
WPM	WPP	WPG	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
SWPM	-	SWPG	1.4301/X5CrNi18-10	-	-
HWPM	HWPP	HWPG	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~

D	m6	p6	g6
2, 3	+0.008 +0.002	+0.012 +0.006	-0.002 -0.008
4~6	+0.012 +0.004	+0.020 +0.012	-0.004 -0.012
8, 10	+0.015 +0.006	+0.024 +0.015	-0.005 -0.014
12, 16	+0.018 +0.007	+0.029 +0.018	-0.006 -0.017
20	+0.021 +0.008	+0.035 +0.022	-0.007 -0.020

- Standard



- Female Thread



P>Q

Standard

Part Number Type	D	P 0.01mm Increment	Q 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	F 0.1mm Increment	m	C	ℓ	€ Unit Price WPM WPP	€ Unit Price SWPM	€ Unit Price HWPM HWPP
D Tolerance m6 WPM SWPM HWPM / D Tolerance p6 WPP HWPP	2	2.00~4.00	1.00~3.00	2~6	2.0~6.0	1.0~3.0	2.0~6.0	1	0.3	0			
	3	3.00~6.00	1.00~5.00	3~6	2.0~10.0	1.0~5.0	2.0~10.0	2	0.5	1			
	4	4.00~7.00	2.00~6.00	4~8	2.0~15.0	1.0~8.0	2.0~15.0	3	1				
	5	5.00~8.00	2.00~7.00	5~10	2.0~20.0	1.0~10.0	2.0~20.0						
	6	6.00~10.00	2.00~9.00	6~12									
	8	8.00~13.00	3.00~12.00	8~16				4	1.5	2			
	10	10.00~15.00	3.00~14.00	10~20	3.0~20.0		3.0~20.0		2				
	12	12.00~16.00	5.00~15.00	12~24									
	16	16.00~25.00	10.00~24.00	16~32	5.0~20.0		5.0~20.0	5	3				
	20	20.00~30.00	13.00~29.00	20~40									

P>Q

Female Thread

Part Number Type	D	P 0.01mm Increment	Q 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	F 0.1mm Increment	m	M (Coarse)	ℓ	€ Unit Price WPG	€ Unit Price SWPG	€ Unit Price HWPG
D Tolerance g6 WPG SWPG HWPG	6	6.00~10.00	2.00~9.00	6~12	2.0~20.0	1.0~10.0	2.0~20.0	3	M3	5			
	8	8.00~13.00	3.00~12.00	8~16				4	M4	8			
	10	10.00~15.00	3.00~14.00	10~20	3.0~20.0		3.0~20.0		M5				
	12	12.00~16.00	5.00~15.00	12~24									
	16	16.00~25.00	10.00~24.00	16~32	5.0~20.0		5.0~20.0	5	M8	12			
	20	20.00~30.00	13.00~29.00	20~40									

P>Q Note the strength of under-head part. P.1281

Order Example

Part Number	-	P	-	Q	-	L	-	B	-	E	-	F
SWPM5	-	P7.30	-	Q5.01	-	L10	-	B10.5	-	E5.2	-	F7.8
HWPG16	-	P20.02	-	Q15.30	-	L18	-	B12.3	-	E3.1	-	F5.0

Days to Ship: 8 Days — Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for hard chrome plated product.

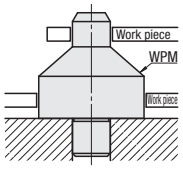
Price

Volume Discount (Round down to one Cent.) P.87

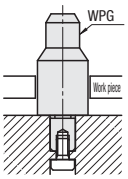
Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Applicable for different hole diameters.
(Suitable for reducing number of tooling changes.)



Small diameter (Q) dimension can be used as Insertion Guide.

Locating Pins

-Screw Mounted / Pilotted / Large Screw Mounted-

CAD Data

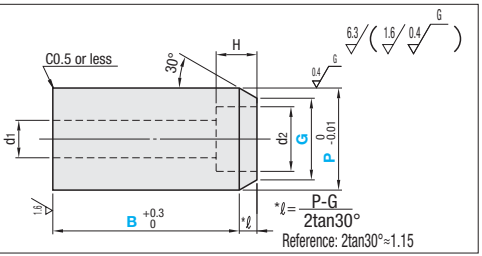
■Screw Mounted



RoHS

Type	M Material	S Surface Treatment	H Hardness
LPZ	1.1191/C45E	-	Treated Hardness 45 ~ 50HRC
LPZB	1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
LPZR	1.1191/C45E	Hard Chrome Plating	Treated Hardness 45 ~ 50HRC
LPZS	1.4301/X5CrNi18-10	-	-
LPZH	1.4301/X5CrNi18-10	Hard Chrome Plating	-
LPZC	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

(?)Hard Chrome Plating: Plating thickness 3µm/plating hardness 750HV~



Part Number Type	No.	P 0.01mm Increment	B 0.1mm Increment	G 1mm Increment	d1	d2	H	Applicable Screw	€ Unit Price LPZ	LPZB	LPZR	LPZS	LPZH	LPZC
LPZ LPZS LPZB LPZH LPZR LPZC	3	11.00~15.00	10.0~25.0	9≤G<P	3.5	6.5	4	M3						
	4	12.00~20.00	10.0~25.0	10≤G<P	4.5	8	5	M4						
	5	14.00~20.00	10.0~30.0	12≤G<P	5.5	9.5	6	M5						
	6	15.00~25.00	12.0~40.0	13≤G<P	6.5	11	7	M6						
	8	18.00~25.00	14.0~50.0	16≤G<P	9	14	9	M8						

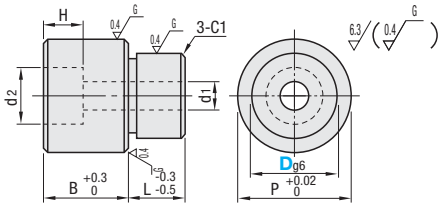
■With Pilot



RoHS

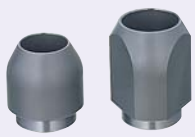
Type	M Material	S Surface Treatment	H Hardness
JPMA	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GJPMA	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC
SJPMA	1.4301/X5CrNi18-10	-	-
CJPMA	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

(?)Hard Chrome Plating: Plating thickness 3µm/plating hardness 750HV~



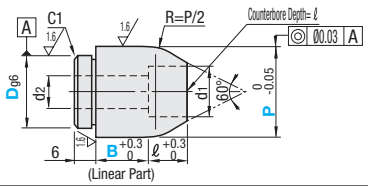
Part Number Type	Dg6		P	d1	d2	H	B	L	Applicable Screw	€ Unit Price JPMA	GJPMA	SJPMA	CJPMA
JPMA GJPMA SJPMA CJPMA	6	-0.004 -0.012	10	3.5	6.5	4	10	5	M 3				
	8	-0.005 -0.014	12	4.5	8	5			M 4				
	10		15	5.5	9.5	6			M 5				
	12	-0.006 -0.017	16	6.5	11	7			M 6				
	15		20	6.5	11	7	15	10					
	16			9	14	9			M 8				
	20	-0.007 -0.020	30	11	17.5	11			M10				
	25			14	20	13			M12				

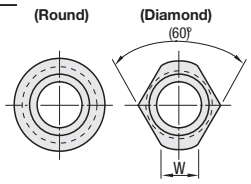
■Large Screw Mounted



RoHS

Type B Dimension Standard	Type B Dimension Configurable	Shape	M Material	S Surface Treatment	H Hardness
LBNA	LBNFA	Round	1.7220/34CrMo4	-	Treated Hardness 35 ~ 40HRC
LBND	-	Diamond			





Part Number Type	Dg6		P 0.1mm Increment	B Selection	B 1mm Increment	ℓ	W	d1	d2	Applicable Screw	€ Unit Price LBNA	LBND	LBNFA
LBNA(Round) LBND(Diamond) LBNFA(Round)	16	-0.006 -0.017	22.0~24.9	5 10 15 20	-	7.5	7	11	6.6	M 6			
	20	-0.007 -0.020	25.0~29.9		5~20	11	10	14	9	M 8			
			30.0~37.9			13		17.5	11	M10			
			38.0~39.9			16	12	20	14	M12			
			40.0~49.9			20	16						
			50.0~59.9			25	20						
	30		60.0~80.0			35	28						

(?)D dimension 16 is applicable to LBNA and LBND only.

Order Example

Part Number	P	B	G	
LPZ5	P16.00	B25.5	G15	(Screw Mounted)
JPMA15				(With Pilot)
LBNA20	P30.0	B10		(Large Screw Mounted)

Days to Ship

8 Days ⊗Express Serviceis not available for hard chrome plated products.

Express A 5,00 EUR/ piece P. 88

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.

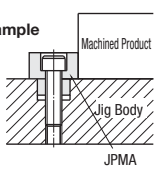
Price

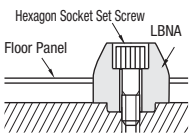
■Volume Discount (?)Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

Example





Locating Pins
-Eccentric / Flanged Flat Type-

CAD Data

■Eccentric

RoHS

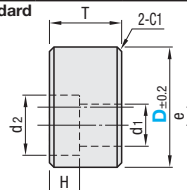


(Alteration LAC)

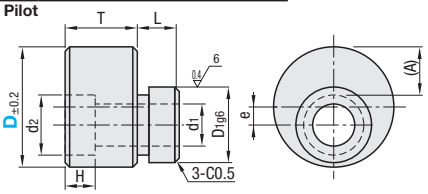
Type		Material	Surface Treatment	Hardness
Standard	Pilot			
JPEA	JPEIA	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GJPEA	-	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60~63HRC/Plating Hardness 750HV~
SJPEA	SJPEIA	1.4301/X5CrNi18-10	-	-
CJPEA	CJPEIA	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

6.3 / (0.4 / G)

- Standard



- Pilot



Part Number Type	D	d1	d2	T	H	Applicable Screw	e	(a)	D1	D1g6	L	€ Unit Price Standard JPEA	GJPEA	SJPEA	CJPEA	Pilot JPEIA	SJPEIA	CJPEIA
Standard: JPEA, GJPEA, SJPEA, CJPEA / Pilot: JPEIA, SJPEIA, CJPEIA	10	3.5	6.5	6	4	M 3	1	2.75	-	-	-							
	12	4.5	8	8	5	M 4	1.2	3.2	8	-0.006 -0.017	8							
	16	5.5	9.5	10	6	M 5	2	5.25	8		8							
	20	6.5	11	12	7	M 6	2.5	7	11	-0.007 -0.020	10							
	25	9	14	16	9	M 8	3.5	9	14		12							
	32	11	17.5	20	11	M10	5	12.25	17	-0.009 -0.025	15							
	40	14	20	24	13	M12	7	17	20		18							

Order Example
Part Number: JPEA32 / SJPEIA25

Days to Ship

-Standard: **8 Days** — Express A — 5,00 EUR/piece — P. 88
※A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Serviceis not available for hard 1.2510/100MnCrW4.

-Pilot: **10 Days** — Express B — 5,00 EUR/piece — P. 88
※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

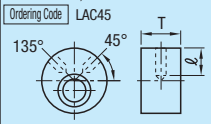
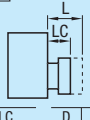
■Volume Discount (※Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

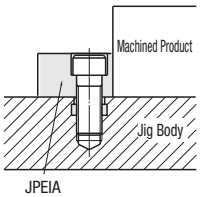
※For orders larger than indicated quantity, please request a quotation.
※Please request a quotation for orders of 20 or more pieces of Pilot type.

Alterations

Part Number - (LAC / LC)
JPEIA20 - LAC45
10 Days

Alterations	Wrench Hole Machining	Pilot Cut
Code	LAC	LC
Spec.	Machines wrench hole. Selection: 45°, 135° Ordering Code LAC45  D: 16, 20 / 25, 32, 40 — Wrench Hole Dia.: 3.5 / 5 — ℓ: 3 / 6 ※Only 1 hole can be specified.	Cuts the pilot section. Ordering Code LC8 (1 mm Increment)  D: 12, 16, 20 / 25, 32, 40 — LC: 6~7, 6~7, 6~9 / 8~11, 10~14, 12~17 ※Applicable to Pilot Type only.
Price Adder	3,00	3,00

Example



JPEIA

- Easy eccentric adjustment due to the presence of a pilot.

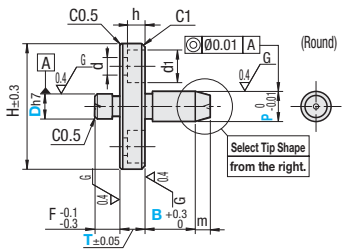
■Flanged Flat Type



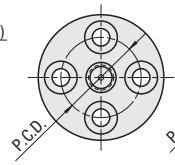
RoHS

Round Flange Round	Round Flange Diamond	Compact Flange Round	Compact Flange Diamond	Material	Surface Treatment	Hardness
MASA	MASD	MATA	MATD	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
SMASA	-	SMATA	-	1.4301/X5CrNi18-10	-	-
HMASA	-	HMATA	-	1.4301/X5CrNi18-10	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~

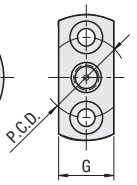
6.3 / (0.4 / G)



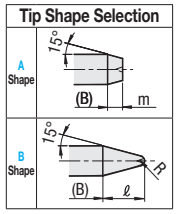
- Round Type



- Compact Type



Tip Shape Selection



※$\ell = \frac{P}{2}/\tan 15° + R - (R/\sin 15°)$
Reference: tan15°≈0.267,sin15 ≈0.259

Part Number Type	Round Flange	Compact Flange	Tip Shape	Dh7	P 0.01mm Increment	B 0.1mm Increment	T 0.1mm Increment	F	H	G	P.C.D.	d	d1	h	m	R	(W)
	MASA	MATA	A	5	0 -0.012	3.00~5.00	3.0~10.0	5.0~10.0	5	25	11	16	3.5	6.5	3.5	3	1	1.5
	MASD	MATD		6		4.00~7.00	3.0~12.0											1.8
	SMASA	SMATA		8	0 -0.015	6.00~9.00	3.0~15.0	7.0~15.0	5	36	16	24	5.5	9.5	5.5	4	1.5	2.2
	HMASA	HMATA		10		7.00~11.00	4.0~20.0										2	3
			B	12	0 -0.018	8.00~12.00	4.0~20.0										3	3.2
				16		13.00~16.00	5.0~20.0	11.0~20.0	10	54	24	37	9	14	9	5	4	4
				20	0 -0.021	16.00~20.00	5.0~20.0										5	5.5

Part Number: MASAA8 - P6.50 - B7.5 - T8.2
10 Days — Express B — 8,00 EUR/piece — P. 88
※A Express Charge of 21,60 EUR for 3 or more identical pieces.

■Volume Discount (※Round down to one Cent.) P. 87

Qty.	1~10	11~20
Rate	€ Unit Price	5%

※For orders larger than indicated quantity, please request a quotation.

■Round Flange

D	€ Unit Price MASA	MASD	SMASA	HMASA
5				
6				
8				
10				
12				
16				
20				

■Compact Flange

D	€ Unit Price MATA	MATD	SMATA	HMATA
8				
10				
12				
16				
20				

※For Compact Flange Type, D Dimension 5 and 6 are not applicable.

Flanged Locating Pins / Height Adjusting Blocks
-Mount Type-

CAD Data

Flanged Locating Pins

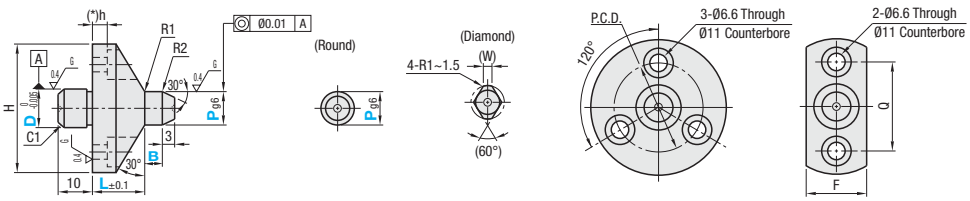


RoHS

Standard	Flange Compact	Pin Shape	Flange Shape	M Material	H Hardness
FLPDC	-	Diamond	Round	1.7242/16CrMo4	Anti-carburizing on Thread 55HRC ~ (Depth 0.7 ~ 0.8)
FLPAQ	FSPAQ	Round	Compact		
FLPDQ	FSPDQ	Diamond			

The head of mounting screw may project out of the flange surface depending on dimensions.

(*) When L=13~18, h=4
When L=19~23, h=7



Standard Type

Part Number Type	D 0 -0.005	L 1mm Increment	P 0.01mm Increment	B 1mm Increment	H	(W)	P.C.D.	Q	F	€ Unit Price FLPDC	FLPAQ	FLPDQ
FLPDC(Round) FLPAQ(Compact) FLPDQ	10	15~23	6.00~13.00	3~7	44	2.5	30	30	21			
	12		13.00~16.00		48	4	33	33	24			
	16		16.00~20.00		56	5	41	41	28			

Compact Flanged Type

Part Number Type	D 0 -0.005	L 1mm Increment	P 0.01mm Increment	B 1mm Increment	H	(W)	P.C.D.	Q	F	€ Unit Price FSPAQ	FSPDQ
FSPAQ FSPDQ(Compact)	12	13~23	6.00~13.00	3~7	38	2.5	25	25	17		
	16		13.00~16.00		42	4	29	29	21		
	20		16.00~20.00		46	5	33	33	25		

Order Example

Part Number	-	L	-	P	-	B
FLPDC12	-	L18	-	P14.25	-	B7

Alterations

Part Number	-	L	-	P	-	B	-	(KC)
FLPDQ12	-	L18	-	P14.25	-	B7	-	KC

10 Days

Days to Ship

10 Days — Express B 5,00 EUR/ piece — P.88

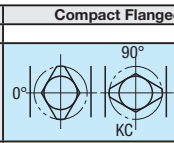
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alteration Code	Compact Flanged Type Diamond Direction KC
Spec.	 Changes the diamond angle to 90° from the standard position 0°. Applicable to Compact Flanged with Diamond Shape only.
Price Adder	3,00

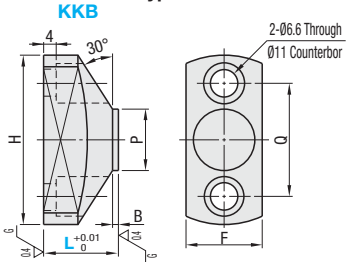
Seating Sensor Hole Type for confirming work seating is now available.

Height Adjusting Blocks

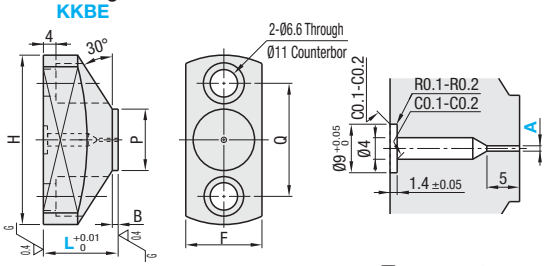


RoHS

-Standard Type KKB



-Seating Sensor Holes KKBE



M Material: 1.2510/100MnCrW4
H Hardness: 60 ~ 63 HRC

Standard Type

Part Number Type	L	P	B	H	Q	F	€ Unit Price KKB
KKB	15	20	2	50	36	22	
	20						
	25						

Seating Sensor Holes

Part Number Type	L	A Selection	P	B	H	Q	F	€ Unit Price KKBE
KKBE	15	1	20	2	50	36	22	
	20	1.5						
	25	2						

Order Example

Part Number	-	A
KKB15		
KKBE15	-	1

Days to Ship

- Standard: 8 Days — Express A 5,00 EUR/ piece — P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.

- Seating Sensor Holes: 10 Days — Express B 5,00 EUR/ piece — P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Locating Pins for Grippers / Plate Centering Pins

CAD Data

■Locating Pins for Grippers Locating Pins

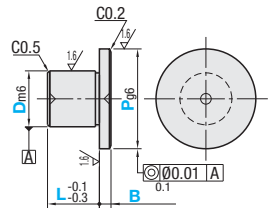


RoHS

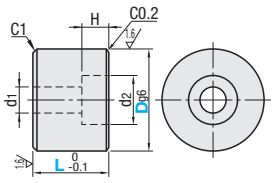
Type			M Material	S Surface Treatment
Stepped	Counterbored	Female Thread		
IPMA	IPZA	IPTA	1.1191/C45E	Electroless Nickel Plating
SIPMA	SIPZA	SIPTA	1.4301/X5CrNi18-10	-

6.3/ (1.6/)

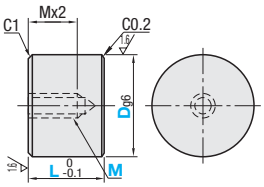
-Stepped



-Counterbored



-Female Thread



Center holes may disappear depending on dimension B.

■Stepped

Part Number Type	D	0.1mm Increment P	L	B	€ Unit Price IPMA	SIPMA
IPMA SIPMA	5	6.0~15.0	5.0~10.0	1.0~10.0		
	6	7.0~20.0				
	8	10.0~20.0				
	10	12.0~25.0				
	12	16.0~32.0				

■Counterbored

Part Number Type	No.	0.1mm Increment D	L	d1	d2	H	€ Unit Price IPZA	SIPZA
IPZA SIPZA	3	10.0~15.0	5.0~30.0	3.5	6.5	3.5		
	4	10.0~32.0	6.0~30.0	4.5	8	4.5		
	5	12.0~32.0	7.0~30.0	5.5	9.5	5.5		

■Female Thread

Part Number Type	M	0.1mm Increment D	L	€ Unit Price IPTA	SIPTA
IPTA SIPTA	3	10.0~20.0	3.0~30.0		
	4	10.0~32.0			
	5	12.0~32.0			

*When L is less than Mx4, the tapped hole or pilot hole for tapping may go through.

Order Example

■Stepped

Part Number	-	P	-	L	-	B
IPMA8	-	P13.0	-	L9.0	-	B1.5

■Counterbored / Female Thread

Part Number	-	D	-	L
IPZA4	-	D17.0	-	L7.0

Days to Ship

8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

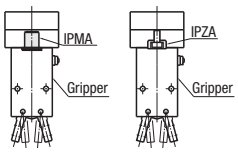
Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

ex

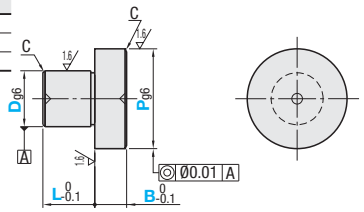


■Plate Centering Pins



RoHS

Part Number	M Material	S Surface Treatment
CMPA	1.1191/C45E	Electroless Nickel Plating
BCMPA	1.1191/C45E	Black Oxide
SCMPA	1.4301/X5CrNi18-10	-



6.3/ (1.6/)

Center holes may disappear depending on dimension B.

Part Number	0.1mm Increment D	P	L	B	C	€ Unit Price CMPA	BCMPA	SCMPA
CMPA BCMPA SCMPA	2.0~9.0	3.0~10.0	5.0~20.0	1.0~20.0	0.2			
	9.0~24.0	10.1~25.0		1.5~20.0	0.5			
	15.0~39.0	25.1~40.0		2.0~20.0	1			

D≤P-1 L≤Dx5 B≤Px5

Order Example

Part Number	-	D	-	P	-	L	-	B
CMPA	-	D5.0	-	P7.0	-	L9.0	-	B1.5

Days to Ship

8 Days

Express A 5,00 EUR/ piece P.88

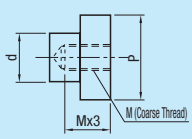
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	D	-	P	-	L	-	B	-	(NTP)
CMPA	-	D6.0	-	P7.0	-	L9.0	-	B1.5	-	NTP

10 Days

Alteration Code	Tapping NTP
Spec.	Adds a tap on P dimension part. Ordering Code NTP



D	M (Coarse Thread)
6.0~10.0	M3
10.1~15.0	M4
15.1~20.0	M5
20.1~28.0	M6
28.1~39.0	M8

Applicable when D≥6.0.
When L+B≤Mx5, the pilot hole of tapped may go through.

Price Adder	3,00

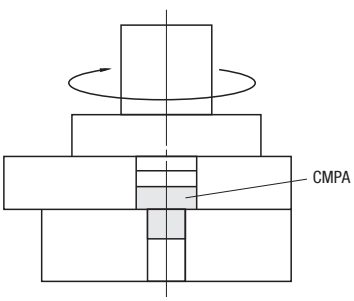
Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Applicable for center alignment of thin objects.

Feed Pins
-Straight-

CAD Data

Features: Length of tapered part can be configurable depending on the purpose or the environment.

Standard RoHS

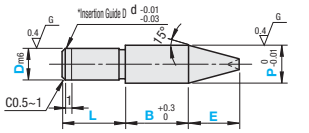


Standard Round	Standard Triangle	M Material	S Surface Treatment	H Hardness
FESM	FESMT	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GFESM	-	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC
SFESM	-	1.4301/X5CrNi18-10	-	-
HFESM	HFESMT	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~
CFESM	-	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

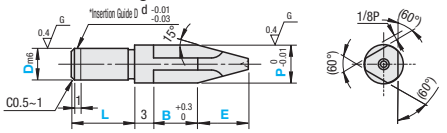
Hard Chrome Plated with Thickness of 3µm or More
P-2Etan15°≥0.73
(Tip dia. Ø0.73 or more Reference: tan15°≈0.267)

*No Insertion Guide for D2 Press-Fit Type.

- Standard - Round



- Standard - Triangle



Part Number Type	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	€ Unit Price Round 1.2510/100MnCrW4	Round 1.2510/100MnCrW4 Hard Chrome Plating	Round 1.4301/X5CrNi18-10	Round 1.4301/X5CrNi18-10 Hard Chrome Plating	Round 1.4125/X105CrMo17	Triangle 1.2510/100MnCrW4	Triangle 1.4301/X5CrNi18-10 Hard Chrome Plating
(Round) FESM GFESM SFESM HFESM CFESM	2	2.50~5.00	2~6	2.0~10.0	0.5~10.0							
(Triangle) FESMT HFESMT	3	3.50~5.00	3~6	2.0~10.0								
	4	4.50~7.00	4~8	2.0~10.0								
	5	5.50~8.00	5~10	2.0~10.0								
	6	6.50~10.00	6~12	2.0~12.0								
	8	9.00~13.00	8~16	2.0~15.0								
	10	10.00~13.00	10~20	2.0~20.0								

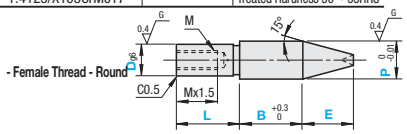
Female Thread RoHS



Female Thread Round	M Material	S Surface Treatment	H Hardness
FESG	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GFESG	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC
SFESG	1.4301/X5CrNi18-10	-	-
HFESG	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~
CFESG	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

Hard Chrome Plated with Thickness of 3µm or More
P-2Etan15°≥0.73
(Tip dia. Ø0.73 or more Reference: tan15°≈0.267)

- Female Thread - Round



Part Number Type	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	M (Coarse)	€ Unit Price Round 1.2510/100MnCrW4	Round 1.2510/100MnCrW4 Hard Chrome Plating	Round 1.4301/X5CrNi18-10	Round 1.4301/X5CrNi18-10 Hard Chrome Plating	Round 1.4125/X105CrMo17
(Round) FESG GFESG SFESG HFESG CFESG	6	6.50~10.00	6~12	2.0~12.0	0.5~10.0	M3					
	8	9.00~13.00	8~16	2.0~15.0		M4					
	10	10.00~13.00	10~20	3.0~20.0		M5					

Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281 Holes may go through.

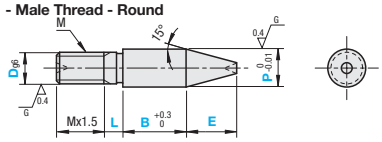
Male Thread RoHS



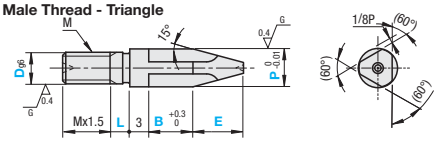
Male Thread Round	Male Thread Triangle	M Material	S Surface Treatment	H Hardness
FEPS	FEPST	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GFEPS	-	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC
SFEPS	SFEPST	1.4301/X5CrNi18-10	-	-
HFEPS	HFEPST	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~
CFEPS	CFEPST	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

Hard Chrome Plated with Thickness of 3µm or More
P-2Etan15°≥0.73
(Tip dia. Ø0.73 or more Reference: tan15°≈0.267)
When 0≤L<Pitchx2, the incomplete threaded portion of Male Thread is included in Mx1.5.

- Male Thread - Round



- Male Thread - Triangle



Part Number Type	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	M (Coarse)	€ Unit Price Round 1.2510	Round 1.2510 Hard Chrome Plating	Round 1.4301/X5CrNi18-10	Round 1.4301 Hard Chrome Plating	Round 1.4125	Triangle 1.2510	Triangle 1.4301/X5CrNi18-10	Triangle 1.4301 Hard Chrome Plating	Triangle 1.4125
(Round) FEPS GFEPS SFEPS HFEPS CFEPS	3	3.50~6.00	0~12	2.0~10.0	0.5~10.0	M3									
(Triangle) FEPST SFEPST HFEPST CFEPST	4	4.50~7.00		2.0~10.0		M4									
	5	5.50~8.00		2.0~10.0		M5									
	6	6.50~10.00		2.0~12.0		M6									
	8	9.00~13.00		2.0~15.0		M8									
	10	10.00~13.00		2.0~20.0		M10									

Order Example

Part Number	P	L	B	E
FESM4	P5.00	L6	B5.0	E3.0
GFESG8	P9.50	L10	B10.0	E5.5
FEPS3	P3.50	L3	B6.0	E2.0

Days to Ship

8 Days — Express A 5,00 EUR/piece P.88 — 8 Days - Hard Chrome Plated Products

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - P - L - B - E - (DRC / NNC)
FEPS3 - P3.50 - L3 - B6.0 - E2 - DRC
10 Days

Alteration is applicable to threaded only.

Alterations	Screwdriver Slot	Relief
		
Code	DRC	NNC
Spec.	Width 0.8mm Depth 1mm Ordering Code DRC	Adds a relief at the thread end. Ordering Code NNC Applicable when L=0.
Price Adder	1,00	1,00

Feed Pins
-Shouldered-

CAD Data

■ Standard RoHS

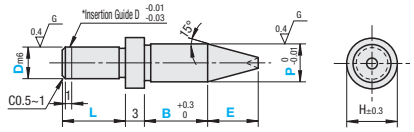


Standard Round	M Material	S Surface Treatment	H Hardness
FEPM	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GFEPM	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC
SFEPM	1.4301/X5CrNi18-10	-	-
HFEPM	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~
CFEPM	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

Hard Chrome Plated with Thickness of 3µm or More
P-2Etan15°≥0.73
(Tip dia. Ø0.73 or more Reference: tan15°≈0.267)

*No Insertion Guide for D2 Press-Fit Type.

- Standard - Round



Part Number Type	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	H	€ Unit Price Round 1.2510/100MnCrW4	1.2510/100MnCrW4 Hard Chrome Plating	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10 Hard Chrome Plating	1.4125/X105CrMo17
(Round) FEPM GFEPM SFEPM HFEPM CFEPM	2	2.00~3.00	2~6	2.0~10.0	0.5~10.0	5					
	3	2.00~5.00	3~6	2.0~10.0		6					
	4	2.00~5.00	4~8	2.0~10.0							
	5	3.00~7.00	5~10	2.0~10.0		8					
	6	4.00~7.00	6~12	2.0~12.0							
	8	5.00~9.00	8~16	2.0~15.0		11					
	10	6.00~11.00	10~20	2.0~20.0		13					

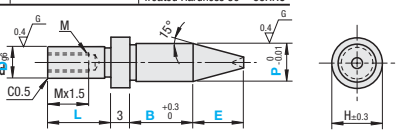
■ Female Thread RoHS



Female Thread Round	M Material	S Surface Treatment	H Hardness
FEPG	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GFEPG	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC
SFEPG	1.4301/X5CrNi18-10	-	-
HFEPG	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~
-	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

Hard Chrome Plated with Thickness of 3µm or More
P-2Etan15°≥0.73
(Tip dia. Ø0.73 or more Reference: tan15°≈0.267)

- Female Thread - Round



Part Number Type	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	H	M (Coarse)	€ Unit Price Round 1.2510/100MnCrW4	1.2510/100MnCrW4 Hard Chrome Plating	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10 Hard Chrome Plating
(Round) FEPG GFEPG SFEPG HFEPG	6	4.00~7.00	6~12	2.0~12.0	0.5~10.0	8	M3				
	8	5.00~9.00	8~16	2.0~15.0		11	M4				
	10	6.00~11.00	10~20	3.0~20.0		13	M5				

Note the strength of under-head part. P.1281 Please confirm pilot hole depth on P.1281 Holes may go through.

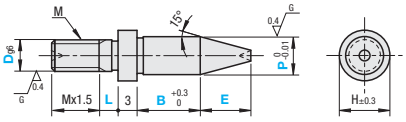
■ Male Thread RoHS



Male Thread Round	M Material	S Surface Treatment	H Hardness
FEPN	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
GFEPN	1.2510/100MnCrW4	Hard Chrome Plating	Treated Hardness 60 ~ 63HRC
SFEPN	1.4301/X5CrNi18-10	-	-
HFEPN	1.4301/X5CrNi18-10	Hard Chrome Plating	Plating Hardness 750HV ~
CFEPN	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

Hard Chrome Plated with Thickness of 3µm or More
P-2Etan15°≥0.73
(Tip dia. Ø0.73 or more Reference: tan15°≈0.267)
When 0≤L<Pitchx2, the incomplete threaded portion of Male Thread is included in Mx1.5.

- Male Thread - Round



Part Number Type	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	E 0.1mm Increment	H	M (Coarse)	€ Unit Price Round 1.2510/100MnCrW4	1.2510/100MnCrW4 Hard Chrome Plating	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10 Hard Chrome Plating	1.4125/X105CrMo17
(Round) FEPN GFEPN SFEPN HFEPN CFEPN	3	2.00~5.00	0~12	2.0~10.0	0.5~10.0	6	M3					
	4	2.00~5.00		2.0~10.0			M4					
	5	3.00~7.00		2.0~10.0		8	M5					
	6	4.00~7.00		2.0~12.0			M6					
	8	5.00~9.00		2.0~15.0		11	M8					
	10	6.00~11.00		2.0~20.0		13	M10					

Order Example

Part Number	P	L	B	E
FEPM5	P3.50	L5	B6.0	E4.0
SFEPG6	P5.00	L10	B10.0	E2.0
FEPN3	P2.01	L6	B6.0	E2.0

- Hard Chrome Plated Products

Days to Ship

8 Days | Express A | 5,00 EUR/ piece P.88 | 8 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

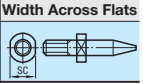
■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	P	L	B	E	(DRC*/ DRC / SC)	10 Days
FEPN3	P2.01	L6	B6.0	E2	DRC	

Alterations	Screwdriver Slot	Relief	Width Across Flats
			
Code	DRC	NNC	
Spec.	Width 0.8mm Depth 1mm Ordering Code DRC Applicable to Male Thread Type only	Adds a relief at the thread end. Ordering Code NNC Applicable when L=0. Applicable to Male Thread Type only	SC=1 mm Increment SC>D SC>P Ordering Code SC10
Price Adder	1,00	1,00	4,00

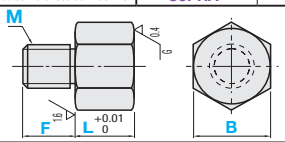
Height Adjusting Pins
-Male Thread-

■Hexagon RoHS



(Alteration CRC)

M Material	S Surface Treatment	H Hardness	Type: B, F Dimension Standard	Type: B Dimension Standard - F Dimension Configurable	Type: B Dimension Selectable - F Dimension Standard
1.7220/34CrMo4	-	Treated Hardness 46 ~ 50HRC	JPRA	JPRAM	JPRFA
	Black Oxide	Treated Hardness 46 ~ 50HRC	BJPRA	BJPRAM	BJPRFA
	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 46 ~ 50HRC Plating Hardness 750HV ~	HJPRA	HJPRAM	HJPRFA
1.4301/X5CrNi18-10	-	-	SJPRA	SJPRAM	SJPRFA
1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPRA	CJPRAM	CJPRFA





* Under-head of B dimension Standard and F dimension configurable type is R0.5 or less. Beware of chamfering dimension on hole sides.

Part Number: Type: B, F Dimension Standard	Type: B Dimension Standard - F Dimension Configurable	Type: B Dimension Selectable - F Dimension Standard	M (Coarse Thread)	L 0.01mm Increment	B Standard	B Selection	F Standard	F 1mm Increment
JPRA	JPRAM	JPRFA	3	2.00~10.00	6	5	5	3~36 (M≤F≤Mx3)
BJPRA	BJPRAM	BJPRFA	4		7	6	6	
HJPRA	HJPRAM	HJPRFA	5		8	7	8	
SJPRA	SJPRAM	SJPRFA	6	5.00~30.00	10	8		
CJPRA	CJPRAM	CJPRFA	8		13	10 12	10	
			10	10.00~50.00	17	12 13 14	12	
			12		19	14 17	15	

M (Coarse Thread)	€ Unit Price: B, F Dimension Standard					B Dimension Standard - F Dimension Configurable					B Dimension Selectable - F Dimension Standard				
	JPRA	BJPRA	HJPRA	SJPRA	CJPRA	JPRAM	BJPRAM	HJPRAM	SJPRAM	CJPRAM	JPRFA	BJPRFA	HJPRFA	SJPRFA	CJPRFA
3															
4															
5															
6															
8															
10															
12															

■Round, Width Across Flats RoHS

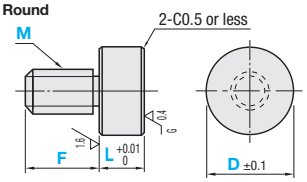


M Material	S Surface Treatment	H Hardness	Type	Ordering Code, Shape Code: F Dimension Standard	Ordering Code, Shape Code: F Dimension Configurable
1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPH	AF (Round) AW (Width Across Flats)	AFM (Round) AWM (Width Across Flats)
	Black Oxide	Treated Hardness 60 ~ 63HRC	BJPH		
	Hard Chrome Plating Plating Thickness 3µm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	HJPH		
1.4301/X5CrNi18-10	-	-	SJPH		
1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPH		
1.7242/16CrMo4	-	Carburized Treated Hardness 55HRC ~ (Depth 0.7 ~ 0.8)	TJPH		

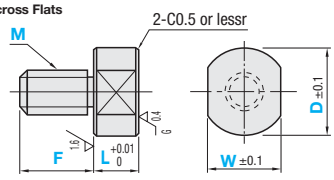
Refer to the price list to select the available combination.

*Under-head of F dimension configurable type is R0.5 or less. Beware of chamfering dimension on hole sides.

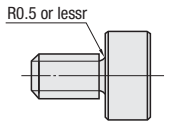
- Round



- Width Across Flats







Part Number: Type	Shape Code	M (Coarse Thread)	L 0.01mm Increment	D 1mm Increment	W 1mm Increment	F Standard	F 1mm Increment
JPH	(Round)	3	2.00~10.00	5~30 (M<D<Mx5)	4~13	5	3~36 (M≤F≤Mx3)
BJPH	AF (F Dimension Standard)	4			5~18	6	
HJPH	AFM (F Dimension Configurable)	5			6~23	8	
SJPH		6	5.00~30.00		7~28		
CJPH	(Width Across Flats)	8			9~29	10	
TJPH	AW (F Dimension Standard)	10	10.00~50.00		11~29	12	
	AWM (F Dimension Configurable)	12			13~29	15	

M<W<D

■Round

M (Coarse Thread)	€ Unit Price F Dimension Standard: JPHAF	BJPHAF	HJPHAF	SJPHAF	CJPHAF	TJPHAF	€ Unit Price F Dimension Configurable: JPHAFM	BJPHAFM	HJPHAFM	SJPHAFM	CJPHAFM	TJPHAFM
3												
4												
5												
6												
8												
10												
12												

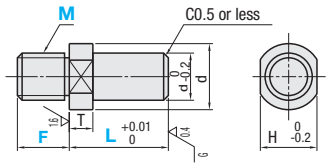
■Width Across Flats

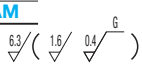
M (Coarse Thread)	€ Unit Price F Dimension Standard: JPHAW	BJPHAW	HJPHAW	SJPHAW	CJPHAW	TJPHAW	€ Unit Price F Dimension Configurable: JPHAWM	BJPHAWM	HJPHAWM	SJPHAWM	CJPHAWM	TJPHAWM
3												
4												
5												
6												
8												
10												
12												

■Shouldered RoHS



Material	Surface Treatment	Hardness	Type: F Dimension Standard	Type: F Dimension Configurable
1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC	JPHA	JPHAM
	Black Oxide	Treated Hardness 60 ~ 63HRC	BJPHA	BJPHAM
	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~	HJPHA	HJPHAM
1.4301/X5CrNi18-10	-	-	SJPHA	SJPHAM
1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC	CJPHA	CJPHAM
1.7242/16CrMo4	-	Carburized Treated Hardness 55HRC ~ (Depth 0.7 ~ 0.8)	-	TJPHAM





*Under-head of F dimension configurable type is R0.5 or less. Beware of chamfering dimension on hole sides.

Part Number: Type: F Dimension Standard	Part Number: Type: F Dimension Configurable	M (Coarse Thread)	L 0.01mm Increment	F: Standard	F: 1mm Increment	D	d	T	H
JPHA	JPHAM	3	5.00~10.00	5	3~36 (M≤F≤Mx3)	3	5	3	3
BJPHA	BJPHAM	4		6		4	6		4
HJPHA	HJPHAM	5		8		5	8		5
SJPHA	SJPHAM	6	5.00~30.00			6	10		8
CJPHA	CJPHAM	8		10		8	12		10
	TJPHAM	10	10.00~50.00	12		10	14	5	12
		12		15		12	16		14

M (Coarse Thread)	€ Unit Price F Dimension Standard: JPHA	BJPHA	HJPHA	SJPHA	CJPHA	€ Unit Price F Dimension Configurable: JPHAM	BJPHAM	HJPHAM	SJPHAM	CJPHAM	TJPHAM
3											
4											
5											
6											
8											
10											
12											

Order Example

	Part Number	L	B	D	W	F
(Hexagon - B and F Dimension Standard)	JPRA4	10.00				
(Hexagon - B Dimension Standard - F Dimension Configurable)	JPRAM8	L15.00				F12
(Hexagon - B Dimension Selectable - F Dimension Standard)	JPRFA6	20.00	8			
(Round - F Dim. Standard)	JPHAF3	5.21		6		
(Round - F Dim. Configurable)	JPHAFM3	L5.21		D6		F9
(Width Across Flats - F Dim. Standard)	HJPHAW10	20.00		15	W11	
(Width Across Flats - F Dim. Configurable)	HJPHAWM10	L20.00		D15	W11	F15
(Flanged - F Dim. Standard)	JPHA8	14.00				
(Flanged - F Dim. Configurable)	JPHAM8	L14.00				F10

Days to Ship

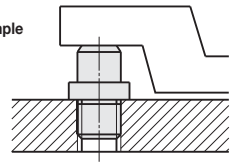
8 Days — Express A — 5,00 EUR/piece — P.88
- A Express Charge of 13,50 EUR for 3 or more identical pieces.1,350a
- Express Serviceis not available for hard chrome plated product.

- 1.7242/16CrMo4 Carburized

10 Days — Express B — 5,00 EUR/piece — P.88
- A Express Charge of 13,50 EUR for 3 or more identical pieces.

5 Days

Example



Price

■Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

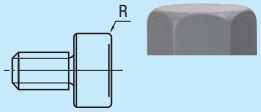
For orders larger than indicated quantity, please request a quotation.

Alterations

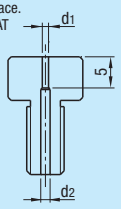
Part Number	L	B	D	W	F	(CRC / EAT)	10 Days
JPRA10	20.5					CRC	
HJPHAWM10	L15.00		D20	W20	F15	EAT	

Alterations	Addition of Radius to End Face	Seating Sensor Holes
Code	CRC	EAT
Spec.	Chamfering of work receiving-surface is changed to R1. Hexagon is R size in the right table. Ordering Code CRC ⊗No addition of radius to width across two flats. Applicable when L≥15. Hexagon is applicable to B≥10.	Machines seating sensor holes on the work-receiving surface. Hole diameters are shown in the table below. Ordering Code EAT Applicable when D≥6. Application conditions vary depending on F and L dimensions.
Price Adder	3,00	5,00

B	R
10	2
12, 13	2.5
14	3
17, 19	4



M	Narrow Hole Dia. d1	Through Hole Dia. d2	Applicable Overall Length Conditions
6	1.0	1.5	F+L≤20
8	1.0	2.5	F+L≤30
10	1.5	3.5	F+L≤40
12	1.5	4.5	F+L≤50



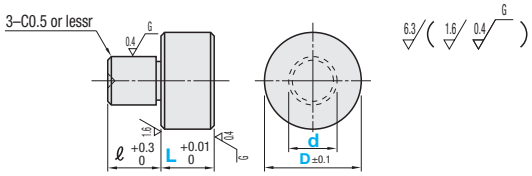
Height Adjusting Pins
-Press-Fit / Counterbore-

CAD Data

Press Fit Type RoHS



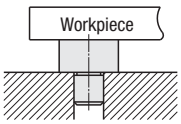
Type				Material	Surface Treatment	Hardness
L Dimension Configurable		D, L Dimension Configurable				
d Tolerance p6	d Tolerance m6	d Tolerance p6	d Tolerance m6			
JPAT	JPAM	JPATF	JPAMF	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
BJPAT	BJPAM	BJPATF	BJPAMF	1.2510/100MnCrW4	Black Oxide	Treated Hardness 60 ~ 63HRC
HJPAT	HJPAM	HJPATF	HJPAMF	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~
SJPAT	SJPAM	SJPATF	SJPAMF	1.4301/X5CrNi18-10	-	-
CJPAT	CJPAM	CJPATF	CJPAMF	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC



L Dimension Configurable

Part Number Type	d	D Dimension Tolerance m6	D Dimension Tolerance p6	L 0.01mm Increment	D	ℓ	€ Unit Price JPAT JPAM	BJPAT BJPAM	HJPAT HJPAM	SJPAT SJPAM	CJPAT CJPAM
d Tolerance p6 / d Tolerance m6											
JPAT JPAM	3	+0.008 +0.002	+0.012 +0.006	2.00~10.00	6	5					
BJPAT BJPAM	4	+0.012 +0.004	+0.020 +0.012		8	6					
HJPAT HJPAM	5				10	8					
SJPAT SJPAM	6			5.00~30.00	12						
CJPAT CJPAM	8	+0.015	+0.024		16	10					
	10	+0.006	+0.015	10.00~50.00	18	12					
	12	+0.018 +0.007	+0.029 +0.018		20	15					

Example

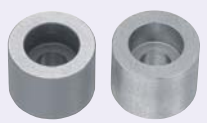


D, L Dimension Configurable

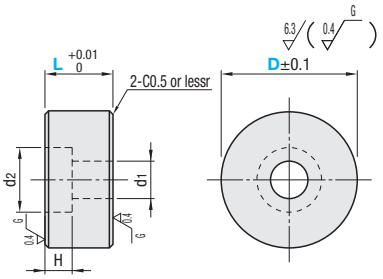
Part Number Type	d	D Dimension Tolerance m6	D Dimension Tolerance p6	L 0.01mm Increment	D 1mm Increment	ℓ	€ Unit Price JPATF JPAMF	BJPATF BJPAMF	HJPATF HJPAMF	SJPATF SJPAMF	CJPATF CJPAMF
d Tolerance p6 / d Tolerance m6											
JPATF JPAMF	3	+0.008 +0.002	+0.012 +0.006	2.00~10.00	5~30 (d<D<5d)	5					
BJPATF BJPAMF	4	+0.012 +0.004	+0.020 +0.012			6					
HJPATF HJPAMF	5					8					
SJPATF SJPAMF	6			5.00~30.00							
CJPATF CJPAMF	8	+0.015	+0.024			10					
	10	+0.006	+0.015	10.00~50.00		12					
	12	+0.018 +0.007	+0.029 +0.018			15					

L Dimension Configurable - D Dimension Standard Type is up to 20% more economical than the conventional products.

Counterbored RoHS



Type		Material	Surface Treatment	Hardness
L Dimension Configurable	D, L Dimension Configurable			
JPHU	JPHUZ	1.2510/100MnCrW4	-	Treated Hardness 60 ~ 63HRC
BJPHU	BJPHUZ	1.2510/100MnCrW4	Black Oxide	Treated Hardness 60 ~ 63HRC
HJPHU	HJPHUZ	1.2510/100MnCrW4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~
SJPHU	SJPHUZ	1.4301/X5CrNi18-10	-	-
CJPHU	CJPHUZ	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC



L Dimension Configurable

Part Number Type	No.	L 0.01mm Increment	D	d_1	d_2	H	Applicable Screw	€ Unit Price JPHU	BJPHU	HJPHU	SJPHU	CJPHU
JPHU	3	6.00~15.00	12	3.5	6.5	4	M3					
BJPHU	4	7.00~20.00	13	4.5	8	5	M4					
HJPHU	5	8.00~20.00	15	5.5	9.5	6	M5					
SJPHU	6	9.00~25.00	20	6.5	11	7	M6					
CJPHU	8	11.00~30.00	30	9	14	9	M8					

D, L Dimension Configurable

Part Number Type	No.	L 0.01mm Increment	D 1mm Increment	d_1	d_2	H	Applicable Screw	€ Unit Price JPHUZ	BJPHUZ	HJPHUZ	SJPHUZ	CJPHUZ
JPHUZ	3	6.00~15.00	10~15	3.5	6.5	4	M3					
BJPHUZ	4	7.00~20.00	12~20	4.5	8	5	M4					
HJPHUZ	5	8.00~20.00	15~20	5.5	9.5	6	M5					
SJPHUZ	6	9.00~25.00	15~25	6.5	11	7	M6					
CJPHUZ	8	11.00~30.00	18~30	9	14	9	M8					

Order Example

Part Number	-	L	
JPAT8	-	15.00	(Press Fit - L Dimension Configurable)
JPHU3	-	10.00	(Counterbore - L Dimension Configurable)

Part Number	-	L	-	D	
JPATF8	-	15.00	-	12	(Press Fit - D, L Dimension Configurable)
JPHUZ5	-	10.00	-	20	(Counterbore - D, L Dimension Configurable)

Days to Ship

8 Days — Express A — 5,00 EUR/ piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for hard chrome plated product.

5 Days

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

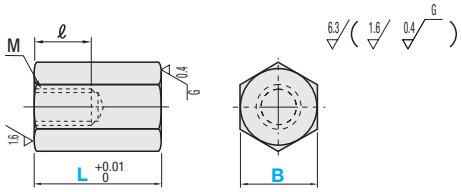
Height Adjusting Pins
-Female Thread-

CAD Data

■Hexagon RoHS



Type	Material	Surface Treatment	Hardness
JPRM	1.7220/34CrMo4	-	Treated Hardness 46 ~ 50HRC
BJPRM	1.7220/34CrMo4	Black Oxide	Treated Hardness 46 ~ 50HRC
HJPRM	1.7220/34CrMo4	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 46 ~ 50HRC Plating Hardness 750HV~



Part Number Type	B	L 0.01mm Increment	M (Coarse)	ℓ	€ Unit Price JPRM	BJPRM	HJPRM
JPRM BJPRM HJPRM	8	16.00~50.00	M5	8			
	10	16.00~50.00					
	13	22.00~50.00	M8	12			
	17	22.00~50.00					
	19	22.00~50.00					

Order Example: Part Number JPRM8 - L 20.00

Price

■Volume Discount (Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days / 5 Days

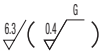
Express A 5,00 EUR/ piece P88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for hard chrome plated product.

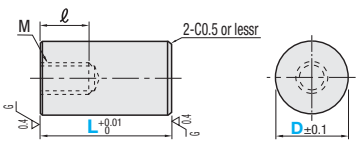
■Round, Width Across Flats RoHS



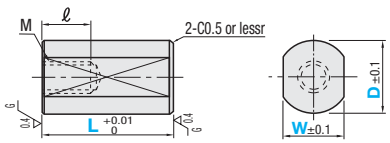
Round	Width Across Flats	Material	Surface Treatment	Hardness
JPHUF	JPHUW	1.2510/ 100MnCrW4	-	Treated Hardness 60 ~ 63HRC
BJPHUF	BJPHUW		Black Oxide	Treated Hardness 60 ~ 63HRC
HJPHUF	HJPHUW		Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV~



- Round



- Width Across Flats



Part Number Type	Round	Width Across Flats	D	L 0.01mm Increment	W 1mm Increment	M (Coarse)	ℓ
Round JPHUF BJPHUF HJPHUF / Width Across Flats JPHUW BJPHUW HJPHUW			6	12.00~30.00	-	M3	5
			8	16.00~30.00	-	M5	8
			10	16.00~50.00	8~9		
			12	16.00~50.00	8~11		
			16	22.00~50.00	11~15	M8	12
			20	22.00~50.00	11~19		

M+2<W<D Width across flats is D≥10.

D	Round € Unit Price JPHUF	BJPHUF	HJPHUF	Width Across Flats € Unit Price JPHUW	BJPHUW	HJPHUW
6						
8						
10						
12						
16						
20						

Order Example: Part Number JPHUF6 - L 20.00 / BJPHUW10 - L 17.00 - W W8 (Round) (Width Across Flats)

Price

■Volume Discount (Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days / 5 Days

Express A 5,00 EUR/ piece P88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for hard chrome plated product.

Height Adjusting Pins / Height Adjusting Caps
-Small Head-

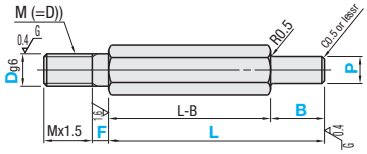
CAD Data

Height Adjusting Pins

RoHS



Type	Material	Hardness
JPSRA	1.7220/34CrMo4	Treated Hardness 46~50HRC



L	Tolerance
5.00~50.00	+0.01 0
50.01~100.00	+0.02 0

Part Number Type	G	L 0.01mm Increment	P 0.5mm Increment	B 0.1mm Increment	F 1mm Increment	D (M)	(C)	€ Unit Price
JPSRA	8	5.00~50.00	3.0~5.0	2.0~30.0 (B≤Px4.0)	2~4 or 0	5	9.2	
	10	5.00~60.00	4.0~6.0		2~5 or 0		11.5	
	13	5.00~80.00	4.0~8.0		2~6 or 0	8	15.0	
	17	10.00~80.00	5.0~10.0		2~8 or 0		19.6	
	19	10.00~100.00	5.0~12.0		2~10 or 0		21.9	

When F=0, a relief will be added at the neck of thread.

Order Example

Part Number	-	L	-	P	-	B	-	F
JPSRA17	-	L12.00	-	P8.0	-	B3.5	-	F4

Days to Ship: 8 Days

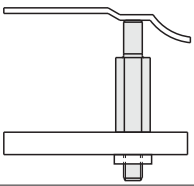
Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~19	20~30
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



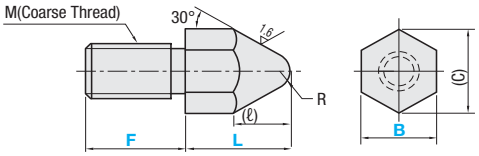
Use it in places with small space to support.

Height Adjusting Pins

RoHS



Type	Material	Surface Treatment	Hardness
JPTU	1.7220/34CrMo4	-	Treated Hardness 46~50HRC
BJPTU		Black Oxide	Treated Hardness 46~50HRC
HJPTU		Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 46~50HRC Plating Hardness 750HV ~
SJPTU	1.4301/X5CrNi18-10	-	-



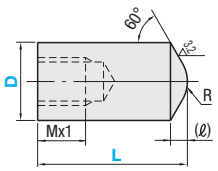
Part Number Type	B	L 1mm Increment	F 1mm Increment	M (Coarse Thread)	R	(ℓ)	(C)	€ Unit Price JPTU	BJPTU	HJPTU	SJPTU
JPTU BJPTU HJPTU SJPTU	10	10~30	6~18	M6	4	6	11.5				
	13	10~32	8~24	M8	6	7	15.0				
	17	15~50	8~24	M8	7	10	19.6				
	19	15~50	8~24	M8	9	10	21.9				

Height Adjusting Caps

RoHS



Type	Material	Recommended Operation Temperature
JPTUC	Polyacetal (Black)	-45~95°C



Part Number Type	D	L 1mm Increment	M (Coarse Thread)	R	(ℓ)	€ Unit Price JPTUC
JPTUC	6	10~30	M3	3	1	
	7			3		
	8	15~50	M5	4		
	10			5	2	
	13	20~60	M8	6	3	

Order Example

Part Number	-	L	-	F
JPTU10 JPTUC13	-	L15 - 25	-	F8

Days to Ship: 8 Days | Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for HJPTU.

Price

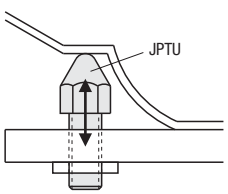
Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

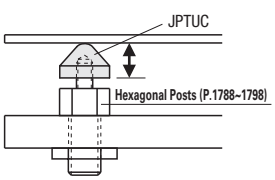
For orders larger than indicated quantity, please request a quotation.

Example

The deflection with the tare of works is supported. Use nuts to prevent loosening.



The deflection with the tare of works is supported.



Holders for Locating Pins
-Standard / Compact Flange-

CAD Data

Features: Its use in combination with locating pins set screw type (**P.1298**, etc) and tapped type (**P.1285** etc.) enables locating at higher position.

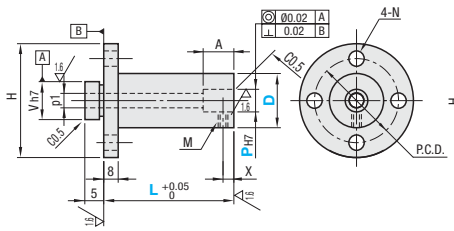
Standard Type



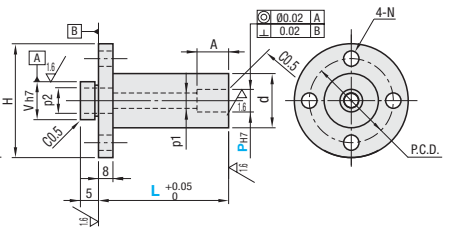
RoHS

Set Screw	Screw	Material	Surface Treatment
M-LPHT	M-LPHB	1.1191/C45E	Black Oxide

- Set Screw



- Screw



Set Screw / Screw

Part Number Type	P	L 0.1mm Increment	D	V	p1	p2	*A	M (Coarse)	X	N	P.C.D	H	€ Unit Price Min.L~100.0	L100.1~150.0	L150.1~200.0
(Set Screw) M-LPHT (Screw) M-LPHB	6	20.0~100.0	12	12	3.5	6.5	10	M3	4.5	4.5	30	39			
	8	25.0~100.0	15	15	5.5	9.5	15	M4	5						
	10	30.0~100.0	17				16		7	5.5	34	44			
	12		18				20								
	13	40.0~150.0	20	20	9	14	22				43	53			
	16		27				24			6.5					
	20	45.0~200.0	32				32				49	63			

*When using with Locating Pin, L dimension (and under-head length) ≤A dimension (shown above)

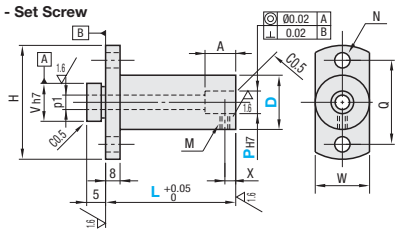
Compact Flange



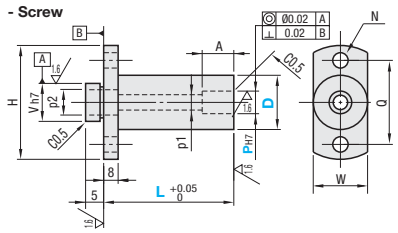
Set Screw	Screw	Material	Surface Treatment
LPHT	LPHB	1.1191/C45E	Black Oxide

When P dimension 6~12 with L>100, concentricity is Ø0.05 and L dimension tolerance is $+0.10^{+0.1}_{0}$

- Set Screw



- Screw



Set Screw / Screw

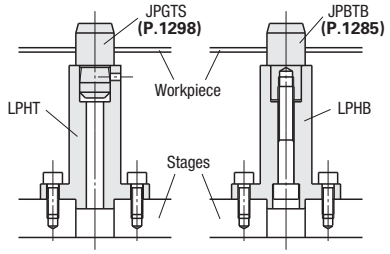
Part Number Type	P	L 0.1mm Increment	D	V	*p1	p2	*A	M (Coarse)	X	N	Q	H	W	€ Unit Price Min.L~100.0	L100.1~150.0	L150.1~200.0
(Set Screw) LPHT (Screw) LPHB	6	20.0~150.0	12	12	3.5	6.5	10	M3	4.5	4.5	30	39	13			
	8	25.0~150.0	15	15	5.5	9.5	15	M4	5				16			
	10	30.0~150.0	17				16		7	5.5	34	44	18			
	12		18				20						19			
	13	40.0~150.0	20	20	9	14	22				43	53	21			
	16		27				24			6.5			28			
	20	45.0~200.0	32				32				49	63	33			

*When using with Locating Pin, L dimension (and under-head length) ≤A dimension (shown above) * For P=6, p1 of L>100 is 5; for P=8, 10 and 12, p1 of L>100 is 7.

Order Example

Part Number	-	L
LPHT8	-	L30.0

Example



Days to Ship

8 Days

Price

Volume Discount (Round down to one Cent.) **P.87**

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
When P dimension 6~12 and L>100, please request a quotation for ordering 20 or more pieces.

Support Pins
-Stepped-

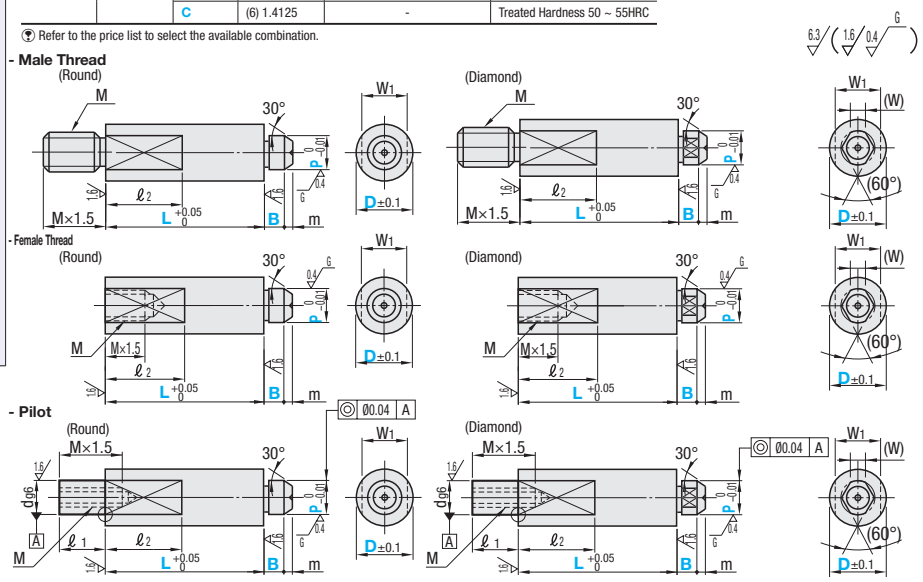
CAD Data

RoHS



Type	Shape Code	Material Code	M Material	S Surface Treatment	H Hardness
SHP (Round) SDP (Diamond)	C (Male Thread) A (Female Thread) B (Pilot)	B	(1) 1.1191	Black Oxide	-
		R	(2) 1.1191	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~
		HB	(3) 1.1191	Black Oxide	Treated Hardness 45 ~ 50HRC
		HR	(4) 1.1191	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 45 ~ 50HRC Plating Hardness 750HV ~
			(5) 1.4301	-	-
		C	(6) 1.4125	-	Treated Hardness 50 ~ 55HRC

Refer to the price list to select the available combination.



Part Number Type	Shape Code	Material Code	D	L 0.01mm Increment	P 0.01mm Increment	B Selection	m	d	M (Coarse)	ℓ1	W1	(W)	ℓ2
SHP(Round) SDP(Diamond)	C(Male Thread) A(Female Thread) B(Pilot)	B R HB HR C	6	10.00~50.00	3.00~4.00	2 3 4 5	1	-	M3	-	5	1.0	8
			8		3.00~6.00						7	1.5	
			10	20.00~80.00			2	6	M5	6	8	1.5	10
			12		4.00~8.00			8			10	1.8	
			15		4.00~10.00		3	10		9	13	2.2	
			20		5.00~10.00			12	M8		17	2.5	
			25		8.00~15.00			16	M10	10	20	3	

Pilot Type is not available for D6, 8. Note the strength of undercut part for Female Thread and Pilot Type. P.1281

Order Example

Part Number	-	L	-	P	-	B
SHPAR10	-	L20.01	-	P4.05	-	B5
SDPCSU20	-	L50.00	-	P8.00	-	B3

Days to Ship

8 Days | Express A | 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for hard chrome plated product.

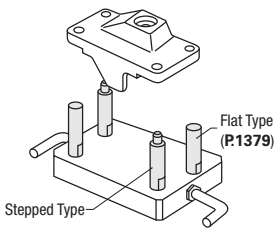
Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Round Shape

D	€ Unit Price Male Thread (1) SHPCB	(2) SHPCR	(3) SHPCHB	(4) SHPCHR	(5) SHPCSU	(6) SHPCC	€ Unit Price Female Thread (1) SHPAB	(2) SHPAR	(3) SHPAHB	(4) SHPAHR	(5) SHPASU	(6) SHPAC	€ Unit Price With Pilot (1) SHPBB	(2) SHPBR	(3) SHPBHB	(4) SHPBHR	(5) SHPBSU	(6) SHPBC
6																		
8																		
10																		
12																		
15																		
20																		
25																		

Diamond Shape

D	€ Unit Price Male Thread (1) SDPCB	(2) SDPCR	(3) SDPCHB	(4) SDPCHR	(5) SDPCSU	(6) SDPCC	€ Unit Price Female Thread (1) SDPAB	(2) SDPAR	(3) SDPAHB	(4) SDPAHR	(5) SDPASU	(6) SDPAC	€ Unit Price With Pilot (1) SDPBB	(2) SDPBR	(3) SDPBHB	(4) SDPBHR	(5) SDPBSU	(6) SDPBC
6																		
8																		
10																		
12																		
15																		
20																		
25																		

Support Pins
-Configurable Stepped-

CAD Data

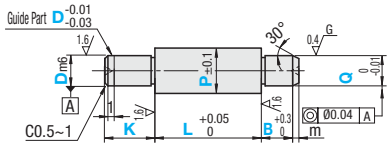


Type						M Material	S Surface Treatment	H Hardness
Straight Type			Shouldered Type					
Standard	Female Thread	Male Thread	Standard	Female Thread	Male Thread			
SHFJ	SHFU	SHFN	-	SHXU	SHXN	(1) 1.2510	-	Treated Hardness 60 ~ 63HRC
GSHFJ	GSHFU	GSHFN	GSHXJ	-	-	(2) 1.2510	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 60 ~ 63HRC Plating Hardness 750HV ~
SSHFJ	SSHFU	SSHFN	-	-	SSHXN	(3) 1.4301	-	-
CSHFJ	CSHFU	CSHFN	CSHXJ	CSHXU	CSHXN	(5) 1.4125	-	Treated Hardness 50 ~ 55HRC

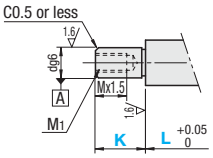
D	H	M (Coarse)	M1 (Coarse)	m
3	6	M3	-	1
4		M4		
5	8	M5		
6		M6	M3	2
8	11	M8	M4	
10	13	M10	M5	3
12	15	M12		

■Straight Type

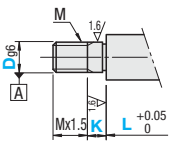
- Standard



- Female Thread

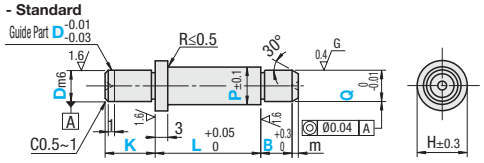


- Male Thread

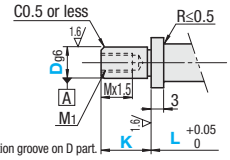


■Shouldered Type

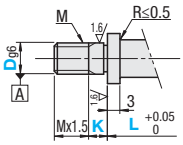
- Standard



- Female Thread



- Male Thread



Q≤P-1 When K<Pitchx2, the incomplete threaded part portion (pitchx2) is included in Mx1.5. 1.4125/X105CrMo17 has an identification groove on D part.

■Standard

Part Number Type	D	P 0.1mm Increment Straight	P 0.1mm Increment Shouldered	Q 0.01mm Increment	K 1mm Increment	L 0.01mm Increment	B 0.1mm Increment	€ Unit Price Straight Type (1) SHFJ	(2) GSHFJ	(3) SSHFJ	(5) CSHFJ	€ Unit Price Shouldered Type (2) GSHXJ	(5) CSHXJ
Straight Shouldered SHFJ GSHFJ GSHXJ SSHFJ CSHFJ CSHXJ	3	3.5~6.0	3.0~5.0	2.00~5.00	3~6	10.00~60.00	2.0~5.0						
	4	4.5~7.0	3.0~5.0	2.00~6.00	4~8	10.00~60.00	2.0~10.0						
	5	5.5~8.0	3.0~7.0	2.00~7.00	5~10	10.00~60.00	2.0~10.0						
	6	6.5~10.0	5.0~7.0	4.00~9.00	6~12	10.00~80.00	2.0~12.0						
	8	9.0~13.0	5.0~8.0	4.00~12.00	8~16	10.00~80.00	2.0~15.0						
	10	11.0~15.0	6.0~11.0	5.00~14.00	10~20	10.00~100.00	2.0~20.0						
	12	13.0~16.0	6.0~13.0	5.00~15.00	12~24	10.00~100.00	2.0~20.0						

■Female Thread

Part Number Type	D	P 0.1mm Increment Straight	P 0.1mm Increment Shouldered	Q 0.01mm Increment	K 1mm Increment	L 0.01mm Increment	B 0.1mm Increment	€ Unit Price Straight Type (1) SHFU	(2) GSHFU	(3) SSHFU	(5) CSHFU	€ Unit Price Shouldered Type (1) SHXU	(5) CSHXU
Straight Shouldered SHFU SHXU GSHFU SSHFU CSHFU CSHXU	6	6.5~10.0	5.0~7.0	4.00~9.00	6~12	10.00~80.00	2.0~12.0						
	8	9.0~13.0	5.0~9.0	4.00~12.00	8~16	10.00~80.00	2.0~15.0						
	10	11.0~15.0	6.0~11.0	5.00~14.00	10~20	10.00~100.00	2.0~20.0						
	12	13.0~16.0	6.0~13.0	5.00~15.00	12~24	10.00~100.00	2.0~20.0						

■Male Thread

Note the strength of under-head part. P.1281

Part Number Type	D	P 0.1mm Increment Straight	P 0.1mm Increment Shouldered	Q 0.01mm Increment	K 1mm Increment	L 0.01mm Increment	B 0.1mm Increment	€ Unit Price Straight Type (1) SHFN	(2) GSHFN	(3) SSHFN	(5) CSHFN	€ Unit Price Shouldered Type (1) SHXN	(3) SSHXN	(5) CSHXN
Straight Shouldered SHFN SHXN GSHFN SSHFN SSHXN CSHFN CSHXN	3	3.5~6.0	3.0~5.0	2.00~5.00	0~6	10.00~60.00	2.0~5.0							
	4	4.5~7.0	3.0~5.0	2.00~6.00	0~8	10.00~60.00	2.0~10.0							
	5	5.5~8.0	3.0~7.0	2.00~7.00	0~10	10.00~60.00	2.0~10.0							
	6	6.5~10.0	5.0~7.0	4.00~9.00	0~12	10.00~80.00	2.0~12.0							
	8	9.0~13.0	5.0~9.0	4.00~12.00	0~16	10.00~80.00	2.0~15.0							
	10	11.0~15.0	6.0~11.0	5.00~14.00	0~20	10.00~100.00	2.0~20.0							
	12	13.0~16.0	6.0~13.0	5.00~15.00	0~24	10.00~100.00	2.0~20.0							

The dispersion of dimension L should be within 0.02 for same orders.

- Material No. (2) Hard 1.2510/100MnCrW4

Order Example

Part Number	P	Q	K	L	B
SHFJ5	P6.0	Q4.50	K5	L30.55	B3.2

Days to Ship: 8 Days | Express A 5,00 EUR/ piece | P.88 | 10 Days

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

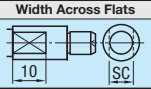
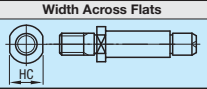
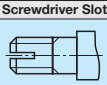
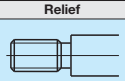
Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	P	Q	K	L	B	(SC / HC / DRC / NNC)
SHXU10	P8.5	Q5.00	K10	L80.00	B6.7	HC12

10 Days

Alterations	Width Across Flats	Width Across Flats	Screwdriver Slot	Relief
				
Code	SC	HC	DRC	NNC
Spec.	SC = 1mm Increment SC>D Ordering Code SC8 When Female Thread SC≥M1+3 Applicable to Straight Type only.	HC = 1mm Increment HC>P HC>D Ordering Code HC10 Applicable to Shouldered Type only.	Width 0.8mm Depth 1mm Ordering Code DRC Applicable to external thread only.	Adds a relief at the thread end. Ordering Code NNC Applicable when K=0. Applicable to external thread only.
Price Adder	5,00	4,00	1,00	1,00

Support Pins
-Flat / Tip Set Screw-

CAD Data

RoHS

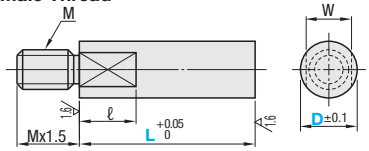
Type	Shape Code	Material Code	M Material	S Surface Treatment	H Hardness
STP(Flat) SPF(Tip Set Screw)	A(Male Thread) B(Female Thread) D(Male Thread with Pilot)	B	(1) 1.1191/C45E	Black Oxide	-
		R	(2) 1.1191/C45E	Hard Chrome Plating	-
		HB	(3) 1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
		HR	(4) 1.1191/C45E	Hard Chrome Plating	Treated Hardness 45 ~ 50HRC
			(5) 1.4301/X5CrNi18-10	-	-
		C	(6) 1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

Ⓟ Hard Chrome Plated: Plating Hardness 750HV~/Plating Thickness 3μm or More
Ⓧ For Tip Set Screw Type, material No. (1) and (5) are only available.

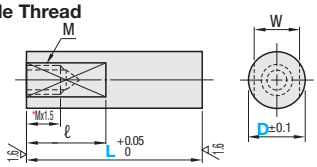


■Flat

- Male Thread

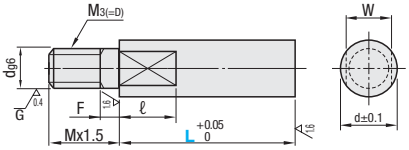


- Female Thread



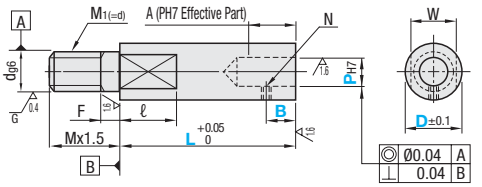
*When D8, L dimension 15 or less is Mx1.2.

- Male Thread with Pilot

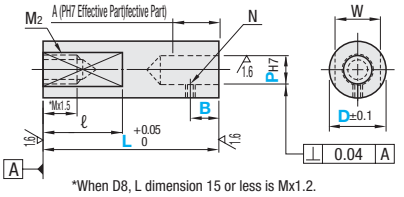


Tip Set Screws

- Male Thread



- Female Thread



*When D8, L dimension 15 or less is Mx1.2.

Ⓟ The dispersion of dimension L should be within 0.02 for same orders.

■Flat Type

Part Number Type	Shape Code	Material Code	D	L 0.01mm Increment	M (Coarse)	d	M3 (Coarse)	F	W	ℓ
STP (Flat)	A(Male Thread) B(Female Thread) D(Male Thread with Pilot)	B	6	10.00~50.00	M3	3	M3	1.5	5	8
		R	8		M5	5	M5	2	7	
		HB	10	20.00~80.00		6	M6	3	8	
		HR	12			8	M8	4	10	10
		C	15		M8	10	M10	5	13	
			20			12	M12		17	

■Tip Set Screw Type

Part Number Type	Shape Code	Material Code	D	L 0.01mm Increment	P Selection	B 0.5mm Increment	d	F	M1 (Coarse)	W	ℓ	A	M2 (Coarse)	N (Coarse)	€ Unit Price Tip Set Screw Male Thread (1) SPFAB	(5) SPFASU	Female Thread (1) SPFBB	(5) SPFBSU
SPF (Tip Set Screw)	A(Male Thread) B(Female Thread)	B	12	20.00 (30.00) ~ 80.00	6	4.0~6.0	8	4	M8	10	10	10	M5	M3				
			15	20.00 (40.00) ~ 80.00	8	5.0~10.0	10	5	M10	13	10	15	M8	M4				
			20	25.00 (45.00) ~ 80.00	10 12	5.0~15.0	12	5	M12	17	10	20	M8	M4				
			25	30.00 (50.00) ~ 80.00	12 16	5.0~19.0	16	5	M16	20	12	24	M10	M4				
			30	35.00 (65.00) ~ 80.00	16 20	5.0~23.0	20	6	M20	24	18	28	M16	M4				

Ⓟ L dimension in ( ) is applicable to Female Thread Type.

Order Example

Part Number	-	L	-	P	-	B
STPAB10	-	L20.03				(Flat Type)
SPFAB12	-	L20.01	-	P6	-	B5 (Tip Set Screw Type)

Days to Ship

-Flat Type: 8 Days — Express A 5,00 EUR/ piece — P. 88

-Tip Set Screw Type: 10 Days

Ⓟ A Express Charge of 13,50 EUR for 3 or more identical pieces.
Ⓧ Express Service is not available for hard chrome plated product.

Price

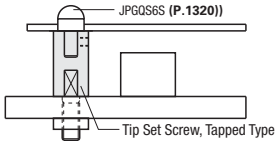
■Volume Discount (Ⓟ Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(For orders of 31 or more pieces of Tip Set Screw Type, please request a quotation.)

Ⓟ For orders larger than indicated quantity, please request a quotation.

Example



D	€ Unit Price Male Thread (1) STPAB	(2) STPAR	(3) STPAHB	(4) STPAHR	(5) STPASU	(6) STPAC	€ Unit Price Female Thread (1) STPBB	(2) STPBR	(3) STPBHB	(4) STPBHR	(5) STPBSU	(6) STPBC	€ Unit Price Male Thread with Pilot (1) STPDB	(2) STPDR	(3) STPDHB	(4) STPDHR	(5) STPDSU	(6) STPDC
6																		
8																		
10																		
12																		
15																		
20																		

NEW

Support Pins

-Tip Shape Selectable-

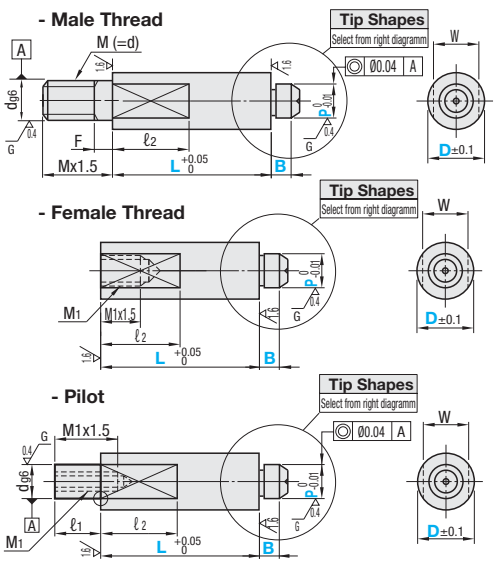
CAD Data

RoHS

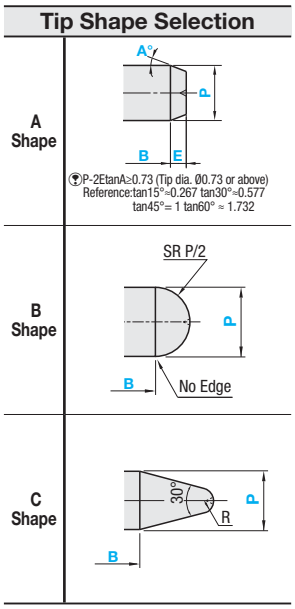
Male Thread	Female Thread	Pilot	M Material	S Surface Treatment	H Hardness
LSPC	LSPA	LSPB	(1) 1.1191/C45E	Black Oxide	-
LSPRC	LSPAR	LSPBR	(2) 1.1191/C45E	Hard Chrome Plating	-
LSPHBC	LSPAHB	LSPBHB	(3) 1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
LSPHRC	LSPAHR	LSPBHR	(4) 1.1191/C45E	Hard Chrome Plating	Treated Hardness 45 ~ 50HRC
LSPSUC	LSPASU	LSPBSU	(5) 1.4301/X5CrNi18-10	-	-
LSPSCC	LSPASC	LSPBSC	(6) 1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

Hard Chrome Plated: Plating Hardness 750HV~/Plating Thickness 3μm or More





Tip Shape Selection



Part Number Type			Tip Shape	D	L 0.01mm Increment	P 0.01mm Increment	B 0.1mm Increment	E 0.1mm Increment (Shape A Only)	A Selection (Shape A Only)	R (Shape C)	d	M (Coarse)	F	M1 (Coarse)	ℓ1	W	ℓ2
Male Thread	Female Thread	Pilot		6	10.00~50.00	3.00~4.00	2.0~12.0	0.5~10.0	15 30 45 60	1	3	3	1.5	M3	-	5	8
LSPC	LSPA	LSPB	A	8		3.00~6.00	2.0~15.0				5	5	2			7	
LSPRC	LSPAR	LSPBR	B	10	20.00~80.00	4.00~8.00	2.0~20.0			1.5	6	6	3		6	8	
LSPHBC	LSPAHB	LSPBHB	C	12		4.00~10.00	2.0~20.0				8	8	4	M5		10	10
LSPHRC	LSPAHR	LSPBHR		15		5.00~10.00	2.0~25.0			2	10	10	5		9	13	
LSPSUC	LSPASU	LSPBSU		20		8.00~15.00	2.0~30.0			3	12	12	5	M8		17	
LSPSCC	LSPASC	LSPBSC		25		10.00~15.00	2.0~30.0			4	16	16	5			20	

For Stepped Pilot Type, D Dimension 10 or more is available. Note the strength of undercut part for Female Thread and Pilot Type. P.1281

Order Example

Part Number	-	L	-	P	-	B	-	E	-	A
LSPCA10	-	L20.01	-	P4.05	-	B5	-	E2.0	-	A15
LSPBC12	-	L25.01	-	P8.00	-	B10				

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship 8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for hard chrome plated product.

D	€ Unit Price Male Thread						€ Unit Price Female Thread						€ Unit Price With Pilot					
	(1) LSPC	(2) LSPRC	(3) LSPHBC	(4) LSPHRC	(5) LSPSUC	(6) LSPSCC	(1) LSPA	(2) LSPAR	(3) LSPAHB	(4) LSPAHR	(5) LSPASU	(6) LSPASC	(1) LSPB	(2) LSPBR	(3) LSPBHB	(4) LSPBHR	(5) LSPBSU	(6) LSPBSC
6																		
8																		
10																		
12																		
15																		
20																		
25																		

Hexagonal Support Pins
-Stepped-

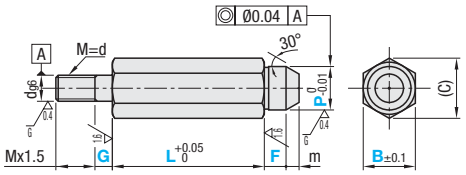
CAD Data

RoHS

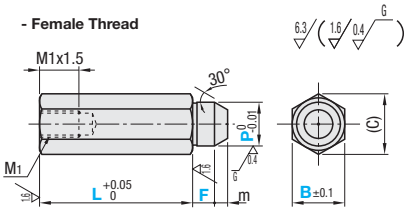


Type	Shape Code	Material Code	Material	Surface Treatment	Hardness
SRP	C(Male Thread) A(Female Thread) B(Pilot)	B	(1)1.1191/C45E	Black Oxide	-
		R	(2)1.1191/C45E	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~
		HB	(3)1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
		HR	(4)1.1191/C45E	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 45 ~ 50HRC Plating Hardness 750HV ~
		C	(6) 1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

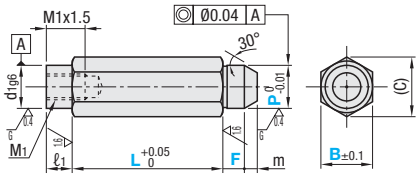
- Male Thread



- Female Thread



- Pilot





a=1.0
d=P-0.2

When G< Pitchx2, the incomplete threaded section (Pitchx2) is included in Mx1.5. Pitch Diameter P.1954

Part Number Type	Shape Code	Material Code	B	L 0.01mm Increment	P 0.01mm Increment	F 0.1mm Increment	G 1mm Increment Male Thread Only	m	(C)	d	M (Coarse)	M1 (Coarse)	ℓ1	d1
SRP	C(Male Thread) A(Female Thread) B(Pilot)	B R HB HR C	6	10.00~50.00	3.00~4.00	2.0~12.0	0 or 2≤G≤dx2	1	6.9	4	M4	M3	-	-
			7		3.00~6.00	2.0~15.0			8.1					
			8	15.00~50.00					9.2	5	M5	M4		
			10	20.00~80.00	4.00~8.00	2.0~20.0		2	11.5			M5	6	8
			12		4.00~10.00				13.9	6	M6			10
			13		5.00~10.00	2.0~25.0		3	15			M6	8	
			14						16.2					
			17		8.00~15.00	2.0~30.0			19.6	8	M8	M8	9	12
			19						21.9					
			24		10.00~15.00			4	27.7	10	M10		10	16

Pilot type available for B≥10. 1.4125/X105CrMo17 is B≥8.

Order Example

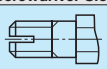
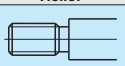
Part Number									
Type	Shape	Materials	B	-	L	-	P	-	F	-	G
SRP	C	B	10	-	L50.00	-	P5.98	-	F3.0	-	G5
SRP	A	HB	14	-	L70.02	-	P6.00	-	F5.0		

Alterations

Part Number - L - P - F - G - (DRC / NNC)
SRPCB12 - L30.00 - P4.98 - F3.0 - G0 - NNC

10 Days

Alteration is applicable to threaded type only.

Alterations	Screwdriver Slot	Relief
		
Code	DRC	NNC
Spec.	Machines a screwdriver slot of width 0.8mm and depth 1mm.	Adds a relief at the thread end. Applicable when G=0.
Price Adder	1,00	1,00

Days to Ship

8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

B	€ Unit Price Male Thread (1) SRPCB	(2) SRPCR	(3) SRPCHB	(4) SRPCHR	(6) SRPCC	€ Unit Price Female Thread (1) SRPAB	(2) SRPAR	(3) SRPAHB	(4) SRPAHR	(6) SRPAC	€ Unit Price With Pilot (1) SRPBB	(2) SRPBR	(3) SRPBHB	(4) SRPBHR	(6) SRPBC
6															
7															
8															
10															
12															
13															
14															
17															
19															
24															

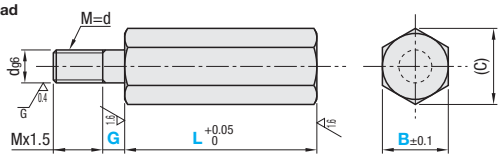
Hexagonal Support Pins
-Flat-

CAD Data

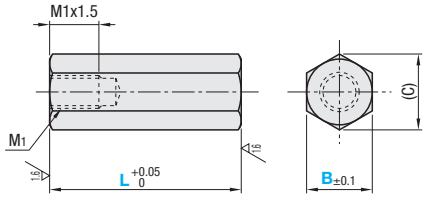


Type	Shape Code	Material Code	M Material	S Surface Treatment	H Hardness
SRT	A(Male Thread) B(Female Thread)	B	(1)1.1191/C45E	Black Oxide	-
		R	(2)1.1191/C45E	Hard Chrome Plating Plating Thickness 3μm or More	Plating Hardness 750HV ~
		HB	(3)1.1191/C45E	Black Oxide	Treated Hardness 45 ~ 50HRC
		HR	(4)1.1191/C45E	Hard Chrome Plating Plating Thickness 3μm or More	Treated Hardness 45 ~ 50HRC Plating Hardness 750HV ~
			(5)1.4301/X5CrNi18-10	-	-
		C	(6) 1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC

- Male Thread



- Female Thread



When G< Pitchx2, the incomplete threaded section (Pitchx2) is included in Mx1.5. Pitch Diameter P.1954

Part Number Type	Shape Code	Material Code	B	L 0.01mm Increment	G 1mm Increment Male Thread Only	(C)	d	M (Coarse)	M_1 (Coarse)
SRT	A(Male Thread) B(Female Thread)	B R HB HR C	6	10.00~50.00	0 or 2≤G≤dx2	6.9	4	M4	M3
			7			8.1			
			8			9.2	5	M5	M4
			10	15.00~50.00		11.5			M5
			12			13.9	6	M6	
			13			15			M6
			14	20.0~80.00		16.2			
			17			19.6	8	M8	
			19			21.9			M8
			24			27.7	10	M10	

1.4125/X105CrMo17 is B≥8.

Order Example

Part Number						
Type	Shape	Materials	B	-	L	- G
SRT	A	B	8	-	L20.00	- G6
SRT	B		12	-	L50.00	

Days to Ship

8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

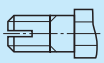
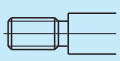
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - L - G - (DRC / NNC)
SRTAB10 - L30.00 - G3 - DRC

10 Days

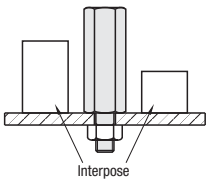
Alteration is applicable to threaded type only.

Alterations	Screwdriver Slot	Relief
		
Code	DRC	NNC
Spec.	Machines a screwdriver slot of width 0.8mm and depth 1mm.	Adds a relief at the thread end. Applicable when G=0.
Price Adder	1,00	1,00

B	€ Unit Price Male Thread (1) SRTAB	(2) SRTAR	(3) SRTAHB	(4) SRTAHR	(5) SRTASU	(6) SRTAC	€ Unit Price Female Thread (1) SRTBB	(2) SRTBR	(3) SRTBHB	(4) SRTBHR	(5) SRTBSU	(6) SRTBC
6												
7												
8												
10												
12												
13												
14												
17												
19												
24												

Example

Features:
Due to hexagonal shape, adjusting height is easy.

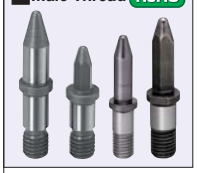


Locating Pin for Jig
-Precision with Shoulder-

CAD Data

Features: For Precision Grade, P dimension tolerance is $^{0}_{-0.01}$ or $^{0}_{-0.02}$ (for Standard Grade, $^{0}_{-0.05}$), concentricity is 0.01 or 0.02 (for Standard Grade, 0.03 or 0.05).

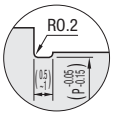
Male Thread RoHS



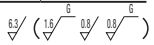
Type		M Material	H Hardness
LANAN	Round	1.7220/34CrMo4	Hardening 35~40HRC
LANDN	Diamond		
TLANAN	Round	1.7242/16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TLANDN	Diamond		

Reference:sin15°≈0.259
tan15°≈0.267

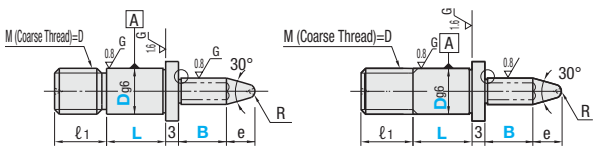
Surface Finish Relief



Type		M Material	H Hardness	S Surface Treatment
D-ANAN	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-ANDN	Diamond			
R-ANAN	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-ANDN	Diamond			
H-ANAN	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	TiCN Treatment
H-ANDN	Diamond			

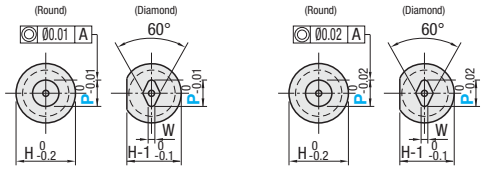


Hardening / Carburized / Hard Chrome Plated **Dicoat® / TiCN Treatment**



e=P/2/tan15°+R-(R/sin15°)

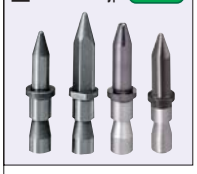
- Without Surface Treatment **- With Surface Treatment**



Part Number Type		Dg6	P 0.1mm Increment	B 1mm Increment	L Selection	ℓ1	H	R	W	€ Unit Price LANAN	LANDN	TLANAN	TLANDN	D-ANAN	D-ANDN	R-ANAN	R-ANDN	H-ANAN	H-ANDN
LANAN LANDN TLANAN TLANDN	D-ANAN D-ANDN R-ANAN R-ANDN H-ANAN H-ANDN	6 -0.004 -0.012	3.0~ 7.0	5~30 (B≤Px4)	5 8 10	6	9	1	1 (2)										
		8	3.0~ 9.0		5 8 10 12 15	10	11	1.5											
		10 -0.005 -0.014	4.5~12.0		(5) (8) 10 12 15	12	13	2	1~3										
		10T				18													
		12 -0.006 -0.017	9.0~13.0		(8) 10 12 15 18	15	15	3	4										
		16	13.0~16.0		(10) 12 15 18 20	18	19	4	5										

W dimension: For D6 and D8, W=2 when P>5.0. For D10 and 10T, W=1 when P<5.0, W=2 when 5.0≤P≤7.0, W=3 when P>7.0 ⊗L dimension in ( ) is not applicable to diamond shape, Dicoat® and TiCN treatment.

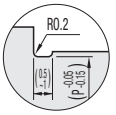
Set Screw Flat Type RoHS



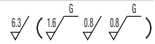
Type		M Material	H Hardness
LATAN	Round	1.7220/34CrMo4	Hardening 35~40HRC
LATDN	Diamond		
TLATAN	Round	1.7242/16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TLATDN	Diamond		

Reference:sin15°≈0.259
tan15°≈0.267

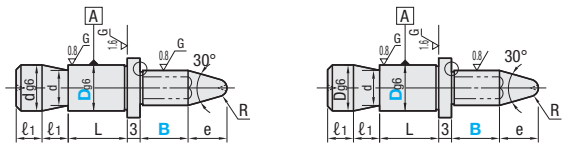
Surface Finish Relief



Type		M Material	H Hardness	S Surface Treatment
D-ATAN	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-ATDN	Diamond			
R-ATAN	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-ATDN	Diamond			
H-ATAN	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	TiCN Treatment

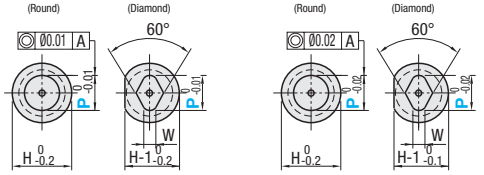


Hardening / Carburized / Hard Chrome Plated **Dicoat® / TiCN Treatment**



e=P/2/tan15°+R-(R/sin15°)

- Without Surface Treatment **- With Surface Treatment**



Part Number Type		Dg6	P 0.1mm Increment	B 1mm Increment	L	ℓ1	H	d	R	Applicable Set Screws	W	€ Unit Price LATAN	LATDN	TLATAN	TLATDN	D-ATAN	D-ATDN	R-ATAN	R-ATDN	H-ATAN
LATAN LATDN TLATAN TLATDN	D-ATAN D-ATDN R-ATAN R-ATDN H-ATAN	6 -0.004 -0.012	3.0~7.0	5~30 (B≤Px4)	8	8	9	4	1	M5	1 (2)									
		8	3.0~9.0				11	5	1.5											
		10 -0.005 -0.014	4.5~12.0		10		13	7	2	M6	1~3									
		10T			5															
		12 -0.006 -0.017	9.0~13.0		12	10	15	9	3	M8	4									
		16	13.0~16.0				19	13	4		5									

W dimension: For D6 and D8, W=2 when P>5.0. For D10 and 10T, W=1 when P<5.0, W=2 when 5.0≤P≤7.0, W=3 when P>7.0

Order Example

Part Number					
Type	D	P	B	L	
LANAN	8	P5.0	B15	L10	
LATAN	6	P6.8	B14		

Days to Ship

- Hardening: 8 Days — Express A 5,00 EUR/piece — P. 88
- Carburized / Hard Chrome Plated / Dicoat® Treated: 8 Days
- TiCN Treatment: 10 Days — Express B 5,00 EUR/piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number						
Type	D	P	B	L		(KC / KD / SC / MC)
LANAN	10	P4.5	B10	L5		KD

Alterations	Flat Position	Flat	Wrench Flats	Thread Diameter
				
Code	KC	KD	SC	MC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Diamond shape only.	Ordering Code KD Machining on one side. H-P≥2 Applicable to Round Shape Only.	Ordering Code SC Adds wrench flats. H 9 11 13 15 19 H1 7 8 11 13 17 Applicable to Round Shape Only.	Ordering Code MC8 Changes the thread diameter. D/3≤M<D Mmin3 Applicable to Male Thread Type only.
Price Adder	2,00	2,00	5,00	2,00

Locating Pin for Jig

-Tip Shape Selectable - Precision with Shoulder-

CAD Data

Features: For Precision Grade, P dimension tolerance is $^{0}_{-0.01}$ or $^{0}_{-0.02}$ (for Standard Grade, $^{0}_{-0.05}$), concentricity is 0.01 or 0.02 (for Standard Grade, 0.03 or 0.05). Tip shape is selectable.

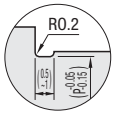
Male Thread RoHS



Type		Material	Hardness
SLANA_	Round	1.7220/34CrMo4	Hardening 35~40HRC
SLAND_	Diamond		
TSLANA_	Round	1.7242/16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TSLAND_	Diamond		

Reference: sin15°=0.259 an15°=0.267 sin30°=0.5 tan30°=0.577 sin45°=0.707 tan45°=1

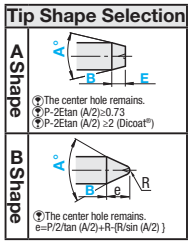
Surface Finish Relief



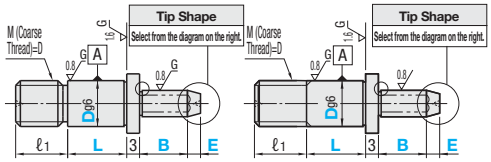
Type		Material	Hardness	Surface Treatment
D-SANA_	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-SAND_	Diamond			
R-SANA_	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-SAND_	Diamond			

6.3 (1.6 G, 0.8 G, 0.8 G)

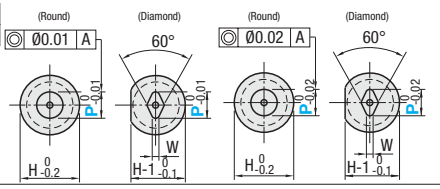
Tip Shape Selection



Hardening / Carburized / Hard Chrome Plated — **Dicoat® Treated**



- Without Surface Treatment — **- With Surface Treatment**



Part Number Type	Tip Shape	Dg6	P 0.1mm Increment	B 1mm Increment	L Selection	A Selection	E (Shape A) 1mm Increment	ℓ1	H	R	W
SLANA D-SANA SLAND D-SAND TSLANA R-SANA TSLAND R-SAND	A (Taper)	6 (-0.004 -0.012)	3.0~7.0	5~30 (B≤Px4)	5 8 10	*30	1~10	6	9	1	1 (2)
		8 (-0.005 -0.014)	3.0~9.0		5 8 10 12 15			10	11	1.5	
		10	4.5~12.0		(5) (8) 10 12 15	60		12	13	2	1-3
	B (Taper R)	10T				90		18			
		12 (-0.006 -0.017)	9.0~13.0		(8) 10 12 15 18	120		15	15	3	4
		16	13.0~16.0		(10) 12 15 18 20			18	19	4	5

€ Unit Price: SLANA_ | SLAND_ | TSLANA_ | TSLAND_ | D-SANA_ | D-SAND_ | R-SANA_ | R-SAND_

W dimension: For D6 and D8, W=2 when P>5.0. For D10 and 10T, W=1 when P<5.0, W=2 when 5.0≤P≤7.0, W=3 when P>7.0 ⊗L dimension in ( ) is not applicable to diamond shape and Dicoat® treated products.
⊗Angle A *30 is not applicable to Tip Shape B. Select from Precision with Shoulder Type (**P.1383**)

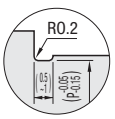
Set Screw Flat Type RoHS



Type		Material	Hardness
SLATA_	Round	1.7220/34CrMo4	Hardening 35~40HRC
SLATD_	Diamond		
TSLATA_	Round	1.7242/16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TSLATD_	Diamond		

Reference: sin15°≈0.259 an15°≈0.267 sin30°=0.5 tan30°=0.577 sin45°≈0.707 tan45°=1

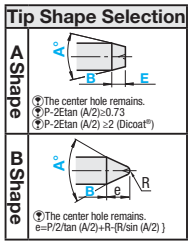
Surface Finish Relief



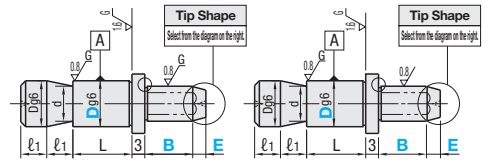
Type		Material	Hardness	Surface Treatment
D-SATA_	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-SATD_	Diamond			
R-SATA_	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-SATD_	Diamond			

6.3 (1.6 G, 0.8 G, 0.8 G)

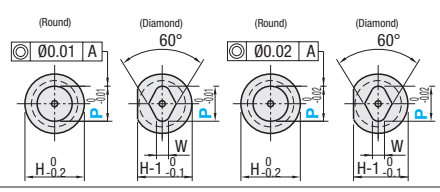
Tip Shape Selection



Hardening / Carburized / Hard Chrome Plated — **Dicoat® Treated**



- Without Surface Treatment — **- With Surface Treatment**



Part Number Type	Tip Shape	Dg6	P 0.1mm Increment	B 1mm Increment	A Selection	E (Shape A) 1mm Increment	L	ℓ1	H	d	R	Applicable Set Screw	W
SLATA D-SATA SLATD D-SATD TSLATA R-SATA TSLATD R-SATD	A (Taper)	6 (-0.004 -0.012)	3.0~7.0	5~30 (B≤Px4)	*30	1~10	8	8	9	4	1	M5	1 (2)
		8 (-0.005 -0.014)	3.0~9.0						11	5	1.5		
		10	4.5~12.0		60		10		13	7	2	M6	1~3
	B (Taper R)	10T			90		5						
		12 (-0.006 -0.017)	9.0~13.0		120		12	10	15	9	3	M8	4
		16	13.0~16.0						19	13	4		5

€ Unit Price: SLATA_ | SLATD_ | TSLATA_ | TSLATD_ | D-SATA_ | D-SATD_ | R-SATA_ | R-SATD_

W Dimension D6, D8: W=2 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0. ⊗Angle A *30 is not applicable to Tip Shape B. Select from Precision with Shoulder Type (**P.1383**)

Order Example

Part Number Type	Tip Shape	D	P	B	L	A	E
SLANA	A	6	P6.8	B14	L8	A30	E2
SLATA	B	8	P7.5	B15		A60	

Alterations

Part Number Type	Tip Shape	D	P	B	L	A	E	(KC / KD / SC / MC)
R-SANA	B	10	P4.5	B10	L5	A60		KD

	Flat Position	Flat	Wrench Flats	Thread Diameter
Alterations	0°	H-1 0 -0.1	H1, H	MC
Code	KC	KD	SC	MC
Spec.	Ordering Code KC. Changes the flat position to 90° from the standard position 0°. Diamond shape only.	Ordering Code KD. Machining on one side. H-P≥2. Applicable to Round Shape Only.	Ordering Code SC. Adds wrench flats. H: 9 11 13 15 19; H1: 7 8 11 13 17. Applicable to Round Shape Only.	Ordering Code MC8. Changes the thread diameter. D/3≤M<D. Mmin3. Applicable to Male Thread Type only.
Price Adder	2,00	2,00	5,00	2,00

Days to Ship

- Hardening: 8 Days — Express A 5,00 EUR/piece — P. 88
  A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Carburized / Hard Chrome Plated / Dicoat® Treated: 8 Days

Price

Volume Discount (Round down to one Cent.) **P. 87**

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Locating Pin for Jig
-Precision with Shoulder-

CAD Data

Features: For Precision Grade, P dimension tolerance is $^{0}_{-0.01}$ or $^{0}_{-0.02}$ (for Standard Grade, $^{0}_{-0.05}$), concentricity is 0.01 or 0.02 (for Standard Grade, 0.03 or 0.05).

Male Thread RoHS

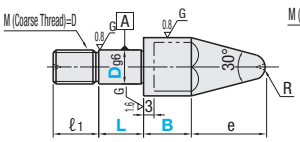


Type		Material	Hardness
LNNAN	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
LNNDN	Diamond		
TLNNAN	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TLNNDN	Diamond		

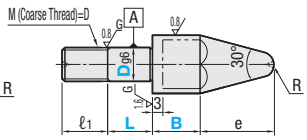
Reference:sin15°≈0.259
tan15°≈0.267

Type		Material	Hardness	Surface Treatment
D-NNAN	Round	1.2379/ equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-NNAN	Round	1.7220/ 34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

Hardening / Carburized / Hard Chrome Plated

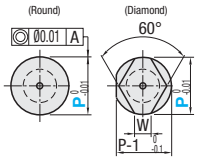


Dicoat® Treated

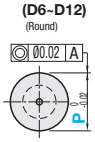


e=P/2/tan15°+R-(R/sin15°)

- Without Surface Treatment



- With Surface Treatment (D6~D12)



Part Number Type	Dg6		P 0.1mm Increment	B 1mm Increment	L Selection	ℓ1	R	W	€ Unit Price LNNAN	LNNDN	TLNNAN	TLNNDN	D-NNAN	R-NNAN
LNNAN LNNDN D-NNAN TLNNAN R-NNAN TLNNDN	6	-0.004 -0.012	8.0~12.0	5~30	5 8 10	6	3	3						
	8	-0.005 -0.014	10.0~16.0		5 8 10 12 15	10	4	3.5						
	10		12.0~20.0		(5) (8) 10 12 15	12		4						
	10T					15	5	5						
	12	-0.006 -0.017	14.0~25.0		(8) 10 12 15 18	15	6	6						
	16		18.0~32.0		(10) 12 15 18 20	18	8	8						
	20	-0.007 -0.020	22.0~35.0		12 15 18 20	22		9						

⊗L dimension in ( ) is not applicable to diamond shape and Dicoat® treated products.

Set Screw Type RoHS

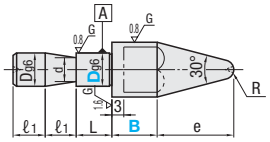


Type		Material	Hardness
LNTAN	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
LNTDN	Diamond		
TLNTAN	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TLNTDN	Diamond		

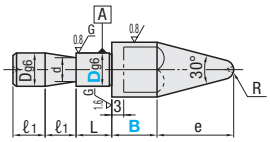
Reference:sin15°≈0.259
tan15°≈0.267

Type		Material	Hardness	Surface Treatment
D-NTAN	Round	1.2379/ equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-NTAN	Round	1.7220/ 34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

Hardening / Carburized / Hard Chrome Plated

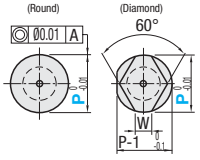


Dicoat® Treated

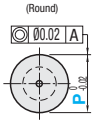


e=P/2/tan15°+R-(R/sin15°)

- Without Surface Treatment



- With Surface Treatment (D6~D12)



Part Number Type	Dg6		P 0.1mm Increment	B 1mm Increment	L	ℓ1	d	R	Applicable Set Screws	W	€ Unit Price LNTAN	LNTDN	TLNTAN	TLNTDN	D-NTAN	R-NTAN
LNTAN LNTDN D-NTAN TLNTAN R-NTAN TLNTDN	6	-0.004 -0.012	8.0~12.0	5~30	5	8	4	3	M5	3						
	8	-0.005 -0.014	10.0~16.0				5	4		3.5						
	10		12.0~20.0		10		7		M6	4						
	10T				5			5		5						
	12	-0.006 -0.017	14.0 ~25.0		12	10	9	6	M8	6						
	16		18.0~32.0				13	8		8						
	20	-0.007 -0.020	22.0~35.0				17			9						

Order Example

Part Number								
Type	D	-	P	-	B	-	L	
LNNAN	6	-	P8.0	-	B14	-	L10	
LNTAN	8	-	P12.0	-	B12			

Days to Ship

- Hardening: 8 Days
- Carburized / Hard Chrome Plated / Dicoat® Treated: 8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

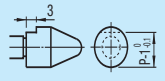
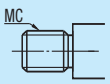
Volume Discount (Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number						
Type	D	- P -	B	- L	-	(KD / MC)
LNNAN	10	- P12.0 -	B10	- L5	-	KD

Alterations	Flat	Thread Diameter
		
Code	KD	MC
Spec.	Ordering Code KD Machining on one side. Applicable to Round Shape Only.	Ordering Code MC8 Changes the thread diameter. D/3≤M<D Mmin3 Applicable to Male Thread Type only.
Price Adder	2,00	2,00

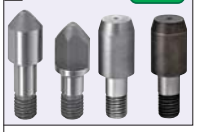
Locating Pin for Jig

-Tip Shape Selectable - Precision No Shoulder-

CAD Data

Features: For Precision Grade, P dimension tolerance is $^{0}_{-0.01}$ or $^{0}_{-0.02}$ (for Standard Grade, $^{0}_{-0.05}$), concentricity is 0.01 or 0.02 (for Standard Grade, 0.03 or 0.05). Tip shape is selectable.

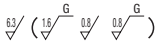
Male Thread RoHS



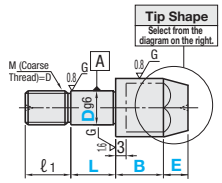
Type		Material	Hardness
SLNNA_	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
SLNND_	Diamond		
TSLNNA_	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TSLNND_	Diamond		

Type		Material	Hardness	Surface Treatment
D-SNNA_	Round	1.2379/ X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-SNND_	Diamond			

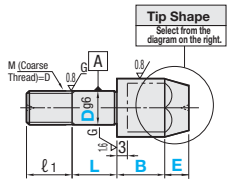
Reference: sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1



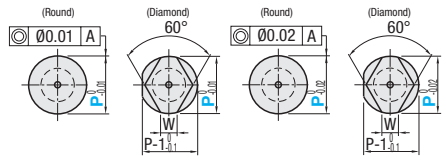
Hardening / Carbunized



Dicoat® Treated

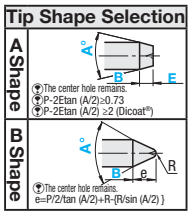


- Without Surface Treatment



- With Surface Treatment (D6~D12)

Tip Shape Selection



Part Number Type	Tip Shape	Dg6		P 0.1mm Increment	B 1mm Increment	L Selection	A Selection	E (Shape A) 1mm Increment	ℓ1	R	W	€ Unit Price SLNNA_	SLNND_	TSLNNA_	D-SNNA_	D-SNND_
SLNNA SLNND TSLNNA D-SNNA D-SNND	A (Taper)	6	-0.004 -0.012	8.0~12.0	5~30	5 8 10	*30 60 90 120	1~10	6	3	3					
		8		10.0~16.0		5 8 10 12 15			10	4	3.5					
		10	-0.005 -0.014	12.0~20.0		(5) (8) 10 12 15			12		4					
		10T							15	5	5					
	B (Taper R)	12	-0.006 -0.017	14.0~25.0		(8) 10 12 15 18			15	6	6					
		16		18.0~32.0		(10) 12 15 18 20			18	8	8					
		20	-0.007 -0.020	22.0~35.0		12 15 18 20			22		9					

⊗Angle A *30 is not applicable to Tip Shape B. Select from Precision No Shoulder Type (**P.1385**) ⊗L dimension in ( ) is not applicable to diamond shape and Dicoat® treated products.

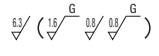
Set Screw Flat Type RoHS



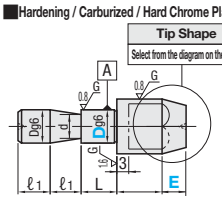
Type		Material	Hardness
SLNTA_	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
SLNTD_	Diamond		
TSLNTA_	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TSLNTD_	Diamond		

Type		Material	Hardness	Surface Treatment
D-SNTA_	Round	1.2379/ equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-SNTA_	Round	1.7220/ 34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

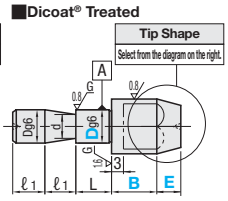
Reference: sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1



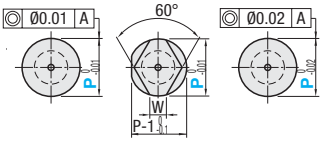
Hardening / Carburized / Hard Chrome Plated



Dicoat® Treated

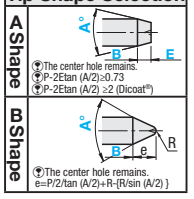


- Without Surface Treatment



- With Surface Treatment (D6~D12)

Tip Shape Selection



Part Number Type	Tip Shape	Dg6		P 0.1mm Increment	B 1mm Increment	A Selection	E (Shape A) 1mm Increment	L	ℓ1	d	R	Applicable Set Screw	W	€ Unit Price SLNTA_	SLNTD_	TSLNTA_	TSLNTD_	D-SNTA_	R-SNTA_
SLNTA SLNTD TSLNTA TSLNTD D-SNTA R-SNTA	A (Taper)	6	-0.004 -0.012	8.0~12.0	5~30	*30 60 90 120	1~10	5	8	4	3	M5	3						
		8	-0.005 -0.014	10.0~16.0						5			3.5						
		10		12.0~20.0				10		7	4	M6	4						
		10T						5					5						
	B (Taper R)	12	-0.006 -0.017	14.0~25.0				12	10	9	6	M8	6						
		16		18.0~32.0						13	8		8						
		20	-0.007 -0.020	22.0~35.0						17			9						

⊗Angle A *30 is not applicable to Tip Shape B. Select from Precision No Shoulder Type (**P.1385**)

Order Example

Part Number Type	Tip Shape	D	P	B	L	A	E
SLNND	A	6	P8.0	B14	L8	A30	E2
SLNTA	B	8	P12.0	B15		A60	

Alterations

Part Number Type	Tip Shape	D	P	B	L	A	E	(KD / MC)
D-SNNA	B	10	P12.0	B10	L5	A60		KD

Days to Ship

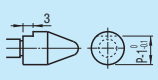
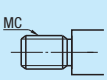
- Hardening: **8 Days** | Express A | 5,00 EUR/ piece | P.88
  - ℗A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Carburized / Hard Chrome Plated / Dicoat® Treated: **8 Days**

Price

Volume Discount (℗Round down to one Cent.) **P.87**

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

℗For orders larger than indicated quantity, please request a quotation.

Alterations	Flat	Thread Diameter
		
Code	KD	MC
Spec.	Ordering Code KD Machining on one side. ℗Applicable to Round Shape Only.	Ordering Code MC8 Changes the thread diameter. ℗D/3≤M<D Mmin3 ℗Applicable to Male Thread Type only.
Price Adder	2,00	2,00

Locating Pins for Jigs Precision - Configurable Type

-Shouldered-

■Male Thread

RoHS



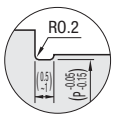
Type		M Material	H Hardness	
Round	Diamond			
FLANA	FLAND	1.7220/34CrMo4	Hardening Hardness	35~40HRC
FTLANA	FTLAND	1.7242/16CrMo4	Anti-carburizing on Thread	55HRC~
FSLANA	FSLAND	1.4301/X5CrNi18-10	-	
FCLANA	FCLAND	1.4125/X105CrMo17	Hardening Hardness	50~55HRC

*Carburized: Depth 0.7 ~ 0.8/Anti-carburizing on Thread

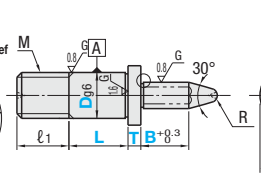
Type		M Material	H Hardness	S Surface Treatment
Round	Diamond			
D-FANA	D-FAND	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-FANA	R-FAND	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

D	g6
3	-0.002 -0.008
4~6	-0.004 -0.012
8-10	-0.005 -0.014
12-16	-0.006 -0.017
20	-0.007 -0.020

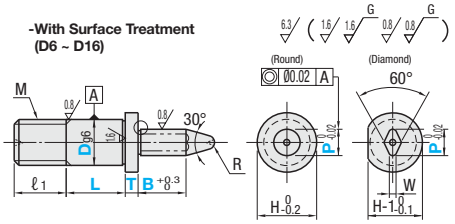
Surface Finish Relief



- Without Surface Treatment



-With Surface Treatment (D6 ~ D16)

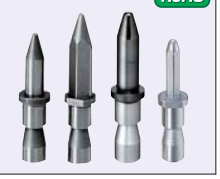


Part Number Type	D	0.1mm Increment P	B	1mm Increment L	0.1mm Increment T	ℓ1	H	R	M (Coarse)	W	€ Unit Price Round Shape FLANA	FTLANA	FSLANA	FCLANA	D-FANA	R-FANA	€ Unit Price Diamond Shape FLAND	FTLAND	FSLAND	FCLAND	D-FAND	R-FAND
FLANA D-FANA FLAND D-FAND FTLANA R-FANA FTLAND R-FAND FSLANA FSLAND FCLANA FCLAND	3	3.0~4.0	2.0~16.0	5~10	2.0~10.0	5	6	1	M3	1(2)												
	4	3.0~5.0	2.0~20.0	5~10		6	7		M4													
	5	3.0~6.0	2.0~24.0	5~10			8		M5													
	6	3.0~7.0	2.0~28.0	5~10			9		M6													
	8	3.0~9.0	2.0~35.0	5~10		10	11	1.5	M8													
	10	5.0~12.0	3.0~35.0	8~15		12	13	2	M10	2(3)												
	12	7.0~13.0	3.0~35.0	10~18		15	15	3	M12	4												
	16	13.0~16.0	5.0~35.0	12~20		18	19	4	M16	5												
	20	16.0~20.0	5.0~35.0	15~20		22	23		M20													

(P)B≤Px4 (W)(W) Dimension D≤8: W=2 when P>5.0. D10: W=3 when P>7.0.

■Set Screw Flat Type

RoHS



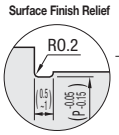
Type		M Material	H Hardness	
Round	Diamond			
FLATA	FLATD	1.7220/34CrMo4	Hardening Hardness	35~40HRC
FTLATA	FTLATD	1.7242/16CrMo4	Anti-carburizing on Thread	55HRC~
FSLATA	FSLATD	1.4301/X5CrNi18-10	-	
FCLATA	-	1.4125/X105CrMo17	Hardening Hardness	50~55HRC

*Carburized: Depth 0.7 ~ 0.8/Anti-carburizing on Thread

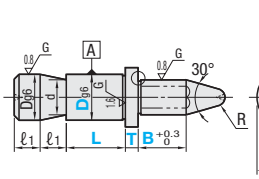
Type	M Material	H Hardness	S Surface Treatment
Round			
D-FATA	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-FATA	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

D	g6
6	-0.004 -0.012
8-10	-0.005 -0.014
12-16	-0.006 -0.017
20	-0.007 -0.020

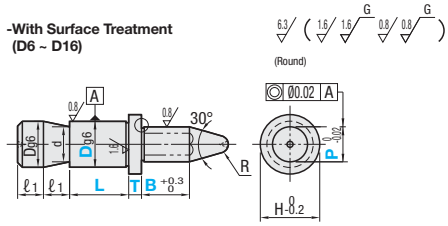
Surface Finish Relief



- Without Surface Treatment



-With Surface Treatment (D6 ~ D16)



Part Number Type	D	0.1mm Increment P	B	1mm Increment L	0.1mm Increment T	ℓ1	H	d	R	Applicable Set Screws	W	€ Unit Price Round Shape FLATA	FTLATA	FSLATA	FCLATA	D-FATA	R-FATA	€ Unit Price Diamond Shape FLATD	FTLATD	FSLATD
FLATA D-FATA FLATD R-FATA FTLATA FTLATD FSLATA FSLATD FCLATA	6	3.0~7.0	2.0~28.0	5~10	2.0~10.0	8	9	4	1	M5	1(2)									
	8	3.0~9.0	2.0~35.0	5~10			11	5	1.5											
	10	5.0~12.0	3.0~35.0	8~15			13	7	2	M6	2(3)									
	12	7.0~13.0	3.0~35.0	10~18			15	9	3		4									
	16	13.0~16.0	5.0~35.0	10~20		10	19	13	4	M8	5									
	20	16.0~20.0	5.0~35.0	10~20			23	17												

(P)B≤Px4 (W)(W) Dimension D6 and D8: W=2 when P>5.0. D10: W=3 when P>7.0.

Order Example

Part Number	P	B	L	T
FLANA6	P6.8	B10.5	L5	T3.1
FSLATA12	P9.6	B21.5	L10	T5.3

Price

■Volume Discount (P)Round down to one Cent.) P87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

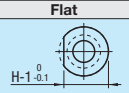
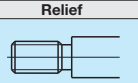
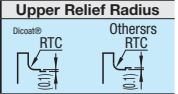
(P)For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	P	B	L	T	(KC, KD, SC...etc.)
FLANA6	P6.8	B10.5	L5	T3.1	SC8
FSLATA12	P9.6	B21.5	L10	T5.3	SC14

Days to Ship

- Hardening 1.4301/X5CrNi18-10: 8 Days
- Carburized, Hard Chrome Plated: 10 Days — Express B 5,00 EUR/piece P88
  (P)A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Dicoat® Treated: 10 Days

Alterations	Flat Position	Flat	Wrench Flats	Tip Angle	Relief	Upper Relief Radius
						
Code	KC	KD		RC	NNC	RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. (P)Diamond shape only.	Ordering Code KD Machining on one side. (P)Applicable to Round Shape Only. (P)H-P≥2	Ordering Code SC10 Adds wrench flats. SC=1 mm Increment SC>DSC>P (P)Applicable to Round Shape Only.	Ordering Code RC60 Changes the tip angle. Selection 60° / 90° / 120°	Ordering Code NNC Adds a relief at the thread end. ⊗Not applicable to Set Screw Type. ⊗For damage prevention, Dicoat® treatment is not applicable.	Ordering Code RTC1 Changes the relief to the following radius R. Selection R1 R2 R3 (P)RTC≤(H-P)/2
Price Adder	2,00	2,00	5,00	2,00	1,00	Free of Charge

Locating Pins for Jigs Precision - Configurable Type

-No Shoulder-

■Male Thread

RoHS



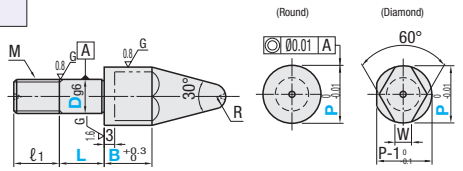
Type		M Material	H Hardness	
Round	Diamond			
FLNNA	FLNND	1.7220/34CrMo4	Hardening Hardness	35~40HRC
FTLNNA	FTLNND	1.7242/16CrMo4	Anti-carburizing on Thread	55HRC~
FSLNNA	FSLNND	1.4301/X5CrNi18-10	-	
FCLNNA	FCLNND	1.4125/X105CrMo17	Hardening Hardness	50~55HRC

*Carburized: Depth 0.7 ~ 0.8/Anti-carburizing on Thread

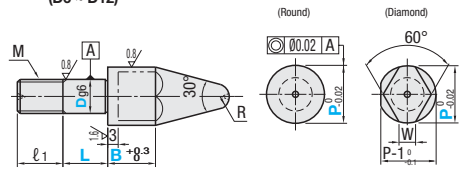
Type		M Material	H Hardness	S Surface Treatment
Round	Diamond			
D-FNNA	D-FNND	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-FNNA	R-FNND	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

D	g6
3	-0.002 -0.008
4~6	-0.004 -0.012
8-10	-0.005 -0.014
12-16	-0.006 -0.017
20	-0.007 -0.020

- Without Surface Treatment



-With Surface Treatment (D6 ~ D12)



Part Number Type	D	0.1mm Increment P	0.1mm Increment B	1mm Increment L	ℓ1	R	M (Coarse)	W	€ Unit Price Round Shape FLNNA	FTLNNA	FSLNNA	FCLNNA	D-FNNA	R-FNNA	€ Unit Price Diamond Shape FLNND	FTLNND	FSLNND	FCLNND	D-FNND	R-FNND
FLNNA D-FNNA FLNND D-FNND FTLNNA R-FNNA FTLNND R-FNND FSLNNA FSLNND FCLNNA FCLNND	3	4.0~6.0	2.0~16.0	5~10	5	2	M3	1.5												
	4	5.0~8.0	2.0~20.0	5~10	6	3	M4	2												
	5	6.0~10.0	2.0~24.0	5~10			M5													
	6	8.0~12.0	2.0~24.0	5~10			M6	3												
	8	10.0~16.0	2.0~26.0	5~10	10	4	M8	3.5												
	10	12.0~20.0	3.0~35.0	8~15	12		M10	4												
	12	14.0~25.0	3.0~35.0	10~18	15	6	M12	6												
	16	18.0~32.0	5.0~35.0	12~20	18	8	M16	8												
	20	22.0~35.0	5.0~35.0	15~20	22		M20	9												

(P)B≤Px4 (P)For Diamond Shape, B dimension 5.0 or more are applicable.

■Set Screw Flat Type

RoHS



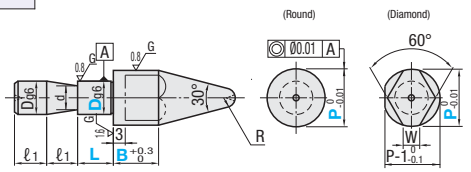
Type		M Material	H Hardness	
Round	Diamond			
FLNTA	FLNTD	1.7220/34CrMo4	Hardening Hardness	35~40HRC
FTLNTA	FTLNTD	1.7242/16CrMo4	Anti-carburizing on Thread	55HRC~
FSLNTA	-	1.4301/X5CrNi18-10	-	
FCLNTA	-	1.4125/X105CrMo17	Hardening Hardness	50~55HRC

*Carburized: Depth 0.7 ~ 0.8/Anti-carburizing on Thread

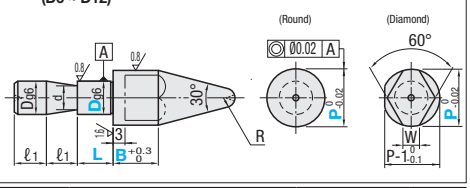
Type		M Material	H Hardness	S Surface Treatment
Round	Diamond			
D-FNTA	D-FNTD	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-FNTA	-	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

D	g6
6	-0.004 -0.012
8-10	-0.005 -0.014
12-16	-0.006 -0.017
20	-0.007 -0.020

- Without Surface Treatment



-With Surface Treatment (D6 ~ D12)



Part Number Type	D	0.1mm Increment P	0.1mm Increment B	1mm Increment L	ℓ1	d	R	Applicable Set Screws	W	€ Unit Price Round Shape FLNTA	FTLNTA	FSLNTA	FCLNTA	D-FNTA	R-FNTA	€ Unit Price Diamond Shape FLNTD	FTLNTD	D-FNTD
FLNTA D-FNTA FLNTD D-FNTD FTLNTA R-FNTA FTLNTD FSLNTA FCLNTA	6	8.0~12.0	2.0~30.0	5~10	8	4	3	M5	3									
	8	10.0~16.0	2.0~35.0	5~10		5	4		3.5									
	10	12.0~20.0	3.0~35.0	8~15		7		M6	4									
	12	14.0~25.0	3.0~35.0	10~18	10	9	6		6									
	16	18.0~32.0	5.0~35.0	10~20		13	8	M8	8									
	20	22.0~35.0	5.0~35.0	10~20		17			9									

(P)B≤Px4 (P)For Diamond Shape, B dimension 5.0 or more are applicable.

Order Example

Part Number	P	B	L
FTLNNA12	P14.2	B15.1	L10
FLNTA10	P12.1	B10.5	L8

Days to Ship

- Hardening 1.4301/X5CrNi18-10: 8 Days
- Carburized, Hard Chrome Plated: 10 Days — Express B 5,00 EUR/piece P.88
  (P)A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Dicoat® Treated: 10 Days

Price

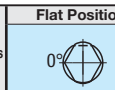
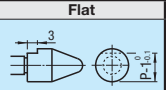
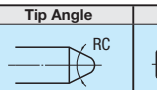
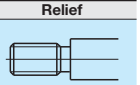
■Volume Discount ((P)Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	P	B	L	(KC / KD / RC / NNC)
FTLNNA12	P14.2	B15.1	L10	RC60
FLNTA10	P12.1	B10.5	L8	RC120

Alterations	Flat Position	Flat	Tip Angle	Relief
				
Code	KC	KD	RC	NNC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. (P)Diamond shape only.	Ordering Code KD Machining on one side. (P)Applicable to Round Shape Only.	Ordering Code RC60 Changes the tip angle. Selection 60° / 90° / 120°	Ordering Code NNC Adds an undercut at the thread end. ⊗Not applicable to Set Screw Type. ⊗For damage prevention, Dicoat ® treatment is not applicable.
Price Adder	2,00	2,00	2,00	1,00

Locating Pin for Jig
-Standard with Shoulder-

CAD Data

Features: For Standard Grade, P dimension tolerance is $^{0}_{-0.05}$ (for Precision Grade, $^{0}_{-0.01}$ or $^{0}_{-0.02}$), concentricity is 0.03 or 0.05 (for Precision Grade, 0.01 or 0.02).

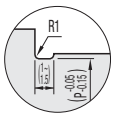
Male Thread



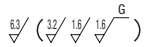
Type		Material	Hardness
ELANA	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
ELAND	Diamond		
TELANA	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TELAND	Diamond		

Reference:sin15°≈0.259
tan15°≈0.267

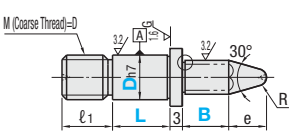
Surface Finish Relief



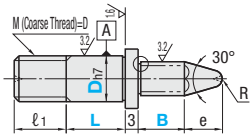
Type		Material	Hardness	Surface Treatment
D-LANA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-LAND	Diamond			
R-LANA	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-LAND	Diamond			
H-LANA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	TiCN Treatment
H-LAND	Diamond			



Hardening / Carburized / Hard Chrome Plated

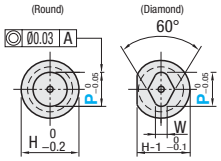


Dicoat® / TiCN Treatment

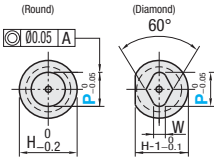


e=P/2/tan15°+R-(R/sin15°)

- Without Surface Treatment



- With Surface Treatment



Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	ℓ1	H	R	W	€ Unit Price ELANA	ELAND	TELANA	TELAND	D-LANA	D-LAND	R-LANA	R-LAND	H-LANA	H-LAND
D-LANA	6 (0 -0.012)	3.0~7.0	5~30 (B≤Px4)	5 8 10	6	9	1	1 (2)										
ELAND D-LAND	8 (0 -0.015)	3.0~9.0		5 8 10 12 15	10	11	1.5											
ELAND R-LANA	10 (0 -0.015)	4.5~12.0		(5) (8) 10 12 15	12	13	2	1~3										
TELANA R-LAND	10T (0 -0.015)				18													
TELAND H-LANA	12 (0 -0.018)	9.0~13.0		(8) 10 12 15 18	15	15	3	4										
H-LAND	16 (0 -0.018)	13.0~16.0		(10) 12 15 18 20	18	19	4	5										

W Dimension D6, D8: W=2 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0. ⊗L dimension in ( ) is not applicable to diamond shape, Dicoat® and TiCN treatment.®

Set Screw Flat Type

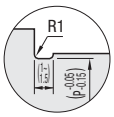
RoHS



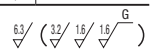
Type		Material	Hardness
ELATA	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
ELATD	Diamond		
TELATA	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TELATD	Diamond		

Reference: sin15°≈0.259
tan15°≈0.267

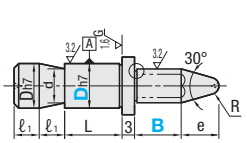
Surface Finish Relief



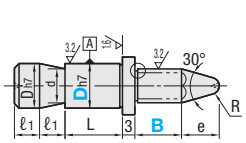
Type		Material	Hardness	Surface Treatment
D-LATA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-LATD	Diamond			
R-LATA	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-LATD	Diamond			
H-LATA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	TiCN Treatment
H-LATD	Diamond			



Hardening / Carburized / Hard Chrome Plated

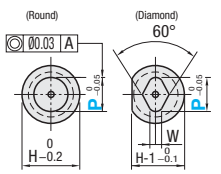


Dicoat® / TiCN Treatment

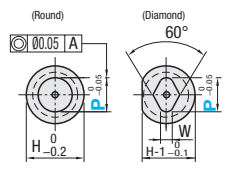


e=P/2/tan15°+R-(R/sin15°)

- Without Surface Treatment



- With Surface Treatment



Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L	ℓ1	H	d	R	Applicable Set Screw	W	€ Unit Price ELATA	ELATD	TELATA	TELATD	D-LATA	D-LATD	R-LATA	R-LATD	H-LATA	H-LATD
D-LATA	6 (0 -0.012)	3.0~7.0	5~30 (B≤Px4)	8	8	9	4	1	M5	1 (2)										
ELATA D-LATD	8 (0 -0.015)	3.0~9.0				11	5	1.5												
ELATD R-LATA	10 (0 -0.015)	4.5~12.0		10		13	7	2	M6	1~3										
TELATA R-LATD	10T (0 -0.015)			5																
TELATD H-LATA	12 (0 -0.018)	9.0~13.0		12	10	15	9	3	M8	4										
H-LATD	16 (0 -0.018)	13.0~16.0				19	13	4		5										

W Dimension D6, D8: W=2 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0.

Order Example

Part Number Type	D	-	P	-	B	-	L
ELANA	8	-	P6.0	-	B15	-	L10
ELATA	10	-	P8.8	-	B10		

Alterations

Part Number Type	D	-	P	-	B	-	L	- (KC / KD / / MC)
ELANA	6	-	P6.8	-	B14	-	L5	-

Days to Ship

- Hardening: 8 Days — Express A — 5,00 EUR/ piece — P. 88
  - A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Dicoat® Treated: 8 Days — Express A — 8,00 EUR/ piece — P. 88
  - A Express Charge of 21,60 EUR for 3 or more identical pieces.
- Carburized, Hard Chrome Plated: 8 Days
- TiCN Treatment: 10 Days — Express B — 5,00 EUR/ piece — P. 88
  - A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations	Flat Position	Flat	Wrench Flats	Thread Diameter
	0°	H-1 0 -0.1	H1, H	MC
Code	KC	KD	SC	MC
Spec.	Ordering Code KC. Changes the flat position to 90° from the standard position 0°. A Applicable to Diamond shape only.	Ordering Code KD. Machining on one side. A H-P≥2 A Applicable to Round Shape Only.	Ordering Code SC. Adds wrench flats. H: 9 11 13 15 19; H1: 7 8 11 13 17. A Applicable to Round Shape Only.	Ordering Code MC8. Changes the thread diameter. A D/3≤M<D Mmin3 A Applicable to Male Thread Type only.
Price Adder	2,00	2,00	5,00	2,00

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

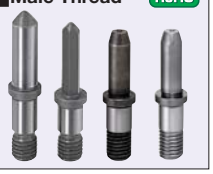
Locating Pin for Jig

-Tip Shape Selectable - Standard with Shoulder-

CAD Data

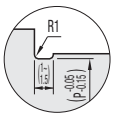
Features: For Standard Grade, P dimension tolerance is $^{0}_{-0.05}$ (for Precision Grade, $^{0}_{-0.01}$ or $^{0}_{-0.02}$), concentricity is 0.03 or 0.05 (for Precision Grade, 0.01 or 0.02).Tip shape is selectable.

Male Thread RoHS



Type		Material	Hardness
SELANA_	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
SELAND_	Diamond		
TSELANA_	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8), Anti-carburizing on Thread
TSELAND_	Diamond		

Surface Finish Relief



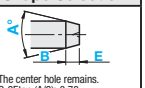
Type		Material	Hardness	Surface Treatment
D-SLANA_	Round	1.2379/X155Cr VMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-SLAND_	Diamond			
R-SLANA_	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

Reference: sin15°=0.259 tan15°=0.267 sin30°=0.5 tan30°=0.577 sin45°=0.707 tan45°=1

6.3 (3.2 1.6 1.6 G)

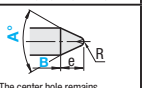
Tip Shape Selection

A Shape



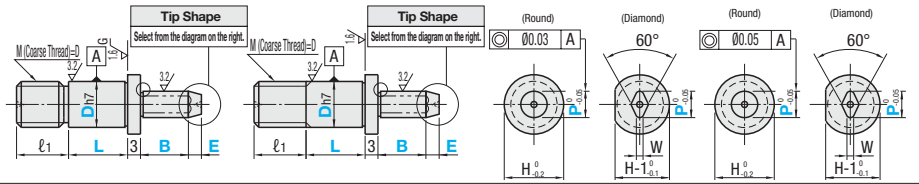
The center hole remains.
P-2Etan (A/2)≥0.73
P-2Etan (A/2) ≥2 (Dicoat®)

B Shape



The center hole remains.
e=P/2/tan (A/2)+R-[R/sin (A/2) }

Hardening / Carburized / Hard Chrome Plated — **Dicoat® Treated** — **- Without Surface Treatment** — **- With Surface Treatment**



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	A Selection	E (Shape A) 1mm Increment	ℓ1	H	R	W	€ Unit Price SELANA_	SELAND_	TSELANA_	TSELAND_	D-SLANA_	D-SLAND_	R-SLANA_
SELANA SELAND TSELANA TSELAND	A (Taper)	6	3.0~7.0	5~30 (B≤Px4)	5 8 10	*30	1~10	6	9	1	1 (2)							
D-SLANA D-SLAND R-SLANA		8	3.0~9.0		5 8 10 12 15	60		10	11	1.5								
		10	4.5~12.0		(5) (8) 10 12 15			12	13	2	1~3							
	B (Taper R)	10T				90		18										
		12	9.0~13.0		(8) 10 12 15 18			15	15	3	4							
		16	13.0~16.0		(10) 12 15 18 20	120		18	19	4	5							

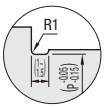
W Dimension D6, D8: W=2 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0. ⊗L dimension in ( ) is not applicable to diamond shape and Dicoat® treated products.
⊗Angle A *30 is not applicable to Tip Shape B. Select from Standard with Shoulder Type (**P.1389**)

Set Screw Flat Type RoHS



Type		Material	Hardness
SELATA_	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
SELATD_	Diamond		
TSELATA_	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TSELATD_	Diamond		

Surface Finish Relief



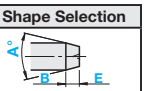
Type		Material	Hardness	Surface Treatment
D-SLATA_	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-SLATD_	Diamond			
D-SLATA_	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	TiCN Treatment

Reference: sin15°=0.259 tan15°=0.267 sin30°=0.5 tan30°=0.577 sin45°=0.707 tan45°=1

6.3 (3.2 1.6 1.6 G)

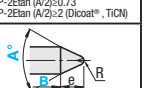
Tip Shape Selection

A Shape



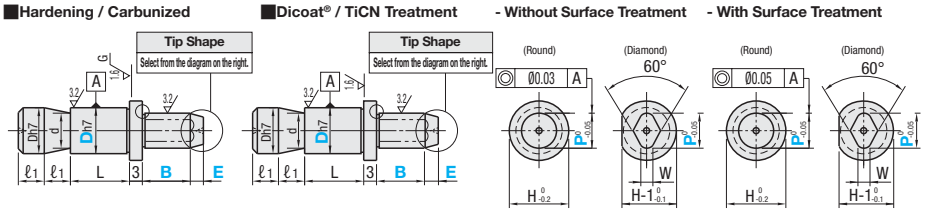
The center hole remains.
P-2Etan (A/2)≥0.73
P-2Etan (A/2)≥2 (Dicoat®, TiCN)

B Shape



The center hole remains.
e=P/2/tan (A/2)+R-[R/sin (A/2) }

Hardening / Carbunized — **Dicoat® / TiCN Treatment** — **- Without Surface Treatment** — **- With Surface Treatment**



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	B 1mm Increment	A Selection	E (Shape A) 1mm Increment	L	ℓ1	H	d	R	Applicable Set Screw	W	€ Unit Price SELATA_	SELATD_	TSELATA_	TSELATD_	D-SLATA_	D-SLATD_	D-SLATA_
SELATA SELATD TSELATA TSELATD	A (Taper)	6	3.0~7.0	5~30 (B≤Px4)	*30	1~10	8	8	9	4	1	M5	1 (2)							
D-SLATA D-SLATD H-SLATA		8	3.0~9.0		60				11	5	1.5									
		10	4.5~12.0		90		10		13	7	2	M6	1~3							
	B (Taper R)	10T					5													
		12	9.0~13.0		120		12	10	15	9	3	M8	4							
		16	13.0~16.0						19	13	4		5							

W Dimension D6, D8: W=2 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0. ⊗Angle A *30 is not applicable to Tip Shape B. Select from Standard with Shoulder Type (**P.1389**)

Order Example

Part Number										
Type	Tip Shape	D	-	P	-	B	-	L	-	A	-	E
SELANA	A	16	-	P14.2	-	B21	-	L15	-	A60	-	E2
SELATA	B	8	-	P6.0	-	B15			-	A90		

Days to Ship

- Hardening: **8 Days** — Express A 5,00 EUR/ piece — P. 88
  A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Dicoat® Treated: **8 Days** — Express A 8,00 EUR/ piece — P. 88
  A Express Charge of 21,60 EUR for 3 or more identical pieces.
- Carburized, Hard Chrome Plated: **8 Days**
- TiCN Treatment: **10 Days** — Express B 5,00 EUR/ piece — P. 88
  A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

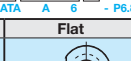
Volume Discount (Round down to one Cent.) **P 87**

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number											
Type	Tip Shape	D	-	P	-	B	-	L	-	A	-	E	- (KC / KD / SC / MC)
SELATA	A	6	-	P6.8	-	B14			-	A30	-	E2	-

Alterations	Flat Position	Flat	Wrench Flats	Thread Diameter
				
Code	KC	KD	SC	MC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Applicable to Diamond shape only.	Ordering Code KD Machining on one side. H-P≥2 Applicable to Round Shape Only.	Ordering Code SC Adds wrench flats. H: 9 11 13 15 19 H1: 7 8 11 13 17 Applicable to Round Shape Only.	Ordering Code MC8 Changes the thread diameter. D/3≤M<D Mmin3 Applicable to Male Thread Type only.
Price Adder	2,00	2,00	5,00	2,00

Locating Pin for Jig

-Standard No Shoulder-

CAD Data

Features: For Standard Grade, P dimension tolerance is $^{0}_{-0.05}$ (for Precision Grade, $^{0}_{-0.01}$ or $^{0}_{-0.02}$), concentricity is 0.03 or 0.05 (for Precision Grade, 0.01 or 0.02).

Male Thread RoHS

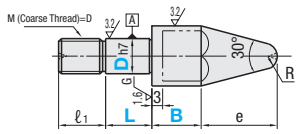


Type		Material	Hardness
ELNNA	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
ELNND	Diamond		
TELNNA	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TELNND	Diamond		

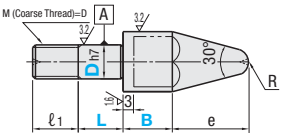
Reference:sin15°≈0.259
tan15°≈0.267

Type		Material	Hardness	Surface Treatment
D-LNNA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-LNND	Diamond			
R-LNNA	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-LNND	Diamond			
H-LNNA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	TiCN Treatment
H-LNND	Diamond			

Hardening / Carburized / Hard Chrome Plated

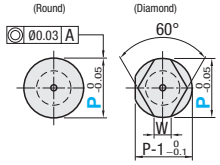


Dicoat® / TiCN Treatment

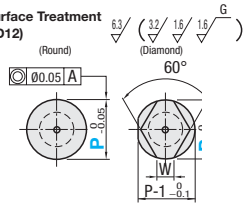


e=P/2/tan15°+R-(R/sin15°)

- Without Surface Treatment



- With Surface Treatment (D6 ~ D12)



Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	ℓ1	R	W	€ Unit Price ELNNA	ELNND	TELNNA	TELNND	D-LNNA	D-LNND	R-LNNA	R-LNND	H-LNNA	H-LNND
D-LNNA	6 0 -0.012	8.0~12.0	5-30	5 8 10	6	3	3										
ELNNA D-LNND	8	10.0~16.0		5 8 10 12 15	10	4	3.5										
ELNND R-LNNA	10 0 -0.015	12.0~20.0		(5) (8) 10 12 15	12		4										
TELNNA R-LNND	10T				15	5	5										
TELNND H-LNNA	12 0 -0.018	14.0~25.0		(8) 10 12 15 18	15	6	6										
H-LNND	16	18.0~32.0		(10) 12 15 18 20	18	8	8										
	20 0 -0.021	22.0~35.0		12 15 18 20	22		9										

⊗L dimension in ( ) is not applicable to diamond shape, Dicoat® and TiCN treatment.

Set Screw Flat Type RoHS

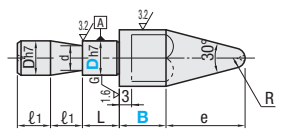


Type		Material	Hardness
ELNTA	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
ELNTD	Diamond		
TELNTA	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TELNTD	Diamond		

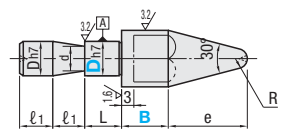
Reference:sin15°≈0.259
tan15°≈0.267

Type		Material	Hardness	Surface Treatment
D-LNTA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-LNTD	Diamond			
R-LNTA	Round	1.7220/34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-LNTD	Diamond			
H-LNTA	Round	1.2379/X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	TiCN Treatment

Hardening / Carburized / Hard Chrome Plated

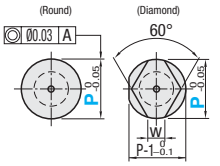


Dicoat® / TiCN Treatment

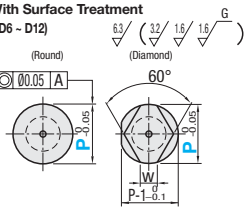


e=P/2/tan15°+R-(R/sin15°)

- Without Surface Treatment



- With Surface Treatment (D6 ~ D12)



Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L	ℓ1	d	R	Applicable Set Screws	W	€ Unit Price ELNTA	ELNTD	TELNTA	TELNTD	D-LNTA	D-LNTD	R-LNTA	R-LNTD	H-LNTA
	6 0 -0.012	8.0~12.0	5~30	5	8	4	3	M5	3									
ELNTA D-LNTA	8	10.0~16.0				5	4		3.5									
ELNTD D-LNTD	10 0 -0.015	12.0~20.0		10		7		M6	4									
TELNTA R-LNTA	10T			5			5		5									
TELNTD R-LNTD	12 0 -0.018	14.0~25.0		12	10	9	6	M8	6									
H-LNTA	16	18.0~32.0				13	8		8									
	20 0 -0.021	22.0~35.0				17			9									

Part Number: Type D - P - B - L

ELNNA 10 - P12.0 - B10 - L8 (Male Thread)
ELNTA 6 - P10.0 - B15 (Set Screw)

- Hardening

8 Days | Express A | 5,00 EUR/ piece | P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

- Dicoat® Treated

8 Days | Express A | 8,00 EUR/ piece | P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

- Carburized, Hard Chrome Plated

8 Days

- TiCN Treatment

10 Days | Express B | 5,00 EUR/ piece | P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number: Type D - P - B - L - (KC, KD...etc.)

ELNNA 6 - P8.0 - B14 - L5 - KD

Alterations	Flat Position	Flat	Thread Diameter	Thread Length
	0°	3, P -0.1	MC	FC
Code	KC	KD	MC	FC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Applicable to Diamond shape only.	Ordering Code KD Machining on one side. Applicable to Round Shape Only.	Ordering Code MC8 Changes the thread diameter. D/3≤M<D Mmin3 Applicable to Male Thread Type only.	Ordering Code FC15 Changes the thread length. FC=1 mm Increment D6~10 : M≤FC≤Mx3 D12, 16: M≤FC≤Mx2.5 D20:M≤FC≤Mx2 Applicable to Male Thread Type only Not applicable to Dicoat® treatment and TiCN treatment.
Price Adder	2,00	2,00	2,00	3,00

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Locating Pin for Jig

-Tip Shape Selectable - Standard No Shoulder-

CAD Data

Features: For Standard Grade, P dimension tolerance is $^{0}_{-0.05}$ (for Precision Grade, $^{0}_{-0.01}$ or $^{0}_{-0.02}$), concentricity is 0.03 or 0.05 (for Precision Grade, 0.01 or 0.02). Tip shape is selectable.

Male Thread

RoHS



Type		Material	Hardness
SELNNA_	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
SELNND_	Diamond		
TSELNNA_	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TSELNND_	Diamond		

Type		Material	Hardness	Surface Treatment
D-SLNNA_	Round	1.2379/ X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-SLNND_	Diamond			

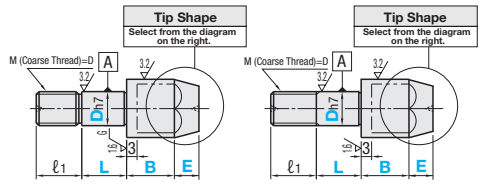
Reference: sin15°≒0.259 tan15°≒0.267 sin30°=0.5 tan30°=0.577 sin45°≒0.707 tan45°=1

6.3 (3.2 1.6 1.6) G

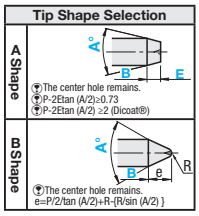
Hardening / Carbunized

Dicoat® Treated

- Without Surface Treatment
- With Surface Treatment (D6 ~ D12)



Tip Shape Selection



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	B 1mm Incr.	L Selection	A Sel.	E (Shape A) 1mm Incr.	ℓ1	R	W	€ Unit Price SELNNA_	SELNND_	TSELNNA_	TSELNND_	D-SLNNA_	D-SLNND_
SELNNA SELNND D-SLNNA TSELNNA D-SLNND TSELNND	A (Taper)	6 $^{0}_{-0.012}$	8.0~12.0	5~30	5 8 10	*30	1~10	6	3	3						
		8	10.0~16.0		5 8 10 12 15			10	4	3.5						
		10 $^{0}_{-0.015}$	12.0~20.0		(5) (8) 10 12 15	60		12		4						
		10T						15	5	5						
	B (Taper R)	12 $^{0}_{-0.018}$	14.0~25.0		(8) 10 12 15 18	90		15	6	6						
		16	18.0~32.0		(10) 12 15 18 20	120		18	8	8						
		20 $^{0}_{-0.021}$	22.0~35.0		12 15 18 20			22		9						

⊗Angle A *30 is not applicable to Tip Shape B. Select from Standard No Shoulder Type (**P.1391**) ⊗L dimension in ( ) is not applicable to diamond shape and Dicoat® treated products..

Set Screw Flat Type

RoHS



Type		Material	Hardness
SELNTA_	Round	1.7220/ 34CrMo4	Hardening 35~40HRC
SELNTD_	Diamond		
TSELNTA_	Round	1.7242/ 16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TSELNTD_	Diamond		

Type		Material	Hardness	Surface Treatment
D-SLNTA_	Round	1.2379/ X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated

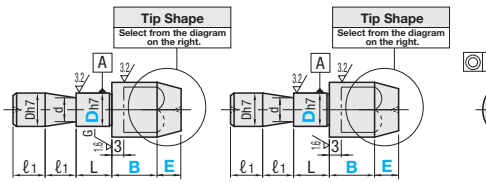
Reference: sin15°≒0.259 tan15°≒0.267 sin30°=0.5 tan30°=0.577 sin45°≒0.707 tan45°=1

6.3 (3.2 1.6 1.6) G

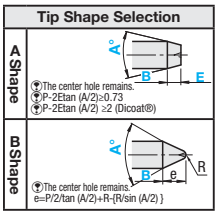
Hardening / Carbunized

Dicoat® Treated

- Without Surface Treatment
- With Surface Treatment (D6 ~ D12)



Tip Shape Selection



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	B 1mm Incr.	A Selection	E (Shape A) 1mm Increment	L	ℓ1	d	R	Applicable Set Screws	W	€ Unit Price SELNTA_	SELNTD_	TSELNTA_	TSELNTD_	D-SLNTA_
SELNTA SELNTD TSELNTA TSELNTD D-SLNTA	A (Taper)	6 $^{0}_{-0.012}$	8.0~12.0	5~30	*30	1~10	5	8	4	3	M5	3					
		8	10.0~16.0		60				5	4		3.5					
		10 $^{0}_{-0.015}$	12.0~20.0		90		10		7		M6	4					
		10T					5			5		5					
	B (Taper R)	12 $^{0}_{-0.018}$	14.0~25.0				12	10	9	6	M8	6					
		16	18.0~32.0		120				13	8		8					
		20 $^{0}_{-0.021}$	22.0~35.0						17			9					

⊗Angle A *30 is not applicable to Tip Shape B. Select from Standard No Shoulder Type (**P.1391**)

Part Number								
Type	Tip Shape	D	P	B	L	A	E	
SELNNA	A	16	P18.0	B21	L15	A60	E2	(Male Thread)
SELNTA	B	10	P14.0	B10	-	A60	-	(Set Screw)

- Hardening: 8 Days — Express A — 5,00 EUR/ piece — P. 88
  - A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Dicoat® Treated: 8 Days — Express A — 8,00 EUR/ piece — P. 88
  - A Express Charge of 21,60 EUR for 3 or more identical pieces.
- Carburized: 8 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number Type	Tip Shape	D	P	B	L	A	E	(KC, KD...etc.)
SELNTA	A	6	P8.0	B14	-	A30	E2	- KD

Alterations	Flat Position	Flat	Thread Ø	Thread Length
	0°	3, P-1 0 -0.1	MC	FC
Code	KC	KD	MC	FC
Spec.	Ordering Code KC. Changes the flat position to 90° from the standard position 0°. Applicable to Diamond shape only.	Ordering Code KD. Machining on one side. Applicable to Round Shape Only.	Ordering Code MC8. Changes the thread diameter. D/3≤M<D Mmin3. Applicable to Male Thread Type only	Ordering Code FC15. Changes the thread length. FC=1 mm Increment D6~10 : M≤FC≤Mx3 D12, 16: M≤FC≤Mx2.5 D20:M≤FC≤Mx2 Applicable to Male Thread Type only. Not applicable to Dicoat ® treatment and TiCN treatment.
Price Adder	2,00	2,00	2,00	3,00

Locating Pins for Jigs Standard Short Set Screw

-Circumference Groove-

CAD Data

Features: Short retaining part is used for thin locator. For Standard Grade, P dimension tolerance is $^{0}_{-0.05}$ (for Precision Grade, $^{0}_{-0.01}$ or $^{0}_{-0.02}$), concentricity is 0.03 or 0.05 (for Precision Grade, 0.01 or 0.02).

Shouldered Type RoHS

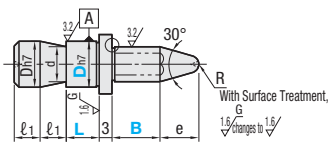


Type		M Material	H Hardness
Circumference Groove	Shape		
ELASA	Round	1.7220/	Hardening Hardness 35~40HRC
ELASD	Diamond		
TELASA	Round	1.7242/	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti carburizing on Thread
TELASD	Diamond		

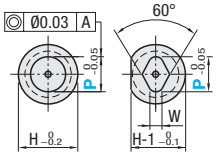
Type		M Material	H Hardness	S Surface Treatment
Circumference Groove	Shape			
D-LASA	Round	1.2379/ equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-LASD	Diamond			
R-LASA	Round	1.7220/	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-LASD	Diamond			

Circumference Groove Shape

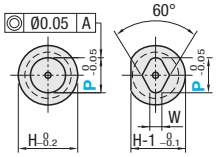
D	ℓ1	d	Applicable Set Screws
6	6	4	M5
8		5	
10		7	
12	8	9	M6
16		13	



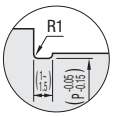
-Without Surface Treatment (Round) (Diamond)



-With Surface Treatment (Round) (Diamond)



Surface Finish Relief



Reference:sin15°≈0.259 tan15°≈0.267
e=P/2/tan15°+R-(R/sin15°)

Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L 1mm Increment	H	R	W	€ Unit Price ELASA	ELASD	TELASA	TELASD	D-LASA	D-LASD	R-LASA	R-LASD
Circumference Groove Shape															
ELASA ELASD TELASA TELASD D-LASA D-LASD R-LASA R-LASD	6 0 -0.012	3.0~7.0	5~30 (B≤Px4)	5~10	9	1	1(2)								
	8 0 -0.015	3.0~9.0			11	1.5									
	10 0 -0.015	4.5~12.0			13	2	1~3								
	12 0 -0.018	9.0~13.0			15	3	4								
	16 0 -0.018	13.0~16.0			19	4	5								

W Dimension D6, D8: W=2 when P>5.0. D10: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0.

No Shoulder Type RoHS

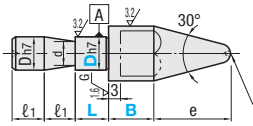


Type		M Material	H Hardness
Circumference Groove	Shape		
ELNSA	Round	1.7220/	Hardening Hardness 35~40HRC
ELNSD	Diamond		
TELNSA	Round	1.7242/	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TELNSD	Diamond		

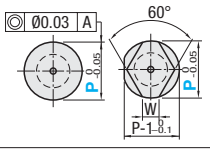
Type		M Material	H Hardness	S Surface Treatment
Circumference Groove	Shape			
D-LNSA	Round	1.2379/ equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
R-LNSA	Round	1.7220/	35~40HRC (Surface 750 HV)	Hard Chrome Plating
R-LNSD	Diamond			

Circumference Groove Shape

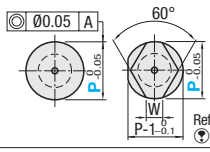
D	ℓ1	d	Applicable Set Screws
6	6	4	M5
8		5	
10		7	
12	8	9	M6
16		13	
20		17	



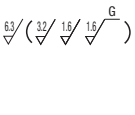
-Without Surface Treatment (Round) (Diamond)



-With Surface Treatment (D6~D12) (Round) (Diamond)



Surface Finish Relief



Reference:sin15°≈0.259 tan15°≈0.267
e=P/2/tan15°+R-(R/sin15°)

Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L 1mm Increment	R	W	€ Unit Price ELNSA	ELNSD	TELNSA	TELNSD	D-LNSA	R-LNSA	R-LNSD
Circumference Groove Shape													
ELNSA ELNSD TELNSA TELNSD D-LNSA R-LNSA R-LNSD	6 0 -0.012	8.0~12.0	5~30	5~10	3	3							
	8 0 -0.015	10.0~16.0			4	3.5							
	10 0 -0.015	12.0~20.0				4							
	12 0 -0.018	14.0~25.0			6	6							
	16 0 -0.018	18.0~32.0			8	8							
	20 0 -0.021	22.0~35.0				9							

Order Example

Part Number Type	D	-	P	-	B	-	L
ELASA	6	-	P5.0	-	B10	-	L5
ELNSA	8	-	P12.0	-	B15	-	L8

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

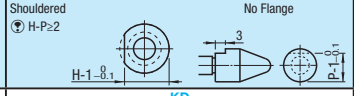
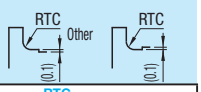
For orders larger than indicated quantity, Zplease request a quotation.

Days to Ship

- Hardening: 8 Days — Express A 5,00 EUR/ piece — P.88
  A Express Charge of 13,50 EUR for 3 or more identical pieces.
- Dicoat® Treated: 8 Days — Express A 8,00 EUR/ piece — P.88
  A Express Charge of 21,60 EUR for 3 or more identical pieces.
- Hard Chrome Plated: 8 Days
- Carburized: 10 Days — Express B 5,00 EUR/ piece — P.88
  A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	P	-	B	-	L	-	(KC / KD / SC / RTC)
ELASA10	-	P10.0	-	B15	-	L10	-	KD

Alterations	Flat Position	Flat	Wrench Flats	Upper Relief Radius
	Shouldered No Shoulder	Shouldered No Flange		Dicoat® RTC Other RTC
				
Code	KC	KD		RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Applicable to Diamond shape only.	Ordering Code KD Machining on one side. Applicable to Round Shape.	Ordering Code Adds wrench flats. H: 9 11 13 15 19 H1: 7 8 11 13 17 Applicable to Round Shape with Shoulder only.	RTC2 Changes the relief to the following radius R. Selection R0.2 R2 R3 Applicable to Shouldered Type only. RTC≤(H-P)/2
Price Adder	2,00	2,00	5,00	Free of Charge

Locating Pins for Jigs Standard Short Set Screw

-Tip Shape Selectable Circumference / Notch-

CAD Data

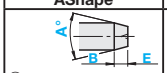
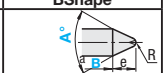
Features: Short retaining part is used for thin locator. For Standard Grade, P dimension tolerance is $^{0}_{-0.05}$ (for Precision Grade, $^{0}_{-0.01}$ or $^{0}_{-0.02}$), concentricity is 0.03 or 0.05 (for Precision Grade, 0.01 or 0.02).

Shouldered Type RoHS

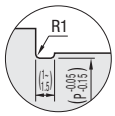


Type			Mat.	Hardness
Circumference Groove	Notch	Shape		
ELASA_	ELACA_	Round	1.7220/	Hardening Hardness 35~40HRC
ELASD_	ELACD_	Diamond		
TELASA_	TELACA_	Round	1.7242/	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TELASD_	TELACD_	Diamond		

Tip Shape Selection

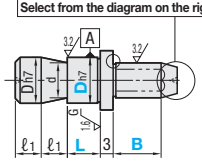
AShape	BShape
	
℗The center hole remains. ℗P-2Etan (A/2)≥0.73	℗The center hole remains. e=P/2/tan (A/2)+R-{R/sin (A/2)}

Surface Finish Relief



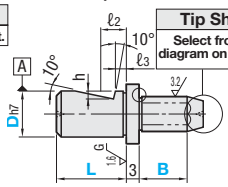
-Circumference Groove Shape

Tip Shape
Select from the diagram on the right.

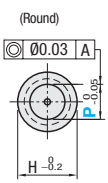


-Notch Shape

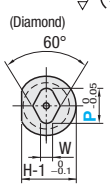
Tip Shape
Select from the diagram on the right.

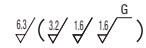


(Round)



(Diamond)





Reference:sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1

■Circumference Groove Shape

D	ℓ1	d	Applicable Set Screws
6	6	4	M5
8		5	
10		7	
12	8	9	M6
16		13	

■Notch Shape

D	ℓ2	ℓ3	h	Applicable Set Screws
6	5.5	2.5	1.0	M4
8	7.5	3.5	1.2	M5
10				
12				M6
16	10.5	5.5	2.0	

℗ℓ2 is the recommended dimension of the position of set screw tip.

Part Number				P 0.1mm Increment	B 1mm Increment	L		A Selection	E (Shape A) 1mm Increment	H	R	W	€ Unit Price							
Type	Tip Shape	Dh7				Circumference Groove Shape 1mm Incr.	Notch Shape Selection						Circumference Groove				Notch			
													ELASA_	ELASD_	TELASA_	TELASD_	ELACA_	ELACD_	TELACA_	TELACD_
Circumference Groove Shape ELASA ELASD TELASA TELASD	Notch Shape ELACA ELACD TELACA TELACD	A (Taper)	6	0 -0.012	3.0~7.0	5~30 (B≤Px4)	5~10	10 12 16	*30 60 90 120	1~10	9	1	1 (2)								
			8	0 -0.015	3.0~9.0			12 16 19			11	1.5									
			10		4.5~12.0						13	2	1~3								
		B (Taper R)	12	0 -0.018	9.0~13.0			12 16 19 20			15	3	4								
			16		13.0~16.0			19 20 25			19	4	5								

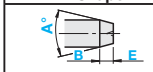
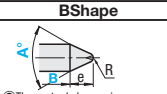
℗W Dimension D6, D8: W=2 when P>5.0. D10: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0. ⊗Angle A *30 is not applicable to Tip Shape B of Circumference Groove. Select from Circumference Groove (**P.1393**)
℗Conventional RC alteration (change of angle) can be substituted with Tip B Shape.

No Shoulder Type RoHS



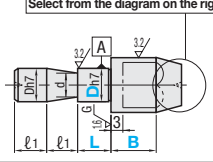
Type			Material	Hardness
Circumference Groove	Notch	Shape		
ELNSA_	ELNCA_	Round	1.7220/	Hardening Hardness 35~40HRC
ELNSD_	ELNCD_	Diamond		
TELNSA_	TELNCA_	Round	1.7242/	Anti-carburizing on Thread 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TELNSD_	TELNCD_	Diamond		

Tip Shape Selection

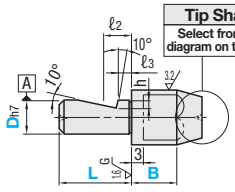
AShape	BShape
	
℗The center hole remains. ℗P-2Etan (A/2)≥0.73	℗The center hole remains. e=P/2/tan (A/2)+R-{R/sin (A/2)}

-Circumference Groove Shape -Notch Shape

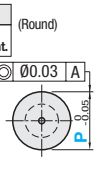
Tip Shape
Select from the diagram on the right.



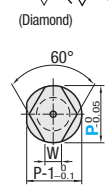
Tip Shape
Select from the diagram on the right.

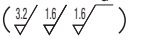


(Round)



(Diamond)





Reference:sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1

■Circumference Groove Shape

D	ℓ1	d	Applicable Set Screws
6	6	4	M5
8		5	
10		7	
12	8	9	M6
16		13	
20		17	

■Notch Shape

D	ℓ2	ℓ3	h	Applicable Set Screws
6	5.5	2.5	1.0	M4
8	7.5	3.5	1.2	M5
10				
12				M6
16	10.5	5.5	2.0	
20				

℗ℓ2 is the recommended dimension of the position of set screw tip.

Part Number				P 0.1mm Increment	B 1mm Increment	L		A Selection	E (Shape A) 1mm Increment	R	W	€ Unit Price							
Type	Tip Shape	Dh7				Circumference Groove Shape 1mm Incr.	Notch Shape Selection					Circumference Groove				Notch			
												ELNSA_	ELNSD_	TELNSA_	TELNSD_	ELNCA_	ELNCD_	TELNCA_	TELNCD_
Circumference Groove Shape ELNSA ELNSD TELNSA TELNSD	Notch Shape ELNCA ELNCD TELNCA TELNCD	A (Taper)	6	0 -0.012	8.0~12.0	5~30	5~10	10 12 16	*30 60 90 120	1~10	3	3								
			8	0 -0.015	10.0~16.0			12 16 19			4	3.5								
			10		12.0~20.0			12 16 19				4								
		B (Taper R)	12	0 -0.018	14.0~25.0			12 16 19 20			6	6								
			16		18.0~32.0			19 20 25			8	8								
			20	0 -0.021	22.0~35.0			19 20 25				9								

⊗Angle A *30 is not applicable to Tip Shape B of Circumference Groove. Select from Circumference Groove (**P.1393**) ℗Conventional RC alteration (change of angle) can be substituted with Tip Shape B.

Order Example

Part Number											
Type	Tip Shape	D	-	P	-	B	-	L	-	A	-	E
ELASA	A	6	-	P5.0	-	B10	-	L5	-	A60	-	E5
ELNCA	B	6	-	P8.0	-	B10	-	L10	-	A60		

Price

■Volume Discount (℗Round down to one Cent.) **P.87**

- Circumference Groove Shape

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

℗For orders larger than indicated quantity, please request a quotation.

- Notch Shape

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

℗For orders larger than indicated quantity, please request a quotation.

Days to Ship

- Hardening

8 Days — Express A — 5,00 EUR/ piece — **P.88**

℗A Express Charge of 13,50 EUR for 3 or more identical pieces.

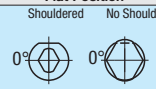
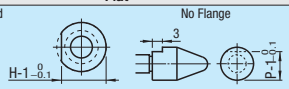
- Carburized

10 Days — Express B — 5,00 EUR/ piece — **P.88**

℗A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	P	-	B	-	L	-	A	-	E	-	(KC / KD / / RTC)
ELNSAB10	-	P12.8	-	B15	-	L10	-	A60	-		-	KD

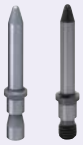
Alterations	Flat Position	Flat	Wrench Flats	Upper Relief Radius
	Shouldered / No Shoulder	Shouldered ℗H-P≥2 / No Flange		
				
Code	KC	KD	SC	RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. ℗Applicable to Diamond shape only.	Ordering Code KD Machining on one side. ℗Applicable to Round Shape.	Ordering Code SC Adds wrench flats. H: 9 11 13 15 19 H1: 7 8 11 13 17 ℗Applicable to Round Shape with Shoulder only.	Ordering Code RTC2 Changes the relief to the following radius R. Selection R0.2 R2 R3 ℗Applicable to Shouldered Type only. ℗RTC≤(H-P)/2
Price Adder	2,00	2,00	5,00	Free of Charge

Locating Pins for Jigs Standard - Long Head

CAD Data

Features: Height direction can be determined by combination with keeping panel.

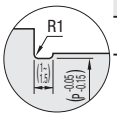
Shouldered Type RoHS



Type		M Material	H Hardness
Male Thread	Set Screws		
LANAR	LATAR	1.7220/ 34CrMo4	Hardening Hardness 35~40HRC
TLANAR	TLATAR	1.7242/ 16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread

Reference:sin15°≈0.259
tan15°≈0.267

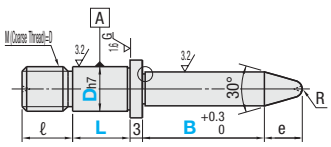
Surface Finish Relief



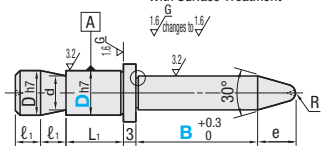
Type		M Material	H Hardness	S Surface Treatment
Male Thread	Set Screws			
R-ANAR	R-ATAR	1.7220/ 34CrMo4	35~40HRC (Surface 750 HV)	Hard Chrome Plating

6.3 (3.2 1.6 1.6 G)

- Male Thread

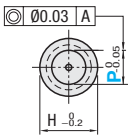


- Set Screw

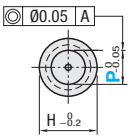


With Surface Treatment

- Without Surface Treatment



- With Surface Treatment



(P)e=P/2/tan15°+R-(R/sin15°) (P)The center hole remains.

Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	ℓ	L1	ℓ1	H	d	R	Applicable Set Screws	€ Unit Price LANAR LATAR	TLANAR TLATAR	R-ANAR R-ATAR
Male Thread LANAR TLANAR R-ANAR	6 (0 -0.012)	5.0~7.0	20~30	5 8 10	6	8	8	9	4	1	M5			
	8 (0 -0.015)	5.0~9.0		5 8 10 12 15	10			11	5	1.5				
	10 (0 -0.015)	4.5~12.0	20~40	5 8 10 12 15	12	10		13	7	2	M6			
Set Screws LATAR TLATAR R-ATAR	10T (0 -0.015)				18	5								
	12 (0 -0.018)	9.0~13.0	30~50	8 10 12 15 18	15	12	10	15	9	3	M8			
	16 (0 -0.018)	13.0~16.0		10 12 15 18 20	18			19	13	4				

No Shoulder Type RoHS

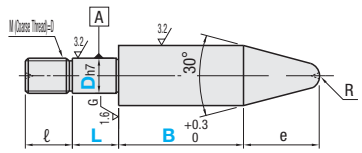


Type		M Material	H Hardness
Male Thread	Set Screws		
LNNAR	LNTAR	1.7220/34CrMo4	Hardening Hardness 35~40HRC
TLNNAR	TLNTAR	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread

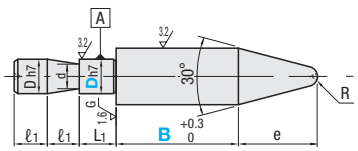
Reference:sin15°≈0.259
tan15°≈0.267

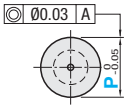
6.3 (3.2 1.6 1.6 G)

- Male Thread



- Set Screw





(P)e=P/2/tan15°+R-(R/sin15°) (P)The center hole remains.

G denoted locations for surf. treated pins will be G

Part Number Type	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	ℓ	L1	ℓ1	d	R	Applicable Set Screws	€ Unit Price LNNAR LNTAR	TLNNAR TLNTAR
Male Thread LNNAR TLNNAR	6 (0 -0.012)	8.0~12.0	30~50	5 8 10	6	8	8	4	3	M5		
	8 (0 -0.015)	10.0~16.0		5 8 10 12 15	10			5	4			
	10 (0 -0.015)	12.0~20.0		5 8 10 12 15	12	10		7		M6		
Set Screws LNTAR TLNTAR	10T (0 -0.015)				15	5			5			
	12 (0 -0.018)	14.0 ~25.0		8 10 12 15 18	15	12	10	9	6	M8		
	16 (0 -0.018)	18.0~32.0		10 12 15 18 20	18			13	8			
	20 (0 -0.021)	22.0~35.0		12 15 18 20	22			17				

Order Example

Part Number	-	P	-	B	-	L
LATAR 10	-	P7.8	-	B20		
LNNAR 8	-	P12.0	-	B40	-	L10

Days to Ship

- Hardening: 8 Days
- Carburized, Hard Chrome Plated: 10 Days

Price

Express B 5,00 EUR/ piece

(P)A Express Charge of 13,50 EUR for 3 or more identical pieces.

P. 88

Volume Discount ((P)Round down to one Cent.) P. 87

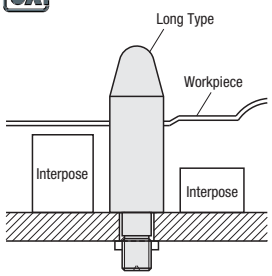
Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	B	-	L	-	(KD /	/ MC / RTC)
LATAR8	-	P6.8	-	B20					

Example



Alterations	Flat	Wrench Flats	Thread Diameter	Upper Relief Radius
	(P) Shouldered H-P≥2, H-1 0 -0.1, 3, No Flange, P-1 0 -0.1	H1, H	MC	RTC, 0.1
Code	KD	SC	MC	RTC
Spec.	Ordering Code KD Machining on one side.	Ordering Code Adds wrench flats. H: 9 11 13 15 19 23 H1: 7 8 11 13 17 21 (P)Applicable to Shouldered Type only.	Ordering Code MC8 Changes the thread diameter. (P)D/3≤M<D Mmin3 (P)Applicable to Male Thread type only.	Ordering Code RTC2 Changes the relief to the following radius R. Selection R0.2 R2 R3 (P)Applicable to Shouldered Type only. (P)RTC≤(H-P)/2
Price Adder	2,00	5,00	2,00	Free of Charge

Locating Pins for Jigs Standard - Screw Mounted

CAD Data

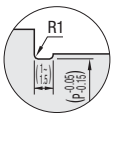
Shouldered Type RoHS



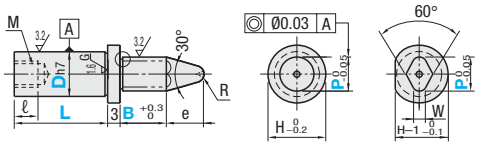
Type		Material	Hardness
Shouldered	Shape		
ELABA	Round	1.7220/34CrMo4	Hardening Hardness 35~40HRC
ELABD	Diamond		
TELABA	Round	1.7242/16CrMo4	Anti-carburizing on Thread 55HRC (Depth 0.7 ~ 0.8) Anti-carburizing on tapped part
TELABD	Diamond		

Reference:sin15°≈0.259
tan15°≈0.267

Surface Finish Relief Standard



(Round) (Diamond)



e=P/2/tan15°+R-(R/sin15°) The center hole remains.

Part Number Type	Dh7	P 0.1mm Increment	B 0.1mm Increment	L 1mm Increment	ℓ	H	R	M (Coarse)	W	€ Unit Price ELABA	ELABD	TELABA	TELABD
ELABA ELABD TELABA TELABD	6 0 -0.012	3.0~7.0	5.0~35.0 (B≤Px4)	9~16	5	9	1	M3	1 (2)				
	8 0 -0.015	3.0~9.0		10~20	6	11	1.5	M4					
	10 0 -0.015	4.5~12.0		12~20	8	13	2	M5	1~3				
	10T							M6					
	12 0 -0.018	7.0~13.0				15	3	M5	4				
	16	13.0~16.0		20~32	12	19	4	M8	5				
	20 0 -0.021	16.0~20.0		20~40		23							

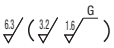
W Dimension D8: W=2 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0.

No Shoulder Type RoHS

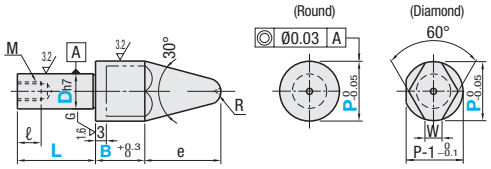


Type		Material	Hardness
No Flange	Shape		
ELNBA	Round	1.7220/34CrMo4	Hardening Hardness 35~40HRC
ELNBD	Diamond		
TELNBA	Round	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on tapped part

Reference:sin15°≈0.259
tan15°≈0.267



(Round) (Diamond)



e=P/2/tan15°+R-(R/sin15°) The center hole remains.

Part Number Type	Dh7	P 0.1mm Increment	B 0.1mm Increment	L 1mm Increment	ℓ	R	M (Coarse)	W	€ Unit Price ELNBA	ELNBD	TELNBA
ELNBA ELNBD TELNBA	6 0 -0.012	8.0~12.0	5.0~35.0 (B≤Px4)	9~16	5	3	M3	3			
	8 0 -0.015	10.0~16.0		9~20	6	4	M4	3.5			
	10 0 -0.015	12.0~20.0		10~20	8		M5	4			
	10T					5	M6				
	12 0 -0.018	14.0~25.0		10~24		6	M5	6			
	16	18.0~32.0		10~32				8			
	20 0 -0.021	22.0~35.0		10~40	12	8	M8	9			

Note the strength of under-head part. See P.1281

Order Example

Part Number	-	P	-	B	-	L
ELABA 8	-	P6.8	-	B14.0	-	L10
ELNBA 10	-	P14.0	-	B25.0	-	L15

Days to Ship

- Hardening: 8 Days
- Carburized: 10 Days

Price

Express B 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

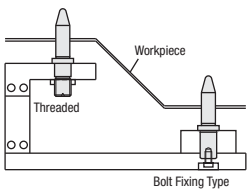
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	B	-	L	- (KC / KD /	/ RTC)
ELABA10	-	P7.0	-	B14.0	-	L12	-	KD

Alterations	Flat Position	Flat	Wrench Flats	Upper Relief Radius
	Shouldered No Shoulder	Shouldered No Flange		
Code	KC	KD	SC	RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Machining on one side. Applicable to Diamond shape only.	Ordering Code KD Machining on one side. Applicable to Round Shape.	Ordering Code Adds wrench flats. H: 9 11 13 15 19 23 H1: 7 8 11 13 17 21 Applicable to Round Shape with Shoulder only.	Ordering Code RTC2 Changes the relief to the following radius R. Selection R0.2 R2 R3 Applicable to Shouldered Type only. RTC≤(H-P)/2
Price Adder	2,00	2,00	5,00	Free of Charge

Example



Locating Pins for Jigs Pilot Shape Selectable

-Tip Shape Selectable-

Features: Addition of radius to the edge makes smooth insertion and extraction of work. For damage prevention, radius is added to upper-lower surface of shoulder.

CAD Data

Shouldered Type RoHS



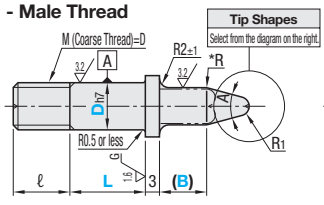
Type			Material	Hardness
Male Thread	Set Screws	Shape		
RANA	RATA	Round	1.7220/34CrMo4	Hardening Hardness 35~40HRC
RAND	RATD	Diamond		
TRANA	TRATA	Round	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TRAND	TRATD	Diamond		

*A30~R10
A60, 90, 120=R3, however, for A90 and 120 of B Shape, only edge part will be removed as the tip becomes short.

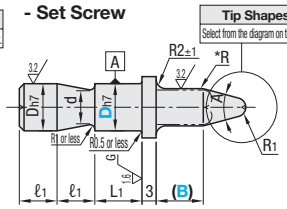
Reference: sin15°≈0.259 tan15°≈0.267 sin30°=0.5 tan30°=0.577 sin45°≈0.707 tan45°=1

6.3 (3.2 1.6) G

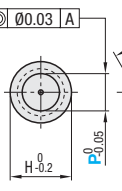
- Male Thread



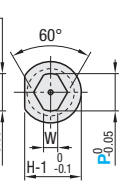
- Set Screw



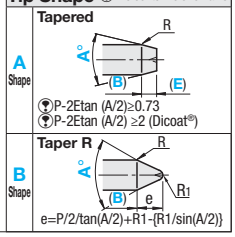
(Round)



(Diamond)



Tip Shape The center hole remains.



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	A Selection	E (Shape A) 1mm Increment	ℓ	L1	ℓ1	d	Applicable Set Screw	H	R1	W	€ Unit Price RANA RATA	RAND RATD	TRANA TRATA	TRAND TRATD
Male Thread Set Screws		6	3.0~7.0	5~30 (B≤Px4)	5 8 10	30 60 90 120	3~10	6	8	8	4	M5	9	1	1				
RANA RATA	A	8	3.0~9.0		5 8 10 12 15			10			5		11	1.5	(2)				
RAND RATD		10	4.5~12.0		(5) (8) 10 12 15			12	10		7	M6	13	2	1~3				
TRANA TRATA		10T						18	5										
TRAND TRATD	B	12	9.0~13.0		(8) 10 12 15 18			15	12	10	9	M8	15	3	4				
		16	13.0~16.0		(10) 12 15 18 20			18			13		19		5				

W Dimension D6, 8, 10T: W=1 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0. ⊗L dimension in ( ) is not applicable to diamond shape.

No Shoulder Type RoHS



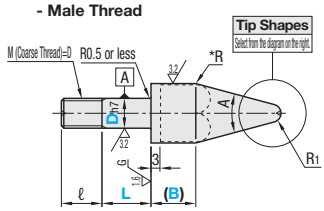
Type			Material	Hardness
Male Thread	Set Screws	Shape		
RNNA	RNTA	Round	1.7220/34CrMo4	Hardening Hardness 35~40HRC
RNND	-	Diamond		
TRNNA	TRNTA	Round	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
TRNND	-	Diamond		

* A30, 60 = R10
A90, 120 = R3

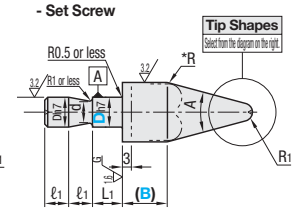
Reference: sin15°≈0.259 tan15°≈0.267 sin30°=0.5 tan30°=0.577 sin45°≈0.707 tan45°=1

6.3 (3.2 1.6) G

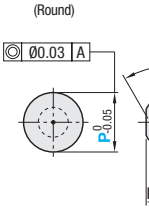
- Male Thread



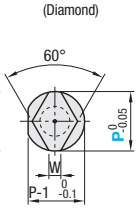
- Set Screw



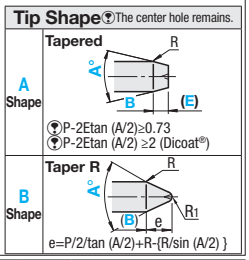
(Round)



(Diamond)



Tip Shape The center hole remains.



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	A Selection	E (Shape A) 1mm Increment	ℓ	L1	ℓ1	d	Applicable Set Screws	R1	W	€ Unit Price RNNA RNTA	RNND	TRNNA TRNTA	TRNND
Male Thread Set Screws		6	9.0~12.0	5~30 (B≤Px3)	5 8 10	30	3~10	6	8	8	4	M5	3	3				
RNNA RNTA	A	8	11.0~16.0		5 8 10 12 15			10			5			3.5				
RNND		10	13.0~20.0	5~30 (B≤Px4)	(5) (8) 10 12 15	60		12	10		7	M6		4				
TRNNA TRNTA		10T						18	5				5	5				
TRNND	B	12	15.0~25.0		(8) 10 12 15 18	90		15	12	10	9	M8		6				
		16	19.0~32.0		(10) 12 15 18 20			18			13		6		8			
		20	23.0~35.0		12 15 18 20	120		22			17			9				

⊗L dimension in ( ) is not applicable to diamond shape.

Order Example

Part Number			-		-		-		-		-	
Type	Tip Shape	D		P		B		L		A		E
RANA	A	10	-	P8.8	-	B10	-	L10	-	A30	-	E5
RNTA	B	10	-	P15.0	-	B15	-	L12	-	A60		

Days to Ship 10 Days — Express B 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Serviceis not available for Carburized Products.

Alterations

Part Number	-	P	-	B	-	L	-	A	-	E	-	(KC / SC)
RNNDA10	-	P13.8	-	B10	-	L10	-	A60	-	E5	-	KC

Price

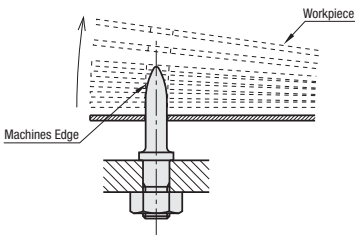
Volume Discount (Round down to one Cent.) P.87

Qty.	1~9	10~19	20~29
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations	Flat Position	Wrench Flats
	Shouldered 0° No Flange 0°	H1 H
Code	KC	SC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Diamond shape only.	Ordering Code Adds wrench flats. H 9 11 13 15 19 H1 7 8 11 13 17 Applicable to Round Shape with Shoulder only.
Price Adder	2,00	5,00

Example Work insertion and extraction is smooth as the insertion guide has an R shape.



Locating Pin for Jigs Bullet Nose

Features: Work insertion and extraction is smooth as the insertion guide has an R shape.

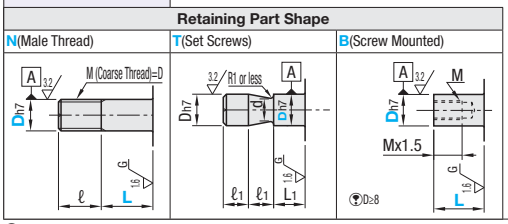
CAD Data

Shouldered Type RoHS



Type	Retaining Part Shape	Shape	M Material	H Hardness
HATA	N(Male Thread) T(Set Screws) B(Screw Mounted)	Round	1.7220/34CrMo4	Hardening Hardness 35 ~ 40 HRC
HATD		Diamond		
THATA		Round	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
THATD		Diamond		

Reference:sin15°≒0.259 tan15°≒0.267 sin30°=0.5 tan30°=0.577 sin45°≒0.707 tan45°=1



Note the strength of under-head part for screw mounted. See P.1281

Part Number Type	Retaining Part Shape	Dh7		P 0.1mm Increment	B 1mm Increment	L Male Thread Selection	L Screw Mounted 1mm Increment	ℓ	L1	ℓ1	d	Applicable Set Screws	M (Coarse Thread) Screw Set Screw	H	R	W
HATA HATD THATA THATD	N (Male Thread) T (Set Screws) B (Screw Mounted)	6	0 -0.015	3.0~7.0	5~30 (B≤Px4)	5 8 10	-	6	8	8	4	M5	-	9	1	1 (2)
		8		3.0~9.0		5 8 10 12 15	12~20	10			5		M4	11		
		10		4.5~12.0		(5) (8) 10 12 15	15~30	12	10		7	M6	M5	13		1~3
		10T						18	5				M6			
		12	0 -0.018	9.0~13.0		(8) 10 12 15 18		15	12	10	9	M8	M5	15	2	4
		16		13.0~16.0		(10) 12 15 18 20	20~40	18			13		M8	19		5

W Dimension D6, 8, 10, 10T: W=1 when P>5.0. D10, 10T: W=1 when P<5.0; W=2 when 5.0≤P≤7.0; W=3 when P>7.0. ⊗L dimension in ( ) is not applicable to diamond shape.

D	€ Unit Price HATAN HATAT	HATDN HATDT	THATAN THATAT	THATDN THATDT	HATAB	HATDB	THATAB	THATDB
6								
8								
10								
10T								
12								
16								

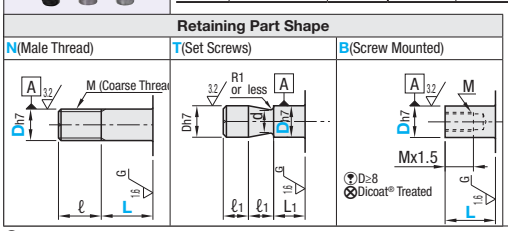
No Shoulder RoHS



Type	Retaining Part Shape	Shape	M Material	H Hardness
HNTA	N(Male Thread) T(Set Screws) B(Screw Mounted)	Round	1.7220/34CrMo4	Hardening Hardness 35 ~ 40 HRC
THNTA		Round	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
THNTD		Diamond		

Type	Retaining Part Shape	Shape	M Material	H Hardness	S Surface Treatment
D-HNTA	N(Male Thread) T(Set Screws)	Round	1.2379/ X155CrVMo12-1 equivalent	55HRC~ (Surface 3000 HV)	Dicoat® Treated
D-HNTD		Diamond			

Reference:sin15°≒0.259 tan15°≒0.267 sin30°=0.5 tan30°=0.577 sin45°≒0.707 tan45°=1



Note the strength of under-head part for screw mounted. P.1281

Part Number Type	Retaining Part Shape	Dh7		P 0.1mm Increment	B 1mm Increment	L Male Thread Selection	L Screw Mounted 1mm Increment	ℓ	L1	ℓ1	d	Applicable Set Screw	M (Coarse Thread) Screw Set Screw	R	W
HNTA THNTA THNTD D-HNTA D-HNTD	N (Male Thread) T (Set Screws) B (Screw Mounted)	6	0 -0.015	9.0~12.0	5~30 (B≤Px3)	5 8 10	-	6	8	8	4	M5	-	2	3
		8		11.0~16.0		5 8 10 12 15	10~20	10			5		M4		3.5
		10		13.0~20.0	5~30 (B≤Px4)	(5) (8) 10 12 15	10~30	12	10		7	M6	M5		4
		10T						18	5				M6		5
		12	0 -0.018	15.0~25.0		(8) 10 12 15 18		15			9	M8	M5		6
		16		19.0~32.0		(10) 12 15 18 20	10~32	18	12	10	13		M8	3	8
		20	0 -0.021	23.0~35.0		12 15 18 20	10~40	22			17		M10		9

⊗L dimension in ( ) is not applicable to diamond shape and Dicoat® treatment.

D	€ Unit Price HNTAN HNTAT	THNTAN THNTAT	THNTDN THNTDT	D-HNTAN D-HNTAT	D-HNTDN D-HNTDT	HNTAB	THNTAB	THNTDB
6								
8								
10								
10T								
12								
16								
20								

Order Example

Part Number								
Type	Retaining Part Shape	D	P	B	L			
HATA	N	8	P7.8	B15	L8			
HNTA	T	8	P12.0	B15				

Days to Ship

- Dicoat® Treated — 8 Days
- Other than listed on the left — 10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Serviceis not available for Carburized Products.

Price

Volume Discount (Round down to one Cent.) P87

Qty.	1~9	10~19	20~29
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	P	B	L	(KC / SC)
HATDB8	P4.5	B10	L12	KC

Alterations	Flat Position	Wrench Flats
	Shouldered 0° No Flange 0°	H1 H
Code	KC	SC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Diamond shape only.	Ordering Code Adds wrench flats. H: 9 11 13 15 19 H1: 7 8 11 13 17 Applicable to Round Shape with Shoulder only.
Price Adder	2,00	5,00

NEW

Locating Pins for Jigs Diamond Shape Type

-Tip Shape Selectable-

Reduced Delivery Time

CAD Data

Features: Diamond-shaped locating pins that secure work piece at four points. Suitable for use with inclined part entry and exit.

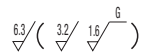
Shouldered Type

RoHS

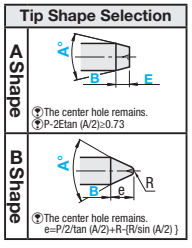


Type		M Material	H Hardness
Male Thread	Set Screws		
LANQN	LATQN	1.7220/34CrMo4	Hardening Hardness 35~40HRC
TLANQN	TLATQN	1.7242/16CrMo4	Anti-carburizing on Thread 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread

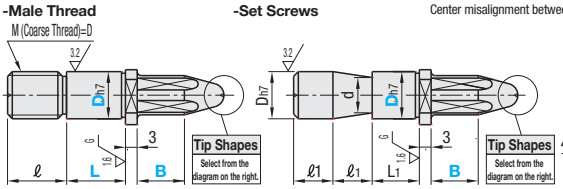
Reference:sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1



Tip Shape Selection



-Male Thread -Set Screws Center misalignment between D and P, W: 0.1 or less



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	W 0.1mm Increment	B 1mm Increment	L Selection	A Selection	E (Shape A) Specify in 1mm Increment	L1	ℓ	ℓ1	H	d	R	Applicable Set Screws	€ Unit Price LANQN LATQN	€ Unit Price TLANQN TLATQN
Male Thread Set Screws																	
LANQN LATQN	A (Taper)	6 0 -0.012	7.0	5.0~17.0 (W≤P)	5~30 (B≤Wx3)	5 8 10	30 60 90 120	1~10	8	6	8	9	4	1	M5		
TLANQN TLATQN		8	7.0~9.0			5 8 10 12 15				10		11	5	1.5			
	B (Taper R)	10 0 -0.015	7.0~11.0			8 10 12 15			10	12		13	7	2	M6		
		10T							5	18							
		12	9.0~13.0			10 12 15 18			12	15	10	15	9	3	M8		
		16 0 -0.018	13.0~17.0			12 15 18 20				18		19	13	4			

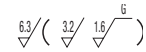
No Shoulder Type

RoHS

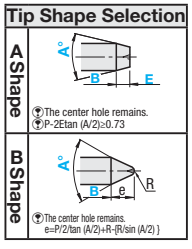


Type		M Material	H Hardness
Male Thread	Set Screws		
LNNQN	LNTQN	1.7220/34CrMo4	Hardening Hardness 35~40HRC
TLNNQN	TLNTQN	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread

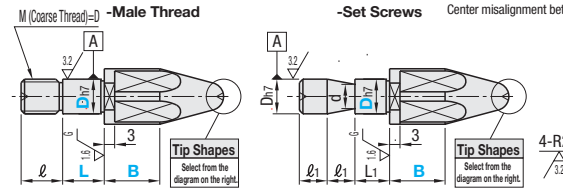
Reference:sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1



Tip Shape Selection



M (Coarse Thread)=D -Male Thread -Set Screws Center misalignment between D and P, W: 0.1 or less



Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	W 0.1mm Increment	B 1mm Increment	L Selection	A Selection	E (Shape A) Specify in 1mm Increment	L1	ℓ	ℓ1	d	R	Applicable Set Screws	€ Unit Price LNNQN LNTQN	€ Unit Price TLNNQN TLNTQN
Male Thread Set Screws																
LNNQN LNTQN	A (Taper)	6 0 -0.012	9.0~12.0	5.0~30.0 (W≤P)	5~30 (B≤Wx3)	5 8 10	30 60 90 120	1~10	8	6	8	4	3	M5		
TLNNQN TLNTQN		8	11.0~16.0			5 8 10 12 15				10		5	4			
	B (Taper R)	10 0 -0.015	13.0~20.0			8 10 12 15			10	12		7		M6		
		10T							5	15						
		12	15.0~25.0			10 12 15 18			12	15	10	9	6	M8		
		16 0 -0.018	19.0~32.0			12 15 18 20				18		13	8			

Order Example

Part Number Type	Tip Shape	D	- P	- W	- B	- L	- A	- E
LANQN	A	6	P7.0	- W5.0	- B15	- L8	- A30	- E8
LNNQN	B	8	P12.0	- W10.0	- B18	- L8	- A60	

Days to Ship 10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Qty.	1~12	13~19	20~49
Rate	€ Unit Price	5%	10%

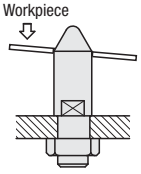
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	- P	- W	- B	- L	- A	- E	- (KC / MC / RTC)
LNNQNA8	- P12.0	- W5.0	- B10	- L8	- A30	- E5	- KC

Example Best suitable for use with sloping works.

Workpiece



Alterations	Flat Position	Thread Diameter	Upper Relief Radius
	Shouldered 0° No Shoulder 0°	MC	RTC
Code	KC	MC	RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°.	Ordering Code MC8 Changes the thread diameter. D/3<M<D M min 3 Applicable to Male Thread type only.	Ordering Code RTC0.2 Changes R1 to R of the selection below. Selection 0.2 R2 R3 RTC≤(H-P)/2 Applicable to Shouldered Type only.
Price Adder	2,00	2,00	Free of Charge

Locating Pin for Jigs Oval -Precision / Standard-

Reduced Delivery Time

CAD Data

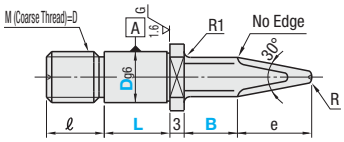
Features: P and W dimensions are configurable in 1mm increment for better fit to the size of oval holes machined on work pieces. Tolerances of P and W dimensions are $^{0}_{-0.05}$ for Precision Type and $^{0}_{-0.2}$ for Standard Type.

Shouldered Type RoHS

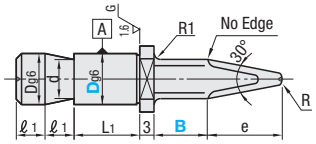


Type				Material	Hardness
Oval, Precision		Oval, Standard			
Male Thread	Set Screws	Male Thread	Set Screws		
LNLANF	LNLATF	NLANF	NLATF	1.7220/34CrMo4	Hardening Hardness 35~40HRC
TLNLANF	TLNLATF	TNLANF	TNLATF	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread

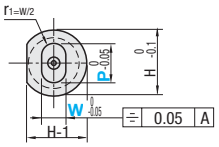
-Male Thread



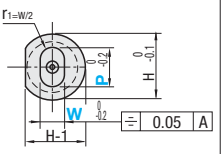
-Set Screws



-Precision Grade



-Standard Grade



3.2 (1.6 G)

e=P/2/tan15°+R-(R/sin15°) The center hole remains.

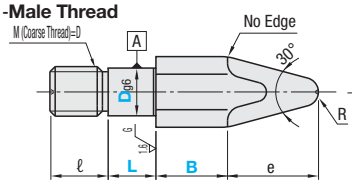
Part Number Type	Dg6		P 0.1mm Increment	W 0.1mm Increment	B 1mm Increment	L Selection	L1	ℓ	ℓ1	H	d	R	Applicable Set Screws	€ Unit Price LNLANF LNLATF	TLNLANF TLNLATF	NLANF NLATF	TNLANF TNLATF
Precision Grade LNLANF LNLATF TLNLANF TLNLATF	6	-0.004 -0.012	5.0~9.0	3.0~17.0 (P≥W+2.0)	5~30 Standard Grade (B≤Wx4) Precision Grade (B≤Wx3)	5 8	8	6	8	9	4	1	M5				
Standard Grade NLANF TNLANF NLATF TNLATF	8	-0.005 -0.014	5.0~11.0			5 12 15		10		11	5	1.5					
	10		7.0~13.0			10 12 15	10	12		13	7	2	M6				
	12	-0.006 -0.017	9.0~15.0			12 15 18	12	15	10	15	9	3					
	16		13.0~19.0			15 18 20		18		19	13	4	M8				

No Shoulder Type RoHS

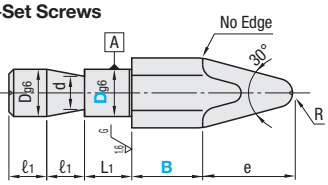


Type				Material	Hardness
Oval, Precision		Oval, Standard			
Male Thread	Set Screws	Male Thread	Set Screws		
LNLNNF	LNLNTF	NLNNF	NLNTF	1.7220/34CrMo4	Hardening Hardness 35~40HRC
TLNLNNF	TLNLNTF	TNLNNF	TNLNTF	1.7242/16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread

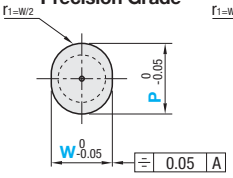
-Male Thread



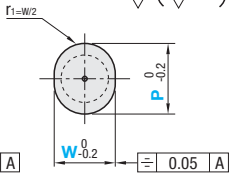
-Set Screws



-Precision Grade



-Standard Grade



3.2 (1.6 G)

e=P/2/tan15°+R-(R/sin15°) The center hole remains.

Part Number Type	Dg6		P 0.1mm Increment	W 0.1mm Increment	B 1mm Increment	L Selection	L1	ℓ	ℓ1	d	R	Applicable Set Screws	€ Unit Price LNLNNF LNLNTF	TLNLNNF TLNLNTF	NLNNF NLNTF	TNLNNF TNLNTF
Precision Grade LNLNNF LNLNTF TLNLNNF TLNLNTF	6	-0.004 -0.012	8.0~12.0	D+2≤W≤ P-2	5~30 Standard Grade (B≤Wx4) Precision Grade (B≤Wx3)	5 8	8	6	8	4	3	M5				
Standard Grade NLNNF TNLNNF NLNTF TNLNTF	8	-0.005 -0.014	10.0~16.0			5 12 15		10		5						
	10		12.0~20.0			10 12 15	10	12		7		M6				
	12	-0.006 -0.017	14.0~24.0			12 15 18	12	15	10	9	5	M8				
	16		18.0~32.0			15 18 20		18		13	6					

Order Example

Part Number	-	P	-	W	-	B	-	L
Type	D							
NLANF	10	P11.8	-	W9.8	-	B10	-	L10
LNLNNF	8	P12.0	-	W10.0	-	B15	-	L12

Days to Ship 10 Days — Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	P	-	W	-	B	-	L	-	(KC / MC / RTC)
NLANF10	-	P7.8	-	W5.8	-	B5	-	L10	-	KC

Price

Volume Discount Round down to one Cent. P.87

Qty.	1~12	13~19	20~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations	Flat Position	Thread Diameter	Upper Relief Radius
	Shouldered 0°	MC	RTC
Code	KC	MC	RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Applicable to Shouldered Type only.	Ordering Code MC8 Changes the thread diameter. D/3<M<D M min 3 Applicable to Male Thread type only.	Ordering Code RTC0.2 Changes R1 to R of the selection below. Selection 0.2 R2 R3 RTC≤(H-P)/2 Applicable to Shouldered Type only.
Price Adder	2,00	2,00	Free of Charge

Alumina Coated Pins

CAD Data

Features: Suitable for locating pins in spot welding since Alumina coating excels in abrasion resistance and insulation.

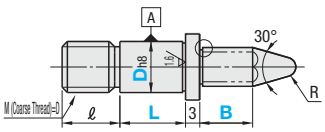
Alumina Coated Pins

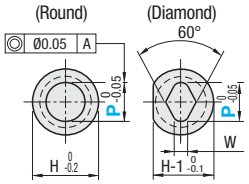
RoHS



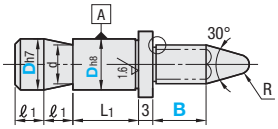
Male Thread	Set Screws	Shape	Material	Surface Treatment	Hardness
Z-LANA	Z-LATA	Round	Special Stainless (KCF)	Alumina Coating	Approx. 1300HV (Approx. 200HV inside)
Z-LAND	Z-LATD	Diamond			

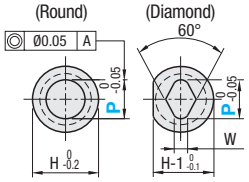
- Male Thread





- Set Screw







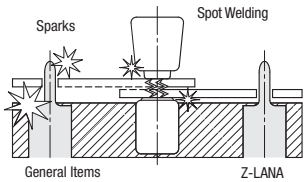
Part Number Type	Dh8	P 0.1mm Increment	B 1mm Increment	L Selection	ℓ	L1	ℓ1	H	d	R	Applicable Set Screws	W	€ Unit Price Z-LANA Z-LATA	€ Unit Price Z-LAND Z-LATD
Z-LANA Z-LAND Z-LATA Z-LATD	8 0 -0.022	3.0~9.0	5~30 (B≤Px4)	5 12 15	10	8	8	11	5	1.5	M5	1(2)		
	10 0 -0.022	5.0~12.0		10 12 15	12	10		13	7	2	M6	2(3)		
	10T 0 -0.022				18	5								
	12 0 -0.027	9.0~13.0		12 15 18	15	12	10	15	9	3	M8	4		
	16 0 -0.027	13.0~16.0		15 18 20	18			19	13	4		5		

W Dimension D8: W=2 when P>5.0. D10, 10T: W=3 when P>7.0.

Order Example

Part Number	-	P	-	B	-	L
Type D						
Z-LANA10	-	P7.8	-	B6	-	L10
Z-LATD10	-	P11.5	-	B20		

Example



Best suited for locating pins in spot welding.
Pins prevent current from causing sparks during welding.
Prevents pin wear from sparks and reduces the causes for positioning problems and work piece appearance degradations.

Days to Ship

8 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~19	20~29
Rate	€ Unit Price	5%

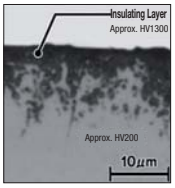
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	B	-	L	-	(SC, RC...etc.)
Z-LANA8	-	P7.8	-	B10	-	L12	-	

Alterations	Flat Position	Flat	Wrench Flats	Tip Angle	Thread Diameter	Upper Relief Radius
	Shouldered / No Shoulder	Shouldered / No Flange				
Code	KC	KD	SC	RC	MC	RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Applicable to Diamond shape only.	Ordering Code KD Machining on one side. Applicable to Round Shape Only.	Ordering Code SC Adds wrench flats. H 11 13 15 19 H1 8 11 13 17 Applicable to Round Shape Only.	Ordering Code RC6 Changes the tip angle. Selection 60° / 90° / 120°	Ordering Code MC8 Changes the thread diameter. D/3<M<D M min 3 Applicable to Male Thread type only.	Ordering Code RTC0.2 Changes R1 to R of the selection below. Selection 0.2 R2 R3 RTC≤(H-P)/2
Price Adder	2,00	2,00	5,00	2,00	2,00	Free of Charge

Alumina Coated Pin (Material: KCF) Cross-Section Diagram



Insulating Layer with depth of 5~10μm (approx. HV1300) is formed.
Alumina coating excels in abrasion resistance and insulation compared to metal.
*Contacts with pointed objects may cause conduction.

Characteristics Comparison (Reference)

	Special Stainless KCF (Alumina Coated)	Stainless Steel 1.4301/ X5CrNi18-10	Ceramics A1203	Nylon	Bakelite (Paper Base)	Bakelite (Cloth Base)
Natural Resistance (Ω)	$2x10^8$	$72x10^{-6}$	10^{14}	$5x10^{12}$	10^{10}	10^{12}
Insulation Breakdown Voltage (V)	150	-	10^4	1.9x104	-	-
Tensile Strength (MPa)	421	520	-	88	80	100
Elongation (%)	10	40	-	50	2	2
Flexural Strength (MPa)	-	-	350	103	180	160
Vickers Hardness (HV)	Front 1300 Inside 200	200	1400	-	-	-
Insulation Properties	Good	X	Excellent	Excellent	Excellent	Excellent
Heat Resistance	Good	Good	Excellent	X	Questionable	Questionable
Machinability	Good	Good	X	Good	Good	Good
Cost	Good	Excellent	X	Good	Good	Good

Detecting Pins
-Sensor Embedded Unit / Work Detecting Unit-

CAD Data

Features: Fiber sensor is inserted into the pin, and the sensor's light level is used to detect the work presence.

Sensor Embedded Unit

RoHS

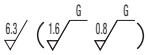


Type		Material	Hardness
Male Thread	Notch		
NUTFN	NUTFT	1.7220/ 34CrMo4	Hardening Hardness 35~40HRC
TNUTFN	TNUTFT	1.7242/ 16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread

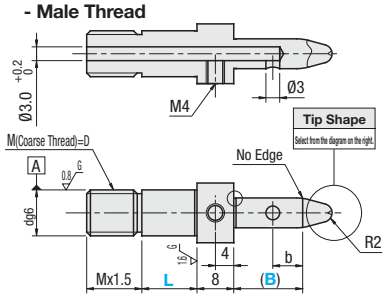
Reference:sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1

Dg6		H
8	-0.005	11
10	-0.014	13

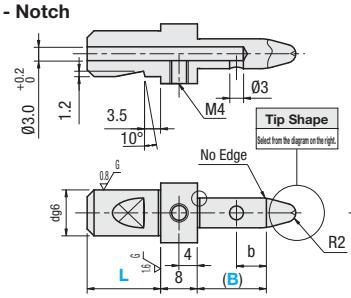
P	B	Applicable Nuts
4.5~5.9	4	M6
6.0~7.9	5	M8
8.0~9.9	6	M10
10.0~11.0	7	M12



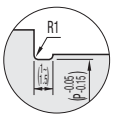
- Male Thread



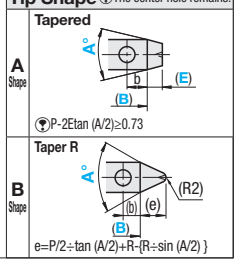
- Notch



Surface Finish Relief



Tip Shape (The center hole remains.)



Part Number Type	Tip Shape	Dg6 Selection	P 0.1mm Increment	B 0.1mm Increment	L Selection Male Thread	L Selection Notch	A Selection	E (Shape A) 1mm Increment	€ Unit Price NUTFN	€ Unit Price TNUTFN	€ Unit Price NUTFT	€ Unit Price TNUTFT
Male Thread / Notch	A	8	4.5~5.9	14.0~30.0 (B≤Px4)	5	12	30	1~10				
NUTFN NUTFT			6.0~7.9		8	16	60					
TNUTFN TNUTFT	B	10	8.0~11.0		10	19	90					
					12		120					

When P≤5.9, no hardening due to thin thickness in order to prevent damage (Material: 1.7220/34CrMo4). D8 is applicable up to P dimension 9.0mm.

Work Detecting Unit

RoHS

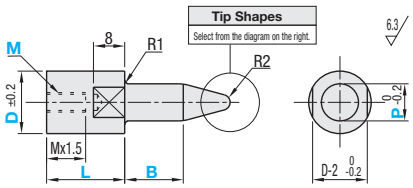


Type	Material	Hardness	Surface Treatment
NUTK	1.1191/ C45E	-	-
BNUTK		Hardening Hardness 45~50HRC	Black Oxide

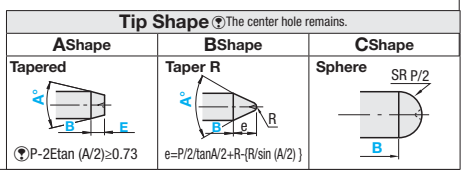
P.1460 Combination of Work Detecting Unit and Cylinder is available.

MxPitch Fine Thread	MxPitch Coarse
5x0.5	5x0.8
6x0.75	6x1.0
8x0.75	8x1.25

Reference:sin15°≈0.259 sin30°=0.5
sin45°≈0.707
tan15°≈0.267 tan30°=0.577
tan45°=1



Tip Shape (The center hole remains.)



Part Number Type	Tip Shape	D	P 0.1mm Increment	B 1mm Increment	L 1mm Increment	A Selection	E (Shape A) 1mm Increment	M Coarse Selection	M Fine Thread Selection	€ Unit Price NUTK	€ Unit Price BNUTK
NUTK BNUTK	A B C	12	5.0~10.0	5~30 (B≤Px4)	15~20	30 60 90 120	1~10	5	5S		
		16	10.1~12.0					5 6	5S 6S		
			12.1~14.0					5 6 8	5S 6S 8S		

Order Example

Part Number									
Type	Tip Shape	D	P	B	L	A	E	M	
NUTFN	B	10	P4.6	B15	L10	A60			(Sensor Embedded Unit: Shape B)
NUTK	A	12	P6.0	B10	L20	A30	E2	M5	(Work Detecting Unit: Shape A)
NUTK	C	16	P10.5	B15	L20			M6	(Work Detecting Unit: Shape C)

Days to Ship

- Sensor Embedded

10 Days — Express B — 5,00 EUR/ piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Carburized Products.

- Work Detection Unit

8 Days — Express A — 5,00 EUR/ piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	P	B	L	A	E	M	(TC / KD / CD)
NUTFNB10	P6.0	B10	L10	A30			KD

Volume Discount (Round down to one Cent.) P. 87

- Sensor Embedded

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

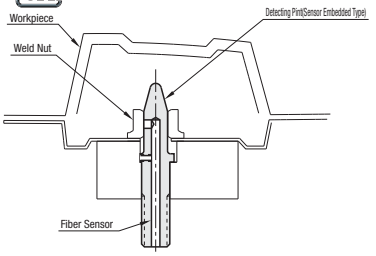
For orders larger than indicated quantity, please request a quotation.

- Work Detection Unit

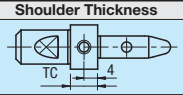
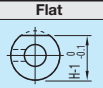
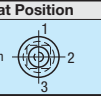
Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Fiber sensor is inserted into a detecting pin, and the sensor light is used to detect the presence of a weld nut.

Alterations	Shoulder Thickness	Flat	Flat Position
			
Code	TC	KD	CD
Spec.	Ordering Code TC8.5 Changes shoulder thickness from 8mm. TC=0.5mm Increment TC: 8.5~12.0 Applicable to sensor embedded set screw shape only.	Ordering Code KD Machining on one side. Applicable to Sensor Embedded Male Thread Type only.	Ordering Code CD1 Changes the position of Set Screw (Notch) from the current position to one of the above 1, 2 or 3. Applicable to sensor embedded set screw shape only.
Price Adder	3,00	2,00	2,00

Locating Pins Pedestal Pins for Jigs / Height Adjusting Pins

CAD Data

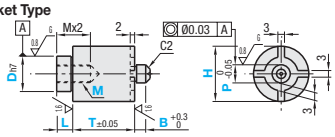
The pocket is to collect dust (spatter etc.) generated during welding.

Pedestal Pins RoHS

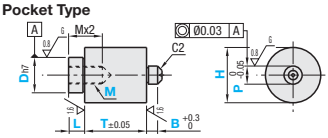


Type		M Material	H Hardness
Pocket Type	No Pocket Type		
KMFR	MFR	1.7242/16CrMo4	Carburized Treated Hardness 55HRC ~ (Depth 0.7 ~ 0.8)

-Pocket Type



-No Pocket Type



Dh7	
12	0 -0.018
13	
14	
15	
16	
17	
18	
19	0 -0.021
20	

Part Number Type	H	D 1mm Increment	P 0.1mm Increment	B 1mm Increment	L 1mm Increment	T 1mm Increment	M Selection	€ Unit Price KMFR	€ Unit Price MFR
KMFR	18	12~20 (H-2>D)	8.0~12.0	5~10	3~10	15~40	6 8		
	22								
	25								
MFR	28		8.0~17.0						
	30								

Order Example Part Number - D - P - B - L - T - M
KMFR30 - D15 - P8.0 - B8 - L5 - T18 - M6

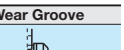
Alterations Part Number - D - P - B - L - T - M - (MZ)
MFR18 - D15 - P10.0 - B8 - L5 - T20 - M6 - MZ

Days to Ship 10 Days — Express B 5,00 EUR/piece — P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not applicable to with Pocket Type.

Price Volume Discount (Round down to one Cent.) P.87

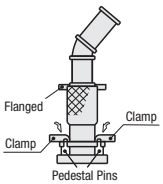
Qty.	1~12	13~19	20~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alteration	Wear Groove
	
Code	MZ
Spec.	Adds a 0.25mm groove at a position of 4mm from the edge of P dimension. Ordering Code MZ
Price Adder	2,00

Example

Locating of work piece in both vertical and horizontal directions is possible. It is possible with the pocket to collect dust (spatter etc.) generated during welding. Best as locating pins for arc welding processes, during which a large amount of spatter.



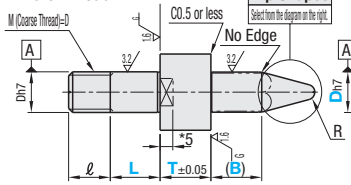
Height Adjusting Pins RoHS



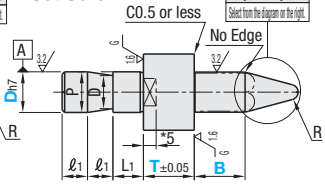
Type			M Material	H Hardness
Male Thread	Set Screws	Shape		
HUPNA	HUPTA	Round	1.7220/ 34CrMo4	Hardening Hardness 35~40HRC
HUPND	HUPTD	Diamond		
THUPNA	THUPTA	Round	1.7242/ 16CrMo4	Carburized Hardness 55HRC ~ (Depth 0.7 ~ 0.8) Anti-carburizing on Thread
THUPND	THUPTD	Diamond		

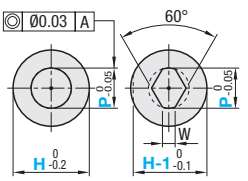
Reference:sin15°≈0.259 sin30°=0.5 sin45°≈0.707
tan15°≈0.267 tan30°=0.577 tan45°=1

- Male Thread



- Set Screw



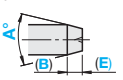


*When T 5.0~7.0, detent width 3mm
When T 7.1~20.0, detent width 5mm

* No relief at P dimension.
* For Diamond Shapes, a step of 0.25 max. will be engraved at the bottom of P.

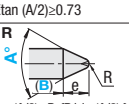
Tip Shape The center hole remains.

A Shape — Tapered



P-2Etan (A/2)≥0.73

B Shape — Taper R



e=P/2/tan (A/2)+R-{R/sin (A/2) }

Part Number Type	Tip Shape	Dh7	P 0.1mm Increment	B 1mm Increment	L Selection	T 0.1mm Increment	H 1mm Increment	A Selection	E (Shape A) 1mm Increment	ℓ	L1	ℓ1	d	R	Applicable Set Screws	W	€ Unit Price HUPNA HUPTA	€ Unit Price HUPND HUPTD	€ Unit Price THUPNA THUPTA	€ Unit Price THUPND THUPTD
Male Thread HUPNA HUPND THUPNA THUPND	A	6	3.0~7.0	5~50 (B≤Px4)	5 8 10	5.0~20.0	9~20	30 60 90 120	1~15	6	8	8	4	1	M5	1(2)				
			7.1~12.0											3						
		8	3.0~9.0		5 8 10 12 15		11~20			10			5	1.5		1(2)				
			9.1~16.0											4		3.5				
		10	4.5~12.0		(5) (8) 10 12 15		13~25			12	10		7	2	M6	1~3				
			12.1~20.0											4		4				
Set Screws HUPTA HUPTD THUPTA THUPTD	B	10T	4.5~12.0							18	5			2		1~3				
			12.1~20.0											5		5				
		12	9.0~14.0		(8) 10 12 15 18		15~30			15	12	10	9	3	M8	4				
			14.1~25.0											6		6				
		16	13.0~18.0		(10) 12 15 18 20		19~35			18			13	4		5				
			18.1~32.0											8		8				

W Dimension D6, D8: W=2 when P>5.0. D10, D10T: W=1 when P<5.0; W=3 when P>7.0. L dimension in ( ) is applicable to round shape only. P+2≤H≤Px5

Order Example Part Number
Type Tip Shape D - P - B - L - T - H - A - E
HUPNA A 10 - P4.8 - B10 - L10 - T20.0 - H20 - A60 - E5

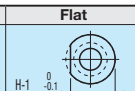
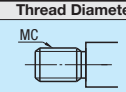
Days to Ship 10 Days — Express B 5,00 EUR/piece — P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for Carburized Products.

Price Volume Discount (Round down to one Cent.) P.87

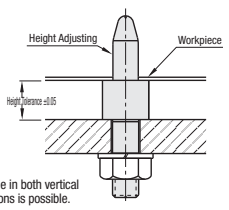
Qty.	1~9	10~19	20~29
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations Part Number - P - B - L - T - H - A - E - (KC / KD / / MC)
HUPTAB10 - P6.0 - B10 - T10.0 - H15 - A30 - KD (Set Screw Shape B)

Alterations	Flat Position	Flat	Wrench Flats	Thread Diameter
				
Code	KC	KD	SC	MC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. Applicable to Diamond shape only.	Ordering Code KD Machining on one side. When T5.0~7.0: 3mm When T7.1~20.0: 5mm Applicable to Round Shape Only.	Ordering Code SC10 Adds wrench flats. SC=1 mm Increment SC>DSC>PSC≤H-2 Applicable to Round Shape Only.	Ordering Code MC8 Changes the thread diameter. D/3≤M<D Mmin3 Relief at thread end is available. Applicable to external thread only.
Price Adder	2,00	2,00	5,00	2,00

Example



Locating of work piece in both vertical and horizontal directions is possible.

Height Adjusting Washers / Locating Pin Holder for Jigs

-Male Thread / Female Thread-

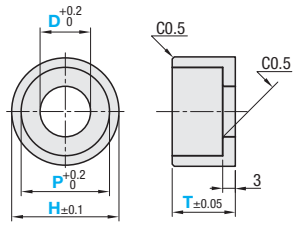
CAD Data

Height Adjusting Washers

RoHS



Type	Material	Hardness
HUK	1.7220/34CrMo4	Hardening 35~40HRC
THUK	1.7242/16CrMo4	Carburized 55HRC ~ (Depth 0.7 ~ 0.8)

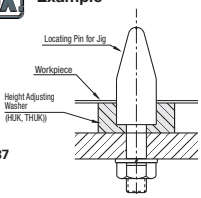


(P)P+3≤H, D+3≤P

Part Number Type	D	P 0.1mm Increment	T 0.1mm Increment	H 1mm Increment	€ Unit Price HUK	€ Unit Price THUK
HUK THUK	6	8.0~12.0	5.0~20.0	10~20		
	8	10.0~16.0		12~20		
	10	12.0~20.0		14~25		
	12	14.0~25.0		16~30		
	16	18.0~32.0		20~35		

Order Example: Part Number - P - T - H
HUK6 - P11.8 - T10.0 - H20

Example



Days to Ship: 8 Days

Express A: 5,00 EUR/ piece — P.88

(P)A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Serviceis not available for Carburized Products.

Price

Volume Discount ((P)Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

Features: Can be used in combination with cylinder when work insertion and extraction is difficult. Number of parts can be reduced by using Integrated Type.

Holder, Integrated

RoHS



M	Pitch Male Thread	Pitch Female Thread
6	1.0	-
8	1.25	
10	1.5	1.25
14	-	1.5
18	-	1.5

P	H7	ℓ1	ℓ	* M1 Female Thread (Set Screws)
8	+0.015 0	18	24	M5
10	+0.018 0	20	26	M6
12		24	32	
16		24	32	

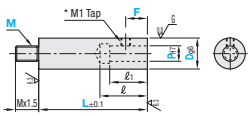
(P)P dimension H7 tolerance is up to ℓ1.

Holders

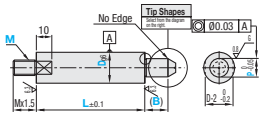
Type Male Thread	Type Female Thread	Material	Hardness
YGID	YGIDB	1.1191/C45E	Treated Hardness 40 ~ 45HRC

* Direct-mounting at the tip of the cylinder is possible.

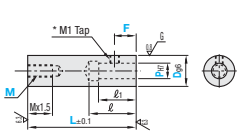
- Holder - Male Thread



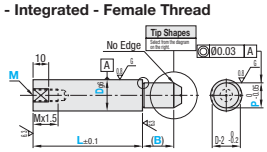
- Integrated - Male Thread



- Holder - Female Thread



- Integrated - Female Thread

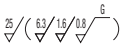


Integrated Type

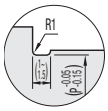
Type Male Thread	Type Female Thread	Material	Hardness
YGIDP	YGIDPB	1.1191/C45E	Treated Hardness 40 ~ 45HRC

* Direct-mounting at the tip of the cylinder is possible.

Surface Finish



Relief



Tip Shape Selection

A Shape



(P)The center hole remains.
(P)P-2Etan (A/2)≥2

B Shape

(P)The center hole remains.
e=P/2/tan (A/2)+R-(R/sin (A/2) }

Reference:
sin15°≈0.259sin30°=0.5
sin45°≈0.707
tan15°≈0.267tan30°=0.577
tan45°=1

Part Number Type		D_{g6}		P (H7) Selection	L 1mm Increment	F 1mm Increment	M Male Thread	M Female Thread
Holder (Male Thread) YGID (Female Thread) YGIDB		16	-0.006 -0.017	8	70~200	5~25	6 8 10	8 10
		20	-0.007 -0.020	8 10 12			8 10	10 14
		25		10 12 16				10 14 18
		30		12 16				

(P)When L≤Mx4, tapped hole goes through. (P)W>S+N/2+2 (P)S>N/2+2 (P)When L≤Mx4, tapped hole goes through.

Part Number Type	Tip Shape	D_{g6}		P 0.1mm Increment	B 1mm Increment	L 1mm Increment	A Selection	E (Shape A) 1mm Increment	M Male Thread	M Female Thread	R
Integrated (Male Thread) YGIDP (FemaleThread) YGIDPB	A	12	-0.006 -0.017	6.0~11.0	5~35 (B≤Px4)	60~150	30 60 90 120	1~10	6 8	8	3
		16		6.0~15.0					6 8 10	8 10	
	B	20	-0.007 -0.020	6.0~16.0					8 10	10 14	
		25		16.0~24.0						10 14 18	4
		30									

(P)Female Thread Type Mx3≤L

Order Example: Part Number - P - B - L - A - E - M
Type - Tip Shape - D
YGIDP B 20 - P12.8 - B30 - L100 - A30 - M8

Days to Ship: 8 Days

Alterations: Part Number - P - L - F - M - (KD / SC / RH / FC)
YGID25 - P16 - L100 - F20 - M10 - KD10

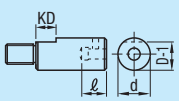
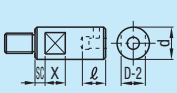
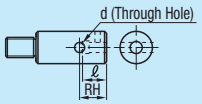
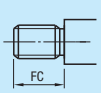
Price

Volume Discount ((P)Round down to one Cent.) P.87

Qty.	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price YGID L70~150	YGID L151~200	YGIDB L70~150	YGIDB L151~200	€ Unit Price YGIDP	€ Unit Price YGIDPB
12						
16						
20						
25						
30						

Alterations	Flat	Wrench Flats	Side Hole	Thread Length
				
Code	KD	SC	RH	FC
Spec.	Ordering Code KD10 Machines one side for detent. KD=1mm Increment KD=3~10 ⊗Not applicable to integrated type.	Ordering Code SC10-X10 Adds wrench flats. SC, X=1mm Increment Holders: 1≤SC≤L/3,SC=0; SC+X<L-ℓ Integrated Type: 1≤SC≤L/3, SC=0 5≤X≤15 (P)Integrated type is changed from size 10.	Ordering Code RH15 Adds hole for driving out the pin when exchanged. RH=1 mm Increment ⊗Not applicable to integrated type. D: 16, 20, 25, 30 / d: 8, 10, 12 / RH: 15≤RH≤ℓ+8	Ordering Code FC Changes the thread length to Mx2.
Price Adder	2,00	5,00	3,00	3,00

Bushings for Locating Pins
-Straight Standard / Thin Wall-

Add. Spec.

Price Reduction
Up to 52%

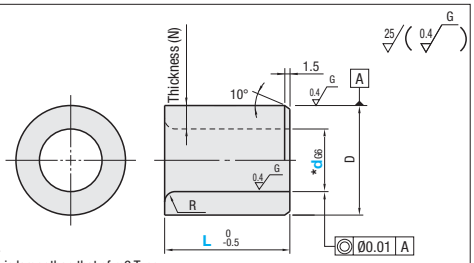
CAD Data

■Standard Type

RoHS



Type p6	Type m6	M Material	S Surface Treatment	H Hardness
JBA	JBAM	1.2510/ 100MnCrW4	-	60HRC~
JBAN	JBAMN	1.2510/ 100MnCrW4	Electroless Nickel Plating	60HRC~
JBAC	JBAMC	1.4125/ X105CrMo17	-	50~55HRC



Tolerance of d dimension 2~6 of electroless nickel plated products is H7.
For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below.)

Part Number Type	d	D Tolerance No Surface Treatment	D Tolerance Electroless Nickel Plating	L Selection	Thickness (N)	R	D	D Tolerance p6	D Tolerance m6	€ Unit Price JBA JBAM	€ Unit Price JBAN JBAMN	€ Unit Price JBAC JBAMC
	2	+0.008 +0.002	+0.010 0	5 6 7 8 10 12	1.5	0.8	5	+0.020 +0.012	+0.012 +0.004			
	3				2		7					
(p6)	4	+0.012 +0.004	+0.012 0	5 6 7 8 10 12 15 *16 20	2	1	8	+0.024 +0.015	+0.015 +0.006			
JBA	5			5 6 7 8 10 12 15 16 20	2.5		10					
JBAN	6			5 6 7 8 10 12 15 16 20 25	2							
JBAC	8	+0.014 +0.005	+0.014 +0.005		2	2	12					
	10	G6		6 7 8 10 12 15 16 20 25 30	2.5		15	+0.029 +0.018	+0.018 +0.007			
(m6)	12			8 10 12 15 16 20 25 30	3		18					
JBAM	13	+0.017 +0.006	+0.017 +0.006	10 12 *15 16 20 *25 30	4.5		22					
JBAMN	15			12 15 16 20 *25 30	5		25	+0.035 +0.022	+0.021 +0.008			
JBAMC	16			12 15 16 20 25 30	5		26					
	20				5	3	30					
	25	+0.020 +0.007	+0.020 +0.007	16 20 25 30 *35	5		35	+0.042 +0.026	+0.025 +0.009			

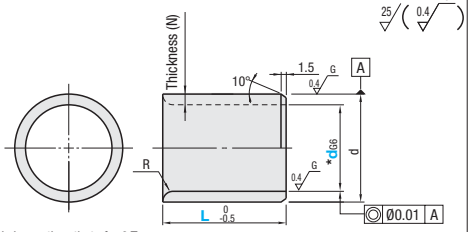
L dimension with * is not applicable to JBAMC.

■Thin Wall

RoHS



Type p6	Type m6	M Material	S Surface Treatment	H Hardness
JBAUP	JBAU	1.3505/100Cr6	-	58HRC~
JBAUNP	JBAUN	1.3505/100Cr6	Electroless Nickel Plating	58HRC~
JBAUCP	JBAUC	1.4125/ X105CrMo17	-	50~55HRC



Tolerance of d dimension 3~6 of electroless nickel plated products is H7.
For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below.)

Part Number Type	d	D Tolerance No Surface Treatment	D Tolerance Electroless Nickel Plating	L Selection	Thickness (N)	R	D	D Tolerance p6	D Tolerance m6	€ Unit Price JBAU JBAUP	€ Unit Price JBAUN JBAUNP	€ Unit Price JBAUC JBAUCP
	3	+0.008 +0.002	+0.010 0	5 6 8 10 12	1	0.5	5	+0.020 +0.012	+0.012 +0.004			
(p6)	4	+0.012 +0.004	+0.012 0	5 6 8 10 12 15 16			6					
JBAUP	5			5 6 8 10 12 15 16 20			7	+0.024 +0.015	+0.015 +0.006			
JBAUNP	6						8					
JBAUCP	8	+0.014 +0.005	+0.014 +0.005	6 8 10 12 15 16 20			10					
	10	G6			1.5		13					
(m6)	12			8 10 12 15 16 20			15	+0.029 +0.018	+0.018 +0.007			
JBAU	13	+0.017 +0.006	+0.017 +0.006	10 12 *15 16 20	2	1	17					
JBAUN	15			10 12 15 16 20			19					
JBAUC	16			10 12 15 16 20 25	2.5		21	+0.035 +0.022	+0.021 +0.008			
	20	+0.020 +0.007	+0.020 +0.007	12 15 16 20 25	3	2	26					
	25			20 25			31	+0.042 +0.026	+0.025 +0.009			

L dimension with * is not applicable to JBAUN.

Order Example

Part Number	-	L
JBAC12	-	10
JBAUN8	-	8

Days to Ship

6 Days P. 87 2 Days

Price

■Volume Discount (Round down to one Cent.) P. 87

- Standard

Qty.	1~49	50~74	75~99	100~199
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

- Thin Wall

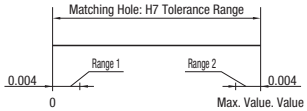
Qty.	1~49	50~64	65~79	80~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

- JBA / JBAM

Qty.	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%

■Bore Inner ØVariances after Press-fitting Bushings for Locating Pins (Reference)



Housing Bore Diameter Tolerance: In Range 1

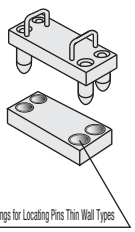
Type	D Tolerance m6	D Tolerance p6
Standard Type	99.95%	99.91%
Thin Wall	99.92%	99.83%

Housing Bore Diameter Tolerance: In Range 2

Type	D Tolerance m6	D Tolerance p6
Standard Type	100.00%	99.94%
Thin Wall	100.00%	99.94%

Data above are not guaranteed but empirical values.

Example



Bushings for Locating Pins

-Configurable Straight Standard / Thin Wall-

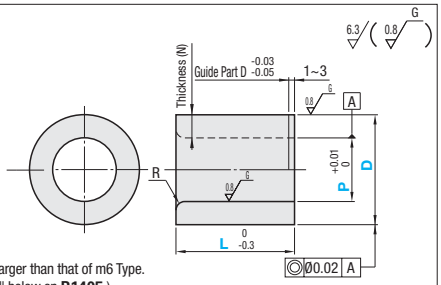
CAD Data

■Standard Type

RoHS



Type p6	Type m6	Material	Surface Treatment	Hardness
JBAFP	JBAF	JIS SKS93	-	56~60HRC
JBAFBP	JBAFB	JIS SKS93	Black Oxide	56~60HRC
JBAFMP	JBAFM	JIS SKS93	Electroless Nickel Plating	56~60HRC
JBAFSP	JBAFS	1.4301/ X5CrNi18-10	-	-
JBAFCP	JBAFC	1.4125/ X105CrMo17	-	50~55HRC



For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below on **P.1405**.)

Part Number Type	D	D Tolerance p6	D Tolerance m6	P 0.01mm Increment	L 0.1mm Increment	Thickness (N)	R	€ Unit Price JBAF JBAFP	JBAFB JBAFBP	JBAFM JBAFMP	JBAFS JBAFSP	JBAFC JBAFCP
(p6)	5	+0.020 +0.012	+0.012 +0.004	2.00~2.50	5.0~6.0	1.25~1.50	0.8					
JBAFP	7	+0.024 +0.015	+0.015 +0.006	2.00~3.50	5.0~8.0	1.75~2.50						
JBAFBP	8			3.00~4.50	5.0~13.0		1.0					
JBAFMP	10			4.00~6.50	5.0~20.0	1.75~3.00						
JBAFSP	12			6.00~8.50								
JBAFCP	15	+0.029 +0.018	+0.018 +0.007	8.00~10.50	10.0~40.0	2.25~3.50	2.0					
	18			10.00~12.50		2.75~4.00						
(m6)	20			12.00~13.50		3.25~4.00						
JBAF	22			12.00~13.50		4.25~5.00						
JBAFB	25	+0.035 +0.022	+0.021 +0.008	13.00~15.50		4.75~6.00						
JBAFM	26			15.00~16.50		4.75~5.50						
JBAFS	30			16.00~20.50	12.0~60.0	4.75~7.00	3.0					
JBAFC	35	+0.042 +0.026	+0.025 +0.009	20.00~25.00		5.00~7.50						

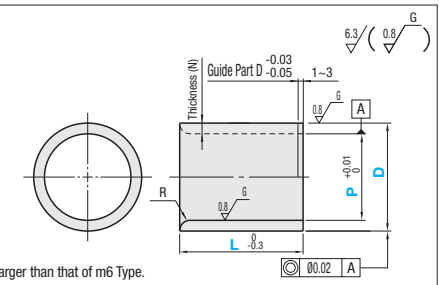
L≤Px2.5 when P≤3.59 L≤Px3.0 when P≥3.60 For (D-P)/2≤2, R≤2

■Thin Wall

RoHS



Type p6	Type m6	Material	Surface Treatment	Hardness
JBAUFP	JBAUF	JIS SKS93	-	56~60HRC
JBAUFBP	JBAUFB	JIS SKS93	Black Oxide	56~60HRC
JBAUFMP	JBAUFM	JIS SKS93	Electroless Nickel Plating	56~60HRC
JBAUFCP	JBAUFC	1.4125/ X105CrMo17	-	50~55HRC



For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below on **P.1405**.)

Part Number Type	D	D Tolerance p6	D Tolerance m6	P 0.01mm Increment	L 0.1mm Increment	Thickness (N)	R	€ Unit Price JBAUF JBAUFP	JBAUFB JBAUFBP	JBAUFM JBAUFMP	JBAUFC JBAUFCP
	7			3.51~5.00	5.0~8.0	1.00~1.74					
	8	+0.024 +0.015	+0.015 +0.006	4.51~6.00	5.0~13.0						
	9			4.51~6.50		1.25~2.24					
(p6)	10			6.51~8.00		1.00~1.74					
JBAUFP	11			8.00~9.00	5.0~20.0	1.00~1.50	0.5				
JBAUFBP	12			8.51~9.00		1.50~1.74					
JBAUFMP	13			8.51~10.00		1.50~2.24					
JBAUFCP	14	+0.029 +0.018	+0.018 +0.007	9.00~11.00		1.50~2.50					
	15			10.51~12.00		1.50~2.24					
(m6)	17			10.51~13.00		2.00~3.24					
JBAUF	18			12.51~14.00		2.00~2.74					
JBAUFB	20			13.51~15.00	10.0~40.0	2.50~3.24					
JBAUFM	22			13.51~17.00		2.50~4.24	1.0				
JBAUFC	25	+0.035 +0.022	+0.021 +0.008	15.51~19.00		3.00~4.74					
	26			16.51~20.00		3.00~4.74					
	30			20.51~24.00		3.00~4.74					
	35	+0.042 +0.026	+0.025 +0.009	25.01~29.00	12.0~60.0	3.00~4.99	1.5				

L≤Px2.5 when P≤3.59 L≤Px3.0 when P≥3.60

Order Example

Part Number	-	P	-	L
JBAF10	-	P4.00	-	L8.5
JBAUFC10	-	P8.00	-	L15.0

Days to Ship

10 Days | Express B | 2,00 EUR/ piece | P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

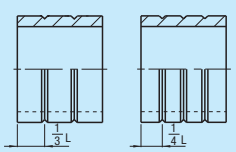
■Volume Discount (Round down to one Cent.) P. 87

Qty.	1~4	5~9	10~19	20~49
Rate	€ Unit Price	5%	10%	15%

Alterations

Part Number	-	P	-	L	-	(RS)
JBAFP20	-	P12.00	-	L20.0	-	RS

10 Days ⊗ Express Serviceis not available.

Alteration	Code	Spec.	Price Adder
Loctite Adhesive Groove Machining When L≤13.0 When L>13.0 	RS	Adds a Loctite adhesive groove. ⓟNumber of Outer Diameter Grooves - When L≤13.0→2 lines - When L>13.0→3 lines Ordering Code RS ⓟWhen D≥13, D-P≥3 When D≥14, D-P≥4 ⊗Not applicable to Thin Wall Type. ⊗Not applicable to L<9.0.	3,00

Add. Spec. Bushings for Locating Pins

-Standard with Flange / Thin Wall-

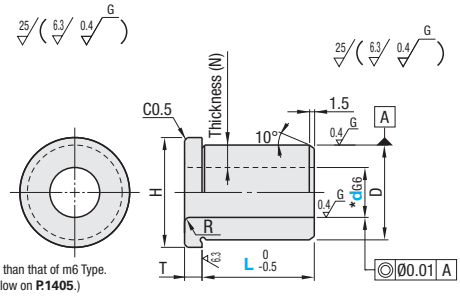
Price Reduction Up to 52%

CAD Data

■Standard Type RoHS



Type p6	Type m6	Material	Surface Treatment	Hardness
JBH	JBHM	1.2510/ 100MnCrW4	-	60HRC~
JBHN	JBHMN	1.2510/ 100MnCrW4	Electroless Nickel Plating	60HRC~
JBHC	JBHMC	1.4125/ X105CrMo17	-	50~55HRC



Tolerance of d dimension 2~6 of electroless nickel plated products is H7.
For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below on **P.1405**.)

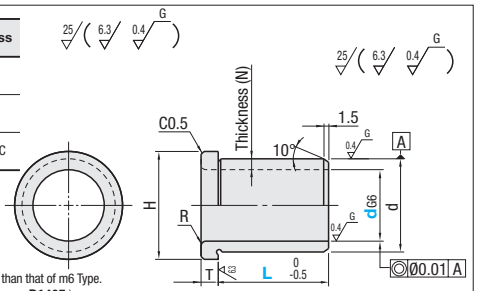
Part Number Type	d	d Tolerance No Surface Treatment		Electroless Nickel Plating		L Selection	Thickness (N)	R	H	T	D	D Tolerance p6	D Tolerance m6	€ Unit Price JBH JBHM	€ Unit Price JBHN JBHMN	€ Unit Price JBHC JBHMC
(p6) JBH JBHN JBHC	2	G6	+0.008 +0.002	H7	+0.010 0	5 6 8 10 12	1.5	0.8	9	2.5	5	+0.020 +0.012	+0.012 +0.004			
	3					5 6 8 *10 12	2		11		7					
	4		+0.012 +0.004		+0.012 0	*5 6 8 10 12 15 *16 20	2	1	12	3	8	+0.024 +0.015	+0.015 +0.006			
	5					5 6 8 10 12 15 16 20	2.5		14		10					
	6					5 6 8 10 12 15 16 20 25	2									
	8		+0.014 +0.005	G6	+0.014 +0.005		2	2	16	4	12	+0.029 +0.018	+0.018 +0.007			
	10					6 8 10 12 15 16 20 25	2.5		19		15					
(m6) JBHM JBHMN JBHMC	12		+0.017 +0.006		+0.017 +0.006	8 10 12 15 16 20 25 30	3		22		18					
	13					10 12 15 16 20 25 30	4.5		26	5	22	+0.035 +0.022	+0.021 +0.008			
	15					10 *12 *15 *16 *20 *25 *30	5		30		25					
	16					10 12 15 16 20 25 30	5				26					
	20		+0.020 +0.007		+0.020 +0.007	12 15 16 20 25 30	5	3	35	6	30	+0.042 +0.026	+0.025 +0.009			
	25					16 20 25 *30 35	5		40		35					

L dimension with * is not applicable to JBHMC.

■Thin Wall RoHS



Type p6	Type m6	Material	Surface Treatment	Hardness
JBHUP	JBHU	1.3505/100Cr6	-	58HRC~
JBHUNP	JBHUN	1.3505/100Cr6	Electroless Nickel Plating	58HRC~
JBHUCP	JBHUC	1.4125/ X105CrMo17	-	50~55HRC



Tolerance of d dimension 3~6 of electroless nickel plated products is H7.
For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below on **P.1405**.)

Part Number Type	d	D Tolerance No Surface Treatment		Electroless Nickel Plating		L Selection	Thickness (N)	R	H	T	D	D Tolerance p6	D Tolerance m6	€ Unit Price JBHU JBHUP	€ Unit Price JBHUN JBHUNP	€ Unit Price JBHUC JBHUCP
(p6) JBHUP JBHUNP JBHUCP	3	G6	+0.008 +0.002	H7	+0.010 0	6 8 10 12	1	0.5	9	2.5	5	+0.020 +0.012	+0.012 +0.004			
	4		+0.012 +0.004		+0.012 0	6 8 10 12 15 16			10	3	6	+0.024 +0.015	+0.015 +0.006			
	5					6 8 10 12 *15 *16 20			11		7					
	6					6 8 10 12 *15 16 20			12		8					
	8		+0.014 +0.005	G6	+0.014 +0.005	6 8 10 12 *15 16 20			14	4	10					
	10					6 8 10 12 15 16 20			17		13					
	12					8 10 12 15 16 *20	1.5		19		15	+0.029 +0.018	+0.018 +0.007			
(m6) JBHU JBHUN JBHUC	13		+0.017 +0.006		+0.017 +0.006	10 12 15 16 20			21	5	17					
	15					12 15 16 20	2	1	24		19					
	16					12 15 16 20 *25	2.5	2	26		21	+0.035 +0.022	+0.021 +0.008			
	20		+0.020 +0.007		+0.020 +0.007	12 15 16 20 25			31	6	26					
	25					20 25	3	2	36		31	+0.042 +0.026	+0.025 +0.009			

L dimension with * is not applicable to JBHUC.

Order Example

Part Number	-	L
JBH5	-	8
JBHUN12	-	12

Days to Ship

6 Days P. 87 2 Days

Price

■Volume Discount (Round down to one Cent.) **P. 87**

Qty.	1~49	50~64	65~79	80~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■JBH JBHM

Qty.	1~9	10~19	20~39	40~99
Rate	€ Unit Price	20%	30%	40%

For orders larger than indicated quantity, please request a quotation.

Bushings for Locating Pins

-Configurable with Flanger - Standard / Thin Wall-

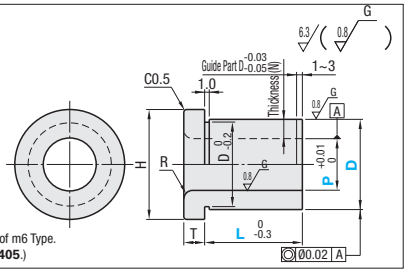
CAD Data

■Standard Type

RoHS



Type p6	Type m6	Material	Surface Treatment	Hardness
JBHFP	JBHF	JIS	-	56~60HRC
JBHFBP	JBHFB	JIS	Black Oxide	56~60HRC
JBHFMP	JBHFM	JIS	Electroless Nickel Plating	56~60HRC
JBHFSP	JBHFS	1.4301/ X5CrNi18-10	-	-
JBHFCP	JBHFC	1.4125/ X105CrMo17	-	50~55HRC



For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below on **P.1405**.)

Part Number Type	D	D Tolerance p6	D Tolerance m6	P 0.01mm Increment	L 0.1mm Increment	Thickness (N)	R	H	T	€ Unit Price JBHF JBHFP	JBHFB JBHFBP	JBHFM JBHFMP	JBHFS JBHFSP	JBHFC JBHFCP
(p6) JBHFP JBHFBP JBHFMP JBHFSP JBHFCP	5	+0.020 +0.012	+0.012 +0.004	2.20~ 2.50	3.0~ 3.5	1.25~1.50	0.8	9	2.5					
	7	+0.024 +0.015	+0.015 +0.006	2.20~ 3.50	3.0~ 6.0	1.75~2.50		11						
	8			3.00~ 4.50	3.0~10.0		1.0	12	3					
	10			4.00~ 6.50				14						
	12	+0.029 +0.018	+0.018 +0.007	6.00~ 8.50	3.0~15.0	1.75~3.00	2.0	16	4					
	15			8.00~10.50	10.0~35.0	2.25~3.50		19						
	18			10.00~12.50		2.75~4.00		22						
(m6) JBHF JBHFB JBHFM JBHFS JBHFC	20	+0.035 +0.022	+0.021 +0.008	12.00~13.50		3.25~4.00		26	5					
	22			12.00~13.50		4.25~5.00								
	25			13.00~15.50		4.75~6.00		30						
	26			15.00~16.50		4.75~5.50								
	30			16.00~20.50	12.0~50.0	4.75~7.00	3.0	35	6					
	35	+0.042 +0.026	+0.025 +0.009	20.00~25.00		5.00~7.50		40						

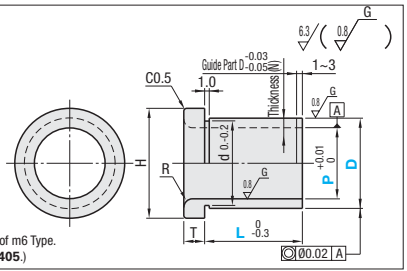
L+T≤Px2.5 when P≤3.59 L+T≤Px3.0 when P≥3.60

■Thin Wall

RoHS



Type p6	Type m6	Material	Surface Treatment	Hardness
JBHUFP	JBHUF	JIS	-	56~60HRC
JBHUFBP	JBHUFB	JIS	Black Oxide	56~60HRC
JBHUFMP	JBHUFM	JIS	Electroless Nickel Plating	56~60HRC
JBHUFCP	JBHUFC	1.4125/ X105CrMo17	-	50~55HRC



For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below on **P.1405**.)

Part Number Type	D	D Tolerance p6	D Tolerance m6	P 0.01mm Increment	L 0.1mm Increment	Thickness (N)	R	H	T	€ Unit Price JBHUF JBHUFP	JBHUFB JBHUFBP	JBHUFM JBHUFMP	JBHUFC JBHUFCP
	7			3.51~ 5.00	3.0~ 6.0	1.00~1.74		11	2.5				
	8	+0.024 +0.015	+0.015 +0.006	4.51~ 6.00	3.0~10.0			12					
	9			4.51~ 6.50		1.25~2.24		13.5	3				
(p6) JBHUFP JBHUFBP JBHUFMP JBHUFCP	10			6.51~ 8.00	3.0~15.0	1.00~1.74		14					
	11			8.00~ 9.00		1.00~1.50	0.5	15					
	12			8.51~ 9.00		1.50~1.74		16	4				
	13	+0.029 +0.018	+0.018 +0.007	8.51~10.00	10.0~35.0	1.50~2.24		17					
	14			9.00~11.00		1.50~2.50		18					
	15			10.51~12.00		1.50~2.24		19					
	17			10.51~13.00		2.00~3.24		21					
(m6) JBHUF JBHUFB JBHUFM JBHUFC	18			12.51~14.00		2.00~2.74		22					
	20			13.51~15.00		2.50~3.24	1.0	26	5				
	22			13.51~17.00		2.50~4.24							
	25	+0.035 +0.022	+0.021 +0.008	15.51~19.00		3.00~4.74		30					
	26			16.51~20.00		3.00~4.74							
	30			20.51~24.00		3.00~4.74		35	6				
	35	+0.042 +0.026	+0.025 +0.009	25.01~29.00	12.0~50.0	3.00~4.99	1.5	40					

L+T≤Px2.5 when P≤3.59 L+T≤Px3.0 when P≥3.60

Order Example

Part Number	- P -	L
JBHFM25	- P14.00 -	L20.0
JBHUFM15	- P11.00 -	L20.0

Days to Ship

10 Days | Express B | 2,00 EUR/ piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

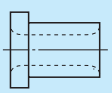
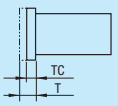
Volume Discount (Round down to one Cent.) P. 87

Qty.	1~4	5~9	10~19	20~49
Rate	€ Unit Price	5%	10%	15%

Alterations

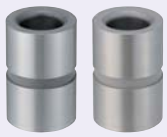
Part Number - P - L - (RC / TC)
JBHFM12 - P8.00 - L12.0 - RC

10 Days ⊗Express Services not available.

Alterations	Code	Spec.	Price Adder
Inner Diameter Radius R 	RC	Machines Radius R on both sides. Thickness 1.5mm or more Size of R will be the same as R on shoulder side with D dimension 10 or more. Ordering Code RC	3,00
Shoulder Thickness 	TC	1mm Increment Ordering Code TC4 3≤TC≤T O.A.L. becomes short as much as T-TC. Applicable when D≥12.	2,00

Bushings for Locating Pins
- Retaining / Oval-

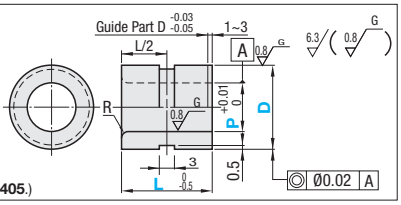
■Retaining



RoHS

Type p6	Type m6	M Material	S Surface Treatment	H Hardness
JBAFPG	JBAFG	JIS SKS93	-	56~60HRC
JBAFBPG	JBAFBG	JIS SKS93	Black Oxide	56~60HRC
JBAFMPG	JBAFMG	JIS SKS93	Electroless Nickel Plating	56~60HRC
JBAFSPG	JBAFSG	1.4301/X5CrNi18-10	-	-
JBAFCPG	JBAFCG	1.4125/X105CrMo17	-	50~55HRC

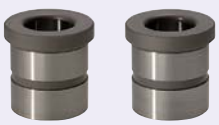
For hole machining, please note that inner diameter shrinkage of p6 Type is more than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins on **P.1405**.)



Part Number Type	D	D Tolerance p6	D Tolerance m6	P 0.01mm Increment	L 0.1mm Increment	R	€ Unit Price JBAFPG JBAFG	JBAFBPG JBAFBG	JBAFMPG JBAFMG	JBAFSPG JBAFSG	JBAFCPG JBAFCG
(p6)	8	+0.024 +0.015	+0.015 +0.006	4.00~4.50	10.0~13.0	1.0					
JBAFPG	10			4.00~6.50							
JBAFBPG	12	+0.029 +0.018	+0.018 +0.007	6.00~8.50	10.0~20.0	2.0					
JBAFMPG	15			8.00~10.50	10.0~40.0						
JBAFSPG	18			10.00~12.50							
JBAFCPG	20	+0.035 +0.022	+0.021 +0.008	12.00~13.50							
(m6)	22			12.00~13.50							
JBAFG	25			13.00~15.50							
JBAFBG	26			15.00~16.50							
JBAFMG	30			16.00~20.50							
JBAFSG	35	+0.042 +0.026	+0.025 +0.009	20.00~25.00	12.0~60.0	3.0					
JBAFCG											

L≤Px3.0

■Flanged, Retaining



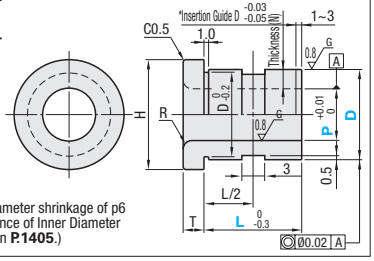
RoHS

Type p6	Type m6	Type h6	M Material	S Surface Treatment	H Hardness
JBHFPG	JBHFG	JBHG	JIS SKS93	-	56~60HRC
JBHFMPG	JBHFMG	JBHMG		Electroless Nickel Plating	56~60HRC
JBHFCPG	JBHFCG	-	1.4125/ X105CrMo17	-	50~55HRC

D	p6	m6	h6
8	+0.024 +0.015	+0.015 +0.006	-0.009 0
10			
12	+0.029 +0.018	+0.018 +0.007	-0.011 0
15			
18			
20	+0.035 +0.022	+0.021 +0.008	-0.013 0
22			
25			
26			
30			
35	+0.042 +0.026	+0.025 +0.009	-0.016 0

*Insertion Guide is not available for D dimension tolerance h6 at D shaft tip.

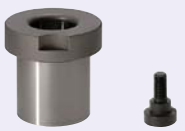
For hole machining, please note that inner diameter shrinkage of p6 Type is larger than that of m6 Type (See Variance of Inner Diameter after Press-fit of Bushings for Locating Pins on **P.1405**.)



Part Number Type	D	P 0.01mm Increment	L 0.1mm Increment	Thickness (N)	R	H	T	€ Unit Price JBHFPG JBHFG JBHG	JBHFMPG JBHFMG JBHMG	JBHFCPG JBHFCG
(p6)	8	4.00~4.50	8.0~10.0	1.75~2.50	1.0	12	3			
JBHFPG	10	4.00~6.50	8.0~15.0	1.75~3.00		14				
JBHFMPG	12	6.00~8.50				16				
JBHFCPG	15	8.00~10.50	10.0~35.0	2.25~3.50	2.0	19	4			
(m6)	18	10.00~12.50		2.75~4.00		22				
JBHFG	20	12.00~13.50		3.25~4.00		26	5			
JBHFMG	22	12.00~13.50		4.25~5.00						
JBHFCG	25	13.00~15.50		4.75~6.00		30				
(h6)	26	15.00~16.50		4.75~5.50						
JBHG	30	16.00~20.50	12.0~50.0	4.75~7.00	3.0	35	6			
JBHMG	35	20.00~25.00		5.00~7.50		40				

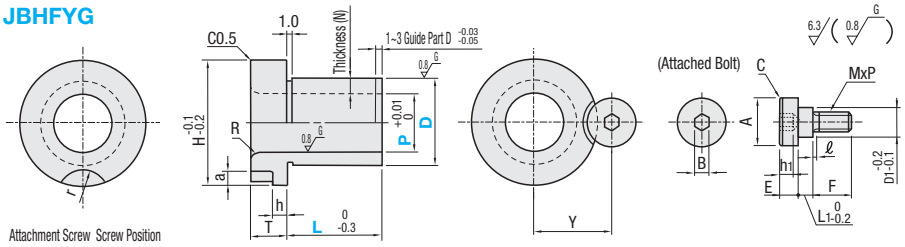
L+T≤Px3.0

■Notched



RoHS

JBHFYG



Attachment Screw Screw Position

M Material: JIS SKS93
H Hardness: 56 ~ 60HRC
A Accessory: Special Hexagon Socket Head Cap Screw 1 Pc.

■Included Screws

D1	L1	A	E	MxP (Coarse)	F	ℓ	B	h1	C
6	3	10	4	4x0.7	8	1.2	3	3	0.5
8	4	12	4.5	5x0.8	10	1.4	4	3.5	0.5

Part Number Type	D	D Tolerance g6	P 0.01mm Increment	L 0.1mm Increment	Thickness (N)	R	H	T	h	a	r	Screw Position Y	Accessory Special Material Screws	€ Unit Price
JBHFYG	10	-0.005 -0.014	4.00~6.50	3.0~12.0	1.75~3.00	1.0	18.0	7.5	3.0	3.0	5.5	12	M4	
	12	-0.006 -0.017	6.00~8.50	10.0~18.0		2.0	20.0					13		
	15		8.00~10.50	10.0~30.0	2.25~3.50		23.0					14.5		
	18		10.00~12.50		2.75~4.00		26.0					16		
	20	-0.007 -0.020	12.00~13.50	12.0~35.0	3.25~4.00		28.0	9.0	4.0		7.0	18	M5	
	22		12.00~13.50		4.25~5.00		30.0					19		
	25		13.00~15.50		4.75~6.00		33.0					20.5		
	26		15.00~16.50		4.75~5.50		34.0					21		
	30		16.00~20.50	12.0~50.0	4.75~7.00	3.0	38.0					23		

L+T≤Px3.0

■**Features**: Economy Type is up to 74% more reasonably priced than Standard Type with the following tolerance. P, W Dimension: $^{+0.3}_{+0.1}$ D dimension: $^{0}_{-0.2}$

■Oval Type Compact Flanged



■Oval Type Compact Flanged Economy Type



RoHS

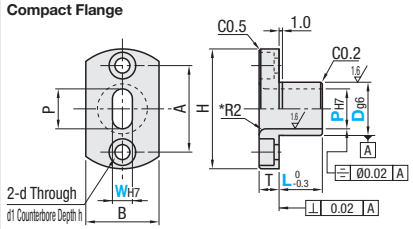
■Compact Flange

Type	Ⓜ Material	Ⓢ Surface Treatment	Ⓗ Hardness
JBEH	JIS SKS93	-	56~60HRC
JBEMH		Electroless Nickel Plating	56~60HRC

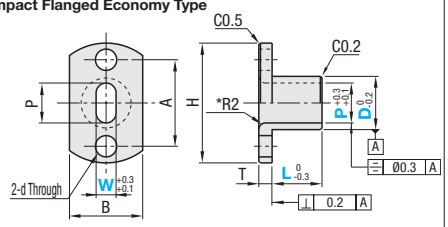
■Compact Flanged Economy Type

Type	Ⓜ Material	Ⓢ Surface Treatment	Ⓗ Hardness
JBFR	1.1191/C45E	-	-
JBFM		Electroless Nickel Plating	-
JBFK		-	45~50HRC
JBFN		Electroless Nickel Plating	

Compact Flange



Compact Flanged Economy Type



* When wall is 2mm or less and (D-P)/2≤2, R is 0.5.

■Compact Flange

Part Number Type	D	D Tolerance g6	PH7 0.01mm Increment	WH7 0.01mm Increment	L 1mm Increment	T	H	A	B	d	d1	h	€ Unit Price JBEH	€ Unit Price JBEMH
JBEH JBEMH	10	-0.005 -0.014	4.00~8.00	3.00≤W<P	8~40 L+T≤Px3	5	25	17	12	3.3	6.5	3.5		
	12	-0.006	4.00~10.00				28	20	15					
	16	-0.017	8.00~14.00			6	36	26	22	4.5	8	4.5		
	20	-0.007	10.00~18.00				40	30	25					
	25	-0.020	13.00~22.00				44	34	30					
	30		16.00~25.00			8	56	42	35	6.6	11	6.5		
	35	-0.009 -0.025	18.0~25.00				60	46	40					

■Compact Flanged Economy Type

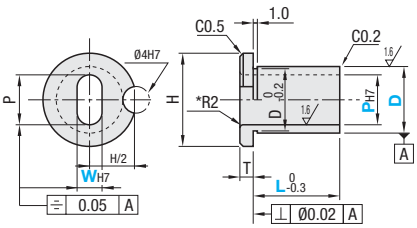
Part Number Type	D	P 0.1mm Increment	W 0.1mm Increment	L 1mm Increment	T	H	A	B	d	€ Unit Price JBFR L≤20	JBFR 21≤L	JBFM L≤20	JBFM 21≤L	JBFK L≤20	JBFK 21≤L	JBFN L≤20	JBFN 21≤L
JBFR JBFM JBFK JBFN	10	4.0~8.0	4.0≤W<P	5~40 L+T≤Px3	3	25	17	12	5								
	12	4.0~10.0				28	20	15									
	15	8.0~13.0				40	30	17	6								
	16	8.0~14.0						20									
	18	10.0~16.0															
	20	10.0~18.0						22									
	25	13.0~22.0			4	44	34	30									
	30	16.0~25.0			5	56	42	35	8								
	35	18.0~25.0				60	46	40									

■Oval with Flange (Dowel Pin)



RoHS

Type p6	Type m6	Ⓜ Material	Ⓢ Surface Treatment	Ⓗ Hardness
JBPE	JBE	JIS SKS93	-	56~60HRC
JBPEM	JBEM		Electroless Nickel Plating	56~60HRC



* When wall is 2mm or less and (D-P)/2≤2, R is 0.5.

Part Number Type	D	D Tolerance p6	D Tolerance m6	PH7 0.01mm Increment	WH7 0.01mm Increment	L 1mm Increment	T	H	€ Unit Price JBPE / JBE	€ Unit Price JBPEM / JBEM
(p6) JBPE JBPEM	10	+0.024 +0.015	+0.015 +0.006	4.00~8.00	3.00≤W<P	8~40 L+T≤Px3	3	14		
	12	+0.029	+0.018	4.00~10.00				16		
	16	+0.018	+0.007	8.00~14.00				20		
(m6) JBE JBEM	20	+0.035	+0.021	10.00~18.00				26		
	25	+0.022	+0.008	13.00~22.00				30		
	30			16.00~25.00			5	35		
	35	+0.042 +0.026	+0.025 +0.009	18.0~25.00				40		

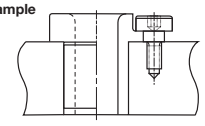
Order Example

Part Number	-	P	-	W	-	L
JBAFG8	-	P4.1			-	L11
JBHG20	-	P13.0			-	L20
JBHFYG18	-	P12.00			-	L18.0
JBFR10	-	P6.0	-	W4.5	-	L10
JBPE10	-	P6.8	-	W4.8	-	L15

Days to Ship: 10 Days — Express B 2,00 EUR/piece — P. 88

Ⓟ A Express Charge of 5,40 EUR for 3 or more identical pieces.
⊗ Express Servicenot available for Oval Type.

Example (Notched)



Alterations

Part Number	-	P	-	W	-	L	-	(HC / RH)
JBAFPG18	-	P8.00			-	L15.0	-	HC
JBFR10	-	P6.0	-	W4.5	-	L10	-	RH

Price

- Retaining Straight

■Volume Discount (Ⓟ Round down to one Cent.) P. 87

Qty.	1~4	5~9	10~19	20~49
Rate	€ Unit Price	5%	10%	15%

Ⓟ For orders larger than indicated quantity, please request a quotation.

- Retaining with Shoulder / Notched

■Volume Discount (Ⓟ Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

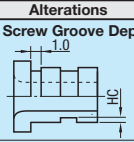
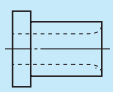
Ⓟ For orders larger than indicated quantity, please request a quotation.

- Oval

■Volume Discount (Ⓟ Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Alterations	Code	Spec.	Price Adder
Set Screw Groove Depth 	HC	Changes the depth of set screw groove depth from 0.5mm to 1.0mm. Ordering Code HC Ⓟ Applicable to Retaining Straight Type only. Ⓟ 2.00	2,00
Inner Diameter Radius R 	RH	Changes the inner diameter radius R from shoulder side to D dimension end face. Size of R will be the same as R on shoulder side. Ordering Code RH Ⓟ Applicable to Compact Flanged Economy Type only. Ⓟ (D-P)/2-R≥1.7	1,00

Bushings for Locating Pins
- Copper Alloy Straight / Flanged-

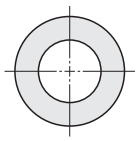
CAD Data

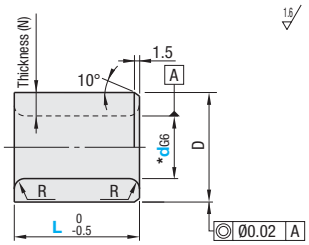
Features: Suitable for preventing pin abrasion and rust since it is softer than steel.

Copper Alloy Straight RoHS



Type		Material
Dp6	Dm6	
JBAD	JBADM	CC762S/CuZn25Al5 (High-tensile Brass)





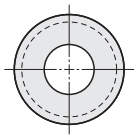
* For hole machining, please note that inner diameter shrinkage of p6 Type is more than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below.)

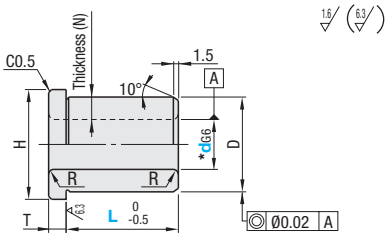
Part Number Type	d	D Tolerance		L Selection	Thickness (N)	R	D	D Tolerance p6	D Tolerance m6	€ Unit Price JBAD	€ Unit Price JBADM
(Dp6) JBAD	5	G6	+0.012	5 6 8 10 12 15	2.5	0.5	10	+0.024	+0.015		
	6		+0.004	5 6 8 10 12 15 16	2			+0.015	+0.006		
	8		+0.014	5 6 8 10 12 15 16 20	2		12	+0.029	+0.018		
	10		+0.005	6 8 10 12 15 16 20 25	2.5		15	+0.018	+0.007		
	12		+0.017	8 10 12 15 16 20 25 30	3	1	18				
(Dm6) JBADM	13		+0.006	10 12 15 16 20 25 30	4.5		22				
	15			12 15 16 20 25 30	5		25	+0.035	+0.021		
	16			12 15 16 20 25 30	5		26	+0.022	+0.008		
	20		+0.020	12 15 16 20 25 30	5	2	30				
	25		+0.007	16 20 25 30 35	5		35	+0.042 +0.026	+0.025 +0.009		

Copper Alloy with Flanged RoHS



Type		Material
Dp6	Dm6	
JBHD	JBHDM	CC762S/CuZn25Al5 (High-tensile Brass)





* For hole machining, please note that inner diameter shrinkage of p6 Type is more than that of m6 Type.
(See "Variance of Inner Diameter after Press-fit of Bushings for Locating Pins" below.)

Part Number Type	d	D Tolerance		L Selection	Thickness (N)	R	H	T	D	D Tolerance p6	D Tolerance m6	€ Unit Price JBHD	€ Unit Price JBHDM
(Dp6) JBHD	5	G6	+0.012	5 6 8 10 12	2.5	0.5	14	3	10	+0.024	+0.015		
	6		+0.004	5 6 8 10 12 15	2					+0.015	+0.006		
	8		+0.014	5 6 8 10 12 15 16 20	2		16	4	12	+0.029	+0.018		
	10		+0.005	6 8 10 12 15 16 20 25	2.5		19		15	+0.018	+0.007		
	12		+0.017	8 10 12 15 16 20 25 30	3	1	22		18				
(Dm6) JBHDM	13		+0.006	10 12 15 16 20 25 30	4.5		26	5	22				
	15			12 15 16 20 25 30	5		30		25	+0.035	+0.021		
	16			12 15 16 20 25 30	5				26	+0.022	+0.008		
	20		+0.020	12 15 16 20 25 30	5	2	35	6	30				
	25		+0.007	16 20 25 30 35	5		40		35	+0.042 +0.026	+0.025 +0.009		

Order Example

Part Number	-	L
JBAD6	-	10
JBHDM10	-	20

Days to Ship: 10 Days — Express B: 2,00 EUR/piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

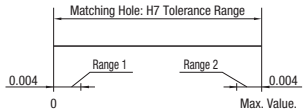
Price

Volume Discount (Round down to one Cent.) P. 87

Qty.	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bore Inner Ø Variances after Press-fitting Bushings for Locating Pins (Reference)



Housing Bore Diameter Tolerance: In Range 1

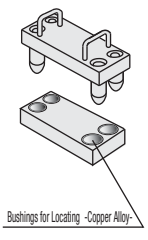
D Tolerance	
m6	p6
99.90%	99.83%

Housing Bore Diameter Tolerance: In Range 2

D Tolerance	
m6	p6
99.99%	99.92%

Data above are not guaranteed but empirical values.

Example



Bushings for Locating Pins

-Straight / Flanged / Ceramics-

CAD Data

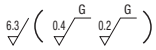
■Straight Type RoHS



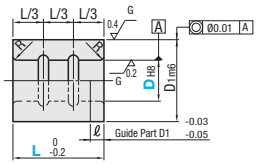
■Flanged Type



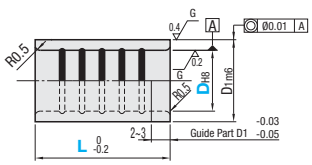
Type		Material	Hardness
Straight	Flanged		
LCB	LCH	1.3505/100Cr6	58HRC~
LCBZ	LCHZ	EN-JL 1040/EN-GJL-250	-



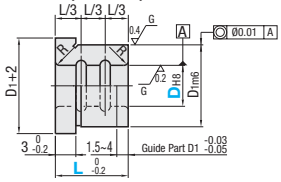
LCB (Standard)



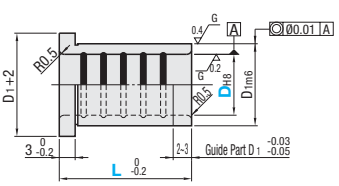
LCBZ (No Lubrication Type)



LCH (Standard)



LCHZ (No Lubrication Type)



(?)5 and L6 of LCB (Standard) have one groove at L/2 position.

■Flanged Type

Part Number Type	D_{H8}		L Selection	D_{1m6}		ℓ	R	€ Unit Price LCB Qty. 1 ~ 29	€ Unit Price LCB Qty. 30 ~ 99	€ Unit Price LCBZ Qty. 1 ~ 29	€ Unit Price LCBZ Qty. 30 ~ 99
	5	+0.018 0	*5 *6 *8 *10 *12 *16	10	+0.015 +0.006	1.5	0.5				
	6		6 8 10 *12 *16	12		2					
(Standard)	8	+0.022	8 10 12 16 20	14	+0.018	3	1				
LCB	10	0		16	+0.007						
	12	+0.027	10 12 16 20 25	18			1.2				
(No Lubrication Type)	13	0		22							
LCBZ	15		16 *20 25 30	25	+0.021	4	1.5				
	16		16 20 25 30	26	+0.008						
	20	+0.033		30			2				
	25	0	20 25 30 35	35	+0.025 +0.009						

(?)L Dimensions marked by * are available for LCB only.

(?)For orders larger than indicated quantity, please request a quotation.

■Flanged Type

Part Number Type	D_{H8}		L Selection	D_{1m6}		ℓ	R	€ Unit Price LCH Qty. 1 ~ 29	€ Unit Price LCH Qty. 30 ~ 99	€ Unit Price LCHZ Qty. 1 ~ 29	€ Unit Price LCHZ Qty. 30 ~ 99
	5	+0.018 0	*8 *10 *12 *16	10	+0.015 +0.006	1.5	0.5				
	6		8 10 *12 *16	12		2					
(Standard)	8	+0.022	8 10 12 16 20	14	+0.018	3	1				
LCH	10	0		16	+0.007						
	12	+0.027	10 12 16 20 25	18			1.2				
(No Lubrication Type)	13	0		22							
LCHZ	15		16 20 25 30	25	+0.021	4	1.5				
	16		16 20 25 30	26	+0.008						
	20	+0.033		30			2				
	25	0	20 25 30 35	35	+0.025 +0.009						

(?)L Dimensions marked by * are available for LCH only.

(?)For orders larger than indicated quantity, please request a quotation.

Order Example

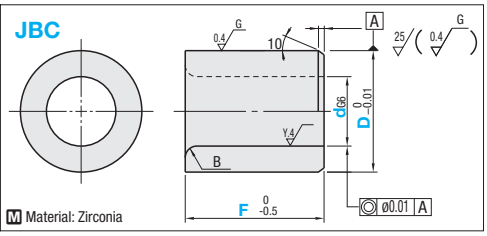
Part Number	-	L
LCB10	-	12
LCBZ12	-	20
LCH25	-	30
LCHZ25	-	35

Days to Ship: 6 Days / 2 Days P. 87

■Ceramics RoHS



JBC



Material: Zirconia

Order Example

Part Number	-	L
JBC16	-	20

Days to Ship: 6 Days P. 87

Part Number Type	d_{G6}		L Selection	R	D	€ Unit Price Qty. 1 ~ 29	Volume Discount Qty. 30 ~ 49
	6	+0.012 +0.004	8 10	1	10		
	8	+0.014	10 12	2	12		
	10	+0.005			15		
	12	+0.017	10 12 16		18		
JBC	13	+0.006			22		
	15		16 20		25		
	16				26		
	20	+0.020 +0.007	20	3	30		

(?)Avoid pressing Ceramic Bushing in. It may crack when struck hard. Use of Loctite is recommended.

(?)Strength may degrade when used at the temperature over 100°C for extended durations, or when operating temperature varies from normal to high repeatedly.

(?)For orders larger than indicated quantity, please request a quotation.

■Properties

Item	Unit	Part Number JBC
Specific Gravity	g/cm²	6.0
Moisture Absorption Ratio	%	0
Vickers Hardness	HV	1300
Flexural Strength	kg/mm²	100
Linear Expansion Coefficient	x10-6/°C	10.0
Thermal Conductivity	cal/cm / sec / °C	0.007
Volume Inherent Resistivity	Ωcm	3x1012

Bushings for Locating Pins
-Flanged-

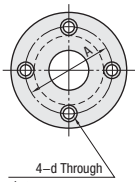
■Round Flange RoHS



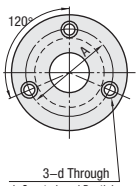
(Alteration FC)

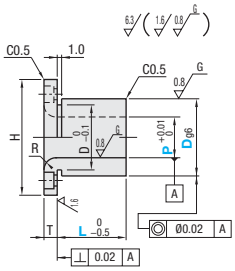
Type				Material		Surface Treatment	Hardness
P Dim. Standard - L Dim. Selectable		P and L Dim. Configurable		P	P		
4-Point Stopper Type	3-Point Stopper Type	4-Point Stopper Type	3-Point Stopper Type	Dimension Standard	Dimension Configurable		
JBY	JBT	JBYF	JBTF	1.2510/	JIS SKS93	-	Treated Hardness 56 ~ 60HRC
-	-	JBYFB	-	-		Black Oxide	
JBYM	-	JBYFM	JBTFM	1.2510/		Electroless Nickel Plating	
-	-	JBYFS	-	-	1.4301/	-	-
-	-	JBYFC	-	-	1.4125/	-	Treated Hardness 50 ~ 55HRC

4-Point Stopper Type



3-Point Stopper Type





■P Dimension Standard / L Dimension Selectable

JBT is available for P dimension with * mark only. L dimensions marked by * are not available for JBYM.

Part Number Type	P	L Selection	R	H	T	Dg6		d	d1	h	€ Unit Price Round Flange JBY	JBYM	JBT
JBY JBYM JBT	5	8 10 12 *16	1	25	5	10	-0.005 -0.014	3.3	6.5	3.5			
	*6	8 10 12 16											
	*8	10 12 16 20	2	28	6	12	-0.006 -0.017	4.5	8	4.5			
	*10			36		15							
	*12	12 16 20 25 30				18							
	13	12 16 *20 25 *30		40		22	-0.007 -0.020						
	*15	12 16 20 25 30		44		25							
	16	16 20 25 30 35				26							
	*20		3	56	8	30		6.6	11	6.5			
	25	20 25 30 *35 40		60		35	-0.009 -0.025						

■P, L Configurable

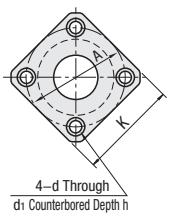
L+T≤Px3.0

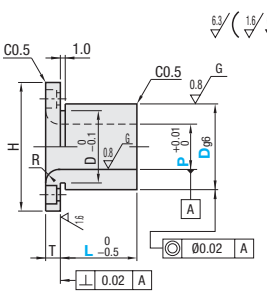
Part Number Type	Dg6		P 0.01mm Increment	L 0.1mm Increment	R	H	T	d	d1	h	€ Unit Price Round Flanges 4-Point Stopper Type JBYF	JBYFB	JBYFM	JBYFS	JBYFC	Round Flanges 3-Point Stopper Type JBTF	JBTFM
Round Flanges 4-Point Stopper	10	-0.005 -0.014	4.00~ 6.50	5.0~15.0	1	25	5	3.3	6.5	3.5							
JBYF	12	-0.006 -0.017	6.00~ 8.50		2	28											
JBYFB	15		8.00~10.50	10.0~35.0		36	6	4.5	8	4.5							
JBYFM	18		10.00~12.50														
JBYFS	20	-0.007 -0.020	12.00~13.50			40											
JBYFC	22		12.00~13.50														
	25		13.00~15.50			44											
Round Flanges 3-Point Stopper	26		15.00~16.50														
JBTF	30		16.00~20.50	12.0~50.0	3	56	8	6.6	11	6.5							
JBTFM	35	-0.009 -0.025	20.00~25.00			60											

■Square Flange RoHS



Type		Material		Surface Treatment	Hardness
P Dimension Standard - L Dim. Selectable Type	P and L Dimension Configurable	P Dimension Selectable	P Dim. Configurable		
JBS	JBSF	1.2510/	JIS SKS93	-	Treated Hardness 56 ~ 60HRC
-	JBSFB	-		Black Oxide	
JBSM	JBSFM	1.2510/		Electroless Nickel Plating	
-	JBSFS	-	1.4301/	-	-
-	JBSFC	-	1.4125/	-	Treated Hardness 50 ~ 55HRC





■P Dimension Standard / L Dimension Selectable

L dimensions marked by * are not available for JBSM.

Part Number Type	P	L Selection	R	H	K	T	Dg6		d	d1	h	€ Unit Price JBS	JBSM
JBS JBSM	8	10 *12 16 20	2	28	22	5	12	-0.006 -0.017	3.3	6.5	3.5		
	10			36	28	6	15		4.5	8	4.5		
	12	12 16 20 25 30					18						
	15			44	34		25	-0.007 -0.020					
	16	16 20 25 30 *35					26						
	20		3	56	44	8	30		6.6	11	6.5		
	25	20 25 30 *35 40		60	47		35	-0.009 -0.025					

■P, L Configurable

L+T≤Px3.0

Part Number Type	Dg6		P 0.01mm Increment	L 0.1mm Increment	R	H	K	T	A	d	d1	h	€ Unit Price JBSF	JBSFB	JBSFM	JBSFS	JBSFC
JBSF	10	-0.005 -0.014	4.00~6.50	5.0~15.0	1	25	20	5	17	3.3	6.5	3.5					
JBSFB	12	-0.006 -0.017	6.00~8.50		2	28	22		20								
JBSFM	15		8.00~10.50	10.0~35.0		36	28	6	26	4.5	8	4.5					
JBSFS	18		10.00~12.50														
JBSFC	20	-0.007 -0.020	12.00~13.50			40	31		30								
	22		12.00~13.50														
	25		13.00~15.50			44	34		34								
	26		15.00~16.50														
	30		16.00~20.50	12.0~50.0	3	56	44	8	42	6.6	11	6.5					
	35	-0.009 -0.025	20.00~25.00			60	47		46								

CAD Data

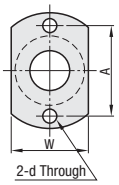
Features: Economy Type is up to 49% reasonably priced without D and P dimension grinding and with the tolerance of P dimension: $^{+0.3}_{+0.1}$ and D dimension: $^{0}_{-0.2}$.

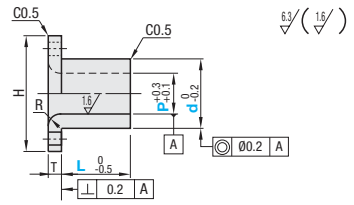
Compact Flange Economy Type



RoHS

Type	Material	Surface Treatment	Hardness
JBOR	1.1191/C45E	-	-
JBOM		Electroless Nickel Plating	-
JBOK		-	45~50HRC
JBON		Electroless Nickel Plating	





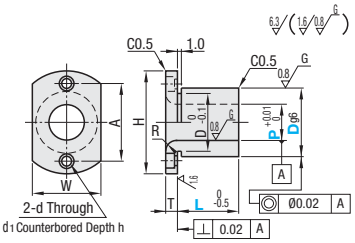
Part Number Type	D	P 0.1mm Increment	L 1mm Increment	R	H	W	T	A	d	€ Unit Price JBOR L≤20	JBOR 21≤L	JBOM L≤20	JBOM 21≤L	JBOK L≤20	JBOK 21≤L	JBON L≤20	JBON 21≤L
JBOR JBOM JBOK JBON	10	4.0~6.5	5~15	1	25	12	3	17	5								
	12	6.0~8.5			28	15		20									
	15	8.0~10.5	5~35	2	40	17		30	6								
	16	9.0~11.5				20											
	18	10.0~12.5															
	20	12.0~13.5				22											
	22	12.0~13.5				25											
	25	13.0~15.5			44	30	4	34									
	26	15.0~16.5															
	30	16.0~20.5	5~50	3	56	35	5	42	8								
	35	20.0~25.0			60	40		46									

Compact Flange



RoHS

Type: P Dimension Standard - L Dimension Selectable Type	Type: P and L Dim. Configurable	Material: P Dimension Standard	Material: P Dimension Configurable	Surface Treatment	Hardness
JBN	JBNF	1.2510/100MnCrW4	JIS	-	Treated Hardness 56 ~ 60HRC
-	JBNFB	-		Black Oxide	
JBNM	JBNFM	1.2510/100MnCrW4		Electroless Nickel Plating	
-	JBNFS	-	1.4301/X5CrNi18-10	-	-
-	JBNFC	-	1.4125/X105CrMo17	-	Treated Hardness 50 ~ 55HRC



P Dimension Standard / L Dimension Selectable

Part Number Type	P	L Selection	R	H	W	T	D_{g6}	A	d	d_1	h	€ Unit Price JBN	€ Unit Price JBNM
JBN JBNM	5	8 10 12 16	1	25	12	5	10 -0.005 -0.014	17	3.3	6.5	3.5		
	6												
	8	10 12 16 20	2	28	15	6	12 -0.006 -0.017	20	4.5	8	4.5		
	10			36	22		15	26					
	12						18						
	13	12 16 20 25 30		40	25		22	30					
	15			44	30		25 -0.007 -0.020	34					
	16						26						
	20	16 20 25 30 35	3	56	35	8	30	42	6.6	11	6.5		
	25	20 25 30 35 40		60	40		35 -0.009 -0.025	46					

P, L Configurable

L+T≤Px3.0

Part Number Type	D_{g6}	P 0.01mm Increment	L 0.1mm Increment	R	H	W	T	A	d	d_1	h	€ Unit Price JBNF	JBNFB	JBNFM	JBNFS	JBNFC
JBNF JBNFB JBNFM JBNFS JBNFC	10 -0.005 -0.014	4.00~6.50	5.0~15.0	1	25	12	5	17	3.3	6.5	3.5					
	12 -0.006 -0.017	6.00~8.50		2	28	15	6	20	4.5	8	4.5					
	15	8.00~10.50	10.0~35.0		36	22		26								
	18	10.00~12.50														
	20 -0.007 -0.020	12.00~13.50			40	25		30								
	22	12.00~13.50														
	25	13.00~15.50			44	30		34								
	26	15.00~16.50														
	30	16.00~20.50	12.0~50.0	3	56	35	8	42	6.6	11	6.5					
	35 -0.009 -0.025	20.00~25.00			60	40		46								

Order Example

Part Number	P	L
JBY6	-	12
JBSF20	P13.00	L30.0
JBOR10	P5.0	L8
JBN10	-	10

Days to Ship

- PDimension Standard
- L Dimension Selectable Type

6 Days P. 88

- Compact Flange Economy Type
- P, L Configurable

8 Days

-Round Flange, Square Flange, Compact Flange P and L Dimension Configurable Type

10 Days | Express B | 2,00 EUR/ piece P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

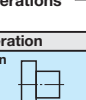
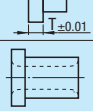
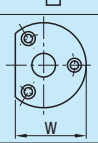
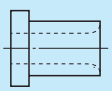
Volume Discount (Round down to one Cent.) P. 87

Qty.	1~4	5~9	10~19	20~49
Rate	€ Unit Price	5%	10%	15%

Please request a quotation for orders of 50 or more pieces of Round Flange, Square Flange, Compact Flange P Dimension Standard, L Dimension Selectable, Compact Flange Economy Type P and L Dimension Configurable Type.

Alterations

Part Number	P	L	(TKC / RC / FC / RH)
JBNF15	P10.0	L10.0	TKC
JBTF20	P12.0	L12.0	FC

Alteration	Code	Spec.	Price Adder
T Dimension Tolerance 	TKC	Changes the T dimension tolerance from general tolerance to ±0.01. Ordering Code TKC ⊗Not applicable to P Dimension Standard, L Dimension Selectable and Compact Flanged Economy Type.	4,00
Radius R Addition 	RC	Machines Radius R on both sides. D10⋯›R1 D12~26⋯›R2 D30, 35⋯›R3 Ordering Code RC Applicable to JBNF / JBNFB / JBNFM / JBNFS / JBNFC only.	3,00
	FC	Cuts one side of flange. Ordering Code FC Applicable to JBTF / JBTFM only. D W D W: 10 21.5 22 33; 12 23 25 35; 15 30 26 36; 18 30 30 46; 20 33 35 49	2,00
Inner Ø Radius R 	RH	Changes the inner diameter radius R from flange side to D dimension end face. Size of R will be the same as R on shoulder side. Ordering Code RH Applicable to Compact Flanged Economy Type only. (D-P)/2-R≥1.5	1,00

Locating and Guide Components

Locating and Guide Components



Product Name	Adjusting Stopper Screws -Hexagon Sockets / Wrench Flats / Wrench Flats with Hexagon Sockets / Hexagon Bolts	-Knurled Knobs-	Locating Bolts	Stopper Bolts	Stopper Screws	Male Thread Stopper Blocks
Page	1417-1418	1418	1419	1420	1420	1421



Brackets for Stopper Screws	Male Thread Stopper Blocks -Standard-	-With Counterbore / With Counterbore and Female Thread Hole / L-Shaped / T-Shaped / Side Counterbored / Two-Hole-
1421	1422	1422~1424



Stop Pins –Press–Fit, Screw, Spherical, Press-Fit Urethane, Urethane,	Wrench Hole-	Stopper Bolts with Bumpers–With Urethane, Polyacetal, Silicon–	-With MC Nylon-	Shock Absorption Stoppers
1425-1426		1427-1428	1428	1429



Washers / Stoppers with Plates -Urethane-	-Low Elastic Rubber-	Stopper Blocks	Stopper Blocks with Urethane	Adjusting Bolts	Blocks for Adjusting Bolts
1430	1430	1431	1432	1433-1434	1435-1436



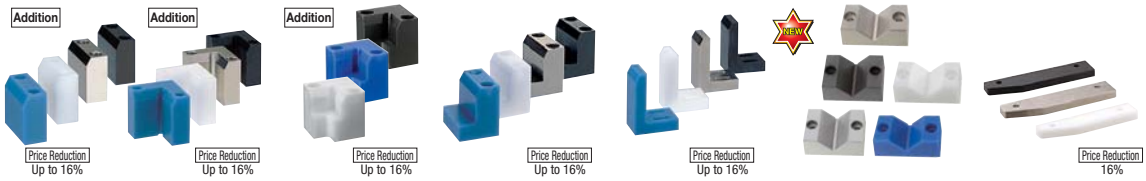
Adjusting Pins	Screw Jacks	Leveling Screws	-Large Holes for Adjustment / with Wrench Flats-	Leveling Bolts	-Wrench Flats Thick-	Lock Nuts
1436	1437	1437	1437	1438	1438	1438



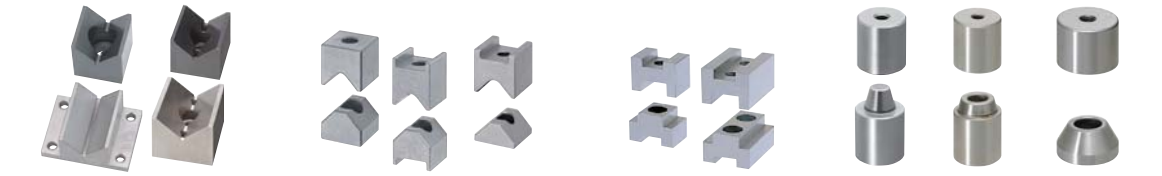
Clamping Screws	High-Lock Screws	Clamping Screws	Hexagon Head Clamping Screws	Grub Screw Sets	-Rubber Pads Type-	-Flanged Type-
1439	1440	1441	1442	1443	1444	1444



Clamp Plates	Shims for Clamp Plates	Basic-Guide Pins –Tip Shape Selectable–	–Eccentric–	Basic-Guides –Standard–	–Narrow–
1444	1444	1445	1445	1446	1446



Guides -Straight / L-Shaped / Height Adjusting / Pedestal / Angle-	-V-Shaped-	-Plate Type-
1447-1448	1449	1449



V Blocks -Standard / Precision-	V-Shaped Locating Block Sets	U/T-shaped Locating Block Sets	Tapered Pin Locating Block Sets
1450	1451-1452	1453	1454



Basic Guides for Welding Jigs -Round Pole-	-Plate Type-	-Ribbed Type-	Guide Plates	Round Stoppers / Shims for Round Stoppers	-Female Thread Hole Type-	Flat Stoppers / Shims for Flat Stoppers
1455	1455	1456	1456	1457	1457	1458



Blocks for Shim Adjustment of Welding Jigs -Straight, L-Shaped- / Shim Sets	Workpiece Detection System	Detection Pins for Weld Nut	Roller Pushers	Point Pads -Sphere / Holes for Suckers Type-
1459	1460	1460	1461	1461



Point Pads -Flat / Female Thread Type-	Lift Pins	Feed Fingers	-Economy Type / Stainless-	-Economy Type / Resin-	Auto-latch
1461	1462	1463	1465	1465	1466

■ Plungers, Indexing Plungers, Ball Lock Pins and Micro Spring Pins have been moved to the index for Plungers.

Ball Plungers	Spring Plungers	Indexing Plungers	Ball Lock Pins	Micro Spring Pins
P.1469~1474	P.1477~1478	P.1485~1493	P.1494	P.1482



■ Spring Side Clamps have been moved to the indexes for Clamp Units and Toggle Clamps.

Spring Side Clamps
P.1498



Adjusting Stopper Screws
-Hexagon Socket Head Type · with Wrench Flats-

CAD Data

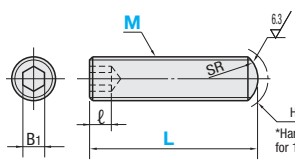
■Adjusting Stopper Screws –Hexagon Socket Head Type–

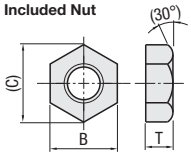


RoHS

Adjusting Stopper	Hexagon Socket Type: L Dimension Selectable	L Dimension Configurable	M Material	H Hardness*	S Surface Treatment	A Accessory (Nut 1 pc.): M Material	A Accessory (Nut 1 pc.): S Surface Treatment
Fine Thread	ANBM	-	1.1191/C45E	45~50HRC	Electroless Nickel Plating	1.0038/S235JR	Trivalent Chromate
	ANB	ANFB			Trivalent Chromate		
	ANBH	ANFBH	1.7220/34CrMo4	50HRC~			
	ANBS	ANFBS	1.4301/X5CrNi18-10	-	-	1.4301/X5CrNi18-10	-
	SANB	SANFB	1.4031/X38Cr13	45HRC~	-		
Coarse Thread	ANBNM	-	1.1191/C45E	45~50HRC	Electroless Nickel Plating	1.0038/S235JR	Trivalent Chromate
	ANBN	ANFBN			Trivalent Chromate		
	ANBNH	ANFBNH	1.7220/34CrMo4	50HRC~			
	ANBNS	ANFBNS	1.4301/X5CrNi18-10	-	-	1.4301/X5CrNi18-10	-
	SANBN	SANFBN	1.4031/X38Cr13	45HRC~	-		

Stainless Steel Hardening Type (1.4031/X38Cr13) may be tarnished by hardening. *H Hardness: Hardening on tip





M	MxPitch: Fine Thread	MxPitch: Coarse Thread	B1	ℓ	SR	B	(C)	T
3	3x0.35	3x0.5	1.5	1.5	3	5.5	6.4	2.4
4	4x0.5	4x0.7	2	2.2	4	7	8.1	
5	5x0.5	5x0.8	2.5	2.8	5	8	9.2	4
6	6x0.75	6x1.0	3	3	6	10	11.5	
8	8x0.75	8x1.25	4	4	8	13	15	5
10	10x1.0	10x1.5	5	5	10	17	19.6	6
12	12x1.0	12x1.75	6	6	12	19	21.9	
16	16x1.5	16x2.0	8	7	16	24	27.7	8
20	20x1.5	20x2.5	10	8	20	30	34.6	10

■L Dimension Selectable

Part Number Type	M	L Selection	ANB • ANBN € Unit Price Qty. 1~49	ANB • ANBN Volume Discount Qty. 50~99	ANBS • ANBNS € Unit Price Qty. 1~49	ANBS • ANBNS Volume Discount Qty. 50~99	SANB • SANBN € Unit Price Qty. 1~49	SANB • SANBN Volume Discount Qty. 50~99
(Fine) ANB	3	10 15 20 25 30 35 40						
ANB	4	10 15 20 25 30 35 40 45 50 60						
ANBS	5	10 15 20 25 30 35 40 45 50 60						
SANB	6	15 20 25 30 35 40 45 50 60						
(Coarse) ANBN	8	20 25 30 35 40 45 50 60						
ANBN	10	25 30 35 40 45 50 60 70 80 90 100						
ANBNS	12	30 35 40 45 50 60 70 80 90 100						
SANBN	16	40 45 50 60 70 80 90 100 120						
	20	45 50 60 70 80 90 100 120						

Part Number Type	M	L Selection	€ Unit Price Qty. 1~49	Volume Discount Qty. 50~99
	3	15 20 25		
(Fine)	4	15 20 25 30 35 40		
ANBM	5	15 20 25 30 35 40		
	6	15 20 25 30 35 40 45 50 60		
(Coarse)	8	20 25 30 35 40 45 50 60		
ANBNM	10	30 35 40 45 50 60 70		
	12	40 45 50 60 70		

Part Number Type	M	L Selection	€ Unit Price Qty. 1~49	Volume Discount Qty. 50~99
	3	20 25 30 35 40		
	4	20 25 30 35 40 45 50 60		
(Fine)	5	20 25 30 35 40 45 50 60		
ANBH	6	20 25 30 35 40 45 50 60		
	8	20 25 30 35 40 45 50 60		
(Coarse)	10	30 35 40 45 50 60 70		
ANBNH	12	35 40 45 50 60 70 80		
	16	40 45 50 60 70 80 100		
	20	45 50 60 70 80 100 120		

■L Dimension Configurable

Part Number Type	M	L 1mm Increment	€ Unit Price ANFB-ANFBN	€ Unit Price ANFBH-ANFBNH	€ Unit Price ANFBS-ANFBNS	€ Unit Price SANFB-SANFBN
(Fine)	3	10~40				
ANFB	4	10~60				
ANFBH	5	10~60				
ANFBS	6	15~60				
SANFB	8	15~60				
(Coarse)	10	20~100				
ANFBN	12	30~100				
ANFBNH	16	40~120				
ANFBNS	20	40~120				
SANFBN						

Order Example

Part Number	-	L
ANB8	-	40
ANBM5	-	30

Days to Ship

- L Dimension Selectable Type: 6 Days / 2 Days

- L Dimension Configurable Type: 10 Days P.87

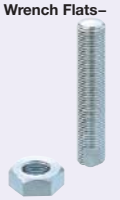
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~49	50~99
Rate	€ Unit Price	5%	10%	15%

Applicable only to L Dimension Configurable Type.
For orders larger than indicated quantity, please request a quotation.

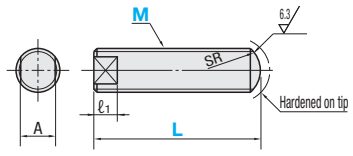
■Adjusting Stopper Screws –with Wrench Flats–

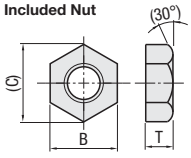


RoHS

Adjusting Stopper	Wrench Flats Type	M Material	H Hardness*	S Surface Treatment	A Accessory (Nut 1 pc.): M Material	A Accessory (Nut 1 pc.): S Surface Treatment
Fine Thread	ANS	1.1191/C45E	45~50HRC	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
	SANS	1.4031/X38Cr13	45HRC~	-	1.4301/X5CrNi18-10	-
Coarse Thread	ANSN	1.1191/C45E	45~50HRC	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
	SANSN	1.4031/X38Cr13	45HRC~	-	1.4301/X5CrNi18-10	-

Stainless Steel Hardening Type (1.4031/X38Cr13) may be tarnished by hardening. *H Hardness: Hardening on tip





M	MxPitch: Fine Thread	MxPitch: Coarse Thread	A	ℓ1	SR	B	(C)	T
3	3x0.35	3x0.5	2.5		3	5.5	6.4	2.4
4	4x0.5	4x0.7	3	4	4	7	8.1	
5	5x0.5	5x0.8	4		5	8	9.2	4
6	6x0.75	6x1.0	5	5	6	10	11.5	
8	8x0.75	8x1.25	6	6	8	13	15	5
10	10x1.0	10x1.5	8	8	10	17	19.6	6
12	12x1.0	12x1.75	10	10	12	19	21.9	
16	16x1.5	16x2.0	14	14	16	24	27.7	8
20	20x1.5	20x2.5	17	17	20	30	34.6	10

Part Number Type	M	L Selection	ANS · ANSN € Unit Price Qty. 1~49	ANS · ANSN Volume Discount Qty. 50~99	SANS · SANSN € Unit Price Qty. 1~49	SANS · SANSN Volume Discount Qty. 50~99
	3	15 20 25 30 35 40				
(Fine)	4	15 20 25 30 35 40 45 50 60				
ANS	5	15 20 25 30 35 40 45 50 60				
SANS	6	20 25 30 35 40 45 50 60				
	8	25 30 35 40 45 50 60				
(Coarse)	10	30 35 40 45 50 60 70				
ANSN	12	35 40 45 50 60 70 80				
SANSN	16	40 45 50 60 70 80 100				
	20	45 50 60 70 80 100 120				

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
ANS6	-	60
SANSN10	-	50

Days to Ship: 6 Days P.87

Adjusting Stopper Screws

-Wrench Flats with Hexagon Socket Type · Hexagon Bolts Type · Knurled Knob Type-

CAD Data

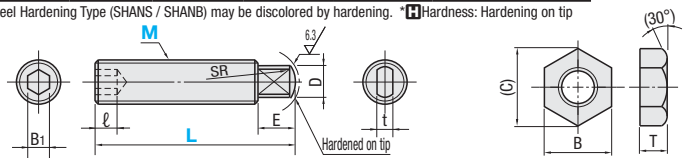
■Adjusting Stopper Screws
–Wrench Flats with Hexagon Socket Type–



RoHS

Adjusting Stopper	Type	M Material	H Hardness*	S Surface Treatment	A Accessory (Nut 1 pc.) M Material	A Accessory (Nut 1 pc.) S Surface Treatment
Fine Thread	HANS	1.1191/C45E	45~50HRC	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
	SHANS	1.4031/X38Cr13	45HRC~	-	1.4301/X5CrNi18-10	-
Coarse Thread	HANB	1.1191/C45E	45~50HRC	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
	SHANB	1.4031/X38Cr13	45HRC~	-	1.4301/X5CrNi18-10	-

Stainless Steel Hardening Type (SHANS / SHANB) may be discolored by hardening. *H Hardness: Hardening on tip



Part Number Type	M	L Selection	MxPitch Fine Thread	MxPitch Coarse Thread	B1	ℓ	E	D	SR	t	B	(C)	T	HANS · HANB € Unit Price Qty. 1~49	HANS · HANB Volume Discount Qty. 50~99	SHANS · SHANB € Unit Price Qty. 1~49	SHANS · SHANB Volume Discount Qty. 50~99
(Fine) HANS SHANS	4	15 20 25 30	4x0.5	4x0.7	2	2.2	4	3	4	2.5	7	8.1	4				
	5	15 20 25 30 40	5x0.5	5x0.8	2.5	2.8	4	4	5	3	8	9.2					
	6	20 25 30 40 50	6x0.75	6x1.0	3	3	5	4.5	6	3	10	11.5					
(Coarse) HANB SHANB	8	25 30 40 50	8x0.75	8x1.25	4	4	6	6	8	4	13	15	5				
	10	30 40 50 60	10x1.0	10x1.5	5	5	8	8	10	6	17	19.6	6				
	12	40 50 60	12x1.0	12x1.75	6	6	10	9	12	7	19	21.9					

For orders larger than indicated quantity, please request a quotation.

■Adjusting Stopper Screws
-Hexagon Screw-



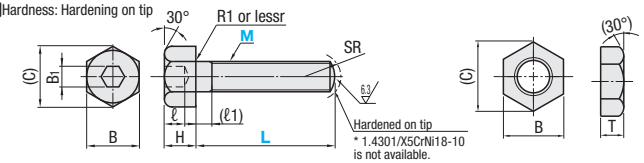
RoHS

Product Numbers are not RoHS compliant

Adjusting Stopper	Type	M Material	H Hardness*	S Surface Treatment	A Accessories(Nut 1 pc.) M Material	A Accessories(Nut 1 pc.) S Surface Treatment
Fine Thread	ANH	1.7220/34CrMo4	40~45HRC	JIS STKM Bright Chromate Plating	1.0038/S235JR	Trivalent Chromate
	SANH	1.4006/X10Cr13	40~45HRC	-	1.4301/X5CrNi18-10	-
Coarse Thread	ANHN	1.7220/34CrMo4	40~45HRC	JIS STKM Bright Chromate Plating	1.0038/S235JR	Trivalent Chromate
	ANHNS	1.4301/X5CrNi18-10	-	-	1.4301/ X5CrNi18-10	-
	SANHN	1.4006/X10Cr13	40~45HRC	-		

Stainless Steel Hardening Type (SANH, SANHN) may be tarnished by hardening.

*H Hardness: Hardening on tip



The direction of the outer hexagon head (B) and the hexagon socket (B_1) is not equal.

Part Number Type	M	L Selection	MxPitch Fine Thread	MxPitch Coarse Thread	T Fine Thread	T Coarse Thread	B	(C)	B1	H	ℓ	(ℓ1)	SR	ANH · ANHN € Unit Price Qty. 1~49	ANH · ANHN Volume Discount Qty. 50~99	ANHNS € Unit Price Qty. 1~49	ANHNS Volume Discount Qty. 50~99	SANH · SANHN € Unit Price Qty. 1~49	SANH · SANHN Volume Discount Qty. 50~99
(Fine) ANH SANH	3	15 20 25 30 35 40	-	3x0.5	-	2.4	5.5	6.4	1.5	2	0.7	3	3						
	4	15 20 25 30 35 40 45 50 60	4x0.5	4x0.7	4	3.2	7	8.1	2.5	2.8	1.3	3	4						
	5	15 20 25 30 35 40 45 50 60	5x0.5	5x0.8		4	8	9.2	3	3.5	2	3	5						
	6	20 25 30 35 40 45 50 60	6x0.75	6x1.0		5	10	11.5	4	4	2.5	5	6						
(Coarse) ANHN ANHNS SANHN	8	25 30 35 40 45 50 60	8x0.75	8x1.25	5	6.5	13	15	5	5.5	3	5	8						
	10	30 35 40 45 50 60 70	10x1.0	10x1.5	6	8	17	19.6	6	7	4	5	10						
	12	35 40 45 50 60 70 80	12x1.0	12x1.75		10	19	21.9	8	8	5	10	12						
	16	40 45 50 60 70 80 100	16x1.5	16x2.0	8	13	24	27.7	10	10	6	10	16						
M3~12 for ANHNS	20	45 50 60 70 80 100 120	20x1.5	20x2.5	10	16	30	34.6	14	13	7.4	10	20						

M3 is not available for Fine Thread (ANH and SANH).

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number - L
HANS6 - 30
ANH4 - 20

Days to Ship: 6 Days P.87

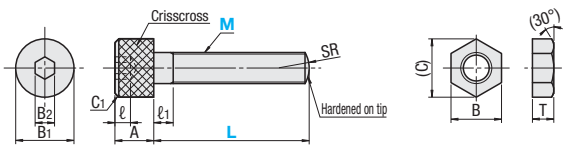
■Adjusting Stopper Screws
-Knurled Knobs Type-



RoHS

Adjusting Stopper	Type	M Material	H Hardness*	S Surface Treatment	A Accessories(Nut 1 pc.) M Material	A Accessories(Nut 1 pc.) S Surface Treatment
Fine Thread	ANKSB	1.7220/34CrMo4	40~45HRC	Black Oxide	1.0038/S235JR	Trivalent Chromate
	ANKSM			Electroless Nickel Plating		
	ANKSS	1.4006/X10Cr13		-	1.4301/X5CrNi18-10	-
Coarse Thread	ANKB	1.7220/34CrMo4		Black Oxide	1.0038/S235JR	Trivalent Chromate
	ANKM			Electroless Nickel Plating		
	ANKS	1.4006/X10Cr13		-	1.4301/X5CrNi18-10	-

Stainless Steel Hardening Type (ANKSS, ANKS) may be tarnished by hardening.*H Hardness: Hardening on tip



Part Number Type	M	L Selection	MxPitch Fine Thread	MxPitch Coarse Thread	B1	B2	A	ℓ	ℓ1	SR	B	(C)	T	€ Unit Price ANKSB ANKB	€ Unit Price ANKSM ANKM	€ Unit Price ANKSS ANKS
(Fine) (Coarse) ANKSB ANKB ANKSM ANKM ANKSS ANKS	3	15 20 25	3x0.35	3x0.5	10	2	7	2	1.6	3	5.5	6.4	2.4			
	4	15 20 25	4x0.5	4x0.7	10	2.5	7	2.5	1.6	4	7	8.1	3.2			
	5	20 25 30 40	5x0.5	5x0.8	15	3	15	3	2	5	8	9.2	4			
	6	20 25 30 40	6x0.75	6x1.0	15	4	15	4	2	6	10	11.5	5			
	8	30 40 50 60	8x0.75	8x1.25	15	5	15	5	2.5	8	13	15	6.5			
	10	30 40 50 60	10x1.0	10x1.5	20	6	25	5	3	10	17	19.6	8			
	12	40 50 60 80	12x1.0	12x1.75	20	8	25	6	3	12	19	21.9	10			

Order Example: Part Number - L
ANKB6 - 20

Days to Ship: 8 Days

Express A 3,00 EUR/ piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Locating Bolts
-Round Head · Round Tip R Type-

CAD Data

■Round Head

RoHS

Product Numbers
are not RoHS compliant



Locating Bolts						Accessory (Nut 1 pc.)	
	Round Head	Hexagon Socket Round Head	M Material	H Hardness*	S Surface Treatment	M Material	S Surface Treatment
Fine Thread	STCB	-	1.1191/C45E	45HRC~	Black Oxide	1.0038/S235JR	JIS STKM Bright Chromate Plating
	STCBM	STCCM			Electroless Nickel Plating		Trivalent Chromate
	SSTCB	SSTCC	1.4125	45HRC~	-	1.4301	-
Coarse Thread	STBB	STBC	1.1191/C45E	45HRC~	Black Oxide	1.0038/S235JR	JIS STKM Bright Chromate Plating (*)
	STBBM	STBCM			Electroless Nickel Plating		Trivalent Chromate
	STBBS	-	1.4301	-	-	1.4301/X5CrNi18-10	-
	SSTBB	SSTBC	1.4125	45HRC~	-		

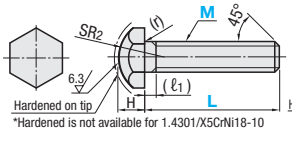
Stainless Steel Hardening Type (1.4125/X105CrMo17) may be tarnished by hardening.
*Surface treatment for included nuts STBC is Trivalent Chromate.

*H Hardness: Hardening on tip

■Nut T Dimension

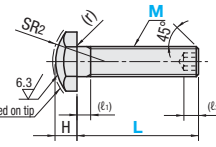
M	T (Coarse)	T1 (Fine)
4	3.2	4
5	4	
6	5	
8	6.5	5
10	8	6
12	10	
16	13	8

Round Head

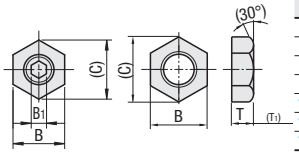


*Hardened is not available for 1.4301/X5CrNi18-10

Hexagon Socket Round Head



Included Nuts



M	MxPitch Fine Thread	MxPitch Coarse Thread	H	SR2	(r)	(ℓ1)	(ℓ2)	B1	B	(C)
4	4x0.5	4x0.7	2.8	8	0.2	2.1	2.2	2	7	8.1
5	5x0.5	5x0.8	3.5			2.4	2.8	2.5	8	9.2
6	6x0.75	6x1.0	4	10	0.3	3.0	3	3	10	11.5
8	8x0.75	8x1.25	5.5	12	0.4	3.7	4	4	13	15.0
10	10x1.0	10x1.5	7	16	0.5	4.5	5	5	17	19.6
12	12x1.0	12x1.75	8	20		5.2	6	6	19	21.9
16	16x1.5	16x2.0	10	25	0.6	6	-	-	24	27.7

■Round Head

Part Number Type	M	L STCB · STBB	L STCBM · SSTCB · STBBM STBBS · SSTBB	STCB · STBB € Unit Price Qty.41~ 49	STCB · STBB Volume Discount Qty. 50~100	STCBM · STBBM € Unit Price Qty. 1~49	STCBM · STBBM Volume Discount Qty. 50~100	STBBS € Unit Price Qty. 1~49	STBBS Volume Discount Qty. 50~100	SSTCB · SSTBB € Unit Price Qty. 1~49	SSTCB · SSTBB Volume Discount Qty. 50~100
(Fine) STCB STCBM SSTCB	4	10 15 20 25 30 35 40	20								
	5	10 15 20 25 30 35 40 50	20								
	6	15 20 25 30 35 40 50	20 25 30 40 50								
(Coarse) STBB STBBM STBBS	8	15 20 25 30 35 40 50 60 70 80	25 30 40 50 60								
	10	30 35 40 50 60 70 80	30 40 50 60 70								
	12	30 35 40 50 60 70 80	40 50 60 70 80								
SSTBB	16	50 60 70 80	-								

■Hexagon Socket Round Head

(€ Unit Price 1,90 EUR + Small Order Charge 1,70 EUR) x 2 pcs. = 7,20 EUR

Part Number Type	M	L	STBC € Unit Price Qty. 1~49	STBC Volume Discount Qty. 50~100	STCCM · STBCM € Unit Price Qty. 1~49	STCCM · STBCM Volume Discount Qty. 50~100	SSTCC · SSTBC € Unit Price Qty. 1~49	SSTCC · SSTBC Volume Discount Qty. 50~100
(Fine) STCCM SSTCC	4	20						
	5	20						
	6	20 25 30 40 50						
(Coarse) STBC STBCM SSTBC	8	25 30 40 50 60						
	10	30 40 50 60 70						
	12	40 50 60 70 80						

■Round Tip R Type

RoHS

Product Numbers
are not RoHS compliant



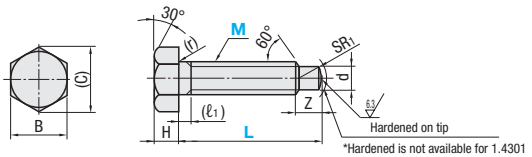
Locating Bolts					Accessory (Nut 1 pc.)	
	Round Tip R Type	M Material	H Hardness*	S Surface Treatment	M Material	S Surface Treatment
Fine Thread	STCA	1.1191/C45E	45HRC~	Black Oxide	1.0038/S235JR	JIS STKM Bright Chromate Plating
	STCAM			Electroless Nickel Plating		Trivalent Chromate
	SSTCA	1.4125/X105CrMo17	45HRC~	-	1.4301/X5CrNi18-10	-
Coarse Thread	STBA	1.1191/C45E	45HRC~	Black Oxide	1.0038/S235JR	JIS STKM Bright Chromate Plating
	STBAM			Electroless Nickel Plating		Trivalent Chromate
	STBAS	1.4301/X5CrNi18-10	-	-	1.4301/X5CrNi18-10	-
	SSTBA	1.4125/X105CrMo17	45HRC~	-		

Stainless Steel Hardening Type (1.4125/X105CrMo17) may be tarnished by hardening.

*H Hardness: Hardening on tip

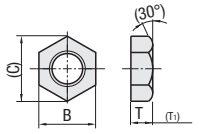
■Nut T Dimension

M	T (Coarse)	T1 (Fine)
4	3.2	4
5	4	
6	5	
8	6.5	5
10	8	6
12	10	
16	13	8



*Hardened is not available for 1.4301

Included Nuts



M	MxPitch Fine Thread	MxPitch Coarse Thread	B	(C)	H	(ℓ1)	(r)	Z	d	SR1
4	4x0.5	4x0.7	7	8.1	2.8	2.1	0.2	3	2	3
5	5x0.5	5x0.8	8	9.2	3.5	2.4			3	4
6	6x0.75	6x1.0	10	11.5	4	3.0	0.3	3.5	4.5	
8	8x0.75	8x1.25	13	15.0	5.5	3.7	0.4	5	6	5
10	10x1.0	10x1.5	17	19.6	7	4.5	0.5	5.5	7	
12	12x1.0	12x1.75	19	21.9	8	5.2		7	9	8
16	16x1.5	16x2.0	24	27.7	10	6	0.6	9	12	10

Part Number Type	M	L STCA · STBA	L STCAM · SSTCA · STBAM STBAS · SSTBA	STCA · STBA € Unit Price Qty.1~ 49	STCA · STBA Volume Discount Qty. 50~99	STCAM · STBAM € Unit Price Qty. 1~49	STCAM · STBAM Volume Discount Qty. 50~100	STBAS € Unit Price Qty. 1~49	STBAS Volume Discount Qty. 50~100	SSTCA · SSTBA € Unit Price Qty. 1~49	SSTCA · SSTBA Volume Discount Qty. 50~100
(Fine) STCA STCAM SSTCA	4	15 20 25 30 35 40	20								
	5	15 20 25 30 35 40 50	20								
	6	15 20 25 30 35 40 50	20 25 30 40 50								
(Coarse) STBA STBAM STBAS SSTBA	8	15 20 25 30 35 40 50 60 70 80	25 30 40 50 60								
	10	30 35 40 50 60 70 80	30 40 50 60 70								
	12	30 35 40 50 60 70 80	40 50 60 70 80								
	16	50 60 70 80	-								

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
STCB6	-	20
STBA10	-	50

Days to Ship

6 Days

2 Days

P.87

Stopper Bolts / Stopper Screws

CAD Data

Features: Less deformation because of the flat contact surface.

Stopper Bolts

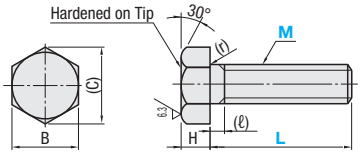
RoHS



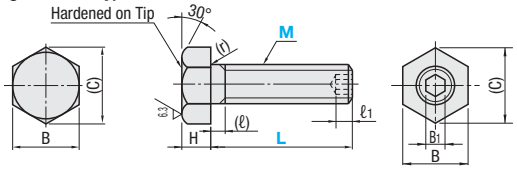
Stopper Bolts	Type: Standard	Type: Hexagon Socket	M Material	H Hardness	S Surface Treatment
Fine Thread	STRCB	STRCC	1.7220/34CrMo4	40~45HRC	Black Oxide
	STRCN	STRNCC			Electroless Nickel Plating
	SSTRCB	SSTRCC	1.4006/X10Cr13		-
Coarse Thread	STRB	STRC	1.7220/34CrMo4		Black Oxide
	STRN	STRNC			Electroless Nickel Plating
	SSTRB	SSTRC	1.4006/X10Cr13		-

Stainless Steel Hardening Type (SSTRCB, SSTRCC, SSTRB and SSTRC) may be tarnished by hardening.

Standard Type



Hexagon Socket Type



Part Number Type	M	L 5mm Increment	M Coarse Thread	M Fine Thread	B	(C)	H	(ℓ)	(r)	ℓ1	B1	€ Unit Price STRCB STRB	STRCN STRN	SSTRCB SSTRB	STRCC STRC	STRNCC STRNC	SSTRCC SSTRC
Standard Type (Fine) STRCB STRCN SSTRCB	*3	10~30	3x0.5	-	5.5	6.4	2	1	0.1	-	-						
Standard Type (Coarse) STRB STRN SSTRB	4	15~60	4x0.7	4x0.5	7	8.1	2.8	2.1	0.2	2.2	2						
Hexagon Socket Type (Fine) STRCC STRNCC SSTRCC	5	15~60	5x0.8	5x0.5	8	9.2	3.5	2.4		2.8	2.5						
Hexagon Socket Type (Coarse) STRC STRNC SSTRC	6	20~60	6x1.0	6x0.75	10	11.5	4	3	0.3	3	3						
	8	25~60	8x1.25	8x0.75	13	15.0	5.5	3.7	0.4	4	4						
	10	30~70	10x1.5	10x1.0	17	19.6	7	4.5	0.5	5	5						
	12	35~80	12x1.75	12x1.0	19	21.9	8	5.2		6	6						

*M3 size is available only for STRB and STRN.

Order Example Part Number - L: STRB6 - 20

Days to Ship

8 Days — Express A — 2,00 EUR/pc — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces

- Electroless Nickel Plating

10 Days — Express B — 4,00 EUR/pc — P.88

A Express Charge of 10,80 EUR for 3 or more identical pieces.

Alterations Part Number - L (LC): STRB10 - LC41

Alteration	Code	Spec.	Price Adder
Changes L dimensions 	LC	Changes the L dimension in 1mm increment. Ordering Code LC22 Lmin<LC<Lmax 1mm Increment	2,00

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

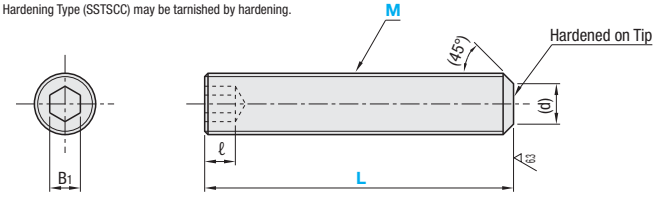
Stopper Screws

RoHS



Type	M Material	H Hardness	S Surface Treatment
STSCC	1.7220/34CrMo4	40~45HRC	Black Oxide
STSNCC			Electroless Nickel Plating
SSTSCC	1.4031/X38Cr13		-

Stainless Steel Hardening Type (SSTSCC) may be tarnished by hardening.



Part Number Type	M	L Selection	MxPitch Fine Thread	B1	ℓ	(d)	€ Unit Price STSCC	STSNCC	SSTSCC
STSCC STSNCC SSTSCC	4	20 25 30 35 40	4x0.5	2	2.5	2.5			
	5	20 25 30 35 40	5x0.5	2.5	3	3.5			
	6	30 35 40 45 50 60	6x0.75	3	3.5	4			
	8	30 35 40 45 50 60	8x0.75	4	5	4.5			
	10	40 45 50 60 70	10x1.0	5	6	7			
	12	40 45 50 60 70 80	12x1.0	6	8	8.5			

Order Example Part Number - L: STSCC10 - 60

Price

Volume Discount (Round down to one Cent.) P.87

•STSCC

Quantity	1~19	20~49
Applicable Price	€ Unit Price	Volume Discount
	Price List	12%

•STSNCC · SSTSCC

Quantity	1~4	5~19	20~49
Rate	€ Unit Price	5%	10%

For orders less than 5 pieces (green colored part), Small Order Charge

For orders larger than indicated quantity, please request a quotation.

For orders larger than indicated quantity, please request a quotation.

Days to Ship 6 Days — P.87

Add. Spec.

Male Thread Stopper Blocks / Brackets for Stopper Screws

-With Counterbores H · With Counterbore and Female Thread Hole Type- -Hexagon Type · Screw Tip Type-

Price Reduction 8%

CAD Data

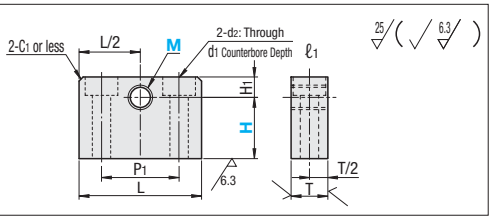
Features: The cost of H Selectable Type is up to 40% for that of H Dimension Configurable Type.

Male Thread Stopper Blocks -With Counterbores Type-



RoHS

Type			Material	Surface Treatment
H Selectable	H Configurable			
Coarse Thread	Coarse Thread	Fine Thread		
TSB	TSBB	TSBSB	1.0038/S235JR	Black Oxide
TSE	TSBE	TSBSE		Electroless Nickel Plating
-	TSBS	TSBSS	1.4301/X5CrNi18-10	-



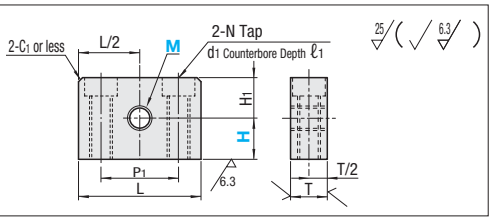
Part Number Type		M	H Selectable	H Configurable 1mm Increment	H1	T	MxPitch Coarse Thread	MxPitch Fine Thread	L	P1	d1	d2	ℓ1	€ Unit Price H Selectable Coarse Thread TSB	€ Unit Price H Selectable Coarse Thread TSE	€ Unit Price H Configurable Coarse Thread TSBB	€ Unit Price H Configurable Coarse Thread TSBE	€ Unit Price H Configurable Coarse Thread TSBS	€ Unit Price H Configurable Fine Thread TSBSB	€ Unit Price H Configurable Fine Thread TSBSE	€ Unit Price H Configurable Fine Thread TSBSS
(H Selectable)	(H Configurable)	3	-	3~20	3	7	3x0.5	3x0.35	21	13	6	3.5	3.5								
(Coarse) TSB	TSBB	4	5 6	4~20	4		4x0.7	4x0.5													
(Coarse) TSE	TSBE	5	5 6 7 8 10	4~20			5x0.8	5x0.5													
	TSBS	6	5 6 7 8 10	5~20	5	9	6x1.0	6x0.75	30	19	8	4.5	4.5								
	TSBSB	8	6 7 8 10	6~20	6		8x1.25	8x0.75													
(Fine)	TSBSE	10	8 10	7~20	7	12	10x1.5	10x1.0	40	25.2	9.5	5.5	5.5								
	TSBSS	12	-	8~20	8		12x1.75	12x1.0													

Male Thread Stopper Blocks -With Counterbore and Female Thread Hole Type-



RoHS

Type		Material	Surface Treatment
Coarse Thread	Fine Thread		
TABB	-	1.0038/S235JR	Black Oxide
TABE	TABSE		Electroless Nickel Plating
TABS	-	1.4301/X5CrNi18-10	-



Part Number Type	M	H 1mm Increment	H1	T	MxPitch Coarse Thread	MxPitch Fine Thread	L	P1	d1	ℓ1	N	€ Unit Price Coarse Thread TABB	€ Unit Price Coarse Thread TABE	€ Unit Price Coarse Thread TABS	€ Unit Price Fine Thread TABSE
(Coarse) TABB	3	5~20	3	10	3x0.5	3x0.35	20	13	6	3.5	M4				
(Coarse) TABE (Fine) TABSE	4	5~20	4		4x0.7	4x0.5									
TABS	5	5~20			5x0.8	5x0.5									
	6	5~20	5		6x1.0	6x0.75	30	19	8	4.5	M5				
	8	6~20	6		8x1.25	8x0.75									
	10	7~20	7	12	10x1.5	10x1.0	40	25.2	9.5	5.5	M6				
	12	8~20	8		12x1.75	12x1.0									

Order Example: Part Number - H

TSBB3 - 7

TABSE5 - 10

-With Counterbores H Selectable- 6 Days P.87

-With Counterbores H Configurable / With Counterbore and Female Thread Hole 8 Days

Express A 3,00 EUR/ piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

-With Counterbores H Selectable

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-With Counterbores H Configurable / With Counterbore and Female Thread Hole Type

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

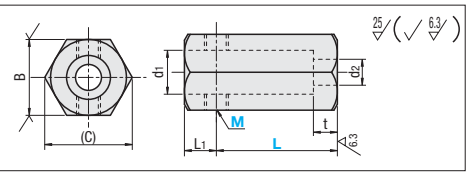
For orders larger than indicated quantity, please request a quotation.

Brackets for Stopper Screws –Hexagon Type–



RoHS

Type		Material	Surface Treatment
Coarse Thread	Fine Thread		
PAFNB	PAFSB	1.0038/S235JR	Black Oxide
PAFNE	-		Electroless Nickel Plating
PAFNS	PAFSS	1.4305/X10CrNiS18-9	-



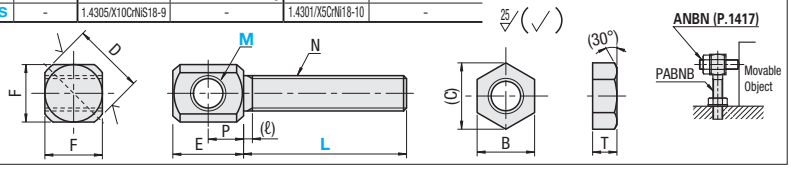
Part Number Type	M	L Selection	L1	MxPitch Coarse Thread	MxPitch Fine Thread	d1	d2	t	B	(C)	€ Unit Price PAFNB / PAFSB	€ Unit Price PAFNE	€ Unit Price PAFNS / PAFSS
	3	10 15 20	4	3x0.5	-	6.5	3.5	3	13	15			
(Coarse) PAFNB (Fine) PAFSB	4	15 20 25	5	4x0.7	4x0.5	8	4.5	3	14	16.2			
PAFNE PAFSS	5	15 20 25 30	6	5x0.8	5x0.5	9.5	5.5	5	17	19.6			
PAFNS Fine screw thread is not available for M3.	6	20 25 30 35	7	6x1.0	6x0.75	11	6.5	5	19	21.9			
	8	20 25 30 35	9	8x1.25	8x0.75	14	8.5	5	24	27.7			
	10	25 30 35 40	10	10x1.5	10x1.0	17	10.5	5	30	34.6			

Brackets for Stopper Screws -Screw Tip Type-



RoHS

Type		Material	Surface Treatment	Accessories(Nut 1 pc.) Material	Accessories(Nut 1 pc.) Surface Treatment
Coarse Thread	Fine Thread				
PABNB	PABSB	1.0038/S235JR	Black Oxide	1.0038/S235JR	Trivalent Chromate
PABNE	-		Electroless Nickel Plating		
PABNS	-	1.4305/X10CrNiS18-9	-	1.4301/X5CrNi18-10	-



Part Number Type	M	L Selection	MxPitch Coarse Thread	MxPitch Fine Thread	N (Coarse)	E	P	D	F	(ℓ)	B	T	(C)	€ Unit Price PABNB / PABSB	€ Unit Price PABNE	€ Unit Price PABNS
	3	10 15 20	3x0.5	-	3	6	3	7	5.5	1	5.5	2.4	6.4			
(Coarse) PABNB (Fine) PABSB	4	10 15 20 25	4x0.7	4x0.5	4	8	4	8	7	1.4	7	3.2	8.1			
PABNE Fine screw thread is not available for M3.	5	10 15 20 25 30	5x0.8	5x0.5	5	10	5	10	8	1.6	8	4	9.2			
PABNS	6	15 20 25 30 40	6x1.0	6x0.75	6	12	6	12	10	2	10	5	11.5			
	8	15 20 25 30 40	8x1.25	8x0.75	8	16	8	16	13	2.5	13	6.5	15			
	10	20 25 30 40 50	10x1.5	10x1.0	10	20	10	22	17	3	17	8	19.6			

Order Example: Part Number - L

PAFNB4 - 15

PABNE6 - 30

8 Days

Express A 3,00 EUR/ piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Male Thread Stopper Blocks

-Standard Type · With Counterbores Type · With Counterbores and Female Thread Holes Type-

CAD Data

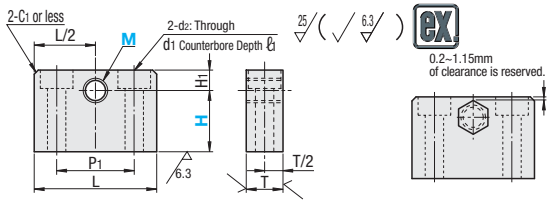
■Features: Slim Male Thread Stopper Blocks with no excess filets. The hexagonal bolt cap is designed to not protrude from the top.

■Male Thread Stopper Blocks -Standard Type-



RoHS

Type		M Material	S Surface Treatment
Coarse Thread	Fine Thread		
SNTBB	SSTXB	1.0038/ S235JR	Black Oxide
SNTBM	SSTBM		Electroless Nickel Plating
SNTBS	SSTBS	1.4301/ X5CrNi18-10	-



Part Number Type	M	H 1mm Increment	H1	T	MxPitch Coarse Thread	MxPitch Fine Thread	L	P1	d1	d2	ℓ1	€ Unit Price SNTBB SSTXB	€ Unit Price SNTBM SSTBM	€ Unit Price SNTBS SSTBS
(Coarse) SNTBB SNTBM SNTBS	4	5~20	5	8	4x0.7	4x0.5	22	14	6	3.5	3.5			
(Fine) SSTXB SSTBM SSTBS	5	5~20	5	10	5x0.8	5x0.5	30	18	8	4.5	4.5			
	6	6~20	6	10	6x1.0	6x0.75	30	20						
	8	8~20	8	12	8x1.25	8x0.75	32	20	9.5	5.5	5.5			
	10	10~20	10	16	10x1.5	10x1.0	38	22	11	6.5	6.5			
	12	12~25	12	16	12x1.75	12x1.0	38	22						
	16	15~30	15	19	16x2.0	16x1.5	50	32	14	9	9			

Order Example: Part Number SNTBM8 - H 12; SSTBS10 - 20

8 Days | Express A 3,00 EUR/ piece | P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

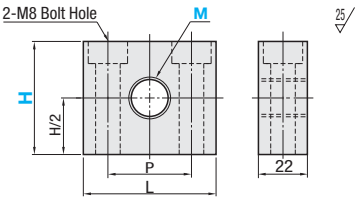
For orders larger than indicated quantity, please request a quotation.

■Male Thread Stopper Blocks -With Counterbores Type-



RoHS

Type		M Material	S Surface Treatment
Coarse Thread	Fine Thread		
STBN	STBS	1.0038/ S235JR	Trivalent Chromate



Part Number Type	M	H Selection	M (Coarse) STBN	M (Fine Thread) STBS	L	P	€ Unit Price Qty.1~19	Volume Discount Qty. 20~50
(Coarse) STBN	6	30	6x1.0	6x0.75	45	24		
	8		8x1.25	8x0.5				
(Fine) STBS	10	50	10x1.5	10x1.0	50	28		
	12		12x1.75	12x1.0				

Order Example: Part Number STBS10 - H 50

Days to Ship: 6 Days | P.87

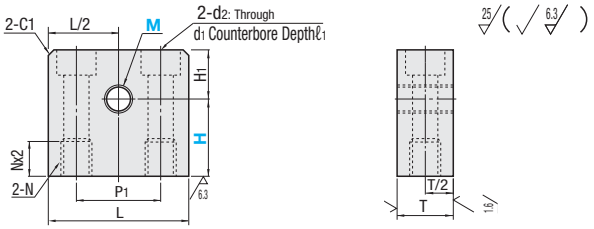
For orders larger than indicated quantity, please request a quotation.

■Male Thread Stopper Blocks -With Counterbore and Female Thread Hole Type-



RoHS

H Selectable Coarse Thread	H Selectable Fine Thread	H Configurable Coarse Thread	H Configurable Fine Thread	M Material	S Surface Treatment
AJSN	AJSS	AJFSN	AJFFSS	1.0038/ S235JR	Black Oxide
AJSNM	AJSSM	AJFSNM	AJFSSM		Electroless Nickel Plating
AJSNS	AJSSS	AJFSNS	AJFSSS	1.4301/X5CrNi18-10	-



Part Number Type	M	H Selectable	H Configurable 1mm Increment	H1	T	MxPitch Coarse Thread	MxPitch Fine Thread	L	P1	d1	d2	ℓ1	N	€ Unit Price H Selectable AJSN AJSS	€ Unit Price H Selectable AJSNM AJSSM	€ Unit Price H Selectable AJSNS AJSSS	€ Unit Price H Configurable AJFSN AJFFSS	€ Unit Price H Configurable AJFSNM AJFSSM	€ Unit Price H Configurable AJFSNS AJFSSS
(H Selectable) AJSN (Coarse) AJSNM AJSNS	3	10 15	10~20	10	10	3x0.5	3x0.35	32	20	8	4.5	4.5	M5						
(H Configurable) AJFSN AJFSNM AJFSNS	4	10 15	10~20			4x0.7	4x0.5												
	5	10 15	10~20			5x0.8	5x0.5												
	6	15 20 25 30	15~35			6x1.0	6x0.75												
AJSS AJSSM AJSSS	8	15 20 25 30	15~35	15	16	8x1.25	8x0.75	44 (50)	28	11	6.5	6.5	M8						
(Fine) AJFFSS AJFSSM AJFSSS	10	15 20 25 30	15~35			10x1.5	10x1.0												
	12	15 20 25 30	15~35			12x1.75	12x1.0												
	16	20 25 30 40	20~50	20	22	16x2.0	16x1.5	60 (65)	42	14	9	9	M10						
	20	20 25 30 40	20~50			20x2.5	20x1.5												

L dimension of Stainless Steel Type is shown in ( ).

Order Example: Part Number AJSN3 - H 10

Days to Ship: 8 Days | Express A 3,00 EUR/ piece | P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Male Thread Stopper Blocks

-L-Shaped / T-Shaped / Side Counterbored / Two-Hole Type-

■L-Shaped Type



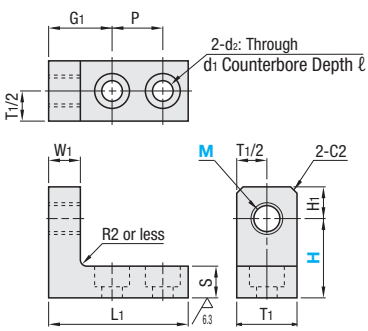
RoHS

Type					M Material	S Surface Treatment
Lengthways Adjustable Type		Widthways Adjustable Type	Bottom Mounting Type*			
Coarse Thread	Fine Thread	Coarse Thread	Coarse Thread	Fine Thread		
AJLTT	AJLSTT	AJLCTY	AJLN	AJLS	*1.1191/C45E	Black Oxide / Electroless Nickel Plating
AJLTTM	AJLSTTM	AJLCTYM	AJLNM	-		
AJLTTS	-	-	AJLNS	AJLSS	1.4301/ X5CrNi18-10	-

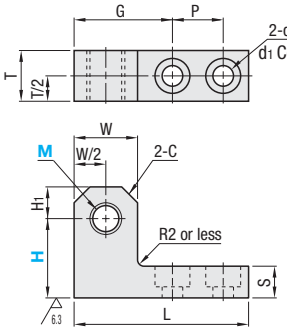
*1.0038/S235JR for Bottom Mounting Type

25 / (6.3)

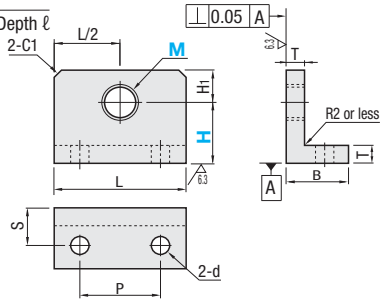
•Lengthways Adjustable Type



•Widthways Adjustable Type



•Bottom Mounting Type



■Lengthways Adjustable Type

Part Number Type	M	H Selection	H1	T1	MxPitch Coarse Thread	MxPitch Fine Thread	W1	L1	S	P	G1	d1	d2	ℓ	€ Unit Price AJLTT AJLSTT	€ Unit Price AJLTTM AJLSTTM	€ Unit Price AJLTTS
(Coarse) AJLTT AJLTTM AJLTTS	3	15 20	4	9	3x0.5	3x0.35	5	25	6	10	10	6.5	3.5	3.5			
	4				4x0.7	4x0.5											
	5	15 20	6	12	5x0.8	5x0.5	8	32	8	10	15	8	4.5	4.5			
	6				6x1.0	6x0.75											
(Fine) AJLSTT AJLSTTM	8	25 30 35	10	22	8x1.25	8x0.75	10	44	10	16	20	11	6.5	6.5			
	10				10x1.5	10x1.0											
	12				12x1.75	12x1.0											
	16	35 40	15	30	16x2.0	16x1.5	15	65	15	30	25	14	9	9			
	20				20x2.5	20x1.5											

■Widthways Adjustable Type

Part Number Type	M	H Selection	H1	T	MxPitch Coarse Thread	L	W	S	C	P	G	d1	d2	ℓ	€ Unit Price AJLCTY	€ Unit Price AJLCTYM
(Coarse) AJLCTY AJLCTYM	3	10 15	4	9	3x0.5	28	8	6	2	10	13	6.5	3.5	3.5		
	4				4x0.7											
	5	15 20	6	10	5x0.8	32	10	8	2	10	17	8	4.5	4.5		
	6				6x1.0											
	8	20 25 30	10	16	8x1.25	55	20	10	5	16	31	11	6.5	6.5		
	10				10x1.5											
	12				12x1.75											
	16	30 35 40	15	19	16x2.0	75	30	15	7	20	45	14	9	9		
	20				20x2.5											

■Bottom Mounting Type

Part Number Type	M	H Selection	H1	T	MxPitch Coarse Thread	MxPitch Fine Thread	L	B	P	S	d	€ Unit Price AJLN AJLS	€ Unit Price AJLNM	€ Unit Price AJLNS AJLSS
(Coarse) AJLN AJLNM AJLNS	3	15 20	10	6	3x0.5	3x0.35	30	20	14	12	4.5			
	4	15 20			4x0.7	4x0.5								
	5	15 20 25			5x0.8	5x0.5								
	6	15 20 25 30			6x1.0	6x0.75								
(Fine) AJLS AJLSS	8	25 30 40	15	10 (8)	8x1.25	8x0.75	40	30	20	20	6.5			
	10	25 30 40			10x1.5	10x1.0								
	12	25 30 40			12x1.75	12x1.0								
	16	30 40 50	20	15	16x2.0	16x1.5	60	40	30	27.5	9			
	20	30 40 50			20x2.5	20x1.5								

(?)T dimension of AJLNS and AJLSS (Material: Stainless Steel) is shown in ( ). M16 and M20 are not available.

Order Example: Part Number AJLTT5 - H 15

Days to Ship: 8 Days

Express A: 3,00 EUR/ piece

P. 88

(?)A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (?)Round down to one Cent. P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

(?)For Lengthways Adjustable Type and Widthways Adjustable Type, please request a quotation for orders of 20 or more pieces.

Price Reduction
8%

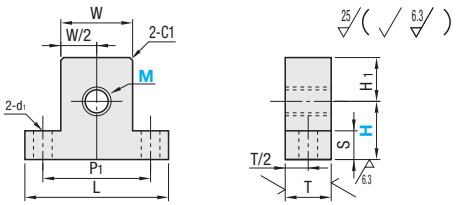
CAD Data

T-Shaped Type



RoHS

Type		M Material	S Surface Treatment
Coarse Thread	Fine Thread		
AJTN	AJTS	1.0038/ S235JR	Black Oxide
AJTNM	AJTSM		Electroless Nickel Plating
AJTNS	AJTSS	1.4301/ X5CrNi18-10	-



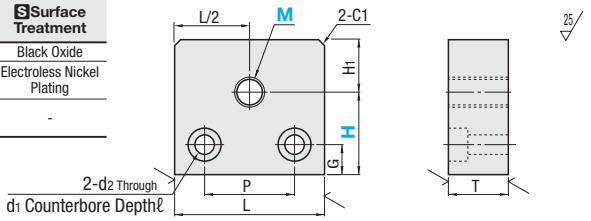
Part Number Type	M	H Selection	H1	T	MxPitch Coarse Thread	MxPitch Fine Thread	L	W	P1	d1	S	€ Unit Price AJTN AJTS	€ Unit Price AJTNM AJTSM	€ Unit Price AJTNS AJTSS
(Coarse) AJTN AJTNM AJTNS	3	15 20	10	10	3x0.5	3x0.35	32	16	24	4.5	5			
	4	15 20			4x0.7	4x0.5								
	5	15 20			5x0.8	5x0.5								
	6	20 25 30			6x1.0	6x0.75								
(Fine) AJTS AJTSM AJTSS	8	20 25 30	15	16	8x1.25	8x0.75	50	25	38	6.5	10			
	10	20 25 30			10x1.5	10x1.0								
	12	20 25 30			12x1.75	12x1.0								
	16	25 30 40	20	22	16x2.0	16x1.5	75	40	57	9	15			
	20	25 30 40			20x2.5	20x1.5								

Side Counterbored Type



RoHS

Type		M Material	S Surface Treatment
Coarse Thread	Fine Thread		
AJFN	AJFS	1.0038/ S235JR	Black Oxide
AJFNM	AJFSM		Electroless Nickel Plating
AJFNS	AJFSS	1.4301/ X5CrNi18-10	-



Part Number Type	M	H Selection	H1	T	MxPitch Coarse Thread	MxPitch Fine Thread	L	P	d1	d2	ℓ	G	€ Unit Price AJFN AJFS	€ Unit Price AJFNM AJFSM	€ Unit Price AJFNS AJFSS
(Coarse) AJFN AJFNM AJFNS	3	20 25	10	10	3x0.5	3x0.35	32	20	8	4.5	4.5	5			
	4	20 25			4x0.7	4x0.5									
	5	20 25			5x0.8	5x0.5									
	6	20 25 35			6x1.0	6x0.75									
(Fine) AJFS AJFSM AJFSS	8	35 40 50	15	16	8x1.25	8x0.75	44 (50)	28	11	6.5	6.5	9			
	10	35 40 50			10x1.5	10x1.0									
	12	35 40 50			12x1.75	12x1.0									
	16	40 50	20	22	16x2.0	16x1.5	60 (65)	42	14	9	9	12			
	20	40 50			20x2.5	20x1.5									

(?)L dimension of AJFNS and AJFSS (Material: Stainless Steel) is shown in ( ).

Part Number - H
AJTN8 - 25
AJFN5 - 20

8 Days | Express A | 3,00 EUR/ piece | P. 88

(?)A Express Charge of 8,10 EUR for 3 or more identical pieces.

Volume Discount (?)Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

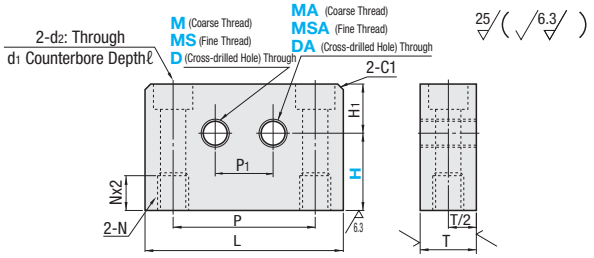
Two-Hole Type



RoHS

Type	M Material	S Surface Treatment
AJWB	1.0038/ S235JR	Black Oxide
AJWM		Electroless Nickel Plating
AJWS	1.4301/ X5CrNi18-10	-

MxPitch Coarse Thread	MxPitch Fine Thread	MxPitch Coarse Thread	MxPitch Fine Thread
3x0.5	3x0.35	10x1.5	10x1.0
4x0.7	4x0.5	12x1.75	12x1.0
5x0.8	5x0.5	-	14x1.5
6x1.0	6x0.75	16x2.0	16x1.5
8x1.25	8x0.75	20x2.5	20x1.5



Part Number Type	No.	M / MS / D Selection	MA / MSA / DA Selection	H Selection	H1	T	L	P	P1	d1	d2	ℓ	N	€ Unit Price AJWB	€ Unit Price AJWM	€ Unit Price AJWS
AJWB	1	3 4 5 6	3 4 5 6 8 10 12	15 20 25	15	12	54	42	20	9.5	5.5	5.5	M6			
AJWM	2	8 10 12 (14)	8 10 12 16 20	20 25 30	20	16	74	60	28	11	6.5	6.5	M8			
AJWS	3	16 20	16 20	20 25 30 40	20	22	86	70	34	14	9	9	M10			

(?)(14) is for MS (Fine thread) only.

Order Example: Part Number - M · MS · D - MA · MSA · DA - H
AJWM2 - M8 - MSA12 - H30

Days to Ship: 10 Days | Express B | 3,00 EUR/ piece | P. 88

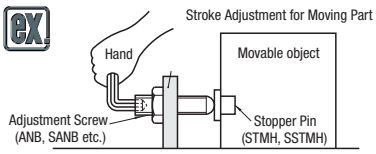
(?)A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

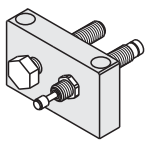
Volume Discount (?)Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.



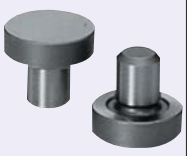
Example of Combination Use of Stopper Bolts and Shock Absorbers



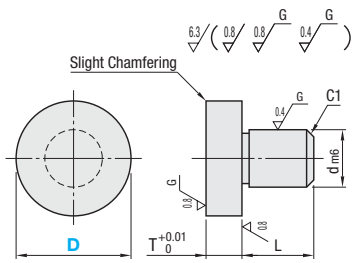
Stop Pins

■Press-Fit Type

RoHS



Type	M Material	H Hardness	S Surface Treatment
STMH	1.1191/C45E	46~50HRC	Electroless Nickel Plating
SSTMH	1.4125/ X105CrMo17	50~55HRC	-



Stainless Steel Hardening Type (1.4125/X105CrMo17) may be tarnished by hardening.

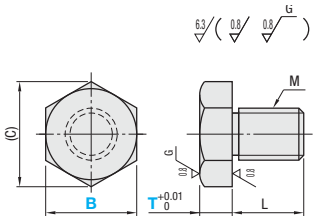
Part Number Type	D	dm6		L	T	€ Unit Price STMH	€ Unit Price SSTMH
STMH SSTMH	5	3	+0.008 +0.002	5	5		
	5A			7			
	5B			5	3		
	6	4	+0.012 +0.004	6	5		
	6A			9			
	6B			6	3		
	8	5		8	5		
	8A			12			
	8B			8	3		
	10	6		8	5		
	10A			12			
	10B			8	3		
	12	8	+0.015 +0.006	10	5		
	12A			15			
	16			10			
	16A			15			
	18	10		12			
	18A			18			
	20	12	+0.018 +0.007	16			
	20A			24			

■Screw Type

RoHS



Type		M Material	H Hardness	S Surface Treatment
T Selectable	T Configurable			
STEHN	STFHN	1.7220/ 34CrMo4	46~50 HRC	Electroless Nickel Plating
SSTEH	SSTFH	1.4125/ X105CrMo17	50~55 HRC	-



Stainless Steel Hardening Type (1.4125/X105CrMo17) may be tarnished by hardening.

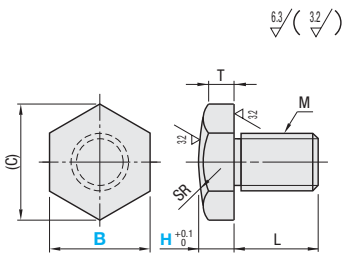
Part Number Type	B	T Selectable	T 0.5 mm Increment	M (Coarse)	L	(C)	€ Unit Price STEHN	€ Unit Price STFHN	€ Unit Price SSTEH	€ Unit Price SSTFH
(T Selectable) STEHN SSTEH	5.5A	3	2.0~10.0	3	5	6.4				
	5.5	5		4		8.1				
	7			5	6	9.2				
	8			6		11.5				
	10		5.0~30.0		9					
	10B	8								
	13	5		8	10	15				
	13A	8			12					
	13B									
(T Configurable) STFHN SSTFH	14	5			10	16.2				
	14A	8								
	14B									
	17	5	10.0~50.0	10	12	19.6				
	17A	8								
	17B									
	19	5		12	15	21.9				
	19A	8								
	19B				18					

■Spherical Type

RoHS



Type		M Material	H Hardness	S Surface Treatment
H Selectable	H Configurable			
BSTEH	BSTFH	1.7220/ 34CrMo4	46~50 HRC	Electroless Nickel Plating
SBTEH	SBTFH	1.4125/ X105CrMo17	50~55 HRC	-



Stainless Steel Hardening Type (1.4125/X105CrMo17) may be tarnished by hardening.

■H Dimension Selectable Type

Part Number Type	B	H	M (Coarse)	L	(C)	T	SR	€ Unit Price BSTEH	€ Unit Price SBTEH
BSTEH SBTEH	5.5	5	3	5	6.4	4.3	7.5		
	7		4		8.1	4	8.5		
	8		5	6	9.2	3.9	10		
	10	8	6		11.5	6.5	12		
	10B			9					
	13		8	10	15	6.1	16		
	14				16.2	6.1	18		
	14B			12					
	17	10	10		19.6	7.7	22		
	19		12	15	21.9	7.5	25		
	19B			18					

■H Dimension Configurable Type

Part No. Type	B	H 0.5mm Increment	M (Coarse)	L	(C)	T	SR	€ Unit Price BSTFH	€ Unit Price SBTFH
BSTFH SBTFH	5.5	2.0~10.0	3	5	6.4	H-0.7	7.5		
	7		4		8.1	H-1	8.5		
	8		5	6	9.2	H-1.1	10		
	10	5.0~30.0	6		11.5	H-1.5	12		
	13		8	10	15	H-1.9	16		
	14				16.2	H-1.9	18		
	17	10.0~50.0	10	12	19.6	H-2.3	22		
	19		12	15	21.9	H-2.5	25		

Order Example

Part Number	-	T	-	H
STMH16				
STFHN10	-	6.5		
SBTFH8			-	8.5

Days to Ship

- Press-Fit Type · Screw Type T Dimension Selectable · Spherical Type H Dimension Selectable: 6 Days / 2 Days P. 87
- Screw Type T Dimension Configurable · Spherical Type H Dimension Configurable: 10 Days, Express B 3,00 EUR/ piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

•Screw Type SSEHN

Quantity	1~9	10~49	50~199
Applicable Price	€ Unit Price	Volume Discount	
	Price List	25%	30%

For orders larger than indicated quantity, please request a quotation.

•Screw Type STFHN

Quantity	1~4	5~49
Rate	€ Unit Price	25%

For orders larger than indicated quantity, please request a quotation.

•Screw Type SSTEH

Quantity	1~49	50~99	100~199
Applicable Price	€ Unit Price	Volume Discount	
	Price List	10%	20%

For orders larger than indicated quantity, please request a quotation.

•Press-Fit Type Screw Type SSTFH Spherical Type

Quantity	1~99	100~149	150~199	200~499
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.
Request a quotation for orders of 50 or more pieces of SSTFH (Screw Type T Dimension Configurable) and BSTFH and SBTFH (Spherical Type H Dimension Configurable).

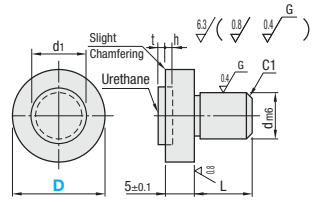
CAD Data

■Press-Fit Urethane Type

RoHS



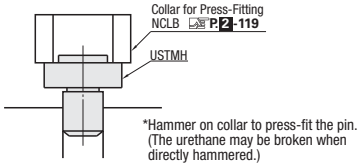
Type	Material	Hardness	Surface Treatment
USTMH	1.7220/34CrMo4	46~50HRC	Electroless Nickel Plating
	Urethane (Black)	Shore A90	-
USSTMH	1.4125/X105CrMo17	50~55HRC	-
	Urethane (Black)	Shore A90	-



Part Number Type	D	dm6	t	h	L	d1	Applicable Collar for Press-Fitting	€ Unit Price USTMH	€ Unit Price USSTMH
USTMH USSTMH	5	3	+0.008 +0.002	1.5	0.7	5	3	NCLB3-6-10		
	6	4	+0.012 +0.004	1.5	1.5	6	4	NCLB4-8-10		
	8	5		2.0	2.0	8	6	NCLB5-10-10		
	10	6					8	NCLB8-12-10		
	12	8	+0.015 +0.006			10	10	NCLB10-16-10		
	16						12	NCLB10-20-10		
	18	10				12	13	NCLB12-20-10		
	20	12	+0.018 +0.007			16	15	NCLB16-20-10		

*Collar for press-fitting is not included.

Example



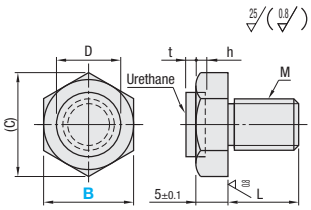
*Hammer on collar to press-fit the pin. (The urethane may be broken when directly hammered.)

■Screw Type with Urethane

RoHS



Type	Material	Hardness	Surface Treatment
USTEH	1.7220/34CrMo4	46~50HRC	Electroless Nickel Plating
	Urethane (Black)	Shore A90	-
USSTEH	1.4301/X5CrNi18-10	-	-
	Urethane (Black)	Shore A90	-



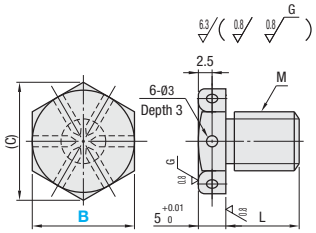
Part Number Type	B	M (Coarse)	t	h	L	D	(C)	€ Unit Price USTEH	€ Unit Price USSTEH
USTEH USSTEH	5.5	3	1.5	0.7	5	3.5	6.4		
	7	4		1.5		5	8.1		
	8	5			6	6	9.2		
	10	6	2.0	2.0		8	11.5		
	13	8			10	10	15		
	14						16.2		
	17	10			12	13	19.6		
	19	12			15	15	21.9		

■Wrench Hole Type

RoHS



Type	Material	Hardness	Surface Treatment
STEHNW	1.7220/34CrMo4	46~50HRC	Electroless Nickel Plating
SSTEHW	1.4125/X105CrMo17	50~55HRC	-



Part Number Type	B	M (Coarse)	L	(C)	€ Unit Price STEHNW	€ Unit Price SSTEHW
STEHNW SSTEHW	10	6	6	11.5		
	13	8	10	15		
	14			16.2		
	17	10	12	19.6		
	19	12	15	21.9		

Order Example

Part Number
USTMH10
USTEH13
STEHNW14

Days to Ship

6 Days P. 87

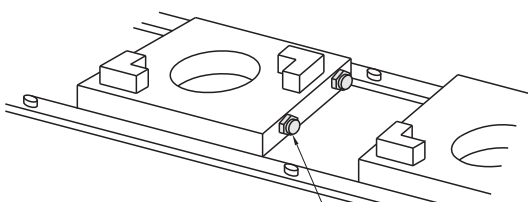
Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~99	100~149	150~199	200~499
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Stopper Bolts

-With Urethane · Polyacetal · Silicon · MC Nylon-

■Shoulder Type



RoHS

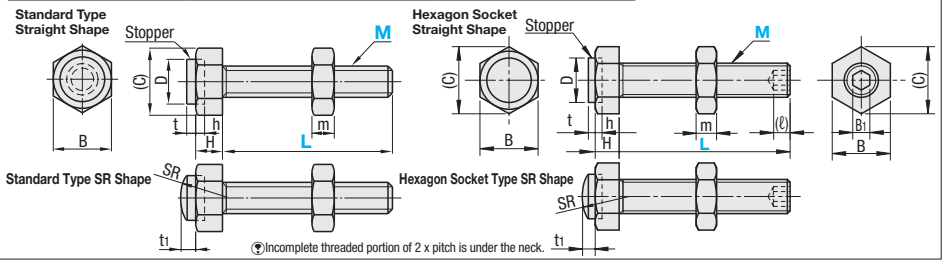
Ⓡ Product Numbers
are not RoHS compliant

*For bolt strength class
P.1959

Standard Type Straight Shape	Standard Type SR Shape	Hexagon Socket Type Straight Shape	Hexagon Socket Type SR Shape	Stopper M Material	Stopper H Hardness	Bolts M Material	Bolts *Strength Class	Bolts S Surface Treatment	A Accessory (Hexagon Nut) M Material	A Accessory (Hexagon Nut) S Surface Treatment
UST	USRT	USTH	USRTH	Urethane (Black)	Shore A90	1.7220/34CrMo4	10.9	JIS STKM Bright Chromate*	1.0038/S235JR	Trivalent Chromate
SUST	SUSRT	SUSTH	SUSRTH			1.4301/X5CrNi18-10	-	-	1.4567/X3CrNiCu18-9-4	-
LUST	-	-	-	Low Repulsion Urethane (Gray)	Shore A60	1.7220/34CrMo4	10.9	JIS STKM Bright Chromate*	1.0038/S235JR	Trivalent Chromate
PUST	-	PUSTH	-	Polyacetal (White)	-	1.7220/34CrMo4	10.9	JIS STKM Bright Chromate*	1.0038/S235JR	Trivalent Chromate
PSST	-	PSSTH	-			1.4301/X5CrNi18-10	-	-	1.4567/X3CrNiCu18-9-4	-
USTS	-	-	-	Silicon (Light Gray)	Shore A60	1.7220/34CrMo4	10.9	JIS STKM Bright Chromate*	1.0038/S235JR	Trivalent Chromate
SSTS	-	-	-			1.4301/X5CrNi18-10	-	-	1.4567/X3CrNiCu18-9-4	-

M (Coarse)	D	B	(C)	H	h	t	t1	m	(ℓ)	B1	SR
3	3.5	5.5	6.4	2	0.7	1.5	2	1.8	-	-	3.5
4	5	7	8.1	2.8	1.5		2.2	2.4	2.2	2	5
5	6	8	9.2	3.5			2.3	3.2	2.8	2.5	6
6	8	10	11.5	4	2	2	2.6	3.6	3	3	8
8	10	13	15	5.5			2.8	5	4	4	10
10	13	17	19.6	7			3.2	6	5	5	13
12	15	19	21.9	8			3.5	7	-	-	15

*Bright chromate for the Shoulder is being switched to Trivalent Chromate. (Trivalent chromate for surface treatment of USTH, USRTH and PUSTH)



Ⓡ Incomplete threaded portion of 2 x pitch is under the neck.

Part Number Type	M (Coarse)	L Selection	€ Unit Price UST	SUST	LUST	PUST	PSST	USTS	SSTS	USTH	SUSTH	PUSTH	PSSTH
Standard Type (Straight) UST SUST LUST PUST PSST USTS SSTS / (SR) USRT SUSRT / Hexagon Socket Type (Straight) USTH SUSTH PUSTH PSSTH / (SR) USRTH SUSRTH	3	15 20 25 30 35 40											
	4	15 20 25 30 35 40											
	5	15 20 25 30 35 40 45 50											
	6	20 25 30 35 40 45 50 60											
	8	20 25 30 35 40 45 50 60											
	10	20 25 30 35 40 45 50 60 70											
	12	30 40 50 60 70											

Ⓡ Silicon (USTS, SSTS): M4~M8; Hexagon Socket Type (USTH, SUSTH, PUSTH, PSSTH, USRTH, SUSRTH): M4~M10.
Ⓡ The unit price of SR Shape is the price of the same material plate shape multiplied 1.2. (Round down to ten Cent.) Ex.: USRT5-20 UST5-20 € Unit Price 2,00x1.2= 2,40 EUR

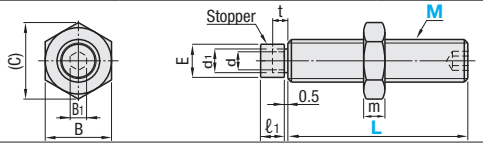
■Straight Type



RoHS

*For bolt strength class P.1959

Type	Stopper M Material	Stopper H Hardness	Bolts M Material	Bolts *Strength Class	Bolts S Surface Treatment	A Accessory (Hexagon Nut) M Material	A Accessory (Hexagon Nut) S Surface Treatment
USS	Urethane (Black)	Shore A90	1.7220/34CrMo4	10.9	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
USUS			1.4301/X5CrNi18-10	-	-	1.4301/X5CrNi18-10	-
PUSS	Polyacetal (White)	-	1.7220/34CrMo4	10.9	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
SPUS			1.4301/X5CrNi18-10	-	-	1.4301/X5CrNi18-10	-



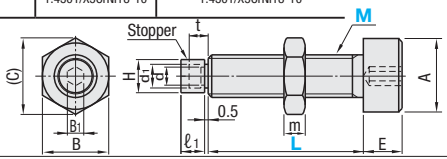
Part Number Type	M (Coarse)	L Selection	ℓ1	d	E	d1	t	B	B1	(C)	m	€ Unit Price USS	USUS	PUSS	SPUS
USS	4	10 15 20 25 30 35	4.5	1.6	3.1	2.1	3	7	2	8.1	2.4				
USUS	5	10 15 20 25 30 35 40		2.2	4	2.6		8	2.5	9.2	3.2				
PUSS	6	15 20 25 30 35 40 45 50 60		2.6	4.8	3		10	3	11.5	3.6				
SPUS	8	25 30 35 40 45 50 60	5.5	5.1	6.5	5.5	4	13	4	15	5				
	10	30 35 40 45 50 60 70		6.9	8.3	7.3		17	5	19.6	6				
	12	30 40 50 60 70	6	8	10	8.6	4.5	19	6	21.9	7				

■Hexagon Socket Head Cap Screw Type



RoHS

Type	Stopper M Material	Stopper H Hardness	Bolts M Material	A Accessory (Hexagon Nut) M Material
UUSCB	Urethane (Black)	Shore A90	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10
PSCB	Polyacetal (White)	-		



Part Number Type	M (Coarse)	L Selection	A	E	H	B	(C)	B1	d1	d	ℓ1	t	m	€ Unit Price UUSCB	PSCB
UUSCB PSCB	4	10 12 15 20	7	4	3.1	7	8.1	3	2.1	1.6	4.5	3	2.4		
	5	12 15 20 25	8.5	5	4	8	9.2	4	2.6	2.2	4.5	3	3.2		
	6	15 20 25 30	10	6	4.8	10	11.5	5	3	2.6	4.5	3	3.6		
	8	20 25 30 40	13	8	6.5	13	15	6	5.5	5.1	5.5	4	5		
	10	25 30 40 50	16	10	8.3	17	19.6	8	7.3	6.9	5.5	4	6		

Ⓡ For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
UST8	-	40
USS6	-	30
PSCB4	-	10

Days to Ship 6 Days P.87

Price

■Volume Discount (Ⓡ Round down to one Cent.) P.87.

-Shoulder Type UST, SUST

Quantity	1~19	20~49	50~199
Applicable Price	€ Unit Price	Volume Discount	
	Price List	30%	40%

-Straight Type USS, USUS

Quantity	1~19	20~49	50~199
Applicable Price	€ Unit Price	Volume Discount	
	Price List	15%	20%

-With Shoulders Standard Type LUST · PUST · PSST · USTS · SSTS · USRT · SUSRT
-With Shoulders With Hexagon Socket Head Type
-Straight Type PUSS · SPUS

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	5%	10%	15%

Ⓡ For orders larger than indicated quantity, please request a quotation.

-Hexagon Socket Head Cap Screw Type

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

Ⓡ For orders larger than indicated quantity, please request a quotation.

■**Features:** Large-headed Stoppers. Best for receiving work pieces on large surfaces.

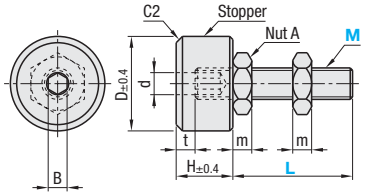
■Head Hexagon Socket MC Nylon Type



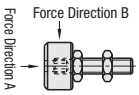
RoHS

*For bolt strength class P.1959

Type	Stopper	Bolts			Accessory (Hexagon Nut)	
	M Material	M Material	*Strength Class	S Surface Treatment	M Material	S Surface Treatment
UNAHM	MC Nylon	1.7220/34CrMo4	8.8	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate



- Bolts and MC Nylon are adhered together using adhesives.
- Contact Nut A to the MC Nylon for use.
- If strong forces are applied, the MC Nylon may be damaged.
- Do not use from the B direction.



- For tightening, use a Hexagonal Hole, not Nut A.

Part Number Type	M (Coarse)	L Selection	t	D	d	B	H	m	€ Unit Price
UNAHM	4	10 15 20 25 30	3	10	2.4	2	7	2.4	
	5	15 20 25 30 40	4	12	3	2.5	9	3.2	
	6	15 20 25 30 40 50		15	3.5	3	10	3.6	
	8	25 30 40 50	5	20	4.7	4	13	5	
	10	30 40 50		25	6	5	15	6	
	12	30 40 50	6	30	7	6	18	7	
	16	30 40 50		40	9.5	8	22	10	

Order Example: Part Number UNAHM5 - L 15

Days to Ship: 8 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

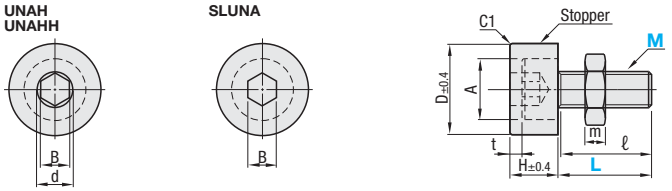
■Head Hexagon Socket Urethane Type



RoHS

*For bolt strength class P.1959

Type	Stopper		Bolts			Accessory (Hexagon Nut)	
	M Material	H Hardness	M Material	*Strength Class	S	M Material	S
UNAH	Urethane (Black)	Shore A90	1.7220/34CrMo4	10.9	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
UNAHH	Urethane (Blue)	Shore A60		10.9	Trivalent Chromate		
SLUNA	Low Repulsion Urethane (Gray)	Shore A60	1.4301/X5CrNi18-10	-	-	1.4301/X5CrNi18-10	-



Part Number Type	M (Coarse)	L UNAH · SLUNA	L UNAHH	t	D	A	d	B	H	ℓ	m	€ Unit Price UNAH	UNAHH	SLUNA
UNAH UNAHH SLUNA	3	10 15	10 15	3	7.5	5.5	3.3	2.5	6	Full Thread	1.8			
	4	10 15 20 (*25) (*30)	10 15 20 *25 *30		10	7	4.2	3	7	Full Thread (22)	2.4			
	5	10 15 20 25 *30 (*40)	15 20 25 *30 *40	4	12.5	8.5	5.5	4	9	Full Thread (24)	3.2			
	6	10 15 20 25 30 *40 (*50)	15 20 25 30 *40 *50		15	10	6	5	10	Full Thread (26)	3.6			
	8	10 15 20 25 30 *40 *50 (*60)	25 30 *40 *50 *60	5	20	13	7.3	6	13	Full Thread (30)	5			
	10	10 15 20 25 30 40 *50 (*60) (*70)	30 40 *50 *60 *70		25	16	10	8	15	Full Thread (34)	6			
	12	15 20 25 30 40		6	30	18	13	10	18	Full Thread	7			
	16	20 25 30 40			40	24	17	14	22	Full Thread	10			

⊗L sizes in ( ) are not available for SLUNA. ℓ dimension for * marked L dimension is in ( ).

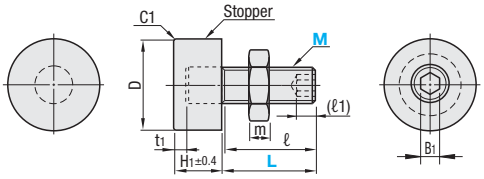
■Tip Hexagon Socket Urethane Type



RoHS

*For bolt strength class P.1959

Type	Stopper		Bolts			Accessory (Hexagon Nut)	
	M Material	H Hardness	M Material	*Strength Class	S	M Material	S
UNBH	Urethane (Black)	Shore A90	1.7220/34CrMo4	10.9	Trivalent Chromate	1.0038/S235JR	Trivalent Chromate
UNBHH	Urethane (Blue)	Shore A60		10.9	Trivalent Chromate		



Part Number Type	M (Coarse)	L Selection	t1	D	B1	H1	ℓ	m	(ℓ1)	€ Unit Price UNBH	UNBHH
UNBH UNBHH	3	10 15	4	7.5	-	14	Full Thread	1.8	1.8		
	4	10 15 20 25 30		10	2		Full Thread	2.4	2.2		
	5	15 20 25 30 40	5	12.5	2.5	15	Full Thread	3.2	2.8		
	6	15 20 25 30 40 50		15	3		Full Thread	3.6	3		
	8	25 30 40 50 60	6	20	4	16	Full Thread	5	4		
	10	30 40 50 60 70		25	5		Full Thread	6	5		

Order Example: Part Number UNAH4 - L 20; UNBH5 - 25

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~49	50~149
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Shock Absorption Stoppers

-Screws with Low Elastic Rubber · Head Hexagon Socket Cap Screws-

CAD Data

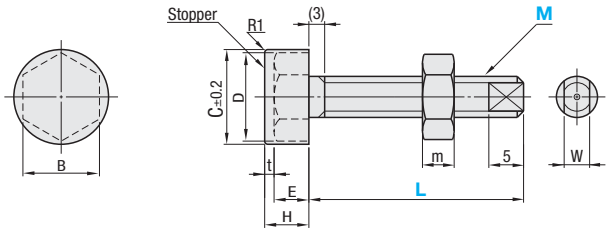
■Bolts with Low Elastic Rubber

RoHS



Type	Stopper		Bolts	Hexagon Nut
	M Material	H Hardness	M Material	M Material
UNST	Low Elastic Rubber (Hanenaito® RGP-60L)	Shore A57	1.4301/ X5CrNi18-10	1.4301/ X5CrNi18-10

Hanenaito® is a registered trademark of Naigai Rubber Industry Co., Ltd.



Part Number Type	M (Coarse)	L Selection	t	C	D	B	H	E	Shock Absorption Amount kgf-cm	Withstand Load (kgf)	m	W	€ Unit Price
UNST	3	10 15 20	4	8	6.15	5.5	6	2.8	0.045	2.2	1.8	2	
	4	10 15 20 30	4.2	10	7.7	7	7	2.8	0.069	3.4	2.4	3	
	5	20 30 40	4.5	12	8.8	8	8	3.5	0.112	5.4	3.2	4	
	6	20 30 40	5	15	11.1	10	9	4	0.207	9.4	3.6	4.5	
	8	30 40 50	5.7	18	14.4	13	11	5.3	0.350	14.2	5	6.5	
	10	30 40 50	5.6	21	17.8	16	12	6.4	0.517	23.4	6	8	

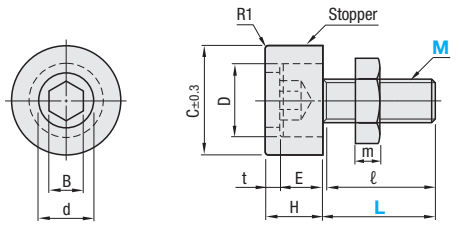
■Head Hexagon Socket Cap Screws with Low Elastic Rubber

RoHS



Type	Stopper		Bolts	Hexagon Nut
	M Material	H Hardness	M Material	M Material
UNSTH	Low Elastic Rubber (Hanenaito® RGP-60L)	Shore A57	1.4301/ X5CrNi18-10	1.4301/ X5CrNi18-10

Hanenaito® is a registered trademark of Naigai Rubber Industry Co., Ltd.



Part Number Type	M (Coarse)	L Selection	t	C	D	d	B	H	E	Shock Absorption Amount kgf-cm	Withstand Load (kgf)	m	ℓ	€ Unit Price
UNSTH	4	10 15 20 *30	4.2	11	7	5	3	8.2	4	0.055	2.4	3.2	Full Thread (22)	
	5	15 20	4.5	13	8.5	7	4	9.5	5	0.072	3.0	4	Full Thread	
	6	15 20 25 30 *40	5	18	10	8	5	11	6	0.197	7.4	5	Full Thread (26)	
	8	25 30	5.7	20	13	9	6	13.7	8	0.272	8.8	6.5	Full Thread	
	10	30 40 *50	5.6	25	16	12	8	15.6	10	0.444	14.4	8	Full Thread (34)	

ℓ dimension for * marked L dimension is in ( ).

Part Number - L

UNST8 - 40

UNSTH4 - 20

6 Days P.87

■Volume Discount (Round down to one Cent.) P87

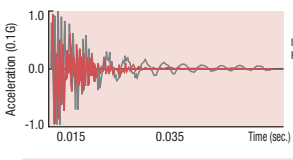
Quantity	1~9	10~19	20~49	50~149
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

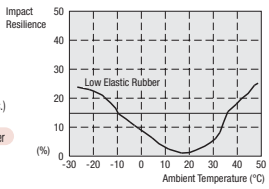
■Material with Excellent Shock Absorption

·Low Elastic Rubber

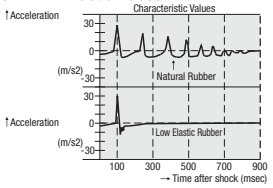
It is used as cushioning material pallet damper, conveyor machine, precision instrument etc, because of its good elongation and shock absorption. Also it is used as vibration absorption materials of various precision instruments because of its excellent vibration absorption.



■Impact Resilience Variation by Temperature of Low Elastic Rubber



■Shock Absorption of Low Elastic Rubber

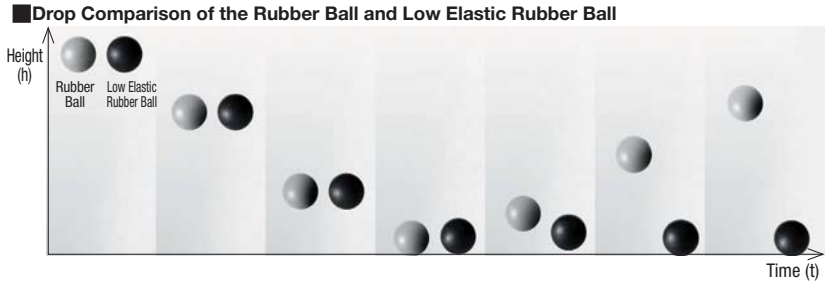


■Properties

Item	Unit	Low Elastic Rubber
Hardness	(JIS-A)	57
Tensile Strength	(MPa)	8.3
Tensile Strength	(kgf/cm²)	85
Elongation	(%)	810
Impact Resilience	(%)	2
Compression Set	70°Cx22hr(%)	16
Specific Gravity		1.35

Above data are standard values, not guaranteed values.

■Drop Comparison of the Rubber Ball and Low Elastic Rubber Ball



Washers, Stoppers with Plates

-Urethane Type · Low Elastic Rubber Type-

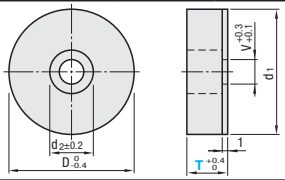
CAD Data

■Urethane Type Urethane Stoppers with Washers RoHS



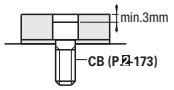
Urethane is baked on a 1.4301/ X5CrNi18-10 plate.

Type	Urethane		Washer
	M Material	H Hardness	M Material
UPWH	Ether Polyurethane (Black)	Shore A90	1.4301/ X5CrNi18-10



Part Number Type	No.	T	D	d1	d2	V	€ Unit Price
UPWH	3	7	15	14	6	3	
		10					
	4	8	20	19	8	4	
		15					
	5	9	25	24	9.5	5	
		20					
	6	10	30	29	11	6	
		25					
	8	12	40	39	14	8	
		30					
	10	14	50	49	17	10	
		35					

Example

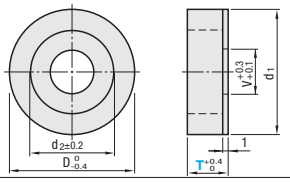


■Urethane Type Urethane Stoppers with Washers For Extra Low Head Screws RoHS



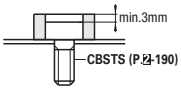
Urethane is baked on a 1.4301/ X5CrNi18-10 plate.

Type	Urethane		Washer
	M Material	H Hardness	M Material
USWH	Ether Polyurethane (Black)	Shore A90	1.4301/ X5CrNi18-10



Part Number Type	No.	T	D	d1	d2	V	€ Unit Price
USWH	3	4	11	10	7	3.5	
		7					
	4	4	13	12	9	4.5	
		7					
	5	4	14	13	10	6	
		7					
	6	4	15	14	11	7	
		7					

Example

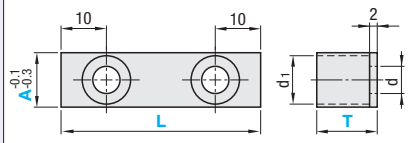


■Urethane Type Urethane Stoppers with Plates RoHS



Urethane is baked on 1.4301/ X5CrNi18-10 plate.
*Use low head bolts.

Type	Urethane		Plate
	M Material	H Hardness	M Material
UPPL	Ether Polyurethane (Black)	Shore A90	1.4301/ X5CrNi18-10



Part Number Type	A	T Selection	L Selection	d	d1	€ Unit Price
UPPL	12	6	30	3.5	6.5	
			50			
	15	8				
	19	10	50	4.5	8.0	
			75			

Price

■Volume Discount (Round down to one Cent.) P.87

•UPWH

Quantity	1~19	20~49	50~199
Applicable Price	€ Unit Price	Volume Discount	
	Price List	5%	13%

For orders less than 5 pieces (green colored part), Small Order Charge (1,80 EUR/pc) will be added to € Unit Price.
[Calculation Example] When ordering UPWH3-7 x 2 pcs€ Unit Pricece 1,20 EUR + Small Order Charge 1,80 EUR) x 2 pcs. = 6,00 EUR

•USWH · UPPL

Quantity	1~49	50~74	75~99	100~199
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	T	-	L
UPWH4	-	8		
USWH3	-	7		
UPPL12	-	6	-	30

Days to Ship: 8 Days

Express A 2,00 EUR/ piece P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

■Low Elastic Rubber Type Low Elastic Rubber Stoppers with Washers RoHS



Rubber is baked on 1.4301/ X5CrNi18-10 plate.

Type	Rubber		Washer
	M Material	H Hardness	M Material
TUPWH	Low Elastic Rubber (Hanenaito® GP-60L)	Shore A57	1.4301/ X5CrNi18-10

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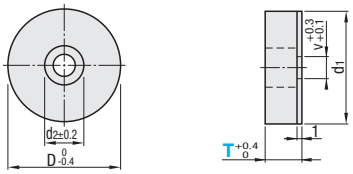
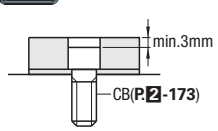
For features of the Low Elastic Rubber, refer to P.1429



Part Number Type	No.	T	D	d1	d2	V	Shock Absorption Amount kgf-cm	Withstand Load (kgf)	€ Unit Price
TUPWH	3	7	15	14	6	3	0.112	4.2	
		10					0.161	3.6	
	4	8	20	19	8	4	0.261	8.0	
		15					0.474	6.8	
	5	9	25	24	9.5	5	0.523	14.0	
	6	10	30	29	11	6	0.919	21.4	
		25					2.018	16.4	
	8	12	40	39	14	8	2.221	41.6	

Example



■Low Elastic Rubber Type Low Elastic Rubber Stoppers with Plates RoHS



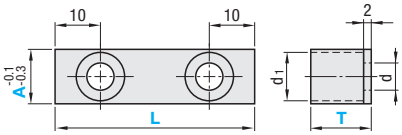
Rubber is baked on 1.4301/ X5CrNi18-10 plate.

Type	Rubber		Plate
	M Material	H Hardness	M Material
TUPPL	Low Elastic Rubber (Hanenaito® GP-60L)	Shore A57	1.4301/ X5CrNi18-10

Hanenaito® is a registered trademark of Naigai Rubber Industry Co., Ltd.

*Use low head bolts.

For features of the Low Elastic Rubber, refer to P.1429



Part Number Type	A	T Selection	L Selection	d	d1	Shock Absorption Amount kgf-cm	Withstand Load (kgf)	€ Unit Price
TUPPL	12	6	30	3.5	6.5	0.217	6.6	
			50			0.577	17.6	
		10	30			0.324	6.0	
			50			0.786	14.6	
	15	10	30	3.5	6.5	0.408	7.4	
			50			1.024	19.0	
	19	10	50	4.5	8.0	1.234	23.0	
			75			2.51	47.0	

Order Example

Part Number	-	T	-	L
TUPWH6	-	10		
TUPPL12	-	6	-	30

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~49	50~99	100~199
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

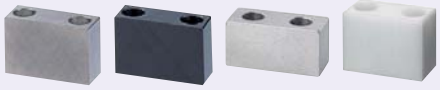
Stopper Blocks

Price Reduction 12%

CAD Data

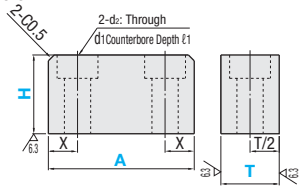
■Straight Type

RoHS

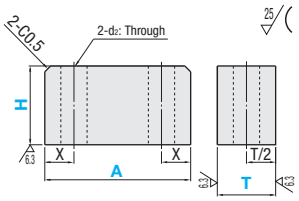


Type		M Material	H Hardness	S Surface Treatment
Counterbore Hole	Thru Hole			
SBHB	SBKHB	1.1191/C45E	-	Black Oxide
SBHM	SBKHM		-	Electroless Nickel Plating
SBHHB	-		40HRC~	Black Oxide
SBHHM	SBKHHM			Electroless Nickel Plating
SBHU	-	Urethane	Shore A90	-
SBHJ	-	Polyacetal	-	-

Counterbore Hole



Thru Hole

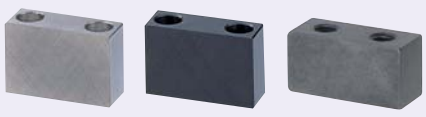


Part Number	A Selection	H 5mm Increment	T		X	d1	d2	ℓ1	T	€ Unit Price					
			Counterbore Hole	Thru Hole						SBHB SBKHB	SBHM SBKHM	SBHHB	SBHHM SBKHHM	SBHU	SBHJ
(Counterbored Hole) (Thru Hole) SBHB SBKHB / SBHM SBKHM / SBHHB / SBHHM SBKHHM / SBHU / SBHJ	20 30 40 50	(5)10~40	10	10	5	8	4.5	4.5	10 · A10						
	30 40 50 60	(10)15~50	15	A10	7	9.5	5.5	5.5	15 · A15						
	30 40 50 60 70 80	(15)20~50	20	15	8	11	6.5	6.5	20						
	40 50 60 70 80 90 100	(20)30~50	30	A15	10	14	9	9	30						

A≥H (H dimension in) is for Thru Hole Type only.

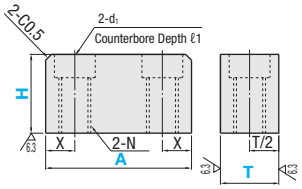
■Female Thread Hole Type

RoHS

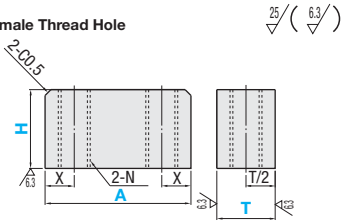


Type		M Material	H Hardness	S Surface Treatment
With Counterbore and Female Thread Hole	With Female Thread Hole			
SBNB	SBKNB	1.1191/C45E	-	Black Oxide
SBNM	SBKNM		-	Electroless Nickel Plating
SBNHB	-		40HRC~	Black Oxide
SBNHM	SBKNHM			Electroless Nickel Plating

With Counterbore and Female Thread Hole



With Female Thread Hole



Part Number	A Selection	H 5mm Increment	T		X	d1	ℓ1	N	T	€ Unit Price			
			Counterbore Hole With Female Thread Hole	With Female Thread Hole						SBNB SBKNB	SBNM SBKNM	SBNHB	SBNHM SBKNHM
(With Counterbore and Female Thread Hole) (With Female Thread Hole) SBNB SBKNB / SBNM SBKNM / SBNHB / SBNHM SBKNHM	20 30 40 50	(5)10~40	10	10	5	8	4.5	M5	10 · A10				
	30 40 50 60	(10)15~50	15	A10	7	9.5	5.5	M6	15 · A15				
	30 40 50 60 70 80	(15)20~50	20	15	8	11	6.5	M8	20				
	40 50 60 70 80 90 100	(20)30~50	30	A15	10	14	9	M10	30				

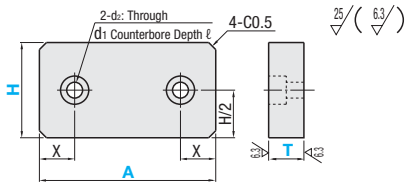
A≥H (H dimensions in) are for Female Thread Hole Type only.

■Plate Type

RoHS



Type	M Material	H Hardness	S Surface Treatment
SBFB	1.1191/C45E	-	Black Oxide
SBFM		-	Electroless Nickel Plating
SBFHB		40HRC~	Black Oxide
SBFHM		40HRC~	Electroless Nickel Plating



Part Number	A Selection	H 5mm Increment	T	X	d1	d2	ℓ	€ Unit Price			
								SBFB	SBFM	SBFHB	SBFHM
SBFB	20 30 40 50	10~30	5	5	-	5.5	-				
SBFM	20 30 40 50 60	10~40	8	5	8	4.5	4.5				
SBFHB	30 40 50 60 70 80	15~50	10	7	9.5	5.5	5.5				
SBFHM	30 40 50 60 70 80 90 100	20~50	15	8	11	6.5	6.5				

The bolt mounting hole is a through hole when T=5. A≥H

Order Example

Part Number	-	A	-	H	-	T
SBKHB	-	40	-	10	-	A10
SBNB	-	20	-	10	-	10
SBFB	-	30	-	15	-	5

Days to Ship: 8 Days — Express A 3,00 EUR/piece — P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P87

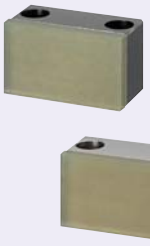
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

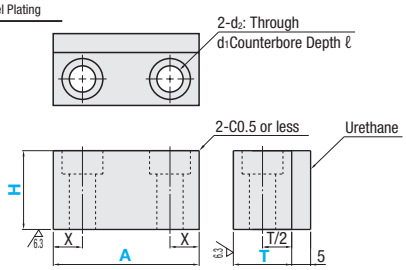
Stopper Blocks with Urethane

CAD Data

■Stopper Blocks with Urethane RoHS



Type	Urethane	Material	Surface Treatment
SBUB	Shore A90 (Natural Color)	1.1191/C45E	Black Oxide
SBUM			Electroless Nickel Plating



Urethane is baked.
Surface treatment of verge part between core block and urethane may be peeled off about 2~3mm from edge.

Part Number Type	A Selection	H Selection	T	X	d1	d2	ℓ	€ Unit Price SBUB	€ Unit Price SBUM
SBUB SBUM	30 40 50	20 25 30 40 50	15	7	9.5	5.5	5.5		
	30 40 50	25 30 40 50	20	8	11	6.5	6.5		
	40 50 60	30 40 50	30	10	14	9	9		

A≥H

Order Example

Part Number	-	A	-	H	-	T
SBUB	-	40	-	20	-	15

Days to Ship: 10 Days — Express B 3,00 EUR/piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

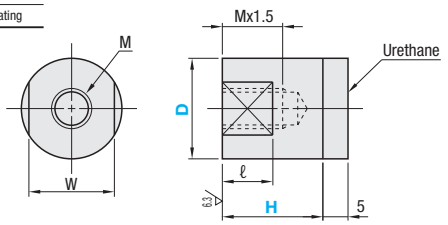
Quantity	1~29	30~39	40~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Stopper Blocks with Urethane Cylinder Type RoHS



Type	Urethane	Material	Surface Treatment
SBEB	Shore A90 (Black)	1.1191/C45E	Black Oxide
SBEM			Electroless Nickel Plating



Urethane is baked.
Surface treatment of verge part between core block and urethane may be peeled off about 2~3mm from edge.

Part Number Type	D	H Selection	M (Coarse)	W	ℓ	€ Unit Price SBEB	€ Unit Price SBEM
SBEB SBEM	10	20 25 30 35 40	6	8	8		
	20	25 30 35 40	10	17	10		
	30	30 35 40	12	27	15		

Order Example

Part Number	-	D	-	H
SBEM	-	20	-	35

Days to Ship: 10 Days — Express B 3,00 EUR/piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~29	30~39	40~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Adjusting Bolts

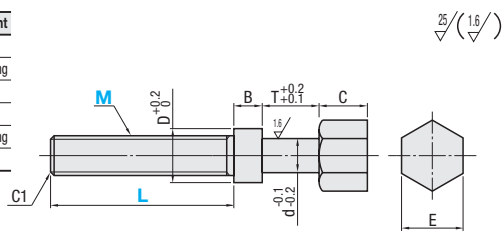
■Adjusting Bolts



RoHS

Threads	Type	Material	Surface Treatment
Coarse Thread	AJST	1.1191/C45E	Black Oxide
	AJSTM		Electroless Nickel Plating
	AJSTS	1.4301/X5CrNi18-10	-
Fine Thread	AJSTF	1.1191/C45E	Black Oxide
	AJSTMF		Electroless Nickel Plating
	AJSTFS	1.4301/X5CrNi18-10	-

Refer to the price list for applicable M size.



Part Number Type	M	L 5mm Increment	d	T	MxPitch Fine Thread	MxPitch Coarse Thread	B	D	C	E	€ Unit Price Coarse Thread AJST	AJSTM	AJSTS	Fine Thread AJSTF	AJSTMF	AJSTFS
(Coarse) AJST AJSTM AJSTS	3	10~45	2.5	7	-	3x0.5	3	4.5	5	6						
	4	10~60	3.5		4x0.5	4x0.7		5.5		7						
	5	10~70	4.5	9	5x0.5	5x0.8	4.6	7.5	10	8						
	6	15~80	5.5		6x0.75	6x1.0		8.5		10						
(Fine) AJSTF AJSTMF AJSTFS	8	20~100	7.5	12	8x0.75	8x1.25	6	11.5	15	13						
	10	25~100	9.5	16	10x1.0	10x1.5	7	15.5		17						
	12	25~150	11.5	19	12x1.0	12x1.75		17.5	20	19						
	16	25~150	15.5		-	16x2.0	8	21.5		24						

Order Example: Part Number AJST8 - L 25

Days to Ship: 8 Days — Express A 5,00 EUR/ piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

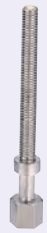
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

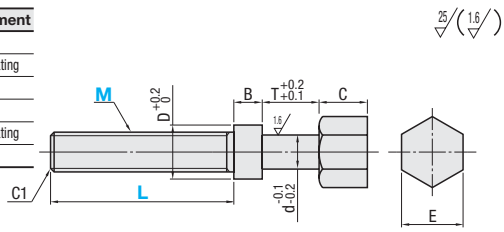
■Adjusting Bolts -T Dimension Compact-



RoHS

Threads	Type	Material	Surface Treatment
Coarse Thread	AJSTC	1.1191/C45E	Black Oxide
	AJSTCM		Electroless Nickel Plating
	AJSTCS	1.4301/X5CrNi18-10	-
Fine Thread	AJSTCF	1.1191/C45E	Black Oxide
	AJSTCMF		Electroless Nickel Plating
	AJSTCFS	1.4301/X5CrNi18-10	-

Applicable block for Adjusting Bolts to T Dimension Compact Type is T Dimension Compact, Side Mounting Type (P.1435)



Part Number Type	M	L 5mm Increment	d	T	MxPitch Fine Thread	MxPitch Coarse Thread	B	D	C	E	€ Unit Price Coarse Thread AJSTC	AJSTCM	AJSTCS	Fine Thread AJSTCF	AJSTCMF	AJSTCFS
(Coarse) AJSTC AJSTCM AJSTCS	4	10~60	3.5	3	4x0.5	4x0.7	3	5.5	5	7						
	5	10~70	4.5	5	5x0.5	5x0.8	4.6	7.5	10	8						
(Fine) AJSTCF AJSTCMF AJSTCFS	6	15~80	5.5		6x0.75	6x1.0		8.5		10						
	8	20~100	7.5		8x0.75	8x1.25	6	11.5	15	13						

Order Example: Part Number AJSTC8 - L 25

Days to Ship: 8 Days — Express A 5,00 EUR/ piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

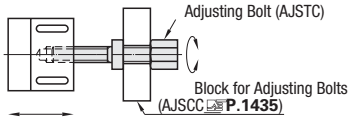
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



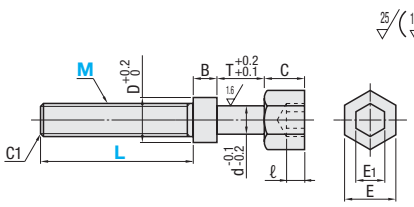
CAD Data

■Adjusting Bolts
-Hexagon Socket Head Type-



RoHS

Threads	Type	M Material	S Surface Treatment
Coarse Thread	AJSTR	1.1191/C45E	Black Oxide
	AJSTMR		Electroless Nickel Plating
	AJSTSR	1.4301/X5CrNi18-10	-



The direction of the outer hexagon head E and the hexagon socket E1 is not equal.

Part Number Type	M	L 5mm Increment	d	T	MxPitch Coarse Thread	B	D	C	E	E_1	ℓ	€ Unit Price AJSTR	AJSTMR	AJSTSR
AJSTR AJSTMR AJSTSR	4	10~50	3.5	7	4x0.7	3	5.5	5	7	2.5	2.5			
	5	10~50	4.5	9	5x0.8	4.6	7.5	10	8	3	3			
	6	15~50	5.5		6x1.0		8.5		10	4	4			
	8	20~50	7.5	12	8x1.25	6	11.5	15	13	5	5			

Order Example: Part Number AJSTR4 - L 20

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

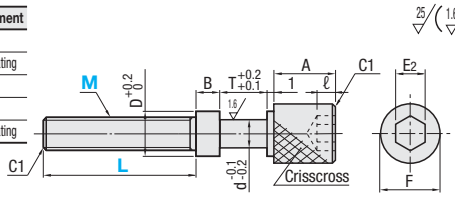
■Adjusting Bolts
-Hexagon Socket Knurled Knobs Type-



RoHS

Threads	Type	M Material	S Surface Treatment
Coarse Thread	AJKTN	1.1191/C45E	Black Oxide
	AJKTNM		Electroless Nickel Plating
	AJKTNS	1.4301/X5CrNi18-10	-
Fine Thread	AJKTNF	1.1191/C45E	Black Oxide
	AJKTNMF		Electroless Nickel Plating

Refer to the price list for applicable M size.



Part Number Type	M	L 5mm Increment	d	T	MxPitch Fine Thread	MxPitch Coarse Thread	B	D	A	F	E_2	ℓ	€ Unit Price Coarse Thread AJKTN	AJKTNM	Fine Thread AJKTNS	AJKTNF	AJKTNMF
(Coarse) AJKTN AJKTNM AJKTNS	3	10~45	2.5	7	-	3x0.5	3	4.5	7	10	5	4					
	4	10~60	3.5		4x0.5	4x0.7		5.5									
	5	10~70	4.5	9	5x0.5	5x0.8	4.6	7.5	15	15	8	7					
	6	15~80	5.5		6x0.75	6x1.0		8.5									
	8	20~100	7.5	12	8x0.75	8x1.25	6	11.5									
(Fine) AJKTNF AJKTNMF	10	25~100	9.5	16	10x1.0	10x1.5	7	15.5	25	20	10	9					
	12	25~150	11.5	19	12x1.0	12x1.75		17.5									
	16	25~150	15.5		-	16x2.0	8	21.5		24							

Order Example: Part Number AJKTN10 - L 80

Days to Ship: 8 Days — Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

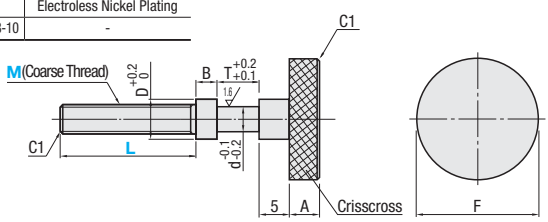
For orders larger than indicated quantity, please request a quotation.

■Adjusting Bolts
-Knurled Knobs Type-



RoHS

Threads	Type	M Material	S Surface Treatment
Coarse Thread	AJSTK	1.1191/C45E	Black Oxide
	AJSTKM		Electroless Nickel Plating
	AJSTKS	1.4301/X5CrNi18-10	-



Part Number Type	M (Coarse)	L 5mm Increment	d	T	B	D	A	F	€ Unit Price AJSTK	AJSTKM	AJSTKS
AJSTK AJSTKM AJSTKS	3	10~20	2.5	7	3	4.5	4	16			
	4	10~30	3.5			5.5					
	5	10~40	4.5	9	4.6	7.5	6	20			
	6	15~50	5.5			8.5					
	8	20~50	7.5	12	6	11.5					

Order Example: Part Number AJSTK4 - L 25

Days to Ship

- AJSTK / AJSTKS: 8 Days — Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

- AJSTKM: 10 Days — Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Blocks for Adjusting Bolts

-Standard · Side Mounting · Side Mounting T Dimension Compact Type-

CAD Data

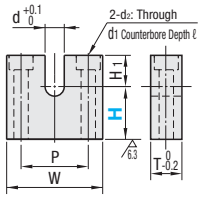
Low-profile products that can be used in space-savings are added.

■Standard Type



RoHS

Type		Material	Surface Treatment
H Selectable	H Configurable		
AJKC	AJKB	1.0038/S235JR	Black Oxide
AJKCM	AJKBM		Electroless Nickel Plating
AJKCS	-	1.4301/X5CrNi18-10	-



Part Number Type	No.	H Selectable	H Configurable	d	H1	T	W	P	d2	d1	ℓ
(H Selectable) (H Configurable) AJKC AJKB AJKCM AJKBM AJKCS (No.3 ~ 10)	3	5 10 15	10~40	2.5	5	7	26	16	3.5	6	3.5
	4	5 10 15 20		3.5							
	5	6 10 15 20 25		4.5	6	9	32	20	4.5	8	4.5
	6	8 10 15 20 25 30		5.5							
	8	10 15 20 25 30		7.5	8	12	38	26	5.5	9.5	5.5
	10	12 15 20 25 30	15~80	9.5	10	16	50	32	9	14	9
	12	12 15 20 25 30		11.5	11	19	65	40			
	16	15 20 25 30		15.5							

€ Unit Price

H Dimension Selectable Type			H Dimension Configurable Type	
AJKC	AJKCM	AJKCS	AJKB	AJKBM

Order Example: Part Number AJKC6 - H 8

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

Express A is not available for electroless nickel plated products.

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

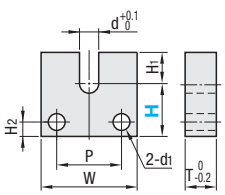
For orders larger than indicated quantity, please request a quotation.

■Side Mounting Type



RoHS

Type		Material	Surface Treatment
H Selectable	H Configurable		
AJSC	AJSB	1.0038/S235JR	Black Oxide
AJSCM	AJSBM		Electroless Nickel Plating
AJSCS	-	1.4301/X5CrNi18-10	-



Part Number Type	No.	H Selectable	H Configurable	d	H1	T	W	P	H2	d1
(H Selectable) AJSC AJSCM AJSCS (H Configurable) AJSB AJSBM	3	15 20	10~40	2.5	5	7	26	16	4	4
	4	15 20		3.5						
	5	15 20 25		4.5	6	9	32	20	5	6
	6	15 20 25 30		5.5						
	8	20 25 30 40		7.5	8	12	38	26	6	7
	10	25 30 40	15~80	9.5	10	16	50	32	9	9.5
	12	25 30 40		11.5	11	19	65	40	12	11.5
	16	25 30 40		15.5						

€ Unit Price

H Selectable			H Configurable	
AJSC	AJSCM	AJSCS	AJSB	AJSBM

Order Example: Part Number AJSCM8 - H 20

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

Express A is not available for electroless nickel plated products.

A Express Charge of 13,50 EUR for 3 or more identical pieces.

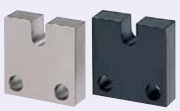
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

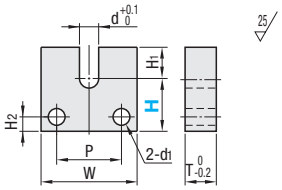
■Side Mounting T Dimension Compact Type



RoHS

Type	Material	Surface Treatment
AJSCC	1.0038/S235JR	Black Oxide
AJSCCM		Electroless Nickel Plating
AJSCCS	1.4301/X5CrNi18-10	-

The applicable adjusting bolt to T Dimension Compact Type is T Dimension Compact (P.1433)



Part Number Type	No.	H Selection	d	H1	T	W	P	H2	d1
AJSCC AJSCCM AJSCCS	4	15 20	3.5	5	3	25	16	4	4
	5	15 20 25	4.5	6	5	32	20	5	6
	6	15 20 25 30	5.5						
	8	20 25 30 40	7.5	8		38	26	6	7

€ Unit Price

AJSCC	AJSCCM	AJSCCS

Order Example: Part Number AJSCC6 - H 20

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

Express A is not available for electroless nickel plated products.

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Blocks for Adjusting Bolts / Adjusting Pins

-L-Shaped Type · L-Shaped Side Mounting Type-

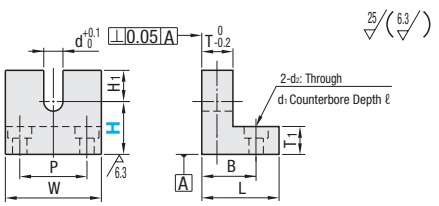
CAD Data

■Blocks for Adjusting Bolts L-Shaped Type



RoHS

Type		M Material	S Surface Treatment
H Selectable	H Configurable		
AJLC	AJLB	1.0038/S235JR	Black Oxide
AJLCM	AJLBM		Electroless Nickel Plating



Part Number Type	No.	H Selectable	H Configurable 1mm Increment	d	H1	T	W	P	L	B	T1	d2	d1	ℓ	€ Unit Price AJLC	AJLCM	AJLB	AJLBM
(H Selectable) AJLC AJLCM	3	15 20	16~40	2.5	5	7	26	16	16	11	7	3.5	6	3.5				
	4	15 20		3.5														
	5	20 25	21~40	4.5	6	9	32	20	23	16	9	4.5	8	4.5				
	6	20 25 30		5.5														
(H Configurable) AJLB AJLBM	8	20 25 30		7.5	8	12	38	26	28	20	10	5.5	9.5	5.5				
	10	30 35	31~80	9.5	10	16	50	32	38	27	15	9	14.0	9				
	12	30 35		11.5	11	19	65	40	41	30								
	16	30 35		15.5														

Order Example: Part Number AJLC10 - H 30 | Days to Ship: 8 Days | Express A 5,00 EUR/ piece | P. 88

※Express A is not available for electroless nickel plated products.
※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (※Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

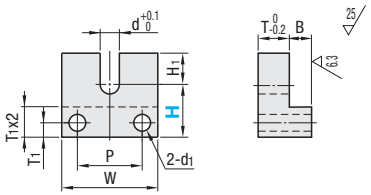
※For orders larger than indicated quantity, please request a quotation.

■Blocks for Adjusting Bolts L-Shaped Side MountingType



RoHS

Type	M Material	S Surface Treatment
AJSLC	1.0038/S235JR	Black Oxide
AJSLCM		Electroless Nickel Plating
AJSLCS	1.4301/X5CrNi18-10	-



Part Number Type	No.	H Selection	d	H1	T	W	P	d1	T1	B	€ Unit Price AJSLC	AJSLCM	AJSLCS
AJSLC AJSLCM AJSLCS	3	15 20	2.5	5	7	26	16	4	4	5			
	4	15 20	3.5										
	5	15 20 25	4.5	6	9	32	20	6	5	6			
	6	15 20 25 30	5.5										
	8	20 25 30 40	7.5	8	12	38	26	7	6	8			
	10	25 30 40	9.5	10	16	50	32	9.5	7	9			
	12	25 30 40	11.5	11	19	65	40	11.5	8	10			
	16	25 30 40	15.5										

Order Example: Part Number AJSLC8 - H 40 | Days to Ship: 8 Days | Express A 5,00 EUR/ piece | P. 88

※Express A is not available for electroless nickel plated products.
※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (※Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

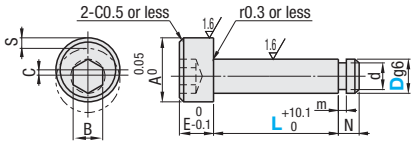
■Adjusting Pins



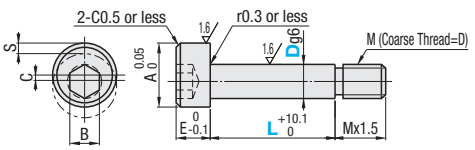
RoHS

Type	M Material	A Accessory
AJP	1.4301/ X5CrNi18-10	Retaining Ring E-Type (1.4301/X5CrNi18-10)
AJPB		-

AJP(Retaining Ring Type)



AJPB(Lock Nut Type)



Part Number Type		D g6	L 1mm Increment	A	B	E	C	S	m Tolerance		N	d	Tolerance	€ Unit Price AJP	AJPB
AJP	3	-0.002 -0.008	5 (10)~20	5.5	2.5	3.5	0.5	1	0.5	+0.05 0	2	2	+0.06 0		
	4		5 (10)~25	7	3	4.5	0.7	1.4	0.7	+0.1 0		3			
AJPB (L≥10)	5	-0.004 -0.012	10~30	8.5	4	5.5	1	2				4	+0.075 0		
	6		10~35	10	5	6.5	1.3	2.6				5			
	8	-0.005 -0.014	10~40	13	6	8.5	1.6	3.2	0.9	+0.14 0	3	7	+0.09 0		

※For AJPB, L≥10. ※S dimension is the maximum length of adjusting pins at 360° rotation by hexagon wrench.

Order Example: Part Number AJP3 - L 6 | 8 Days | Express A 3,00 EUR/ piece | P. 88

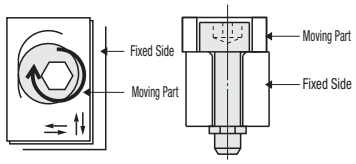
※A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (※Round down to one Cent.) P. 87

Quantity	1~29	30~39	40~49	50~99
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.



By machining oval shape on the moving part, fine adjustment of positioning is made possible by turning the adjusting.
Adjusting pins have no function of fixing.
AJP (Retaining Ring Type) cannot fix the pin, but AJPB (Bolt Type) can fix it by using double nuts.

Screw Jacks / Leveling Screws

-Standard Type · Large Holes for Adjustment with Wrench Flats-

CAD Data

■**Features:** Possible to finely adjust heights without machining a tapped hole on a plate.

■Screw Jacks

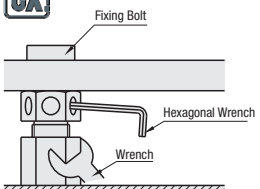
RoHS

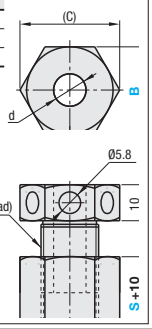


(Alterations NR)

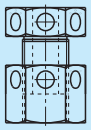
Type	Material	Surface Treatment
SJKB	1.1191/C45E	Black Oxide
SJKN		Electroless Nickel Plating
SJKS	1.4301/X5CrNi18-10	-

Example





Part Number - S - (NR)
SJKS24 - 10 - NR

Alteration	Wrench Hole Machining on Nut Side
Code	NR
Spec.	 Adds 6 wrench holes on the nut side.
Price Adder	3,00

Part Number Type	B	S Selection (Stroke)	M (Fine)	MxPitch (Fine)	d	L S=10	L S=20	L S=30	(C)	Applicable Bolts	Allowable Load (N) 1.1191/C45E	Allowable Load (N) 1.4301/X5CrNi18-10	€ Unit Price SJKB	€ Unit Price SJKN	€ Unit Price SJKS
SJKB SJKN SJKS	17	10 20 30	10	10x1.0	5.5	30~40	40~60	50~80	19.6	M5	332	198			
	19		12	12x1.0	7				21.9	M6	406	242			
	24		16	16x1.5	9				27.7	M8	535	320			
	27		20	20x1.5	11				31.2	M10	683	408			

The allowable loads are theoretical reference values and not guaranteed values.

Order Example: Part Number SJKB17 - S 20

Days to Ship: 8 Days — Express A 3,00 EUR/piece — P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■**Volume Discount** (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

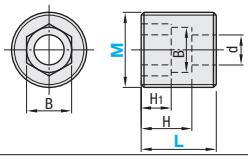
For orders larger than indicated quantity, please request a quotation.

■Leveling Screws Standard Type

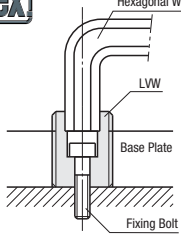
RoHS



Type L Selectable	Type L Dimension Configurable Type	M Material	S Surface Treatment
LVW	LVFW	1.1191/C45E	Black Oxide
LVWM	LVFWM		Electroless Nickel Plating
LVWS	LVFWS	1.4301/X5CrNi18-10	-



Example



How to Use

- Leveling screws are used to adjust parallelism of a base plate. (The base plate must be tapped to used these screws.)
- LVW Leveling Screw: Loosen the mounting screw first, once loose the LVW can be turned to provide fine adjustments to the base plate.

Part Number Type	M (Fine)	L Selectable	L Configurable 1mm Increment	B	Mx Pitch (Fine)	d	H1	H	Applicable Bolts	€ Unit Price L Selectable LVW L=10~30	LVW L=35 / 40	LVWM L=10~30	LVWM L=35 / 40	LVWS L=10~30	LVWS L=35 / 40	L Dimension Configurable Type LVFW	LVFWM	LVFWS
(L Selectable) LVW LVWM LVWS	(L Configurable) LVFW LVFWM LVFWS	12	10 15 20	10~30	6	12x1.0	3.5	4	8.5	M3								
		16	15 20 30	15~40	8	16x1.5	4.5	5	12	M4								
		20	15 20 25 35 40	15~40	10	20x1.5	5.5	6	13	M5								
		24	20 25 30 40	20~50	14	24x1.5	6.5	8	17	M6								
		30	25 30 40	25~60	17	30x1.5	9	10	22	M8								

Order Example: Part Number LVFW12 - L 20

Days to Ship:
- Dimension Selectable Type: 6 Days — 2 Days — P.87
- Dimension Configurable Type: 8 Days — Express A 3,00 EUR/piece — P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■**Volume Discount** (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

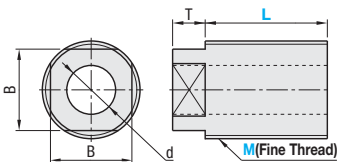
For orders larger than indicated quantity, please request a quotation.

■Leveling Screws Large Holes for Adjustment with Wrench Flats

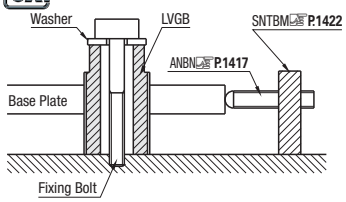
RoHS



Type	Main Body Material	Main Body Surface Treatment	Accessory (Washer) Material	Accessory (Washer) Surface Treatment
LVGB	1.1191/C45E	Black Oxide	1.0330/DC01	Trivalent Chromate
LVGM		Electroless Nickel Plating		
LVGS	1.4301/X5CrNi18-10	-	1.4301/X5CrNi18-10	-



Example



-As the inner diameter is larger than the mounting screws, the horizontal movement of the plate is allowable.
-As the T dimension part is served for wrench tightening, the clearance can be prevented when tightening the mounting screws.

Part Number Type	M (Fine)	L Selection	B	MxPitch (Fine)	d	T	Applicable Bolts	Accessory LVGB · LVGM D	LVGB · LVGM d1	LVGB · LVGM t	Accessory LVGS D	LVGS d1	LVGS t	€ Unit Price LVGB L=10~30	LVGB L=35 / 40	LVGM L=10~30	LVGM L=35 / 40	LVGS L=10~30	LVGS L=35 / 40
	12	10 15 20	10	12x1.0	6	6	M4	10	4.5	1.6	10	4.5	1.5						
LVGB	16	15 20 25 30	12	16x1.5	8	8	M5	16	5.5	2	12	5.5	2						
LVGM	20	15 20 25 30 35 40	17	20x1.5	9	10	M6	16	6.5	3.2	13	6.5	3						
LVGS	24	20 25 30 35 40	19	24x1.5	9	10	M6	16	6.5	3.2	13	6.5	3						
	30	25 30 35 40	22	30x1.5	12	12	M8	20	8.5	3	22	8.5	3						

Order Example: Part Number LVGB20 - L 40

Days to Ship: 8 Days — Express A 3,00 EUR/piece — P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■**Volume Discount** (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Leveling Bolts / Lock Nuts

-Standard Type · Wrench Flats Thick Type-

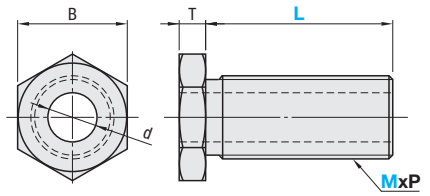
CAD Data

■Leveling Bolts Standard Type

RoHS

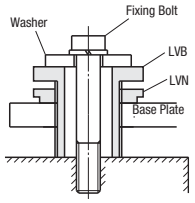


Type		M Material	S Surface Treatment
L Selectable	L Dimension Configurable Type		
LVB	LVFB	1.1191/C45E	Black Oxide
LVBM	LVFBM		Electroless Nickel Plating
LVBS	LVFBS	1.4301/X5CrNi18-10	-



Example **How to Use**

- LVB Leveling Screw: Loosen mounting screw first, LVB can then be turned to provide the adjustments to the base plate. Lock nuts (LVN) are used to prevent rotation. *When the position of the base plate is decided, tighten the mounting screw again.



Part Number Type	M (Fine)	L Selectable	L Configurable 1mm Increment	d	MxPitch (Fine)	T	B	Applicable Bolts	€ Unit Price L Selectable LVB L=5~50	LVB L=60~100	LVBM L=5~50	LVBM L=60~100	LVBS L=5~50	LVBS L=60~100	L Dimension Configurable Type LVFB	LVFBM	LVFBS
(L Selectable) LVB LVBM LVBS	(L Configurable) LVFB LVFBM LVFBS																
	8	5 10 15 20 25 30	5~50	3.5	8x0.75	4	13	M3									
	10	10 15 20 25 30 40 50	10~60	5.5	10x1.0	4	17	M4 / 5									
	12	10 15 20 25 30 40 50	10~60	7	12x1.0	5	19	M6									
	16	15 20 25 30 40 50 60 80	15~80	9	16x1.5		22	M8									
	20	20 25 30 40 50 60 80	15~100	13	20x1.5		27	M10 / 12									
	24	25 30 40 50 60 80	20~100	17	24x1.5	8	32	M16									
	30	30 40 50 80 100	25~120	23	30x1.5		36	M20									

Order Example: Part Number - L
LVB12 - 15
LVFB20 - 60

Days to Ship
● Dimension Selectable Type: 6 Days / 2 Days P.87
● Dimension Configurable Type: 8 Days — Express A 3,00 EUR/piece P.88
A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

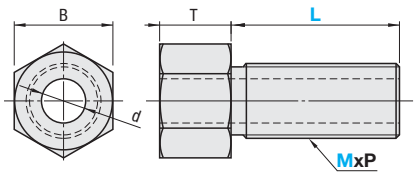
For orders larger than indicated quantity, please request a quotation.

■Leveling Bolts Wrench Flats Thick Type

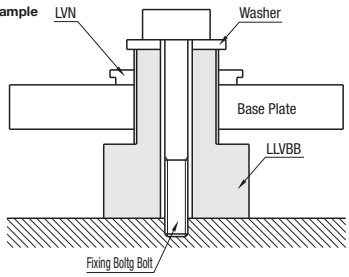
RoHS



Type	M Material	S Surface Treatment
LLVBB	1.1191/C45E	Black Oxide
LLVBM		Electroless Nickel Plating
LLVBS	1.4301/X5CrNi18-10	-



Example



■Features: A wrench can be readily used for tightening the screw for the thick T dimensioned parts.

Part Number Type	M (Fine Thread)	L 1mm Increment	d	MxPitch (Fine)	T	B	Applicable Bolts	€ Unit Price LLVBB	LLVBM	LLVBS
LLVBB LLVBM LLVBS	8	5~35	3.5	8x0.75	13	13	M3			
	10	10~55	5.5	10x1.0	16	17	M4 / 5			
	12	10~60	7	12x1.0	18	19	M6			
	16	15~70	9	16x1.5	20	22	M8			
	20	15~80	13	20x1.5	24	27	M10 / 12			
	24	20~80	17	24x1.5	28	32	M16			
	30	25~80	23	30x1.5	30	36	M20			

Order Example: Part Number - L
LLVBM24 - 30

Days to Ship: 8 Days — Express A 3,00 EUR/piece P.88
A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

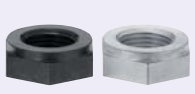
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49
Rate	€ Unit Price	5%	10%

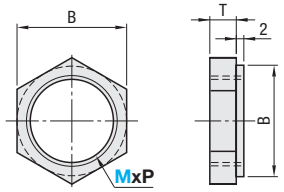
For orders larger than indicated quantity, please request a quotation.

■Lock Nuts

RoHS



Type	M Material	S Surface Treatment
LVN	1.1191/C45E	Black Oxide
LVNM		Electroless Nickel Plating
LVNS	1.4301/X5CrNi18-10	-



Part Number Type	M (Fine)	T	B	€ Unit Price LVN	LVNM	LVNS
LVN LVNM LVNS	8	4	13			
	10		17			
	12	5	19			
	16		22			
	20		27			
	24	8	32			
	30		36			

Order Example: Part Number
LVN20

Days to Ship
6 Days
2 Days
P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

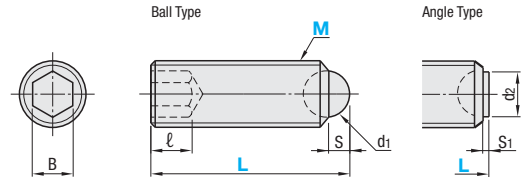
Clamping Screws
-Ball · Angle-

Price Reduction

CAD Data



Type		Main Body			Ball	
Ball Type	Angle Type	M Material	H Hardness	S Surface Treatment	M Material	H Hardness
RSM	FSM	1.7220/34CrMo4	38~43HRC	Black Oxide	1.3505/100Cr6	55~60HRC
RSU	FSU	1.4567/ X3CrNiCu18-9-4	-	-	1.4125/X105CrMo17	55HRC~
RSUC	-				Alumina	1100HV



Screws grade is judged whether or not it can be used with commercially available nut which is JIS6g .

■Ball Type

Part Number Type	M	L	d1	B	ℓ	S	Withstand Load (kN)	Mass (g)	€ Unit Price RSM	€ Unit Price RSU
RSM RSU	3	5.2 10.2	1.5	1.5	1.2	0.5	0.5	0.2~0.4		
	4	6.5 10.5 16.5	2.5	2	2	0.8	1.3	0.4~1		
	5	8.6 12.6 20.6	3	2.5		1	1.4	0.8~2.3		
	6	10.8 16.8 20.8 25.8	4	3	3.5	1.3	3.3	1.5~4		
	8	*11.2 13.2 21.2 26.2 31.2	5.6	4	5(2.5)	1.8	3.9	2.5~9		
	10	*13.7 17.7 21.7 26.7 36.7	7.1	5	6 (3.5)	2.3	3.4	5~16		
	12	*18 22 32 42	8.7	6	8 (3)	2.8	4.8	10~28		
	16	*23.3 38.3 53.3	11.9	8	10 (3)	4.3	8.9	22~48		

ℓ dimension for * marked L dimension is in ( ).

Part Number Type	M	L	d1	B	ℓ	S	Withstand Load (kN)	Mass (g)	€ Unit Price
RSUC	4	6.5 10.5 16.5	2.5	2	2	0.8	1.3	0.4~1	
	5	8.6 12.6 20.6	3	2.5		1	1.4	0.8~2.3	
	6	10.8 16.8 25.8	4	3	3.5	1.3	3.3	1.5~4	
	8	13.2 21.2 31.2	5.5	4	5	1.8	3.9	2.5~9	
	10	17.7 26.7	7	5	6	2.3	3.4	5~16	
	12	22 42	8.5	6	8	2.8	4.8	10~28	

■Angle Type

Part Number Type	M	L	d2	B	ℓ	S1	Withstand Load (kN)	Mass (g)	€ Unit Price FSM	€ Unit Price FSU
FSM FSU	4	6 10 16	2	2	2	0.3	1.3	0.4~1		
	5	8 12 20	2.5	2.5		0.4	1.4	0.8~2.3		
	6	10 16 20 25	3.2	3	3.5	0.6	3.3	1.5~4		
	8	*10 12 20 25 30	4.5	4	5(2.5)	0.8	3.9	2.5~9		
	10	*12 16 20 25 35	6	5	6 (3.5)	0.8	3.4	5~16		
	12	*16 20 30 40	7.2	6	8 (3)	1	4.8	10~28		
FSM	16	*20 25 35 50	10.7	8	10 (3)	1.3	8.9	22~48		

ℓ dimension for * marked L dimension is in ( ).

kgf=Nx0.101972

Order Example

Part Number	-	L
RSM4	-	10.5

Days to Ship: 2 Days

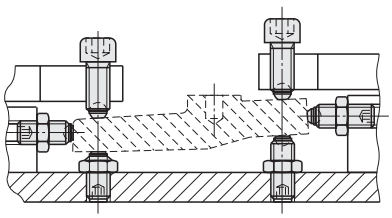
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~39	40~99
Rate	€ Unit Price	10%	20%	30%

For orders larger than indicated quantity, please request a quotation.

Example



■Notes on Clamping Screws

This product is used not to rotate face balls but to clamp works.
(The face balls do not necessarily rotate depending on each caulking conditions of face balls.)
For Angle Type, a sphere of its hemisphere appears on the face, instead of a flat plane by its rotation. In such a case, return its position using adhesive tape and magnet. Otherwise use Non-reverse Type to avoid rotations.

Clamping Screws · High Locked Screws

-Non-Reverse · Serrations-

Price Reduction

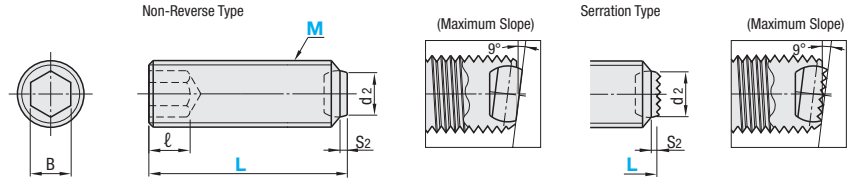
CAD Data

■Clamping Screws

RoHS



Type		Main Body		Ball	
Non-Reverse Type	Serration Type	MMaterial	SSurface Treatment	MMaterial	HHardness
FSMB	FSMG	1.7220/34CrMo4	Black Oxide	1.3505/100Cr6	55~60HRC
FSUB	FSUG	1.4567/X3CrNiCu18-9-4	-	1.4125/X105CrMo17	55~60HRC



Screws grade is judged whether or not it can be used with commercially available nut which is JIS6g .

Part Number Type	M	L	d2	B	ℓ	S2	Withstand Load (kN)	Mass (g)	€ Unit Price FSMB	FSUB	FSMG	FSUG
FSMB FSUB FSMG FSUG	6	10 16 20 25	3.2	3	3.5	0.45	3.3	1.5~4				
	8	*10 12 20 25 30	4.5	4	5(2.5)	0.5	3.9	2.5~9				
	10	*12 16 20 25 35	6	5	6 (3.5)	0.6	3.4	5~16				
	12	*16 20 30 40	7.2	6	8 (3)	0.75	4.8	10~28				
	16	*20 25 35 50	10.7	8	10 (3)	1	8.9	22.5~48				

ℓ dimension for * marked L dimension is in ( ).

kgf=Nx0.101972

Order Example: Part Number FSMB6 - L 16

Days to Ship: 2 Days

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	10%	20%	30%

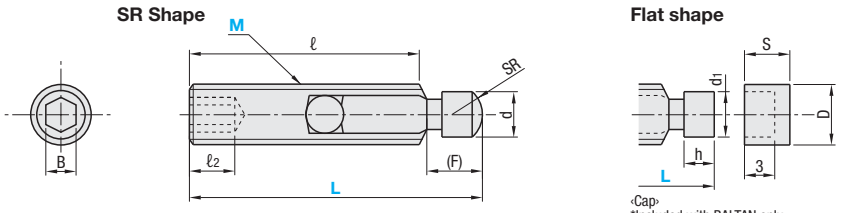
For orders larger than indicated quantity, please request a quotation.

■High-Lock Screws

RoHS



Type	Tip Shape	Main Body MMaterial	Main Body SSurface Treatment	Ball MMaterial	Ball HHardness	Head MMaterial	Head HHardness	AAccessory
BALTAR	SR	1.1191/C45E	Black Oxide	1.4125/ X105CrMo17	58~63HRC	1.4125/ X105CrMo17	55~60HRC	-
SALTAR		1.4301/ X5CrNi18-10	-					
BALTAN	Flat							Polyacetal (White)



‹Cap›
*Included with BALTAN only.

Part Number Type	M	L	B	d	SR	d1	(F)	h	ℓ	ℓ2	Cap (1pc) D	S	€ Unit Price BALTAR	SALTAR	BALTAN
BALTAR SALTAR BALTAN	6	20	3	4	4	-	4	-	12.8	2.5	-	-			
		30				4		3	22.8	3.5	4.7	6			
		50		-	-		-		42.8						
	8	25	4	5.5	5.5	-	5	-	16.5	3.5	-	-			
		40				5.5		4	31.5	5	6.5	8			
		60		-	-		-		51.5						
	10	30	5	7	7	-	6	-	20.4	4.5	-	-			
		50				7		5	40.4	6	8	10			
		70		-	-		-		60.4						

Order Example: Part Number BALTAR6 - L 30

Days to Ship: 6 Days P87

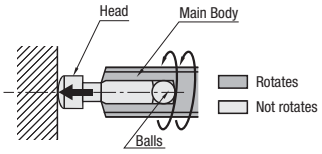
Price

■Volume Discount (Round down to one Cent.) P87

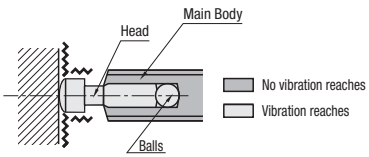
Quantity	1~4	5~9	10~19	20~29
Rate	€ Unit Price	3%	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



■Features: Although the screw rotates, the screw head contacting the work does not rotate, thus the head will not damage the work.



■Features: Screws are less likely to loosen due to intervention of a ball absorbing the work vibration.

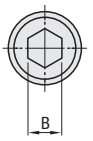
Clamping Screws
-Ball · Angle-

CAD Data

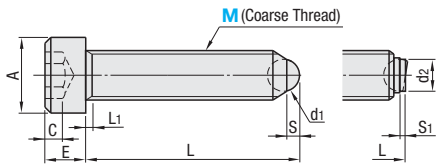


Type		Main Body		Ball	
Ball Type	Angle Type	M Material	S Surface Treatment	M Material	H Hardness
HRSM	HFSM	1.7220/34CrMo4	Black Oxide	1.3505/100Cr6	55~60HRC
HRSU	HFSU	1.4567/ X3CrNiCu18-9-4	-	1.4125/X105CrMo17	55~60HRC
HRSUC	-			Alumina	1100HV

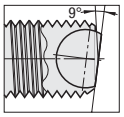
Ball Type



Angle Type



(Maximum Slope)



M	L1	A	E	B	C	d1	d2	S	S1	Withstand Load (kN)
4	2.1	7	4	3	2	2.5	2	0.8	0.3	1.3
5	2.4	8.5	5	4	2.5	3	2.5	1	0.4	1.4
6	3	10	6	5	3	4	3.2	1.3	0.6	3.3
8	3.5	13	8	6	4	5.5	4.5	1.8	0.8	3.9
10	4.5	16	10	8	5	7	6	2.3	0.8	3.4
12	5	18	12	10	6	8.5	7.2	2.8	1	4.8
16	6	24	16	14	8	12	10.7	4.3	1.3	9.6

kgf=Nx0.101972

Screws grade is judged whether or not it can be used with commercially available nut which is JIS6g .

Ball Type / Angle Type (Steel Ball / Stainless Ball)

Part Number Type	M	Nominal	L HRSM HRSU	L HFSM HFSU	€ Unit Price HRSM	HRSU	HFSM	HFSU
(Ball) HRSM HRSU (Angle) HFSM HFSU	4	10	10.5	10				
		12	12.5	12				
		16	16.5	16				
		20	20.5	20				
		25	25.5	25				
	5	12	12.6	12				
		16	16.6	16				
		20	20.6	20				
		25	25.6	25				
		30	30.6	30				
	6	16	16.8	16				
		20	20.8	20				
		25	25.8	25				
		30	30.8	30				
		40	40.8	40				
	8	20	21.2	20				
		30	31.2	30				
		35	36.2	35				
		40	41.2	40				
		50	51.2	50				
	10	25	26.7	25				
		30	31.7	30				
		40	41.7	40				
		50	51.7	50				
		60	61.7	60				
	12	30	32	30				
		50	52	50				
		80	82	80				
	16	40	43.3	40				
		60	63.3	60				
		80	83.3	80				

Ball Type (Alumina Ball)

Part Number Type	M	Nominal	L	€ Unit Price
HRSUC	4	10	10.5	
		16	16.5	
		25	25.5	
	5	20	20.6	
		30	30.6	
	6	16	16.8	
		25	25.8	
		40	40.8	
	8	20	21.2	
		35	36.2	
		50	51.2	
	10	25	26.7	
		40	41.7	

Order Example: Part Number HRSM6-16

Days to Ship: 6 Days P. 87

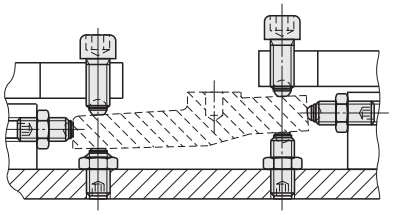
Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~49	50~149
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Example



Notes on Clamping Screws

This product is used not to rotate face balls but to clamp works.
(The face balls do not necessarily rotate depending on each caulking conditions of face balls.)
For Angle Type, a sphere of its hemisphere appears on the face, instead of a flat plane by its rotation. In such a case, return its position using adhesive tape and magnet. Otherwise use Non-reverse Type to avoid rotations.

Clamping Bolts / Hexagon Head Clamping Bolts

-Non-Reverse · Serrations- -Tip · Head Clamp Type-

CAD Data

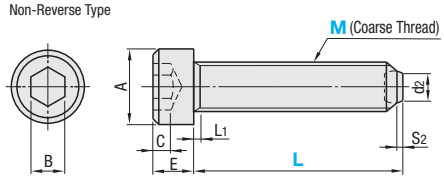
■Clamping Screws Non-Reverse / Serrated Type

RoHS

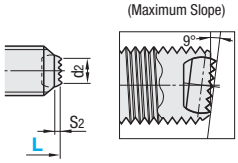


Type		Main Body		Ball	
Non-Reverse	Non-Reverse Serration	M Material	S Surface Treatment	M Material	H Hardness
HFMB	HFMG	1.7220/34CrMo4	Black Oxide	1.3505/100Cr6	55~60HRC
HFUB	-	1.4567/X3CrNiCu18-9-4	-	1.4125/X105CrMo17	55~60HRC

Non-Reverse Type



Non-Reverse Serratd Type



Screws grade is judged whether or not it can be used with commercially available nut which is JIS6g .

Part Number Type	M	L Selection	L1	A	E	B	C	d2	S2	Withstand Load (kN)	€ Unit Price HFMB	HFUB	HFMG
(Non-Reverse) HFMB HFUB (Non-Reverse Serration) HFMG	6	16 20 25 30 40	3	10	6	5	3	3.2	0.45	3.3			
	8	20 30 35 40 50	3.5	13	8	6	4	4.5	0.5	3.9			
	10	25 30 40 50 60	4.5	16	10	8	5	6	0.6	3.4			
	12	30 50 80	5	18	12	10	6	7.2	0.75	4.8			
	16	40 60 80	6	24	16	14	8	10.7	1	9.6			

kgf=Nx0.101972

Order Example: Part Number HFMB10 - L 30

Days to Ship: 6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19	20~49	50~149
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Short L Dimension Type is added for space-savings.

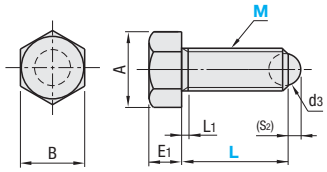
■Hexagon Head Clamping Screws Tip Clamp Type

RoHS

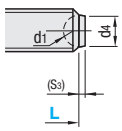


Type		Main Body			Ball	
Ball Type	Angle Type	M Material	H Hardness	S Surface Treatment	M Material	H Hardness
BRASM	BFASM	1.7220/34CrMo4	32~40HRC	Black Oxide	1.3505/100Cr6	62HRC~

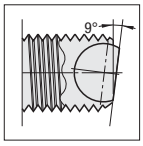
Ball Type



Angle Type



(Maximum Slope)



Part Number Type	M	L Selection	L1	A	B	E1	d1	d3	d4	(S2)	(S3)	€ Unit Price BRASM	BFASM
BRASM BFASM	6	20 30 40	2	11.5	10	4	5.6	4	3.2	1.3	0.6		
	8	20 30 40	2.5	15	13	5.5	8	5.5	4.5	1.8	0.8		
	10	40 50	3	19.6	17	7	9.5	7.1	6	2.3	0.9		
	12	50 60	3.5	21.9	19	8	12.7	8.7	7.2	2.8	1		
	16	50 60	4	27.7	24	10	15.9	11.9	10.7	4.3	1.3		

Order Example: Part Number BFASM6 - L 20

Days to Ship: 6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~29	30~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

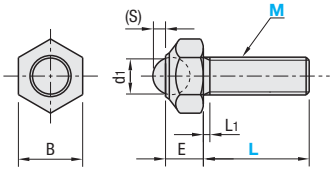
■Hexagon Head Clamping Screws Head Clamp Type

RoHS

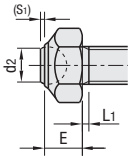


Type		Main Body			Ball	
Ball Type	Angle Type	M Material	H Hardness	S Surface Treatment	M Material	H Hardness
BRSM	BFSM	1.7220/34CrMo4	32~40HRC	Black Oxide	1.3505/100Cr6	62HRC~
BRSMS	-	1.4301/X5CrNi18-10	-	-	1.4125/X105CrMo17	55HRC~

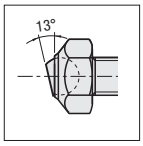
Ball Type



Angle Type



(Maximum Slope)



Part Number Type	M	L Selection	L1	B	E	d1	d2	(S)	(S1)	€ Unit Price BRSM	BRSMS	BFSM
BRSM BRSMS BFSM	6	30 40	2	10	6	5.6	4.5	2	0.8			
	8	30 40	2.5	13	8	8	6.7	2.8	1			
	10	40 50	3	17	10	9.5	7.9	3.2	1.2			
	12	50 60	3.5	19	12	12.7	10.8	4.7	1.8			
	16	50 60	4	24	16	15.9	13.3	5.7	2.1			

Order Example: Part Number BFSM12 - L 50

Days to Ship: 6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~29	30~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Grub Screw Sets

-With Ball Point · With Thrust Point · Stainless Steel Types-

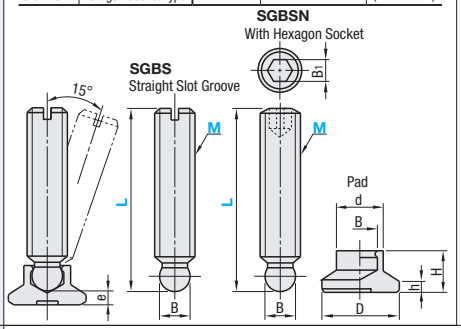
CAD Data

■With Ball Point

RoHS

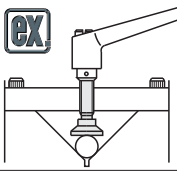


Type		Screw M Material	Screw S Surface Treatment	Pad M Material
SGBS	Straight Slot Groove Type	1.0715 /9SMn28	Black Oxide	Polyacetal (Mat Black)
SGBSN	Hexagon Socket Type			



Part Number Type	M (Coarse)	L	e	D	h	H	d	B	B1	Mass (g)	€ Unit Price
SGBS SGBSN	8	40	2.5	15	2.5	7.6	8.6	6.1	4	12	
		50								15	
		63								19	
	10	50	3.4	18	2.5	9.2	11	7.8	5	22	
		63								29	
		80								37	
	12	63	3.4	21	3	10	13	9.4	6	41	
		80								53	
		100								68	

Screws and pads are not assembled when shipped.



■Features

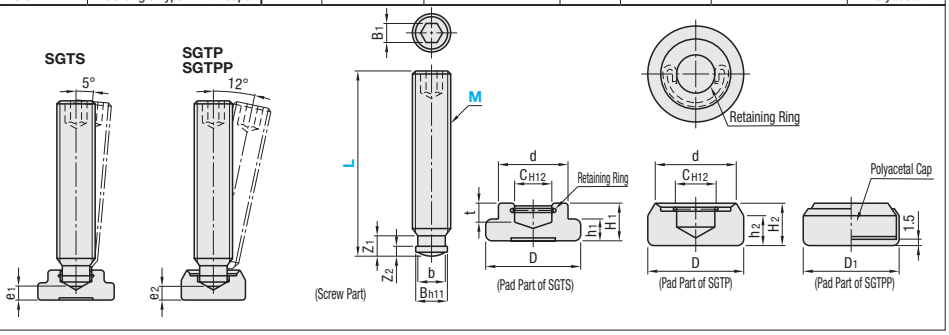
- Useable to tighten or position the work or as a stopper.
- Clamping Screws can be made easily by assembling with a lever or a knob.
- Pad is made of plastic and doesn't hurt work. It is effective when the work surface is uneven or tilted.

■With Thrust Point

RoHS



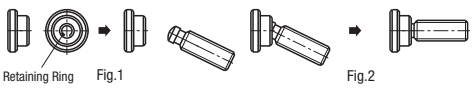
Type		Screw M Material	Screw H Hardness	Screw S Surface Treatment	Pad M Material	Pad H Hardness	Pad S Surface Treatment	Cap M Material
SGTS	Standard Type	1.1191/ C45E	50~60HRC (Hardening on tip)	Black Oxide	1.0715/ 9SMn28	50~60HRC	Black Oxide	-
SGTP	Wide-angle Type							Polyacetal
SGTPP	Wide-angle Type · With Caps							



M (Coarse)	Dimension of Screw B	b	Z1	Z2	B1	Dimension of Pad D	h1	H1	t	d	C	e1	h2	H2	e2	D1
6	4.5	4	5.4	2.5	3	12	2.5	7	4	10	4.6	2.2	-	-	-	-
8	6	5.4	6.8	3	4	16	4	9	5	12	6.1	3	7	8	2.2	19
10	8	7.2	8.2	4.5	5	20	5	11	6	15	8.1	3.6	8.5	10	2.6	23
12			8.6		6	25	6	13	7	18		4.5	8	11	2.9	28
16	12	11	10.6	5	8	32	7	15	7.5	22	12.1	5.3	10	14	4.5	35
20	15.5	14.4	12.4	5.5	10	40	9	16	8	28	15.6	5.6	-	-	-	-

SGTPP is SGTP attached with a polyacetal cap.
Screws and pads are not assembled when shipped.

Example



•How to assemble Grub Screw and Thrust Pad

Insert a tilted grub screw to the open side of the retaining ring set in the thrust pad as shown in Fig.1. Pull the grub screw up to fit it into the pad as shown in Fig.2.
Assembleable by hand.
Do not beat with hammers, etc. Do not assemble forcibly or the retaining ring may be broken.

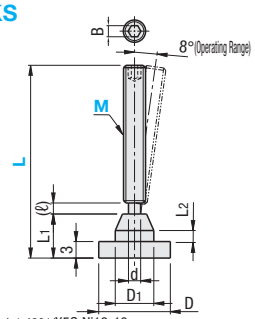
Part Number Type	M (Coarse)	L	Mass (g) SGTS	SGTP	SGTPP	€ Unit Price SGTS	SGTP	SGTPP
SGTS	6	30	9	-	-			
		40	10	-	-			
		50	12	-	-			
SGTS SGTP	8	40	21	25	26			
		50	24	28	29			
		60	26	30	31			
	10	50	42	48	50			
		60	49	55	57			
		80	54	60	62			
	12	60	72	76	79			
		70	88	92	95			
		80	98	102	105			
		100	154	158	161			
SGTPP (Polyacetal With Cap)	16	70	144	160	162			
		80	159	175	177			
		100	259	275	277			
		125	300	316	318			
SGTS	20	90	274	-	-			
		100	305	-	-			
		125	355	-	-			
		150	397	-	-			

■Stainless Steel

RoHS



SGKS



M Material: 1.4301/X5CrNi18-10

Part Number Type	M (Coarse)	L Selection	D	D1	d	L1	L2	(ℓ)	B	€ Unit Price L30	L50	L80
SGKS	4	30	13	7	2.2	8	2	2	2			
	6	30 50		9	3.2				3			
	8	30 50 80	16	11	5.2				4			
	10	50 80	20	13	6.2	9	3		5			

Screw and pad are caulked for Stainless Steel Type. (Screw and pad cannot be separated.)

Order Example

Part Number	-	L
SGBS10	-	50
SGTS8	-	60
SGKS4	-	30

Days to Ship

6 Days P.87 2 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~49	50~149
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Grub Screw Sets / Clamp Plates / Shims for Clamp Plates
-Rubber Pads Type · Flanged Type-

NEW

Price Reduction 12%

CAD Data

Features: The rubber-baked pad prevents the clamped works from being damaged.

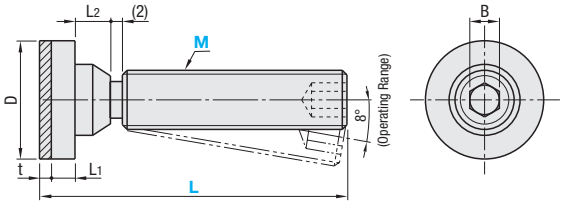
Grub Screw Sets -Rubber Pads Type-



RoHS

Type	Screw			Pad		Pad End Face
	M Material	H Hardness	S Surface Treatment	M Material	S Surface Treatment	M Material
SGKG	1.7220	45HRC~	Black Oxide	1.0038	Black Oxide	NBR

The coatings peeled off at swaging are retouched with repair sprays.



Part Number Type	M (Coarse)	L Selection	D	t	L1	L2	B	€ Unit Price L=30 · 40	L=50 · 60	L=80~
SGKG	4	30	12	2	3	5	2			
	6	30 40 50	12				3			
	8	40 50 60	16				4			
	10	50 80	20	3	4	6	5			
	12	100	24			8	6			
	16	125	30			11	8			

Order Example: Part Number SGKG8 - L 60

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Features: Optional attachments can be mounted using through holes on the pad.

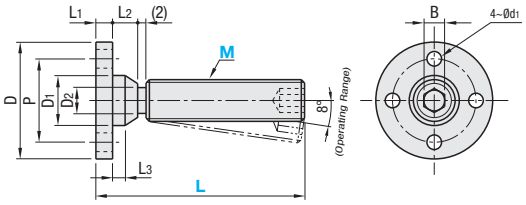
Grub Screw Sets -Flanged Type-



RoHS

Type	Screw			Pad	
	M Material	H Hardness	S Surface Treatment	M Material	S Surface Treatment
SGKA	1.7220	45HRC~	Black Oxide	1.0038	Black Oxide

The coatings peeled off at swaging are retouched with repair sprays.



Part Number Type	M (Coarse)	L Selection	D	P	D1	D2	L1	L2	L3	d1	B	€ Unit Price L=30 / 40	L=50 / 60	L=80~
SGKA	4	30	20	14	7	2.2	3	5	2	3.5	2			
	6	30 40 50	20	14	7	3.2					3			
	8	40 50 60	22	16	9	5.2					4			
	10	50 80	28	20	12	6.2	4	6	3	4.5	5			
	12	100	30	22	14	8.1		8	5		6			
	16	125	37	28	18	11.0		11	7	5.5	8			

Order Example: Part Number SGKA12 - L 100

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

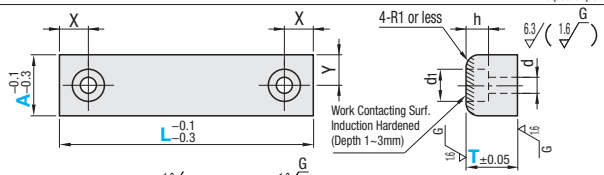
Clamp Plates



RoHS

Type	M Material	H Hardness
PCWN	1.1191/C45E	-
PCW		40~45HRC (Induction Hardening)
PCWJ	Polyacetal	-

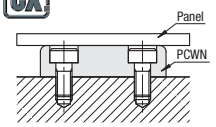
No R1 for PCWJ (Polyacetal).
Induction hardening is applicable to PCW only.



For PCWJ, 1.6 is substituted for 1.6 G part.

Part Number Type	A	T Selection	L Selection	X	Y	d	d1	h	€ Unit Price PCWN	PCW	PCWJ
PCWN PCW PCWJ	12	12 15 20	30 50 75 100	7	6	4.5	8	5			
	15			9	7.5	6.6	11	7			
	16				8						
	19		50 75 100	11	9.5	9	14	9			
	25			13	12.5	11	18	11			
	30				15						
	40				20						
	50				25						

Example

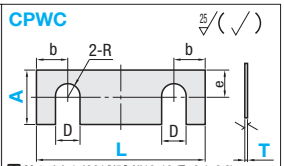


Shims for Clamp Plates



RoHS

CPWC



M Material: 1.4301/X5CrNi18-10 (T=0.1, 0.2)
1.0330/DC01 (T=0.5~4)

Part Number Type	A	T Selection	L Selection	D	b	e	€ Unit Price T0.1	T0.2	T0.5	T1	T2	T4
CPWC	12	0.1 0.2 (1.4301/X5CrNi18-10) 0.5 1 2 4 (1.0330/DC01)	30 50 75 100	5	7	6						
	15			7	9	7.5						
	16					8						
	19		50 75 100	10	11	9.5						
	25			12	13	12.5						
	30					15						
	40					20						
	50					25						

Order Example: Part Number PCWN50 - T 20 - L 100; CPWC50 - 2 - 75

•Clamp Plates

8 Days — Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

•Shims for Clamp Plates

8 Days — Express A 2,00 EUR/ piece P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

•Clamp Plates

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

•Shims for Clamp Plates

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Basic Guide Pins
-Tip Shape Selectable Type · Eccentric Type-

CAD Data

Features: Pin-shaped Basic Guides that can be used to various shapes of work pieces. Tip shapes and mounting parts are selectable.

Tip Shape Selectable

RoHS

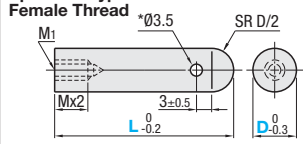


Mounting Part	Type: Sphere	Type: Taper R	Type: Tapered	Material	Surface Treatment
Female Thread	RGP	RGPR	RGPT	1.1191/C45E	Electroless Nickel Plating
	RGPS	RGPRS	RGPTS	1.4301/X5CrNi18-10	-
Male Thread	RGPN	RGPRN	RGPTN	1.1191/C45E	Electroless Nickel Plating
	RGPNS	RGPRNS	RGPTNS	1.4301/X5CrNi18-10	-

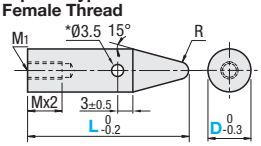
Reference: tan15°≈0.267 tan30°≈0.577 tan45°=1 tan60°≈1.732

*When D=6, Ø2.0
*When D=20,25, Ø5.0

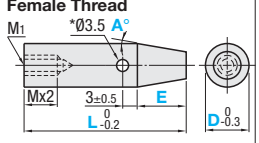
•Spherical Type Female Thread



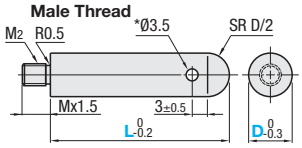
•Taper R Type Female Thread



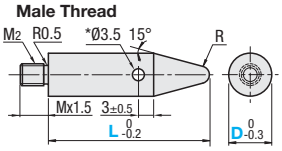
•Taper Type Female Thread



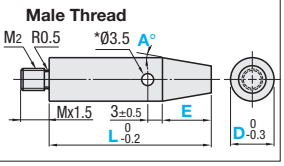
Male Thread



Male Thread



Male Thread



Spherical Type

Part Number Type	D	L 1mm Increment	M1 (Coarse)	M2 (Coarse)
Female Thread RGP RGPS	6	15~100	3	-
	8	20~100	4	
	10	20~100		5
	12	21~100	5	6
Male Thread RGPN RGPNS	15	26~100	6	8
	20	28~100		10
	25	31~100		

Male Thread Type is available only when D≥10.

Taper R Type

Part Number Type	D	L 1mm Increment	M1 (Coarse)	M2 (Coarse)	R
Female Thread RGPR RGPRS	6	20~100	3	-	1
	8	24~100	4		1.5
	10	26~100		5	
	12	32~100	5	6	2
Male Thread RGPRN RGPRNS	15	40~100	6	8	
	20	47~100		10	3
	25	57~100			

L-Mx2≥(Dx1.85)-(Rx2.75)-1
Male Thread Type is available only when D≥10.

Taper Type

Part Number Type	D	L 1mm Increment	E 0.5mm Increment	A 1° Increment	M1 (Coarse)	M2 (Coarse)
Female Thread RGPT RGPTS	6	20~100	For Female Thread 5.0≤E E≤L-M1x3	1~45	3	-
	8				4	
	10					5
	12				5	6
Male Thread RGPTN RGPTNS	15		For Male Thread 5.0≤E E≤L-7		6	8
	20					10
	25					

D-2EtanA≥1.0(Tip diameter Ø1.0 or more)
Male Thread Type is available only when D≥10.

D	€ Unit Price											
	Spherical Type				Taper R Type				Taper Type			
	RGP / RGPN		RGPS / RGPNS		RGPR / RGPRN		RGPRS / RGPRNS		RGPT / RGPTN		RGPTS / RGPTNS	
	L15~59	L60~100	L15~59	L60~100	L20~59	L60~100	L20~59	L60~100	L20~59	L60~100	L20~59	L60~100
6												
8												
10												
12												
15												
20												
25												

Order Example: Part Number - L - E - A
RGP10 - 40
RGPTNS12 - 40 - E10 - A5

Days to Ship: 8 Days
Express A 3,00 EUR/ piece P.88
A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~34	35~39	40~49
Rate	€ Unit Price	5%	10%	18%

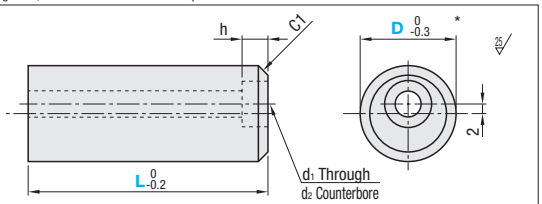
For orders larger than indicated quantity, please request a quotation.

Eccentric

RoHS



Type	Material	Surface Treatment
RGPEZ	1.1191/C45E	Electroless Nickel Plating
RGPEZS	1.4301/ X5CrNi18-10	-
RGPEZMC	MC Nylon	-



*For MC nylon, D dimension tolerance is Volume

Part Number Type	D	L 10mm Increment	d1	d2	h: L30 / 40	h: L50~ 100	h: L110~ 120	h: L130 / 140	Applicable Bolts
RGPEZ RGPEZS RGPEZMC	20	30~70	5.5	9.5	6	20	-		M5
	25	30 ~120	6.6	11	7		25	-	M6
	30	30 ~140	9	14	9			30	M8

€ Unit Price								
L30~60			L70~100			L110~140		
RGPEZ	RGPEZS	RGPEZMC	RGPEZ	RGPEZS	RGPEZMC	RGPEZ	RGPEZS	RGPEZMC

Order Example: Part Number - L
RGPEZ25 - 80

Example

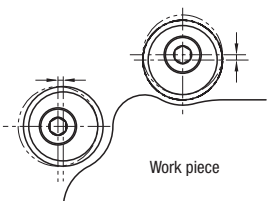
Days to Ship: 8 Days
Express A 3,00 EUR/ piece P.88
A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~34	35~39	40~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.



Eccentricity in the counterbored hole position makes fine adjustments of guiding position possible.
Suitable for guiding works which are not accurate in finished dimensions, such as castings.

Basic Guides
-Standard Type · Narrow Type-

CAD Data

Features: This guide can be used as a tool to guide a work piece into a jig. For the Basic Guides for Welding Jigs, refer to **P.1455**

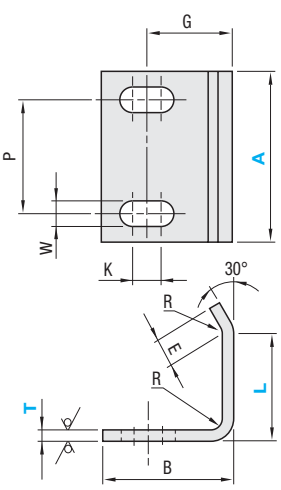
Standard Type

RoHS



Part Number	Material	Surface Treatment
RGH	1.0330/DC01	-
RGHN		Electroless Nickel Plating
RGHS	1.4301/ X5CrNi18-10	-

When plate thickness is 4.5, material is 1.0320/St.22.



Part Number	T 1.0330/DC01	T 1.4301/X5CrNi18-10	A Selection	L 5mm Increment	B	E	P	K	W	G	Rmax	€ Unit Price RGH	€ Unit Price RGHN	€ Unit Price RGHS
RGH RGHN RGHS	1.6	1.5	20 30	15~50	23	6	12	10	3.5	13.8	1.5			
	2.3	2.0	30 40	20~60	26	10	20	10	4.5	16.3	2			
	3.2	3.0	35 40	30~80	32	15	20	10	6.5	21.3	3			
	4.5	4.0	35 40 50	40~100	35	20	20	10	6.5	23.3	4			

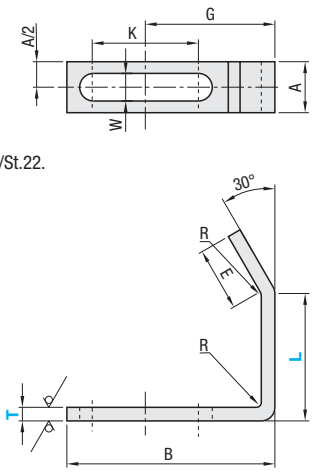
Narrow

RoHS



Part Number	Material	Surface Treatment
RGN	1.0330/DC01	-
RGNN		Electroless Nickel Plating
RGNS	1.4301/ X5CrNi18-10	-

When plate thickness is 4.5, material is 1.0320/St.22.



Part Number	T 1.0330/DC01	T 1.4301/X5CrNi18-10	L 5mm Increment	A	B	E	K	W	G	Rmax	€ Unit Price RGN	€ Unit Price RGNN	€ Unit Price RGNS
RGN RGNN RGNS	2.3	2.0	10~50	10	40	10	24	4.5	23	2			
	3.2	3.0	20~70	12	52	15	30	6.5	31	3			
	4.5	4.0	20~70	12	55	20	30	6.5	34	4			

Order Example

•Standard

Part Number	-	T	-	A	-	L
RGH	-	1.6	-	20	-	15

•Narrow

Part Number	-	T	-	L
RGNS	-	3.0	-	40

Days to Ship: **10 Days**

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

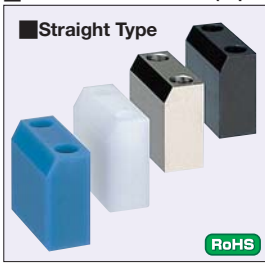
For orders larger than indicated quantity, please request a quotation.

Guides

-Straight · L-Shaped · Height Adjusting · Pedestal · Angle Types-

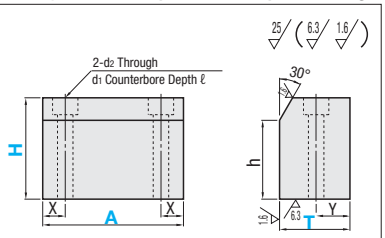
■Features: Each of sizes (in particular, H Dimensions) are downsized for the Compact Type, the newly added lineup. Useful in space-savings.

■Straight Type



RoHS

Part Number: Compact Type	Part Number: Standard Type	Material	Hardness	Surface Treatment
WGHBC	WGHB	1.1191/C45E	-	Black Oxide
WGHMC	WGHM			Electroless Nickel Plating
-	WGHHB		40HRC~	Black Oxide
-	WGHHM			Electroless Nickel Plating
-	WGHA	EN AW-2017/AlCu4MgSi	-	-
WGHSC	WGHS	1.4301/X5CrNi18-10		
WGHJC	WGHJ	Polyacetal		
WGHNC	WGHN	MC Nylon		
-	WGHNE	Conductive MC Nylon R2		
-	WGHPT	PTFE		



Part Number	A Selection	H 1mm Increment	T	h	X	Y	d1	d2	ℓ
(Compact Type) WGHBC WGHSC WGHMC WGHJC WGHNC	17 20	6~10	10	H-3	4.5	4.5	6.5	3.5	3.5
	20 30		12		4.5	4.5	6.5	3.5	3.5
(Standard Type) WGHB WGHS WGHM WGHJ WGHHB WGHN WGHHM WGHNE WGHA WGHPT	20 30 40 50	10~30	12	H-5	5	5	6.5	3.5	3.5
	20 30 40 50		15		5	6	8	4.5	4.5
	30 40 50 60		20		7	9	9.5	5.5	5.5
	30 40 50 60	15~30	25		8	11	11	6.5	6.5
	40 50 60		30		11	14	14	9	9

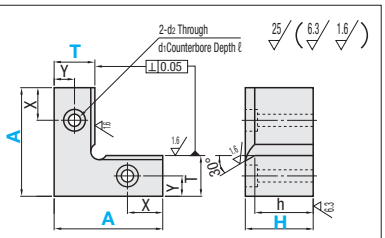
T	€ Unit Price: Compact Type					Standard Type								
	WGHBC	WGHMC	WGHSC	WGHJC	WGHNC	WGHB	WGHM	WGHHB	WGHHM	WGHA	WGHS	WGHJ	WGHN	WGHNE	WGHPT
10															
12															
15															
20															
25															
30															

■L-Shaped Type



RoHS

Part Number: Compact Type	Part Number: Standard Type	Material	Hardness	Surface Treatment
WGLBC	WGLB	1.1191/C45E	-	Black Oxide
WGLMC	WGLM			Electroless Nickel Plating
-	WGLHB		40HRC~	Black Oxide
-	WGLHM			Electroless Nickel Plating
-	WGLA	EN AW-2017/AlCu4MgSi	-	-
WGLSC	WGLS	1.4301/X5CrNi18-10		
WGLJC	WGLJ	Polyacetal		
WGLNC	WGLN	MC Nylon		
-	WGLNE	Conductive MC Nylon R2		
-	WGLPT	PTFE		



Part Number	A Selection	H 1mm Incremnt	T	h	X	Y	d1	d2	ℓ
(Compact Type) WGLBC WGLSC WGLMC WGLJC WGLNC	17 20	6~10	10	H-3	4.5	4.5	6.5	3.5	3.5
	20 30		12		4.5	4.5	6.5	3.5	3.5
(Standard Type) WGLB WGLS WGLM WGLJ WGLHB WGLN WGLHM WGLNE WGLA WGLPT	20 30 40 50	10~30	12	H-5	5	5	6.5	3.5	3.5
	20 30 40 50		15		5	6	8	4.5	4.5
	30 40 50 60		20		7	9	9.5	5.5	5.5
	30 40 50 60	15~30	25		8	11	11	6.5	6.5
	40 50 60		30		11	14	14	9	9

T	€ Unit Price: Compact Type					Standard Type								
	WGLBC	WGLMC	WGLSC	WGLJC	WGLNC	WGLB	WGLM	WGLHB	WGLHM	WGLA	WGLS	WGLJ	WGLN	WGLNE	WGLPT
10															
12															
15															
20															
25															
30															

Part Number - A - H - T
WGHJ - 40 - 10 - 20
WGLMC - 15 - 8 - 10

8 Days | Express A | 3,00 EUR/ piece | P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Price Reduction
Up to 16%

CAD Data

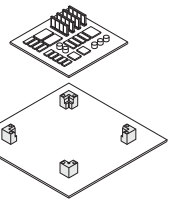
■Height Adjusting Type

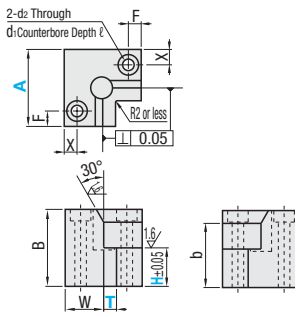
RoHS



Part Number	Material
WGDLJ	Polyacetal
WGDLN	MC Nylon
WGDLNE	Conductive MC Nylon R2

Example





Part Number	A Selection	H 1mm Increment	T 1mm Increment	B	W	F	X	d1	d2	ℓ	b	€ Unit Price WGDLJ	WGDLN	WGDLNE
WGDLJ WGDLN WGDLNE	15	3~5	2~5	10	10	4	4	4.8	2.4	2.4	7			
	20	3~12	3~10	20	10	5	3.5	6.5	3.5	3.5	15			
	30	3~22	3~15	30	15	5	6	8	4.5	4.5	25			
	40	3~32		40	20	7	9	9.5	5.5	5.5	35			
	50	3~42		50							45			

Part Number - A - H - T
WGDLJ - 20 - 10 - 3

8 Days

Express A 5,00 EUR/ piece

P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

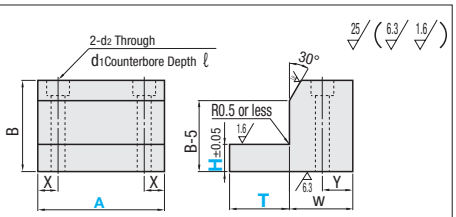
For orders larger than indicated quantity, please request a quotation.

■Pedestal Type

RoHS



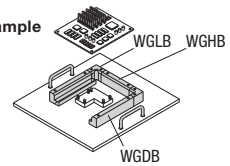
Part Number	Material	Hardness	Surface Treatment
WGDB	1.1191/C45E	-	Black Oxide
WGDM			Electroless Nickel Plating
WGDHB		40HRC~	Black Oxide
WGDHM			Electroless Nickel Plating
WGDS	1.4301/X5CrNi18-10	-	-
WGDJ	Polyacetal		
WGDN	MC Nylon		
WGDNE	Conductive MC Nylon R2		



Part Number	A Selection	H 1mm Increment	T 1mm Increment	B	W	X	Y	d1	d2	ℓ	€ Unit Price WGDB	WGDM	WGDHB	WGDHM	WGDS	WGDJ	WGDN	WGDNE
WGDB WGDS WGDM WGDJ WGDHB WGDN WGDHM WGDNE	20	3~12	2~15	20	15	5	6	8	4.5	4.5								
	30			30														
	40	5~20		40	20	7	9	9.5	5.5	5.5								
	50			50														
	60	10~25		60	25	8	11	11	6.5	6.5								

Order Example: Part Number - A - H - T
WGDM - 30 - 10 - 10

Example



Days to Ship: 8 Days

Express A 3,00 EUR/ piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

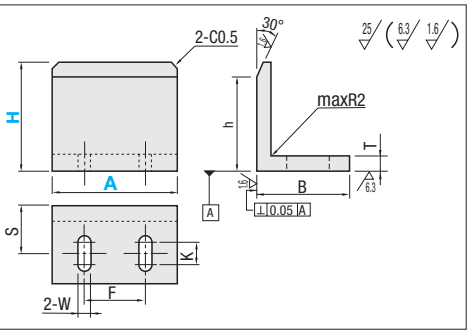
For orders larger than indicated quantity, please request a quotation.

■Angle Type

RoHS



Part Number	Material	Hardness	Surface Treatment
WGNB	1.1191/C45E	-	Black Oxide
WGNM			Electroless Nickel Plating
WGNHB		40HRC~	Black Oxide
WGNHM			Electroless Nickel Plating
WGNA	EN AW-2017/	-	-
WGNS	1.4301/X5CrNi18-10		
WGNJ	Polyacetal		
WGNN	MC Nylon		
WGNNE	Conductive MC Nylon R2		



Part Number Type	A Selection	H 10mm Increment	T	h	B	F	S	W	K	€ Unit Price WGNB	WGNM	WGNHB	WGNHM	WGNA	WGNS	WGNJ	WGNN	WGNNE
WGNB WGNS WGNM WGNJ WGNHB WGNN WGNHM WGNNE WGNA	20	20~60	8	H-5	30	11	19	3.5	8									
	30		10		40	16	25	4.5	10									
	40		10		40	26	25	4.5	10									
	50		12		50	32	31	5.5	15									
	60		12		50	42	31	5.5	15									

Order Example: Part Number - A - H
WGNJ - 20 - 40

Days to Ship: 8 Days

Express A 3,00 EUR/ piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

NEW

Guides

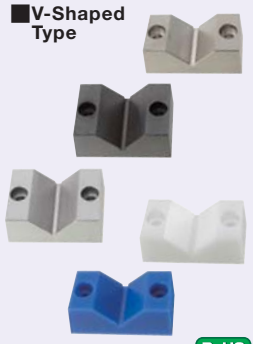
-V-Shaped Type · Plate Type-

Price Reduction 16%

CAD Data

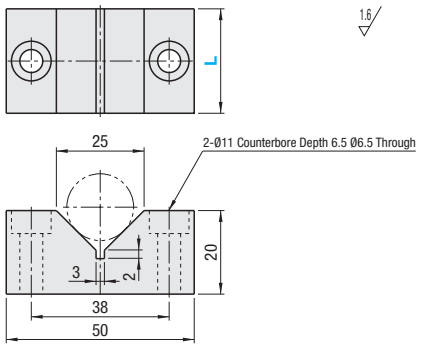
Features: Can be used as a round work piece guide or receiver.

V-Shaped Type



RoHS

Type	Material	Hardness	Surface Treatment
WGVA	1.1191/C45E	-	-
WGVB		-	Black Oxide
WGVM			Electroless Nickel Plating
WGVH		40HRC~	Black Oxide
WGVR			Electroless Nickel Plating
WGVJ	Polyacetal	-	-
WGVN	MC Nylon	-	-



Possible to receive Ø5~Ø30 round poles.

Part Number		€ Unit Price						
Type	L	WGVA	WGVB	WGVM	WGVH	WGVR	WGVJ	WGVN
WGVA WGVB WGVM WGVH WGVR WGVJ WGVN	25							
	35							

Order Example Part Number: WGVA25, WGVJ35

Days to Ship 8 Days — Express A: 3,00 EUR/piece P. 88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example

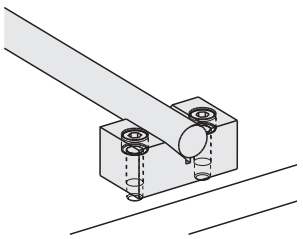
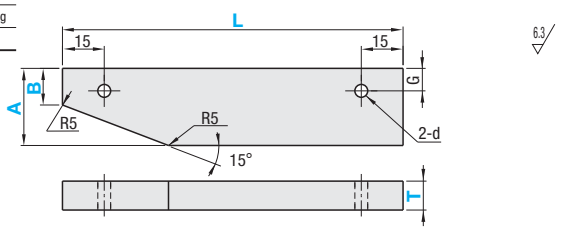


Plate Type

RoHS



Type	Material	Surface Treatment
WGTB	1.1191/C45E	Black Oxide
WGTM		Electroless Nickel Plating
WGTJ	Polyacetal	-



Part Number		B	L	T			€ Unit Price		
Type	A	1mm Increment	10mm Increment	Selection	G	d	WGTB	WGTM	WGTJ
WGTB WGTM WGTJ	16	8~12	50~200	5	6	4.5			
	19								
	22	11~15	60~200	9	8	5.5			
	25								
	32	14~25	80~200	12	10	6.5			

Order Example Part Number: WGTB16 - B8 - L50 - T5

Alterations Part Number: WGTB16 - B8 - L100 - T5 - CC (CC · SHC) — 10 Days

Days to Ship 8 Days — Express A: 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations	Both Sides Cut Type	Partial Hardening
Spec.	Cuts symmetrically. L≥minLx2	Applicable to WGTB / WGTM. (45~50HRC) Depth 0.5~1.5mm
Code	CC	SHC
Price Adder	5,00	5,00

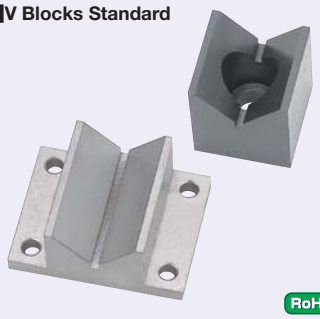
V Blocks

-Standard · Precision Class-

CAD Data

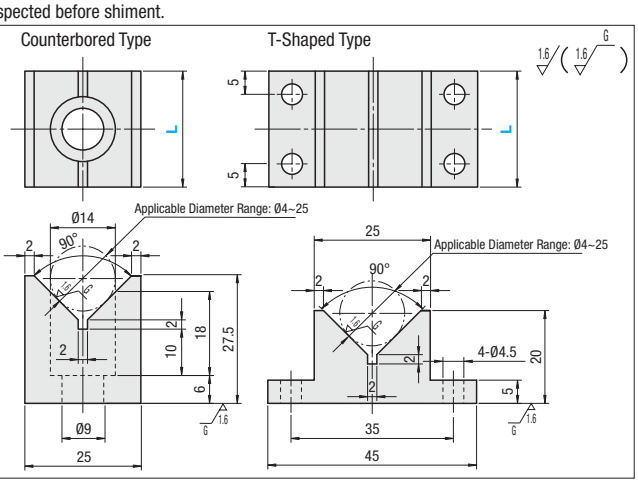
Features: The position of work piece receiver in precision class is inspected before shiment.

V Blocks Standard



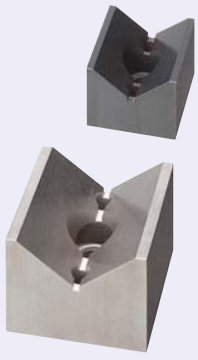
RoHS

Counterbored Type	T-Shaped Type	Material	Hardness	Surface Treatment
VBZ	VBT	1.2510/ 100MnCrW4	55~60HRC	-
VBZB	VBTB			Black Oxide
VBZE	VBTE			Electroless Nickel Plating



Part Number Type	L Selection	€ Unit Price Counterbored Type VBZ	VBZB	VBZE	T-Shaped Type VBT	VBTB	VBTE
(Counterbored Type) VBZ / VBZB / VBZE (T-Shaped Type) VBT / VBTB / VBTE	25						
	35						

V Blocks Precision Class

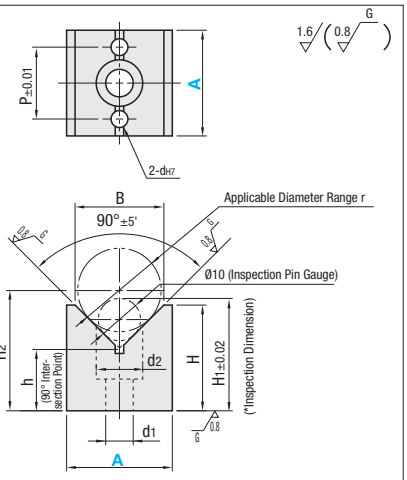


RoHS

Type	Material	Hardness	Surface Treatment
VBZ	1.2510/ 100MnCrW4	HRC58~62	-
VBZB			Black Oxide
VBZM			Electroless Nickel Plating

(Reference: Calculation of Central Height H2)

$H_2=\sqrt{2}\times\frac{r}{2}+h$



(?)* Inspection dimension H1
when VBZ25, 26.57±0.02
when VBZ38, 34.07±0.02
(Inspection pin gauge of Ø10±0.001 is used.)

Part Number Type	A	B	H	h	d1	d2	P	dH7	Applicable Ø Range r	€ Unit Price VBZ	VBZB	VBZM
VBZ / VBZB / VBZM	25	21	25	14.5	6.5	11	17	4	4~25			
	38	32	38	22	9	14	28	5	5~38			

Order Example — Part Number

VBZ 25
VBTE 35
VBZ 25
VBZM 38

Days to Ship — 8 Days

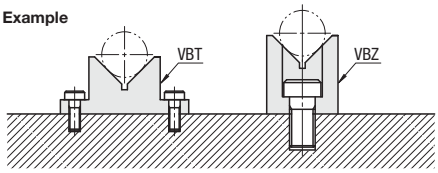
Price

Volume Discount (?)Round down to one Cent. P. 87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

(?)For orders larger than indicated quantity, please request a quotation.

Example

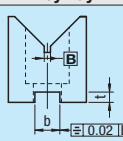
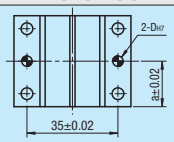


Alterations

Part Number - L - (KC / DC)
VBZ - 25 - KC

10 Days

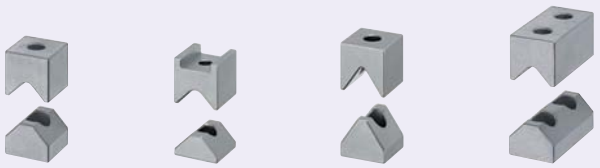
(?)Alteration is available for Standard Type only.

Alterations	Keyway	Dowel Hole
		
Code	KC	DC
Spec.	Machines keyway. Ordering Code KC b=8±0.02 t=3+0.2	Machines dowel hole. Ordering Code DC D=4 a=L/2 ⊗Not applicable to Counterbored Type.
Price Adder	18,00	18,00

V-Shaped Locating Block Sets
-Flat Bottom Type-

CAD Data

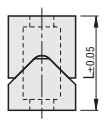
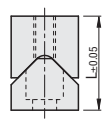
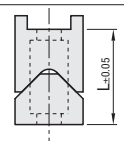
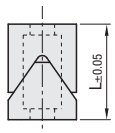
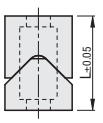
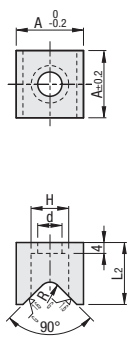
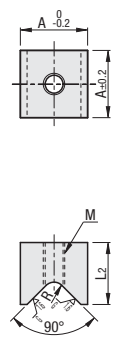
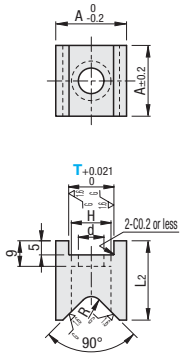
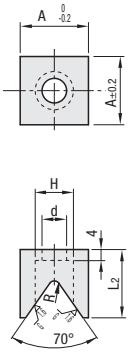
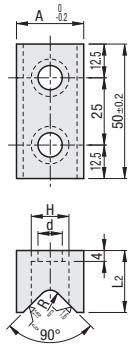
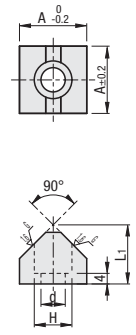
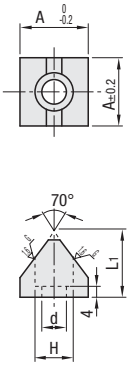
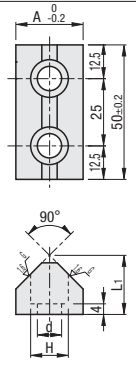
Features: The V Groove 70° Type has wider contacting surface compared to that of the 90° Type, suitable for misalignment prone rotating jigs.



RoHS

M Material: 1.1191/C45E
H Hardness: 42~45HRC

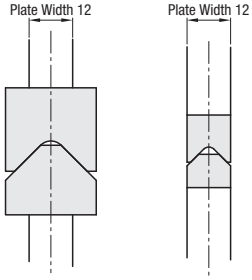
25 / (1.6 / G)

Type	Standard Type CVTA · CVTA12C CVTA16C · CVTAS CVTACS	Female Thread Hole Type CVTAT CVTAST	Upper Plate Holding Type CVTAB CVTABS	V Groove 70° Type CVTAK	Long Type CVTAL
Mounting Dimensions					
Upper Part					
Lower Part					

	Part Number Type	T	L	L1	L2	A	H	d	R	M (Coarse)	€ Unit Price Qty. 1~19 Sets	Volume Discount 20~
Standard Type	CVTA	-	35	22	23	25	14	9	4	-		
	CVTA12C		20	12	13	12	8	4.5	2			
	CVTA16C		25	16	16	16	11	7	4			
	CVTAS		25		19	25						
	CVTACS				17	20			2			
Female Thread Hole Type	CVTAT		35	22	23	25	14	9	4	M8		
	CVTAST		25	16	19		11	7		M6		
Upper Part Plate Holding Type	CVTAB	12	35	22	20	26	20	9.5	5.5	2	-		
		16			22	28	25	14	9	4		
		19										
	CVTABS	12	25	16	14	22	20	9.5	5.5	2		
		16			16	24	25	11	7	4		
		19										
V Groove 70° Type	CVTAK	-	35	25	25	25	14	9	2			
Long Type	CVTAL		35	22	23	25	14	9	4			

Example

CVTA12C is a compact locating block which has the same width to that of the plate.



Order Example

Part Number
CVTA
CVTAB12

Days to Ship 6 Days P. 87

V-Shaped Locating Block Sets
-Plate Holding Type-

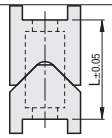
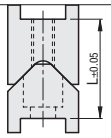
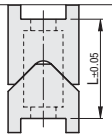
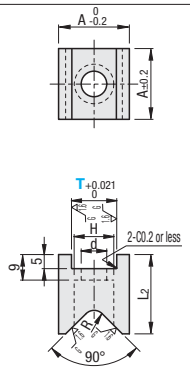
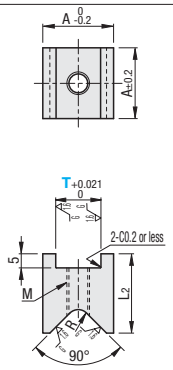
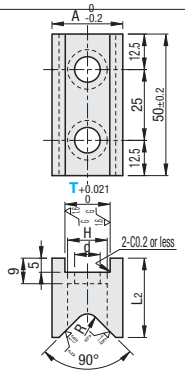
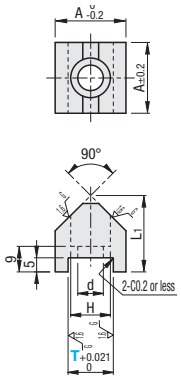
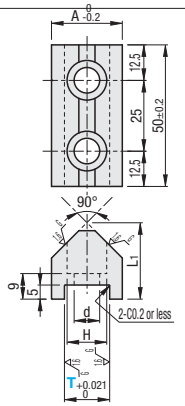
CAD Data

RoHS



M Material: 1.1191/C45E
H Hardness: 42~45HRC

25 / (1.6 / G)

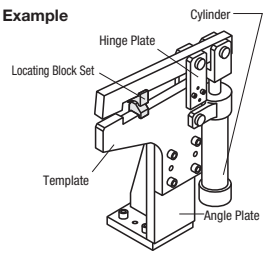
Type	Standard Type **CVTB** **CVTBS**	Female Thread Hole Type **CVTBST**	Long Type **CVTBL**
Mounting Dimensions			
Upper Part			
Lower Part			

	Part No. Type	T	L	L_1	L_2	A	H	d	R	M (Coarse)	€ Unit Price Qty. 1~19 Sets	Volume Discount 20~
Standard Type	CVTB	12	35	25	26	20	9.5	5.5	2	-		
		16		27	28	25	14	9	4			
		19										
	CVTBS	12	25	19	22	20	9.5	5.5	2			
		16		21	24	25	11	7	4			
		19										
Female Thread Hole Type	CVTBST	16	25	21	24	25	11	7	4	M6		
Long Type	CVTBL	12	35	25	26	20	9.5	5.5	2	-		
		16		27	28	25	14	9	4			
		19										

Order Example — Part Number: CVTB16

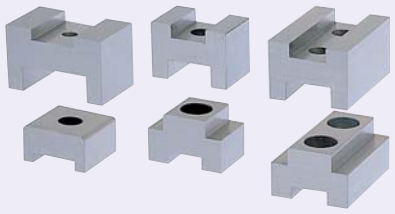
Days to Ship — 6 Days P. 87

Example



U/T-shaped Locating Block Sets

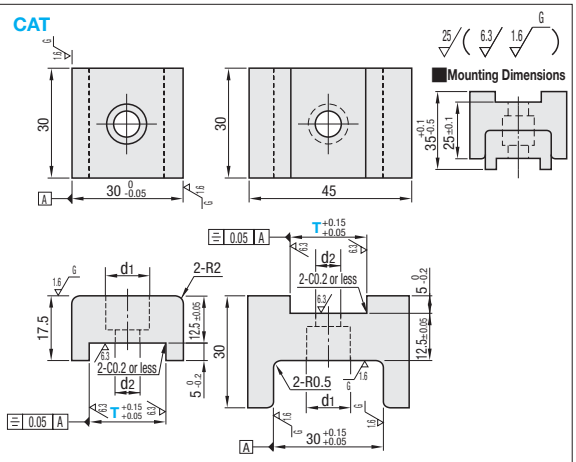
CAD Data



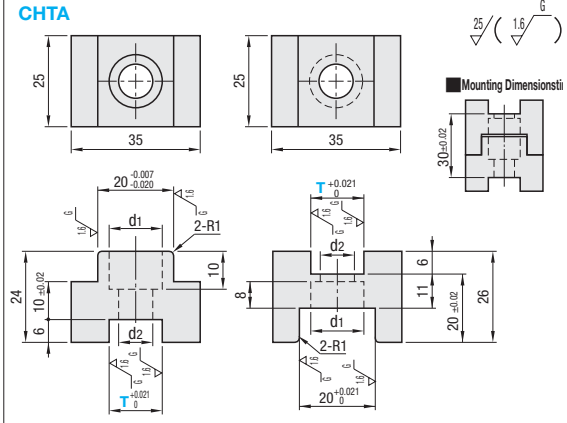
RoHS

M Material: 1.1191/C45E
H Hardness: 42~45HRC

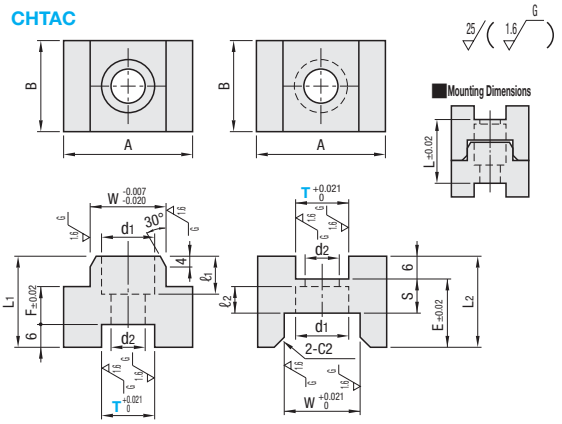
CAT



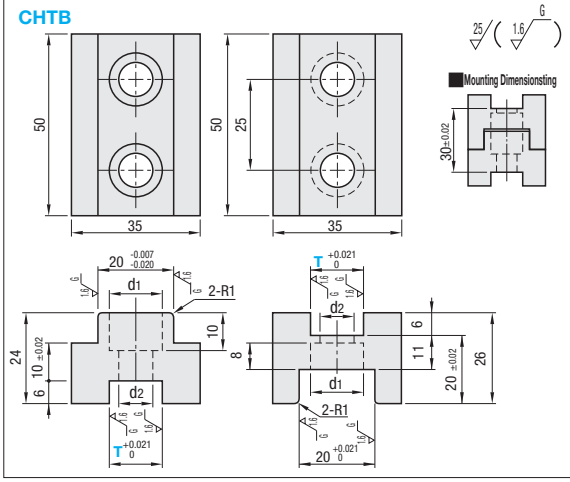
CHTA



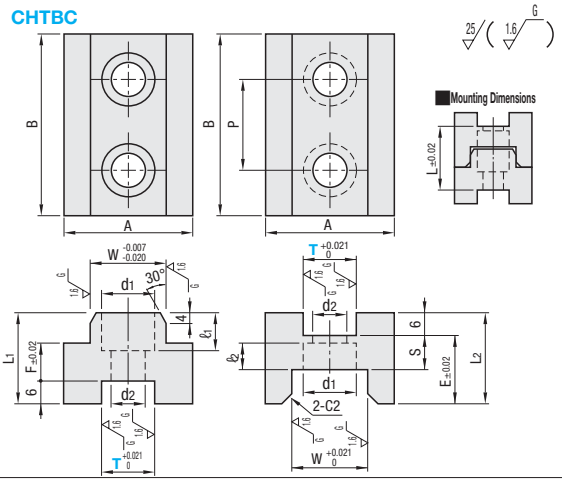
CHTAC



CHTB



CHTBC



Part Number Type	T	d_1	d_2	€ Unit Price Qty. 1~19 Sets	Volume Discount 20~
CAT	14	11	6.5		
	16	11	6.5		
	20	11	6.5		
CHTA	12	9.5	5.5		
	16	14	9		
	19	14	9		
CHTB	12	9.5	5.5		
	16	14	9		
	19	14	9		

Part Number Type	T	d_1	d_2	L	A	B	W	L_1	ℓ_1	F	L_2	ℓ_2	E	S	P	€ Unit Price Qty. 1~19 Sets	Volume Discount 20~
CHTAC	12	9.5	5.5	30	35	25	20	24	10	10	26	8	20	11	-		
	16	14	9														
	16L	9.5	5.5	25	30	20	17	21	6.5	7	24	6	18	9	-		
	19	14	9	30	35	25	20	24	10	10	26	8	20	11	-		
CHTBC	16	14	9	30	35	50	20	24	10	10	26	8	20	11	25		
	16L	9.5	5.5	25	30	40	17	21	6.5	7	24	6	18	9	20		
	19	14	9	30	35	50	20	24	10	10	26	8	20	11	25		

Order Example Part Number CAT20

Days to Ship 6 Days P.87

Tapered Pin Locating Block Sets

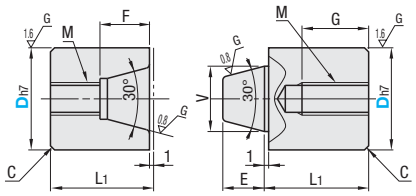
-Standard · Counterbored · Short Types-

CAD Data

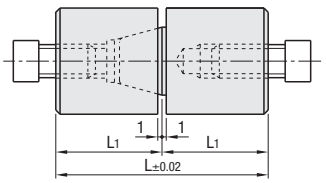
■Standard Type RoHS



TPCAT



■Mounting Dimensions



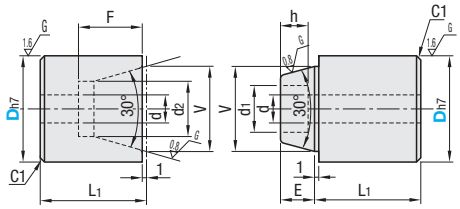
M Material: 58~62HRC
H Hardness: 58~62HRC

Part Number Type	Dh7	L	L1	F	G	V	E	M	C	€ Unit Price
TPCAT	12	32	16	7	8	8	5	M4	0.5	
	12C	24	12		5					
	16	32	16		10	10	6	M5		
	16C	26	13		7					
	20	44	22	11	12	12	8	M6	1	
	20C	36	18		8					
	25	50	25	12	16	16	10	M8		
	25C	42	21		12					
	30	60	30	14	20	20	12	M10		

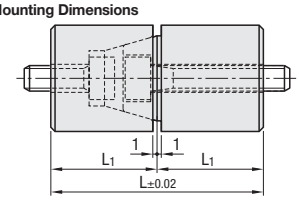
■Counterbored Type RoHS



TPCATZ



■Mounting Dimensions



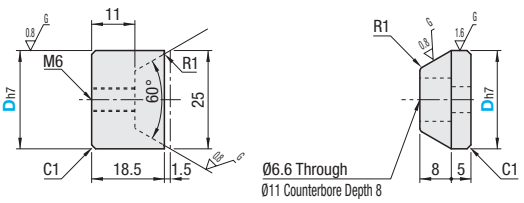
M Material: 58~62HRC
H Hardness: 58~62HRC

Part Number Type	Dh7	L	L1	F	V	E	d1	d	d2	h	Applicable Screw	€ Unit Price
TPCATZ	20	44	22	16	16	8	8	4.5	10	5	M4	
	25	50	25	19	20	9	11	6.6	13.5	7	M6	
	30	60	30	23	25	12	14	9	17	9	M8	

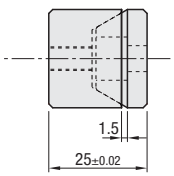
■Short Type RoHS



TPCATS



■Mounting Dimensions



M Material: 58~62HRC
H Hardness: 58~62HRC

Part Number Type	Dh7	Applicable Screw	€ Unit Price
TPCATS	25	M6	

Order Example
Part Number
TPCAT12
TPCATZ25
TPCATS25

Days to Ship: 6 Days P.87

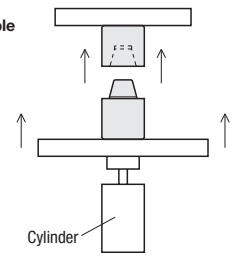
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Basic Guides for Welding Jigs / Guide Plates

-Round Pole · Plate · Ribbed Types-

Features: Can be used as work guides. The point contacting makes suitable for Basic Guides.

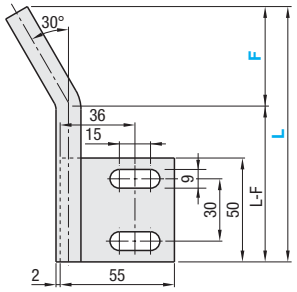
Round Pole Type

RoHS

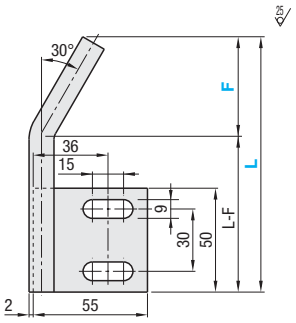


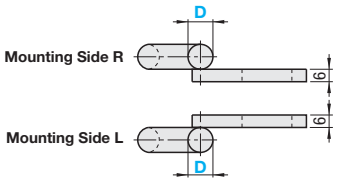
Type		Material	Hardness
GMRS	GMLS	1.0038/S235JR	-
GMRH	GMLH	1.1191/C45E	55HRC

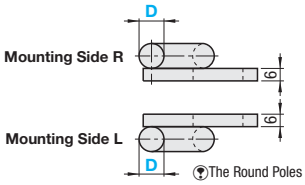
GMRS GMRH



GMLS GMLH







The Round Poles and the Mounting Plates are welded.

Part Number Type	D	Mounting Side Selection	L 5mm Increment	F 5mm Increment	€ Unit Price GMRS	GMLS	GMRH	GMLH
GMRS GMLS GMRH GMLH	9	R	100~300	30~50				
	12							
	16	L						

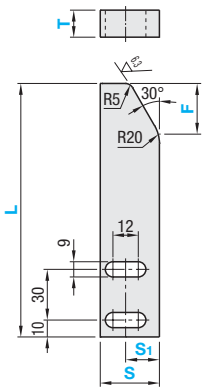
Features: Can be used as work guides. The line contact nature renders well as a wear prevention measure as compared to the Round Type.

Plate Type

RoHS



Type	Material	Hardness
GIRS	1.0038/S235JR	-
GIRH	1.1191/C45E	55HRC





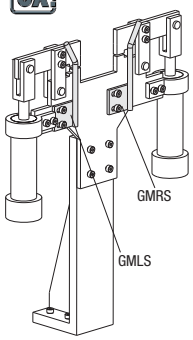
Part Number Type	T	L 5mm Increment	F 5mm Increment	S 5mm Increment	S1 5mm Increment	€ Unit Price GIRS	GIRH
GIRS GIRH	6	100~300	20~60	25~50	13≤S1≤S-13		
	9						
	12						
	16						

Order Example

Part Number Type	D / T	Mounting Side	L	F	S	S1
GMRS	9	R	150	30		
GIRS	12		130	20	25	12.5

Part Number	Mounting Side	L	F	S	S1	(MR / TA)
GMRS9	R	150	30			TA9
GIRS12		130	20	25	12.5	MR

Example



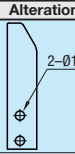
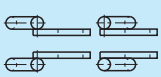
Days to Ship 8 Days

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations	Code	Spec.	Price Adder
	MR	Alters Mounting Holes to Round Holes. Ordering Code MR Applicable to Plate Type only.	0,00
	TA	Alters the Mounting Plate thickness from 6mm to 9mm, or to 12mm. Ordering Code TA9 / TA12 Applicable to Round Pole Type only.	TA9 1,50 TA12 2,00

CAD Data

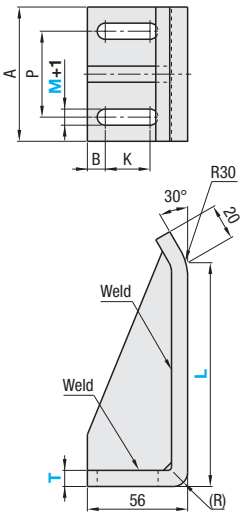
Features: Can be used as work guides. The ribs make for a rugged basic guide.

Ribbed Type

RoHS



RGHK



Material: 1.0038/S235JR

Part Number Type	T	L Selection	M Mounting Bolt Hole Selection	A	P	(r)	B	K	€ Unit Price RGHK L 75	L 100	L 125	L 150	L 200
RGHK	6	75 100 125 150 200	M8	60	33	8	11	28					
			M10				12	26					
	9		M10	75	48	15	11	19					
			M12				12	17					

Order Example

Part Number				
Type	T	-	L	- M
RGHK	6	-	125	- M8

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece P.88

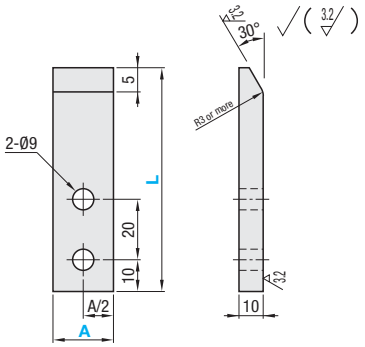
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Guide Plates



RoHS

CPGP

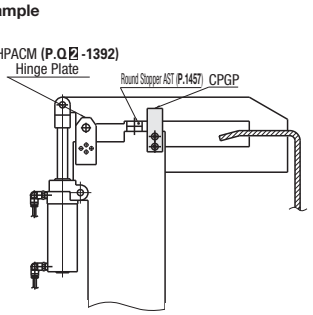


Material: 1.1191/C45E
Hardness: 25~30HRC

Part Number Type	A	L Selection	€ Unit Price
CPGP	20	60 75 90	

Use as pair, left and right hand.
Flatness: 0.2 or lower

Example



Order Example

Part Number	-	L
CPGP20	-	75

Days to Ship: 8 Days

Express A: 3,00 EUR/ piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~39	40~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Round Stoppers / Shims for Round Stoppers Standard Type

-With Counterbored Holes · Female Thread Holes-

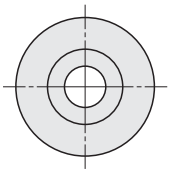
CAD Data

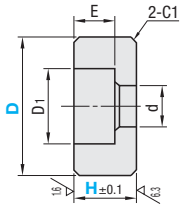
Round Stoppers -Counterbored Type-

RoHS

Standard Type **AST**
Configurable Type **ASTNF**







25 (6.3 1.6)

M Material: 1.1191/C45E
H Hardness: 40~45HRC

Standard Type

Part Number Type	No.	D	H	d	D1	E	Applicable Bolts	€ Unit Price Qty.1~19	Volume Discount 20~99 pcs.
AST	3	12	8	3.4	6.5	3.5	M 3		
	4	16		4.4	8	4.5	M 4		
	5	19	10	5.4	9.5	5.5	M 5		
	6	20		6.6	11	6.5	M 6		
	8	25	15	9	14	8.6	M 8		
	10	28	16	11	17.5	11	M10		
	12	30	18	14	20	13.5	M12		

For orders of 100 or more pieces, please request a quotation.

Configurable Type

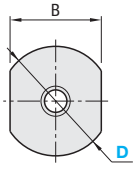
Part Number Type	No.	D 1mm Increment	H 1mm Increment	d	D1	E	Applicable Bolts	€ Unit Price
ASTNF	3	10~15	5~30 (H≥E+1)	3.4	6.5	3.5	M 3	
	4	10~25		4.4	8	4.5	M 4	
	5	12~35		5.4	9.5	5.5	M 5	
	6	15~40		6.6	11	6.5	M 6	
	8	16~50		9	14	8.6	M 8	
	10	22~50		11	17.5	11	M10	
	12	24~50		14	20	13.5	M12	

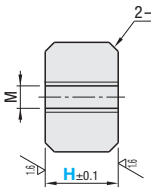
Round Stoppers -Female Thread Hole Type-

RoHS

Standard Type **ASTM**
Configurable Type **ASTMF**







25 (6.3)

M Material: 1.1191/C45E
H Hardness: 40~45HRC

Standard Type

Part Number Type	No.	D	H	M (Coarse)	B	€ Unit Price Qty.1~19	Volume Discount Qty. 20~99
ASTM	3	12	8	M3	10		
	4	16		M4	14		
	5	19	10	M5	17		
	6	20		M6			
	8	25	15	M8	22		
	10	28	16	M10	24		
	12	30	18	M12	27		

For orders of 100 or more pieces, please request a quotation.

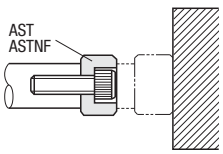
Configurable Type

Part Number Type	No.	D 1mm Increment	H 1mm Increment	M (Coarse)	B	€ Unit Price
ASTMF	3	10~15	5~30 (H≤Mx4)	M3	D-2	
	4	10~25		M4		
	5	12~35		M5		
	6	15~40		M6		
	8	16~50		M8		
	10	22~50		M10		
	12	24~50	6~30	M12		

Order Example

Part Number	-	D	-	H	
AST8					(Counterbored Type / Standard Type)
ASTNF3	-	12	-	10	(Counterbored Type / Configurable Type)
ASTM6					(Female Thread Hole / Standard Type)
ASTMF5	-	12	-	15	(Female Thread Hole / Configurable Type)

Example

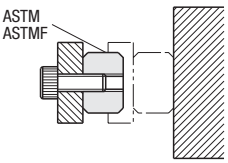


Days to Ship

•Standard Type: **6 Days** P.87

•Configurable Type: **8 Days** | Express A 3,00 EUR/piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.



Price

•Configurable Type

Volume Discount (Round down to one Cent.) P. 87

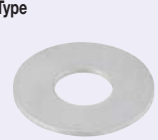
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

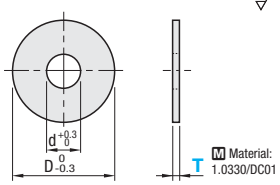
For orders larger than indicated quantity, please request a quotation.

Round Stoppers Shims for Standard Type

RoHS

ASTC





Part Number Type	No.	T Selection	d	D	€ Unit Price Qty.1~19	Volume Discount Qty. 20-49
ASTC	3	0.1 0.2 0.5 1	4	12		
	4		5	16		
	5		6	19		
	6		8	20		
	8		10	25		
	10		12	28		
	12		14	30		

For orders larger than indicated quantity, please request a quotation.

For Configurable Type Shims, refer to P.2-149

Order Example

Part Number	-	T
ASTC3	-	0.1

Days to Ship

6 Days P. 87

Flat Stoppers / Shims for Flat Stoppers Standard Type

CAD Data

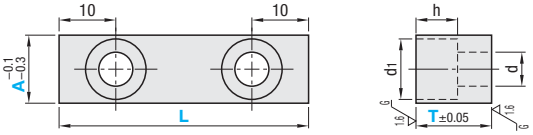
Flat Stoppers –T · L Dimension Selectable/T · L Dimension Configurable–



RoHS

Type		M Material	H Hardness
T · L Dimension Selectable	T · L Dimension Configurable		
FSWN	FSWNF	1.1191/C45E	40~45HRC
FSWJ	FSWJF	Polyacetal	-

For FSWJ and FSWJF, $\sqrt{1.6}$ is substituted for $\sqrt{G}$ part.



T / L Dimensions Selectable Type

Part Number Type	A	T Selection	L Selection	d	d1	h	€ Unit Price FSWN	€ Unit Price FSWJ
FSWN FSWJ	12	12 15 20	50 75 100	4.5	8	5		
	15			5.5	9.5	6		
	16							
	19			6.6	11	7		
	25							

T / L Dimension Configurable Type

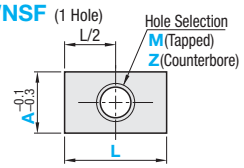
Part Number Type	A	T 1mm Increment	L 5mm Increment	d	d1	h	€ Unit Price FSWNF	€ Unit Price FSWJF
FSWNF FSWJF	12	10~20	35~100	4.5	8	5		
	15			5.5	9.5	6		
	16							
	19			6.6	11	7		
	25							

Flat Stoppers –Hole Selection Type–

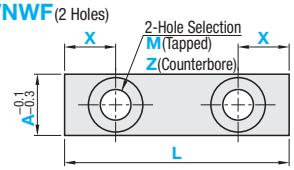
RoHS



FSWNSF (1 Hole)

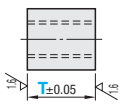


FSWNWF (2 Holes)

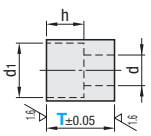


Hole Details

M(Tapped)



Z(Counterbore)



Counterbore Dimensions

	d	d1	h
Z4	4.5	8	5
Z5	5.5	9.5	6
Z6	6.6	11	7

M Material: 1.1191/C45E H Hardness: 40~45HRC

Hole Selection One-Hole Type

Part Number Type	A	T 1mm Increment	L 1mm Increment	Hole Selection M (Female Thread)	Hole Selection Z (Counterbore)	€ Unit Price
FSWNSF	12	10~15	A≤L≤60	M4 · 5 · 6	Z4 · 5	
	15			M4 · 5 · 6	Z4 · 5 · 6	
	16					
	19	10~20		M6	Z6	
	25					

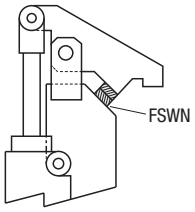
Hole Selection Two-Hole Type

Part Number Type	A	T 1mm Increment	L 1mm Increment	X 1mm Increment	Hole Selection M (Female Thread)	Hole Selection Z (Counterbore)	€ Unit Price
FSWNWF	12	10~15	35~100	10~30	M4 · 5 · 6	Z4 · 5	
	15				M4 · 5 · 6	Z4 · 5 · 6	
	16						
	19	10~20			M6	Z6	
	25						

Order Example

Part Number	-	T	-	L	-	X	-	Hole Selection
FSWN12	-	15	-	75				
FSWNSF16	-	12	-	16			-	Z5
FSWNWF16	-	15	-	40	-	X10	-	M6

Example



Days to Ship

8 Days — Express A 3,00 EUR/ piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

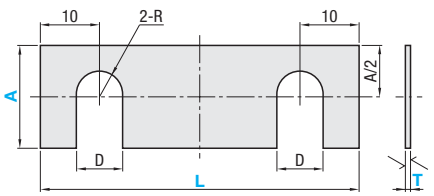
For orders larger than indicated quantity, please request a quotation.

Shim for Flat Stopper Standard Type

RoHS



Type	M Material	S Surface Treatment	T
FSWNC	1.4301/ X5CrNi18-10	-	0.1 0.2 0.3
	1.0330/DC01	Black Oxide	0.5 1



Part Number Type	A	T 1.4301/X5CrNi18-10	T 1.0330/DC01	L Selection	D	€ Unit Price T0.1 · 0.2 · 0.3	€ Unit Price T0.5 · 1
FSWNC	12	0.1 0.2 0.3	0.5 1	30 50 75 100	5		
	15				6		
	16						
	19				7		
	25						

For T · L Configurable Type Shims, refer to P.2-149

Order Example

Part Number	-	T	-	L
FSWNC12	-	0.1	-	75

Days to Ship

8 Days — Express A 2,00 EUR/ piece P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~25	26~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Blocks for Shim Adjustment of Welding Jigs / Shim Sets

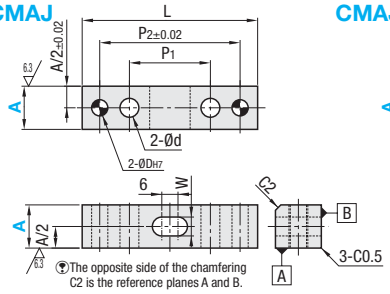
-Straight Type · L-Shaped Type-

CAD Data

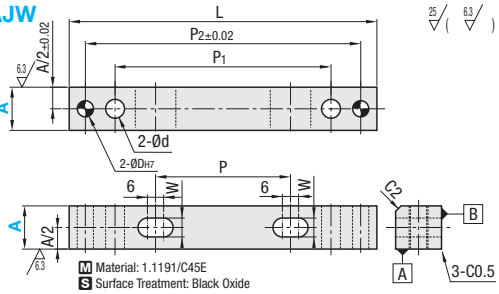
■Straight Type RoHS



CMAJ



CMAJW

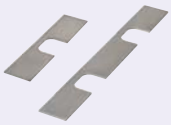


The opposite side of the chamfering C2 is the reference planes A and B.

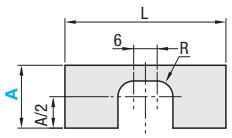
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide

Part Number Type	A	L	D	d	P	P1	P2	W	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~29
CMAJ	16	65	6	7	-	30	52	7		
	20	75	8	9		40	62	9		
CMAJW	16	114	6	7	50	80	102	7		
	20	124	8	9		90	112	9		

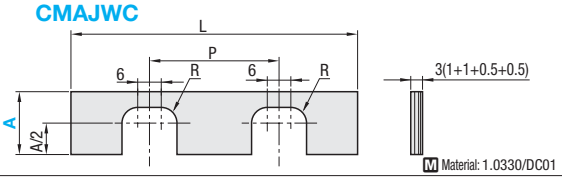
■For Straight Type Shim Sets RoHS



CMAJC



CMAJWC



M Material: 1.0330/DC01

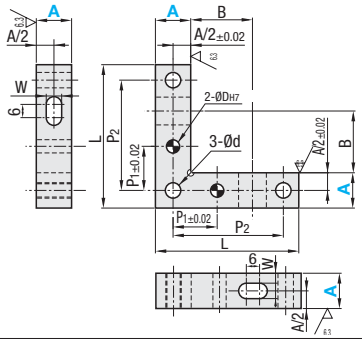
Part Number Type	A	L	R	P	€ Unit Price Qty. 1~9 Sets	Volume Discount Qty. 10~29 Sets
CMAJC	16	65	4	-		
	20	75	5			
CMAJWC	16	114	4	50		
	20	124	5			

This product is offered as a set of 2 pieces of 1mm and 0.5mm thickness.

■L-Shaped Type RoHS



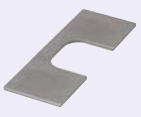
CMAJL



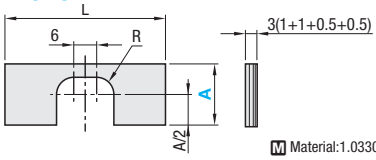
M Material: 1.1191/C45E
S Surface Treatment: Black Oxide

Part Number Type	A	L	D	d	B	P1	P2	W	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~29
CMAJL	16	65	6	7	28	20	50	7		
	20	100	8	9	53	40	80	9		

■Shim Set, L-Shaped RoHS



CMAJLC



M Material:1.0330/DC01

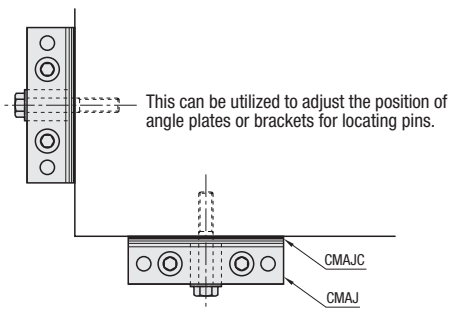
Part Number Type	A	L	R	€ Unit Price Qty. 1~9 Sets	Volume Discount Qty. 10~29 Sets
CMAJLC	16	42	4		
	20	54	5		

This product is offered as a set of 2 pieces of 1mm and 0.5mm thickness.

Order Example

Part Number
CMAJ16
CMAJC16
CMAJL16
CMAJLC20

Example



Days to Ship

6 Days P.87

For orders larger than indicated quantity, please request a quotation.

Workpiece Detection System / Detection Pins for Weld Nut

Reduced Delivery Time

CAD Data

Workpiece Detection System

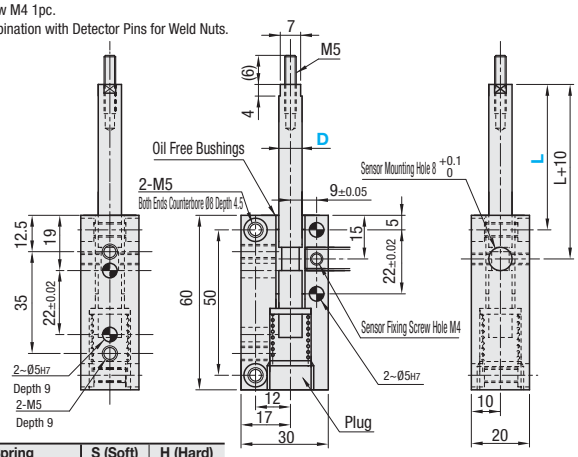
RoHS



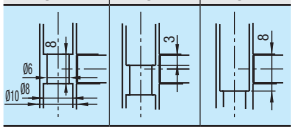
Type	Body		Pin		Spring
	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material
PCPNA	EN AW-6061/EN AW-AlMg1SiCu	Clear Anodize	1.1191/C45E	Electroless Nickel Plating	1.4301/X5CrNi19-10

A Accessory: Set Screw M4 1pc.

Can be used in combination with Detector Pins for Weld Nuts.



Stroke		
0 (min.)	3	8 (max.)
Switch		
OFF	ON	ON



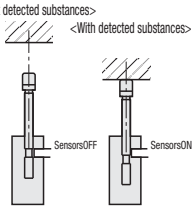
Spring	S (Soft)	H (Hard)
Spring Constant (N/mm)	0.3	0.5
Outer Diameter (mm)	12	12
Wire Dia. (mm)	0.65	0.8
Inner Diameter (mm)	10.7	10.4
Free Length (mm)	20	20
Allowable Deflection	12	9

*Example of an applicable proximity sensor (shield type of 2–Line type)
- KEYENCE EV-108M
- OMRON E2E-X2D1-M3G

A proximity sensor is not included.

Part Number Type	D	Spring Selection	L Selection	S (Soft) Load (N) min	S (Soft) Load (N) max	H (Hard) Load (N) min	H (Hard) Load (N) max	€ Unit Price
PCPNA	8	S (Soft)	30	1.2	3.6	2.0	6.0	
		H (Hard)	50					

kgf=Nx0.101972



Suitable to confirm existence of workpiece when proximity sensor cannot be placed near target objects.
Urethane Pushers (2-P.1439 or Detector Pins (below) tip parts can be selected depending on the detection objects.

Order Example

Part Number	-	L
PCPNA8H	-	50

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

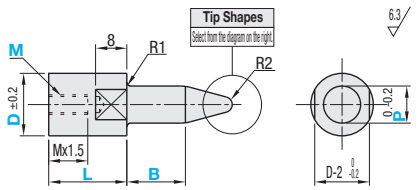
Detection Pins for Weld Nut

RoHS



Type	M Material	H Hardness	S Surface Treatment
NUTK	1.1191/C45E	-	-
BNUTK		Hardening Hardness 45~50HRC	Black Oxide

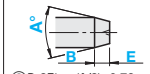
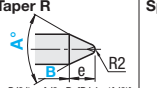
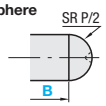
Combination of Work Detecting Unit and Cylinder is available.



MxPitch Fine Thread	MxPitch Coarse Thread
5x0.5	5x0.8
6x0.75	6x1.0
8x0.75	8x1.25

Reference: sin15°≈0.259 sin30°=0.5 sin45°≈0.707 sin60°=0.87 tan15°≈0.267 tan30°=0.577 tan45°=1 tan60°=1.73

Tip Shape (The center hole remains.)

A Shape	B Shape	C Shape
Tapered	Taper R	Sphere
		
P-2Etan (A/2)≥0.73	e=P/2/tanA/2+R-{R/sin (A/2)}	

Part Number Type	Tip Shape	D	P 0.1mm Increment	B 1mm Increment	L 1mm Increment	A Selection	E (A Shape) 1mm Increment	M Coarse Thread	M Fine Thread	€ Unit Price NUTK	€ Unit Price BNUTK
NUTK BNUTK	A	12	5.0~10.0	5~30 (B≤Px4)	15~20	30	1~10	5	5S		
	B	16	10.1~12.0			60		5 6	5S 6S		
	C		12.1~14.0			90					
						120		5 6 8	5S 6S 8S		

Order Example

Part Number	-	P	-	B	-	L	-	A	-	E	-	M
Type		Tip Shape		D								
NUTK		A		12	-	P6.0	-	B10	-	L20	-	A30	-	E2	-	M5 (A Shape)
NUTK		C		16	-	P10.5	-	B15	-	L20					-	M6 (Shape C)

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Roller Pushers · Point Pads
-Low Particulate Generation Type-

CAD Data

Features: Can be used for alignment adjustment for thin work pieces such as glass plates. Uses low particulate generation bearings.

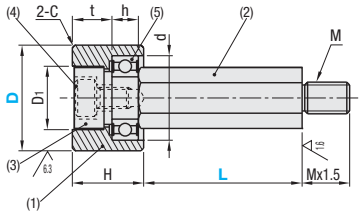
Roller Pushers -Low Particulate Generation Type-

RoHS

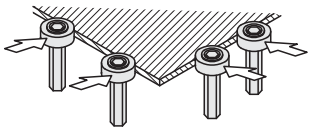


Type / Components (1) (2) (3) (4) (5)	Material (1) Cap	(2) Post	(3) Holder	(4) Screw	(5) Bearings (For Low Particulate Generation)
RLLP	Polyacetal	1.4301/ X5CrNi18-10	1.4301/ X5CrNi18-10	1.4567/ X3CrNiCu18-9-4	SBC6__ZZ (Stainless Steel)
RLLUP	Ultra High-Molecular-Weight Polyethylene				
RLLPK	PEEK				

*Low Particulate Grease Bearings SBC6__ZZ P.913



Example As the cap rotates, it prevents the work from being damaged.



Part Number Type	D	L 5mm Increment	H	D_1	(4) Screw	C	t	h	d	B	M	€ Unit Price RLLP	RLLUP	RLLPK
RLLP	10	5~30	10	7.5	SCB2.6-5	0.2	5.5	2.5	7	5	M3			
RLLUP	20	10~50	14	12	SCB4-6	0.5	7.5	5	16	10	M6			
RLLPK	30	10~70	18	12	SCB5-8	0.5	9	8	26	13	M8			

Order Example Part No. RLLP10 - L 20

Days to Ship 8 Days — Express A 3,00 EUR/ piece

A Express Charge of 8,10 EUR for 3 or more identical pieces.

P. 88

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~9	10~29
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Point Pads

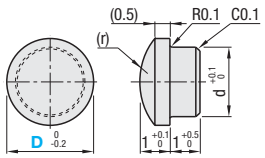
RoHS



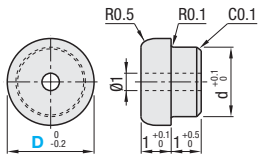
Type: Spherical Type	Hole Type	Flat Type	Female Thread Type	Material
PDKPK	PDCPK	PDAPK	PDUPK	PEEK
-	-	PDATF	-	PTFE Resin
PDKUP	PDCUP	PDAUP	PDUUP	Ultra High-Molecular-Weight Polyethylene

6.3

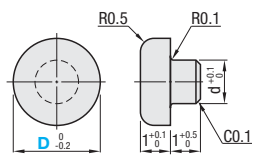
-Spherical Type



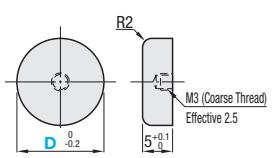
-Suction Hole Type



-Flat Type



-Female Thread Type



Spherical Type

Feature: Suitable for reducing contact area since the pads make point contacts.

Part Number Type	D	d	(r)	PDKPK (PEEK) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99	PDKUP (Ultra High-Molecular-Weight Polyethylene) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99
PDKPK (PEEK) PDKUP (Ultra High-Molecular-Weight Polyethylene)	3	1.5	2.5						
	4	2	4.25						
	5	2	6.5						

For orders larger than indicated quantity, please request a quotation.

Suction Hole Type

Feature: Can be used for vacuum pickup of objects such as glass plates.

Part Number Type	D	d	PDCPK (PEEK) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99	PDCUP (Ultra High-Molecular-Weight Polyethylene) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99
PDCPK (PEEK) PDCUP (Ultra High-Molecular-Weight Polyethylene)	5	4						
	8	5						
	10	5						

For orders larger than indicated quantity, please request a quotation.

Flat Type

Feature: Can be used when surface contacting with objects are desired.

Part Number Type	D	d	PDATF (PTFE Resin) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99	PDAUP (Ultra High-Molecular-Weight Polyethylene) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99
PDATF (PTFE Resin) PDAUP (Ultra High-Molecular-Weight Polyethylene)	3	1.5						
	4	2						
	5	2						

For orders larger than indicated quantity, please request a quotation.

Female Thread Type

Feature: Can be used for screw fastening.

Part Number Type	D	PDUPK (PEEK) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99	PDUUP (Ultra High-Molecular-Weight Polyethylene) € Unit Price Qty. 1~9	Volume Discount Qty. 10~29	Volume Discount Qty. 30~99
PDUPK (PEEK) PDUUP (Ultra High-Molecular-Weight Polyethylene)	10						
	15						
	20						

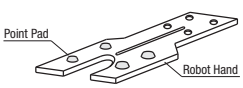
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	
PDKPK3	(Spherical Type)
PDCUP10	(Holes for Suckers Type)
PDATF3	(Flat Type)
PDUPK20	(Female Thread Type)

Days to Ship 6 Days P. 87

Example



Point pad prevents robot hand from contacting conveyed products directly.

Lift Pins

CAD Data

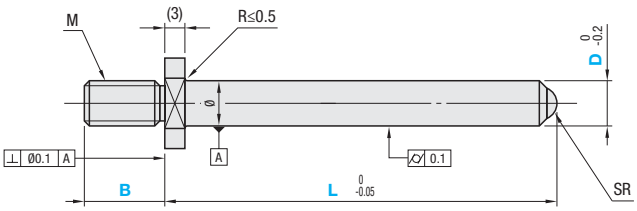
Features: Useable for lifting work objects that require isolation from metal contacts. A length selectable type 50% more economical are newly introduced.

Lift Pins

RoHS



Type			Material	
L Dimension Selectable	L Dimension Configurable	L · B Dimensions Configurable	Main Body	Tip
-	LPCE	LPFCE	1.4301/ X5CrNi18-10	Ceramic (Alumina 99)
LPEPK	LPPK	LPFPK		PEEK
-	LPMC	LPFMC		MC Nylon



L Selectable Type

Part Number Type	D	L Selection	B Selectable	M (Coarse)	H	W	SR	€ Unit Price L 25 · 50	L 75 · 100	L 120
LPEPK	3	25 50 75 100 120	4.5	3	6	5	1.2			
	4		6	4	8	7				
	5		7.5	5	9	7	2			
	6		9	6	10	8				

L Dimension Configurable Type

Part Number Type	D	L 1mm Increment	B Selectable	M (Coarse)	H	W	SR	€ Unit Price L15~50 LPCE	LPPK	LPMC	L51~120 LPCE	LPPK	LPMC
LPCE LPPK LPMC	3	15~120	4.5	3	6	5	1.2						
	4		6	4	8	7							
	5		7.5	5	9	7	2						
	6		9	6	10	8							
	8	20~120	12	8	12	10	3.2						
	10		15	10	15	13							

L · B Dimensions Configurable Type

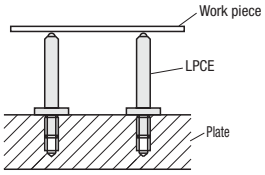
Part Number Type	D	L 1mm Increment	B 0.5mm Increment	M (Coarse)	H	W	SR	€ Unit Price L15~50 LPFCE	LPFPK	LPFMC	L51~120 LPFCE	LPFPK	LPFMC
LPFCE LPFPK LPFMC	3	15~120	5.0~9.0	3	6	5	1.2						
	4		6.5~12.0	4	8	7							
	5		8.0~15.0	5	9	7	2						
	6		9.5~18.0	6	10	8							
	8	20~120	12.5~24.0	8	12	10	3.2						
	10		15.5~30.0	10	15	13							

(P) L+B≤135

Order Example

Part Number	-	L	-	B	
LPEPK3	-	120			(L Selectable)
LPCE4	-	72			(L Configurable)
LPFCE5	-	75	-	B9.0	(L / B Dimension Config.)

Example



Suitable for lifting high temperature objects and objects that are not to come in contact with metals.

Days to Ship

- L Dimension Selectable Type: **6 Days** P. 87
- L Dimension Configurable · L · B Dimension Configurable Types: **8 Days**

Price

Volume Discount (P) Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(P) For orders larger than indicated quantity, please request a quotation.

Feed Fingers

■Features: The minimal 20.5mm height has been added to the lineup. Best for use in space-savings.



RoHS

■(1)Claw

Type	M Material	S Surface Treatment	H Hardness
ATBM	1.0038/S235JR	Electroless Nickel Plating	Carburization (Depth 0.1) HV400 ~ 500
ATBS	1.4301/ X5CrNi18-10	-	-
ATBST		Tuftride	Tuftride (Depth 0.01) HV1000
ATBJ	MC Nylon	-	-

Ⓨ1.4301/X5CrNi18-10 Tuftride is gray.
Ⓨ1.4301/X5CrNi18-10 Tuftride has lesser antitrust effect compared to 1.4301/X5CrNi18-10.

■(2)Spring

M Material: 1.4301/X5CrNi18-10–WPB

■(3)Body • Pin

Type	Body M Material	Body S Surface Treatment	A Accessory M Material	A Accessory S Surface Treatment
BL BH BT TP PI	1.0038/S235JR	Electroless Nickel Plating	1.1191/C45E	Electroless Nickel Plating
BLS BHS BTS TPS	1.4301/ X5CrNi18-10	-	1.4305/ X10CrNiS18-9	-

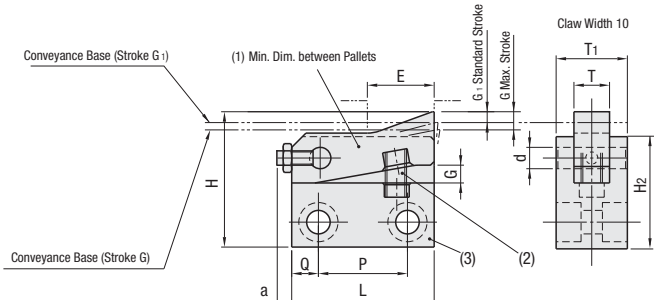
AAccessory: (For BH and BHS only)

(1)Claw	BH	BHS
14A · 14B	WSSM25-8-3x2 pcs.	-
10A · 10B	WSSM20-6-3x2 pcs.	WSSS20-6-3x2 pcs.

Feed Fingers are composed of (1) Claw, (2) Spring and (3) Main Body.
By selecting each type of components, the unit can be assembled before shipping.

(1)Claw		(2) Spring	(3)Body
ATBM	28A 28B 20A 20B	S H	BT PI
ATBM ATBJ	14A 14B 10A 10B 7A 7B 7SA 7SB*1	S H	BL BH BT TP PI*2
ATBJ ATBS ATBST	10A 10B	S H	BLS BHS BTS TPS

Ⓨ*1: 7SB is selectable for ATBM only.

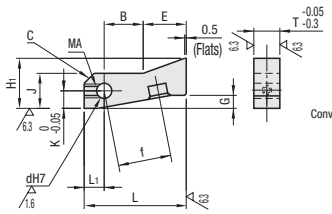


Part Number Type	(1)Claw	(2) Spring	(3)Body		T	T1	d	H	H2	L	P	Q	a	G	G1	€ Unit Price ATBM	ATBJ	ATBS	ATBST
ATBM (1.0038/S235JR + Electroless Nickel Plating) ATBJ (MC Nylon)	7SA 7SB	S (Soft) H (Hard)	BL	Side Mounting Type (Screw Holes)	7	12	6	29	22.5	30	20	5	2.5	5	3				
			TP	Side Mounting Type (Female Thread Holes)															
			BT	Bottom Mount Type															
			PI	π-Shaped Type				20.5	14										
	7A 7B		BL	Side Mounting Type (Screw Holes)	7	12	6	38	31	40	25	7.5	2	5	3				
			TP	Side Mounting Type (Female Thread Holes)															
			BT	Bottom Mount Type															
			PI	π-Shaped Type															
ATBM (1.0038/S235JR + Electroless Nickel Plating) ATBS (1.4301/X5CrNi18-10) ATBST (1.4301/X5CrNi18-10 + Tuftride) ATBJ (MC Nylon)	10A 10B		BL	Side Mounting Type (Screw Holes)	10	19	6	38	31	40	25	7.5	2.5	5	3				
			BH	Side Mounting Type (Thru Holes)															
			TP	Side Mounting Type (Female Thread Holes)															
			BT	Bottom Mount Type															
			PI	π-Shaped Type															
			BLS	Side Mounting Type (Screw Holes)															
			BHS	Side Mounting Type (Thru Holes)															
			TPS	Side Mounting Type (Female Thread Holes)															
			BTS	Bottom Mount Type															
	14A 14B		BL	Side Mounting Type (Screw Holes)	14	25	8	55.5	43	55	35	10	2.5	10	5				
			BH	Side Mounting Type (Thru Holes)															
			TP	Side Mounting Type (Female Thread Holes)															
			BT	Bottom Mount Type															
			PI	π-Shaped Type					54										
ATBM (1.0038/S235JR + Electroless Nickel Plating)	20A 20B		BT	Bottom Mount Type	20	38	10	63	49	65	40	12.5	4.5	10	5				
			PI	π-Shaped Type					64										
	28A 28B		BT	Bottom Mount Type	28	50	12	83	64	80	50	15	7	12	7				
			PI	π-Shaped Type					82										

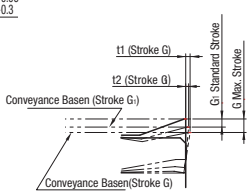
Dimension Details (1)Claws

■Straight Type

7SA 14A
7A 20A
10A 28A

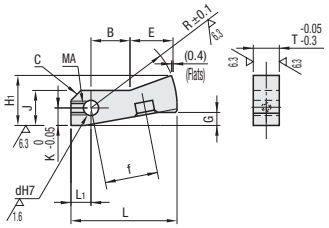


■Claw Position of Straight Type

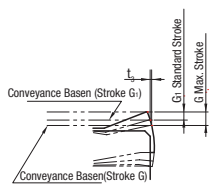


■Round Type

7SB 14B
7B 20B
10B 28B



■Standard Stopping Position for Round Type



Type		T	L Claw Shape Straight	L Claw Shape Round	L1	B	G	E Claw Shape Straight	E Claw Shape Round	R	H1	J	K	MA	d	f	C	t1	t2	t3
ATBM ATBS ATBST ATBJ	7SA 7SB	7	30	31.5	7.5	7.5	5	15	13.9	24	16	10	5	M3*	6	15.7	3	1.8	1.2	0.7
	7A 7B		40	41.5	8	15		17	15.9	33.5	20	14	7			21	4	1.6	1	0.5
	10A 10B	10												M4*						
	14A 14B	14	55	57	10	12.4	10	32.6	30	47	30.5	19	10	M4*	8	35.8	5	3.3	2	0.8
	20A 20B	20	65	66.5	12.5	18.5	11	34	30.4	54	33	21	10	M5	10	40	7	3.4		1.5
	28A 28B	28	80	82.5	15	30	13	35	30.5	67.5	45	30	15	M6	12	50	9	4.5	2.8	1.8

Ⓨ ATBM is available for 28A · 28B · 20A · 20B and 7SB only.
*ATBJ is for thread insert.

Price Reduction
15%

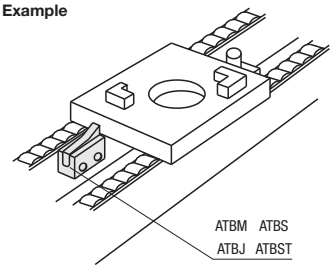
CAD Data

Load Details (2) Spring

Type			Load (Calculated Value) N							
			Set		Stroke 3		Stroke 5(7)		Stroke 10(12)	
			Spring Upper Part	Claw Tip Part	Spring Upper Part	Claw Tip Part	Spring Upper Part	Claw Tip Part	Spring Upper Part	Claw Tip Part
7SA	Soft	S	0.4	0.3	1.1	0.7	1.5	1.0	-	-
7SB	Hard	H	1.4	1.0	2.4	1.6	2.9	2.0	-	-
7A	Soft	S	0.3	0.2	1.0	0.7	1.5	1.0	-	-
7B	Hard	H	1.7	1.1	2.6	1.7	3.1	2.1	-	-
10A	Soft	S	0.3	0.2	1.0	0.7	1.5	1.0	-	-
10B	Hard	H	1.8	1.2	2.6	1.7	3.2	2.1	-	-
14A	Soft	S	0.9	0.7	1.3	1.1	1.7	1.3	2.4	1.9
14B	Hard	H	2.6	2.1	3.1	2.5	3.5	2.8	4.3	3.5
20A	Soft	S	2.3	1.8	-	-	3.0	2.4	3.8	3.0
20B	Hard	H	3.6	2.8	-	-	4.5	3.5	5.5	4.3
28A	Soft	S	3.7	2.6	-	-	5.2	4.0	6.3	4.8
28B	Hard	H	4.9	3.4	-	-	6.7	5.2	8.0	6.2

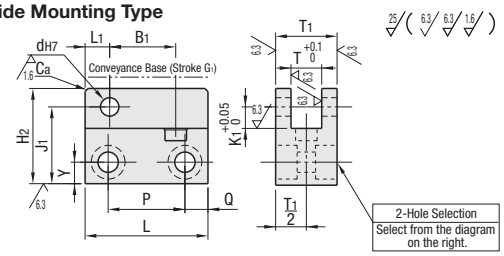
The value of Stroke 5 and 10 for 28A and 28B are of when Stroke 7 and 12.

Example



Dimension Details (3)Main Body

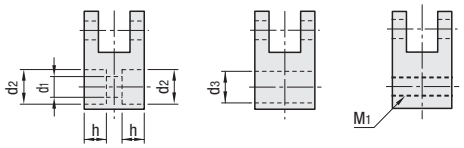
Side Mounting Type



Screw Hole
BL (1.0038/S235JR)
BLS (1.4301/X5CrNi18-10)

Through Hole
BH (1.0038/S235JR)
BHS (1.4301/X5CrNi18-10)

Female Thread Hole
TP (1.0038/S235JR)
TPS (1.4301/X5CrNi18-10)

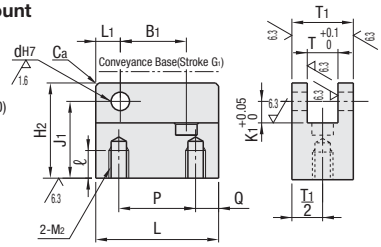


*No counterbore for claw 7A · 7B · 7SA and 7SB.

Bottom Mount

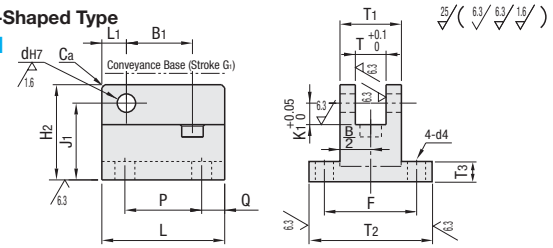
BT
(1.0038/S235JR)

BTS
(1.4301/X5CrNi18-10)



π-Shaped Type

PI

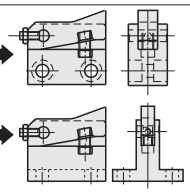


For PI of claw width 14 · 20 and 28, flange is screwed on BT.

Type		T	T1	L	P	Q	L1	B1	H2	J1	K1	d	Ca	Side Mounting Type						Bottom Mount Type		π-Shaped Type			
Applicable Claw	Body													Y	d1	d2	h	d3	M1	M2	ℓ	d4	F	T2	T3
7SA 7SB	BL	7	12	30	20	5	7.5	16	22.5	18	5	6	3	7	5.5				-	-	-				
	TP												2.5		-	-	-	-	M5		-	-	-	-	
	BT													-					-	M5	6				
	PI								14	9.5	5									-	-	4.5	20	28	5
7A 7B	BL	7	12	40	25	7.5	8	21.5	31	25	7	6	3	7	6.6				-	-	-				
	TP														-	-	-	-	M6		-	-	-	-	
	BT													-					-	M6	9				
	PI																			-	-	5.5	22	32	6
10A 10B	BL BLS	10	19	40	25	7.5	8	21.5	31	25	7	6	3	7	6.6	11	7	-	-	-	-				
	BH BHS														-	-	-	9	M6		-	-	-	-	
	TP TPS																								
	BT BTS													-				-	-	M6	9				
	PI																			-	-	5.5	30	40	6
14A 14B	BL	14	25	55	35	10	10	36.5	43	35	10	8	4	10	9	14	8.5	-	-	-	-				
	BH														-	-	-	12	M8		-	-	-	-	
	TP																								
	BT													-				-	-	M8	12				
	PI								54	46										-	-	9	42	60	12
20A 20B	BT	20	38	65	40	12.5	12.5	40.7	49	40	10	10	5	-	-	-	-	-	-	M10	15	-	-	-	-
	PI								64	55										-	-	9	58	75	16
28A 28B	BT	28	50	80	50	15	15	51.4	64	53	15	12	5	-	-	-	-	-	-	M12	20	-	-	-	-
	PI								82	71										-	-	11	70	90	19

Order Example

Part Number	-	(2) Spring	-	(3)Body
ATBM10A	-	S	-	BL
ATBJ7A	-	H	-	PI



Days to Ship: 8 Days

Express A 3,00 EUR/ piece P. 88

A Express Charge of 8,10 € for 3 or more identical pieces.

Price

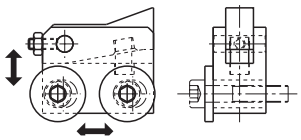
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~29	30~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example

Fine adjustment for the mounting position of BH and BHS (Through Hole) can be made by combining with the included washer. Fine adjustment of mounting position is possible.



Claw	Applicable Screw
14A · 14B	M8
10A · 10B	M6

Feed Fingers Economy Type

-Stainless Steel Type · Plastic Type-

CAD Data

Features: Feature: Use of sheet metal for the main body has realized price reduction by approx. 50%, comparing to the conventional products.

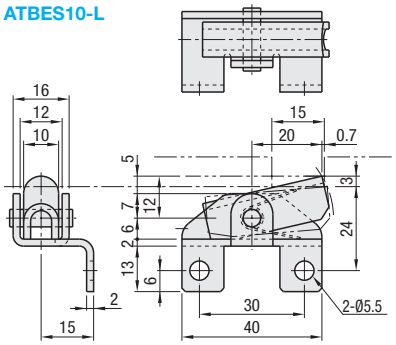
Stainless Steel

RoHS

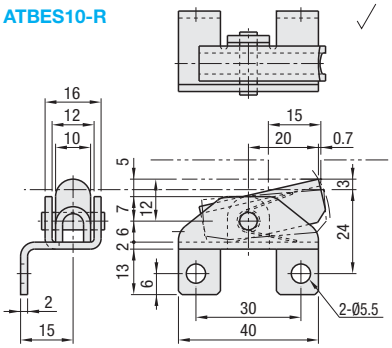


Type	Material			
	Main Body	Claw	Pin	Spring
ATBES	1.4301/X5CrNi18-10-CP	1.4301/X5CrNi18-10-CP	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10-WPB

ATBES10-L



ATBES10-R



Part Number		Claws Orientation		Load (Calculated Value) N		Mass (g)	€ Unit Price	Volume Discount	
Type	No.			Stroke 3mm	Stroke 5mm		1~3 pcs.	Qty. 4~9	Qty. 10~30
ATBES	10	L	(Left)	8.3	8.9	45			
		R	(Right)						

For orders larger than indicated quantity, please request a quotation.

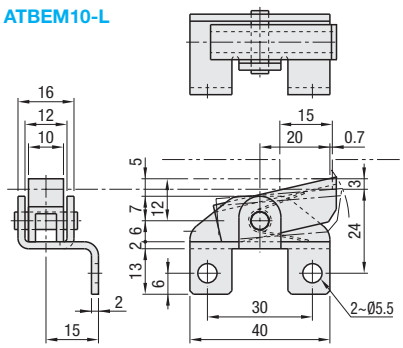
Plastic

RoHS

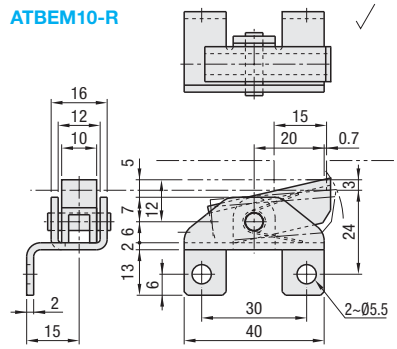


Type	Material			
	Main Body	Claw	Pin	Spring
ATBEM	1.4301/X5CrNi18-10-CP	MC Nylon	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10-WPB

ATBEM10-L



ATBEM10-R



Part Number		Claws Orientation		Load (Calculated Value) N		Mass (g)	€ Unit Price	Volume Discount	
Type	No.			Stroke 3mm	Stroke 5mm		1~3 pcs.	Qty. 4~9	Qty. 10~30
ATBEM	10	L	(Left)	8.1	8.7	35			
		R	(Right)						

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	Claws Orientation
ATBES10	-	L
ATBEM10	-	R

Days to Ship: 8 Days

Express A: 3,00 EUR/ piece

P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Auto-latch

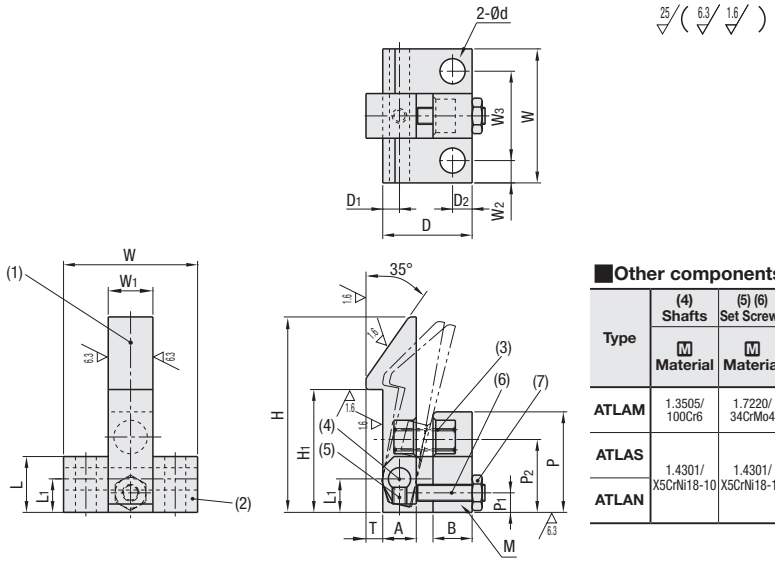
CAD Data

Features: Thin-plated works (eg; printed circuit boards, metal plates, etc.) can be easily located.

RoHS

Type	(1)Claw			(2) Base			(3) Spring
	M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material
ATLAM	1.1191/C45E	20~35HRC	Electroless Nickel Plating	1.1191/C45E	-	Electroless Nickel Plating	1.4301/X5CrNi18-10-WPB
ATLAS	1.4301/X5CrNi18-10	-	-	1.4301/X5CrNi18-10	-	-	
ATLAN	MC Nylon	-	-				





Other components

Type	(4) Shafts M Material	(5) (6) Set Screws M Material	(7) Nuts M Material/ S Surface Treatment
ATLAM	1.3505/100Cr6	1.7220/34CrMo4	JIS SWCH / Trivalent Chromate
ATLAS	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10
ATLAN			

Part Number Type	No.	H	H1	T	W	W1	W2	W3	d	L	L1	D	D1	D2	A	B	P	P1	P2	M (Coarse)
ATLAM ATLAS ATLAN	25	25	15	2	20	7	3	14	3.5	8	5	14	2.5	3	5	6	15	3.5	11	M3
	35	35	22	3	24	8	4	16	4.5	10	6	16	3	3.5	6	7	18	3.5	13.5	M3
	45	45	30	4	26	10	4	18	4.5	12	7	20	4	4	8	8	22	4.5	17	M4

Order Example Part Number: ATLAM25, ATLAS45

Days to Ship 8 Days | Express A 3,00 EUR/piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

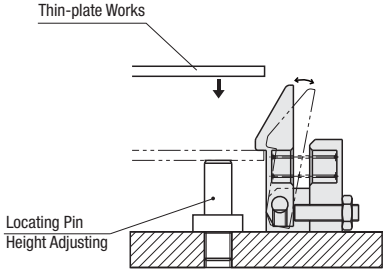
Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~29	30~49
Rate	€ Unit Price	5%	10%

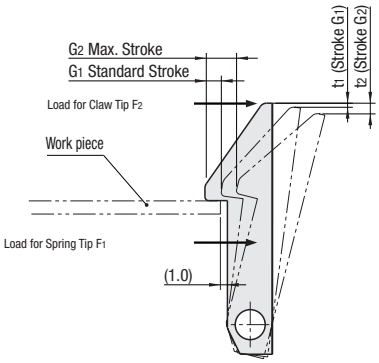
For orders larger than indicated quantity, please request a quotation.

No.	€ Unit Price		
	ATLAM	ATLAS	ATLAN
25			
35			
45			

Example Clicks and latches the work easily at the required position just by lowering the work from above.



Claws Stroke Position Variations



No.	G1	G2	t1	t2
25	1	3.2	0.3	1.4
35	2	4.2	0.5	1.4
45	3	6.3	0.5	1.6

*1.0mm clearance is assumed.

Spring Load Table (Calculated Value)

No.	Spring Tip F1 (N)			Claw Tip F2 (N)		
	Initial Load	When Stroke G1	When Stroke G2	Initial Load	When Stroke G1	When Stroke G2
25	1.2	1.3	1.7	0.4	0.4	0.5
35	2.0	2.4	2.9	0.5	0.6	0.8
45	3.9	5.1	6.5	1.0	1.3	1.7

Plungers

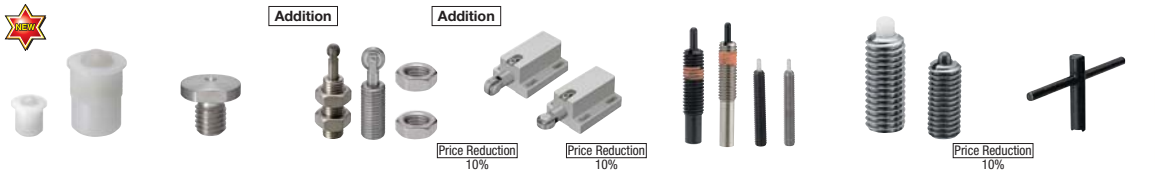
Plungers



Product Name	Ball Plungers -Economy-	-Standard-	-Stainless Steel-	-Roller-	-Load Adjustable-	-Plastic-
Page	1469	1469	1470	1470	1470	1471



-Fine Thread-	-Short-	-Long-	Wrenches for Ball Plunger	-Bolt Type-	-Flanged-	Ball Buttons	Press-Fit Plungers -Standard-
1471	1471	1472·1473	1473	1474	1474	1474	1475



-Roller-	Ball Buttons -Screw Head-	-Roller Plungers -Bolt-	Mounting Type	Spring Plungers -Steel-	-Stainless Steel-	Wrenches for Spring Plungers
1475	1475	1476	1476	1477	1478	1478



Long Sleeve Plungers	Short Spring Plungers -Steel-	-Stainless Steel-	Micro Spring Plungers -Standard-	-Short-	-Set Screw Flat-	Micro Spring Pin
1479	1480	1480	1481	1481	1481	1482



Spring Plungers -Female Thread Tip-	-With Hexagon Socket Tip-	-Hexagon Nose-	-Flat Tip-	-For Slope Surface-	-Flanged-	Indexing Plungers -Standard-	-Flanged-
1482	1483	1483	1484	1484	1484	1485	1486



Indexing Plungers -Tip Female Thread-	Short Thread Type	-Compact-	-Long-	-With Precision Pilot-	-Press-Fit / Knob-	-Knob-less Standard–	-Knob-less, Large Screws for Mounting Knobs-
1486	1487	1488	1488	1489	1489	1490	1490



Indexing Plungers -Coarse / Fine Thread - Lever-	-Switch Lever-	-Push Type-	-Plate Mount-	-Fine Thread, Coarse Thread-	Ball Lock Pins -Spring Type-	-Push Type-
1491	1492	1492	1492	1493	1494	1494

Plunger Overview

■Ball Plungers

As the tip ball strokes, it can be used for tentative locating the work or indexing.

	Economy	Standard	Roller	Load Adjustable	Plastic	Fine Thread	Short	Long
Type								
Features	By omitting the hardening on the plunger, dramatically competitive pricing is achieved	General Ball Plunger	As the ball rotates smoothly, it prevents the mating parts from being damaged.	By compressing the inner spring, the load can be adjusted.	Ball Plunger with the plastic body.	Fine threads provide an easy fine adjustment of strokes.	As the overall length is shorter than conventional ball plungers by 30%, it can be mounted to a thin plate.	As the overall length is long, it can be fixed with nuts. Length Selectable Type is also available.
Page	P.1469	P.1469	P.1470	P.1470	P.1471	P.1471	P.1471	P.1472·1473

Some products' Hexagon Holes are colored with markers for identifying products.

■Roller Plungers

As the tip bearing stroke is longer than that of Ball Plungers, it is suitable for positioning of sliding works.

	Bolt	Flanged	Press-Fit	Press-Fit Rollers
Type				
Features	As the Plunger bodies are bolt shape, easy positioning of the tip is possible.	Flanges keep constant heights from the plate.	A Ball Plunger which has no threads on the outer diameter. It keeps constant heights from the plate.	A Press-Fit Plunger with a ball which rotates smoothly.
Page	P.1474	P.1474	P.1475	P.1475

	Bolt	Mount
Type		
Features	Can be mounted to a plate with Female Thread Holes.	Can be mounted to flat locations. The position can be adjusted with long holes.
Page	P.1476	P.1476

■Spring Plungers

The head is pin shaped, and is possible to use for pushing the work out, or as a stopper.

	Standard	Long Sleeve	Short	Micro	Micro Spring Pin	Female Thread Tip	Hexagon Socket Tip	Hexagon Nose	Flat Tip	Flanged
Type										
Features	General Spring Plungers.	As a long pin-guide is used, it is strong enough to bear the diagonal load.	A Spring Plunger with both short length and stroke.	The Small Diameter Type with Ø1.5~5 in outer dimensions. It contributes to space-saving.	It has a resin tip, thus suitable for holding the base.	Stop pins can be mounted on the tip.	As a hexagonal hole is provided on the tip, it can be mounted using a wrench.	As the pin is hexagonal shape, users can mount it with a spanner.	Suitable for working with its flat tip on the work.	Flanges keep constant heights from the plate.
Page	P.1477	P.1479	P.1480	P.1481	P.1482	P.1482	P.1483	P.1483	P.1484	P.1484

Some products' Hexagon Holes are colored with markers for identifying products.

■Indexing Plungers

The pin can be push in / out manually by using a knob or lever. It is suitable for tentative work location.

	Standard	Flanged	Tip Female Thread	Short Threads	Compact	Long	With Precision Pilot	Press-fitted
Type								
Features	Most general Indexing Plungers	Fine position adjustment is possible for the flanges.	The attachment can be mounted on the tip.	Has shorter threads than those of the Standard Type and saves space.	As the overall length is 2/3 for conventional products, it can be used in the space-saving.	As this Type has longer mounting threads than those of the Standard Type, it can be mounted to a thick plate.	The combination of pilots and the inner structure keeps high repeatability.	Can be mounted by press-fit, not with screws.
Page	P.1485	P.1486	P.1486	P.1487	P.1488	P.1488	P.1489	P.1489

■Ball Block Pins

The pins and their side balls can smoothly locate and fix the works.

	Knob-less	Lever Type	Push Type	Plate Mount Type
Type				
Features	The most suitable knob for each purpose can be mounted.	Can be used in space-savings.	A Push-Type can be operated by one finger.	Can be used in the location without space for pulling the knob.
Page	P.1490	P.1491	P.1492	P.1492

	Spring	Push Type
Type		
Features	The spring moves the ball. Economical products.	Manual operation is possible for taking-in / out the ball.
Page	P.1494	P.1494

NEW

Ball Plungers

-Economy Type · Standard Type-

Price Reduction 6% in average

CAD Data

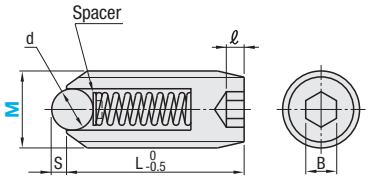
Features: By omitting the hardening on the plunger, slits for a wrench on the tip and thread-lock treatment, overwhelming competitive price is achieved.

Economy

RoHS



Type		Body M Material	Body S Surface Treatment	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operating Temperature
Light Load	BPU	1.7220/ 34CrMo4	Trivalent Chromate	1.3505/ 100Cr6	55HRC~	JIS SWP-B ~1.0600	1.4301/ X5CrNi18-10	-30~80°C
Heavy Load	BPM							
Extra Heavy Load	BPQ							



Values below are not guaranteed values but empirical values.

M	Breaking Torque (N•cm)
3	98
4	98
5	226
6	520
8	1726
10	2746
12	5099
16	7845
20	10787

Part Number Type	M (Coarse)	d	S	L	ℓ	B	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	€ Unit Price
BPU BPM BPQ	3	1.5	0.5	7	1	1.5	1	2	1.5	2.9	2.2	5	
	4	2.5	0.8	9	2.4	2	2	4.9	3.9	9.8	2.5	12.5	
	5	3		12	2	2.5	2.9	9.8	4.9	19.6	11.2	24.1	
	6			13	2.5	3	4.9	14.7	9.8	29.4	17.7	33.4	
	8	4	1	15	2.5	4	6.9	19.6	12.7	39.2	21.4	45.3	
	10	5	1.2	16	3	5	8.8	24.5	18.6	49	23.5	58.7	
	12	7	1.8	20	3	6	9.8	29.4	19.6	58.8	24.1	62.3	
	16	9.5	2.5	25	3	8	15.7	49	29.4	98	43.6	116	
	20	11.9	4.5	40	6	10	53.9	19.8	78.4	147.6	84.6	196.6	

Has no slits for a wrench on the tip. It can be installed only by using a hexagon socket. Min. is the initial load, and max. is the load when the tip is fully compressed.

Part Number Type	M (Coarse)	€ Unit Price 1~4 Pack	(Reference) Price per unit
PACK-BPU (Light Load)	3		
	4		
	5		
	6		
	8		

PACK-BPU is sold by package.
For package sales, minimum order is 1 pack.
100 pcs. per package
For orders larger than indicated quantity, please request a quotation.

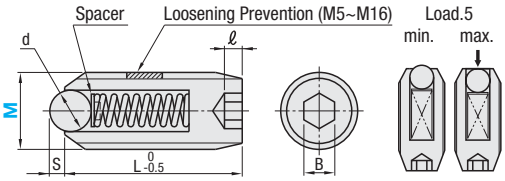
Standard



RoHS

Product Number ☐ is not applicable.

Type		Standard	Thread-lock Untreated	Body M Material	Body H Hardness	Body S Surface Treatment	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operating Temperature
Metal Ball	Ultra Light Load	BPY	BPY-N	1.7220/ 34CrMo4	29~35HRC	Black Oxide	1.3505/ 100Cr6	55HRC~	JIS SWP-B ~1.0600	1.4301/ X5CrNi18-10	-30~80°C
	Light Load	BPJ	BPJ-N								
	Heavy Load	BSJ	BSJ-N	1.4301	-	-					
	Extra Heavy Load	BPW	BPW-N	1.7220/34CrMo4	29~35HRC	Nickel Plating					
Plastic Ball	Ultra Light Load	NBPS		1.1191/ C45E	29~35HRC	Black Oxide	Polyacetal	-	JIS SWP-B ~1.0600	1.4301	-30~80°C
	Light Load	NBPJ	-							Brass	
	Heavy Load	NBSJ									
	Extra Heavy Load	NBPW									



On Standard Type,Thread-lock treatment is not provided on M2, M3 and M4.
The Thread Locking Coating fixes parts using a microencapsulated anaerobic adhesive. Once parts have been loosened, adhesion is lost, use an anaerobic adhesive when reassembling.
The thread-lock is most effective by leaving the parts for 72 hours or more in 25°C. Be noted if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.

Standard

Part Number Type	M (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	B	Ultra Light Load Load (N) min.	Ultra Light Load Load (N) max.	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	€ Unit Price Metal Ball	€ Unit Price Plastic Ball
	2	1	0.2	-	-	5	1	0.9	-	-	0.7	1.4	1.2	2	-	-		
	* 3	1.5	0.5	-	-	7	1	1.5	0.3	0.64	1	2	1.5	2.9	2.2	5		
(Metal Ball) BPY(* only) BPJ BSJ BPW(* only)	*/** 4	2.5	0.8	2.4	0.8	9	1.5	2	0.6	1.6	2	4.9	3.9	9.8	2.5	12.5		
(Plastic Ball) NBPS(**only) NBPJ(**only) NBSJ(**only) NBPW(**only)	*/** 5	3		3.2		12	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.2	24.1		
	*/** 6	3		3.2		13	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	17.7	33.4		
	*/** 8	4	1	4	1.0	15	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	21.4	45.3		
	*/**10	5	1.2	4.8	1.2	16	3	5	3	8.1	8.8	24.5	18.6	49	23.5	58.7		
	*/**12	7	1.8	7.1	1.8	20	3	6	3.5	9.68	9.8	29.4	19.6	58.8	24.1	62.3		
	*/**16	9.5	2.5	9.5	2.5	25	3	8	5.7	15.8	15.7	49	29.4	98	43.6	116		

M2, M3 and M4 have no slits for a wrench on the tip. It can be installed only by using a hexagon socket. Min. is the initial load, and max. is the load when the tip is fully compressed.

kgf=Nx0.101972

Thread-lock Untreated

Part Number Type	M (Coarse)	d	S	L	ℓ	B	Ultra Light Load Load (N) min.	Ultra Light Load Load (N) max.	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	€ Unit Price
(Metal Ball) BPY-N BPJ-N BSJ-N BPW-N	5	3	0.8	12	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.2	24.1	
	6	3		13	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	17.7	33.4	
	8	4	1	15	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	21.4	45.3	
	10	5	1.2	16	3	5	3	8.1	8.8	24.5	18.6	49	23.5	58.7	
	12	7	1.8	20	3	6	3.5	9.68	9.8	29.4	19.6	58.8	24.1	62.3	
	16	9.5	2.5	25	3	8	5.7	15.8	15.7	49	29.4	98	43.6	116	

Min. is the initial load, and max. is the load when the tip is fully compressed.

kgf=Nx0.101972

Order Example: Part Number BPQ8, PACK-BPU8, BPW-N12

Days to Ship: 6 Days / 2 Days P87

Volume Discount (Round down to one Cent.) P87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%

Ball Plungers

-Stainless Steel Type · Roller Type · Load Adjustable Type-

NEW

Price Reduction

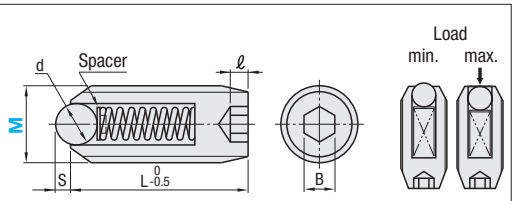
CAD Data

■Stainless Steel

RoHS



Type			Body M	Ball M	Ball H	Spring M	Spacer M	Operating Temperature
Metal Ball	Ultra Light Load	BMS	1.4305/X10CrNiS18-10	1.4125/X105CrMo17	55HRC~	1.4568/X7CrNiAl17-7	1.4301/X5CrNi18-10	-30~260°C
Metal Ball	Light Load	BSM						
Metal Ball	Heavy Load	BSZ						
Metal Ball	Extra Heavy Load	BSX						
Plastic Ball	Ultra Light Load	NBSS		Polyacetal	-	1.4568/X7CrNiAl17-7	1.4301/X5CrNi18-10	-30~80°C
Plastic Ball	Light Load	NBSM						
Plastic Ball	Heavy Load	NBSZ						
Plastic Ball	Extra Heavy Load	NBSX						



Part Number Type	M (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	B	Ultra Light Load (BMS / NBSS) Load (N) min.	Ultra Light Load (BMS / NBSS) Load (N) max.	Light Load (BSM) Load (N) min.	Light Load (BSM) Load (N) max.	Light Load (NBSM) Load (N) min.	Light Load (NBSM) Load (N) max.	Heavy Load (BSZ / NBSZ) Load (N) min.	Heavy Load (BSZ / NBSZ) Load (N) max.	Extra Heavy Load (BSX / NBSX) Load (N) min.	Extra Heavy Load (BSX / NBSX) Load (N) max.	€ Unit Price Metal Ball	€ Unit Price Plastic Ball
(Metal Ball) BMS (* only) BSM BSZ BSX (* only) (Plastic Ball) NBSS (** only) NBSM (** only) NBSZ (** only) NBSX (** only)	2	1	0.2	-	-	5	1	0.9	-	-	0.7	1.4	-	-	1.2	2	-	-		
	*3	1.5	0.5	-	-	7	1	1.5	0.3	0.64	1	2	-	-	1.5	2.9	2.2	5		
	*/**4	2.5	0.8	2.4	0.8	9	1.5	2	0.6	1.6	1.9	4.9	2	4.9	3.9	9.8	2.5	12.5		
	*/**5	3		3.2		12	2	2.5	1	3.12	3.3	9.8	2.9	9.8	4.9	19.6	11.2	24.1		
	*/**6	3		3.2		13	2.5	3	1.6	4.85	5.1	15.3	4.9	14.7	9.8	29.4	17.7	33.4		
	*/**8	4	1	4.0	1.0	15	2.5	4	2.4	6.36	5.5	19.1	6.9	19.6	12.7	39.2	21.4	45.3		
	*/**10	5	1.2	4.8	1.2	16	3	5	3	8.1	8.9	24.1	8.8	24.5	18.6	49	23.5	60		
	*/**12	7	1.8	7.1	1.8	20	3	6	3.5	9.68	10.5	29.3	9.8	29.4	19.6	58.8	24.1	63.7		
	*/**16	9.5	2.5	9.5	2.5	25	3	8	5.7	15.8	14.9	48.9	15.7	49	29.4	98	43.6	116.3		

Ⓟ M2, M3 and M4 have no slits for a wrench on the tip. It can be installed only by using a hexagon socket. Ⓟ Thread-lock treatment not applied.

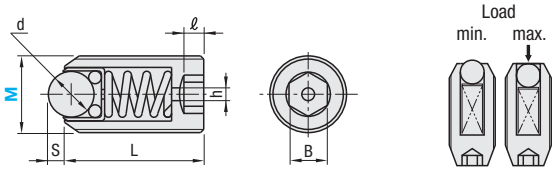
kgf=Nx0.101972

■Roller

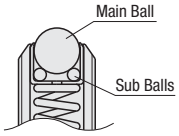
RoHS



Type		Body M Material	Ball M Material	Ball H Hardness	Sub Balls M Material	Sub Balls H Hardness	Spring M Material	Operation Temperature
Metal Ball	BPRM	1.4567/X3CrNiCu18-9-4	1.4125	55HRC~	1.4125	55HRC~	1.4568/X7CrNiAl17-7	-30~100°C
Plastic Ball	BPRJ		Polyacetal	-				-30~80°C



■Features



The combinational structure of the main ball and the sub ball helps smooth rotation of the ball.

Part Number Type	M (Coarse)	d	S	L	ℓ	B	h	Load (N) min.	Load (N) max.	€ Unit Price
BPRM BPRJ	6	3	0.8	13	2.5	3	1.5	8.1	29.6	
	8	4	1.3	15		4	2	12.6	39.8	
	10	5	1.6	16		5	2.5	13.5	44.4	
	12	7.1	2.3	20	3	6	3	16.1	46.9	
	16	9.5	3.1	25		8	4	26.1	88.2	

Ⓟ Has no slits for a wrench on the tip. It can be installed only by using a hexagon socket. Ⓟ Thread-lock treatment not applied.

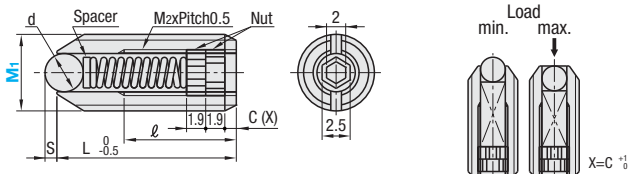
■Features: By moving the nut for compressing the inner spring, the load can be adjusted freely.

■Load Adjustable

RoHS



Type		Body M Material	Ball M Material	Ball H Hardness	Spring M Material	Nut M Material	Spacer M Material	Operation Temperature
Metal Ball	BPCF	1.4305/X10CrNiS18-9	1.4125	55HRC~	1.4301/X5CrNi18-10	1.4305/X10CrNiS18-9	1.4301/X5CrNi18-10	-30~80°C
Plastic Ball	NPCF		Polyacetal	-				



Ⓟ For facilitating installation, the plunger is tightened approx. X=C $^{+1}_{0}$ mm at shipping.

Part Number Type	M1 (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	M2 (Fine)	C	X	Min. Tightening (X=0) Load (N) min.	Min. Tightening (X=0) Load (N) max.	Max. Tightening(X=Xmax) Load (N) min.	Max. Tightening(X=Xmax) Load (N) max.	€ Unit Price BPCF	€ Unit Price NPCF
BPCF NPCF	8	4	1	4	1	16	6.4	5	1	0~2.6	10	20	32	41		
	10	5	1.2	4.8	1.2	18	6.5	6	1.3	0~2.7	7	21	38	52		
	12	7	1.8	7.1	1.8	22	6.6	8	1.8	0~2.8	3	29	42	62		

Ⓟ Has slits for a wrench on the tip. As the rear hexagonal hole is prepared for the load adjustable, it is impossible to use for tightening. Only the straight slit is used for tightening. Ⓟ Load values are for reference, not guaranteed.
Ⓟ Thread-lock treatment not applied. Ⓟ Fix the plunger with the rear nut after load setting.

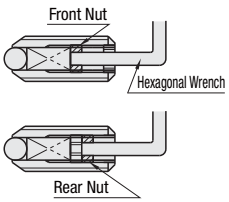
Order Example

Part Number
BSX8
BPRM10
BPCF8

Days to Ship

6 Days P.87

2 Days



Moving the front (ball side) nut back or forth enables users to change the load freely to the desired hardness.

Then tightening the rear nut prevents the front nut from loosening after adjustment.

■Volume Discount (Ⓟ Round down to one Cent.) P.87

-Stainless Steel

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%

Ⓟ For orders larger than indicated quantity, please request a quotation.

-Roller · Load Adjustable

Quantity	1~49	50~74	75~99
Rate	€ Unit Price	5%	10%

Ⓟ For orders larger than indicated quantity, please request a quotation.

NEW

Ball Plungers

-Plastic Type · Fine Thread Type · Short Type-

Price Reduction 10%

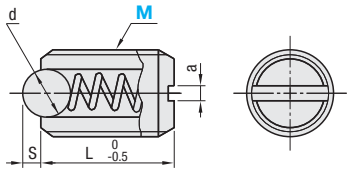
CAD Data

■Plastic

RoHS



Type			Body	Ball		Spring	Operation Temperature
			M Material	M Material	H Hardness	M Material	
Metal Ball	Light Load	BSMN	Polyacetal (Black)	1.4125/ X105CrMo17	55HRC~	1.4301/X5CrNi18-10	-30~80°C
	Heavy Load	BSZN	Nylon 66 (White)			1.4568/X7CrNiAl17-7	
Plastic Ball	Light Load	BNMN	Polyacetal (Black)	Polyacetal (White)	-	1.4301/X5CrNi18-10	
	Heavy Load	BNZN	Nylon 66 (White)			1.4568/X7CrNiAl17-7	



Part Number Type	M (Coarse)	d	S	L	a	Load (N) Light Load min.	Light Load max.	Heavy Load min.	Heavy Load max.	€ Unit Price BSMN	BSZN	BNMN	BNZN
Metal Ball BSMN BSZN / Plastic Ball BNMN BNZN	6	3.2	0.8	13	1	0.2	5	8	16				
	8	4	1	15	1.2	2	12	15	30				
	10	4.8	1.2	16	1.5	2.5	16	20	39				

No slits for a wrench on the tip.

kgf=Nx0.101972

Order Example Part Number BSZN6

Days to Ship 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

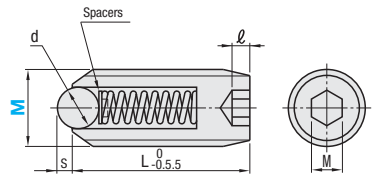
For orders larger than indicated quantity, please request a quotation.

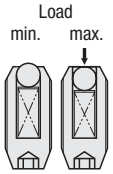
■Fine Thread

RoHS

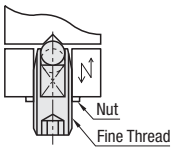


Type		Body M Material	Body H Hardness	Body S Surface Treatment	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operation Temperature
Light Load	BMPJ	1.1191/ C45E	29~35HRC	Black Oxide	1.3505/100Cr6	55HRC~	JIS SWP-B ~1.0600	1.4301/ X5CrNi18-10	-30~80°C
Heavy Load	BMSJ								





■Features
Fine threads provide an easy fine adjustment of strokes.



Part Number Type	M (Fine Thread)	Pitch (Fine)	Metal Ball d	Metal Ball S	L	ℓ	B	Light Load (N) min.	Light Load (N) max.	Heavy Load (N) min.	Heavy Load (N) max.	€ Unit Price
Light Load BMPJ / Heavy Load BMSJ	3	0.35	1.5	0.5	7	1	1.5	1	2	1.5	2.9	
	4	0.5	2.5	0.8	9	1.5	2	2	4.9	3.9	9.8	
	5	0.5	3		12	2	2.5	2.9	9.8	4.9	19.6	
	6	0.75	3		13	2.5	3	4.9	14.7	9.8	29.4	
	8	0.75	4	1	15	2.5	4	6.9	19.6	12.7	39.2	

Thread-lock treatment not applied.

kgf=Nx0.101972

Order Example Part Number BMPJ5

Days to Ship 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

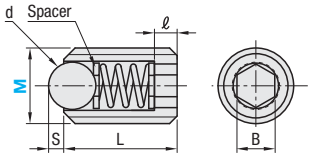
■Short

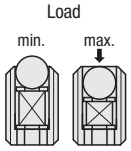
RoHS

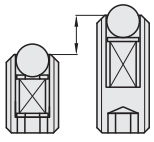


Type	Body M Material	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operating Temperature
BPK	1.4567/ X3CrNiCu18-9-4	1.4125/ X105CrMo17	59~66HRC	1.4301/ X5CrNi18-10	1.4301/ X5CrNi18-10	-30~80°C

■Features:Less likely to protrude from thin plates, as the overall length is shorter than conventional ball plunger by 30%.







Part Number Type	M (Coarse)	d	S	L	ℓ	B	Load (N) min.	Load (N) max.	€ Unit Price
BPK	3	2	0.5	5	1	1.5	(1.0)	(2.0)	
	4	2.5	0.8	6	1.2	2	(1.1)	(3.7)	
	5	3		8	1.7	2.5	(2.2)	(5.9)	
	6	4	1	9	1.8	3	(4.6)	(8.7)	
	8	5	1.2	10	1.8	4	(7.5)	(11.9)	

Has no slits for a wrench on the tip. It can be installed only by using a hexagon socket. Min. is the initial load, and max. is the load when the tip is fully compressed.

kgf=Nx0.101972

Order Example Part Number BPK4

Days to Ship 6 Days P.87

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Ball Plungers

-Long Type · Stainless Steel Long Type-

CAD Data

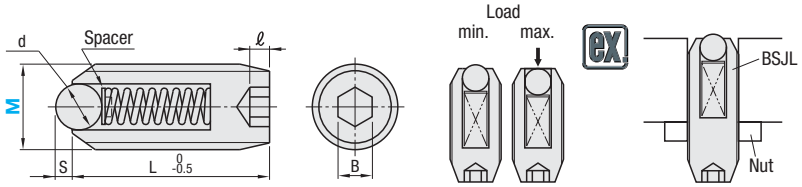
■Long



RoHS

Ⓟ Product Number
□ is not applicable.

Type			Body			Ball		Spring	Spacer	Operating Temperature
			M Material	H Hardness	S Surface Treatment	M Material	H Hardness	M Material	M Material	
Metal Ball	Ultra Light Load	BPSL	1.1191/C45E	29~35HRC	Black Oxide	1.3505/100Cr6	55HRC~	JIS SWP-B ~1.0600	1.4301/X5CrNi18-10	-30~80°C
	Light Load	BPJL								
	Heavy Load	BSJL	1.4301	-	-					
	Extra Heavy Load	BPWL	1.1191/C45E	29~35HRC	Nickel Plating					
Plastic Ball	Ultra Light Load	NPSL			Black Oxide	Polyacetal	-		Brass	
	Light Load	NPJR								
	Heavy Load	NSJL								
	Extra Heavy Load	NSWL			Nickel Plating					



Part Number Type	M (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	B	Ultra Light Load (BPSL · NPSL) Load (N) min.	Ultra Light Load (BPSL · NPSL) Load (N) max.	Light Load (BPJL · NPJR) Load (N) min.	Light Load (BPJL · NPJR) Load (N) max.	Heavy Load (BSJL · NSJL) Load (N) min.	Heavy Load (BSJL · NSJL) Load (N) max.	Extra Heavy Load (BPWL · NSWL) Load (N) min.	Extra Heavy Load (BPWL · NSWL) Load (N) max.	€ Unit Price Metal Ball	€ Unit Price Plastic Ball
Metal Ball	3	1.5	0.5	-	-	13	1	1.5	0.3	0.64	1	2	1.5	2.9	2.2	5		⊠
BPSL	* 4	2.5		2.4	0.7	15	1.5	2	0.6	1.6	2	4.9	3.9	9.8	2.5	12.6		
BPJL	* 5	3	0.8	3	0.8	18	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.7	25.1		
BSJL	* 6	3		3	0.8	20	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	18.7	35.3		
BPWL																		
Plastic Ball	* 8	4	1	4	1	23	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	24.5	46.8		
NPSL (* only)	*10	5	1.2	5	1.2	27	3	5	3	8.1	8.8	24.5	18.6	49	26.7	58.7		
NPJR (* only)	*12	7	1.8	7	1.8	32	3	6	3.5	9.68	9.8	29.4	19.6	58.8	26.1	62.3		
NSJL (* only)	*16	9.5	2.5	9.5	2.5	40	3	8	5.7	15.8	15.7	49	29.4	98	55.4	116		
NSWL (* only)																		

Ⓟ M3 and M4 have no groove for a wrench on the tip. It can be installed only by using a hexagon socket.
Ⓟ Min. is the initial load, and max. is the load when the tip is fully compressed.

kgf=Nx0.101972

Order Example — Part Number: BPSL6

Days to Ship — 6 Days P.87

Price

■Volume Discount (Ⓟ Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

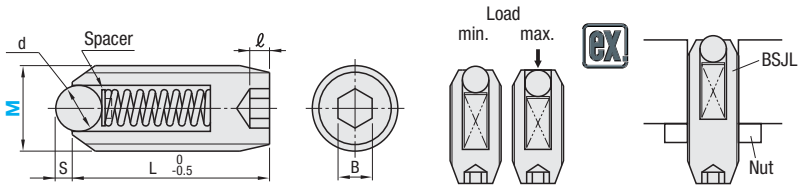
Ⓟ For orders larger than indicated quantity, please request a quotation.

■Stainless Steel Long



RoHS

Type			Body M Material	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operating Temperature
Metal Ball	Ultra Light Load	BMSL	1.4301/X5CrNi18-10	1.4125/X105CrMo17	55HRC~	1.4568/X7CrNiAl17-7	1.4301/X5CrNi18-10	-30~260°C
	Light Load	BSML						
	Heavy Load	BSZL						
	Extra Heavy Load	BSXL						
Plastic Ball	Ultra Light Load	NMSL		Polyacetal	-			-30~80°C
	Light Load	NSML						
	Heavy Load	NSZL						
	Extra Heavy Load	NSXL						



Part Number Type	M (Coarse)	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	L	ℓ	B	Ultra Light Load (BMSL · NMSL) Load (N) min.	Ultra Light Load (BMSL · NMSL) Load (N) max.	Light Load (BSML · NSML) Load (N) min.	Light Load (BSML · NSML) Load (N) max.	Heavy Load (BSZL · NSZL) Load (N) min.	Heavy Load (BSZL · NSZL) Load (N) max.	Extra Heavy Load (BSXL · NSXL) Load (N) min.	Extra Heavy Load (BSXL · NSXL) Load (N) max.	€ Unit Price Metal Ball	€ Unit Price Plastic Ball
Metal Ball	3	1.5	0.5	-	-	13	1	1.5	0.3	0.65	1	2	1.5	2.9	2.2	5		⊠
BMSL	* 4	2.5		2.4	0.7	15	1.5	2	0.6	1.62	1.9	4.9	3.9	9.8	2.5	12.5		
BSML	* 5	3	0.8	3	0.8	18	2	2.5	1.1	3.21	3.3	9.8	4.9	19.6	11.2	24.1		
BSZL	* 6	3		3	0.8	20	2.5	3	1.7	4.96	5.1	15.3	9.8	29.4	17.7	33.4		
BSXL																		
Plastic Ball	* 8	4	1	4	1	23	2.5	4	2.5	6.56	5.5	19.1	12.7	39.2	21.4	45.3		
NMSL (* only)	*10	5	1.2	5	1.2	27	3	5	3.2	8	8.9	24.1	18.6	49	23.5	60		
NSML (* only)	*12	7	1.8	7	1.8	32	3	6	3.5	9.8	10.5	29.3	19.6	58.8	24.1	63.7		
NSZL (* only)	*16	9.5	2.5	9.5	2.5	40	3	8	6.1	15.6	14.9	48.9	29.4	98	43.6	116.3		
NSXL (* only)																		

Ⓟ M3 and M4 have no groove for a wrench on the tip. It can be installed only by using a hexagon socket.
Ⓟ Min. is the initial load, and max. is the load when the tip is fully compressed.

kgf=Nx0.101972

Order Example — Part Number: NSML8

Days to Ship — 6 Days P.87

Price

■Volume Discount (Ⓟ Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Ball Plungers / Wrenches for Ball Plunger

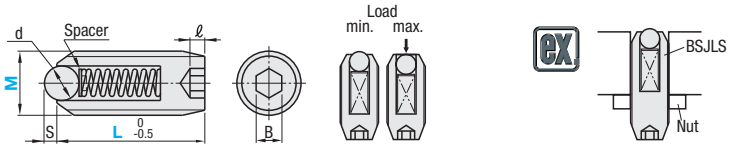
- L Dimension Selectable Long Type · L Dimension Selectable Stainless Steel Long Type -

CAD Data

■L Dimension Selectable Long



Type			Body M Material	Body H Hardness	Body S Surface Treatment	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operating Temperature
Metal Ball	Ultra Light Load	BPSLS	1.1191/ C45E	29~35HRC	Black Oxide	1.3505/ 100Cr6	55HRC~	JIS SWP-B ~1.0600	Brass	-30~80°C
	Light Load	BPJLS								
	Heavy Load	BSJLS								
	Extra Heavy Load	BPWLS			Nickel Plating					
Plastic Ball	Light Load	NPJRS			Black Oxide	Polyacetal	-			



Part Number Type	M (Coarse)	L Selection	Metal Ball d	Metal Ball S	Plastic Ball d	Plastic Ball S	ℓ	B	Ultra Light Load (BPSLS) Load (N) min.	Ultra Light Load (BPSLS) Load (N) max.	Light Load (BPJLS · NPJRS) Load (N) min.	Light Load (BPJLS · NPJRS) Load (N) max.	Heavy Load (BSJLS) Load (N) min.	Heavy Load (BSJLS) Load (N) max.	Extra Heavy Load (BPWLS) Load (N) min.	Extra Heavy Load (BPWLS) Load (N) max.	€ Unit Price Metal Ball	€ Unit Price Plastic Ball
(Metal Ball) BPSLS	3	20 30	1.5	0.5	-	-	1	1.5	0.3	0.64	1	2	1.5	2.9	2.2	5		
	*4	20 30	2.5		2.4	0.7	1.5	2	0.6	1.6	2	4.9	3.9	9.8	2.5	12.6		
BPJLS	*5	30 40	3	0.8	3	0.8	2	2.5	1	3.12	2.9	9.8	4.9	19.6	11.7	25.1		
BSJLS	*6	30 40	3		3	0.8	2.5	3	1.6	4.85	4.9	14.7	9.8	29.4	18.7	35.3		
BPWLS	*8	40 50	4	1	4	1	2.5	4	2.4	6.36	6.9	19.6	12.7	39.2	24.5	46.8		
(Plastic Ball) NPJRS(* only)	*10	40 50	5	1.2	5	1.2	3	5	3	8.1	8.8	24.5	18.6	49	26.7	58.7		
	*12	50 60	7	1.8	7	1.8	3	6	3.5	9.68	9.8	29.4	19.6	58.8	26.1	62.3		
	*16	50 60	9.5	2.5	9.5	2.5	3	8	5.7	15.8	15.7	49	29.4	98	55.4	116		

Min. is the initial load, and max. is the load when the tip is fully compressed. M3 and M4 have no groove for a wrench on the tip. It can be installed only by using a hexagon socket. kgf=Nx0.101972

Order Example: Part Number BPJLS6 - 40

Days to Ship: 8 Days — Express A 2,00 EUR/ piece — P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

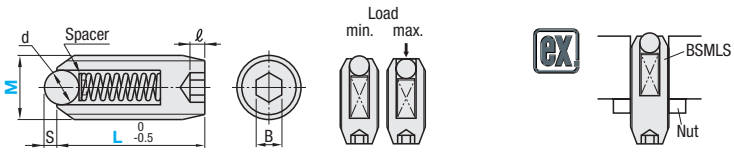
For orders larger than indicated quantity, please request a quotation.

■L Dimension Selectable Stainless Steel Long

RoHS



Type			Body M Material	Ball M Material	Ball H Hardness	Spring M Material	Spacer M Material	Operating Temperature
Metal Ball	Ultra Light Load	BSSLS	1.4301/ X5CrNi18-10	1.4125/ X105CrMo17	55HRC	1.4568/ X7CrNiAl17-7	1.4301/ X5CrNi18-10	-30~260°C
	Light Load	BSMLS						
	Heavy Load	BSZLS						
	Extra Heavy Load	BSXLS						



Part Number Type	M (Coarse)	L Selection	d	S	ℓ	B	Ultra Light Load (BSSLS) Load (N) min.	Ultra Light Load (BSSLS) Load (N) max.	Light Load (BSMLS) Load (N) min.	Light Load (BSMLS) Load (N) max.	Heavy Load (BSZLS) Load (N) min.	Heavy Load (BSZLS) Load (N) max.	Extra Heavy Load (BSXLS) Load (N) min.	Extra Heavy Load (BSXLS) Load (N) max.	€ Unit Price
	3	20 30	1.5	0.5	1	1.5	0.3	0.65	1	2	1.5	2.9	2.2	5	
	4	20 30	2.5		1.5	2	0.6	1.62	1.9	4.9	3.9	9.8	2.5	12.5	
(Metal Ball) BSSLS	5	30 40	3	0.8	2	2.5	1.1	3.21	3.3	9.8	4.9	19.6	11.2	24.1	
BSMLS	6	30 40	3		2.5	3	1.7	4.96	5.1	15.3	9.8	29.4	17.7	33.4	
BSZLS	8	40 50	4	1	2.5	4	2.5	6.56	5.5	19.1	12.7	39.2	21.4	45.3	
BSXLS	10	40 50	5	1.2	3	5	3.2	8	8.9	24.1	18.6	49	23.5	60	
	12	50 60	7	1.8	3	6	3.5	9.8	10.5	29.3	19.6	58.8	24.1	63.7	
	16	50 60	9.5	2.5	3	8	6.1	15.6	14.9	48.9	29.4	98	43.6	116.3	

Min. is the initial load, and max. is the load when the tip is fully compressed. M3 and M4 have no groove for a wrench on the tip. It can be installed only by using a hexagon socket. kgf=Nx0.101972

Order Example: Part Number BSZLS8 - 40

Days to Ship: 8 Days — Express A 2,00 EUR/ piece — P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Wrenches for Ball Plunger

RoHS

BPJG



M Material: 1.1191/C45E
H Hardness: 34~43HRC
S Surface Treatment: Black Oxide

Part Number	Applicable M Size	Applicable Plungers	€ Unit Price Qty. 1 ~ 3	Volume Discount Qty. 4 ~ 19
BPJG1	5 · 6	P1469 Standard Type (Metal ball only)		
BPJG2	8	P1470 Stainless Steel Type		
BPJG3	10	P1472 Long Type · Stainless Steel Long Type		
BPJG4	12	P1473 L Dimension Selectable Long Type · Stainless Steel Long Type		
BPJG5	16	P1474 Flanged Type		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number BPJG2

Days to Ship: 6 Days — P.87

Ball Plungers / Ball Buttons

- Bolt Type · Flanged Type-

Price Reduction 6%

CAD Data

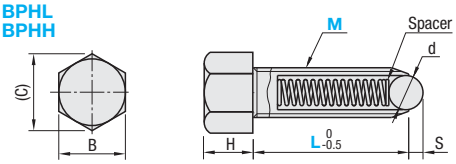
■Bolt

RoHS

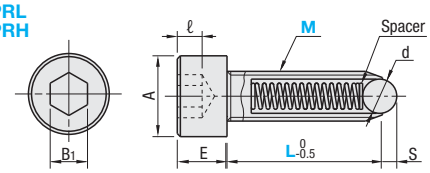


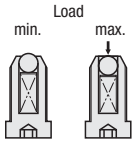
Type			Body			Ball		Spring	Spacer	Operating Temperature
			M Material	H Hardness	S Surface Treatment	M Material	H Hardness	M Material	M Material	
Light Load	Hexagon Bolts	BPHL	1.1191/C45E	29~35HRC	Black Oxide	1.3505/ 100Cr6	55HRC~	JIS SWP-B ~1.0600	1.4301/ X5CrNi18-10	-30~80°C
Heavy Load		BPHH			Electroless Nickel Plating					
Light Load	Hexagon Socket Bolt	BPRL	1.7220/ 34CrMo4		Black Oxide					
Heavy Load		BPRH			Electroless Nickel Plating					

Hexagon Bolt Type BPHL BPHH



Hexagon Socket Head Cap Screw Type BPRL BPRH





L dimension includes the incomplete threaded portion (pitch x 2).

Part Number Type	M	L Selection	d	S	A	B	B1	(C)	E	H	ℓ	Load (N) BPHL · BPRL min.	Load (N) BPHL · BPRL max.	Load (N) BPHH · BPRH min.	Load (N) BPHH · BPRH max.	€ Unit Price BPHL BPHH	€ Unit Price BPRL BPRH
(Hexagon Bolt Type)	4	*10 *15 *20 30	2.5		7	7	3	8.1	4	2.8	2	1.9	4.9	3.9	9.8		
BPHL BPHH	5	*15 *20 30 40	3	0.8	8.5	8	4	9.2	5	3.5	2.5	3.3	9.8	4.9	19.6		
	6	*15 *20 30 40	3		10	10	5	11.5	6	4	3	5.1	15.3	9.8	29.4		
(Hexagon Socket Head Cap Screw Type)	8	*15 *20 30 40	4	1	13	13	6	15	8	5.5	4	5.5	19.1	12.7	39.2		
	10	15 *20 30 40 50	5	1.2	16	17	8	19.6	10	7	5	8.9	24.1	18.6	49		
BPRL	12	*25 30 40	7	1.8	18	19	10	21.9	12	8	6	10.9	29.3	19.6	58.8		
BPRH	16	40	9.5	2.5	24	24	14	27.7	16	10	8	14.9	48.9	29.4	98		

*L size with * mark is only available for BPHL and BPHH.

Order Example: Part Number BPRL5 - L 30

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

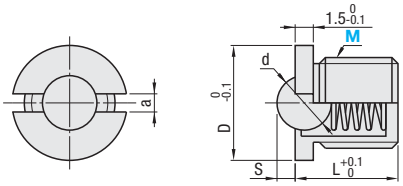
For orders larger than indicated quantity, please request a quotation.

■Flanged

RoHS



Type	Body M Material	Body H Hardness	Body S Surface Treatment	Ball M Material	Ball H Hardness	Spring M Material	Operation Temperature
FBPJ	1.1191/C45E	29~35HRC	Black Oxide	1.4125/X105CrMo17	55HRC~	1.4568/ X7CrNiAl17-7	-30~80°C
FBPJS	1.4305/X10CrNiS18-9	-	-				-30~260°C



Part Number Type	M (Coarse)	D	L	S	d	a	FBPJ Load (N) min.	FBPJ Load (N) max.	FBPJS Load (N) min.	FBPJS Load (N) max.	Applicable Wrench	€ Unit Price FBPJ	€ Unit Price FBPJS
FBPJ	5	7	5	0.8	3	0.8	0.6	5.6	1.3	6.4	BPJG1		
	6	8	6	1	4	1	2.8	6.3	2.7	8	BPJG2		
	8	10	7	1.6	5	1.5	2.9	9.6	1.3	10.2	BPJG3		
FBPJS	10	12	9	1.9	6.35		6.4	11.7	6.1	17.2	BPJG4		
	12	14	11.5	2.4	7.94		9	15	2.1	18.8	BPJG5		
	16	18	16	3.2	9.53	2	9.9	21.5	13	25.5	BPJG5		

Order Example: Part Number FBPJ5

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

kgf=Nx0.101972

For orders larger than indicated quantity, please request a quotation.

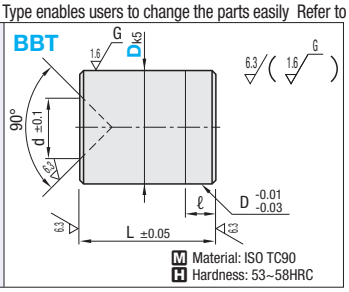
The Female Thread Type enables users to change the parts easily Refer to P.1475

■Ball Buttons

RoHS



BBT



M Material: ISO TC90
H Hardness: 53~58HRC

Part Number Type	D	Dk5		L	d	ℓ	€ Unit Price Qty.1~19	Volume Discount 20~49	50~199	200~500
BBT	6	6	+0.006 +0.001	8	2	2				
	8	8	+0.007 +0.001	10	3	3				
	10	10		12	4					
	12	12	+0.009 +0.001	14	5					
	16	16		18	8					

When using with a ball plunger, select the same No. (M=D). (BBT6 is also applicable to M5)

Order Example: Part Number BBT6

Days to Ship: 6 Days P.87

For orders of 501 or more pieces, please request a quotation P.87

NEW

Press-Fit Plungers / Ball Buttons

-Standard Type · Roller Type- –Female Thread Type–

Price Reduction
Up to 20%

CAD Data

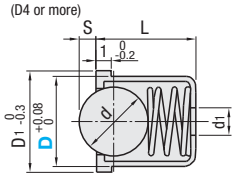
■Press-Fit Plungers
-Standard-

RoHS

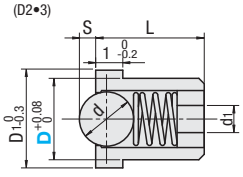


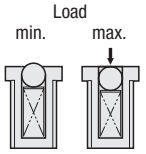
Type		Body	Ball		Spring	Operation Temperature
		M Material	M Material	H Hardness	M Material	
Light Load	PFSSN	1.4305/ X10CrNiS18-9	1.4125/ X105CrMoV18	55HRC~	1.4568/ X7CrNiAl17-7	-20~120°C
Heavy Load	PFSSR					
Light Load	PFPSN	Polyacetal	Polyacetal	-		-30~80°C
	PFPPN					

(D4 or more)

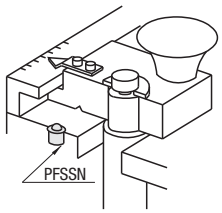


(D2•3)





Example



Part Number Type	D	D1	L Light Load	L Heavy Load	S	d	d1	Light Load (N) PFSSN min.	Light Load (N) PFSSN max.	Light Load (N) PFSPN · PFPPN min.	Light Load (N) PFSPN · PFPPN max.	Heavy Load (N) PFSSR min.	Heavy Load (N) PFSSR max.	€ Unit Price PFSSN	PFSSR	PFPSN	PFPPN
PFSSN PFSSR PFPSN PFPPN	2	2.5	3	-	0.3	1	0.5	0.54	0.78	0.54	0.78	-	-				
	3	3.6	4	-	0.6	2	1	0.74	0.98	0.74	0.94	-	-				
	4	4.6	5	6.5	0.8	3	1.5	0.65	5.6	1.3	6.4	3.1	8.7				
	5	5.6	6	8	1	4	2	2.8	6.3	2.7	8.0	5.1	13.5				
	6	6.6	7	9	1.6	5	2.5	2.95	9.6	1.15	10.2	5.3	16.5				
	8	8.6	9	12	1.9	6.35	3	6.5	11.7	6.15	17.2	8	28				
	10	10.6	11.5	14.5	2.4	8		9	15	2.1	18.8	13.5	30.5				

Recommended Diameter of Mounting Hole D $^{+0.13}_{+0.08}$

Use adhesive to prevent loosening.

kgf=Nx0.101972

Order Example Part Number PFSSN4

Days to Ship 6 Days P.87

■Volume Discount (Round down to one Cent.) P.87

-PFSSN

Quantity	1~19	20~99	100~199
Applicable Price	€ Unit Price	Qty. Discount	
	Price List	10%	15%

For orders larger than indicated quantity, please request a quotation.

-Except PFSSN

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

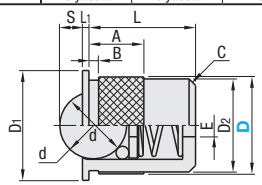
For orders larger than indicated quantity, please request a quotation.

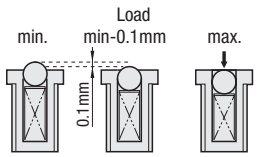
■Press-Fit Plungers
-Roller-

RoHS

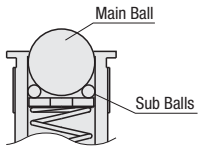


Type	M Material Body	Main Ball	Sub Ball	Spring	Operation Temperature
PFPR	Polyacetal	Polyacetal	1.4125/X105CrMo17	1.4568	-30~80°C





■Features



The combinational structure of the main ball and the sub ball helps smooth rotation of the ball.

Part Number Type	D	D1	D2	L	S	L1	d	A	B	E	C	Allowable Load (N) min.	Allowable Load (N) min.-0.1mm	Allowable Load (N) max.	€ Unit Price
PFPR	7	9	-	7.5	1.5	1	4.76	7.5	1	1.5	0.8	-	0.1	2	
	9	11	8.4	10	1.7		5.56	7		2.5	1	-	0.2	4	
	13	15	12.4	15	2.8		8.73		1.2	3		-	0.3	7	
	15	17	14.7	16.5	3.5		10.32	8.5	1.5	3.5		-	0.3	11	
	20	22	19.4	22.5	5.2	1.5	15.88	10.5		5.3		-	0.3	14	
	24	26	23.4	29	6.6		19.05	13.5		6.4		-	0.3	21	

Recommended Diameter of Mounting Hole D_{H8}

Order Example Part Number PFPR15

Days to Ship 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99
Rate	€ Unit Price	5%	10%

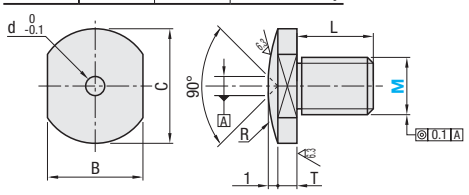
For orders larger than indicated quantity, please request a quotation.

■Ball Buttons
–Female Thread–

RoHS

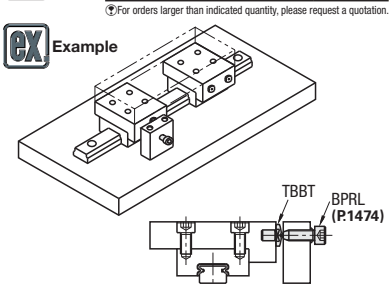


Type	M Material	H Hardness	S Surface Treatment
TBBT	ISO TC90	55~60HRC	Electroless Nickel Plating



When using with a ball plunger, select the same M.

Example



Part Number Type	M	B	L	C	T	R	d	€ Unit Price
TBBT (Coarse)	4	7	5	8	2	8.4	1.5	
	5	8	6	9	2	10.2	2	
	6	10	8	12	2	18	2	
	8	13	10	15	3	27.6	3	
	10	17	12	20	3	48.5	4	
	12	19	15	22	3	57.8	5	

Order Example Part Number TBBT6

Days to Ship 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Roller Plungers
-Bolt Type · Mounting Type-

Price Reduction 10%

CAD Data

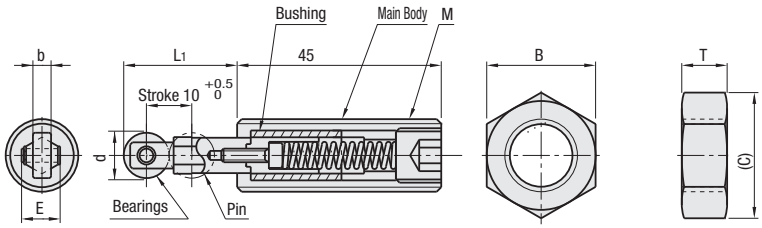
Features: Has a ball bearing on the tip. Lager bearings are now added.

Bolt

RoHS



Type		Main Body		Pin		Bearing	Bushing	Spring	Accessory	
		M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	M Material	M Material	M Material	S Surface Treatment
Light Load	RBPJ	1.1191/C45E	Electroless Nickel Plating	1.1191/C45E	Electroless Nickel Plating	1.3505/100Cr6	High-Tensile Brass Alloy	1.4301/ X5CrNi18-10	1.0038/S235JR	Electroless Nickel Plating
Heavy Load	RBSJ									



Part Number Type		No.	d	b	E	L1	M	Nut B	Nut (C)	Nut T	Load (N) min.	Load (N) max.	€ Unit Price
Light Load	RBPJ	16	10	4	9	25	16x2.0	24	27.7	10	1.6	4.8	
		20	19	6	11.5	30	20x2.5	30	34.6	12			
Heavy Load	RBSJ	16	10	4	9	25	16x2.0	24	27.7	10	2.9	8.4	
		20	19	6	11.5	30	20x2.5	30	34.6	12			

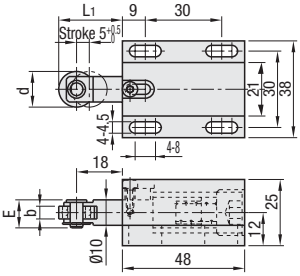
Mounting

RoHS

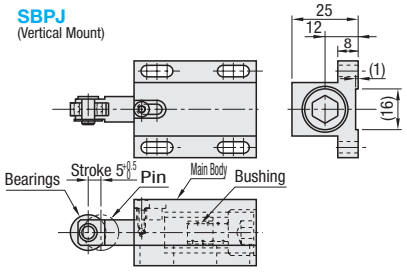


Type		Main Body M Material	Main Body S Surface Treatment	Pin M Material	Pin S Surface Treatment	Bearing M Material	Bushing M Material	Spring M Material
Side Mount	TBPJ	1.1191/C45E	Electroless Nickel Plating	1.1191/C45E	Electroless Nickel Plating	1.3505/100Cr6	High-Tensile Brass Alloy	1.4301/ X5CrNi18-10
Vertical Mount	SBPJ							

TBPJ (Side Mount)



SBPJ (Vertical Mount)



Part Number Type		No.	d	b	E	L1	Load (N) min.	Load (N) max.	€ Unit Price
Light Load	TBPJ (Side Mount)	1	14	5	11	25	3	5.1	
		1A	19	6	12.8	27.5			
Heavy Load		2	14	5	11	25	6.1	10.4	
		2A	19	6	12.8	27.5			
Light Load	SBPJ (Vertical Mount)	1	14	5	11	25	3	5.1	
		1A	19	6	12.8	27.5			
Heavy Load		2	14	5	11	25	6.1	10.4	
		2A	19	6	12.8	27.5			

No.1A and 2A have larger bearing dia. than that of conventional products.

Order Example

Part Number
RBPJ20
TBPJ2A

Days to Ship 6 Days P.87

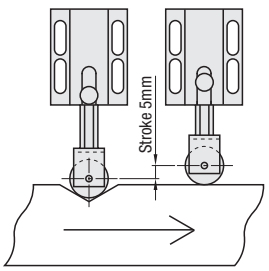
Price

Volume Discount Rate (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Example



Features

-The tip part is rolling mechanism and long stroke, it is suitable for the position setting of sliding work-pieces or indexing for rotating tables.

-The stroke is longer (5~10mm) than that of ball plungers (0.2~2.5mm).

Spring Plungers
-Steel Type-

CAD Data

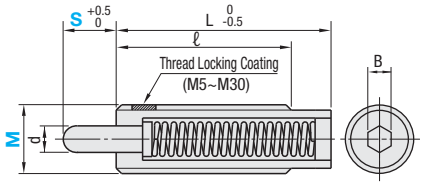
For details of spring plungers with a switch, refer to P.1782

Steel

RoHS



Load Category		Type: Standard	Type: Thread-lock Untreated	Body: M Material	Body: H Hardness	Body: S Surface Treatment	Pin: M Material	Pin: H Hardness	Pin: S Surface Treatment	Spring: M Material	Operating Temperature
Steel Nose	Ultra Light Load	PJS	PJS~N	1.1191/C45E	29~35HRC	Black Oxide	1.1191/C45E	57~63HRC (Carburized)	Trivalent Chromate	JIS SWP-B ~1.0600	-30~80°C
	Light Load	PJL	PJL-N						Black Oxide		
	Heavy Load	PJH	PJH-N			Nickel Plating					
	Extra Heavy Load	PJX	PJX~N								
Plastic Tip	Ultra Light Load	NPJS	NPJS~N			Black Oxide	Polyacetal	~	~		
	Light Load	NPJL	NPJL~N								
	Heavy Load	NPJH	NPJH~N								
	Extra Heavy Load	NPJX	~			Nickel Plating					

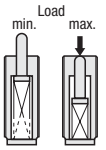


Thread-lock treatment is not provided on M3 and M4.

Thread-lock Treatment

To fix the position of the spring plunger use a micro-encapsulated anaerobic adhesive. Once parts have been loosened, adhesion is lost, use an anaerobic adhesive when reassembling.

The thread-lock is most effective by leaving the parts for 72 hours or more in 25°C. Be noted if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.



Standard

Part Number: Type	M (Coarse)	S	d	ℓ	L: Ultra Light · Light · Heavy Load	L: Extra Heavy Load	B	Ultra Light Load: min.	Ultra Light Load: N Load	Ultra Light Load: max.	Light Load: min.	Light Load: N Load	Light Load: max.	Heavy Load: min.	Heavy Load: N Load	Heavy Load: max.	Extra Heavy Load: min.	Extra Heavy Load: N Load	Extra Heavy Load: max.	€ Unit Price: Ultra Light · Light · Heavy Load	€ Unit Price: Extra Heavy Load
(Steep Tip) PJS (Applicable to ** only) PJL PJH PJX (Applicable to * only)	3	*/**1.5	1.1	10 (15)	10	15	0.9	0.05		0.32	0.49		1.0	0.78		2.9	2.2		4.5		
		*/**3	1.1	15 (20)	15	20	0.9	0.09		0.32	0.29		1.0	0.78		2.9	1.8		4.5		
	4	*/**2	1.6	15 (24)	15	24	1.3	0.23		0.65	1.0		2.0	2.9		8.8	5.2		13		
		*/**4	1.6	24	24	24	1.3	0.24		0.65	0.59		2.0	2.0		8.8	5.2		13		
	5	*/**3	2.0	20 (27)	20	27	1.5	0.74		2.95	2.0		9.8	4.9		19.6	9.1		24.5		
		*/**5	2.0	27 (39)	27	39	1.5	0.72		2.95	2.0		9.8	2.9		19.6	8.8		24.8		
	6	*/**3	2.5	25 (30)	25	30	2	0.85		3.2	5.9		9.8	7.8		29.4	14.2		39.5		
		*/**5	2.5	30 (36)	30	36	2	0.85		3.2	2.0		9.8	4.9		29.4	14.1		39.4		
		10	2.5	30	39	-	2	-		-	1.4		9.8	5.0		28.0	-		-		
	8	*/**3	3.1	25 (27)	25	27	2.5	0.9		3.3	5.9		9.8	14.7		29.4	35.3		41.2		
		*/**5	3.1	27 (30)	27	35	2.5	0.9		3.3	2.9		9.8	7.8		29.4	14.7		41.2		
		10	3.1	30	43	-	2.5	-		-	3.0		9.8	7.0		28.8	-		-		
	10	*/**5	3.8	30	30	35	3	1.9		4.7	5.9		14.7	8.8		49.0	15.7		62.8		
		*/**10	3.8	30	43	53	3	1.7		4.7	2.9		14.7	7.8		49.0	12.7		62.8		
		15	3.8	30	58	-	3	-		-	2.9		14.7	6.2		48.7	-		-		
	12	*/**5	5.5	30 (35)	30	43	4	1.5		4.7	5.9		14.7	18.6		49.0	37.2		98.1		
		*/**10	5.5	35	43	58	4	1.3		5.9	2.9		19.6	7.8		49.0	14.7		98.1		
		*/**15	5.5	35	51	78	4	1.6		5.9	2.9		19.6	4.9		49.0	14.9		98.1		
		20	5.5	35	78	-	4	-		-	3.5		19.6	6.9		49.0	-		-		
(Plastic Tip) NPJS (Applicable to ** only) NPJL (Applicable to * only) NPJH (Applicable to * only) NPJX (Applicable to ** only)	16	*/**10	8	35	60	60	5	1.7		12.8	5.9		39.2	12.7		78.5	23.5		147.2		
		*/**15	8	35	60	70	5	1.7		12.8	3.9		39.2	12.7		78.5	21.6		147.2		
		*/**20	8	35	85	90	5	1.7		12.8	4.9		39.2	9.8		78.5	12.7		147.2		
		*30	8	35	125	125	5				2.9		39.2	6.9		78.5	19.6		147.2		
		40	8	35	125		5				4.9		39.2	6.9		78.5					
		50	8	35	155		5				19.6		49.0	29.4		78.5					
		60	8	35	159	-	5				2.9		49.0	3.9		78.5	-		-		
		70	8	35	185		5		-		3.4		49.0	5.5		78.5					
		80	8	35	185		5			-	19.6		49.0	29.4		93.2					
	20	*15	10	45	60	80	6				12.7		78.5	24.5		147.1	12.7		245.3		
		20	10	45	72		6				11.7		78.5	22.6		147.1					
		30	10	45	96	-	6				11.7		78.5	22.6		147.1	-		-		
		40	10	45	120		6				11.7		78.5	22.6		147.1					
	24	7	10	45	60	-	10				19.6		98.1	44.1		196.1	-		-		
		*15	10	45	60	84	10				19.6		98.1	47.1		215.7	24.5		314.0		
		20	10	45	75		10				17.7		98.1	44.1		215.7					
		30	10	45	100		10				17.7		98.1	44.1		215.7					
		40	10	45	124		10		-		17.7		98.1	44.1		215.7					
	30	15	14	45	66	-	14				27.5		117.7	44.1		274.6	-		-		
		20	14	45	78		14				27.5		117.7	53.0		274.6					
		30	14	45	100		14				27.5		117.7	45.1		274.6					
		40	14	45	123		14				27.5		117.7	47.1		274.6					

ℓ dimensions with ( ) are applicable to the Extra Heavy Load.

Thread-lock Untreated

kgf=Nx0.101972

Part Number: Type	M (Coarse)	S	d	ℓ	L: Ultra Light · Light · Heavy Load	L: Extra Heavy Load	B	Ultra Light Load: min.	Ultra Light Load: N Load	Ultra Light Load: max.	Light Load: min.	Light Load: N Load	Light Load: max.	Heavy Load: min.	Heavy Load: N Load	Heavy Load: max.	Extra Heavy Load: min.	Extra Heavy Load: N Load	Extra Heavy Load: max.	€ Unit Price: Ultra Light · Light · Heavy Load	€ Unit Price: Extra Heavy Load
(Steel Tip) PJS-N PJL-N PJH-N PJX-N	5	3	2.0	20 (27)	20	27	1.5	0.74		2.95	2.0		9.8	4.9		19.6	9.1		24.5		
		5	2.0	27 (39)	27	39	1.5	0.72		2.95	2.0		9.8	2.9		19.6	8.8		24.8		
	6	3	2.5	25 (30)	25	30	2	0.85		3.2	5.9		9.8	7.8		29.4	14.2		39.5		
		5	2.5	30 (36)	30	36	2	0.85		3.2	2.0		9.8	4.9		29.4	14.1		39.4		
	8	3	3.1	25 (27)	25	27	2.5	0.9		3.3	5.9		9.8	14.7		29.4	35.3		41.2		
		5	3.1	27 (30)	27	35	2.5	0.9		3.3	2.9		9.8	7.8		29.4	14.7		41.2		
	10	5	3.8	30	30	35	3	1.9		4.7	5.9		14.7	8.8		49.0	15.7		62.8		
		10	3.8	30	43	53	3	1.7		4.7	2.9		14.7	7.8		49.0	12.7		62.8		
(Plastic Tip) NPJS-N NPJL-N NPJH-N	12	5	5.5	30 (35)	30	43	4	1.5		4.7	5.9		14.7	18.6		49.0	37.2		98.1		
		10	5.5	35	43	58	4	1.3		5.9	2.9		19.6	7.8		49.0	14.7		98.1		
		15	5.5	35	51	78	4	1.6		5.9	2.9		19.6	4.9		49.0	14.9		98.1		
	16	10	8	35	60	60	5	1.7		12.8	5.9		39.2	12.7		78.5	23.5		147.2		
		15	8	35	60	70	5	1.7		12.8	3.9		39.2	12.7		78.5	21.6		147.2		
		20	8	35	85	90	5	1.7		12.8	4.9		39.2	9.8		78.5	12.7		147.2		

ℓ dimensions with ( ) are applicable to the Extra Heavy Load.

kgf=Nx0.101972

Part Number
NPJH3-1.5
PJS-N10-5

6 Days P.87

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Spring Plungers / Wrenches
-Stainless Steel Type-

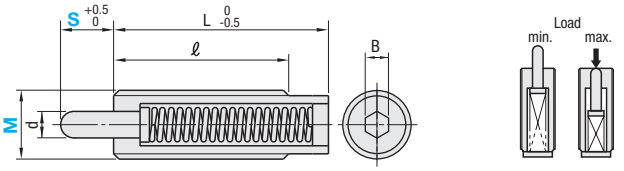
Price Reduction 10%

CAD Data

■Spring Plungers RoHS
-Stainless Steel-



Load Category		Type	Body M Material	Nose M Material	Nose H Hardness	Spring M Material	Operation Temperature
Stainless Steel Nose	Ultra Light Load	PJLSW	1.4301/X5CrNi18-10	1.4125/X105CrMo17	55HRC~	1.4568/X7CrNiAl17-7	-30~260°C
	Light Load	PJLW					
	Heavy Load	PJHW					
	Extra Heavy Load	PJXW					
Plastic Nose	Ultra Light Load	PJLSK		Polyacetal	-		-30~80°C
	Light Load	PJLK					
	Heavy Load	PJHK					
	Extra Heavy Load	PJXK					



Part Number Type	M (Coarse)	S	d	ℓ	L	B	Ultra Light Load (PJLSW · PJLSK) min.	N Load	max.	Light Load (PJLW · PJLK) min.	N Load	max.	Heavy Load (PJHW · PJHK) min.	N Load	max.	Extra Heavy Load (PJXW · PJXK) min.	N Load	max.	€ Unit Price
(Stainless Tip) PJLSW PJLW PJHW PJXW	3	1.5	1.0	15	15	0.9	0.12		0.4	0.4		1.3	0.8		2.94	1.1		3.42	
		3		15	15		0.12		0.4	0.2		1.3	0.6		2.93	0.8		3.41	
	4	2	1.6	15	15	1.3	0.27		0.65	0.9		2.0	2.0		8.8	6.1		13.8	
		4		24	24		0.18		0.65	0.6		2.1	1.9		8.75	5.8		13.6	
	5	3	2.0	20	20	1.5	0.4		3	1.4		9.7	2.7		16.3	6.8		22.0	
		5		27	27		0.35		3	1.1		10.3	1.0		17.1	5.7		21.5	
	6	3	2.5	25	25	2	1.8		3.05	6.0		9.8	8.0		26.4	15.8		35.6	
		5		30	30		1.5		3.05	3.4		9.86	4.4		26.6	12.9		34.4	
(Plastic Tip) PJLSK PJLK PJHK PJXK	8	3	3.1	25	25	2.5	1.9		3.15	6.0		9.9	14.7		27.0	21.9		36.3	
		5		27	27		1.4		3.15	4.0		9.83	6.7		26.6	14.7		34.5	
	10	5	3.8	30	30	3	1.6		4.6	5.7		14.7	8.2		45.7	24.5		58.6	
		10		30	43		1.6		4.6	4.4		14.7	6.2		45.1	19.8		58.7	
	12	5	5.5	30	30	4	1.7		4.7	5.8		14.7	18.2		49.0	34.9		63.6	
		10		35	43		1.6		4.7	5.0		14.7	8.2		49.1	25.5		63.6	
		15		35	51		1.8		4.7	6.9		14.7	7.5		48.9	20.1		63.7	
	16	10	8.0	35	57	5	2.8		10.8	9.2		34.2	18.9		68.5	38.7		88.4	
		15		35	57		2.6		10.8	8.6		34.4	14.4		68.6	33.9		88.1	
		20		35	65		2		11	7.1		34.4	4.2		68.6	25.4		88.1	

(P)Thread-lock treatment not applied. (P)Min. is the initial load, and max. is the load when the tip is fully compressed. kgf=Nx0.101972

Order Example Part Number PJLW12-5

Days to Ship 6 Days P.87

Price

■Volume Discount (P)Round down to one Cent. P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

■Wrenches for Spring Plungers RoHS

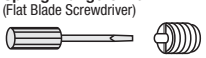


M Material: 1.1191/C45E
S Surface Treatment: Black Oxide

Part Number Type	No.	Applicable Plunger Sizes	€ Unit Price 1~3 pcs.	Volume Discount Qty 4~19
PJG	1	M5 · 6		
	2	M8 · 10		
	2A	M8 · 10 (Flanged Type)		
	3	M12		
	4	M16		
	5	M20 · 24		
	6	M30		

(P)For orders larger than indicated quantity, please request a quotation.

Example
Spring Plungers M3 • M4
(Flat Blade Screwdriver)



Spring Plungers M5~M30
(Special Wrench PJG)



■Applicable Spring Plungers

Type	Page
Steel Type	P.1477
Stainless Steel Type	P.1478
Tip Female Thread Type	P.1482
Flat Tip Type	P.1484
For Inclined Surface Type	
Flanged Type	

Order Example Part Number PJG1

Days to Ship 6 Days P.87

Long Sleeve Plungers

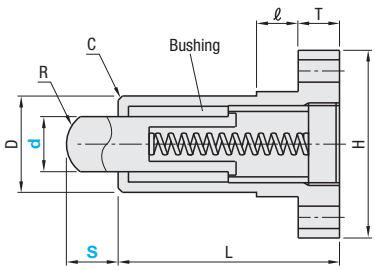
CAD Data

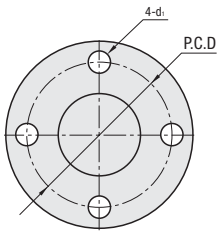
Features: As a long pin-guide is used, the structure of this plunger is strong enough to bear the diagonal load.

RoHS



Type	Pin			Main Body		Bushing	Spring
	M Material	H Hardness	S Surface Treatment	M Material	S Surface Treatment	M Material	M Material
GLPN	1.1191/ C45E	HRC50~55	Black Oxide	1.1191/ C45E	Black Oxide	High-Tensile Brass Alloy Solid Lubricant Embedded	1.4301/ X5CrNi18-10





Part Number		Stroke	R	D	L	H	d1	P.C.D	T	C	ℓ	Load (N)		€ Unit Price
Type	d	S										min.	max.	1~10 pcs.
GLPN	6	5	4	14	32	30	4.5	22	8	1	5	18	29	
		10			38							8	29	
	8	5	5	16	38	32		24				22	30	
		10			42							14	30	
	10	10	6	20	48	40	5.5	30		1.5	8	26	47	
		15			52							15	47	
	12	15	8	22	52	42		32				27	48	
		20			58							20	48	
	16	15	10	28	60	52	6.5	40	10	2	10	42	73	
		25			70							22	73	
	20	20	12	32	70	56		44				48	86	
		30			80							30	86	

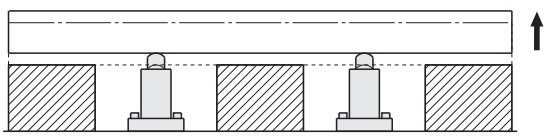
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	S
GLPN8	-	10
GLPN16	-	25

Days to Ship: 8 Days

Example



Short Spring Plungers
-Steel Type · Stainless Steel Type-

Price Reduction
Up to 52%

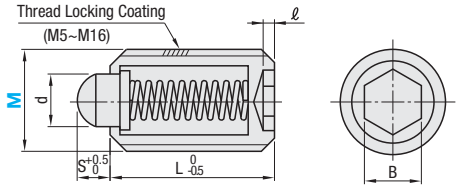
CAD Data

■Steel

RoHS



Load Category		Type: Standard	Type: Thread-lock Untreated	Body: M Material	Body: H Hardness	Body: S Surface Treatment	Pin: M Material	Pin: H Hardness	Pin: S Surface Treatment	Spring: M Material	Operating Temperature
Steel Nose	Ultra Light Load	SPJS	SPJS-N	1.7220/34CrMo4	29~35HRC	Black Oxide	1.1191/ C45E	57~63HRC (Carburized)	Trivalent Chromate	JIS SWP-B ~1.0600	-30~80°C
	Light Load	SPJL	SPJL-N						Black Oxide		
	Heavy Load	SPJH	SPJH-N			Nickel Plating					
	Extra Heavy Load	SPJF	SPJF-N								
Plastic Nose	Ultra Light Load	SPRRS	SPRRS-N			Black Oxide	Polyacetal	-	-		
	Light Load	SPRM	SPRM-N								
	Heavy Load	SPRH	-								
	Extra Heavy Load	SPRF	-			Nickel Plating					



Thread-lock untreated type is not available for M3 or M4 (M3 and M4 Standard Type are not thread-lock treated.)
Thread-lock Treatment
To fix the position of the spring plunger use a micro-encapsulated anaerobic adhesive. Once parts have been loosened, adhesion is lost, use an anaerobic adhesive when reassembling.

■Standard

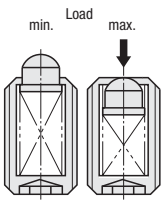
Part Number Type	M (Coarse)	d	S	L	ℓ	B	Ultra Light Load Load (N) min.	Ultra Light Load Load (N) max.	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	€ Unit Price SPJL SPJH	€ Unit Price SPJS SPJF	€ Unit Price SPRRS · SPRM SPRH · SPRF
(Steel Tip) SPJS SPJL SPJH SPJF / (Plastic Tip) SPRRS SPRM SPRH SPRF	3	1.2	1	7	1	1.5	0.11	0.48	0.4	1.5	0.8	2.0	-	-			
	4	2.1	1.2	9	1.5	2	0.49	1.55	1.6	5.0	2.0	9.0	4.4	11.9			
	5	2.7	1.5	12	2	2.5	0.53	2.53	2.0	7.8	4.9	14.7	4.1	24.9			
	6	3.2		13	2.5	3	0.89	3.11	2.9	9.8	5.9	19.6	7.7	30.6			
	8	4	2	15	2.5	4	0.9	3.14	2.9	9.8	5.9	19.6	8.6	43			
	10	5	2.5	16	3	5	1.76	4.71	4.9	14.7	9.8	29.4	14.1	53.1			
	12	6	3.5	20	3	6	1.96	4.82	4.9	14.7	9.8	29.4	23.1	58.3			
	16	8	4.5	22	3	8	3.29	9	9.8	29.4	19.6	58.8	26.6	78.8			

No slits for swaging on the tip.
Min. is the initial load, and max. is the load when the tip is fully compressed. Extra Heavy Load Type is available from M4 size.

kgf=Nx0.101972

■Thread-lock Untreated

Part Number Type	M (Coarse)	d	S	L	ℓ	B	Ultra Light Load Load (N) min.	Ultra Light Load Load (N) max.	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	Extra Heavy Load Load (N) min.	Extra Heavy Load Load (N) max.	€ Unit Price
(Steel Tip) SPJS-N SPJL-N SPJH-N SPJF-N / (Plastic Tip) SPRRS-N SPRM-N	5	2.7	1.5	12	2	2.5	0.53	2.53	2	7.8	4.9	14.7	4.1	24.9	
	6	3.2		13	2.5	3	0.89	3.11	2.9	9.8	5.9	19.6	7.7	30.6	
	8	4	2	15	2.5	4	0.9	3.14	2.9	9.8	5.9	19.6	8.6	43	
	10	5	2.5	16	3	5	1.76	4.71	4.9	14.7	9.8	29.4	14.1	53.1	
	12	6	3.5	20	3	6	1.96	4.82	4.9	14.7	9.8	29.4	23.1	58.3	
	16	8	4.5	22	3	8	3.29	9	9.8	29.4	19.6	58.8	26.6	78.8	



No slits for swaging on the tip.
Min. is the initial load, and max. is the load when the tip is fully compressed.

Order Example — Part Number: SPJL12, SPJS-N5

Days to Ship: 6 Days P.87

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

2 Days

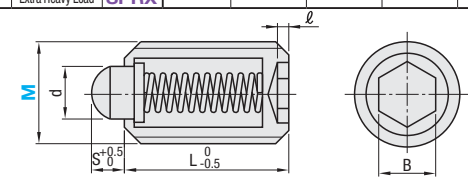
Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%

■Stainless Steel

RoHS



Load Category		Type	Body: M Material	Pin: M Material	Pin: H Hardness	Spring: M Material	Operating Temperature
Stainless Steel Nose	Ultra Light Load	SPJY	1.4301/X5CrNi18-10	1.4125/ X105CrMo17	55HRC~	1.4568/X7CrNiAl17-7	-30~260°C
	Light Load	SPJK					
	Heavy Load	SPJZ					
	Extra Heavy Load	SPJX					
Plastic Nose	Ultra Light Load	SPRY		Polyacetal	-		-30~80°C
	Light Load	SPRK					
	Heavy Load	SPRZ					
	Extra Heavy Load	SPRX					



Part Number Type	M (Coarse)	d	S	L	ℓ	B	Ultra Light Load (SPJY · SPRY) Load (N) min.	Ultra Light Load (SPJY · SPRY) Load (N) max.	Light Load (SPJK · SPRK) Load (N) min.	Light Load (SPJK · SPRK) Load (N) max.	Heavy Load (SPJZ · SPRZ) Load (N) min.	Heavy Load (SPJZ · SPRZ) Load (N) max.	Extra Heavy Load (SPJX · SPRX) Load (N) min.	Extra Heavy Load (SPJX · SPRX) Load (N) max.	€ Unit Price
(Stainless Tip) SPJY SPJK SPJZ SPJX / (Plastic Tip) SPRY SPRK SPRZ SPRX	3	1.2	1	7	1	1.5	0.11	0.49	0.5	1.51	0.8	2.0	-	-	
	4	2.1	1.2	9	1.5	2	0.51	1.54	1.6	4.8	2.0	9.0	4.0	11.5	
	5	2.7	1.5	12	2	2.5	0.62	2.49	2	7.9	5.1	14.7	6.0	24.2	
	6	3.2		13	2.5	3	0.97	3.06	2.8	9.9	5.5	19.6	9.4	29.5	
	8	4	2	15	2.5	4	1.16	3.26	3.6	10.9	6.1	19.6	13.5	43.7	
	10	5	2.5	16	3	5	1.54	4.76	4.2	14.6	9.6	29.4	19.1	53.3	
	12	6	3.5	20	3	6	1.81	4.82	4.6	14.8	10.4	29.4	24.5	58.8	
	16	8	4.5	22	3	8	3.1	9.1	9.9	29.3	18.0	58.8	26.6	78.7	

No slits for swaging on the tip.
Min. is the initial load, and max. is the load when the tip is fully compressed. Thread-lock treatment not applied.

kgf=Nx0.101972

Order Example — Part Number: SPJZ10

Days to Ship: 6 Days P.87 2 Days

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%

For orders larger than indicated quantity, please request a quotation.

Micro Spring Plungers

-Standard Type / Set Screw Type · Short Type-

CAD Data

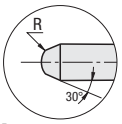
■Standard

RoHS

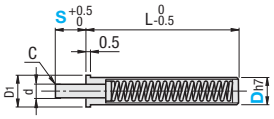


Load Category	Type			Body	Pin	Spring	Operating Temperature
	Flat	Sphere	Taper R	Material	Material	Material	
Light Load	MPFL	MPJL	MPTL	1.4305/ X10CrNiS18-9	1.4301/ X5CrNi18-10	1.4301/ X5CrNi18-10	-30~140°C
Heavy Load	MPFH	MPJH	-				

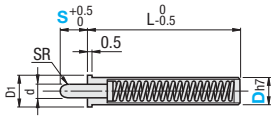
Tapered R Portion



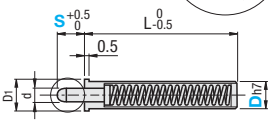
Flat



Spherical Type



Taper R Type



Part Number Type		Dh7	S	d	D1	L	C	R	Light Load N min.	Light Load N max.	Heavy Load N min.	Heavy Load N max.	€ Unit Price
(Flat)	MPFL MPFH	1.5	1.5	0.5	2	13	0.05	0.15	0.49	0.98	0.93	1.86	
		2	1.5	1	2.5	16	0.1	0.3	0.49	0.98	1.96	3.92	
			3			26			0.49	0.98	1.67	3.73	
		3	3	2	3.5	16	0.15	0.5	0.49	1.47	2.45	3.92	
(Sphere)	MPJL MPJH		6			26			0.49	1.47	2.26	3.73	
		4	3	3	4.5	15	0.2	1	0.59	1.47	3.43	5.3	
			6			20			0.49	2.06	2.45	5.3	
(Taper R)	MPTL		9			32			0.69	3.92	2.94	6.47	
		5	4	4	5.5	17	0.3	1.5	0.64	1.96	3.73	6.96	
			8			24			0.78	3.82	3.04	7.06	
			12			32			0.83	5.79	2.75	7.06	

*Recommended Diameter of Mounting Hole Dh7 (P) Use adhesive to prevent loosening.

kgf=Nx0.101972

Order Example — Part Number: MPJL2-1.5

Days to Ship: 6 Days P.87

■Volume Discount (P) Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

(P) For orders larger than indicated quantity, please request a quotation.

■Feature:Shorter in dimensions by 30~50% comparing to the conventional products. It can be used in the space-saving.

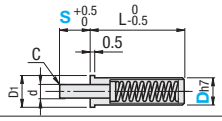
■Short

RoHS

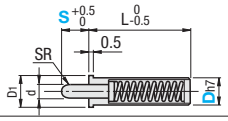


Load Category	Type		Body	Pin	Spring	Operating Temperature
	Flat	Sphere	Material	Material	Material	
Light Load	MPFS	MPJS	1.4305/X10CrNiS18-9	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	-30~140°C

Flat



Spherical Type



Part Number Type		Dh7	S	d	D1	L	C	Light Load (N) min.	Light Load (N) max.	€ Unit Price
(Flat)	MPFS	1.5	1.5	0.5	2	9.5	0.05	0.49	0.98	
		2	1.5	1	2.5	8	0.1	0.49	0.98	
		3	3	2	3.5	10	0.15	0.49	1.47	
(Sphere)	MPJS	4	3	3	4.5	10	0.2	0.59	1.47	
		5	4	4	5.5	11.5	0.3	0.64	1.96	

*Recommended Diameter of Mounting Hole DH7 (P) Use adhesive to prevent loosening.

Order Example — Part Number: MPFS4-3

Days to Ship: 6 Days P.87

■Volume Discount (P) Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99
Rate	€ Unit Price	5%	10%

(P) For orders larger than indicated quantity, please request a quotation.

■Features: Slits are applied for side-mounting with a Set Screw.

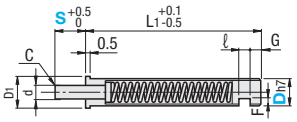
■Set Screw Flat

RoHS



Load Category	Type	Body	Pin	Spring	Operating Temperature
	Flat	Material	Material	Material	
Light Load	MPFLT	1.4305/ X10CrNiS18-9	1.4301/ X5CrNi18-10	1.4301/ X5CrNi18-10	-30~140°C
Heavy Load	MPFHT				

Flat



(P) The D dimension tolerance of the set screw part is D$^{0.1}_{0.2}$

Order Example — Part Number: MPFLT3-6

Days to Ship: 6 Days P.87

■Volume Discount (P) Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

(P) For orders larger than indicated quantity, please request a quotation.

Part Number Type		Dh7	S	d	D1	L	ℓ	F	G	C	Light Load N min.	Light Load N max.	Heavy Load N min.	Heavy Load N max.	€ Unit Price
(Flat)	MPFLT MPFHT	1.5	1.5	0.5	2	17.5	2.5	0.5	1	0.05	0.49	0.98	0.93	1.86	
		2	1.5	1	2.5	20.5	2.5	0.5	1	0.1	0.49	0.98	1.96	3.92	
			3			30.5					0.49	0.98	1.67	3.73	
		3	3	2	3.5	20.5	2.5	0.5	1	0.15	0.49	1.47	2.45	3.92	
			6			30.5					0.49	1.47	2.26	3.73	
		4	3	3	4.5	20.5	3.5	0.8	1	0.2	0.59	1.47	3.43	5.3	
			6			25.5					0.49	2.06	2.45	5.3	
			9			37.5					0.69	3.92	2.94	6.47	
		5	4	4	5.5	22.5	3.5	0.8	1	0.3	0.64	1.96	3.73	6.96	
			8			29.5					0.78	3.82	3.04	7.06	
			12			37.5					0.83	5.79	2.75	7.06	

*Recommended Diameter of Mounting Hole Dh7 (P) Use adhesive to prevent loosening.

kgf=Nx0.101972

Micro Spring Pins / Spring Plungers
-Tip Female Thread Type-

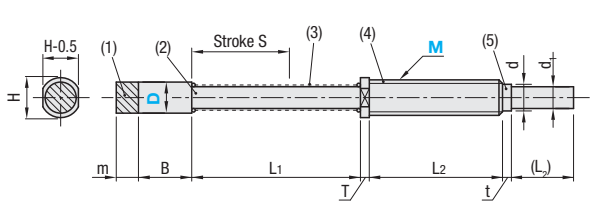
CAD Data

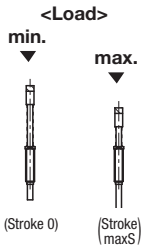
Features: Suited for soldering or bonding electronic parts on a circuit board.

Micro Spring Pin RoHS



Type	Material				
	(1) Pin End	(2) Pin	(3) Spring	(4) Sleeve	(5) Collar
JJPPN	Polyacetal	SK Electroless Nickel Plating	JIS SUS	SK Electroless Nickel Plating	BS





Maintain the stroke not to exceed S dimensions, otherwise the spring may be damaged.
Tighten the nut with forces under 2.39kgf/cm for M2, 10kgf/cm for M3~5.

Part Number Type	M	D	H	m	B	L1	T	L	t	(d)	d1	(L2)	Stroke S	Load (N) min.	Load (N) max.	€ Unit Price
JJPPN	2(Fine)	1.5	2.5	2	3.5	14	0.5	9	0.8	1.7	1	4.2	8	0.202	0.883	
	3(Coarse)	2.5	3.5	2.5	6	19	1	15	1	2.25	1.72	7	11	0.392	3.432	
	4(Coarse)	3.5	4.5							3	2.45			0.762		
	5(Coarse)	4.5	5.5							4	3.45			1.245		

Order Example: Part Number - D → JJPPN4 - 3.5

Days to Ship: 6 Days P.87

Price

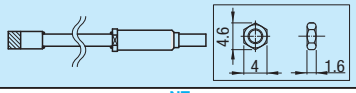
Volume Discount (Round down to one Cent.) P.87

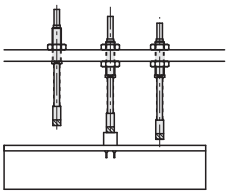
Quantity	1~9	10~49
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Alterations: Part Number - D - (NT) → JJPPN2 - 1.5 - NT1

Example

Alteration	Nuts Included
	
Code	NT
Spec.	One nut is included with NT1 while 2 nuts are included with NT2. Ordering Code NT1 Applicable to M2 only
Price Adder	NT1:1,00 / NT2:2,00

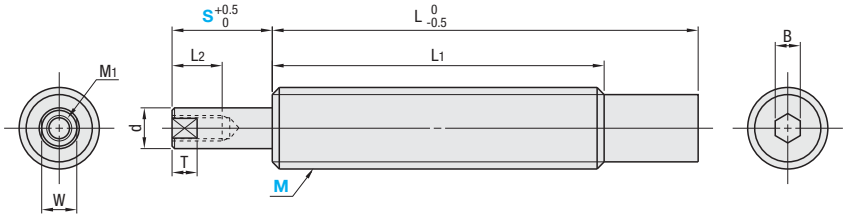


Features: Stop Pins on the tip (**P.1425**) or Urethane Pushers (**P.2-1439**) can be mounted for use.

Spring Plungers -Tip Female Thread- RoHS



Type		Body Material	Body Hardness	Body Surface Treatment	Pin Material	Pin Hardness	Pin Surface Treatment	Spring Material	Operating Temperature
Light Load	PJLTP	1.1191/C45E	29~35HRC	Black Oxide	1.1191/C45E	57~63HRC (Carburized)	Electroless Nickel Plating	JIS SWP-B	-30~80°C
Heavy Load	PJHTP						Black Oxide	~1.0600	



Part Number Type	M (Coarse)	S	d	L	L1	M1 (Coarse)	L2	W	T	B	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	€ Unit Price
PJLTP PJHTP	12	15	5.5	51	35	M3	6	4	4	4	2.9	19.6	4.9	49.0	
		20		78	35						3.5	19.6	6.9	49.0	
	16	15	8	60	35	M4	8	7	5	5	3.9	39.2	12.7	78.5	
		20		85	35						4.9	39.2	9.8	78.5	
		30		125	35						2.9	39.2	6.9	78.5	
	20	15	10	60	45	M5	10	8	6	6	12.7	78.5	24.5	147.1	
		20		72	45						11.7	78.5	22.6	147.1	
		30		96	45						11.7	78.5	22.6	147.1	

kgf=Nx0.101972

Order Example: Part Number → PJLTP 12-20 / PJHTP 20-15

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Spring Plungers
-With Hexagon Socket · Hexagon Nose Type-

CAD Data

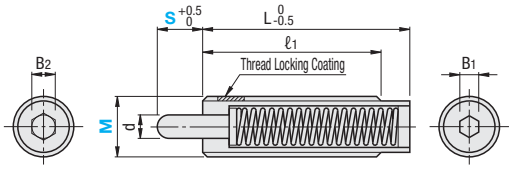
Features: As it can be fixed with a hexagon wrench from the top, no special wrench is required.

BodyTip Hexagon Socket Head

RoHS



Type	Body			Pin			Spring	Operating Temperature
	M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	
PJLH (Light Load)	1.1191/ C45E	29~35HRC	Black Oxide	1.1191/ C45E	57~63HRC (Carburized)	Trivalent Chromate	JIS SWP-B ~1.0600	-30~80°C



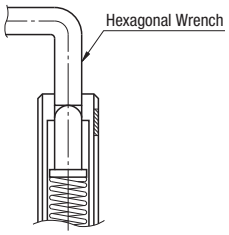
The Thread Locking Coating fixes parts using a microencapsulated anaerobic adhesive. Once parts have been loosened, adhesion is lost, use an anaerobic adhesive when reassembling.

The thread-lock is most effective by leaving the parts for 72 hours or more in 25°C. Be noted if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.

Part Number Type	M	S	d	ℓ1	L	B1	B2	Light Load N {kgf} min.	Light Load N {kgf} max.	€ Unit Price
PJLH	8	3	3	25	25	2.5	3	5.8 {0.6}	9.8 {1.0}	
		5						2.7 {0.3}	9.8 {1.0}	
	10	5	4	30	34	3	4	5.8 {0.6}	14.7 {1.5}	
		10			38			2.6 {0.3}	14.7 {1.5}	
	12	5	5	35	35	4	5	5.6 {0.6}	14.7 {1.5}	
		10			40			3.0 {0.3}	19.7 {2.0}	

kgf=Nx0.101972

Example



Order Example — Part Number: PJLH 8-3

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

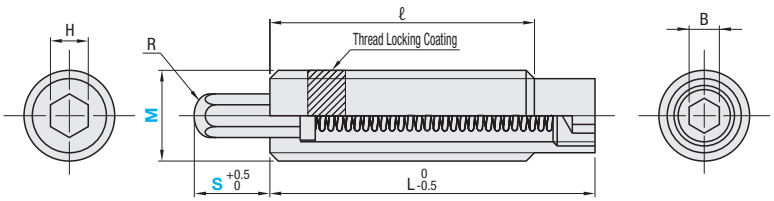
Features: The hexagonal shape of pin allow this spring plunger to be installed with socket wrenches or spanners, without any special wrenches.

Hexagon Nose

RoHS



Type		Body			Pin			Spring	Operation Temperature
		M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	
Light Load	PJLR	1.1191/C45E	29~35HRC	Black Oxide	1.1191/C45E	57~63HRC (Carburized)	Trivalent Chromate	JIS SWP-B ~1.0600	-30~80°C
Heavy Load	PJHR						Black Oxide		



The Thread Locking Coating fixes parts using a microencapsulated anaerobic adhesive. Once parts have been loosened, adhesion is lost, use an anaerobic adhesive when reassembling.

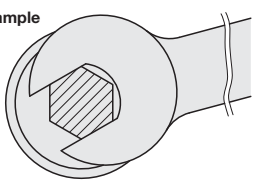
The thread-lock is most effective by leaving the parts for 72 hours or more in 25°C. Be noted if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.

Part Number Type	M	S	MxP (Coarse)	H	R	ℓ	L	B	Light Load Load N {kgf} min.	Light Load Load N {kgf} max.	Heavy Load Load N {kgf} min.	Heavy Load Load N {kgf} max.	€ Unit Price
PJLR PJHR	10	5	10x1.5	4	2.2	30	30	3	5.9 {0.6}	14.7 {1.5}	8.8 {0.9}	49.0 {5.0}	
		10					43		2.9 {0.3}	14.7 {1.5}	7.8 {0.8}	49.0 {5.0}	
	12	5	12x1.75	5	2.9		30		5.9 {0.6}	14.7 {1.5}	18.6 {1.9}	49.0 {5.0}	
		10				35	43	4	2.9 {0.3}	19.6 {2.0}	7.8 {0.8}	49.0 {5.0}	
		15					51		2.9 {0.3}	19.6 {2.0}	4.9 {0.5}	49.0 {5.0}	
	16	10	16x2.0	7	4.1		60	5	5.9 {0.6}	39.2 {4.0}	12.7 {1.3}	78.5 {8.0}	
		15					60		3.9 {0.4}	39.2 {4.0}	12.7 {1.3}	78.5 {8.0}	
		20					85		4.9 {0.5}	39.2 {4.0}	9.8 {1.0}	78.5 {8.0}	

kgf=Nx0.101972

Order Example — Part Number: PJHR 10-10

Example



Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

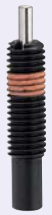
Spring Plungers

-Flat Tip Type · For Inclined Surface · Flanged Type-

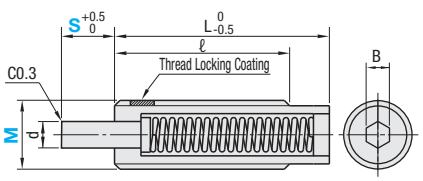
CAD Data

■Flat Tip

RoHS



Type	Body (M H S)	Pin (M H S)	Spring (M Material)	Operating Temperature
PJLF (Light Load)	M 1.1191/C45E H 29~35HRC S Black Oxide	M 1.1191/C45E H 57~63HRC (Carburized) S Trivalent Chromate	JIS SWP-B ~1.0600	-30~80°C



Part Number Type	M (Coarse)	S	d	ℓ	L	B	Load N min.	Load N max.	€ Unit Price
PJLF	5	3	2.0	20	20	1.5	2.0	9.8	
		5	2.0	27	27	1.5	2.0	9.8	
	6	3	2.5	25	25	2	5.9	9.8	
		5	2.5	30	30	2	2.0	9.8	
	8	3	3.1	25	25	2.5	5.9	9.8	
		5	3.1	27	27	2.5	2.9	9.8	
	10	5	3.8	30	30	3	5.9	14.7	
		10	3.8	30	43	3	2.9	14.7	
	12	10	5.5	35	43	4	2.9	19.6	

kgf=Nx0.101972

The Thread Locking Coating fixes parts using a microencapsulated anaerobic adhesive. Once parts have been loosened, adhesion is lost, use an anaerobic adhesive when reassembling.

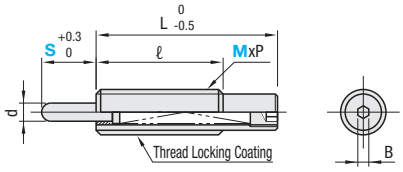
The thread-lock is most effective by leaving the parts for 72 hours or more in 25°C. Be noted if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.

■For Inclined Surface

RoHS



Type	Body (M H S)	Pin (M H S)	Spring (M Material)	Operating Temperature
PJHZ	M 1.1191/C45E H 29~35HRC S Black Oxide	M 1.1191/C45E H 50HRC~ (Carburized) S Electroless Nickel Plating	JIS SWP-B ~1.0600	-30~80°C



Part Number Type	M (Coarse)	S	d	S	ℓ	L	B	Load N min.	Load N max.	€ Unit Price
PJHZ	10	10	4	10	30	43	3	7.8	49.0	
	12	10	5		35	43	4	7.8	49.0	
		15		15	35	51		4.9	49.0	
	16	10	8	10	35	60	5	12.7	78.5	
		15		15	35	60		12.7	78.5	
		20		20	35	85		9.8	78.5	
		30		30	35	125		6.9	78.5	

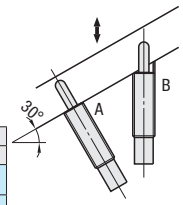
kgf=Nx0.101972

■Features of PJHZ

(1) Special structure with high abrasion resistance and seizing resistance enables the use on inclines. (For conventional spring plungers, use 0°, under oil free condition; 5° or less with oil lubrication.)
(2) Oil free use is possible.
(3) Angle: 0~30°

Test Conditions

Press Machine: 20 TON Crank Press
Cyclic Speed: 130SPM
Inclination Angle: 30°
Lubrication: Oil Free



Type	Operating Life A	Operating Life B
PJHZ16-30	Over 300 Thousand Times or More	Over 300 Thousand Times or More
PJH16-30	Gouging at 17,000 cycles	Gouging at 50,000 cycles

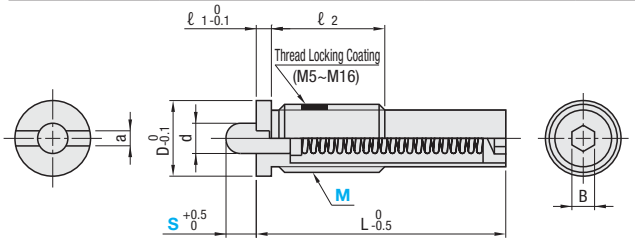
(Note) This test result was obtained in conditions specified above.
The service life changes according to the usage condition.

■Flanged

RoHS



Type		Body Material (M)	Body Hardness (H)	Body Surface Treatment (S)	Pin Material (M)	Pin Hardness (H)	Pin Surface Treatment (S)	Spring Material (M)	Operating Temperature
Light Load	FPJL	1.1191/C45E	29~35HRC	Black Oxide	1.1191/C45E	57~63HRC (Carburized)	Trivalent Chromate	JIS SWP-B ~1.0600	-30~80°C
Heavy Load	FPJH						Black Oxide		



The Thread Locking Coating fixes parts using a microencapsulated anaerobic adhesive. Once parts have been loosened, adhesion is lost, use an anaerobic adhesive when reassembling.

The thread-lock is most effective by leaving the parts for 72 hours or more in 25°C. Be noted if the parts are left for short period of time and in low temperature, the thread-lock will be less-effective.

Part Number Type	M (Coarse)	S	d	L	B	D	ℓ1	ℓ2	a	FPJL Load (N) min.	FPJL Load (N) max.	FPJH Load (N) min.	FPJH Load (N) max.	Applicable Wrench	€ Unit Price
FPJL FPJH	3	1.5	1.1	10	0.9	5	1.5	5	0.5	0.5	1	0.8	2.9	-	
		3		15						0.3	1	0.8	2.9		
	4	2	1.6	15	1.3	6	1.8	6	0.7	1	2	2.9	8.8		
		4		24						0.6	2	2	8.8		
	5	3	2	20	1.5	7	2	8	1.2	2	9.8	4.9	19.6	PJG1	
		5		27						2	9.8	2.9	19.6		
	6	3	2.5	25	2	8		9		5.9	9.8	7.8	29.4		
		5		30						2	9.8	4.9	29.4		
	8	3	3.1	25	2.5	10	2.5	12	1.5	5.9	9.8	14.7	29.4	PJG2A	
		5		27						2.9	9.8	7.8	29.4		
	10	5	3.8	30	3	12		15		5.9	14.7	8.8	49		
		10		43						2.9	14.7	7.8	49		
	12	5	5.5	30	4	14	3.0	20	2.0	5.9	14.7	18.6	49	PJG3	
		10		43						2.9	19.6	7.8	49		
		15		51						2.9	19.6	4.9	49		
	16	10	8	60	5	18		25		5.9	39.2	12.7	78.5	PJG4	
		15		60						3.9	39.2	12.7	78.5		
		20		85						4.9	39.2	9.8	78.5		
		30		125						2.9	39.2	6.9	78.5		
		40		125						4.9	39.2	6.9	78.5		

M3 and M4 can be fixed with a flat blade screwdriver.

kgf=Nx0.101972

Order Example — Part Number: PJLF6-3, PJHZ16-20, FPJL3-1.5

Days to Ship: 6 Days P87

Price

■Volume Discount (Round down to one Cent.) P87

-Flat Tip Type

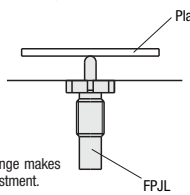
Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-For Inclined Surface · Flanged Type

Quantity	1~49	50~74	75~99	100~200
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.



■Feature: The flange makes easier height adjustment.

Indexing Plungers
-Standard Type-

Price Reduction 15%

CAD Data

Features: Alteration of tip shapes makes it possible to use the product as the application demands.

Standard

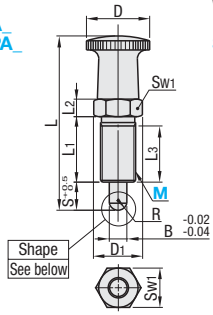
RoHS



Threads	Return Type			Rest Position Type			Knob	Main Body		Pin			Spring	(Lock Nut)	
	Sphere	Tapered	Flat	Sphere	Tapered	Flat	M Material	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
Fine Thread	PXAN	PXAT	PXAF	PXYAN	PXYAT	PXYAF	EN AW-2017/ AlCu4MgSi (Black Anodize)	1.0715	Black Oxide	1.1191/ C45E	50~60HRC	Black Oxide	1.4568-J1	-	-
	PXKN	PXKT	PXKF	PXYKN	PXYKT	PXYKF								1.0038	Black Oxide
	SXPAN	SXPAT	SXPAF	SXYAN	SXYAT	SXYAF		1.4305	-	1.4125/ X105CrMo17	45HRC~	-		-	-
	SXPKN	SXPKT	SXPKF	SXYKN	SXYKT	SXYKF								1.4305	-

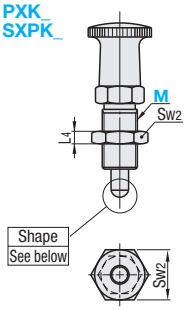
-Return Type-

PXA_ SXPA_



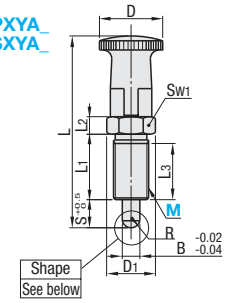
With Lock Nut

PXK_ SXPK_



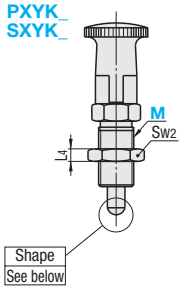
-Rest Position Type-

PXYA_ SXYA_

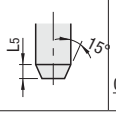
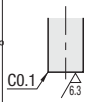


With Lock Nut

PXYK_ SXYK_



Shape

Sphere	Tapered	Flat
____N	____T	____F
		

Mass (g)

M	PXA_ SXPA_	PXK_ SXPK_	PXYA_ SXYA_	PXYK_ SXYK_
8	12	17	13	18
10	20	27	23	30
12	32	42	38	48
16	70	90	79	99

Part Number Type	M	Pitch (Fine)	D	D_1	S	B	L Return Type	L Rest Position Type	L_1	L_2	L_3	L_4	L_5	Sw_1	Sw_2	SR	Load (N) min.	Load (N) max.
Return Type (Sphere) (Tapered) (Flat) / Rest Position Type (Sphere) (Tapered) (Flat)																		
PXAN PXAT PXAF / PXYAN PXYAT PXYAF	8	1.0	15	11.5	4	4	40	46	16	5	14	4	1.5	10	13	2	3	9
PXKN PXKT PXKF / PXYKN PXYKT PXYKF	8L				6		42	48										12
SXPAN SXPAT SXPAF / SXYAN SXYAT SXYAF	10	1.0	18	13.8	5	5	45	50	17	5	15	5	2.0	12	17	2.5	5	11.5
SXPKN SXPKT SXPKF / SXYKN SXYKT SXYKF	10L				8		48	53										16
	12	1.5	21	16.2	6	6	54.5	60.5	20	6	17	6	2.5	14	19	3	6.5	14.5
	12L				10		58.5	64.5										20
	16	1.5	26	21.9	7	8	68	75.5	26	8	23	8	3.0	19	24	4	7.15	18
	16L				12		73	80.5										25

M dimensions with "L" have longer strokes comparing to the conventional products.

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Order Example

Part Number

SXPAN12L
PXKF10

Days to Ship

•Sphere Type
6 Days P.87

•Tapered · Flat Type
10 Days

Express B 2,00 EUR/ piece P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

Price

•Sphere Type

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~29	30~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

•Tapered · Flat Type

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Return Type

M	€ Unit Price											
	Sphere				Tapered				Flat			
	PXAN	PXKN	SXPAN	SXPKN	PXAT	PXKT	SXPAT	SXPKT	PXAF	PXKF	SXPAF	SXPKF
8												
8L												
10												
10L												
12												
12L												
16												
16L												

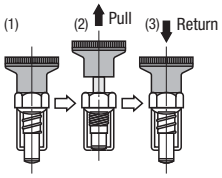
Rest Position Type

M	€ Unit Price											
	Sphere				Tapered				Flat			
	PXYAN	PXYKN	SXYAN	SXYKN	PXYAT	PXYKT	SXYAT	SXYKT	PXYAF	PXYKF	SXYAF	SXYKF
8												
8L												
10												
10L												
12												
12L												
16												
16L												

Features of the Return Type and Rest Position Type

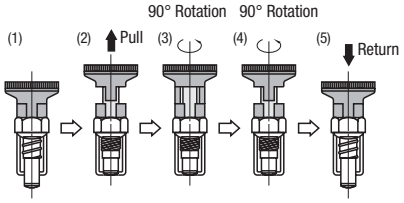
•Return Type

(1) In normal condition, the tip protrudes.
(2) When pulling up the knob, the tip retracts.
(3) When releasing the knob, the internal spring resets the plunger to the protruding position.



•Rest Position Type

(1) In normal condition, the tip protrudes.
(2) When pulling up the knob, the tip retracts.
(3)Pulling the knob and turning it by 90° locks the plunger with the tip retracted.
(4)To unlock, pull the knob slightly and turn it by 90°.
(5) When releasing the knob, the internal spring resets the plunger to the protruding position.



Indexing Plungers
-Flanged Type · Tip Female Thread Type-

CAD Data

Features: The flanges enable the Indexing Plunger to be adjusted to right or left.

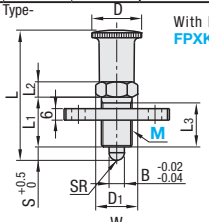
Flanged

RoHS

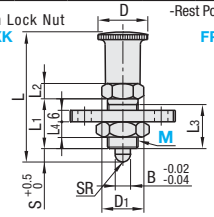


Threads	Return Type	Rest Position Type	Knob M Material	Main Body M Material	Main Body S Surface Treatment	Pin M Material	Pin H Hardness	Pin S Surface Treatment	Spring M Material	Flange M Material	Flange S Surface Treatment	(Lock Nut) M Material	(Lock Nut) S Surface Treatment
Fine Thread	FPXA	FPXY	EN AW-2017 (Black Anodize)	1.0715/ 9SMn28	Black Oxide	1.1191/ C45E	50~60HRC	Black Oxide	1.4568/ X7CrNiAl17-7	1.0038/ S235JR	Trivalent Chromate	-	-
	FPXK	FPXR										1.0038	Black Oxide

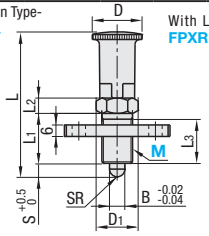
-Return Type- FPXA



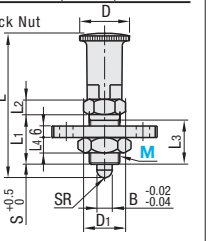
With Lock Nut FPXK

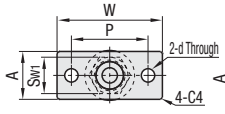


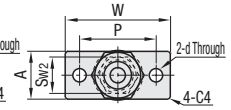
-Rest Position Type- FPXY



With Lock Nut FPXR







As the flanges are fixed with the Indexing Plunger through tapped holes, the lower adjustment is possible. After adjustment, the Lock nuts can be used for fixing the Plunger at the determined position.

Part Number Type	M	Pitch (Fine)	D	D1	S	B	L Return Type	L Rest Position Type	L1	L2	L3	L4	Sw1	Sw2	SR	A	W	P	d	Load (N) min.	Load (N) max.
Return Type FPXA FPXK	8	1	15	11.5	4	4	40	46	16	5	14	4	10	13	2	20	46	34	6	3	9
	8L				6		42	48													12
	10	1	18	13.8	5	5	45	50	17	5	15	5	12	17	2.5	20	48	36		5	11.5
	10L				8		48	53													16
Rest Position Type FPXY FPXR	12	1.5	21	16.2	6	6	54.5	60.5	20	6	17	6	14	19	3	22	55	40	8	6.5	14.5
	12L				10		58.5	64.5													20
	16	1.5	26	21.9	7	8	68	75.5	26	8	23	8	19	24	4	25	60	45		7.15	18
	16L				12		73	80.5													25

M dimensions with "L" have longer strokes comparing to the conventional products.

Order Example: Part Number FPXA8

Days to Ship: 10 Days — Express B — 2,00 EUR/ piece — P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

Price

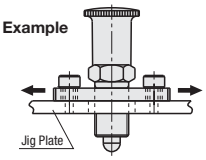
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

M	€ Unit Price Spherical Type FPXA	FPXK	FPXY	FPXR
8				
8L				
10				
10L				
12				
12L				
16				
16L				

Example



The flanges enable the Plunger to be adjusted to right or left.

Features: By mounting the attachment to the tip, the Pin dia. and length are adjustable, and the works can be clamped.

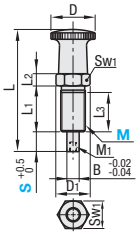
Tip Female Thread

RoHS

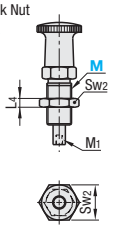


Type Return Type	Type Rest Position Type	Knob M Material	Main Body M Material	Main Body S Surface Treatment	Pin M Material	Pin H Hardness	Pin S Surface Treatment	Spring M Material	Lock Nuts M Material	Lock Nuts S Surface Treatment
PXTAB	PXTYB	EN AW-2017/ AlCu4MgSi (Black Anodize)	1.0715/ 9SMn28	Black Oxide	1.1191/ C45E	50~60HRC	Black Oxide	1.4568/ X7CrNiAl17-7	-	-
PXTNB	PXTSB								1.0038/S235JR	Black Oxide
PXTAS	PXTYS		1.4305/ X10CrNiS18-9	-	1.4125/ X105CrMo17	45HRC~	-		-	-
PXTNS	PXTSS								1.4305	-

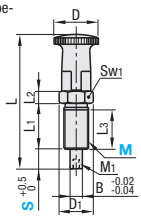
-Return Type- PXTA_



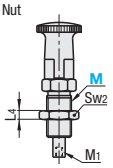
With Lock Nut PXTN_



-Rest Position Type- PXTY_



With Lock Nut PXTS_



Part Number Type (Return Type)	Part Number Type (Rest Position Type)	M	S (Stroke)	Pitch (Fine)	D	D1	B	M1	L Return Type	L Rest Position Type	L1	L2	L3	L4	Sw1	Sw2	Load (N) min.	Load (N) max.
PXTAB	PXTYB	10	5	1.0	18	13.8	5	M3	45	50	17	5	15	5	12	17	5	11.5
			8						48	53								16
PXTNB	PXTSB	12	6	1.5	21	16.2	6	M4	54.5	60.5	20	6	17	6	14	19	6.5	14.5
PXTAS	PXTYS		10						58.5	64.5								20
PXTNS	PXTSS	16	7	1.5	26	21.9	8	M5	68	75.5	26	8	23	8	19	24	7.15	18
			12						73	80.5								25

kgf=Nx0.101972

Order Example: Part Number PXTAB10-5

Days to Ship: 10 Days — Express B — 2,00 EUR/ piece — P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

Price

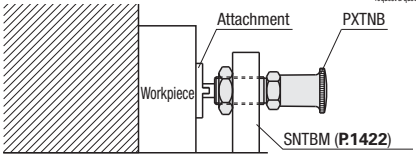
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~29	30~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

M	S	€ Unit Price Return Type PXTAB	PXTNB	PXTAS	PXTNS	Rest Position Type PXTYB	PXTSB	PXTYS	PXTSS
10	5								
	8								
12	6								
	10								
16	7								
	12								

Example



Indexing Plungers

-Short Threads Type, Aluminum Knob · Plastic Knob-

Price Reduction
15% Average

CAD Data

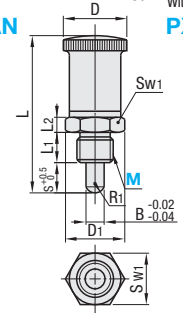
■Short Threads Type Aluminum Knob RoHS



Type		Knob	Main Body		Pin			Spring	(Lock Nut)	
Return Type	Rest Position Type	M Material	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
PXSAN	PXRAN	EN AW-2017 (Black Anodize)	1.0715/ 9SMn28	Black Oxide	1.1191/ C45E	50~60HRC (Carburized)	Black Oxide	1.4568/ X7CrNiAl17-7	-	-
PXSKN	PXRKN								1.0038/ S235JR	Black Oxide

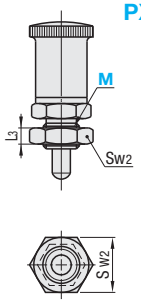
-Return Type-

PXSAN



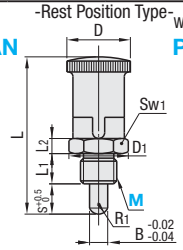
With Lock Nut

PXSKN



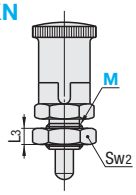
-Rest Position Type-

PXRAN



With Lock Nut

PXRKN



Part Number Type	M	Pitch (Fine)	D	D1	B	S	L	L1	L2	L3	Sw1	Sw2	R1	Load (N) min.	Load (N) max.	Mass (g) PXSAN PXRAN	Mass (g) PXSKN PXRKN	€ Unit Price PXSAN	PXSKN	PXRAN	PXRKN
(Return Type) PXSAN PXSKN (Rest Position Type) PXRAN PXRKN	12	1.5	21	19.6	6	6	48	10	5	6	17	19	3	6.5	14.5	35	45				
	16	1.5	26	21.9	8	7	56	12	6	8	19	24	4	7.5	18	60	80				

kgf=Nx0.101972

Order Example
Part Number
PXSAN16
PXRKN12

Price

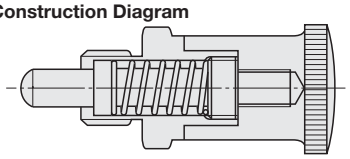
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship
6 Days P.87

■Construction Diagram



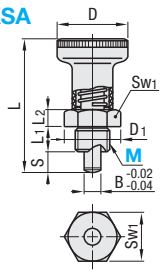
■Short Threads Type Plastic Knob RoHS



Type		Knob	Main Body		Pin			Spring	(Lock Nut)	
Return Type	Rest Position Type	M Material	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
PXSA	PXRA	Nylon 6 (Mat Black)	1.0715/ 9SMn28	Black Oxide	1.1191/ C45E	50~60HRC	Black Oxide	JIS SWP-B ~1.0600	-	-
PXSK	PXRK								1.1191/C45E	Black Oxide

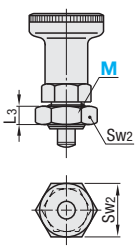
-Return Type-

PXSA



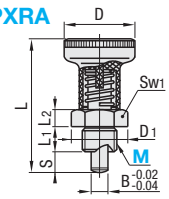
With Lock Nut

PXSK



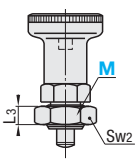
-Rest Position Type-

PXRA



With Lock Nut

PXRK



Part Number Type	M	Pitch (Fine)	D	D1	B	S	L	L1	L2	L3	Sw1	Sw2	Load (N) min.	Load (N) max.	Mass (g) PXSA PXRA	Mass (g) PXSK PXRK	€ Unit Price PXSA	PXSK	PXRA	PXRK
(Return Type) PXSA PXSK (Rest Position Type) PXRA PXRK	12	1.5	25	19.6	6	6	45	10	5	6	17	19	7	18	35	45				
	16	1.5	31	21.9	8	8	54	12	6	8	19	24	14	24	60	80				

kgf=Nx0.101972

Order Example
Part Number
PXSA16
PXRK12

Days to Ship
6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-Features of the Return Type and Rest Position Type P.1485

Indexing Plungers
-Compact Type · Long Type-

CAD Data

Features: Has shorter length by 2/3 comparing to the general Indexing Plungers. This type can be used in narrow space.

Compact

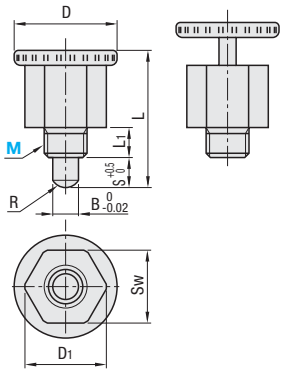
RoHS



Type		Threads	Knob	Main Body		Pin	Spring
Return Type	Rest Position Type		M Material	M Material	S Surface Treatment	M Material	M Material
PMXSB PMXSM	PMXYSB PMXYSM	Coarse	Nylon 6	1.1191/ C45E	Black Oxide Electroless Nickel Plating	1.4305/ X10CrNiS18-9	1.4301/ X5CrNi18-10

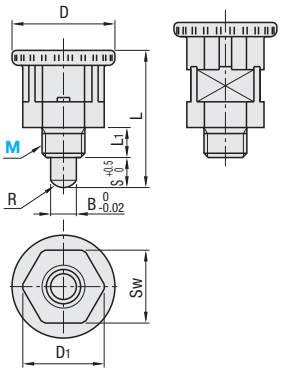
-Return Type-

PMXSB
PMXSM



-Rest Position Type-

PMXYSB
PMXYSM



Part Number			Pitch (Coarse)	D	D1	S	B	L	L1	SW	R	Load (N)		€ Unit Price			
Type		M												Return Type		Rest Position Type	
Return Type	Rest Position Type											min	max	PMXSB	PMXSM	PMXYSB	PMXYSM
PMXSB	PMXYSB	8	1.25	20	14.5	5	5	25	5	13	3	2.5	6.0				
PMXSM	PMXYSM	10	1.5	24	19	6	6	31	7	17	3.5	4.5	9.5				

Order Example — Part Number: PMXSB10

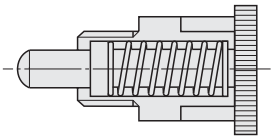
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Construction Diagram



Days to Ship: 6 Days P.87

Features: As the Plunger has longer mounting threads, it can be mounted to a thick plate.

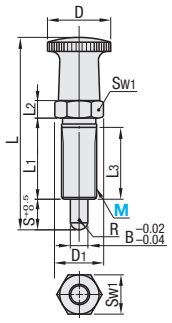
Long -Return Type-

RoHS



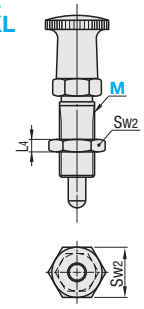
Threads	Type	Knob	Main Body		Pin			Spring	(Lock Nut)	
		M Material	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
Fine Thread	PXAL	EN AW-2017/ AlCu4MgSi (Black Anodize)	1.0715/ 9SMn28	Black Oxide	1.1191/C45E	50~60HRC	Black Oxide	1.4568/ X7CrNiAl17-7	-	-
	PXKL								1.0038/S235JR	Black Oxide
	SXPAL		1.4305/ X10CrNiS18-9	-	1.4125/ X105CrMo17	45HRC~	-		-	-
	SXPKL								1.4305	-

PXAL
SXPAL



With Lock Nut

PXKL
SXPKL



Mass (g)

M	PXAL SXPAL	PXKL SXPKL
8	13	18
10	22	29
12	35	45
16	78	98

Part Number		Pitch (Fine)	D	D1	S	B	L	L1	L2	L3	L4	Sw1	Sw2	R	Load (N)		€ Unit Price			
Type	M														min.	max.	PXAL	PXKL	SXPAL	SXPKL
PXAL PXKL SXPAL SXPKL	8	1.0	15	11.5	4	4	46	22	5	20	4	10	13	2	3	9				
	8L				6		48									12				
	10	1.0	18	13.8	5	5	53	25	5	23	5	12	17	2.5	5	11.5				
	10L				8		56									16				
	12	1.5	21	16.2	6	6	64.5	30	6	27	6	14	19	3	6.5	14.5				
	12L				10		68.5									20				
	16	1.5	26	21.9	7	8	80	38	8	34.5	8	19	24	4	7.15	18				
	16L				12		85									25				

kgf=Nx0.101972

Order Example — Part Number: PXAL8, SXPKL16L

Days to Ship: 8 Days

Express A: 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-Features of the Return Type and Rest Position Type P.1485

Indexing Plungers

-With Precision Pilot Type / Press-Fit Type / Knob for Press-Fit-

CAD Data

Features: Pitch part clearance is 0.035 or less.

With Precision Pilot

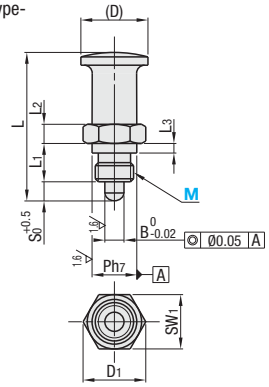
RoHS



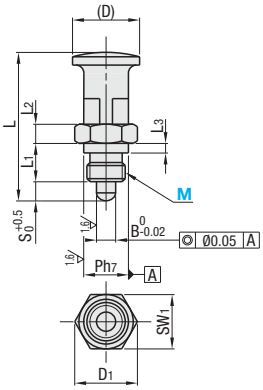


Load	Type		Threads Type	Knob	Main Body			Pin			Spring
	Return Type	Rest Position Type		M Material	M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material
Light Load	PMXSL	PMXYSL	Coarse	Nylon 6	1.1191/ C45E	33~38HRC	Black Oxide	1.1191/ C45E	HV500~600	Black Oxide	1.4301/ X5CrNi18-10
Heavy Load	PMXSH	PMXYSH									
Light Load	PXSL	PXYSL	Fine								
Heavy Load	PXSH	PXYSH									

-Return Type-



-Rest Position Type-



Part Number Type	M	Pitch Coarse Thread	Pitch Fine Thread	Ph7	(d)	D1	S	B	L	L1	L2	L3	SW1	Light Load Load (N) min.	Light Load Load (N) max.	Heavy Load Load (N) min.	Heavy Load Load (N) max.	€ Unit Price PMXSL PMXSH	€ Unit Price PMXYSL PMXYSH	€ Unit Price PXSL PXSH	€ Unit Price PXYSL PXYSH
(Coarse) (Fine)	10	1.5	1	12	0 -0.018	18	16.2	5	5	38	10	5	3	14	4.5	7.3	5.7	11.9				
PMXSL PXSL	12	1.75	1.5	14		20	19.6	6	6	46	12	6	3	17	5.3	8.8	6.7	13.2				
PMXSH PXSH	16	2	1.5	18		26	25.4	8	8	56.5	16	6	4	22	5.7	10.1	7.4	17.2				
PMXYSL PXYSL	20	2.5	1.5	22	0 -0.021	32	31.2	10	10	70	20	10	4	27	6.6	15.0	8.0	26.8				
PMXYSH PXYSH																						

Order Example — Part Number: PXSL20

Days to Ship — 6 Days P.87

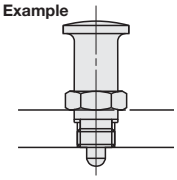
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Example



Features

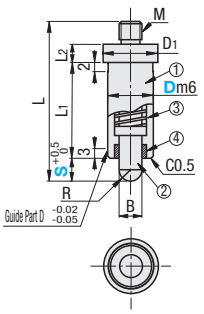
- h7 finished pilot can achieve high repeatability.
- Clearance of the pin part is 0.035 or less, which helps to prevent backlash.

Press-Fit

RoHS

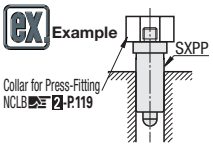


SXPP



(1) M Materials: 1.4125/X105CrMo17
H Hardness: 45~50HRC
(2) M Materials: 1.4125/X105CrMo17
H Hardness: 45~50HRC
(3) M Material: 1.4568/X7CrNiAl17-7
(4) M Material: Special Bushing

Example



*Drive the Collar for Press-Fitting into the hole from the top. (The threads may be broken when directly hammered.)

Part Number Type	Dm6	Smin	D1	B	L	L1	L2	M (Coarse)	R	Load (N) min.	Load (N) max.	Mass (g)	€ Unit Price
SXPP 8	+0.015	4	10	4	32	19	4	3	2	3	9	9	
		6			34						12	9.2	
10	+0.006	5	12	5	34	20		5	2.5	5	11.5	15	
		8			37						16	15.5	
12	+0.018	6	14	6	42	24	5	6	3	6.5	14.5	26.5	
		10			46						20	27.5	
15	+0.007	7	19	8	52	32		8	4	7.15	18	54	
		12			57						25	55.5	

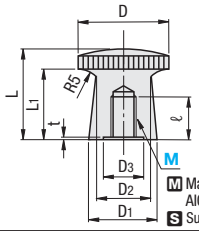
Recommended tolerance of mounting hole: H7. kgf=Nx0.101972

Knob for Press-Fit

RoHS



NSXP



M Material: EN AW-2017/ AlCu4MgSi
S Surface Treatment : Anodize

Part Number Type	M	Applicable Indexing Plungers	L	L1	t	D	D1	D2	D3	ℓ	€ Unit Price
NSXP	3	SXPP8	15	12	1.5	15	9.8	9	6	5	
	5	SXPP10	18	14		18	11.8	11	8	8	
	6	SXPP12	22.5	17.5		21	13.8	13	9	9	
	8	SXPP15	27	21		26	18.8	18	11	11	

Order Example — Part Number: SXPP10 - S; NSXP8 - 5

Days to Ship — 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

-Features of the Return Type and Rest Position Type P.1485

Indexing Plungers

-Knob-less Standard Type / Knob-less Large Screws for Mounting Knobs Type-

Price Reduction 5%

CAD Data

■Features: The most suitable knob for each purpose can be mounted and used.

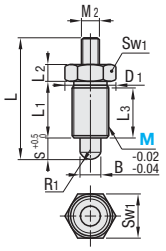
■Knob-less Standard

RoHS



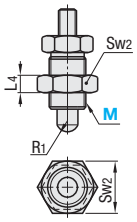
Type	Main Body		Pin			Spring	(Lock Nut)	
	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
PXNAN	1.0715/ 9SMn28	Black Oxide	1.1191/ C45E	50~60HRC (Carburized)	Black Oxide	1.4568/ X7CrNiAl17-7	-	-
PXNKN							1.0038/S235JR	Black Oxide
SXNAN	1.4305/ X10CrNiS18-9	-	1.4125/ X105CrMo17	45HRC~	-		-	-
SXNKN							1.4305/X10CrNiS18-9	-

PXNAN
SXNAN(Stainless Steel)



With Lock Nut

PXNKN
SXNKN(Stainless Steel)



Part Number Type	M	Pitch (Fine)	D1	B	S	L	L1	L2	L3	L4	M2 (Coarse)	Sw1	Sw2	R1	Load (N) min.	Load (N) max.	Mass (g) PXNAN SXNAN	Mass (g) PXNKN SXNKN	€ Unit Price PXNAN	€ Unit Price SXNAN	€ Unit Price PXNKN	€ Unit Price SXNKN
PXNAN SXNAN PXNKN SXNKN	8	1.0	11.5	4	4	30	16	5	14	4	3	10	13	2	3	9	10	15				
	8L				6	32										12						
	10	1.0	13.8	5	5	32	17	5	15	5	4	12	17	2.5	5	11.5	15	22				
	10L				8	35										16						
	12	1.5	16.2	6	6	39	20	6	17	6	5	14	19	3	6.5	14.5	25	35				
	12L				10	44										20						
	16	1.5	21.9	8	7	49	26	8	23	8	6	19	24	4	7.5	18	57	77				
	16L				12	54										25						

M dimensions with "L" have longer strokes comparing to the conventional products.

kgf=Nx0.101972

Order Example **Part Number** PXNAN12L

Days to Ship **8 Days** Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Features: Screws for Mounting Knobs (M2) are larger by 1 size for the Standard Type.

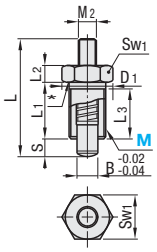
■Knob-less Large Screws for Mounting Knobs

RoHS



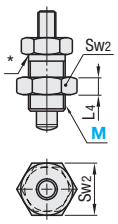
Type	Main Body		Pin			Spring	(Lock Nut)	
	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
PXNK	1.0715/9SMn28	Black Oxide	1.1191/C45E	50~60HRC	Black Oxide	JIS SWP-B ~1.0600	1.1191/C45E	Black Oxide
SXNA	1.4305/ X10CrNiS18-9	-	1.4305/ X10CrNiS18-9	-	Nickel Plating	1.4319/ X3CrNiN17-8	-	-
SXNK							1.4305/X10CrNiS18-9	-

SXNA(Stainless Steel)



With Lock Nut

PXNK
SXNK(Stainless Steel)



*The nut does not closely contact under the neck because of the radius.

Part Number Type	M	Pitch (Fine)	D1	B	S min.	L	L1	L2	L3	L4	M2 (Coarse)	Sw1	Sw2	Load (N) PXNK min.	Load (N) PXNK max.	Load (N) SXNA SXNK min.	Load (N) SXNA SXNK max.	Mass (g) SXNA	Mass (g) PXNK SXNK	€ Unit Price SXNA	€ Unit Price PXNK	€ Unit Price SXNK
SXNA	10	1.0	13.8	5	5	33	17	5	15	5	5	12	17	7	17	6	15	15	22			
PXNK	12	1.5	16.2	6	6	42	20	6	17	6	6	14	19	9	24	8	21	25	35			
SXNK	16	1.5	21.9	8	8	54	26	8	23	8	8	19	24	24	30	9	26	57	77			

kgf=Nx0.101972

Order Example **Part Number** SXNA12 PXNK16

Days to Ship **6 Days** P.87

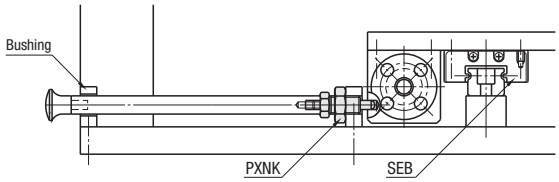
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



-Features of the Return Type and Rest Position Type P.1485

Indexing Plungers

-Coarse · Fine Thread Lever Types-

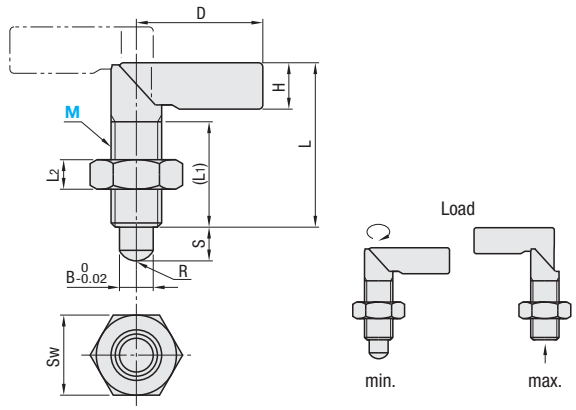
CAD Data

■**Features:** The pin can be taken in and out by turning the lever, so it is usable in places with no room to pull up a knob.The pin is retractable in the body by 180° turn of the lever. The lever can be locked by the notch.

■Coarse Thread Lever RoHS



Type	Threads	Lever		Main Body		Pin			Spring	Lock Nuts	
		M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
PMXRB PMXRM	Coarse	1.1191/ C45E	Black Oxide Electroless Nickel Plating	1.1191/ C45E	Black Oxide Electroless Nickel Plating	1.1191/ C45E	45HRC~	Black Oxide Electroless Nickel Plating	1.4301/ X5CrNi18-10	JIS SWCH	Black Oxide Electroless Nickel Plating



Part Number Type	M	Pitch (Coarse)	B	S	L	(L1)	D	H	L2	Sw	R	Load (N) min.	Load (N) max.	Mass (g)	€ Unit Price PMXRB	€ Unit Price PMXRM
PMXRB	10	1.5	5	5	34	20	24	8	6	17	3	5	9.5	22		
PMXRM	12	1.75	6	6	39	25	30	11	7	19	3.5	8	13	33		

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Order Example: Part Number **PMXRB10**

Price

■**Volume Discount** (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

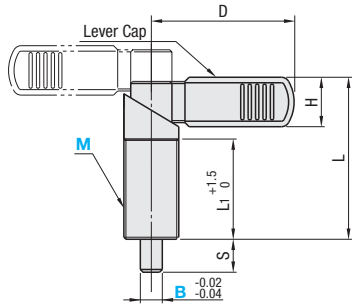
Days to Ship: **6 Days** P.87

■Fine Thread Lever RoHS

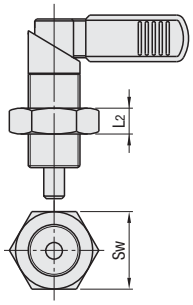


Type	Lever cap M Material	Main Body M Material	Main Body S Surface Treatment	Pin M Material	Pin H Hardness	Pin S Surface Treatment	Spring M Material	(Lock Nut) M Material	(Lock Nut) S Surface Treatment
PXVB	Nylon 6 (Mat Black)	1.0715/ 9SMn28-L	Black Oxide	1.1191/ C45E	50~60HRC	Black Oxide	JIS SWP-B ~1.0600	-	-
PXVBK								1.1191/C45E	Black Oxide
SPXVB		1.4305/ X10CrNiS18-9	-	1.4305/ X10CrNiS18-9	-	Nickel Plating	1.4319/ X3CrNiN17-8	-	-
SPXVBK								1.4305	-

PXVB
SPXVB



With Lock Nut
PXVBK
SPXVBK



Part Number Type (Steel)	Type (Stainless Steel)	M	Pitch (Fine)	B (Selection)	S	L	L1	D	H	L2	Sw	€ Unit Price PXVB	PXVBK	SPXVB	SPXVBK
PXVB	SPXVB	16	1.5	6 8 10	10	47	30	42	15.5	8	24				
PXVBK	SPXVBK	20	1.5	8 10 12	12	59	36	52	19	10	30				

Order Example: Part Number - B
PXVB16 - 8
SPXVBK20 - 12

Days to Ship: **6 Days** P.87

Price

■**Volume Discount** (Round down to one Cent.) **P.87**

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■**Mass and Load**

M	B	Mass (g)	Load (N) min.	Load (N) max.
16	6	79	12	32
	8	80		
	10	82		
20	8	112	21	58
	10	115		
	12	118		

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Indexing Plungers

-Switch Lever Type / Push Type / Plate Mount Type-

CAD Data

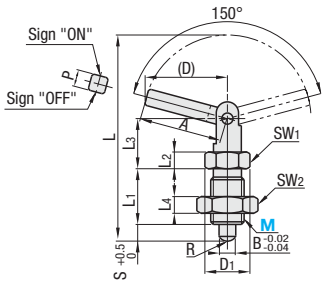
Features: The ON/OFF state can be visually recognized by the indication on the lever.

Switch Lever

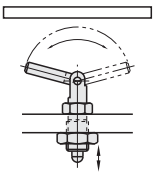
RoHS



Type	Threads Type	Lever		Main Body		Pin			Spring	Lock Nuts	
		M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	H Hardness	S Surface Treatment	M Material	M Material	S Surface Treatment
PMXSR	Coarse	1.1191/ C45E	Black Oxide	1.0038/ S235JR	Black Oxide	1.1191/ C45E	HV500~600	Black Oxide	1.4301/ X5CrNi18-10	1.0038/ S235JR	Black Oxide
PXSR	Fine										



Example



Part Number Type	M	Pitch (Coarse)	Pitch (Fine)	(d)	D1	S	B	L	L1	L2	L3	L4	SW1	SW2	A	P	R	Load (N) min.	Load (N) max.	€ Unit Price PMXSR	€ Unit Price PXSR
PMXSR (Coarse) PXSR (Fine)	12	1.75	1.5	30	16.1	6	6	74	20	6	18	7	14	19	30	6	3.5	12.0	26.0		
	16	2	1.5	40.5	21.9	8	8	99.9	26	8	24.9	10	19	24	41	8	4.5	18.0	39.0		
	20	2.5	1.5	49.5	27.7	10	10	123	33	10	30	12	24	30	50	10	6	27.0	58.5		

Order Example Part Number PXSR12

Days to Ship 8 Days — Express A 2,00 EUR/ piece — P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

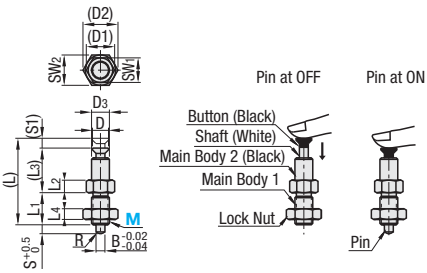
For orders larger than indicated quantity, please request a quotation.

Push Type

RoHS



Type	Threads	Button M Material	Shaft M Material	Main Body 1 M Material	Main Body 1 S Surface Treatment	Main Body 2 M Material	Pin M Material	Pin H Hardness	Pin S Surface Treatment	Spring M Material	Lock Nuts M Material	Lock Nuts S Surface Treatment
PMXPB	Coarse	Nylon 6 (Black)	Polyacetal (White)	1.1191/ C45E	Black Oxide Electroless Nickel Plating	Nylon 6 (Black)	1.1191/ C45E	HV500~600	Black Oxide Electroless Nickel Plating	1.4301/ X5CrNi18-10	JIS SWCH	Black Oxide
PMXPM											1.4301	-



Features

One finger operation is possible. It can significantly reduce work area in the upper part of the button.
One pushing button turns the status to ON (color of button is black) and another pushing button returns the status to OFF (color of button is black and white).

Part Number Type	M	Pitch (Coarse)	D	(D1)	(D2)	D3	S	B	(L)	L1	L2	(L3)	L4	(S1)	SW1	SW2	R	Load (N) min.	Load (N) max.	€ Unit Price PMXPB	€ Unit Price PMXPM
PMXPB PMXPM	10	1.5	9	16.1	19.6	10	5	5	47.5	18	7	24	6	5.5	14	17	3	2.2	3.0		
	12	1.75	11	19.6	21.9	12	6	6	53	20	7	26.5	7	6.5	17	19	3.5	2.0	3.9		
	16	2	15	24.3	27.7	16	8	8	68	25	8	34.5	10	8.5	21	24	4.5	1.3	5.4		

Order Example Part Number PMXPB10

Days to Ship 6 Days — P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

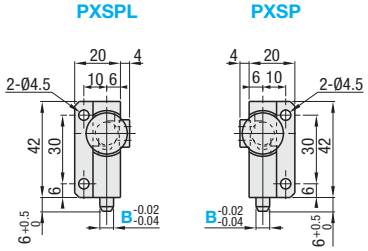
For orders larger than indicated quantity, please request a quotation.

Plate Mount

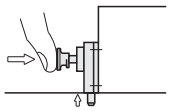
RoHS



Type	Knob M Material	Main Body M Material	Main Body S Surface Treatment	Pin M Material	Pin H Hardness	Pin S Surface Treatment	Spring M Material
PXSP PXSPL	Polyacetal	1.1191/C45E	Black Oxide	1.1191/C45E	50~60HRC (Carburized)	Black Oxide	1.4568/ X7CrNiAl17-7-J1



Example



This type can be effectively used in the places with limited headrooms.

Part Number Type	B	Load (N) min.	Load (N) max.	€ Unit Price
PXSP PXSPL	6	0.1	1.9	

Order Example Part Number PXSP6

Days to Ship 8 Days — Express A 2,00 EUR/ piece — P.88

Flat charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Indexing Plungers
-Fine Thread / Coarse Thread Type-

Price Reduction

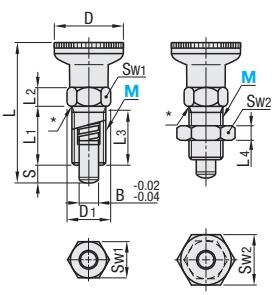
CAD Data

■Fine Thread, Coarse Thread RoHS

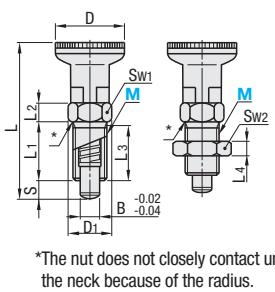


Threads	Return Type	Rest Position Type	Knob M Material	Main Body M Material	Main Body S Surface Treatment	Pin M Material	Pin H Hardness	Pin S Surface Treatment	Spring M Material	(Lock Nut) M Material	(Lock Nut) S Surface Treatment
Fine	PXA	PXYA	Nylon 6 (Mat Black)	1.0715/ 9SMn28	Blackening	1.1191/C45E	50~60HRC	Blackening	JIS SWP-B	-	-
	PXK	PXYK								1.1191/C45E	Blackening
	SXPA	-		1.4305/ X10CrNiS18-9	-	1.4305/ X10CrNiS18-9	-	Nickel Plating	1.4319/ X3CrNiN17-8	-	-
	SXPK	SXYK								1.4305	-
Coarse	PMXA	PMXYA		1.0715/ 9SMn28	Trivalent Chromate			-	1.4301/ X5CrNi18-10	-	-
	PMXK	PMXYK								1.1191/C45E	Trivalent Chromate

-Return Type- Fine Thread With Lock Nut

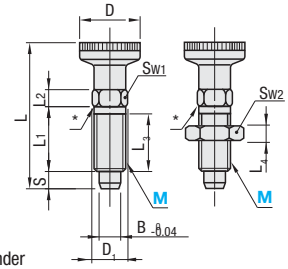


-Rest Position Type- Fine Thread With Lock Nut

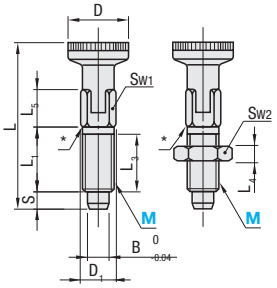


*The nut does not closely contact under the neck because of the radius.

-Return Type- Coarse Thread With Lock Nut



-Rest Position Type- Coarse Thread With Lock Nut



■Fine Thread

M	Pitch (Fine)	D	D1	B	S min.	L Return Type	L Rest Position Type	L1	L2	L3	L4	SW1	SW2	Load (N) PXA · PXYA PXK · PXYK min.	Load (N) PXA · PXYA PXK · PXYK max.	Load (N) SXPA SXPK · SXYK min.	Load (N) SXPA SXPK · SXYK max.	Mass (g) PXA SXPA	Mass (g) PXK SXPK	Mass (g) PXYA	Mass (g) PXYK SXYK
10	1.0	21	13.8	5	5	45	51	17	5	15	5	12	17	7	17	6	15	20	27	23	30
12	1.5	25	16.2	6	6	54.5	61	20	6	17	6	14	19	9	24	8	21	32	42	38	48
16	1.5	31	21.9	8	8 (7)	69	75.5	26	8	23	8	19	24	11	30	9	26	70	90	79	99

Min. S dimension of Rest Position Type M16 is shown in the ( ).

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Part Number Type	M	€ Unit Price Return Type PXA	SXPA	PXK	SXPK	Rest Position Type PXYA	PXYK	SXYK
(Stainless Steel) PXA SXPA PXK SXPK PXYA PXYK SXYK	10							
	12							
	16							

■Coarse Thread

Part Number Type	Part Number M	Pitch (Coarse)	D	D1	B	S min.	L Return Type	L Rest Position Type	L1	L2	L3	L4	L5	SW1	SW2	Load (N) min.	Load (N) max.	Mass (g) PMXA	Mass (g) PMXK	Mass (g) PMXYA	Mass (g) PMXYK	Unit Price PMXA PMXYA	Unit Price PMXK PMXYK
PMXA	6M	1.0	12	6.9	4	4	30.5	33	12	4.5	10	3.2	7	6	10	3	12	5	9	4	8		
PMXK	8M	1.25	16	9.2	5	5	40	43.5	16	6	14	4	9.5	8	13	5	24	10	15	11	16		
PMXYA	10M	1.5	18	11.5	6	6	49	52	20	7.5	18	5	10.5	10	16	5	21	17	24	18	15		
PMXYK	12M	1.75	21	13.8	8	8	59	63.5	24	9	22	6	13.5	12	18	6	22	31	41	36	46		

kgf=Nx0.101972

Order Example — Part Number: SXPA16, PMXK10M

Price

■Volume Discount Rate (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~39	40~99
Discount Rate	€ Unit Price	20%	30%	40%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 6 Days P.87 / 2 Days

As the thread thickness of coarse thread type (PMXA · PMXK · PMXYA · PMXYK) is thin, do not exceed the torque values shown on the right.

M	Allowable Tightening Torque (Nm)
6	1.5
8	9
10	20
12	25

-Features of the Return Type and Rest Position Type P.1485

Ball Lock Pins
-Spring Type / Push Type-

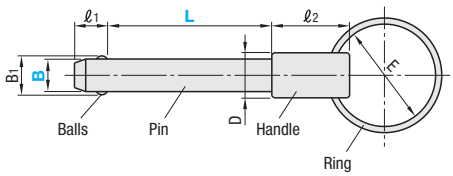
CAD Data

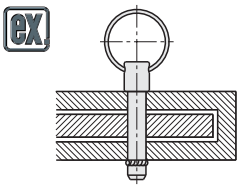
■**Features:** Locks with the spring force. Economical in price by 1/3 for that of the Push Type.

■Ball Lock Pins -Spring Type- RoHS



Type		Ball		Pin		Handle		Ring	
L Selectable	L Dimension Configurable	M Material	H Hardness	M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	S Surface Treatment
BLPS	BLPF	1.0038/S235JR	HRC55~	1.1191/C45E	Electroless Nickel Plating	1.0715/9SMn28	Electroless Nickel Plating	JIS SWRH	Nickel Plating





■L Selectable

Part Number Type	B	L Selection	B1	ℓ1	D	ℓ2	E	€ Unit Price L=25	L=30	L=40	L=50	L=60
BLPS	5	30	5.5	6	11	22	25					
	6	25 30 40 50	7	7	11	22	25					
	8	25 30 40 50	9.5	8	11	22	25					
	10	25 30 40 50 60	12	9	16	27	25					
	12	60	14.5	10	16	27	25					
	16	60	19	14	19	32	25					

■L Dimension Configurable

Part Number Type	B	L 5mm Increment	B1	ℓ1	D	ℓ2	E	€ Unit Price
BLPF	5	10~30	5.5	6	11	22	25	
	6	15~50	7	7	11	22	25	
	8	20~100	9.5	8	11	22	25	
	10	25~100	12	9	16	27	25	
	12	30~100	14.5	10	16	27	25	
	16	50~100	19	14	19	32	25	

Order Example: Part Number BLPS8 - L 25; BLPF10 - L 45

Days to Ship: - BLPS **6 Days** P.87; - BLPF **10 Days**

Price

■Volume Discount Rate (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

Please request a quotation for orders of 10 or more of L Dimension Configurable Type.

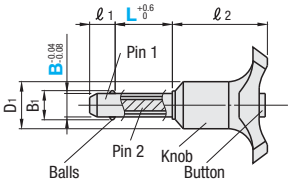
For orders larger than indicated quantity, please request a quotation.

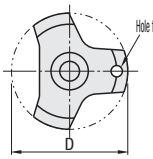
B	Mating Hole Recommended Dim.	Resistance when Removed (N)	Pin Fracture Load (kN)	Mass (g)
5	$5^{+0.07}_{0}$	9	5	19~22
6	$6^{+0.07}_{0}$	9	7	21~28
8	$8^{+0.09}_{0}$	9	13	27~58
10	$10^{+0.09}_{0}$	20	20	59~105
12	$12^{+0.11}_{0}$	30	29	73~135
16	$16^{+0.11}_{0}$	50	51	159~237

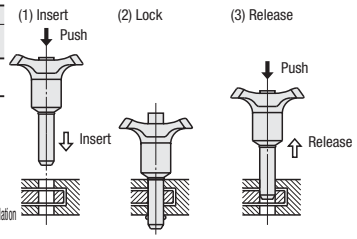
■Ball Lock Pins -Push Type- RoHS



Type	Ball		Pin 1	Pin 2	Spring	Knob
	M Material	H Hardness	M Material	M Material	M Material	M Material
BLP	1.0038/ S235Jr	55HRC~	1.4542 Equivalent	1.4305/ X10CrNiS18-9	1.4568/ X7CrNiAl17-7	Nylon 6 (Black · Orange)







(1)When the button is pushed, the ball lock is released. The pin can be inserted into a hole as the balls draw in the pin.
(2)When the button is released, the pin is locked as the balls extend outward from the pin.
(3)When the button is pushed again, the ball lock is released and the pin is pulled out.

Part Number Type	B	L	D	D1	B1	ℓ1	ℓ2	Mating Hole Recommended Dimensions	Shear Load (kN)	Mass (g)	€ Unit Price L=10~25	L=30~50	L=60 / 80	L=100
BLP	5	10 15 20 25 30	38	16	5.5	6	31.5	$5^{+0.07}_{0}$	24	30~32				
	6	10 15 20 25 30 40 50			7	7		$6^{+0.07}_{0}$	35	31~39				
	8	20 25 30 40 50			9.5	8		$8^{+0.09}_{0}$	63	38~47				
	10	25 30 40 50 60	43	23	12	9	36	$10^{+0.09}_{0}$	100	76~97				
	12	40 50 60 80			14.5	10		$12^{+0.11}_{0}$	144	100~135				
	16	60 80 100			19	14		$16^{+0.11}_{0}$	257	171~232				

Order Example: Part Number BLP8 - L 25

Days to Ship: **6 Days** P.87

Price

■Volume Discount Rate (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.


MC01-2B







Clamp Units · Toggle Clamps

Clamp Units/ Toggle Clamps





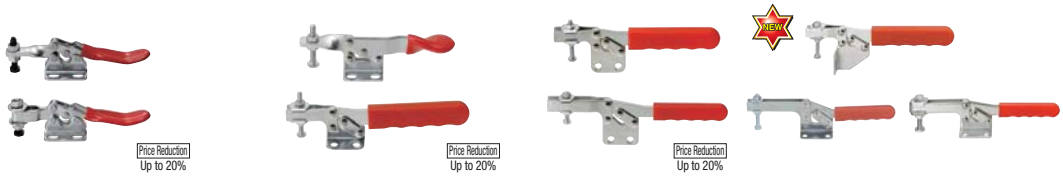
Price Reduction 20%

Product Name	Spring Clamp -Small · Large-	Spring Side Clamp · Tip Attachments
Small Head	1497	1498



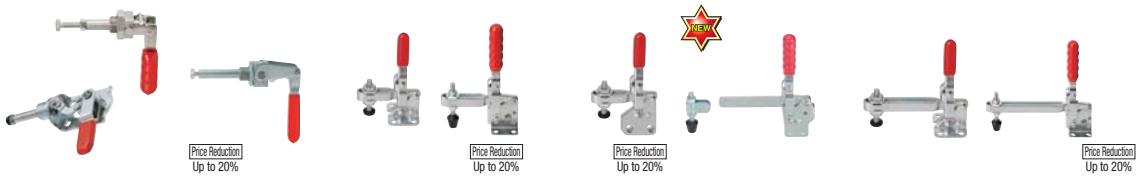
Price Reduction Up to 20%

Toggle Clamps-Hold Down, Horizontal Standard Handle	- Hold Down - Horizontal Handle - Standard Handle / High Arm Type-	- Hold Down - Horizontal Handle - Standard Handle (Straight Base)-
1501	1502	1503



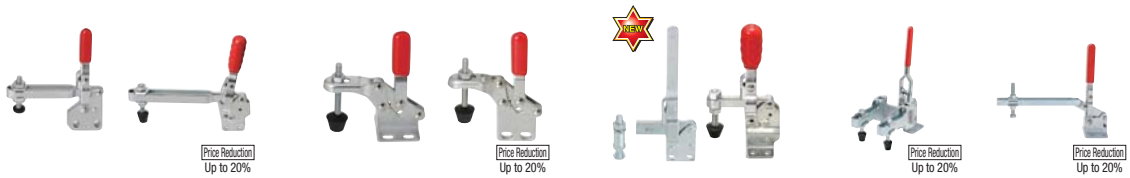
Price Reduction Up to 20%

-Hold Down -Horizontal Handle, Long Handle-	-Hold Down - Horizontal Handle (Flange Base)-	-Hold Down - Horizontal Handle (Straight Base · Side Mount Base · Flange Base)-
1504	1505	1506



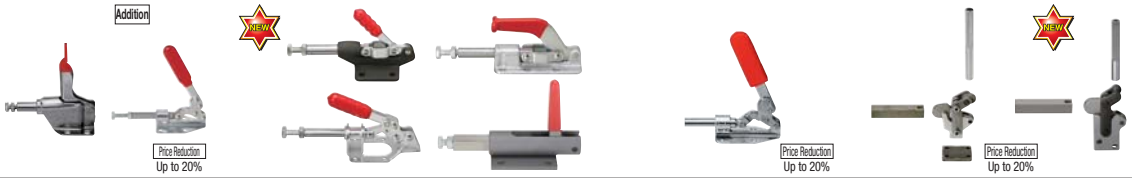
Price Reduction Up to 20%

-Side Push-pull Type · Horizontal Type-	-Hold Down - Vertical Handle (Flange Base)-	-Hold Down - Vertical Handle (Straight Base)-	-Hold Down - Vertical Handle, Long Arm (Flange Base)-
1507	1508	1509	1510



Price Reduction Up to 20%

-Hold Down - Vertical Handle, Long Arm (Straight Base)-	-Vertical Handle (Flange Base · Straight Base)-	-Vertical Handle - Welded Tip Screw Type · High Arm Type-	–2-Pronged Type–	–Long Arm Type–
1511	1512•1513	1514	1515	1515



Price Reduction Up to 20%

-Side Push Type (Flange Base)-	–Smooth Stroke–	-Welded Clamp-
1516~1519	1519	1520



Metal Heads for Clamps	Components for Toggle Clamps–Two-pronged Clamp Arms–-Clamp Arm Extension Kits–		–Post Holderss–
1521	1522	1522	1522

Spring Clamp
-Small Type · Large Type-

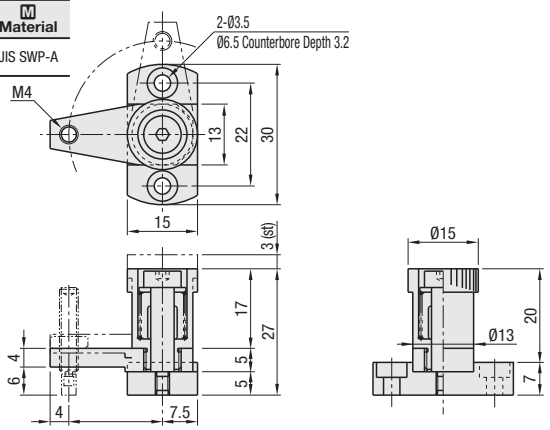
CAD Data

Features: Spring force clamps work pieces with a constant force.

Small Type RoHS



Type	Body		Spring
	M Material	S Surface Treatment	M Material
SPCPS	1.1191/C45E	Electroless Nickel Plating	JIS SWP-A

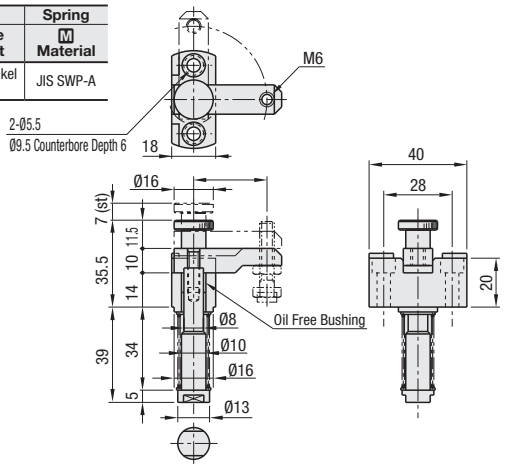


Part Number Type	L	Spring	Clamp Force (N) S (Light Load) min.	S (Light Load) max.	H (Heavy Load) min.	H (Heavy Load) max.	€ Unit Price
SPCPS	20	S (Light Load) H (Heavy Load)	2.0	2.6	3.0	3.6	
	30						

Large Type RoHS



Type	Body		Spring
	M Material	S Surface Treatment	M Material
SPCPL	1.1191/C45E	Electroless Nickel Plating	JIS SWP-A



Part Number Type	L	Spring	Clamp Force (N) S (Light Load) min.	S (Light Load) max.	H (Heavy Load) min.	H (Heavy Load) max.	€ Unit Price
SPCPL	30	S(Light Load) H(Heavy Load)	3.0	5.1	5.0	8.5	
	40						
	50						
	60						

Order Example

Part Number Type	L	-	Spring
SPCPS	20	-	S
SPCPL	50	-	H

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	10%	15%

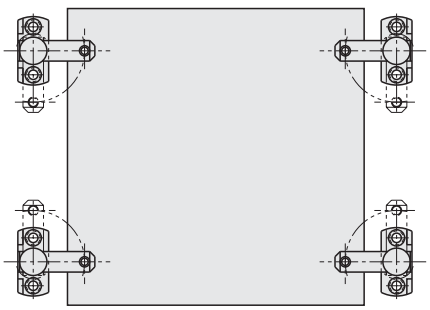
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number Type	L	-	Spring	-	(SB)
SPCPS	30	-	H	-	SB

Alteration	Code	Spec.	Price Adder
Tip Screw Included	SB	Tip Screw with a Urethane Bumper will be included. SPCPS...USS4-15 (P.1427) SPCPL...SUST6-20 (P.1427)	2,00

Days to Ship 6 Days P.87



Clamps a work piece from above by spring force.

Add. Spec. Spring Side Clamp / Tip Attachments

Price Reduction 20%

CAD Data

Features: Newly added M4 size requires half the space compared to the conventional products.

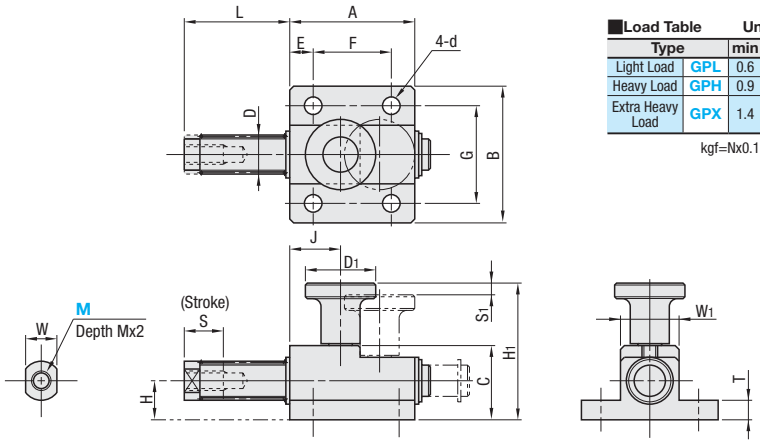
Spring Side Clamp

RoHS



In addition to the tip attachments shown below (GP and GPF), urethane pushers (P.2-1439: USLH10, etc) and stopper pins (P.1425: BSTEH8, etc) are also attachable to the tip of Spring Guide Clamp.

Type		Body		Pin		Spring	Knob
		M Material	S Surface Treatment	M Material	S Surface Treatment	M Material	M Material
Light Load	GPL	Aluminum Alloy	Clear Anodize	1.1191/C45E	Electroless Nickel Plating	1.4301/X5CrNi18-10-WPB	Polyacetal
Heavy Load	GPH						
Extra Heavy Load	GPX						



Load Table Unit (N)

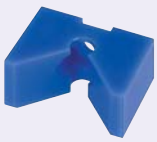
Type		min	max
Light Load	GPL	0.6	2.5
Heavy Load	GPH	0.9	3.8
Extra Heavy Load	GPX	1.4	5.9

kgf=Nx0.101972

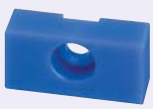
Part Number Type	Part Number M (Coarse)	S	Pin D	L	W	H	Body A	B	C	T	G	E	F	d	Knob S1	H1	J	D1	W1	€ Unit Price
GPL GPH GPX	4	6	8	22	6	5	18	26	11.5	4	18	4	10	4.5	1.5	24.5	5.5	15	10	
	5	10	10	27	8	10	32	35	19	5	25	6	20	5.5	3	35	13	18	15	

Tip Attachments

-V Shape-

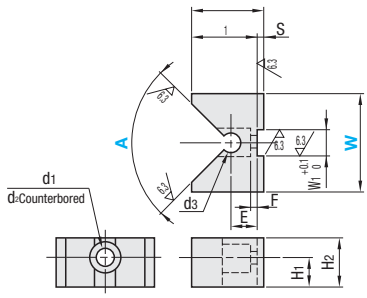


-Flat Shape-

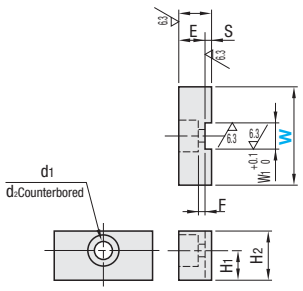


RoHS

GP (V Shape)



GPF (Flat Shape)



Applicable to M5 size Spring Side Clamp only.

M Material: MC Nylon

V Shape

Part Number	A°	W	d1	d2	L	L1	H1	H2	d3	E	F	S	W1	€ Unit Price
GP	90	20	5.5	9.5	18	16	9	15	6	8	2	2	8	
		30			22	20								
	120	20			15	13								
		30			18	16								

Flat Shape

Part Number	W	d1	d2	L	H1	H2	E	F	S	W1	€ Unit Price
GPF	20	5.5	9.5	10	9	15	8	2	2	8	
	30										

Order Example

Part Number	-	A	-	W
GPH5				
GP	-	90	-	30
GPF			-	20

Days to Ship 6 Days P.87

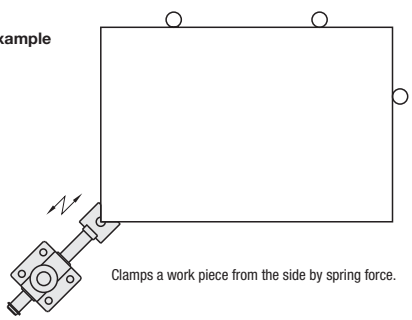
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~49	50~74	75~99
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



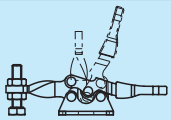
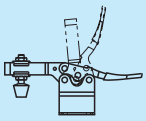
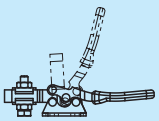
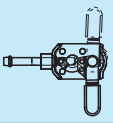
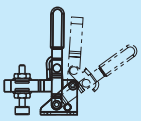
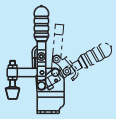
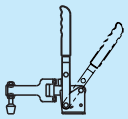
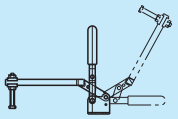
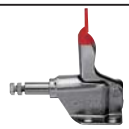
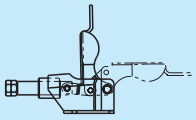
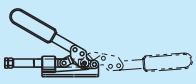
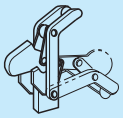
Clamps a work piece from the side by spring force.

Toggle Clamps Overview

MISUMI toggle clamps are offered in a wide variety of shapes such as Hold-down Types (Vertical / Horizontal Handle) and Side-push Types. 28 new products are added, and conventional products are reduced in price following the reduction in 2009 (up to 20%). Suitable for inspection, welding, assembly and machining jigs.

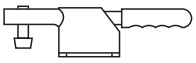
Selection Table

For { - Clamping Force (Force to Hold Down) / - Distance to the work piece (Stroke, Arm Height and length) / - Material (Steel, Stainless Steel) } refer to the information below and see each product page.

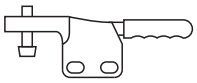
Shape		Appearance	When Clamped (Solid Line) / When Unclamped (Dotted Line)	Features	Mount Type *
Hold Down Horizontal Handle	Standard Handle			- Low Profile Design - Selectable from flange, straight and side mount types according to the installation space and the shape.	Flanged Straight Side
	Standard Handle High Arm Types			- High Arm Types - Arm positions higher than those of conventional products eliminate the need for raising the clamps for high work positions.	Flanged
	Long Handle			- Longer handles prevent fingers from being caught, thus resulting in improved operability.	Flanged
Push-pull Type 360° Mountable				- Handles are mountable at any desired positions and angles.	- { Mounted with a bracket held by a hex nut and a threaded sleeve. }
Horizontal Handle				- Small clamps For light-duty operations. - Horizontally-moving handles are effective if there is an obstacle above.	Flanged
Hold Down Vertical Handle	Stan-dard			- Most widely used in inspection and welding jigs for automotive and aerospace industries. - 90°or more arm open-close angle* secures enough space to remove work pieces when unclamped. * Except MC04-6 series. - Selectable from flange and straight types according to the installation space and the shape.	Flanged Straight
	High Arm Types			- High Arm Types - Arm positions higher than those of conventional products eliminate the need for raising the clamps for high work positions.	Flanged
	Two-pronged Arm			- Two clamping positions at a time enhances operability and saves space.	Flanged
	Long Arm			- Long Arm Types - Suitable when clamping A work piece from A distance.	Flanged Straight
Side Push Types	Stan-dard			- Suitable when clamping a work piece from the side. - Available in a wide range of clamping forces, strokes and mounting types including compact and lightweight types.	Flanged
	Smooth Stroke Smooth			- Suitable when clamping a work piece from the side. - Built-in Oil Free Bushing requires no lubrication, and enables smooth strokes.	Flanged
Welded Types				- Assembly-required clamps. - Suitable for various purposes since arms and handles can be welded in desired angles.	Flanged Straight

* Mounted Views

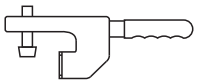
Flanged



Straight



Side



Tightening Force (N)	Hold Down		Side Push		Material		Part Number	Small Head
	Arm Length	Arm Height (From Mounting Surface)	Stroke	Shaft Height (From Mounting Surface)	Body			
					Steel	Stainless Steel		
196~5000	17.6~108.3	7.7~50	-	-	○	○	MC01-__	P.1501~1503 P.1505 · 1506
900~2270	56.9~71.65	41.6~54.1	-	-	○	-	MC01H-__	P.1502
264~882	21~57	7.7~25	-	-	○	-	MC01L-__	P.1504
900~3138	-	-	20.34~66.7	-	○	○	MC02-__	P.1507
450~500	-	-	16~17	10~12.7	○	○	MC03-__	P.1507
294~4000	24~120	16~97	-	-	○	○	MC04-__	P.1508 · 1509 P.1512~1514
910	34.5	42.2	-	-	○	-	MC04H-2	P.1514
800~1500	150	50	-	-	○	-	MC05-1	P.1515
186~3700	51~264	16~88	-	-	○	-	MC04-_L MC04-_LS MC06-1 LN2BS	P.1510 · 1511 · 1515
490~16000	-	-	10~80	14~60	○	○	MC07-__	P.1516~1519
1960	-	-	30	20	○	-	MC08-1	P.1519
1960~9800	-	-	-	-	○	-	MC09-__	P.1520

NEW

Toggle Clamps

-Hold Down - Horizontal Handle - Standard Handle (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■**Features:** MC01-3 is the size between MC01-2B and MC01.

■Hold Down - Horizontal Handle - Standard Handle (Flange Base)-



(Clamp Condition)

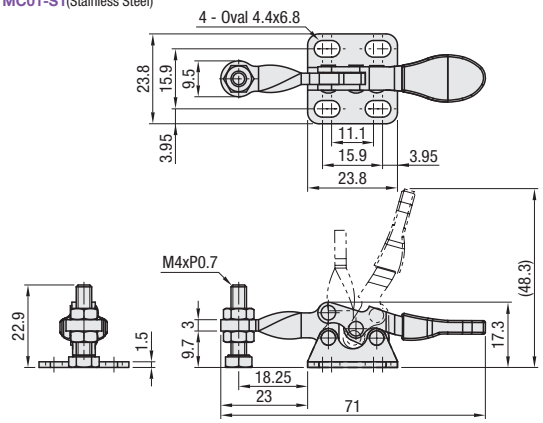
RoHS

Part Number	MC01-1	MC01-S1
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	264.6	
Weight (g)	30	
Open-Close Angle of Arm	90°	
Open-Close Angle of Handle	75°	
Accessory	*Nylon Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC01-1
MC01-S1(Stainless Steel)

*Not a bolt with rubber.



■Hold Down - Horizontal Handle - Standard Handle (Flange Base)-



(Clamp Condition)

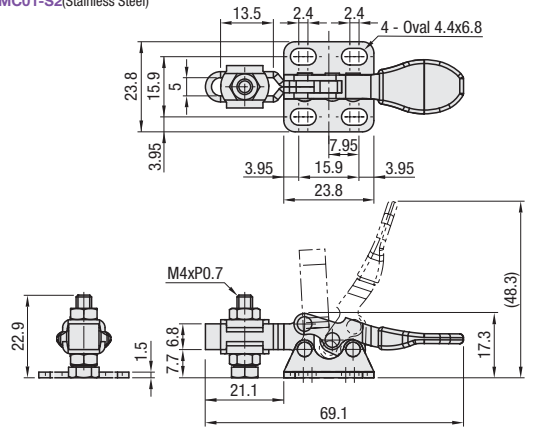
RoHS

Part Number	MC01-2	MC01-S2
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	264.6	
Weight (g)	35	
Open-Close Angle of Arm	90°	
Open-Close Angle of Handle	75°	
Accessory	*Nylon Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC01-2
MC01-S2(Stainless Steel)

*Not a bolt with rubber.



■Hold Down - Horizontal Handle - Standard Handle (Flange Base)-



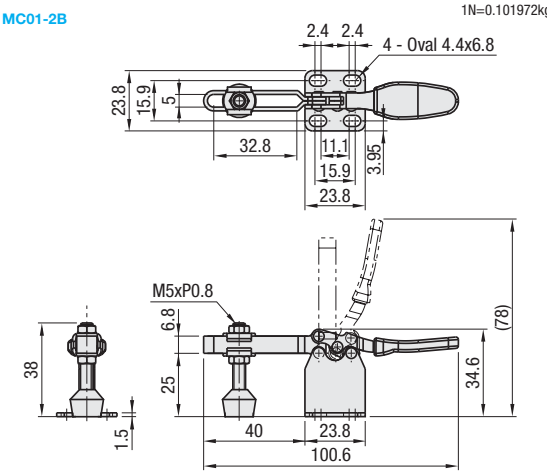
(Clamp Condition)

RoHS

Part Number	MC01-2B
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	400
Weight (g)	60
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	75°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC01-2B



■Hold Down - Horizontal Handle - Standard Handle (Flange Base)-



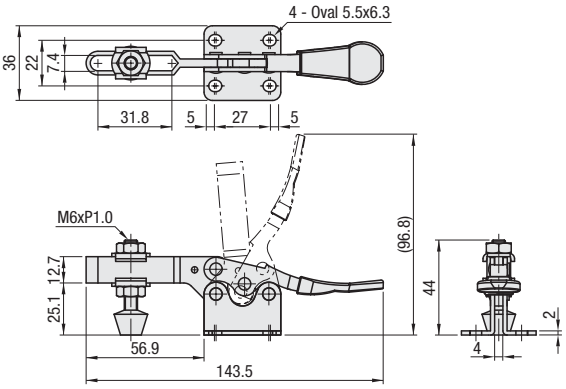
(Clamp Condition)

RoHS

Part Number	MC01-3	MC01-S3
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	882	
Weight (g)	130	
Open-Close Angle of Arm	85°	
Open-Close Angle of Handle	73°	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC01-3
MC01-S3(Stainless Steel)



Order Example

Part Number
MC01-1

Days to Ship 6 Days 2 Days P.87

Price

■**Volume Discount** (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps

-Hold Down - Horizontal Handle - Standard Handle (Flange Base) · High Arm Type (Flange Base)-

NEW

Price Reduction
Up to 20%

CAD Data

■**Features:** MC01-10 is larger than MC01-4 in size and clamping force. High Arm Type with an arm position higher than conventional products is adjustable without spacers.
(MC01H-3: 16mm higher than MC01-3; MC01H-4: 19mm higher than MC01-4)

■Hold Down - Horizontal Handle - Standard Handle (Flange Base)-



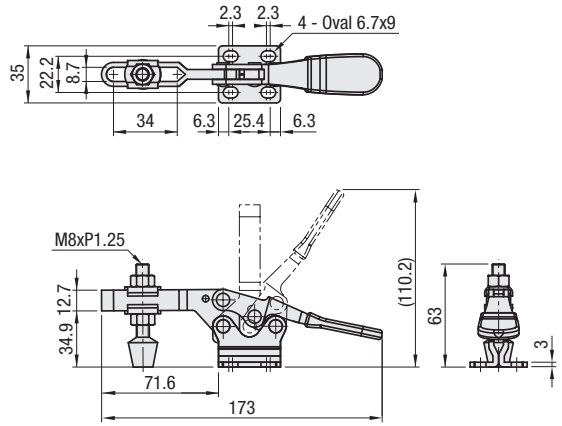
(Clamp Condition)

RoHS

Part Number	MC01-4	MC01-S4
Main Material	1.0038/S235JR	1.4301
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	2352	
Weight (g)	265	
Open-Close Angle of Arm	90°	
Open-Close Angle of Handle	65°	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC01-4
MC01-S4(Stainless Steel)



■Hold Down - Horizontal Handle - Standard Handle (Flange Base)-



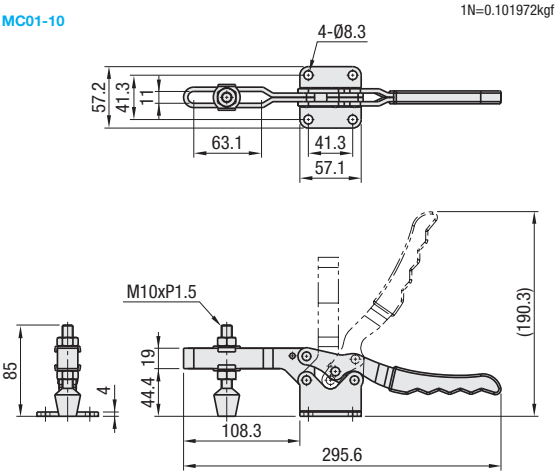
(Clamp Condition)

RoHS

Part Number	MC01-10
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	3400
Weight (g)	640
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	68°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC01-10



■High Arm Type (Flange Base)



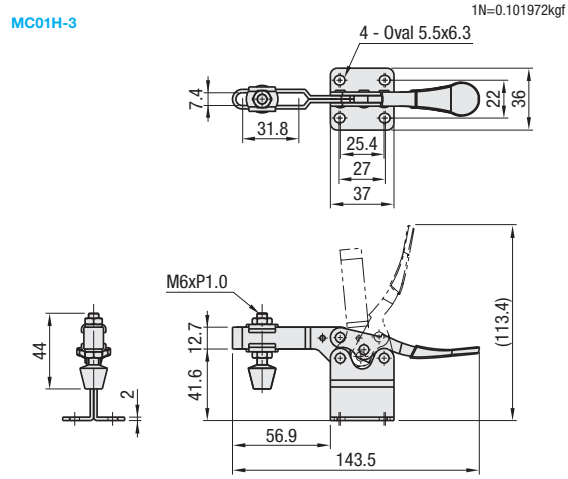
(Clamp Condition)

RoHS

Part Number	MC01H-3
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	900
Weight (g)	150
Open-Close Angle of Arm	85°
Open-Close Angle of Handle	73°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC01H-3



■High Arm Type (Flange Base)



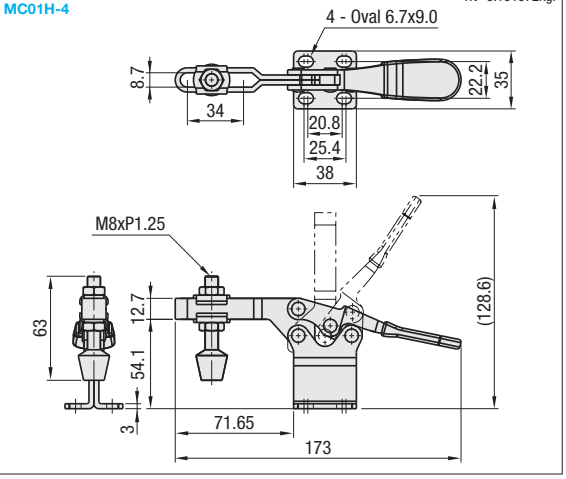
(Clamp Condition)

RoHS

Part Number	MC01H-4
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	2270
Weight (g)	290
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	65°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC01H-4



Order Example

Part Number
MC01-10
MC01H-3

Price

■**Volume Discount** (Round down to one Cent.) **P.87**

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

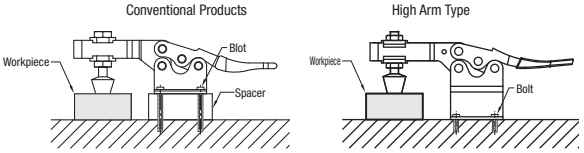
For orders larger than indicated quantity, please request a quotation.

Days to Ship

6 Days | **2 Days**

P.87

■High Arm Type Features (Comparison with Conventional Products)



Raise by spacer according to work heights.

Height is adjustable by toggle clamp arms.

Toggle Clamps

- Hold Down • Horizontal Handle • Standard Handle (Straight Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down - Horizontal Handle - Standard Handle (Straight Base)-



(Clamp Condition)

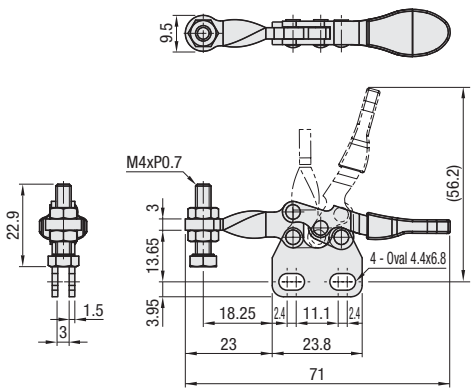
RoHS

Part Number	MC01-1S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	264.6
Weight (g)	30
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	75°
Accessory	*Nylon Bolt
€ Unit Price	

MC01-1S

1N=0.101972kgf

*Not a bolt with rubber.



■Hold Down - Horizontal Handle - Standard Handle (Straight Base)-



(Clamp Condition)

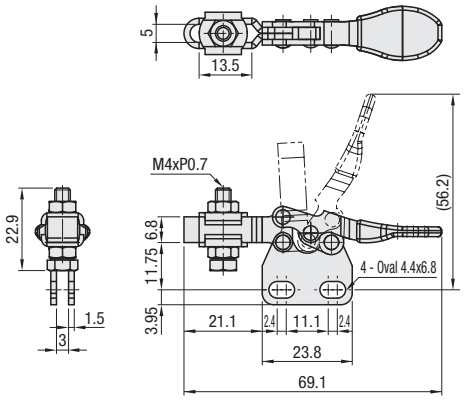
RoHS

Part Number	MC01-2S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	264.6
Weight (g)	35
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	75°
Accessory	*Nylon Bolt
€ Unit Price	

MC01-2S

1N=0.101972kgf

*Not a bolt with rubber.



■Hold Down - Horizontal Handle - Standard Handle (Straight Base)-



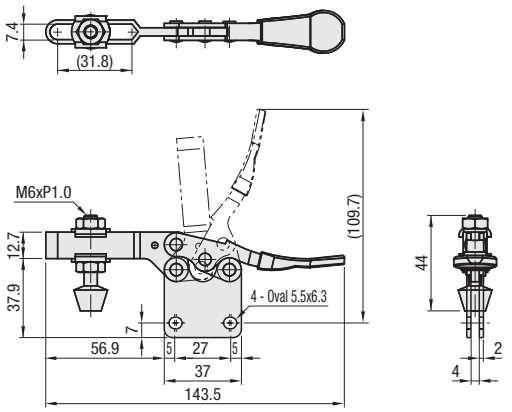
(Clamp Condition)

RoHS

Part Number	MC01-3S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	882
Weight (g)	130
Open-Close Angle of Arm	85°
Open-Close Angle of Handle	73°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

MC01-3S

1N=0.101972kgf



■Hold Down - Horizontal Handle - Standard Handle (Straight Base)-



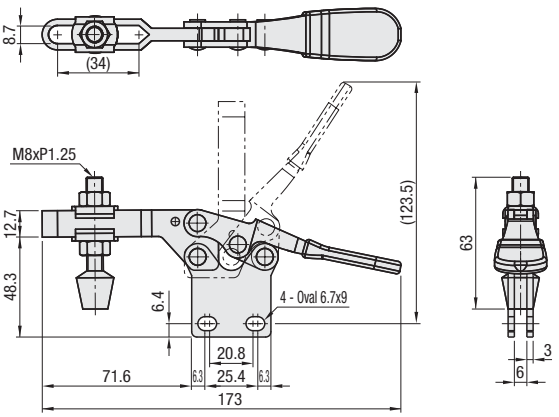
(Clamp Condition)

RoHS

Part Number	MC01-4S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	2352
Weight (g)	265
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	65°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

MC01-4S

1N=0.101972kgf



Order Example

Part Number
MC01-1S

Days to Ship: 6 Days / 2 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps

-Hold Down - Horizontal Handle - Long Handle (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down - Horizontal Handle - Long Handle (Flange Base)-



(Clamp Condition)

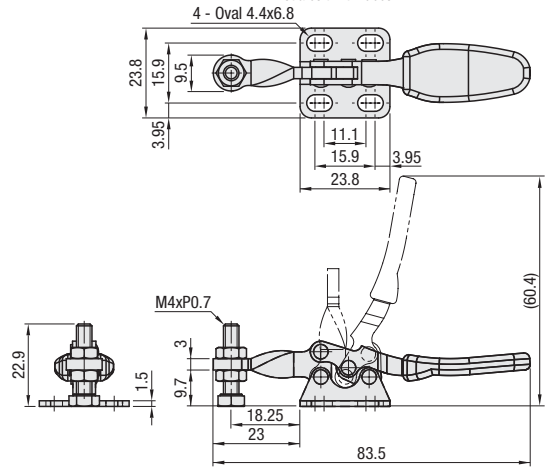
RoHS

Part Number	MC01L-1
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	264.6
Weight (g)	35
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	75°
Accessory	*Nylon Bolt
€ Unit Price	

1N=0.101972kgf

MC01L-1

*Not a bolt with rubber.



■Hold Down - Horizontal Handle - Long Handle (Flange Base)-



(Clamp Condition)

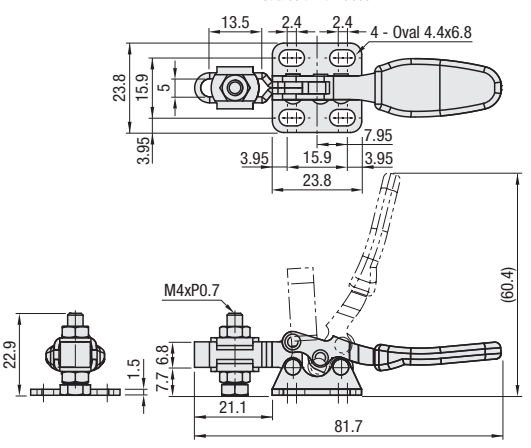
RoHS

Part Number	MC01L-2
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	264.6
Weight (g)	40
Open-Close Angle of Arm	90°
Open-Close Angle of Handle	75°
Accessory	*Nylon Bolt
€ Unit Price	

1N=0.101972kgf

MC01L-2

*Not a bolt with rubber.



■Hold Down - Horizontal Handle - Long Handle (Flange Base)-



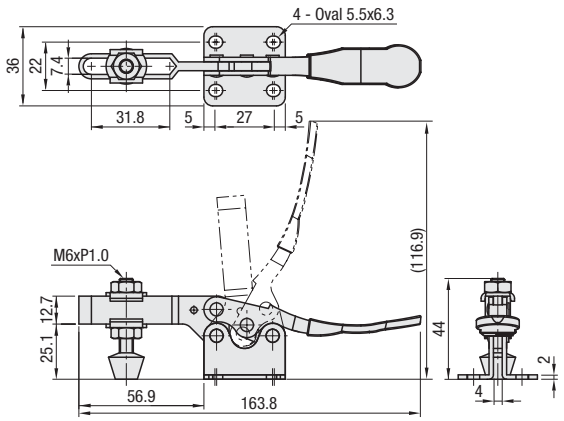
(Clamp Condition)

RoHS

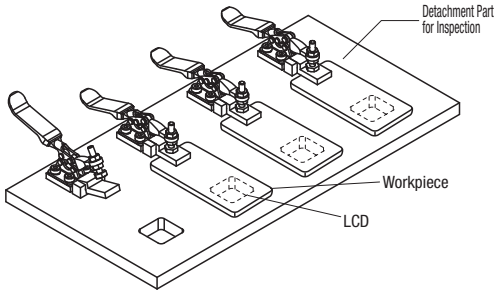
Part Number	MC01L-3
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	882
Weight (g)	140
Open-Close Angle of Arm	85°
Open-Close Angle of Handle	73°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC01L-3

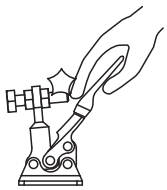


Example Work pushers for mobile phone LCD continuity tests.



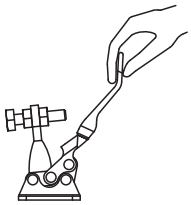
■Long Handles' Feature (Comparison with Conventional Products)

■Conventional Products



Fingers can be caught!

■Long Handle



Long arm prevents fingers from being caught, thus resulting in increased operability.

Order Example — Part Number: MC01L-1

Days to Ship: 6 Days / 2 Days P.87

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps

-Hold Down · Horizontal Handle (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down · Horizontal Handle (Flange Base)



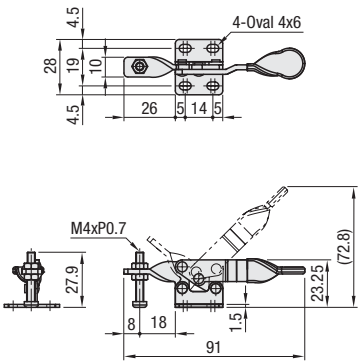
(Clamp Condition)

RoHS

Part Number	MC01-5
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	196
Weight (g)	30
Arms Open-Close Angle	71°
Handle Open-Close Angle	72°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC01-5



■Hold Down · Horizontal Handle (Flange Base)



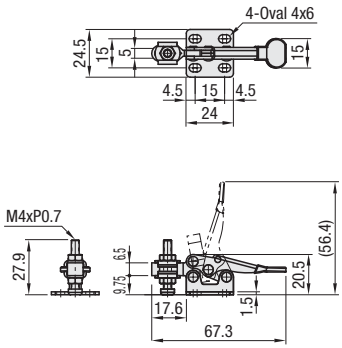
(Clamp Condition)

RoHS

Part Number	MC01-6	MC01-S6
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	196	
Weight (g)	30	
Arms Open-Close Angle	75°	
Handle Open-Close Angle	82°	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC01-6
MC01-S6(Stainless Steel)



■Hold Down · Horizontal Handle (Flange Base)



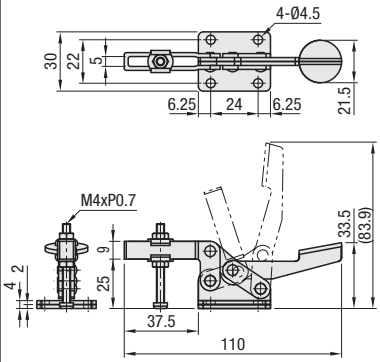
(Clamp Condition)

RoHS

Part Number	MC01-7
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	294
Weight (g)	100
Arms Open-Close Angle	72°
Handle Open-Close Angle	74°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC01-7



■Hold Down · Horizontal Handle (Flange Base)



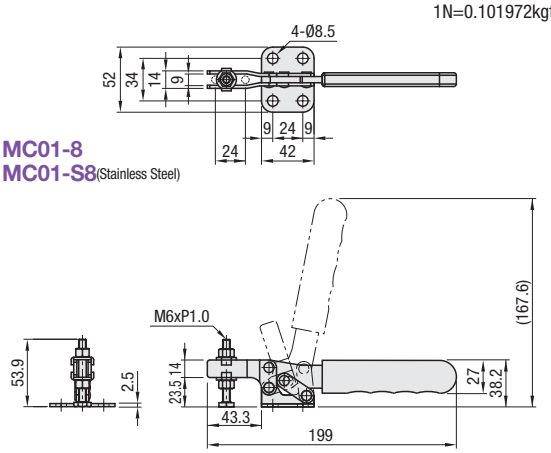
(Clamp Condition)

RoHS

Part Number	MC01-8	MC01-S8
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	2450	
Weight (g)	210	
Open-Close Angle of Arm	77°	
Open-Close Angle of Handle	85°	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC01-8
MC01-S8(Stainless Steel)



■Hold Down · Horizontal Handle (Flange Base)



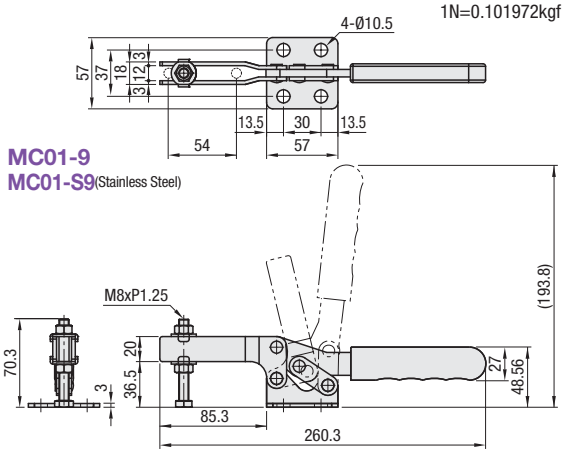
(Clamp Condition)

RoHS

Part Number	MC01-9	MC01-S9
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	2744	
Weight (g)	435	
Open-Close Angle of Arm	79°	
Open-Close Angle of Handle	86°	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC01-9
MC01-S9(Stainless Steel)



Order Example

Part Number
MC01-6
MC01-S8

Days to Ship: 2 Days

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps

-Hold Down · Horizontal Handle (Straight Base · Side Mount Base · Flange Base)-

NEW

Price Reduction
Up to 20%

CAD Data

Features: MC01-11 is Side Mount Base Type. MC01-12 and MC01-13 each have a high clamping force.

Hold Down - Horizontal Handle (Straight Base)

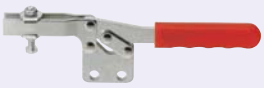


(Clamp Condition)

RoHS

Part Number	MC01-8S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	2450
Weight (g)	210
Open-Close Angle of Arm	77°
Open-Close Angle of Handle	85°
Accessory	Steel Bolt
€ Unit Price	

Hold Down - Horizontal Handle (Straight Base)



(Clamp Condition)

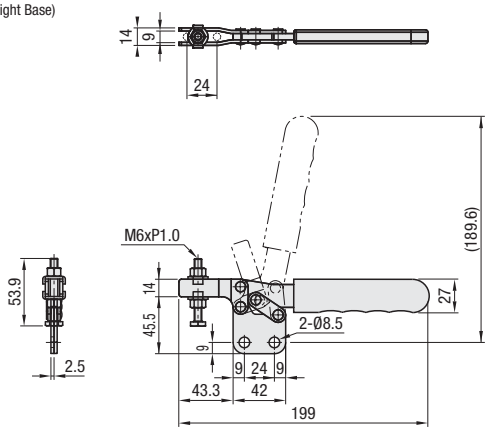
RoHS

Part Number	MC01-9S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	2744
Weight (g)	435
Open-Close Angle of Arm	79°
Open-Close Angle of Handle	86°
Accessory	Steel Bolt
€ Unit Price	

MC01-8S

(Straight Base)

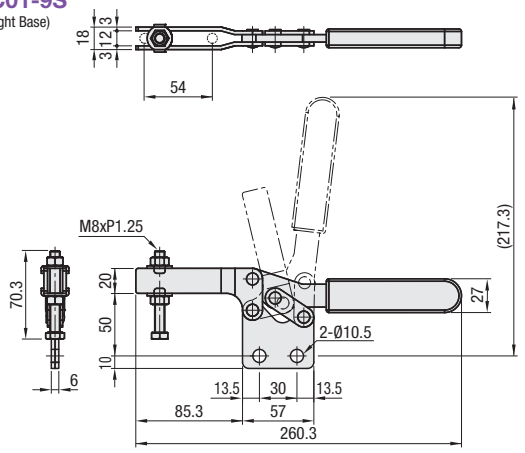
1N=0.101972kgf



MC01-9S

(Straight Base)

1N=0.101972kgf



Hold Down - Horizontal Handle (Side Mount Base)



(Clamp Condition)

RoHS

Part Number	MC01-11
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	2500
Weight (g)	210
Arms Open-Close Angle	77°
Handle Open-Close Angle	85°
Accessory	Steel Bolt
€ Unit Price	

Hold Down - Horizontal Handle (Flange Base)



(Clamp Condition)

RoHS

Part Number	MC01-12
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	2800
Weight (g)	530
Arms Open-Close Angle	86°
Handle Open-Close Angle	75°
Accessory	Steel Bolt
€ Unit Price	

Hold Down - Horizontal Handle (Flange Base)



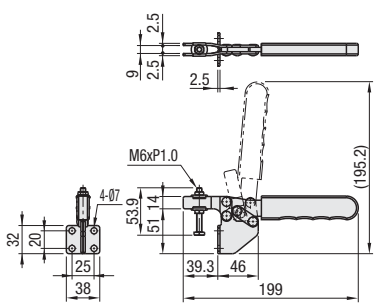
(Clamp Condition)

RoHS

Part Number	MC01-13
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	5000
Weight (g)	635
Arms Open-Close Angle	66°
Handle Open-Close Angle	83°
Accessory	Steel Bolt
€ Unit Price	

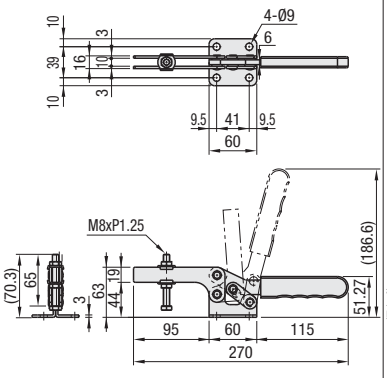
MC01-11

1N=0.101972kgf



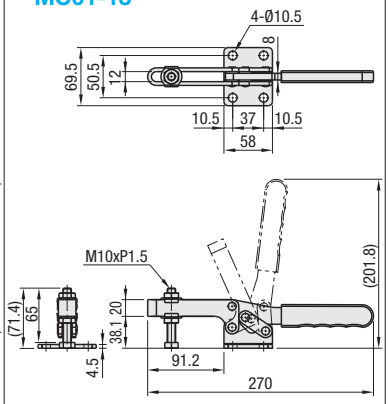
MC01-12

1N=0.101972kgf



MC01-13

1N=0.101972kgf



Order Example

Part Number

MC01-11
MC01-12

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

6 Days — P.87

2 Days

Toggle Clamps

-Side Push-pull Free Mounting Direction Type · Horizontal Type (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■Side Push-pull Type 360°Mountable

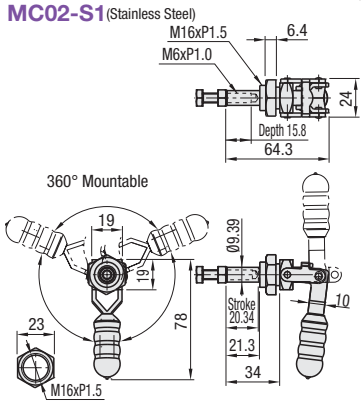

(Clamp Condition)

Part Number	MC02-1	MC02-S1
Main Material	1.0038/S235JR	1.4301 Shaft Material 1.4005 Pin: 1.4006
Surface Treatment	* Trivalent Chromate	-
Stroke (mm)	20.34	
Tightening Force (N)	900	
Open-Close Angle of Handle	180°	
Weight (g)	120	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

RoHS * Shaft: Nickel Plating

MC02-1
MC02-S1 (Stainless Steel)

1N=0.101972kgf



■Side Push-pull Type 360°Mountable

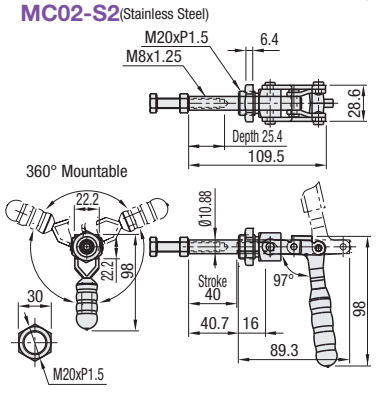

(Clamp Condition)

Part Number	MC02-2	MC02-S2
Main Material	1.0038/S235JR	1.4301 Shaft Material 1.4005 Pin: 1.4006
Surface Treatment	* Trivalent Chromate	-
Stroke (mm)	40	
Tightening Force (N)	1470	
Open-Close Angle of Handle	180°	
Weight (g)	280	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

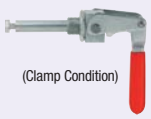
RoHS * Shaft: Nickel Plating

MC02-2
MC02-S2 (Stainless Steel)

1N=0.101972kgf



■Side Push-pull Type 360°Mountable

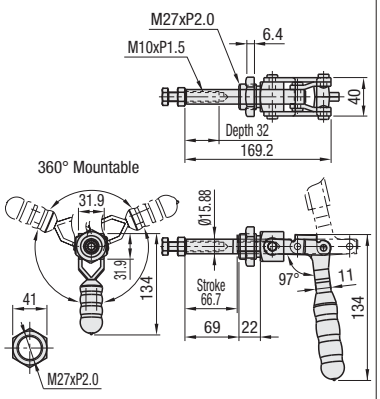

(Clamp Condition)

Part Number	MC02-3
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	66.7
Tightening Force (N)	3138
Handle Open-Close Angle	180°
Weight (g)	750
Accessory	Steel Bolt
€ Unit Price	

RoHS * Shaft: Nickel Plating

MC02-3

1N=0.101972kgf



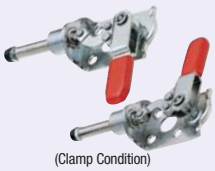
■Horizontal Type (Flange Base)


(Clamp Condition)

Part Number	MC03-1	MC03-S1
Main Material	1.0038/S235JR	1.4301/ X5CrNi18-10
Surface Treatment	* Trivalent Chromate	-
Stroke (mm)	17	
Tightening Force (N)	450	
Open-Close Angle of Handle	190°	
Weight (g)	50	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	Stainless Steel Bolt
€ Unit Price		

RoHS * Shaft: Nickel Plating

■Horizontal Type (Flange Base)

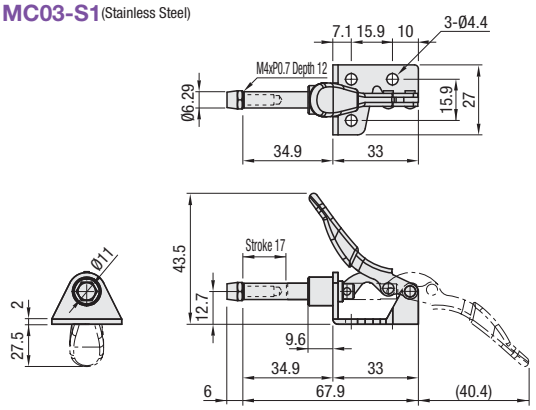

(Clamp Condition)

Part Number	MC03-2	MC03-3
Main Material	1.0038/S235JR	
Surface Treatment	* Trivalent Chromate	
Stroke (mm)	16	
Tightening Force (N)	500	
Open-Close Angle of Handle	180°	
Weight (g)	65	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	
€ Unit Price		

RoHS * Shaft: Nickel Plating

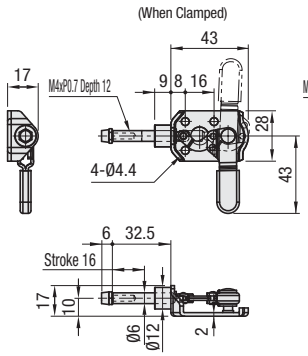
MC03-1
MC03-S1 (Stainless Steel)

1N=0.101972kgf

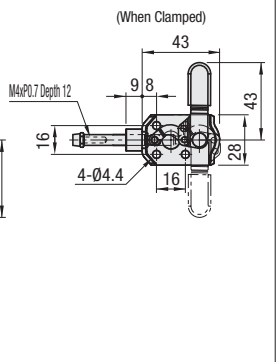


MC03-2
(Right Turn)

1N=0.101972kgf



MC03-3
(Left Turn)



Order Example | Part Number: MC02-1

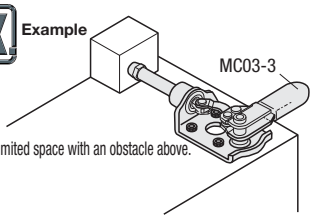
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Days to Ship: 2 Days P.87

NEW

Toggle Clamps

-Hold Down · Vertical Handle (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down - Vertical Handle Type (Flange Base)-



(Clamp Condition)

RoHS

Part Number	MC04-1	MC04-S
Main Material	1.0038	1.4301
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	441	
Weight (g)	60	
Open-Close Angle of Arm	100°	
Open-Close Angle of Handle	56°	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	Stainless Steel Bolt
€ Unit Price		

■Hold Down - Vertical Handle Type (Flange Base)-



(Clamp Condition)

RoHS

Part Number	MC04-2	MC04-S2
Main Material	1.0038	1.4301
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	882	
Weight (g)	170	
Open-Close Angle of Arm	95°	
Open-Close Angle of Handle	60°	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	Stainless Steel Bolt
€ Unit Price		

■Hold Down, Vertical Handle Type Welded Tip Type (Flange Base)



(Clamp Condition)

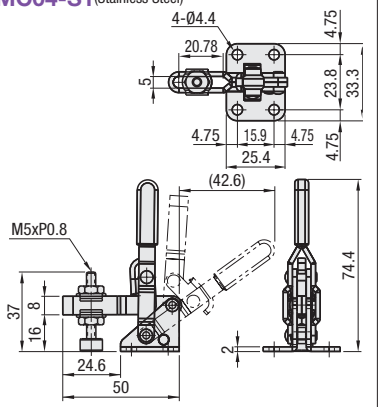
RoHS

Part Number	MC04-5
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	2270
Weight (g)	340
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

MC04-1

MC04-S1 (Stainless Steel)

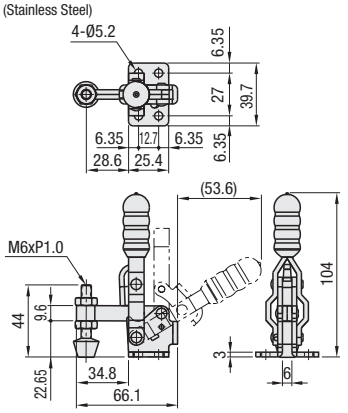
1N=0.101972kgf



MC04-2

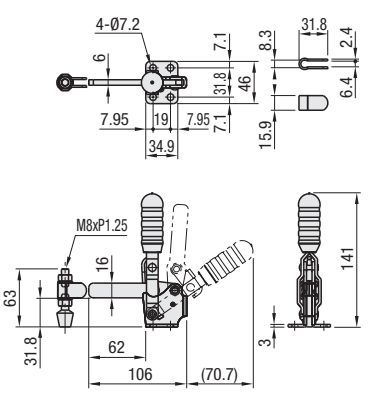
(Stainless Steel)

1N=0.101972kgf



MC04-5

1N=0.101972kgf



■Hold Down - Vertical Handle Type (Flange Base)-



(Clamp Condition)

RoHS

Part Number	MC04-3	MC04-S3
Main Material	1.0038/S235JR	1.4301/ X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	2205	
Weight (g)	355	
Open-Close Angle of Arm	100°	
Open-Close Angle of Handle	56°	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	Stainless Steel Bolt
€ Unit Price		

■Hold Down - Vertical Handle Type (Flange Base)-



(Clamp Condition)

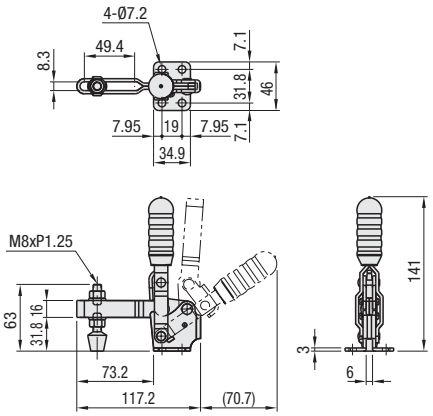
RoHS

Part Number	MC04-4
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	3332
Weight (g)	635
Open-Close Angle of Arm	112°
Open-Close Angle of Handle	61°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

MC04-3

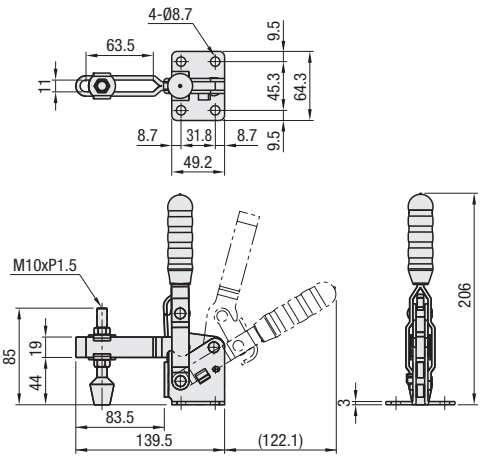
MC04-S3 (Stainless Steel)

1N=0.101972kgf



MC04-4

1N=0.101972kgf



Order Example

Part Number
MC04-1

Days to Ship
2 Days
P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

NEW

Toggle Clamps

-Hold Down - Vertical Handle (Straight Base)-

Price Reduction
Up to 20%

CAD Data

Features: MC04-5S is Straight Base, Welded Tip Type.

Hold Down, Vertical Handle Type (Straight Base)



RoHS (Clamp Condition)

Part No.	MC04-1S
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	441
Weight (g)	60
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

Hold Down, Vertical Handle Type (Straight Base)



RoHS (Clamp Condition)

Part Number	MC04-2S
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	882
Weight (g)	170
Open-Close Angle of Arm	95°
Open-Close Angle of Handle	60°
Accessory	Bolt w. Rubber Material NBR Hardness Shore A70
€ Unit Price	

Hold Down, Vertical Handle Type Welded Tip Type (Straight Base)

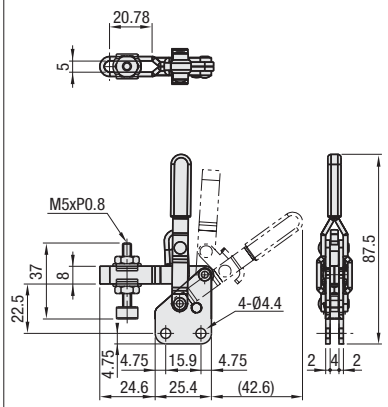


RoHS (Clamp Condition)

Part Number	MC04-5S
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	2270
Weight (g)	355
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

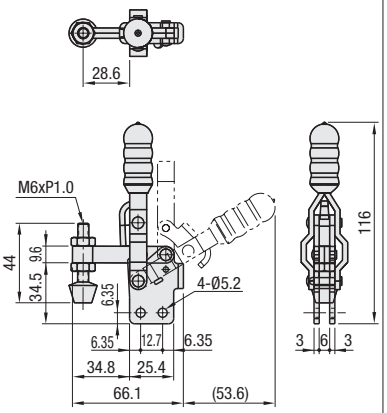
MC04-1S

1N=0.101972kgf



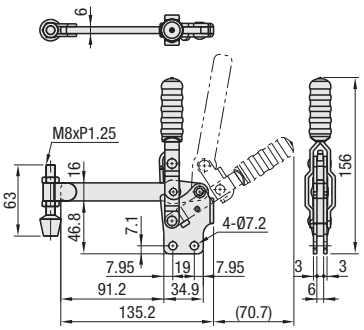
MC04-2S

1N=0.101972kgf



MC04-5S

1N=0.101972kgf



Hold Down, Vertical Handle Type (Straight Base)



RoHS (Clamp Condition)

Part Number	MC04-3S
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	2205
Weight (g)	355
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

Hold Down, Vertical Handle Type (Straight Base)

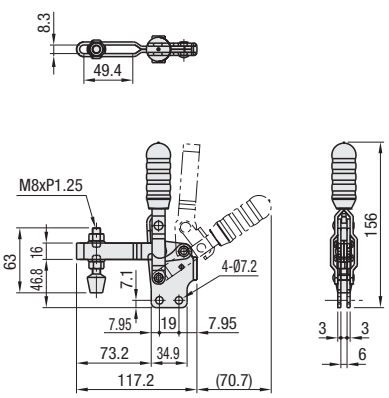


RoHS (Clamp Condition)

Part Number	MC04-4S
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	3332
Weight (g)	635
Open-Close Angle of Arm	112°
Open-Close Angle of Handle	61°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

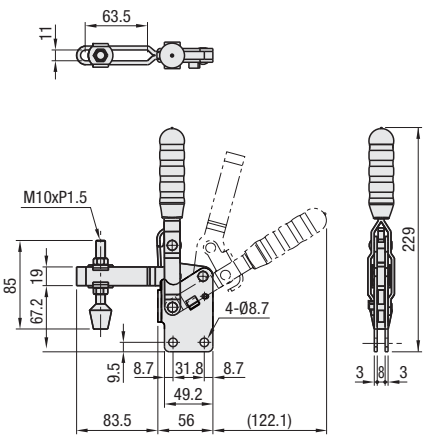
MC04-3S

1N=0.101972kgf



MC04-4S

1N=0.101972kgf



Order Example

Part Number
MC04-1S

Days to Ship
2 Days
P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

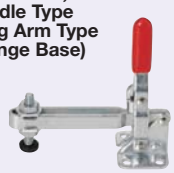
Toggle Clamps

-Hold Down - Vertical Handle - Long Arm Type (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down, Vertical Handle Type Long Arm Type (Flange Base)

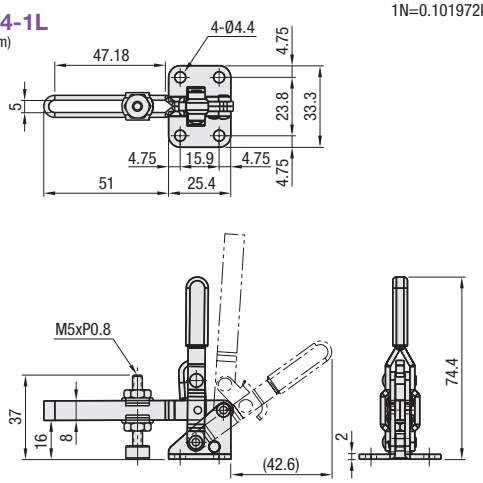


RoHS (Clamp Condition)

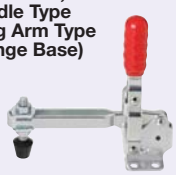
Part Number	MC04-1L
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	186
Weight (g)	75
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-1L
(Long Arm)



■Hold Down, Vertical Handle Type Long Arm Type (Flange Base)

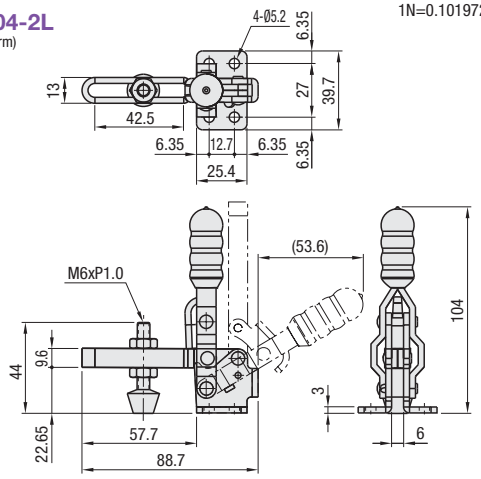


RoHS (Clamp Condition)

Part Number	MC04-2L
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	392
Weight (g)	175
Open-Close Angle of Arm	95°
Open-Close Angle of Handle	60°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-2L
(Long Arm)



■Hold Down, Vertical Handle Type Long Arm Type (Flange Base)

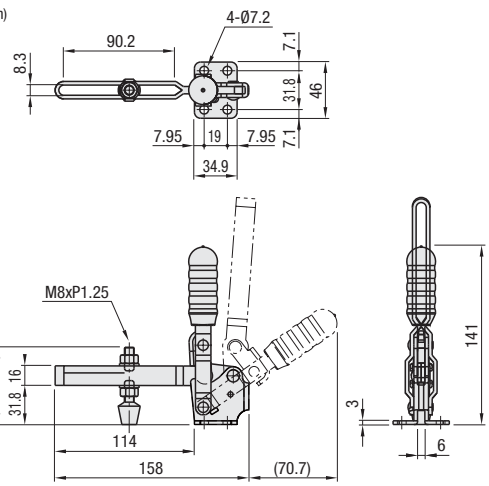


RoHS (Clamp Condition)

Part Number	MC04-3L
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	784
Weight (g)	370
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-3L
(Long Arm)



■Hold Down, Vertical Handle Type Long Arm Type (Flange Base)

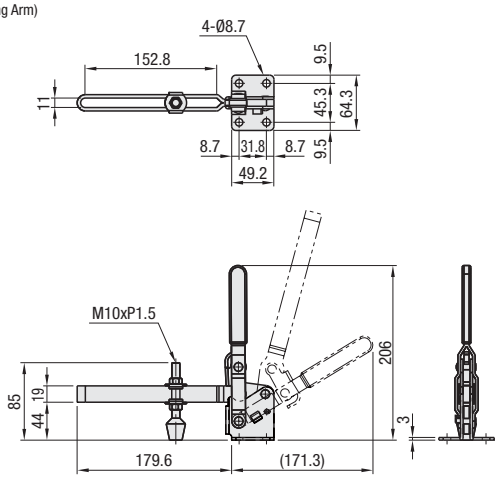


RoHS (Clamp Condition)

Part Number	MC04-4L
Main Material	1.0038/S235JR
Surface Treatment	Trival. Chromate
Tightening Force (N)	1078
Weight (g)	815
Open-Close Angle of Arm	112°
Open-Close Angle of Handle	61°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-4L
(Long Arm)



Order Example

Part Number
MC04-3L

Days to Ship
6 Days | 2 Days

P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

NEW

Toggle Clamps

-Hold Down - Vertical Handle - Long Arm (Straight Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down, Vertical Handle Type (Long Arm Type, Straight Base)

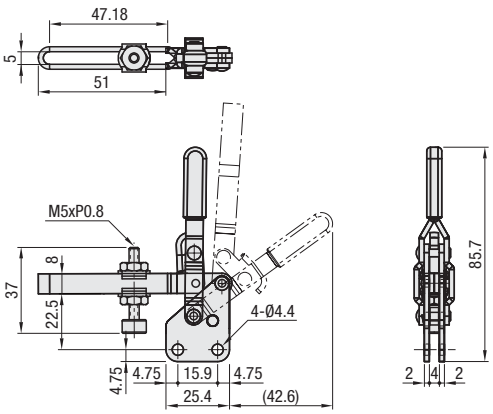


RoHS (Clamp Condition)

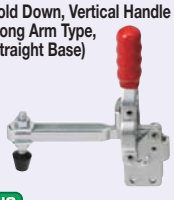
Part Number	MC04-1LS
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	186
Weight (g)	75
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-1LS



■Hold Down, Vertical Handle Type (Long Arm Type, Straight Base)

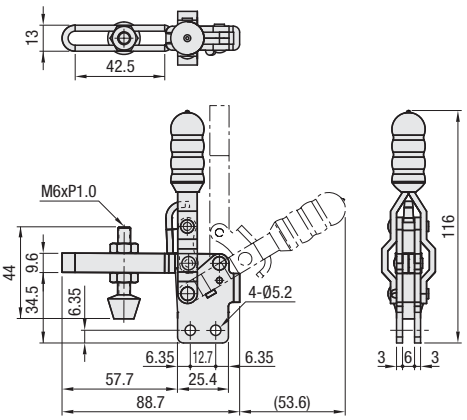


RoHS (Clamp Condition)

Part Number	MC04-2LS
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	392
Weight (g)	175
Open-Close Angle of Arm	95°
Open-Close Angle of Handle	60°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-2LS



■Hold Down, Vertical Handle Type (Long Arm Type, Straight Base)

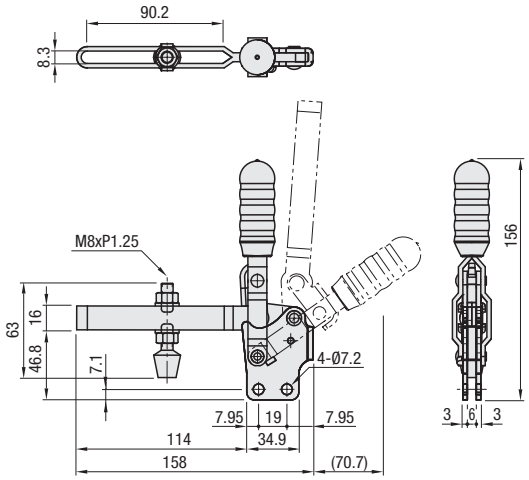


RoHS (Clamp Condition)

Part Number	MC04-3LS
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	784
Weight (g)	370
Open-Close Angle of Arm	100°
Open-Close Angle of Handle	56°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-3LS



■Hold Down, Vertical Handle Type (Long Arm Type, Straight Base)

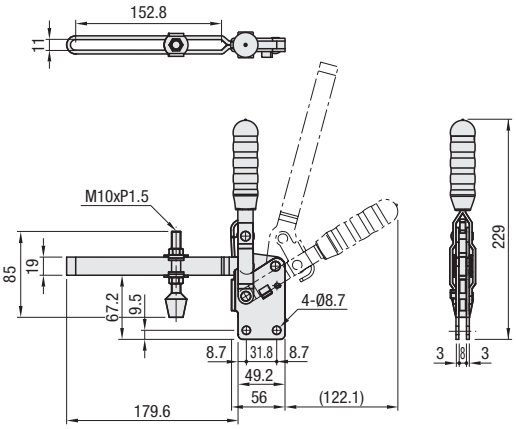


RoHS (Clamp Condition)

Part Number	MC04-4LS
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	1078
Weight (g)	815
Open-Close Angle of Arm	112°
Open-Close Angle of Handle	61°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-4LS



Order Example

Part Number
MC04-3LS

Days to Ship

2 Days

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps
-Hold Down - Vertical Handle (Flange Base)-

Price Reduction
Up to 20%

CAD Data

Hold Down, Vertical Handle Type (Flange Base)

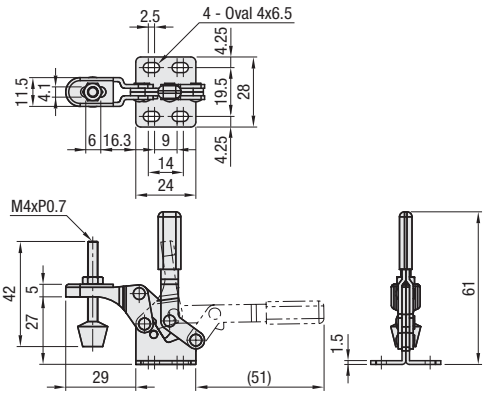


RoHS (Clamp Condition)

Part Number	MC04-6	MC04-S6
Main Material	1.0038/S235JR	1.4301
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	294	
Weight (g)	40	
Open-Close Angle of Arm	80°	
Open-Close Angle of Handle	88°	
Accessory	Bolt with Rubber Material NBR Hardness Shore A70	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC04-6
MC04-S6 (Stainless Steel)



Hold Down, Vertical Handle Type (Flange Base)

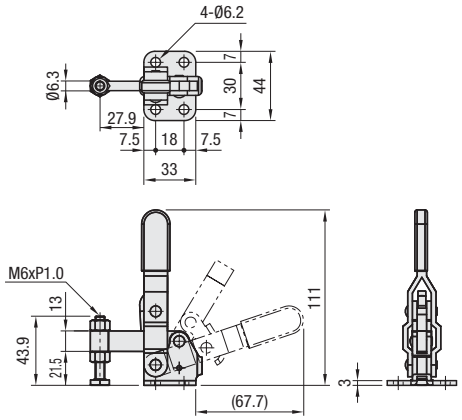


RoHS (Clamp Condition)

Part Number	MC04-7	MC04-S7
Main Material	1.0038/S235JR	1.4301
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	980	
Weight (g)	200	
Open-Close Angle of Arm	120°	
Open-Close Angle of Handle	72°	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC04-7
MC04-S7 (Stainless Steel)



Hold Down, Vertical Handle Type (Flange Base)

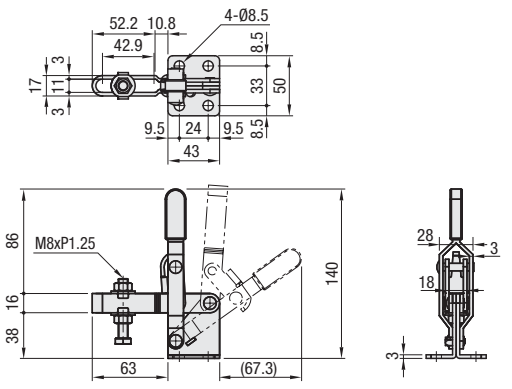


RoHS (Clamp Condition)

Part Number	MC04-8	MC04-S8
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	Trivalent Chromate	-
Tightening Force (N)	1470	
Weight (g)	370	
Open-Close Angle of Arm	94°	
Open-Close Angle of Handle	54°	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC04-8
MC04-S8 (Stainless Steel)



Hold Down, Vertical Handle Type (Flange Base)

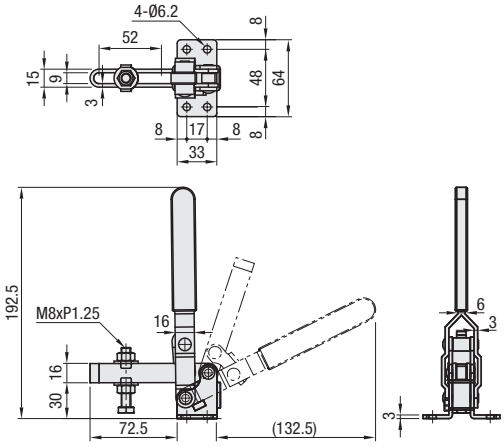


RoHS (Clamp Condition)

Part Number	MC04-9
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	1960
Weight (g)	420
Open-Close Angle of Arm	110°
Open-Close Angle of Handle	64°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC04-9



Order Example

Part Number
MC04-6

Days to Ship
2 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps

-Hold Down · Vertical Handle (Straight Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down, Vertical Handle Type (Straight Base)

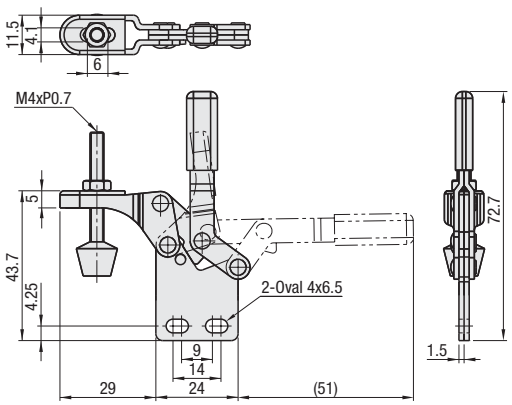


RoHS (Clamp Condition)

Part Number	MC04-6S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	294
Weight (g)	40
Open-Close Angle of Arm	80°
Open-Close Angle of Handle	88°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

1N=0.101972kgf

MC04-6S



■Hold Down, Vertical Handle Type (Straight Base)

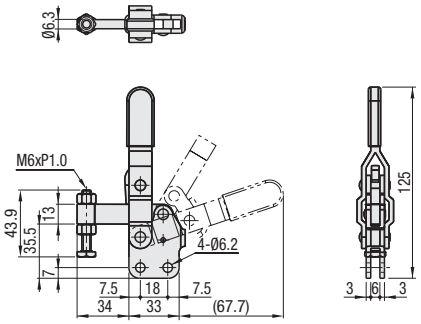


RoHS (Clamp Condition)

Part Number	MC04-7S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	980
Weight (g)	200
Open-Close Angle of Arm	120°
Open-Close Angle of Handle	72°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC04-7S



■Hold Down, Vertical Handle Type (Straight Base)

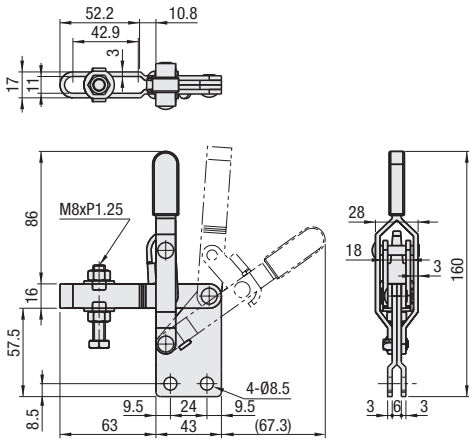


RoHS (Clamp Condition)

Part Number	MC04-8S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	1470
Weight (g)	370
Open-Close Angle of Arm	94°
Open-Close Angle of Handle	54°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC04-8S



■Hold Down, Vertical Handle Type (Straight Base)

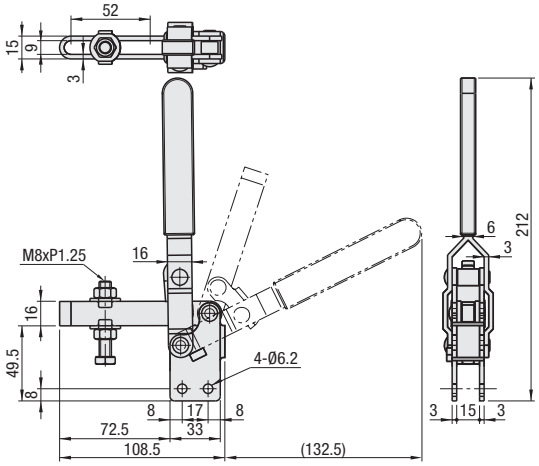


RoHS (Clamp Condition)

Part Number	MC04-9S
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	1960
Weight (g)	420
Open-Close Angle of Arm	110°
Open-Close Angle of Handle	64°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC04-9S



Order Example | Part Number: MC04-7S

Days to Ship: 6 Days | 2 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps

-Hold Down, Vertical Handle · Welded Tip Screw Type (Straight Base) / High Arm Type (Flange Base)-

CAD Data

Features: Welded Tip Screw Type (MC04-10 · MC04-11· MC04-12) allows a screw to be fixed at any desired position to be easily fit in jig designs.
High Arm Type (MC04H-2) is adjustable without spacers because it has an arm position 20mm higher compared to the conventional products (MC04-2).

Hold Down, Vertical Handle Welded Tip Screw Type (Straight Base)



(Clamp Condition)

RoHS

Part Number	MC04-10
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	1500
Weight (g)	430
Open-Close Angle of Arm	130°
Open-Close Angle of Handle	68°
Accessory	Steel Bolt
€ Unit Price	

Hold Down, Vertical Handle Welded Tip Screw Type (Straight Base)



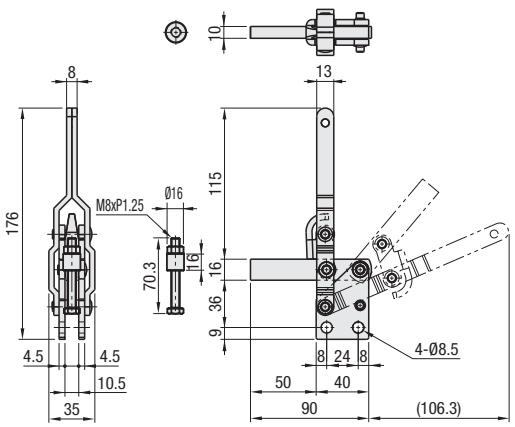
(Clamp Condition)

RoHS

Part Number	MC04-11
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	3500
Weight (g)	960
Open-Close Angle of Arm	160°
Open-Close Angle of Handle	88°
Accessory	Steel Bolt
€ Unit Price	

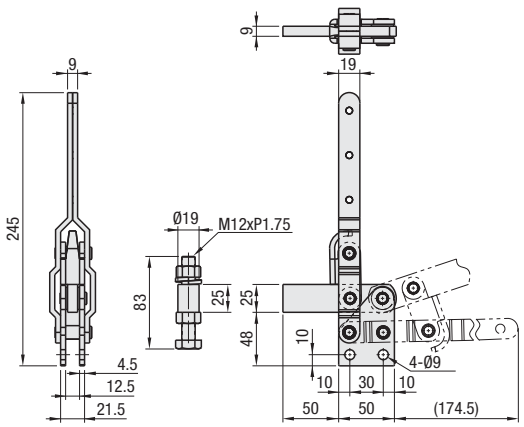
MC04-10

1N=0.101972kgf



MC04-11

1N=0.101972kgf



Hold Down, Vertical Handle Welded Tip Screw Type (Straight Base)



(Clamp Condition)

RoHS

Part Number	MC04-12
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	4000
Weight (g)	1250
Open-Close Angle of Arm	160°
Open-Close Angle of Handle	88°
Accessory	Steel Bolt
€ Unit Price	

Hold Down, Vertical Handle High Arm Type (Flange Base)



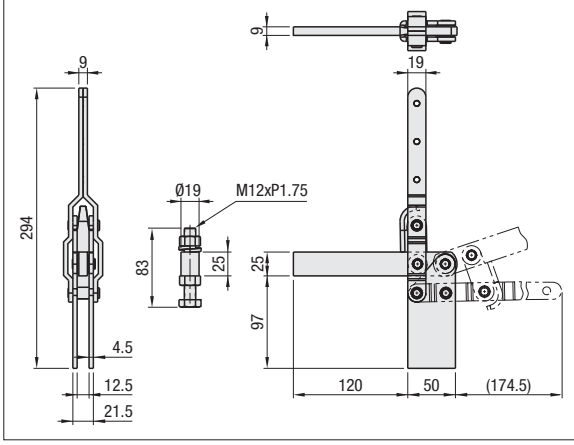
(Clamp Condition)

RoHS

Part Number	MC04H-2
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	910
Weight (g)	170
Open-Close Angle of Arm	95°
Open-Close Angle of Handle	60°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

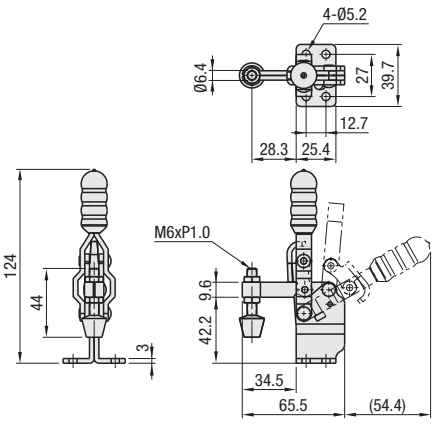
MC04-12

1N=0.101972kgf



MC04H-2

1N=0.101972kgf



Order Example

Part Number
MC04-11
MC04H-2

Days to Ship 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps / Two-Pronged Fittings

-Hold Down, Vertical Handle · 2 Pronged Type (Flange Base) / Long Arm Type (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■Hold Down, Vertical Handle 2-Pronged Type (Flange Base)



(Clamp Condition)

RoHS

Part Number	MC05-1
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	800~1500
Weight (g)	2000
Right and Left Travel Distance (mm)	40~80
Back and Forth Travel Distance (mm)	60
Open-Close Angle of Arm	140°
Open-Close Angle of Handle	74°
Accessory	Bolt with Rubber Material NBR Hardness Shore A70
€ Unit Price	

■2-Pronged Metals

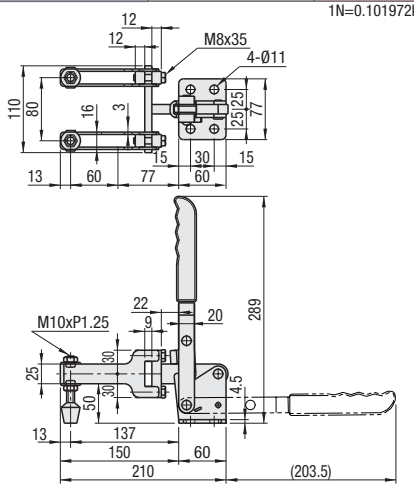


RoHS

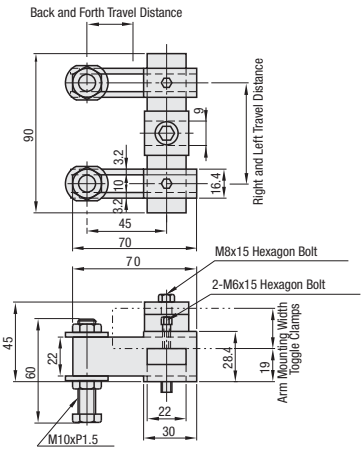
Part Number	FTK
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Weight (g)	550
Toggle Clamps Arm Mounting Width	Up to 22 Min. 16
Right and Left Travel Distance (mm)	40~70
Back and Forth Travel Distance (mm)	17
€ Unit Price	

1N=0.101972kgf

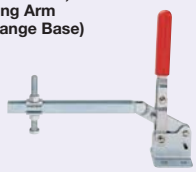
MC05-1



FTK



■Hold Down, Vertical Handle Long Arm (Flange Base)



(Clamp Condition)

RoHS

Part Number	MC06-1
Main Material	1.0038/S235JR
Surface Treatment	Trivalent Chromate
Tightening Force (N)	1000~3700
Weight (g)	1500
Open-Close Angle of Arm	110°
Open-Close Angle of Handle	90°
Accessory	Steel Bolt
€ Unit Price	

■Hold Down, Vertical Handle Long Arm Small Type (Flange Base)

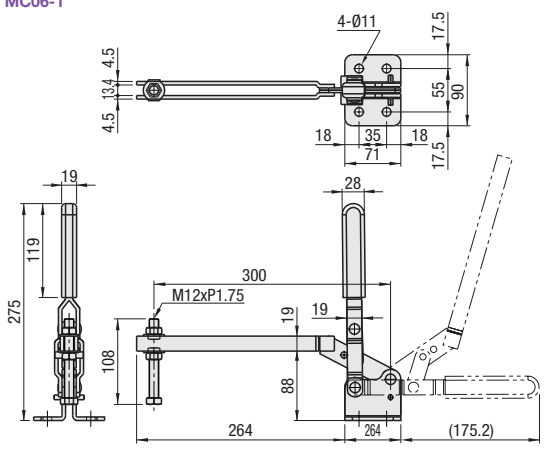


(Clamp Condition)

Part Number	LN2BS
Main Material	1.0038/S235JR
Surface Treatment	STKM Bright Chromate Plating
Tightening Force (N)	294~980
Weight (g)	500
Open-Close Angle of Arm	140°
Open-Close Angle of Handle	90°
Accessory	Steel Bolt
€ Unit Price	

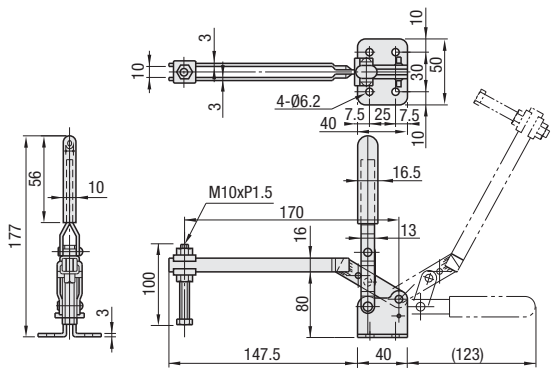
1N=0.101972kgf

MC06-1



1N=0.101972kgf

LN2BS



Order Example

Part Number
MC06-1
FTK

Days to Ship

6 Days
2 Days

P.87

Price

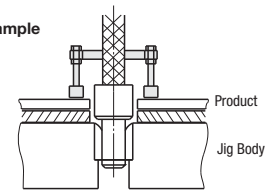
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

P.87

Example



It can hold both sides of a slot pin.

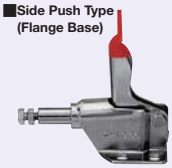
Toggle Clamps
-Side Push Type (Flange Base)-

Price Reduction
Up to 20%

CAD Data

Features: MC07-S3 is Stainless Type of MC07-3.

■Side Push Type (Flange Base)



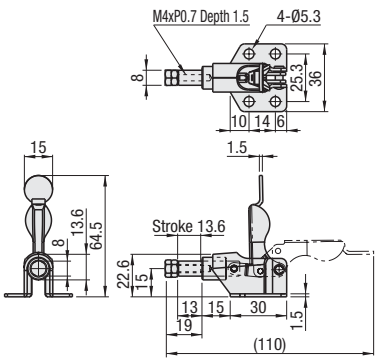
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-1
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	13.6
Tightening Force (N)	490
Handle Open-Close Angle	93°
Weight (g)	70
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-1



■Side Push Type (Flange Base)



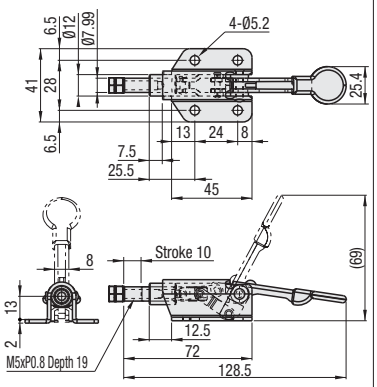
(Clamp Condition)

RoHS * Shaft: Nickel Plating

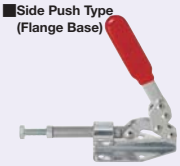
Part Number	MC07-2
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	10
Tightening Force (N)	500
Handle Open-Close Angle	66°
Weight (g)	100
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-2



■Side Push Type (Flange Base)



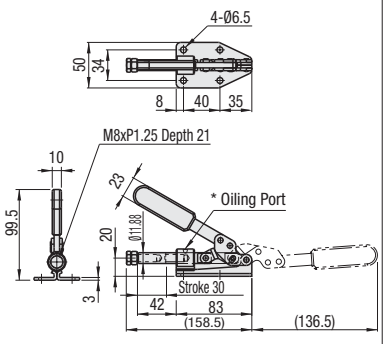
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-3	MC07-S3
Main Material	1.0038/S235JR	1.4301/X5CrNi18-10
Surface Treatment	* Trivalent Chromate	–
Stroke (mm)	30	
Tightening Force (N)	1960	
Handle Open-Close Angle	140°	
Weight (g)	370	
Accessory	Steel Bolt	Stainless Steel Bolt
€ Unit Price		

1N=0.101972kgf

MC07-3
MC07-S3(Stainless Steel)



* Stainless Type has no oiling port.

■Side Push Type (Flange Base)



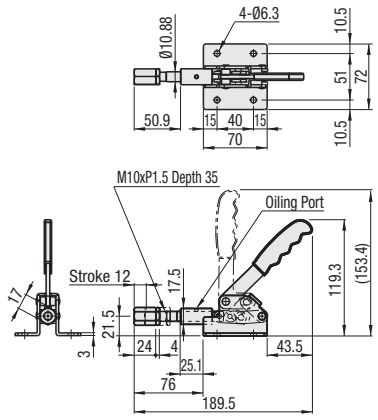
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-4
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	12
Tightening Force (N)	1568
Handle Open-Close Angle	45°
Weight (g)	460
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-4



■Side Push Type (Flange Base)



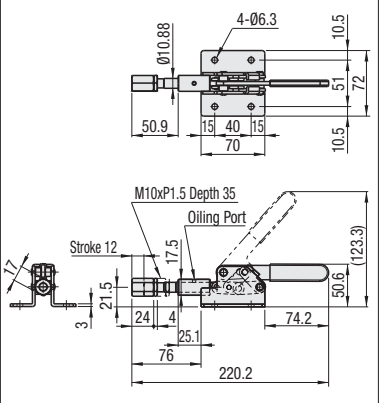
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-5
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	12
Tightening Force (N)	1600
Handle Open-Close Angle	45°
Weight (g)	450
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-5



■Side Push Type (Flange Base)



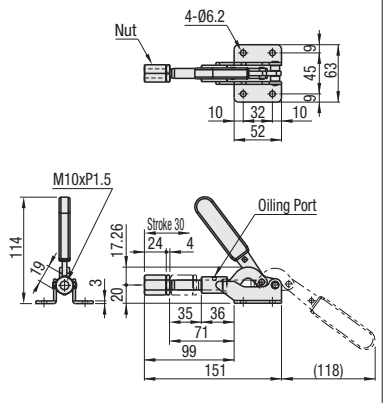
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-6
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	30
Tightening Force (N)	1960
Handle Open-Close Angle	190°
Weight (g)	390
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-6



Order Example

Part Number
MC07-3

Days to Ship

6 Days P87
2 Days

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Toggle Clamps
-Side Push Type (Flange Base)-

CAD Data

Feature: Side Push Type is a new addition to our product lineup. Please select a product suitable in strokes and clamping forces, etc. MC07-9 is a lightweight type with a hollow mount base.

Side Push Type (Flange Base)



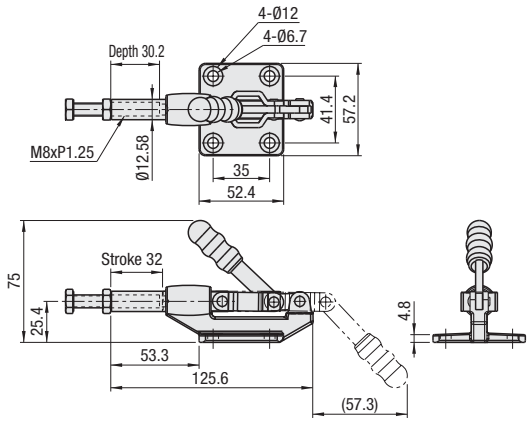
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-7
Material	Body: 1.0038 Attaching Portion: EN-JS 1040
Surface Treatment	Body: *Trivalent Chromate / Attaching Portion: Chemical Conversion Coating
Stroke (mm)	32
Tightening Force (N)	2270
Weight (g)	340
Open-Close Angle of Handle	180°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-7



Side Push Type (Flange Base)



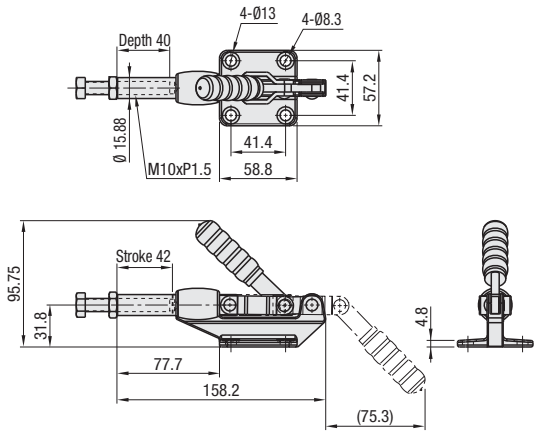
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-8
Material	Body: 1.0038 Attaching Portion: EN-JS 1040
Surface Treatment	Body: *Trivalent Chromate / Attaching Portion: Chemical Conversion Coating
Stroke (mm)	42
Tightening Force (N)	3860
Weight (g)	580
Open-Close Angle of Handle	180°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-8



Side Push Type (Flange Base)



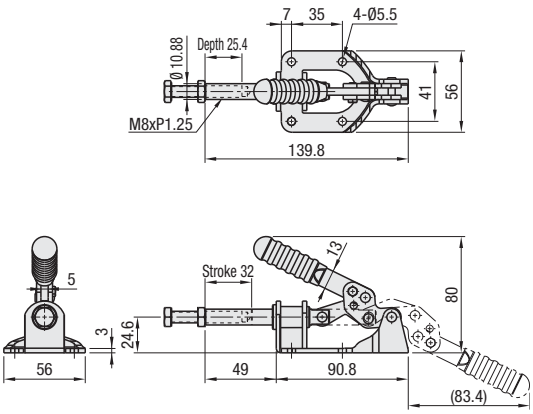
(Clamp Condition)

RoHS * Shaft: Nickel Plating

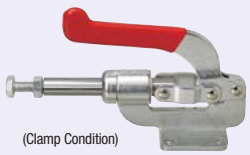
Part Number	MC07-9
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	32
Tightening Force (N)	1360
Weight (g)	300
Open-Close Angle of Handle	180°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-9



Side Push Type (Flange Base)



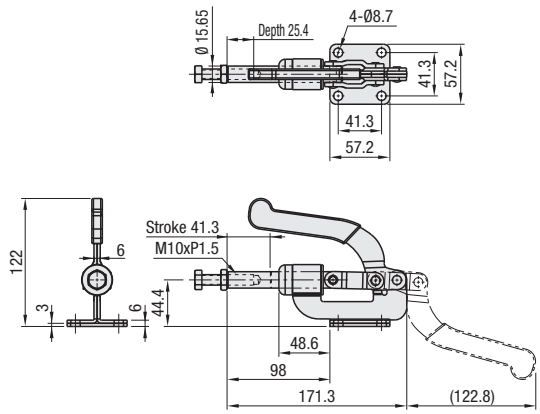
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-10
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	41.3
Tightening Force (N)	3640
Weight (g)	800
Open-Close Angle of Handle	180°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-10



Order Example | Part Number: MC07-7

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

CAD Data

■**Feature:** MC07-11 and MC07-13, each having a shorter vertical base length, requires smaller installation space.
■**Feature:** MC07-12, having the same shape as MC07-6, is larger in size and clamping force and longer in stroke.

■Side Push Type (Flange Base)



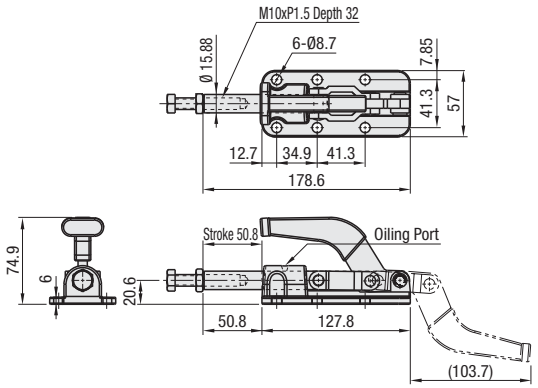
(Clamp Condition)

RoHS * Shaft: Nickel Plating

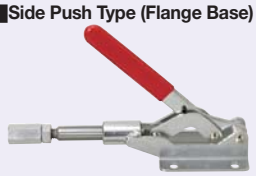
Part Number	MC07-11
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	50.8
Tightening Force (N)	11360
Weight (g)	935
Open-Close Angle of Handle	180°
Accessory	Steel Bolt
€ Unit Price	

MC07-11

1N=0.101972kgf



■Side Push Type (Flange Base)



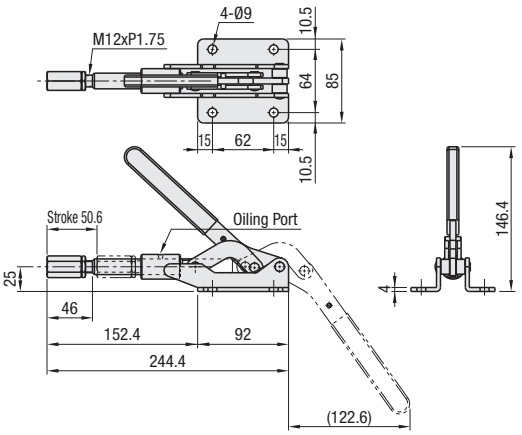
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-12
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	50.6
Tightening Force (N)	4540
Weight (g)	965
Open-Close Angle of Handle	190°
Accessory	Nut
€ Unit Price	

MC07-12

1N=0.101972kgf



■Side Push Type (Flange Base)



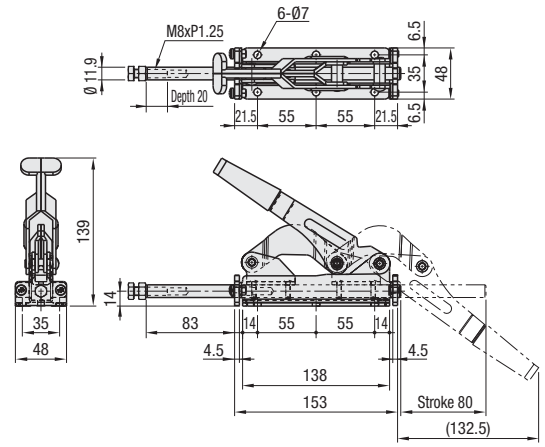
(Clamp Condition)

RoHS * Shaft: Nickel Plating

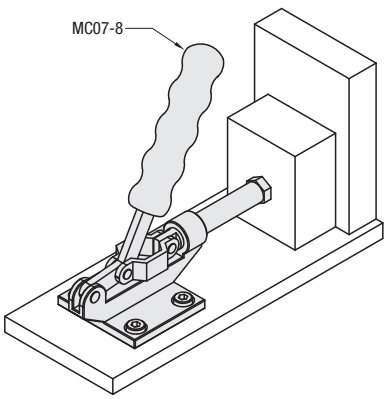
Part Number	MC07-13
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Stroke (mm)	80
Tightening Force (N)	3000
Weight (g)	1000
Open-Close Angle of Handle	180°
Accessory	Steel Bolt
€ Unit Price	

MC07-13

1N=0.101972kgf



Example



Order Example | Part Number | MC07-11

Days to Ship | 6 Days | P.87

Price

■**Volume Discount** (Round down to one Cent.) **P.87**

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

NEW

Toggle Clamps

-Side Push Type (Flange Base) / Smooth Stroke Type (Flange Base)-

Price Reduction
Up to 20%

CAD Data

■**Features:** MC07-14, MC07-15 and MC07-16 can be used for welding and machining jigs.

■**Side Push Type (Flange Base)**



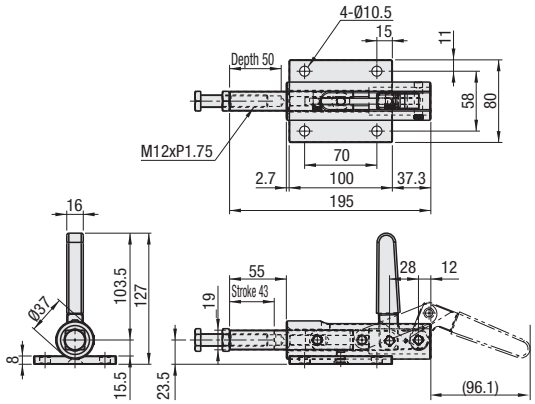
(Clamp Condition)

RoHS * Shaft: Nickel Plating

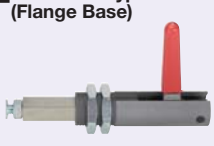
Part Number	MC07-14
Material	Body / Attaching Portion: 1.1191/C45E
Surface Treatment	*Chemical Conversion Coating
Stroke (mm)	43
Tighten. Force (N)	3000
Weight (g)	1600
Open-Close Angle of Handle	115°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-14



■**Side Push Type (Flange Base)**



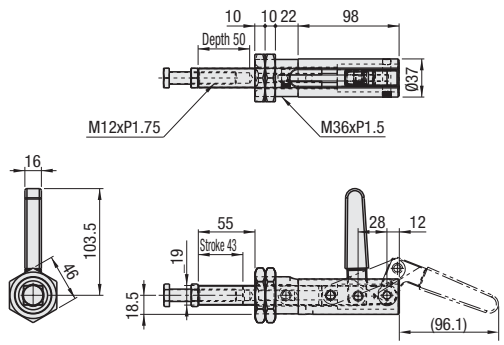
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-15
Material	Body / Attaching Portion: 1.1191/C45E
Surface Treatment	*Chemical Conversion Coating
Stroke (mm)	43
Tightening Force (N)	3000
Weight (g)	1280
Open-Close Angle of Handle	115°
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC07-15



■**Side Push Type (Flange Base)**



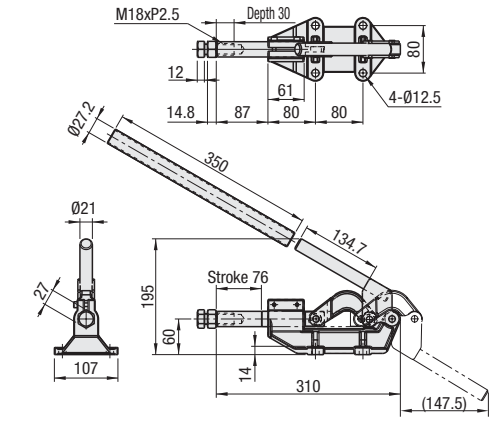
(Clamp Condition)

RoHS * Shaft: Nickel Plating

Part Number	MC07-16
Material	Body: 1.0038 Attaching Portion: EN-JS 1040
Surface Treatment	Body: *Trivalent Chromate / Attaching Portion: Chem. Conversion Coating
Stroke (mm)	76
Tighten. Force (N)	16000
Weight (g)	4360
Open-Close Angle of Handle	180°
Accessory	Steel Bolt, Hollow
€ Unit Price	

1N=0.101972kgf

MC07-16



■**Smooth Stroke (Flange Base)**



(Clamp Condition)

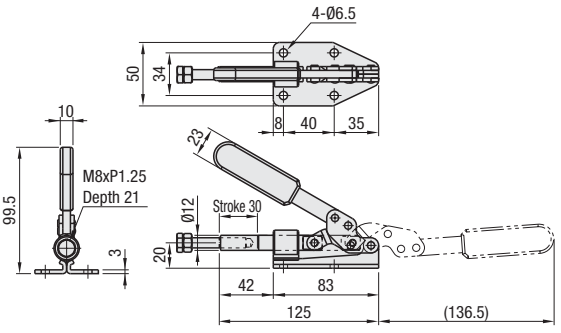
RoHS * Shaft: Nickel Plating

Part Number	MC08-1
Main Material	1.0038/S235JR
Surface Treatment	* Trivalent Chromate
Oil Free Bushing	MDZB12-20: 1pc.
Stroke (mm)	30
Tightening Force (N)	1960
Open-Close Angle of Handle	140°
Weight (g)	380
Accessory	Steel Bolt
€ Unit Price	

1N=0.101972kgf

MC08-1

Built-in Oil Free Bushing requires no lubrication.

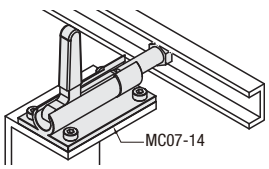


Order Example

Part Number

MC07-14
MC08-1

Example



Price

■**Volume Discount** (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship

6 Days | 2 Days P. 87

NEW

Toggle Clamps

-Weldable Clamp (Flange Base / Straight Base)-

Price Reduction
Up to 20%

CAD Data

Features: MC09-2S is Straight Base Type of Welded Clamp Type (MC09-2).

Welding Clamps (Flange Base)

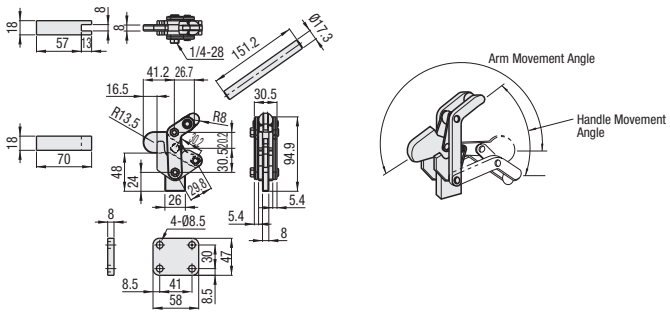


RoHS

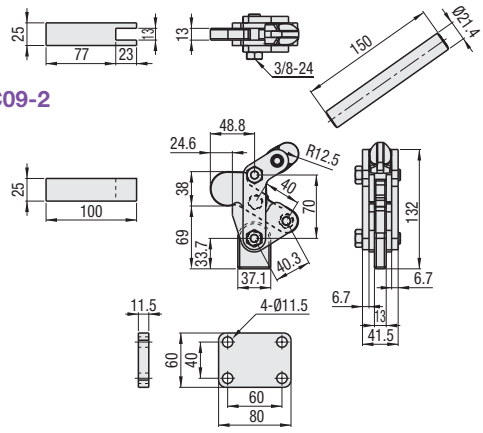
Part Number	MC09-1	MC09-2	MC09-3
Main Material	1.0038/S235JR (With Hardening Bushing)		
Weight (g)	845	2130	4100
Tightening Force (N)	1960	4900	9800
Handle Movem. Angle	122°	122°	128°
Arm Movement Angle	196°	191°	197°

1N=0.101972kgf

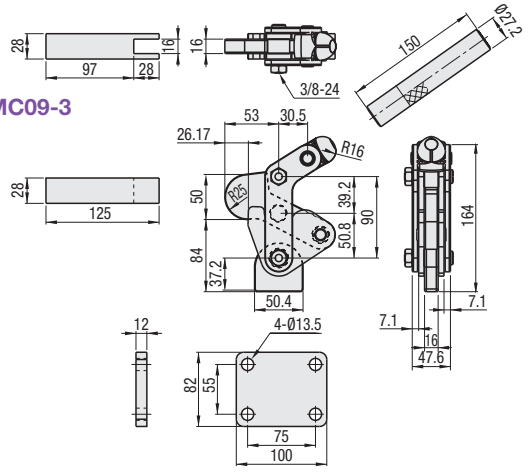
MC09-1



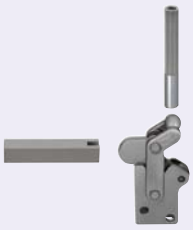
MC09-2



MC09-3



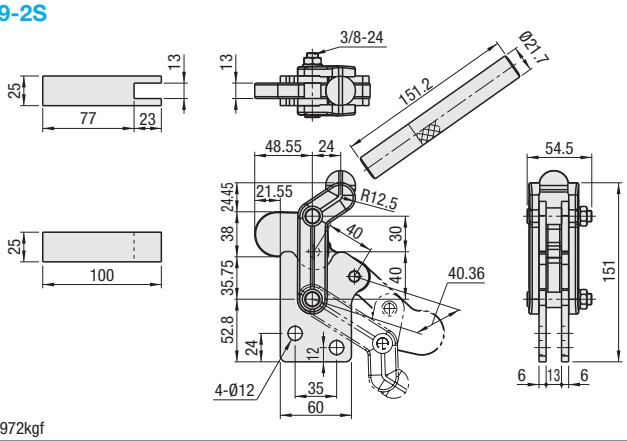
Welded Clamp (Straight Base)



RoHS

Part Number	MC09-2S
Main Material	1.0038/S235JR (With Hardening Bushing)
Weight (g)	2500
Tightening Force (N)	5000
Handle Movement Angle	122°
Arm Movement Angle	191°

MC09-2S



1N=0.101972kgf

Order Example Part Number: MC09-1, MC09-2S

Days to Ship 6 Days / 2 Days P. 87

Price

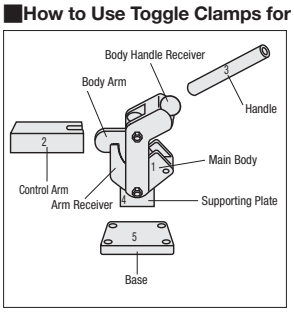
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Part Number	€ Unit Price
MC09-1	
MC09-2	
MC09-3	
MC09-2S	

How to Use Toggle Clamps for Various Purposes



Toggle Clamps are composed of 4 parts shown to the left; handle, body, base and arm.
(1) Determine the mounting position of the body.
(2) Determine the length of the control arm, then connect to the body arm by welding.
(3) Given space from the jig for clamp mounting, determine the height of the handle, and weld the handle and the body handle receiver.
(4) Determine the angle between the body and the supporting plate, and weld them together.
(5) Determine how to mount a clamp on to the jig. If the base is used, weld the base and the supporting plate together.
Assemble a toggle clamp as described above.
- Toggle Clamps can be flexibly assembled depending on different working situations, thus leading to A wide range of applications currently in use.
- Heat treatment (hardness 60HRC) ensures abrasion-resistant assembly of the pin constituting the supporting point, and the surrounding bushing. The clamps are best for jigs that require frequent use or accuracy.

Add. Spec. Metal Heads for Clamps

CAD Data

Features: Bolts for toggle clamps. In addition to the standard type, we offer a variety of types of bolts that are highly capable of resisting abrasion, or buffering impacts from a work piece. M5 bolts as well as M6 and M8 bolts of intermediate length are newly added to NBR head types.

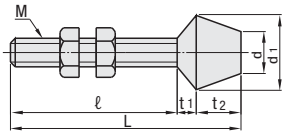
Metal Head (Standard)

(NBR)



RoHS

MC_-_ _
MCS_-_ _ (Stainless Steel)



Type	Tip part		Bolt	
	M Material	H Hardness	M Material	S
MC_-_ _	NBR	Shore A70	Steel	Trivalent Chromate
MCS_-_ _			Stainless Steel	-

Part Number	M-ℓ (Thread Effective Length)	L O.A.L.	t1	t2	d	d1	€ Unit Price
MC4-15	4-15	25	2	8	8	12	
MC4-32	4-32	42					
MC5-27	5-27	38	4	7	11.3	13.5	
MC5-69	5-69	80					
MC6-37	6-37	51	2	12	10	16	
MC6-62	6-62	76					
MC6-87	6-87	101					
MC8-45	8-44.5	63	3.5	15	12.5	19	
MC8-75	8-74.5	93					
MC8-105	8-104.5	123					
MC10-59	10-59	85	6	20	16	24	
MC12-66	12-66	100	9	25	22	32	

Part Number	M-ℓ (Thread Effective Length)	L O.A.L.	t1	t2	d	d1	€ Unit Price
MCS4-15	4-15	25	2	8	8	12	
MCS4-32	4-32	42					
MCS6-37	6-37	51		12	10	16	
MCS8-45	8-44.5	63	3.5	15	12.5	19	

Metal Head (Standard)

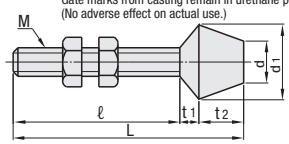
(Urethane)



RoHS

Type	Tip part		Bolt	
	M Material	H Hardness	M Material	S
TGUB	Urethane*	Shore A90	Steel	Trivalent Chromate

*Excellent in abrasion resistance compared to NBR.
*Gate marks from casting remain in urethane portion. (No adverse effect on actual use.)



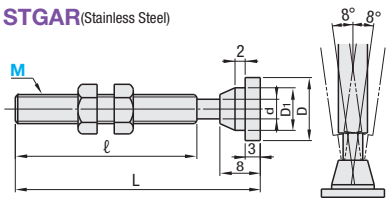
Part Number Type	M-ℓ	L	t1	t2	d	d1	€ Unit Price TGUB
TGUB	4-13	23	2	8	8	12	
	4-32	42					
	6-37	51		12	10	16	
	6-87	101					
	8-49	67	5	13	12	19	
	8-105	123					

Metal Head (Universal)



RoHS

TGAR (Steel)
STGAR (Stainless Steel)



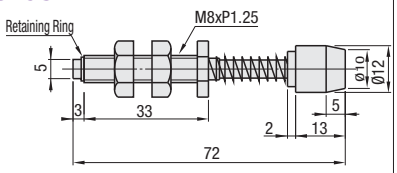
Part Number Type	M-ℓ	L	D	D1	d	€ Unit Price TGAR	€ Unit Price STGAR
TGAR STGAR	4-13	23	13	7	2.2		
	4-32	42					
	6-37	51		9	3.2		
	8-49	67	16	11	5.2		

Metal Head (Rubber Bolt with Springs)



RoHS

TGSP (Steel)
STGSP (Stainless Steel)



Rubber Part M Material: NBR (Nitrile Rubber) H Hardness: Shore A70

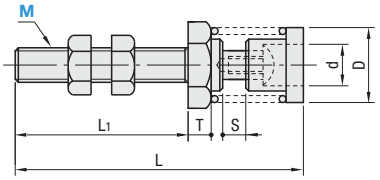
Part Number	Maximum Smooth Stroke	Load N (kgf)	€ Unit Price TGSP	€ Unit Price STGSP
TGSP STGSP	4	30(3)		

Metal Head (Rubber Bolt with Spring and Resin Pad)



RoHS

TGSPM (Steel)



Pad M Material: Polyacetal (White)

Part Number Type	M	S (Stroke)	min. Load (N)	max. Load (N)	€ Unit Price
TGSPM	4	3	19.4	29.1	
	6	4	21.8	30.5	
	8	8	18.8	32.4	

M	L	L1	T	D	d
4	34.5	20	2	12	6.4
6	50	30	4	13	7.2
8	60	30	5	14	7.8

Order Example — Part Number: MC4-32, MCS6-37

Days to Ship: 6 Days (P. 87), 2 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~100
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Components for Toggle Clamps

-Two-pronged Clamp Arms · Clamp Arm Extension Kits / Post Holderss-

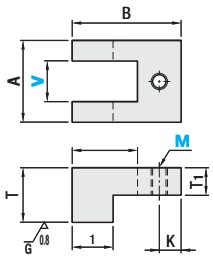
CAD Data

■Two-pronged Clamp Arms

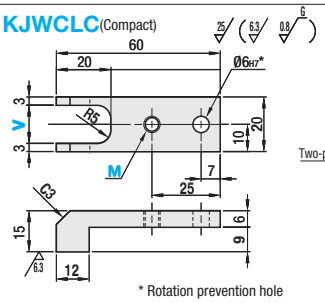


RoHS

KJWCL(Standard)

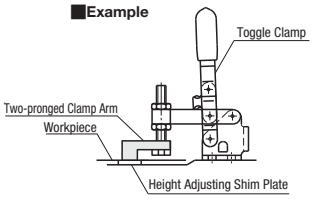


KJWCLC(Compact)



* Rotation prevention hole

■Example



M Material: 1.0038/S235JR

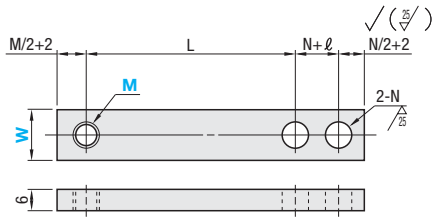
Part Number Type	V	M Selection	A	B	L	L_1	K	T	T_1	€ Unit Price
KJWCL	10	4 6	20	30	18	10	6	15	7	
	15	6 8	30	40	24	15	8	20	10	
	20	8 10	40	50	30	20	10	25	12	
KJWCLC	14	4 6 8	(Described in the drawing)							

■Clamp Arm Extension Kits



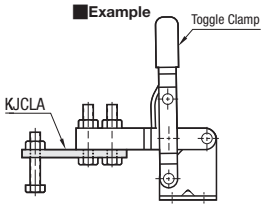
RoHS

KJCLA



M	N	ℓ
4	4.5	10
5	5.5	10
6	6.5	12
8	9	15
10	11	18

■Example



M Material: 1.0038/S235JR

Part Number Type	W	L Selection	M Selection	€ Unit Price L10	L20	L30	L40	L50	L60
KJCLA	10	10* 20 30 40 50 60	4 5 6						
	16		8 10						

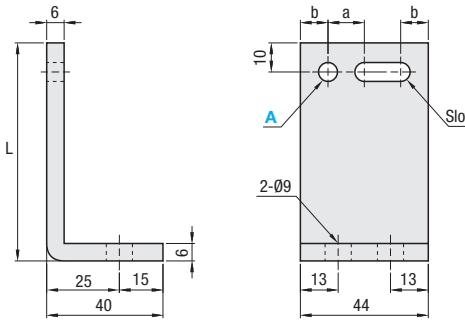
*For L10, M6, 8 or 10 is not selectable (due to an interference with the holes or the mounted bolt nuts).

■Post Holderss

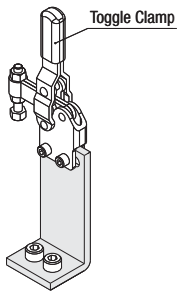


RoHS

KJCLB



■Example



Use toggle clamps with straddling slot width 6, and side mount type toggle clamps.

M Material: 1.0038/S235JR Black

Part Number Type	No.	L Selection	Hole Diameter A	B	Hole Pitch a	b	€ Unit Price L50	L75	L100	L125	L150
KJCLB	6	50 75 100 125 150	6.5	19	13.5	9					
			8.5	21	12.5	9.5					

Order Example

Part Number	-	L	-	M	-	A
KJWCLC14			-	6		
KJCLA10	-	L60	-	M6		
KJCLB6	-	L100			-	A6.5

Days to Ship

8 Days — Express A — 2,00 EUR/piece — P. 88

Ⓟ A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Ⓟ Round down to one Cent.) P. 87

Quantity		1~9	10~14	15~19
Rate	Two-pronged Clamp Arms	€ Unit Price	5%	10%
	Others	€ Unit Price	10%	15%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	L	-	M	-	A	-	(STC)
KJCLA10	-	L60	-	M6			-	STC

8 Days ⊗ Express Service is not available.

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment	STC	Adds Black Oxide Surface Treatment	2,00

Inspection Articles

Inspection Articles



Product Name	Slot Pins for Inspection Jigs -Straight-	-Stepped Straight-	-Stepped Diamond, Straight Diamond Fixed · Configurable-	-Oval Straight-
Small Head	1527	1527	1529	1531



-Square-	-Stepped D-Shape-	-Stepped Large Diameter-	Stepped Small Diameter-	–Straight Long–	-Stepped Straight Long-	-Male Thread Straight Long with One Step / Two Step-
1532	1533	1534	1534	1535	1535	1536



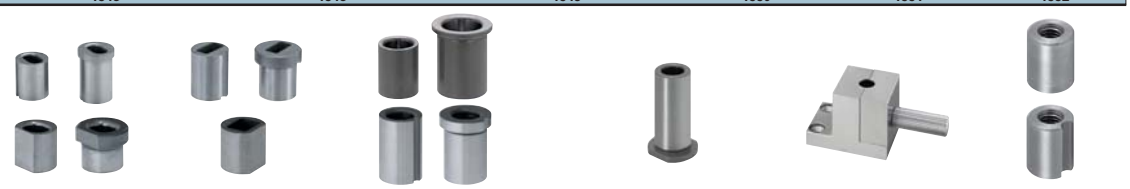
-Tapered-	Female Thread Pins for Inspection Jigs	- Diamond, Taper Diamond Fixed · Configurable-	Marking Pins
1537	1538	1539 · 1540	1541



-Stepped Straight, Male Thread-	-Male Thread Pins-	-Male Thread Taper, Round-	-Male Thread Taper with No Step-	-Male Thread Taper, Revolving Diamond-Shape-	-Straight Clamp-	-Taper Clamp-
1543	1544	1545	1545	1546	1547	1547



GO · NO-GO Pins -Reversible-	Slot Pins for Inspection Jigs -With Groove-	Bushings for Inspection Jigs -Straight-	-Straight with Shoulder-	-Stepped Straight-	-D-Shape-
1548	1548	1549	1550	1551	1552



-Oval-	-Square-	-Stepped and Male Thread / For Straight Pin, Taper Pin-	-Retaining Male Thread Bushings-	-Clip Detaching Blocks for Plastic Panels-	-Male Thread Bushings-
1553	1554	1555, 1556	1557	1558	1559



-For Plastic Panels-	Shim Plates -Square-	-Round-	Height Adjusting Pins -Standard-	-Male Thread-	Hinge Units for Jig	Slide Units for Jig
1559	1560	1560	1560	1560	1561	1561



Hinge, Slide Unit Bases for Inspection
1561



Hinge Units for Jigs -Vertical-
1562



Angle Plate Sets for Jigs -For Horizontal Rest Position-
1563



-For Vertical Rest Position-
1563



Angle Plate for Jig
1564



Angle Plate Support Stand
1564



Clamp Plates for Inspection Components
1565



L Pin · T Pin
1566



Components for Inspection Jigs -Jig Locating Kits-
1567

Addition



-Construction Balls, Pads, Covers-
1567



-Pin Clips-
1568

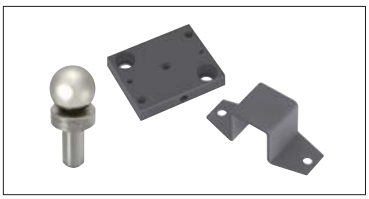


-Wires and Chains for Pins-
1568



-Self-Retractable Wires for Slot Pin-
1568

■Added Specs.



<Construction Balls>
- Ball diameter Ø20 is newly added.
- Applicable pads and covers are also available.

Page:**P.1567**

■Note to Customers

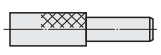
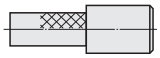
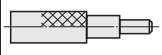
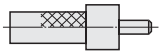
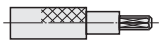
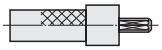
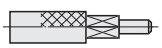
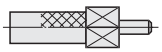
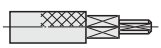
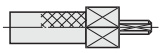
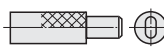
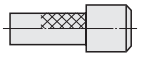
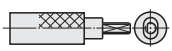
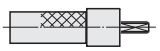
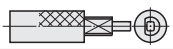
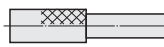
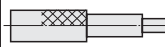
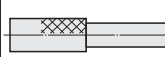
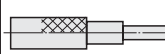
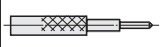
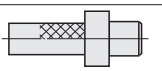
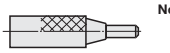
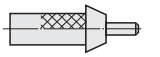
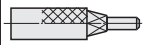
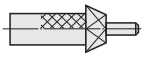
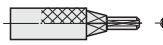
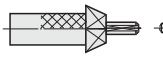
For Toggle Clamps, see the new index "Clamp Units / Toggle Clamps".
(Page:**P.1499**~)

28 new types of toggle clamps are added and 72 existing products are discounted by 20%.

Slot Pins · Bushings for Inspection Jigs

-Selection Guide-

■Slot Pins for Inspection Jigs

Type Shape		Shape: Small Head	Shape: Large Head	Page
Straight	Round			P.1527
				
	Diamond			P.1527
				P.1529 ~ P.1530
				
	Oval, Square			P.1531 ~ P.1533
				
	D-Shape		-	
	Round Long		-	P.1534 ~ P.1536
			-	
	Male Thread Long		-	
			-	
	Round Small Diameter		-	
	Round Large Diameter	-		P.1534
Tapered	Round	 No Step		P.1537
	Diamond			P.1539 ~ P.1540
				

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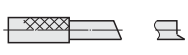
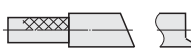
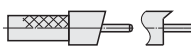
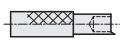
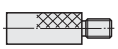
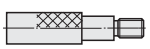
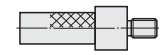
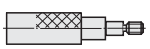
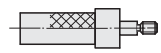
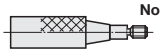
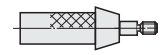
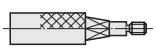
Marking	Straight			P.1541
				
	Hollow		-	
Male Thread Type	Straight		-	P.1543
				
				
	Tapered	 No Step		P.1545 P.1546
			-	
Female Thread Type			-	P.1538
Clamp Type	Straight		-	P.1547
			-	
	Tapered		-	
			-	
Others	GO-NOGO		-	P.1548
	With Groove		-	P.1548
	Slit Types		-	P.1548

■Bushings for Inspection Jigs

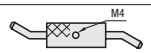
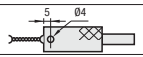
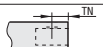
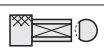
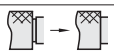
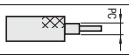
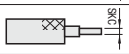
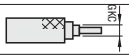
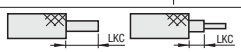
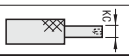
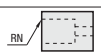
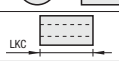
Type Shape		Shape	Page
Straight	Round		P.1549 P.1550
			P.1551
	D-Shape		P.1552
	Oval, Square		P.1553 P.1554

Type Shape		Shape	Page
For Male Thread			P.1555
		For retaining	P.1557
			P.1556
			P.1559
For Clips			P.1559

Slot Pins / Bushings for Inspection Jigs
-Alteration List-

■Slot Pins · Bushings for Inspection Jigs Alteration Chart

* Alterations applicable to each product are limited. Refer to product pages for details.

Alterations			Code	Spec. (Explanation)	Spec. (Features)	Price Adder
Pin Alteration	Surface Treatment	Additional Surface Treatment	STC	Adds Black Oxide Surface Treatment	-	2,00
		Additional Surface Treatment	MN	Electroless nickel plating is applied.	-	3,00
	Shape Change / Handle Part		KH	Machines flats on knurled part and engraves specified characters or numbers.	Engraves P and W dimensions on oval and square pins.	3,00~8,00
			KHS		Engraves dimension other than P dimension which can be used for identification.	3,00
			KHQ		Engraves dimension other than P dimension which can be used for identification.	3,00
			KF		Engraves specified characters such as serial numbers.	8,00
			ZC	Changes handle length from 50 to 10, 20, 30 or 40.	Prevents handle interference to work.	2,00~10,00
			MH	Adds M4 tapped hole to knurled part. (Applicable to GO / NOGO pins)	-	3,00
	Shape Change / Pin		CH	Loss-proof chain (length 600 mm) is attached to the gauge body.	-	5,00
			PC	Changes P dimension (outer diameter) with hollow-edged marking pins.	-	2,00
			TM	Adds a tap on pin end	Can connect to various shapes to end.	2,00
			TN	Adds a tap for set screw on pin side for hollow-edged pins.	Setting locating pins at the tip for easy maintenance.	2,00
			GN	No polishing on pin part. (Maintaining Roughness 1.6.)	Reduced cost	-7,00
			SST	Make the tip triangle for sharp tip type Tolerance Checking Pin.	-	2,00
			ABT	Adds air vent.	Prevents pins from floating by air pressure.	2,00
			NMN	Omits the relief groove between knurled part and straight part on the step.	Prevents snagging work.	3,00
			STT	Tapers the tip.	Facilitates smooth pin insertion.	2,00
	Tolerance		PKC	Changes tolerance of the part specified by the alteration code.	-	2,00
			SKC		-	2,00
			GKC		-	2,00
			LKC		Length can be measured.	5,00
			KC		-	2,00
Bushing Alteration	Surface Treatment	Additional Surface Treatment	STC	Adds Black Oxide Surface Treatment	-	2,00
	Shape Change / Bushing Opening		RN	Changes bushing R to C Chamfer (0.5 or less).	-	-1,00~Free of Charge
			CRN	Replaces R with square corner. ⓡThere may be burrs on the edge.	The opening can be used as a datum point.	Free of charge
	Shape Change / Bushing Outer Diameter Part		FC	Adds groove for accumulating adhesives.	-	2,00
			NC	Adds groove for retaining.	-	3,00
			HT	Adds a flat on bushing.	Ensures threadlock fluid path to retaining groove (alteration NC).	2,00
	Tolerance		LKC	Changes L dimension tolerance to $^{0}_{-0.05}$	Available for measuring clearances between work and jig through bushing.	2,00~4,00
			TKC	Changes shoulder thickness tolerance to ±0.01.	-	4,00
			PKC	Changes P dimension tolerance to H7.	-	2,00

Slot Pins for Inspection Jigs

-Straight, Stepped Straight-

Features: Straight Slot Pins for inspection jigs. For applicable bushings, see **P.1549**~**P.1551** For thicker pins, see **P.1534**

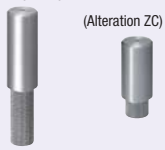
Straight

RoHS

- D=8~25



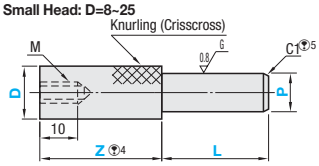
- D=10L~20L



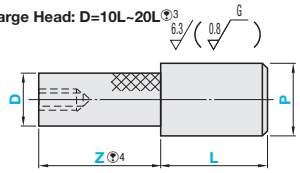
Material ①1	Hardness	Handle Length (Z) Fixed		Handle Length (Z) Selectable	
		Type	Material Code	Type	Material Code
1.1191/C45E	-	($P^{0}_{-0.02}$)	S	($P^{0}_{-0.02}$)	SZ
1.1191/C45E	45HRC~	KJP	SH	KJP	SHZ
1.4301/X5CrNi18-10	-	(Pg6)		(Pg6)	-
②1.4125/X105CrMo17 equivalent	45~50HRC	KJPG	SSC	KJPG	-

P	g6
2.00~ 3.00	$^{-0.002}_{-0.008}$
3.01~ 6.00	$^{-0.004}_{-0.012}$
6.01~10.00	$^{-0.005}_{-0.014}$
10.01~18.00	$^{-0.006}_{-0.017}$
18.01~30.00	$^{-0.007}_{-0.020}$

Small Head: D=8~25



Large Head: D=10L~20L ③



①1. For electroless nickel plating, please refer to the alteration MN.
②2. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
③3. Dimensions not specified are same as Small Head Type.
④4. Selection of Z dimension with 1.4301/X5CrNi18-10 and 1.4125/X105CrMo17 equivalent products requires Alteration ZC.
⑤5. When P<3, C is 0.5.
The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a centering hole.

Part Number: Type	Material Code: Z Fixed	Material Code: Z Selection	D	P 0.01mm Increment	L 1mm Increment	Z: Fixed	Z: Selection	M
($P^{0}_{-0.02}$) KJP	S	SZ	8	2.00~ 6.00	(When P<8) 5~40 (When P≥8) 5~50 (For 1.4301/X5CrNi18-10, L≤PX5) (For longer pins, P.1535)	50	*	M4
	SH	SHZ	10	2.00~ 8.00			10	M5
(Pg6) KJPG			12	4.00~10.00			20	
	SSC		16	8.00~14.00			30	
			20	10.00~18.00			40	
			25	15.00~23.00				
			10L	10.00~16.00			30	
			12L	12.00~20.00			40	
			16L	16.00~25.00				
			20L	20.00~30.00				

Select Type, Material Code and D Dimension.
For details refer to Order Example on **P.1528**

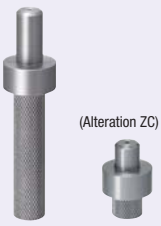
① Large head type (D=10L~20L) is only available in 1.1191/C45E.
② Dowel holes are not provided on products with Z=10.
③ Z dimension can be specified for handle length selectable type only.
Z dimension 10 and 20 are only available when P≥5 and pin length L≤30 only.

Stepped Straight

- D=8~25



- D=10L~20L

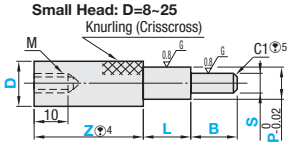


RoHS

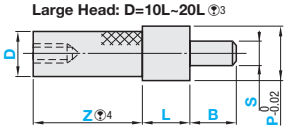
	Material ①1	Hardness	Handle Length (Z) Fixed: Type	Handle Length (Z) Fixed: Material Code	Handle Length (Z) Selectable: Type	Handle Length (Z) Selectable: Material Code
(1) Round Edge Type	1.1191/C45E	-	($S^{0}_{-0.02}$) KJP	D	($S^{0}_{-0.02}$) KJP	DZ
	1.1191/C45E	45HRC~		DH		DHZ
	1.4301/X5CrNi18-10	-	(Sg6) KJPG	DS	(Sg6) KJPG	-
	②1.4301/equivalent	45~50HRC		DSC		-
(2) Diamond-shaped Edge Type	1.1191/C45E	-	($S^{0}_{-0.02}$) KJP	DD	-	-
	1.1191/C45E	45HRC~		DDH		-

S	g6
2.00~ 3.00	$^{-0.002}_{-0.008}$
3.01~ 6.00	$^{-0.004}_{-0.012}$
6.01~10.00	$^{-0.005}_{-0.014}$
10.01~18.00	$^{-0.006}_{-0.017}$
18.01~29.00	$^{-0.007}_{-0.020}$

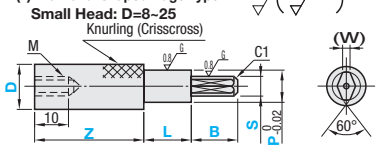
(1) Round Edge Type
Small Head: D=8~25



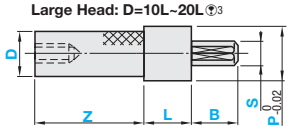
Large Head: D=10L~20L ③



(2) Diamond-shaped Edge Type
Small Head: D=8~25



Large Head: D=10L~20L ③



Diamond Part Dimensions

S	(W)
2.00~ 2.99	0.8
3.00~ 6.00	1.5
6.01~10.00	3
10.01~15.00	4
15.01~29.00	5.5

①1. For electroless nickel plating, please refer to the alteration MN.
②2. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
③3. Dimensions not specified are same as Small Head Type.
④4 Selection of Z dimension with 1.4301/X5CrNi18-10 and 1.4125/X105CrMo17 equivalent products requires Alteration ZC.
⑤5 Slight chamfering when S≤3.
The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a centering hole.

Select Type, Material Code and D Dimension. (For details refer to Order Example on **P.1528**.)

Part Number: Type	Material Code: Z Fixed	Material Code: Z Selection	Type	Material Code Z Fixed	D	0.01mm Increment: P	0.01mm Increment: S(P>S)	1mm Increment: L	1mm Increment: B	Z: Fixed	Z: Selection	M
(1) Round Edge Type ($S^{0}_{-0.02}$) KJP (Sg6) KJPG	D	DZ	(2) Diamond-shaped Edge Type ($S^{0}_{-0.02}$) KJP	DD	8	2.50~ 6.00	2.00~ 5.50	5~25 (When P≤3.99 L≤Px4) (For 1.4301/X5CrNi18-10, L≤Px5)	5~25 (When S≤2.99 B≤Sx4) (For 1.4301/X5CrNi18-10, B≤Sx5)	50	*	M4
	DH	DHZ		DDH	10	2.50~ 8.00	2.00~ 7.50				10	M5
	DS				12	2.50~10.00	2.00~ 9.50				20	
	DSC				16	3.50~14.00	3.00~13.50				30	
					20	10.00~18.00	5.00~17.00				40	
					25	15.00~23.00	8.00~22.00					
					10L	10.00~16.00	5.00~15.00				30	
					12L	12.00~20.00	6.00~19.00	(L+B≤50)			40	
					16L	16.00~25.00	8.00~24.00	(For longer pins, P.1535)				
					20L	20.00~30.00	10.00~29.00					

① Large head type (D=10L~20L) is only available in 1.1191/C45E.
② Thin diamond is unavailable. (when S≤8, B≤Sx3)
③ Z dimension can be specified for handle length selectable type only.
* Z dimension 10 and 20 are only available when P≥5 and pin length (L+B)≤30 only.
④ Dowel holes are not provided on products with Z=10.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

- Straight

D		Handle length (Z) Fixed € Unit Price Qty. (For Z Selection, add + 1,50 EUR)							
		$P^{0}_{-0.02}$				P_{g6}			
		KJPS	KJPSH	KJPSS	KJPSSC	KJPGS	KJPGSH	KJPGSS	KJPGSSC
Small Head	8								
	10								
	12								
	16								
	20								
	25								
Large Head	10L								
	12L								
	16L								
	20L								

Example of Z dimension selection price calculation — When KJPSZ16–P10.20–L30–Z40 — 12,40 (KJPGD16) +1,50=13,90 EUR

- Stepped Straight

D		Handle length (Z) Fixed € Unit Price Qty. (For Z Selection, add + 1,50 EUR)									
		(1) Round Edge Type								(2) Diamond-shaped Edge Type	
		$S^{0}_{-0.02}$				S_{g6}				$S^{0}_{-0.02}$	
		KJPD	KJPDH	KJPDS	KJPDSC	KJPGD	KJPGDH	KJPGDS	KJPGDSC	KJPDD	KJPDDH
Small Head	8										
	10										
	12										
	16										
	20										
	25										
Large Head	10L										
	12L										
	16L										
	20L										

Example of Z dimension selection price calculation — When KJPGDZ16–P8.25–S6.20–L25–B20–Z30 — 19,00 (KJPGD16) +1,50=20,50 EUR

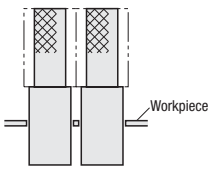
Order Example

Part Number	Type	Shape Material Code	D	- P	- S	- L	- B	- Z
- Straight (Handle Length Z Fixed)	KJP	S	10L	- P14.50		- L10		
(Handle Length Z Selectable)	KJP	SZ	16	- P10.20		- L30		- Z40
- Stepped Straight (Handle Length Z Fixed)	KJP	D	12	- P8.03 - S5.00		- L5	- B10	
(Handle Length Z Selectable)	KJPG	DZ	16L	- P20.25 - S16.00		- L25	- B20	- Z30

Example

<Large Head Type Example of Use>

Avoids interference when pins are arranged close together.



Days to Ship

8 Days — Express A 5,00 EUR/piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	- P	- S	- L	- B	- Z	- (CH, KH, KF...etc.)
KJPSH10	- P5.50		- L10			- CH-LKC
KJPSZ20	- P16.65		- L30		- Z20	- MN
KJPGD10L	- P13.50 - S5.05		- L25	- B10		- KH-KF-KJPGD10L
KJPDS12	- P5.00 - S4.00		- L10	- B16		- ZC30

8 Days — Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Alteration	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. For chains only, refer to **P.1568**	5,00
Engraving of P Dimension	KH	Machines flats on knurled head and engraves P dimension. Not applicable to handle length 10.	3,00
Engraving of the Specified Characters	KF	Engraves alphabet or number. Ordering Code KF-MISUMI0034. Printable character: alphabet, number, . (period). Not applicable to handle length 10. Engraves on the reverse side when combined with KH and KHS. Up to 8 digits. When selecting with other options, enter this last. (Z (Handle): 20, 30, 40, 50; Max. Characters: Small Head 5, 10, 12; Large Head -, 5, 10)	8,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. Applicable to Material 1.1191/C45E only. Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment. Applicable to Material 1.1191/C45E only. Combination with MN is not available.	2,00

Applicable to Straight Type only

Alterations	Code	Spec.	Price Adder
Air Vent 0.2dle Length	ABT	Adds air vent to P dimension. Applicable to Straight Type only	2,00

Applicable to Stepped Straight Type only.

Alterations	Code	Spec.	Price Adder
P Dimension Tolerance PKC	PKC	Changes P dimension tolerance to g6. Applicable to Stepped Straight Type only.	2,00

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance LKC LKC	LKC	Changes the L dimension tolerance to ±0.05. Ordering Code LKC. When the LKC is used, 0.1mm increment can be specified for L Dimension. L<30 P>4	5,00
No Relief Groove	NMN	Clears the relief groove between knurled part and straight part on the step. Not applicable to Large Head.	3,00
Handle Length ZC ZC	ZC	Changes handle length to 10, 20, 30 and 40. Ordering Code ZC20. Handle length 10 and 20 are only available when P≥5 and pin length L≤30. Applicable to 1.4301/X5CrNi18-10, 1.4125/X105CrMo17 only. For handle length 10, there is no tapped hole. For large head type, ZC30 and 40 only are applicable.	2,00
Tapered Tip 45° P or S m	STT	Tapers the tip. Applicable when L≥10, B≥10. The length of m is included in that of L or B. (P or S: 2.00~3.00 → m 1; 3.01~6.00 → 2; 6.01~10.00 → 3; 10.01~20.00, 20.01~30.00 → 4)	2,00

Alterations	Code	Spec.	Price Adder
Engraving of S Dimension	KHS	Machines flats on knurled head and engraves P dimension. Available for Stepped Type only. Not applicable to handle length 10.	3,00

Slot Pins for Inspection Jigs
-Stepped Diamond, Straight-

Features: Diamond-shaped Inspection Pins to determine the work location. Applicable bushings: (1) Round Edge Type **P.1549~P.1550**, (2) D-shaped Tip Type **P.1552**

Stepped Diamond, Straight
-Diamond Fixed-
- D=8~25



- D=10L~20L



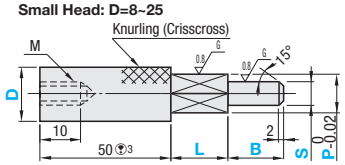
RoHS

Material ①1	Hardness	(1) Round Edge Type		(2) D-shaped Tip Type	
		Type	Material Code	Type	Material Code
1.1191/C45E	-	($S^{0}_{-0.02}$)	DKM	($S^{0}_{-0.02}$ /$F^{0}_{-0.05}$)	DK
1.1191/C45E	45HRC~	KJP	DKMH	KJP	DHK
1.4301/X5CrNi18-10	-	(Sg6)	DKMS	(Sg6/$F^{0}_{-0.03}$)	DKS
②1.4522 equivalent	45~50HRC	KJPG	-	KJPG	DKC

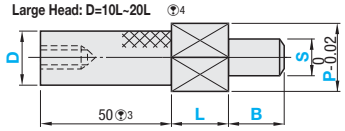
① Refer to the price list to select the available combination.

S	g6
3.00	$^{-0.002}_{-0.008}$
3.01~ 6.00	$^{-0.004}_{-0.012}$
6.01~10.00	$^{-0.005}_{-0.014}$
10.01~18.00	$^{-0.006}_{-0.017}$
18.01~29.00	$^{-0.007}_{-0.020}$

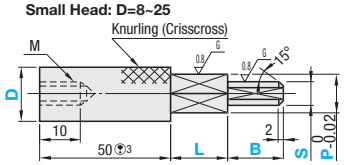
(1) Round Edge Type
Small Head: D=8~25

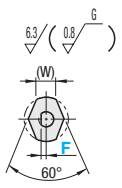


Large Head: D=10L~20L ④

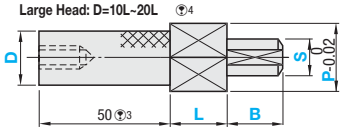


(2) D-shaped Tip Type
Small Head: D=8~25





Large Head: D=10L~20L ④



① 1. For electroless nickel plating, please refer to the alteration MN.
② 2. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
③ 3. For shorter handle length, please refer to the alteration ZC.
④ 4. Dimensions not specified on the drawing are same as Small Head Type.
There may be a centering hole at tip and a relief groove approx. 1 mm in width (approx. 0.2mm in depth) at joint of each step. For no relief grooves, refer to the alteration NMN.

Select Type, Material Code and D Dimension.

Part Number					0.01mm Increment		0.1mm Increment	1mm Increment		(W)	M
(1) Round Edge Type		(2) D-shaped Tip Type		D	P	S(P>S)	F($F<S^{5}/_{2}$) (2) only	L	B		
Type	Material Code	Type	Material Code								
($S^{0}_{-0.02}$) KJP	DKM DKMH DKMS	($S^{0}_{-0.02}$ /$F^{0}_{-0.05}$) KJP	DK DHK DKS DKC	8	4.00~ 6.00	3.00~ 5.00	0.3~ 2.0	5~10	5~15	2	M4
				10	4.00~ 8.00	3.00~ 7.00	0.3~ 3.0				
				12	6.00~10.00	3.00~ 9.00	0.3~ 4.0			3	
				16	8.00~14.00	3.00~13.00	0.5~ 6.0			4	
				20	12.00~18.00	5.00~17.00	1.0~ 8.0	5~25	5~25	6	
				25	16.00~23.00	8.00~22.00	2.0~10.0	(For 1.4301/X5CrNi18-10, L≤Px5)	(For 1.4301/X5CrNi18-10, B≤Sx5)	8	M5
(Sg6) KJPG		(Sg6/$F^{0}_{-0.03}$) KJPG		10L	10.00~16.00	5.00~15.00	1.0~ 7.0			4	
				12L	12.00~20.00	6.00~19.00	2.0~ 9.0			6	
				16L	16.00~25.00	8.00~24.00	2.0~11.0			8	
				20L	20.00~30.00	10.00~29.00	2.0~14.0				

① Large head type (D=10L~20L) is only available in 1.1191/C45E.

Order Example

Part Number												
Type	Shape	Material Code	D		P		S		F		L		B
KJPDK	12L			-	P16.00	-	S6.00	-	F2.2	-	L10	-	B10

Days to Ship 8 Days — Express A 5,00 EUR/piece — P.88

② A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (②Round down to one Cent.) **P.87**

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

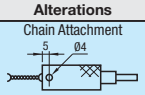
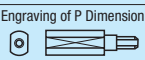
②For orders larger than indicated quantity, please request a quotation.

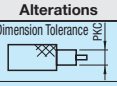
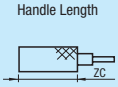
D		(1) Round Edge Type € Unit Price				(2) Segmental Arc-Shaped Edge Type € Unit Price						
		$S^{0}_{-0.02}$	Sg6			$S^{0}_{-0.02}$ /$F^{0}_{-0.05}$			Sg6/$F^{0}_{-0.03}$			
		KJPDKM	KJPGDKM	KJPGDKMH	KJPGDKMS	KJPDK	KJPDKH	KJPDKS	KJPGDK	KJPGDKH	KJPGDKS	KJPGDKC
Small Head	8											
	10											
	12											
	16											
	20											
	25											
Large Head	10L											
	12L											
	16L											
	20L											

Alterations

Part Number - P - S - F - L - B - (CH · KH · PKC...etc.)
KJPDK12 - P8.00 - S6.00 - F2.2 - L10 - B10 - CH
KJPDKM20 - P17.90 - S10 - L15 - B20 - ZC10

8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-prevention chain (length 600 mm) is attached to gauge body. ①For chains only, refer to **P. 1568**.	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to handle length 10.	3,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. ①Applicable to Material 1.1191/C45E only. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ①Applicable to Material 1.1191/C45E only. ⊗Combination with MN is not available.	2,00

Alterations	Code	Spec.	Price Adder
P Dimension Tolerance 	PKC	Changes P dimension tolerance to g6.	2,00
No Relief Groove 	NMN	Clears the relief groove between knurled part and straight part on the step. ⊗Not applicable to Large Head.	3,00
Handle Length 	ZC	Changes handle length to 10, 20, 30 and 40. Ordering Code ZC20 ①Handle length 10 and 20 are only available when P≥5 and pin length L≤30. ①For large head type, ZC30 and 40 only are applicable. ⊗For handle length 10, there is no tapped hole. ⊗For handle length 10, combination with KH is not available.	2,00

Stepped Diamond, Straight

–Diamond Configurable–

- D=8~25



(Alteration ZC)

- D=10L~20L

(Alteration ZC)



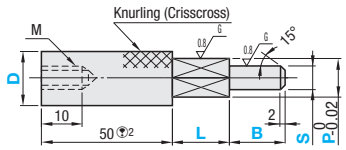
RoHS

Material ①1	Hardness	(1) Round Edge Type		(2) D-shaped Tip Type	
		Type	Material Code	Type	Material Code
1.1191/C45E	-	($S^{0}_{-0.02}$) KJP (Sg6) KJPG	VM	($S^{0}_{-0.02}$/$F^{0}_{-0.05}$) KJP ($Sg6/F^{0}_{-0.03}$) KJPG	V
1.1191/C45E	45HRC~		-		VH
1.4301/X5CrNi18-10	-		-		VS

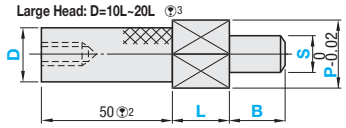
① Refer to the price list to select the available combination.

S	g6
3.00	$^{-0.002}_{-0.008}$
3.01~ 6.00	$^{-0.004}_{-0.012}$
6.01~10.00	$^{-0.005}_{-0.014}$
10.01~18.00	$^{-0.006}_{-0.017}$
18.01~28.00	$^{-0.007}_{-0.020}$

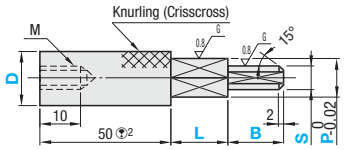
(1) Round Edge Type
Small Head: D=8~25



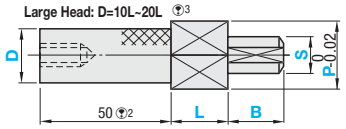
Large Head: D=10L~20L ③3

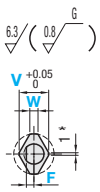


(2) D-shaped Tip Type
Small Head: D=8~25



Large Head: D=10L~20L ③3





* Diamond-shaped Configurable Type are chamfered 1mm on faces of the diamond shape.

①1. For electroless nickel plating, please refer to the alteration MN.
②2. For shorter handle length, please refer to the alteration ZC.
③3. Dimensions not specified are same as Small Head Type.
There may be a centering hole at tip and a relief groove approx. 1 mm in width (approx. 0.2mm in depth) at joint of each step. For no relief grooves, refer to the alteration NMN.

Select Type, Material Code and D Dimension.

Part Number					0.01mm Increment		0.1mm Increment	1mm Increment		0.1mm Increment	0.5mm Increment	
(1) Round Edge Type		(2) D-shaped Tip Type		D	P	S(P-1≥S)	F(F<S/2) (2) Only	L	B	V(P>V V≥S+1)	W(V>W)	M
Type	Material Code	Type	Material Code									
($S^{0}_{-0.02}$) KJP (Sg6) KJPG	VM	($S^{0}_{-0.02}$/$F^{0}_{-0.05}$) KJP ($Sg6/F^{0}_{-0.03}$) KJPG	V VH VS	8	4.00~ 6.00	3.00~ 4.00	0.3~ 2.0	5~10	5~15	4.0~ 5.0	1.0~ 4.5	M4
				10	4.00~ 8.00	3.00~ 6.00	0.3~ 3.0			4.0~ 7.0	1.0~ 6.5	
				12	4.00~10.00	3.00~ 8.00	0.3~ 4.0			4.0~ 9.0	1.0~ 8.5	
				16	8.00~14.00	3.00~12.00	0.5~ 6.0			4.0~13.0	1.0~12.5	
				20	10.00~18.00	5.00~16.00	1.0~ 8.0	5~25	5~25	6.0~17.0	1.0~16.5	
				25	15.00~23.00	8.00~21.00	2.0~10.0			9.0~22.0	1.0~21.5	M5
				10L	10.00~16.00	5.00~14.00	1.0~ 7.0	For 1.4301/ X5CrNi18-10, B≤SX5	For 1.4301/ X5CrNi18-10, B≤SX5	6.0~15.0	1.0~14.5	
				12L	12.00~20.00	6.00~18.00	2.0~ 9.0			7.0~19.0	1.0~18.5	
				16L	16.00~25.00	8.00~23.00	2.0~11.0			9.0~24.0	1.0~23.5	
				20L	20.00~30.00	10.00~28.00	2.0~14.0			11.0~29.0	1.0~28.5	

① Large head type (D=10L~20L) is only available in 1.1191/C45E.② Please select V, W and S dimension so that S dimension is smaller.

Order Example

Part Number										
Type	Shape Material Code	D	P	S	F	L	B	V	W	
KJPV16			- P8.00	- S4.00	- F1.0	- L10	- B10	- V7.0	- W5.0	

Days to Ship 8 Days — Express A 5,00 EUR/ piece — P.88

①A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (①Round down to one Cent.) P87

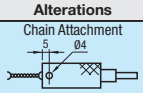
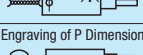
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

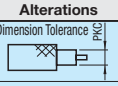
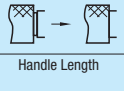
①For orders larger than indicated quantity, please request a quotation.

D		(1) Round Edge Type € Unit Price		(2) Segmental Arc-Shaped Edge Type € Unit Price				
		$S^{0}_{-0.02}$	Sg6	$S^{0}_{-0.02}$/$F^{0}_{-0.05}$		Sg6/$F^{0}_{-0.03}$		
		KJPVM	KJPGVM	KJPV	KJPVH	KJPGV	KJPGVH	KJPGVS
Small Head	8							
	10							
	12							
	16							
	20							
	25							
Large Head	10L							
	12L							
	16L							
	20L							

Alterations Part Number - P - S - F - L - B - V - W - (CH · KH · PKC...etc.) — 8 Days — ⊗Express Service is not available.

KJPV16 - P8.00 - S4.00 - F1.0 - L10 - B10 - V7.0 - W5.0 - CH
KJPVM20 - P16.55 - S10.00 - L7 - B7 - V12.2 - W1.0 - ZC30

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-prevention chain (length 600 mm) is attached to gauge body. ①For chains only, refer to **P. 1568**.	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to handle length 10.	3,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. ①Applicable to Material 1.1191/C45E only. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ①Applicable to Material 1.1191/C45E only. ⊗Combination with MN is not available.	2,00

Alterations	Code	Spec.	Price Adder
P Dimension Tolerance PKC 	PKC	Changes P dimension tolerance to g6.	2,00
No Relief Groove 	NMN	Clears the relief groove between knurled part and straight part on the step. ⊗Not applicable to Large Head.	3,00
Handle Length 	ZC	Changes handle length to 10, 20, 30 and 40. Ordering Code ZC20 ①Handle length 10 and 20 are only available when P≥5 and pin length L≤30. ①For large head type, handle length 30 and 40 only are applicable. ⊗For handle length 10, there is no tapped hole. ⊗For handle length 10, combination with KH is not available.	2,00

Slot Pins for Inspection Jigs

-Oval Straight-

CAD Data

Features: Oval Straight / Stepped Oval Straight Slot Pins for inspection jigs. Applicable bushings: (1) For Standard Type, see **P.1553**, (2) For Stepped Type, see **P.1552**

Oval Straight

• D=8~25



• D=10L~20L



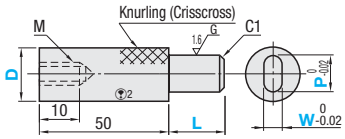
RoHS

M Material	H Hardness	(1) Standard Type	(1) Standard Material Code	(2) Stepped Type	(2) Stepped Material Code
1.1191/C45E	-	KJP	SC	($S^{0}_{-0.02}$ / $F^{0}_{-0.05}$) KJP	DC
1.1191/C45E	45HRC~		SHC		DHC
1.4301/X5CrNi18-10	-		SCS	(S_{g6} / $F^{0}_{-0.03}$) KJPG	DCS
①1 1.4125/X105CrMo17 equivalent	45~50HRC		SCC		DCC

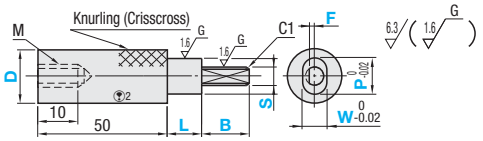
① Refer to the price list to select the available combination.

S	g6
3.00	-0.002 -0.008
3.01~ 6.00	-0.004 -0.012
6.01~10.00	-0.005 -0.014
10.01~18.00	-0.006 -0.017
18.01~29.00	-0.007 -0.020

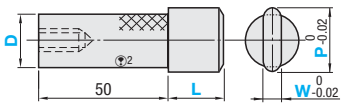
(1) Standard
Small Head: D=8~25



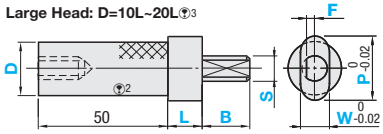
(2) Stepped
Small Head: D=8~25



Large Head: D=10L~20L③



Large Head: D=10L~20L③



①1. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
②2. For shorter handle length, please refer to the alteration ZC.
③3. Dimensions not specified are same as Small Head Type.

① Centering hole may remain on tip depending on the diameter and the length.
① Depending on diameter, the hardness of 1.1191/C45E hardening material may be less than 45HRC.

Select Type, Material Code and D Dimension.

Part Number (1) Standard Type	Part Number (1) Standard Material Code	Part Number (2) Stepped Type	Part Number (2) Stepped Material Code	D	0.01mm Increment P	0.01mm Increment W	0.01mm Increment S (2) Stepped	0.1mm Increment F(F≤S/2) (2) Stepped	1mm Increment L	1mm Increment B (2) Stepped	M
KJP	SC SHC SCS SCC	($S^{0}_{-0.02}$ / $F^{0}_{-0.05}$) KJP	DC DHC DCS DCC	8	4.00~6.00	P>W>S (W≥3.01)	3.00~5.00	0.3~2.5	Standard 5~30*1	Stepped Only 5~20	M4
		(S_{g6}/$F^{0}_{-0.03}$) KJPG		10	4.00~8.00		3.00~7.00	0.3~3.5			M5
				12	4.00~10.00		3.00~9.00	0.5~4.5			
				16	6.00~14.00		4.00~13.00	0.5~6.5			
				20	10.00~18.00		6.00~17.00	1.0~8.5			
				25	14.00~22.00		8.00~21.00	2.0~10.5			
				10L	10.00~16.00		5.00~15.00	1.0~7.5	Stepped 5~20		
				12L	12.00~20.00		6.00~19.00	2.0~9.5			
				16L	16.00~25.00		8.00~24.00	2.0~12.0			
				20L	20.00~30.00		10.00~29.00	2.0~14.5			

①Large head type (D=10L~20L) is only available in 1.1191/C45E. ①When S dimension tolerance is g6, front of Segmental Arch cannot be too thin. (S≥5.00 F≥1.0 when D=20, F≥1.5)
* 1 L=21~30 is only available when the following conditions are all satisfied: Material 1.1191/C45E, Handle diameter D≥10, Pin diameter:P≥6, W≥5

Order Example

Part Number											
Type	Shape Material Code	D	-	P	-	W	-	S	-	F	-	L	-	B
KJPDC16			-	P10.97	-	W8.47	-	S6.00	-	F2.0	-	L5	-	B10

Days to Ship

• **All types other than listed on the right**
8 Days | Express A | 10,00 EUR/piece | P.88
①A Express Charge of 27,00 EUR for 3 or more identical pieces.

• **Large Head (D=10L~20L) S_{g6} Type(KJPGDC / KJPGDHC)**
8 Days

Price

Volume Discount (①Round down to one Cent.) **P.87**

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

①For orders larger than indicated quantity, please request a quotation.

D		(1) Standard € Unit Price L dimension 20 or less KJPSC	KJPSHC	KJPSCS	KJPSCC	L dimension 21 or more KJPSC	KJPSHC	(2) Stepped € Unit Price $S^{0}_{-0.02}$ / $F^{0}_{-0.05}$ KJPDC	KJPDHC	KJPDCS	S_{g6}/$F^{0}_{-0.03}$ KJPGDC	KJPGDHC	KJPGDCC
Small Head	8												
	10												
	12												
	16												
	20												
	25												
Large Head	10L												
	12L												
	16L												
	20L												

Part Number - P - W - S - F - L - B - (CH · KH · ZC...etc.)
KJPDC12 - P8.50 - W4.50 - S3.50 - F1.2 - L5 - B10 - CH
KJPSC20 - P10.00 - W5.00 - S3.50 - F1.2 - L10 - B10 - ZC20

8 Days
⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment (5, Ø4)	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. ①For chains only, refer to **P. 1568**.	5,00
Engraving of P / W Dimension	KH	Machines flats on the knurled head and engraves P or W dimension. ⊗Not applicable to handle length 10.	3,00
Handle Length (ZC)	ZC	Changes handle length 50 to 20, 30 or 40. Ordering Code ZC20 ①Handle Diameter D≥10, Pin Length L≤20, Pin Diameter P≥6 W, S≥5 S/2+F≥4.5 Applicable only when above conditions are all satisfied.	10,00

Alterations	Code	Spec.	Price Adder
P / W Dimension Tolerance (PKC)	PKC	Changes P and W dimension tolerance to g6. ⊗Combination with GN is not available.	2,00
No polish on pin	GN	No polishing on pin part. (Maintaining roughness 1.6) ⊗Combination with is not available. ⊗Not applicable to Sg6 type.	-7,00

Slot Pins for Inspection Jigs

-Square-

CAD Data

Features: Square Straight / Stepped Square Straight Slot Pins for inspection jigs. Applicable bushings: (1) For Standard Type, see P.1554, (2) For Stepped Type, see P.1552

Square Straight

• D=8~25



• D=10L~20L



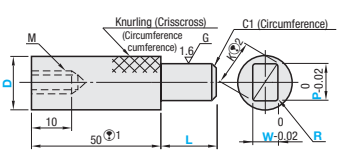
RoHS

Material	Hardness	(1) Standard Type	(1) Standard Material Code	(2) Stepped Type	(2) Stepped Material Code
1.1191/C45E	-	KJP	SR	($S^{0}_{-0.02}$/$F^{0}_{-0.05}$) KJP	DR
1.1191/C45E	45HRC~		SHR	($Sg6/F^{0}_{-0.05}$) KJPG	DHR
1.4301/X5CrNi18-10	-		-		DRS

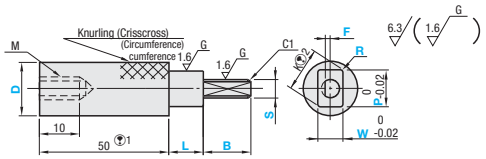
Refer to the price list to select the available combination.

S	g6
3.00	-0.002 -0.008
3.01~ 6.00	-0.004 -0.012
6.01~10.00	-0.005 -0.014
10.01~18.00	-0.006 -0.017
18.01~28.00	-0.007 -0.020

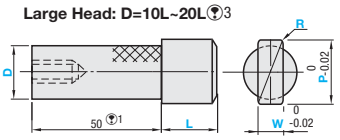
(1) Standard Small Head: D=8~25



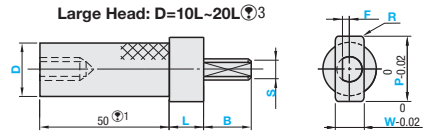
(2) Stepped Small Head: D=8~25



Large Head: D=10L~20L 3



Large Head: D=10L~20L 3



1. For shorter handle length, please refer to the alteration ZC.
2. K = $\sqrt{(P-2R)^2+(W-2R)^2}+2R$
3. Dimensions not specified are same as Small Head Type.

Centering hole may remain on tip depending on the diameter and the length.
Depending on diameter, the hardness of 1.1191/C45E hardening material may be less than 45HRC.

Select Type, Material Code and D Dimension.

Part Number (1) Standard Type	Material Code	(2) Stepped Type	Material Code	D	0.01mm Increment P	W	R	S (2) Stepped	0.1mm Increment F(F≤S/2) (2) Stepped	1mm Increment L	B (2) Stepped	M
KJP	SR SHR	($S^{0}_{-0.02}$ /$F^{0}_{-0.05}$) KJP ($Sg6/F^{0}_{-0.03}$) KJPG	DR DHR DRS	8	4.00~6.00	P≥W>S (W≥3.01)	0.20≤R<W/2	3.00~5.00	0.3~2.5	Standard 5~30*1	Stepped Only 5~20	M4
				10	4.00~6.00			3.00~7.00	0.3~3.5			M5
				12	4.00~10.00			3.00~9.00	0.5~4.5			
				16	6.00~14.00			4.00~13.00	0.5~6.5			
				20	10.00~18.00			6.00~17.00	1.0~8.5			
				25	12.00~22.00			8.00~21.00	2.0~10.5			
				10L	8.00~16.00			5.00~15.00	1.0~7.5	Stepped 5~20		
				12L	10.00~20.00			6.00~19.00	2.0~9.5			
				16L	16.00~25.00			8.00~24.00	2.0~12.0			
				20L	20.00~30.00			10.00~29.00	2.0~14.5			

Large head type (D=10L~20L) is only available in 1.1191/C45E. When S dimension tolerance is g6, front of Segmental Arch cannot be too thin. (S≥5.00 F≥1.0 when D=20, F≥1.5)
For Small Head: K≤D-2, For Large Head: K≤Pmax *1 L=21~30 is available in Material 1.1191/C45E only when the following conditions are all met: Handle Diameter D≥10, Pin Diameter: P;W≥5

Order Example

Part Number	Type	Shape Material Code	D	P	W	R	S	F	L	B
KJPDR16				P10.97	W8.57	R0.5	S6.00	F2.0	L5	B10

Days to Ship

• All types other than listed on the right: 8 Days — Express A 10,00 EUR/piece — P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

*Large Head (D=10L~20L) Sg6 Type (KJPGDR, KJPGDHR): 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

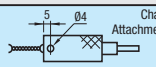
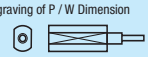
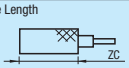
For orders larger than indicated quantity, please request a quotation.

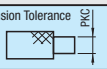
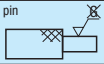
D		(1) Standard € Unit Price L dimension 20 or less KJPSR	KJPSHR	L dimension 21 or more KJPSR	KJPSHR	(2) Stepped € Unit Price $S^{0}_{-0.02}$ /$F^{0}_{-0.05}$ KJPDR	KJPDHR	KJPDRS	$Sg6/F^{0}_{-0.03}$ KJPGDR	KJPGDHR	KJPGDRS
Small Head	8										
	10										
	12										
	16										
	20										
	25										
Large Head	10L										
	12L										
	16L										
	20L										

Part Number	P	W	R	S	F	L	B	(CH · KH · ZC...etc.)
KJPDR12	P8.50	W7.50	R0.5	S6.00	F1.5	L5	B10	CH
KJPSR16	P13.75	W6.00	R1.0			L20		ZC30

8 Days

Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. For chains only, refer to P.1568.	5,00
Engraving of P / W Dimension 	KH	Machines flats on the knurled head and engraves P or W dimension. Not applicable to handle length 10.	3,00
Handle Length 	ZC	Changes handle length 50 to 20, 30 or 40. Ordering Code ZC20 Handle Diameter D≥10, Pin Length L≤20, Pin Diameter P, W, S≥5 S/2+F≥4.5 Applicable only when above conditions are all satisfied.	10,00

Alterations	Code	Spec.	Price Adder
P / W Dimension Tolerance 	PKC	Changes P and W dimension tolerance to g6. Combination with GN is not available.	2,00
No polish on pin 	GN	No polishing on pin part. (Maintaining roughness 1.6) Combination with PKC is not available. Not applicable to Sg6 type.	-7,00

Slot Pins for Inspection Jigs

-Stepped D-Shape-

CAD Data

Features: Directions can be determined by using Segmental Arch (P dimension) when inspecting less visible locations such as the back of work. For applicable bushings, refer to **P.1552**

Stepped D-Shape

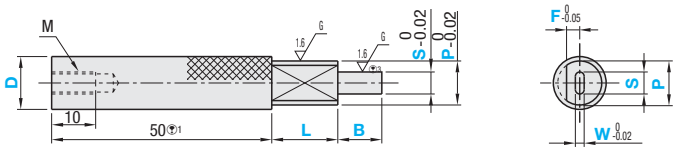


RoHS

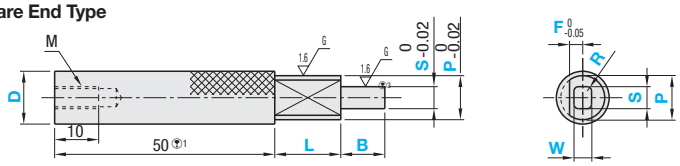
Type (1) Oval End Type	Type (2) Square End Type	M Material	H Hardness
KJPDSKC	KJPDSKR	1.1191/C45E	-
KJPDSKCH	KJPDSKRH		45HRC~(2)



(1) **Oval End Type**



(2) **Square End Type**



(1) To shorten the handle, specify alteration ZC shown below.
(2) Depending on diameter, the hardness of 1.1191/C45E hardening material may be less than 45HRC.
(3) The tip doesn't have C plane (Square Corner).

Oval End Type

Part Number Type	D	0.01mm Increment P	W	S(P>S)	0.1mm Increment F(F<P/2) F>W/2	1mm Increment L	B	M	€ Unit Price KJPDSKC	KJPDSKCH
KJPDSKC KJPDSKCH	8	4.10~6.50	W<S<P (W≥3.00)	4.00~6.40	1.6~3.1	5~20	5~20	M4		
	10	4.10~8.00		4.00~7.90	1.6~3.9			M5		
	12	4.10~10.00		4.00~9.90	1.6~4.9					
	16	6.10~14.00		6.00~13.90	1.6~6.9					
	20	10.10~18.00		10.00~17.90	1.6~8.9					
	25	14.10~23.00		12.00~22.50	1.6~11.4					

Square End Type

Part Number Type	D	0.01mm Increment P	W	R	S(P>S)	0.1mm Increment F(F<P/2) F>W/2	1mm Increment L	B	M	€ Unit Price KJPDSKR	KJPDSKRH
KJPDSKR KJPDSKRH	8	4.10~6.50	W<S<P (W≥3.00)	0.2≤ R<W/2	4.00~6.40	1.6~3.1	5~20	5~20	M4		
	10	4.10~8.00			4.00~7.90	1.6~3.9			M5		
	12	4.10~10.00			4.00~9.90	1.6~4.9					
	16	6.10~14.00			6.00~13.90	1.6~6.9					
	20	10.10~18.00			10.00~17.90	1.6~8.9					
	25	14.10~23.00			14.00~22.50	1.6~11.4					

Order Example

Part Number		P	W	R	S	F	L	B
Type	D							
KJPDSKC	12	P10	W3		S5	F2	L15	B10
KJPDSKR	16	P14	W5	R1	S7	F3.5	L5	B20

Days to Ship: **8 Days**

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(For orders larger than indicated quantity, please request a quotation.)

Alterations

Part Number - P - W - R - S - F - L - B - (CH · KH · PKC...etc.)
KJPDSKRH20 - P12 - W5 - R0.5 - S10 - F4.0 - L10 - B10 - ZC20

Alterations	Code	Spec.	Price Adder
5 Ø4 Chain Attachment	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. (2)For chains only, refer to **P. 1568**.	5,00
Engraving of P / W Dimension	KH	Machines flats on the knurled head and engraves P or W dimension. ⊗Not applicable to handle length 10.	3,00
Handle Length ZC	ZC	Changes handle length 50 to 20, 30 or 40. Ordering Code ZC20 (2)Handle Diameter D≥10, Pin Length L≤20, Pin Diameter P, W, S≥5 S/2+F≥4.5 Applicable only when above conditions are all satisfied.	10,00

Alterations	Code	Spec.	Price Adder
S / W Dimension Tolerance PKC	PKC	Changes S and W dimension tolerance to g6. ⊗Combination with GN is not available.	2,00
No polish on pin	GN	No polishing on pin part. (Maintaining roughness 1.6) ⊗Combination with PKC is not available.	-7,00

Slot Pins for Inspection Jigs

-Stepped Large Diameter Straight · Stepped Small Diameter-

Reduced Delivery Time

CAD Data

Features: Suitable when inspecting work with large diameter.

Stepped Large Diameter Straight



RoHS

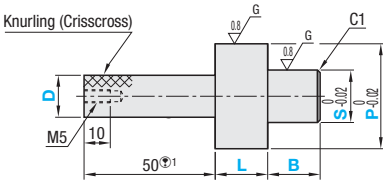
Type	Material	Hardness
KJPOD	1.1191/C45E	-
KJPODH		45HRC~ ※2

※1 To shorten the handle, specify alteration ZC shown below.

※2 Depending on thickness and length, the hardness of 1.1191/C45E hardening material may be less than 45HRC.

※ The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a center hole.

Large Head



Part Number		0.01mm Increment		1mm Increment		€ Unit Price	
Type	D	P	S (P>S)	L	B	KJPOD	KJPODH
KJPOD KJPODH	16L	30.00~40.00	10.00 ~30.00	5~40	5~40		
	20L	40.00~50.00		(L+B≤50)			

Order Example: Part Number — Type D - P - S - L - B
KJPODH20L - P49.99 - S21.0 - L30 - B10

Days to Ship: 10 Days | Express B | 5,00 EUR/piece | P.88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

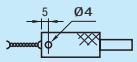
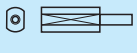
Volume Discount (※Round down to one Cent.) P.87

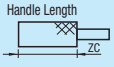
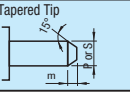
Quantity	1~4	5~19
Rate	€ Unit Price	5%

※For orders larger than indicated quantity, please request a quotation.

Alterations: Part Number - P - S - L - B - (CH · KH...etc.)
KJPOD20L - P50.00 - S20.00 - L20 - B30 - ZC30

10 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-prevention chain (length 600 mm) is attached to gauge body. ※For chains only, refer to P.1568	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to handle length 10.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00

Alterations	Code	Spec.	Price Adder
P Dimension Tolerance 	PKC	Changes P dimension tolerance to g6.	2,00
S Dimension Tolerance 	SKC	Changes S dimension tolerance to g6.	2,00
Handle Length 	ZC	Changes handle length from 50 to 30 or 40.	2,00
Tapered Tip 	STT	Tapers the tip. ※Applicable when L≥10, B≥10. ※The length of m is included in that of L or B. (P or S / m: 10.00~30.00 / 4; 30.01~40.00 / 5; 40.01~50.00 / 6)	2,00

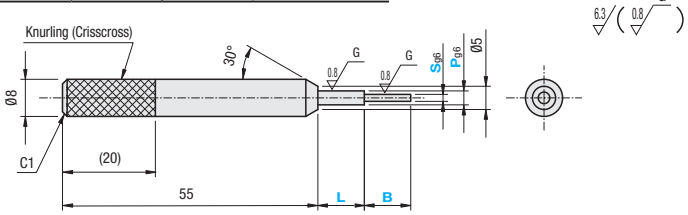
Features: Suitable when inspecting work with small diameter.

Stepped Small Diameter



RoHS

Type	Pin		Handle	
	Material	Hardness	Material	Surface Treatment
KJSPD	1.1191/C45E	45HRC~	Brass	Electroless Nickel Plating
KJSPDS	1.4301/X5CrNi18-10	-		



Part Number	P	L	S	B	€ Unit Price	
Type	0.01mm Increment	0.5mm Increment	0.01mm Increment	0.5mm Increment	KJSPD	KJSPDS
KJSPD	0.60 ~ 1.99	3.0 ~ 10.0	0.50 ~ 1.90	3.0 ~ 10.0		
KJSPDS	2.00 ~ 4.00	3.0 ~ 15.0	1.90 ~ 3.90	3.0 ~ 15.0		

※P–S≥0.1

Order Example: Part Number - P - L - S - B
KJSPDS - P2.50 - L5.5 - S1.95 - B3.5

Days to Ship: 8 Days | Express A | 5,00 EUR/piece | P.88

※A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (※Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

※For orders larger than indicated quantity, please request a quotation.

Slot Pins for Inspection Jigs

-Straight Long, Stepped Straight Long-

CAD Data

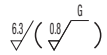
Features: Suitable when inspecting work with depth. For applicable bushings, refer to **P.1549~1551**

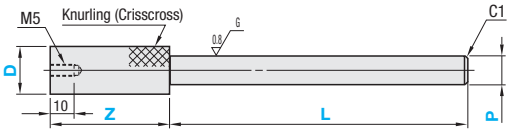
Straight Long



Type		M Material	H Hardness
P	P_{g6}		
KJPLS	KJPGLS	1.1191/C45E	-
KJPLSH	KJPGLSH	1.1191/C45E	45HRC~

The tip may have a centering hole.





P	g6
4.00~ 6.00	-0.004 -0.012
6.01~10.00	-0.005 -0.014
10.01~18.00	-0.006 -0.017
18.01~29.00	-0.007 -0.020

Handles and pins may be joined with an adhesive. Heat or strong force may cause separation.

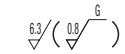
Part Number Type	D	P 0.01mm Increment	L 1mm Increment	Z Selection	$P^{0}_{-0.02}$ € Unit Price KJPLS L50~100	KJPLS L101~150	KJPLSH L50~100	KJPLSH L101~150	P_{g6} € Unit Price KJPGLS L50~100	KJPGLS L101~150	KJPGLSH L50~100	KJPGLSH L101~150
($P^{0}_{-0.02}$) KJPLS KJPLSH (P_{g6}) KJPGLS KJPGLSH	12	4.00~10.00	(When P<12) 50~100	30 40 50								
	16	6.00~14.00										
	20	10.00~18.00	(When P≥12) 50~150									
	25	15.00~23.00										

Stepped Long (2-step, 3-step)

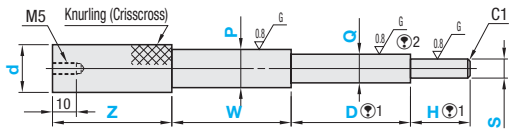


Type		M Material	H Hardness
P,Q,S	P,Q,S g6		
KJPLDS	KJPGLDS	1.1191/C45E	-
KJPLDSH	KJPGLDSH	1.1191/C45E	45HRC~

The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a center hole.



1. Specify D and H as 0 if 2-step type is preferable. 2. When H=0, the angle Q is the same as C1.



S	g6
3.00	-0.002 -0.008
3.01~ 6.00	-0.004 -0.012
6.01~10.00	-0.005 -0.014
10.01~18.00	-0.006 -0.017
18.01~21.00	-0.007 -0.020

Handles and pins may be joined with an adhesive. Heat or strong force may cause separation.

Part Number Type	d	1mm Increment W,D	H	0.01mm Increment (P≥Q≥S) P,Q	S	Z Selection	$P,Q,S^{0}_{-0.02}$ € Unit Price KJPLDS W+D+H =~100	KJPLDS W+D+H =101~150	KJPLDSH W+D+H =~100	KJPLDSH W+D+H =101~150	P, Q, S_{g6} € Unit Price KJPGLDS W+D+H =~100	KJPGLDS W+D+H =101~150	KJPGLDSH W+D+H =~100	KJPGLDSH W+D+H =101~150
(P, Q, $S^{0}_{-0.02}$) KJPLDS KJPLDSH (P, Q, S_{g6}) KJPGLDS KJPGLDSH	12	0	0	4.00~10.00	3.00~9.00	30 40 50								
	16	3~100 (W≤Px5) (D≤Qx4)	3~25 (H≤Sx3)	6.00~14.00	4.00~13.00									
	20			10.00~18.00	6.00~17.00									
	25	(W+D+H≤150)		15.00~23.00	8.00~21.00									

Specify P=0 for W=0, Q=0 for D=0, S=0 for H=0.

Order Example

Part Number	Type	d									
			P	L	Z						
KLPLS20			P15	L120	Z50						
Part Number	Type	d	W	D	H	P	Q	S	Z		
(2-step) KJPLDSH25			W100	D0	H10	P20	Q0	S8	Z30		
(3-step) KJPLDS20			W25	D50	H15	P15	Q13	S6	Z50		

Days to Ship 8 Days — Express A 5,00 EUR/piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~19
Rate	€ Unit Price	5%

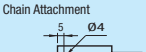
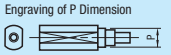
For orders larger than indicated quantity, please request a quotation.

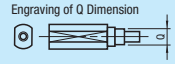
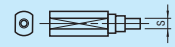
Alterations

Part Number	P	L	Z	–(CH / KH...etc.)
KJPLS20	P15	L100	Z50	CH

Part Number	W	D	H	P	Q	S	Z	–(CH / KH...etc.)
KJPLDS20	W25	D50	H18	P15	Q13	S6	Z50	CH

Days to Ship 8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to gauge body. For chains only, refer to **P.1568**	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension.	3,00

Alterations	Code	Spec.	Price Adder
Engraving of Q Dimension 	KHQ	Machines flats on knurled head and engraves Q dimension. Available for stepped straight long type only.	3,00
Engraving of S Dimension 	KHS	Machines flats on knurled head and engravings engraves P dimension. Available for stepped straight long type only.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00

Slot Pins for Inspection Jigs

-Male Thread Straight Long-

CAD Data

Features: Suitable when clamping work with depth. For applicable bushings, refer to **P.1555**, **P.1557**, **P.1559**

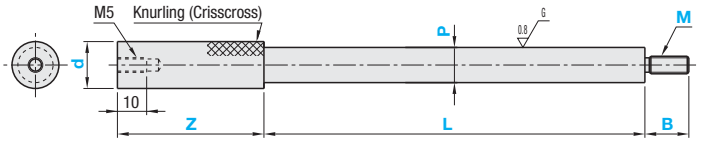
Male Thread Straight Long One-Step Type



RoHS

Type		Material
P $^{0}_{-0.02}$	P_{g6}	
KJPLM	KJPGLM	1.1191/C45E

The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a center hole.



P	g6
4.00~ 6.00	-0.004 -0.012
6.01~10.00	-0.005 -0.014
10.01~18.00	-0.006 -0.017
18.01~23.00	-0.007 -0.020

Handles and pins may be joined with an adhesive. Heat or strong force may cause separation.

Part Number Type	d	P 0.01mm Increment	M(P≥M) Selection	1mm Increment L	1mm Increment B	Z Selection	€ Unit Price KJPLM Min. L ~100	€ Unit Price KJPLM L101 ~145	€ Unit Price KJPGLM Min. L ~100	€ Unit Price KJPGLM L101 ~145
($P^{0}_{-0.02}$) KJPLM (P_{g6}) KJPGLM	12	4.00~10.00	4 5 6 8	35~145	5~25 (M≤B≤Mx3)	30 40 50				
	16	6.00~14.00	4 5 6 8 10 S10 12							
	20	10.00~18.00	5 6 8 10 S10 12	(When P<12, L+B≤100)						
	25	15.00~23.00		(When P≥12, L+B≤150)						

S10 is fine thread (pitch1.25).

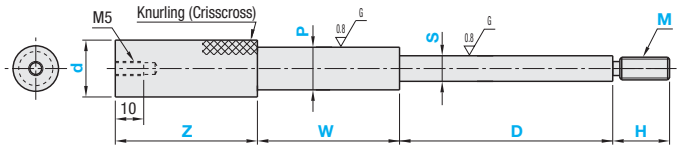
Male Thread Straight Long 2-Step Type



RoHS

Type		Material
P,S $^{0}_{-0.02}$	P,S_{g6}	
KJPLDM	KJPGLDM	1.1191/C45E

The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a center hole.



S	g6
4.0~6.0	-0.004 -0.012
6.0~10.0	-0.005 -0.014
10.1~18.0	-0.006 -0.017
18.1~22.0	-0.007 -0.020

Handles and pins may be joined with an adhesive. Heat or strong force may cause separation.

Part Number Type	d	P 0.01mm Increment	S(P>S) 0.1mm Increment	M(S≥M) Selection	1mm Increment W	1mm Increment D	1mm Increment H	Z Selection	€ Unit Price KJPLDM W+D+H =~100	€ Unit Price KJPLDM W+D+H =101~150	€ Unit Price KJPGLDM W+D+H =~100	€ Unit Price KJPGLDM W+D+H =101~150
($P,S^{0}_{-0.02}$) KJPLDM (P, S_{g6}) KJPGLDM	12	5.00~10.00	4.0~9.0	4 5 6 8	20~100 (W≤Px5)	20~90 (D≤Sx4)	5~20 (M≤H≤Mx3)	30 40 50				
	16	8.00~14.00	7.0~13.0	4 5 6 8 10 S10 12								
	20	10.00~18.00	9.0~17.0	5 6 8 10 S10 12	(W+D+H≤150)							
	25	15.00~23.00	14.0~22.0									

S10 is fine thread (pitch1.25).

Order Example

Part No.	-	P	-	M	-	L	-	B	-	Z
Type d										
KJPLM16	-	P12	-	M6	-	L130	-	B15	-	Z30

(2-step)

Part No.	-	P	-	S	-	M	-	W	-	D	-	H	-	Z
Type d														
KJPLDM20	-	P15	-	S9	-	M8	-	W35	-	D36	-	H20	-	Z50

Days to Ship 8 Days — Express A 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~19
Rate	€ Unit Price	5%

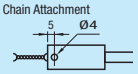
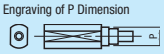
For orders larger than indicated quantity, please request a quotation.

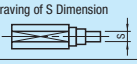
Alterations

Part No. - P - M - L - B - Z -(CH / KH...etc.)
KJPGLM25 - P20 - M12 - L75 - B25 - Z50 - KH

Part No. - P - S - M - W - D - H - Z -(CH / KH...etc.)
KJPLDM16 - P8 - S7 - M5 - W40 - D25 - H10 - Z30 - STC

Days to Ship 8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to gauge body. For chains only, refer to **P.1568**	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension.	3,00

Alterations	Code	Spec.	Price Adder
Engraving of S Dimension 	KHS	Machines flats on knurled head and engravings engraves P dimension.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00

Slot Pins for Inspection Jigs

-Tapered, Tapered with No Step-

CAD Data

Features: Tapered with No Step Type has no groove at joint and prevents snagging thin work such as sheet metal. For applicable bushings, refer to **P.1549~P.1550**

Tapered
- D=8~25 - D=10L~20L



Tapered with No Step

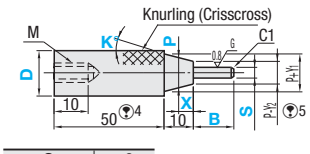


RoHS

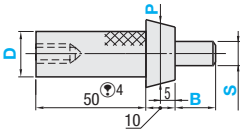
Material ①1	Hardness	(1) Taper Shape Fixed Type	(1) Taper Shape Fixed Material Code	(2) Angle Selectable Type	(2) Angle Selectable Material Code	(3) X Dimension Selectable Type	(3) X Dimension Selectable Material Code	(4) Tapered with No Step Type	(4) Tapered with No Step Material Code
1.1191/C45E	-	($S^{0}_{-0.02}$) KJP	DT	($S^{0}_{-0.02}$) KJP	-	($S^{0}_{-0.02}$) KJP	-	KJP	DTN
1.1191/C45E	45HRC~		DTH		KTH		XTH		DTNH
1.4301/X5CrNi18-10	-	(Sg6) KJPG	DTS		-		XTS		-
①2 1.4125/X105CrMo17 equivalent	45~50HRC		DTC		-		-		-

① Refer to the price list to select the available combination.

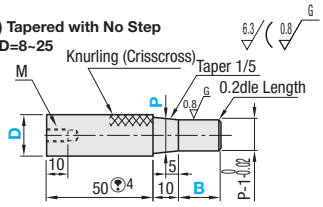
(1) (2) (3) Round Edge Type
Small Head: D=8~25



(1) Taper Shape Fixed Only ①3
Large Head: D=10L~20L



(4) Tapered with No Step
D=8~25



S	g6
3.00	-0.002 -0.008
3.01~ 6.00	-0.004 -0.012
6.01~10.00	-0.005 -0.014
10.01~18.00	-0.006 -0.017
18.01~29.00	-0.007 -0.020

①1. For electroless nickel plating, please refer to the alteration MN.
①2. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
①3. Dimensions not specified are same as Small Head Type
①4. For shorter handle length, please refer to the alteration ZC.
①5. The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a centering hole.
For no relief groove, please refer to the alteration NMN.

(1) Taper Shape Fixed: Select Type, Material Code and D Dimension.

Part Number Type	Material Code	D	0.01mm Increment P	0.01mm Increment S(P-1≥S)	1mm Increment B	K°	X	Y_1 / Y_2	M	€ Unit Price $S^{0}_{-0.02}$ KJPDT	$S^{0}_{-0.02}$ KJPDTH	Sg_6 KJPGDT	Sg_6 KJPGDTH	Sg_6 KJPGDTS	Sg_6 KJPGDTC
($S^{0}_{-0.02}$) KJP (Sg6) KJPG	DT DTH DTS DTC	8	4.00~6.00	3.00~5.00	(When S<8) 5~25 (When S≥8) 5~40 (For 1.4301/X5CrNi18-10, B≤Sx5)	Tapered 1/5	5	1	M4						
		10	4.00~8.00	3.00~7.00					M5						
		12	5.00~10.00	3.00~9.00											
		16	8.00~14.00	3.00~13.00											
		20	10.00~18.00	5.00~17.00											
		25	15.00~23.00	8.00~22.00											
		10L	10.00~16.00	5.00~15.00											
		12L	12.00~20.00	6.00~19.00											
		16L	16.00~25.00	8.00~24.00											
		20L	20.00~30.00	10.00~29.00											

①Large head type (D=10L~20L) is only available in 1.1191/C45E.

(2) Angle Selectable Type (X dimension is fixed) (3) X Dimension Selectable Type (Angle K° is fixed): Select Type, Material Code and D Dimension.

Part Number Type	Material Code Angle Selectable	Material Code X Selectable	D	0.01mm Increment P	0.01mm Increment S	1mm Increment B	K° Selection	K° Fixed	X Selection	X Fixed	Y_1 / Y_2	Condition	M	€ Unit Price (2) Angle Selectable KJPKTH	(3) X Dimension Selectable KJPXTH	KJPXTS
($S^{0}_{-0.02}$) KJP	KTH	XTH XTS	10	4.00~8.00	3.00~7.00	5~25 (For 1.4301/X5CrNi18-10, B≤SX5)	10 15	Tapered 1/5	1 2 3	5	1.8 when K°=10 2.7 when K°=15 When X=1, Y1=1.8, Y2=0.2 When X=2, Y1=1.6, Y2=0.4 When X=3, Y1=1.4, Y2=0.6	When K°=10, S<P-2.8, D>P+2.8 When K°=15, S<P-3.7, D>P+3.7 When X=1, S<P-1.2, D>P+2.8 When X=2, S<P-1.4, D>P+2.6 When X=3, S<P-1.6, D>P+2.4	M5			
			12	5.00~10.00	3.00~9.00											
			16	8.00~14.00	4.00~13.00											
			20	10.00~18.00	6.00~17.00											
			25	15.00~23.00	8.00~21.00											

(4) Tapered with No Step Type: Select Type, Material Code and D Dimension.

Part Number Type	Material Code	D	0.01mm Increment P	1mm Increment B	M	€ Unit Price KJPDTN	KJPDTNH
KJP	DTN DTNH	8	4.00~6.00	(When P-1<8) 5~25 (When P-1≥8) 5~40	M4		
		10	4.00~8.00		M5		
		12	5.00~10.00				
		16	8.00~14.00				
		20	10.00~18.00				
		25	15.00~23.00				

Order Example

Part Number Type	Shape Material Code	D	P	S	B	K	X
(1) Taper Shape Fixed (2) Angle Selectable (3) X Dimension Selectable (4) Tapered with No Step	KJPDT8		P5.01	S3.00	B10		
	KJPKTH20		P16.00	S8.00	B20	K10	
	KJPXTH20		P15.00	S10	B13		X3
	KJPDTN16		P8.00		B20		

Days to Ship

- Taper Shape Fixed, Angle Selectable Type, X Dimension Fixed Type: 8 Days
- Tapered with No Step type: 8 Days

Express A 5,00 EUR/piece P.88

①A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (①Round down to one Cent.) P.87

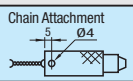
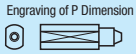
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

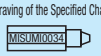
①For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number - P - S - B - K - X - (CH / KH / ZC / NMN...etc.)
KJPDT16 - P12.00 - S10.00 - B15 - NMN
KJPDTN10 - P8.00 - B10 - ZC30 - KF - KJPDTN10- KH

8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. ①For chains only, refer to **P.1568**	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to handle length 10.	3,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. ①Applicable to Material 1.1191/C45E only. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ①Applicable to Material 1.1191/C45E only. ⊗Combination with MN is not available.	2,00

Alterations	Code	Spec.	Price Adder
Handle Length 	ZC	Changes handle length from 50 to 10, 20, 30 or 40. ⊗For handle length 10, there is no tapped hole. ①Handle length 10 or 20 is available when P≥5 and pin length (10+B or L+10)≤30. ①For large head type, handle length 30 and 40 only are applicable. ⊗For handle length 10, combination with KH is not available.	2,00
Engraving of the Specified Charactersing 	KF	Engraves alphabet or number. Ordering Code KF-MISUMI0034 [printable character] alphabet / number / . (period) ⊗Not applicable to handle length 10. ①Engraves on the reverse side when combined with KH. ①Up to 8 digits. ①When selecting with other options, enter this last.	8,00
No Relief Groove 	NMN	Clears the relief groove between knurled part and straight part on the step. ⊗Not applicable to Large Head.	3,00

Z (Handle)	Max. Characters Small Head	Max. Characters Large Head
20	5	-
30	10	5
40	12	10
50		

Female Thread Pins for Inspection Jigs

CAD Data

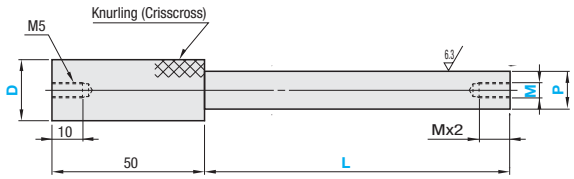
■Features: Female Thread Pins clamp work to measure the dimensions. Use alteration KC when using a bushing as a guide.

■Female Thread Pin



RoHS

Type	Material	Hardness
KJPNM	1.1191/C45E	-
KJPNMH	1.1191/C45E	45HRC~



P dimension tolerance is general tolerance. For accuracy enhancement, please refer to the alteration KC.

Part Number Type	D	P 0.01mm Increment	L 1mm Increment	M(P-4≥M) Selection	€ Unit Price KJPNM L10~100	KJPNM L101~150	KJPNMH L10~100	KJPNMH L101~150
KJPNM KJPNMH	10	8.00~10.00	When P<12 10~100 When P≥12 10~150	4 5 6 8 10				
	12	8.00~10.00						
	16	8.00~14.00						
	20	10.00~18.00						
	25	14.00~23.00						

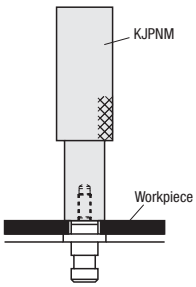
For D10, knurling may extend slightly to the pin part when difference between P dimension is none or small.

Order Example

Part Number		P	L	M
Type	D			
KJPNM20		P12.00	L80	M8

Example

Clamps objects.



Days to Ship

8 Days

Express A | 5,00 EUR/piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

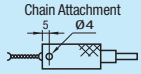
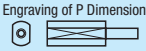
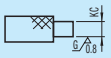
■Volume Discount (Round down to one Cent.) P.87

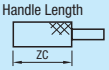
Quantity	1~19	20~35	36~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	P	L	M	(CH·KH...etc.)
KJPNMH16	P9.30	L100	M5	KC

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. For chains only, refer to **P.1568**	5,00
Engraving of P Dimensionving 	KH	Machines flats on knurled head and engraves P dimension.	3,00
P Dimension Tolerance 	KC	Changes P dimension tolerance to $^{0}_{-0.02}$. There may be a relief groove between handle part and pin part.	2,00

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ⊗Combination with MN is not available.	2,00
Handle Length 	ZC	Changes handle length from 50 to 30 or 40. Ordering Code ZC30 Applicable only when pin length L≤30.	2,00

Slot Pins for Inspection Jigs
-Diamond, Taper-

Features: Diamond-shaped Tapered Inspection Pins for Diamond-shaped work pieces. Applicable bushings: (1)Round Edge Type **P.1549~1550**, (2) D-shaped Tip Type **P.1552**

Diamond, Taper
–Diamond Fixed–

- D=8~25

(Alteration ZC)



- D=10L~20L

(Alteration ZC)



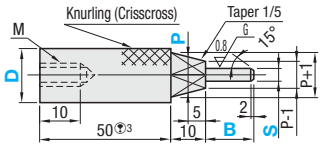
RoHS

M Material ①1	H Hardness	(1) Round Edge Type		(2) D-shaped Tip Type	
		Type	Material Code	Type	Material Code
1.1191/C45E	-	($S^{0}_{-0.02}$) KJP	DTKM	($S^{0}_{-0.02}$ / $F^{0}_{-0.05}$) KJP	DTK
1.1191/C45E	45HRC~		DTKMH		DTHK
1.4301/X5CrNi18-10	-	($Sg6$) KJPG	DTKMS	($Sg6$ / $F^{0}_{-0.03}$) KJPG	DTKS
①1.4125/X105CrMo17	45~50HRC		-		DTKC

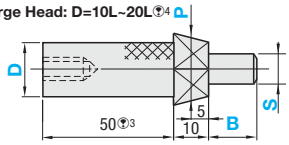
① Refer to the price list to select the available combination.

S	g6
3.00	-0.002 -0.008
3.01~ 6.00	-0.004 -0.012
6.01~10.00	-0.005 -0.014
10.01~18.00	-0.006 -0.017
18.01~29.00	-0.007 -0.020

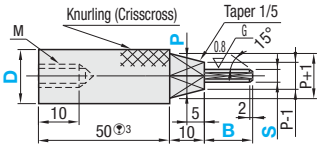
(1) Round Edge Type
Small Head: D=8~25



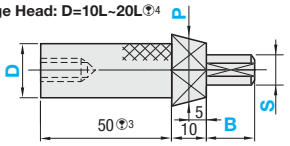
Large Head: D=10L~20L④

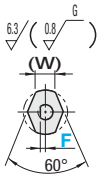


(2) D-shaped Tip Type
Small Head: D=8~25



Large Head: D=10L~20L④





① 1. For electroless nickel plating, please refer to the alteration MN.
① 2. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
① 3. For shorter handle length, please refer to the alteration ZC.
① 4. Dimensions not specified on the drawing are same as Small Head Type.
① There may be a centering hole at tip and a relief groove approx. 1 mm in width (approx. 0.2mm in depth) at joint of each step. For no relief grooves, refer to the alteration NMN.

Select Type, Material Code and D Dimension.

Part Number					0.01mm Increment		0.1mm Increment	1mm Increment		
(1) Round Edge Type		(2) D-shaped Tip Type		D	P	S(P-1≥S)	F(F<S/2) (2) only	B	(W)	M
Type	Material Code	Type	Material Code							
($S^{0}_{-0.02}$) KJP ($Sg6$) KJPG	DTKM DTKMH DTKMS	($S^{0}_{-0.02}$ / $F^{0}_{-0.05}$) KJP ($Sg6$ / $F^{0}_{-0.03}$) KJPG	DTK DTHK DTKS DTKC	8	4.00 ~ 6.00	3.00 ~ 5.00	0.3 ~ 2.0	5~25 (For 1.4301/ X5CrNi18-10, B≤Sx5)	2	M4
				10	4.00 ~ 8.00	3.00 ~ 7.00	0.3 ~ 3.0			
				12	6.00 ~ 10.00	3.00 ~ 9.00	0.3 ~ 4.0		3	
				16	8.00 ~ 14.00	3.00 ~ 13.00	0.5 ~ 6.0		4	
				20	12.00 ~ 18.00	5.00 ~ 17.00	1.0 ~ 8.0		6	
				25	16.00 ~ 23.00	8.00 ~ 22.00	2.0 ~ 10.0		8	M5
				10L	10.00 ~ 16.00	5.00 ~ 15.00	1.0 ~ 7.0		4	
				12L	12.00 ~ 20.00	6.00 ~ 19.00	2.0 ~ 9.0		6	
				16L	16.00 ~ 25.00	8.00 ~ 24.00	2.0 ~ 11.0		8	
				20L	20.00 ~ 30.00	10.00 ~ 29.00	2.0 ~ 14.0			

① Large head type (D=10L~20L) is only available in 1.1191/C45E.

Order Example

Part Number											
Type	Shape Material Code	D	-	P	-	S	-	F	-	B
KJPDTK12L			-	P16.00	-	S8.00	-	F2.2	-	B10

Days to Ship 8 Days — Express A | 5,00 EUR/piece — P.88

① A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (①Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

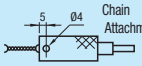
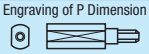
① For orders larger than indicated quantity, please request a quotation.

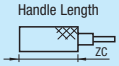
D		(1) Round Edge Type € Unit Price					(2) Segmental Arc-Shaped Edge Type € Unit Price				
		$S^{0}_{-0.02}$		$Sg6$			$S^{0}_{-0.02}$ / $F^{0}_{-0.05}$		$Sg6$ / $F^{0}_{-0.03}$		
		KJPDTKM	KJPDTKMH	KJPGDTKM	KJPGDTKMH	KJPGDTKMS	KJPDTK	KJPDTHK	KJPGDTHK	KJPGDTKS	KJPGDTKC
Small Head	8										
	10										
	12										
	16										
	20										
	25										
Large Head	10L										
	12L										
	16L										
	20L										

Alterations

Part Number	-	P	-	S	-	F	-	B	- (CH / KH...etc.)
KJPDTK12	-	P8.00	-	S6.00	-	F2.2	-	B10	- CH
KJPDTKMH16	-	P8.00	-	S5.00			-	B15	- ZC20-KH

8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-prevention chain (length 600 mm) is attached to gauge body. ①For chains only, refer to **P. 1568**	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to Handle Length 10.	3,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. ①Applicable to Material 1.1191/C45E only. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ①Applicable to Material 1.1191/C45E only. ⊗Combination with MN is not available.	2,00

Alterations	Code	Spec.	Price Adder
Engraving of the Specified Characters 	KF	Engraves alphabet or number. Ordering Code KF-MISUMI0034 [printable character] alphabet · number · . (period) ⊗Not applicable to handle length 10. ①Engraves on the reverse side when combined with KH. ①Up to 8 digits. ①When selecting with other options, enter this last.	8,00
No Relief Groove 	NMN	Clears the relief groove between knurled part and straight part on the step. ⊗Not applicable to Large Head.	3,00
Handle Length 	ZC	Changes handle length to10, 20, 30 or 40. Ordering Code ZC20 ①Handle length 10 and 20 are only available when P≥5 and pin length (10+B)≤30. ①For large head type, handle length 30 and 40 only are applicable. ⊗For handle length 10, there is no tapped hole. ⊗For handle length 10, combination with KH is not available.	2,00

Z (Handle)	Max. Characters Small Head	Max. Characters Large Head
20	5	-
30	10	5
40	12	10
50		

■Diamond, Taper
–Diamond Configurable–

- D=8~25

(Alteration ZC)



- D=10L~20L

(Alteration ZC)



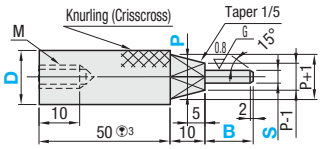
RoHS

Material ①1	Hardness	(1) Round Edge Type		(2) D-shaped Tip Type	
		Type	Material Code	Type	Material Code
1.1191/C45E	-	($S^{0}_{-0.02}$)	DTMV	($S^{0}_{-0.02}$ / $F^{0}_{-0.05}$)	DTV
1.1191/C45E	45HRC~	KJP	-	KJP	DTVH
1.4301/X5CrNi18-10	-	(Sg6)	-	(Sg6 / $F^{0}_{-0.03}$)	DTVS
①1.4125/X105CrMo17	45~50HRC	KJPG	-	KJPG	DTVC

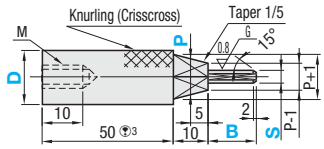
① Refer to the price list to select the available combination.

S	g6
3.00	$^{-0.002}_{-0.008}$
3.01~ 6.00	$^{-0.004}_{-0.012}$
6.01~10.00	$^{-0.005}_{-0.014}$
10.01~18.00	$^{-0.006}_{-0.017}$
18.01~29.00	$^{-0.007}_{-0.020}$

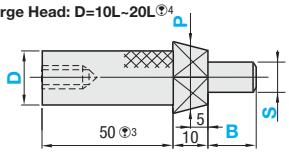
(1) Round Edge Type
Small Head: D=8~25



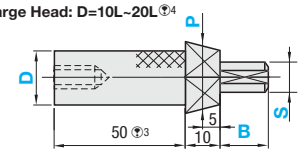
(2) D-shaped Tip Type
Small Head: D=8~25

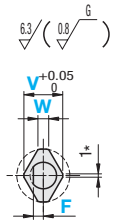


Large Head: D=10L~20L ④



Large Head: D=10L~20L ④





* Diamond-shaped Configurable Type are chamfered 1mm on faces of the diamond shape.

① 1. For electroless nickel plating, please refer to the alteration MN.
② 2. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
③ 3. For shorter handle length, please refer to the alteration ZC.
④ 4. Dimensions not specified on the drawing are same as Small Head Type.
⑤ There may be a centering hole at tip and a relief groove approx. 1 mm in width (approx. 0.2mm in depth) at joint of each step. For no relief grooves, refer to the alteration NMN.

Select Type, Material Code and D Dimension.

Part Number					0.01mm Increment		0.1mm Increment	1mm Increment	0.1mm Increment	0.5mm Increment	
(1) Round Edge Type		(2) D-shaped Tip Type		D	P	S(P-1≥S)	F(F<S/2) (2) only	B	V(P>V V>S+1)	W(V>W)	M
Type	Material Code	Type	Material Code								
($S^{0}_{-0.02}$) KJP (Sg6) KJPG	DTMV	($S^{0}_{-0.02}$ / $F^{0}_{-0.05}$) KJP (Sg6 / $F^{0}_{-0.03}$) KJPG	DTV DTVH DTVS DTVC	8	4.00~6.00	3.00~5.00	0.3~2.0	5~15	3.0~5.0	1.0~4.5	M4
				10	4.00~8.00	3.00~7.00	0.3~3.0		3.0~7.0	1.0~6.5	
				12	4.00~10.00	3.00~9.00	0.3~4.0		3.0~9.0	1.0~8.5	
				16	8.00~14.00	4.00~13.00	0.5~6.0	5~25	4.0~13.0	1.0~12.5	
				20	10.00~18.00	6.00~17.00	1.0~8.0		6.0~17.0	1.0~16.5	
				25	15.00~23.00	8.00~22.00	2.0~10.0		8.0~22.0	1.0~21.5	M5
				10L	10.00~16.00	5.00~15.00	1.0~7.0	(For 1.4301/ X5CrNi18-10, B≤Sx5)	5.0~15.0	1.0~14.5	
				12L	12.00~20.00	6.00~19.00	2.0~9.0		6.0~19.0	1.0~18.5	
				16L	16.00~25.00	8.00~24.00	2.0~11.0		8.0~24.0	1.0~23.5	
				20L	20.00~30.00	10.00~29.00	2.0~14.0		10.0~29.0	1.0~28.5	

① Large head type (D=10L~20L) is only available in 1.1191/C45E. ② Please select V, W and S dimension so that S dimension is smaller.

Order Example

Part Number												
Type	Shape Material Code	D	-	P	-	S	-	F	-	B	-	V	-	W
KJPDTMV16			-	P10.20	-	S6.80			-	B20	-	V8.0	-	W6.0

Days to Ship: **8 Days** — Express A | 5,00 EUR/piece — P.88

① A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (①Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

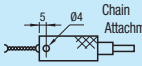
① For orders larger than indicated quantity, please request a quotation.

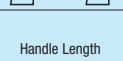
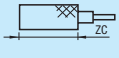
D		(1) Round Edge Type € Unit Price		(2) Segmental Arc-Shaped Edge Type € Unit Price					
		$S^{0}_{-0.02}$	Sg6	$S^{0}_{-0.02}$ / $F^{0}_{-0.05}$		Sg6 / $F^{0}_{-0.03}$			
		KJPDTMV	KJPGDTMV	KJPDTV	KJPDTVH	KJPGDTV	KJPGDTVH	KJPGDTVS	KJPGDTVC
Small Head	8								
	10								
	12								
	16								
	20								
	25								
Large Head	10L								
	12L								
	16L								
	20L								

Alterations

Part Number									
KJPDTMV16	- P10.20	- S6.80		- B20	- V8.0	- W6.0	- CH		
KJPDTV12	- P9.50	- S5.00	- F2.0	- B18	- V8.0	- W4.0	- ZC10		

8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-prevention chain (length 600 mm) is attached to gauge body. ①For chains only, refer to **P. 1568**.	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to Handle Length 10.	3,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. ①Applicable to Material 1.1191/C45E only. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ①Applicable to Material 1.1191/C45E only. ⊗Combination with MN is not available.	2,00

Alterations	Code	Spec.	Price Adder
Engraving of the Specified Characters 	KF	Engraves alphabet or number. Ordering Code KF-MISUMI0034 [printable character] alphabet · number · . (period) ⊗Not applicable to handle length 10. ①Engraves on the reverse side when combined with KH. ①Up to 8 digits. ①When selecting with other options, enter this last. Z (Handle): 20, 30, 40, 50 Max. Characters: Small Head 5, 10, 12; Large Head -, 5, 10	8,00
No Relief Groove 	NMN	Clears the relief groove between knurled part and straight part on the step. ⊗Not applicable to Large Head.	3,00
Handle Length 	ZC	Changes handle length to10, 20, 30 or 40. Ordering Code ZC20 ①Handle length 10 and 20 are only available when P≥5 and pin length (10+B)≤30. ①For large head type, handle length 30 and 40 only are applicable. ⊗For handle length 10, there is no tapped hole. ⊗For handle length 10, combination with KH is not available.	2,00

Marking Pins
-Straight, Stepped, Hollow Edge-

■**Features:** Suitable when confirming dimensions by scribing on work pieces. Applicable bushings: (2) Stepped Type **P.1549**, **P.1550**

■**Straight** - D12~30 / D12L~20L

■**Stepped** - D12~30 / D12L~20L

■**Hollow Edge**



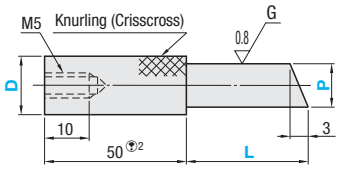
RoHS

Shape	M[1]	Hardness	(1) Straight Type	(1) Straight Material Code	(2) Stepped Type	(2) Stepped Material Code	(3) Hollow Edge Type
Standard	1.2510/ 100MnCrW4	58HRC~	($P^{0}_{-0.02}$) KJP (Pg6) KJPG	KH	($S^{0}_{-0.02}$) KJP (Sg6) KJPG	KS	-
Acute-angled Edge	1.2510/ 100MnCrW4	58HRC~	($P^{0}_{-0.02}$) KJP (Pg6) KJPG	KHE	($S^{0}_{-0.02}$) KJP (Sg6) KJPG	KSE	(Pg6) KJPGKSC

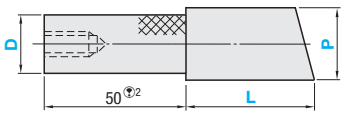
1. When L dimension is 51 or more, the material for the handle part is 1.1191/C45E.

(1) Straight (Standard)

Small Head: D=12~30

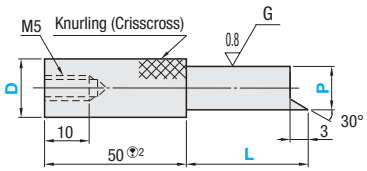


Large Head: D=12L~20L3

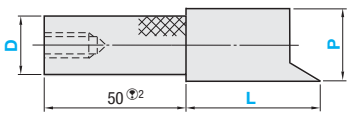


(1) Straight (Acute-angled edge)

Small Head: D=12~30

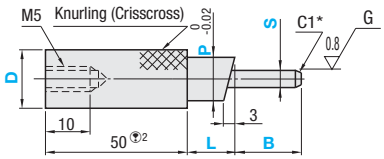


Large Head: D=12L~20L3



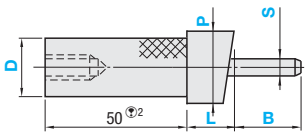
(2) Stepped (Standard)

Small Head: D=12~30



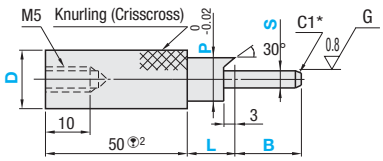
* When S=2, C is 0.5.

Large Head: D=12L~20L3

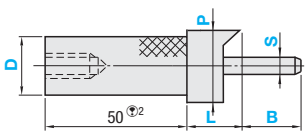


(2) Stepped (Acute-angled edge)

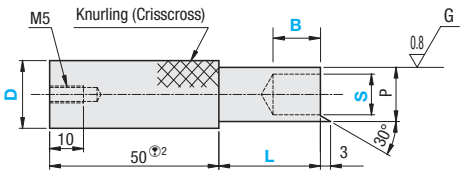
Small Head: D=12~30



Large Head: D=12L~20L3



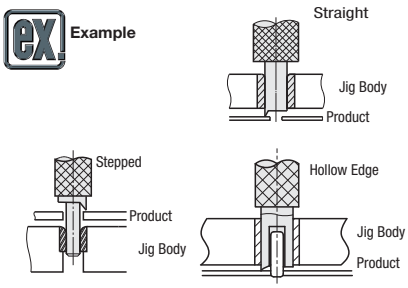
(3) Hollow Edge



2. For shorter handle length, please refer to the alteration ZC on the right page.
3. Dimensions not specified are same as Small Head Type.

Handles and pins may be joined with an adhesive. Heat or strong force may cause separation.

Example



■(1) Straight: Select Type, Material Code and D Dimension

Part Number			P	L	€ Unit Price							
					Standard				Acute-angled Edge			
Type	Material Code	D	0.01mm Increment	1mm Increment	KJPKH		KJPGKH		KJPKHE		KJPGKHE	
					L10~50	L51~100	L10~50	L51~100	L10~50	L51~100	L10~50	L51~100
($P^{0}_{-0.02}$) KJP	KH KHE	12	6.00~10.00	10~100								
		16	10.01~14.00									
(Pg6) KJPG		20	14.01~18.00									
		25	18.01~20.00									
		30	20.01~25.00	10~50								
		12L	12.00~20.00									
		16L	16.00~25.00									
		20L	20.00~30.00									

■(2) Stepped: Select Type, Material Code and D Dimension.

Part Number			P	S(P-4≥S)	L	B	€ Unit Price			
							Standard		Acute-angled Edge	
Type	Material Code	D	0.01mm Increment	0.1mm Increment	1mm Increment	1mm Increment	KJPKS	KJPGKS	KJPKSE	KJPGKSE
($S^{0}_{-0.02}$) KJP	KS KSE	12	6.00~10.00	2.0~6.0	5~20	10~20				
		16	8.00~14.00	3.0~10.0		10~40				
(S_{g6}) KJPG		20	10.00~18.00	3.0~14.0						
		25	15.00~23.00	6.0~19.0						
		30	20.00~28.00	10.0~24.0						
		12L	12.00~20.00	3.0~16.0						
		16L	16.00~25.00	6.0~21.0						
		20L	20.00~30.00	10.0~26.0						

■(3) Hollow Edge

Part Number		S	L*1	B	P*2	€ Unit Price
Type	D	0.1mm Increment	1mm Increment	1mm Increment		
KJPGKSC	12	2.0~4.0	5~40	3~15	10	
	16	3.0~6.0		3~30	12	
	20	6.0~10.0		5~30	16	
	25	8.0~14.0		5~35	20	
	30	12.0~19.0		5~35	25	

*1 When L dimension of hollow edge type is short, it may interfere with M5 screw pilot hole.
*2 When Hollow Edge Type needs P dimension specified, please use alteration PC.

Order Example

	Part Number: Type / Shape Material Code / D	- P	- S	- L	- B
(1) Straight Standard	KJPKH20	- P16.00		- L100	
(1) Straight Acute-angled Edge	KJPKHE16	- P10.10		- L12	
(2) Stepped Standard Large Head	KJPKS16L	- P20.20	- S6.8	- L10	- B10
(3) Hollow Edge, Acute-angled Edge	KJPGKSC16		- S6.0	- L10	- B10

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent.) P. 87

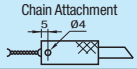
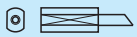
Quantity	1~19	20~35	36~49
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

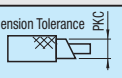
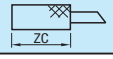
Alterations

Part Number - P - S - L - B - (CH · KH · PKC...etc.)

KJPKH16	- P10.1		- L12	- CH	
KJPGKSC20		- S8.0	- L25	- B20	- PC14
KJPKHE12	- P7.02		- L80	- ZC30	
KJPKSE16L	- P20.00	- S12.1	- L15	- B20	-

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. For chains only, refer to P.1568	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00
P Dimension 	PC	Changes the P Dimension. Applicable to hollow edge type only. 3mm or greater wall thickness (PC≥S+6) Ordering Code PC13	2,00

D	PC 1mm Increment
12	8, 9
16	10, 11
20	12~15
25	16~19
30	20~24

Alterations	Code	Spec.	Price Adder
P Dimension Tolerance 	PKC	Changes P dimension tolerance to g6. Available for Stepped Type only.	2,00
Tip 	SST	Makes acute-angle edge of Marking Pin triangular to make it sharper. Available for acute-angle type only.	2,00
Engraving of the Specified Characters 	KF	Engraves alphabet or number. Ordering Code KF-MISUMI0034 [printable character] alphabet · number · . (period) Engraves on the reverse side when combined with KH.	8,00
Handle Length 	ZC	Changes handle length from 50 to 30 or 40.	2,00

Z (Handle)	Max. Characters: Small Head	Max. Characters: Large Head
30	10	5
40	12	10
50		

Up to 8 digits.
When selecting with other options, enter this last.

Slot Pins for Inspection Jigs

-Straight Male Thread with Step · Male Thread Pins-

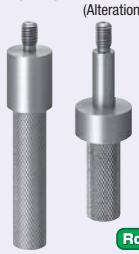
Features: Suitable when clamping work with threaded part and measuring work diameter with straight part. For applicable bushings, see **P.1555, P.1559**

Straight Male Thread with Step

- D=8~25 (Alteration ZC)



- D=10L~20L (Alteration ZC)



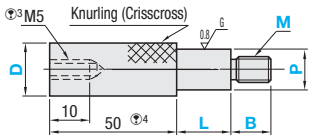
RoHS

M Material ①1	H Hardness	(1) Single-Row Type		(2) Two-Row Type	
		Type	Material Code	Type	Material Code
1.1191/C45E	-	($P^{0}_{-0.02}$)	M	($S^{0}_{-0.02}$)	MD
1.1191/C45E	45HRC~	KJP	MH	KJP	MDH
1.4301/X5CrNi18-10	-	(P_{g6})	MS	(S_{g6})	MDS
②1.4125/X105CrMo17 equivalent	45~50HRC	KJPG	MC	KJPG	-

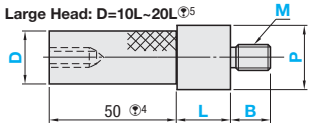
①Some combinations are unavailable. Refer to the price list to select the available combination.

(1) Single-Row Type

Small Head: D=8~25

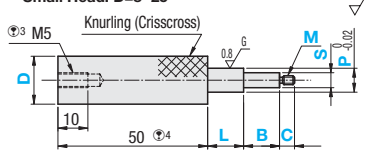


Large Head: D=10L~20L⑤

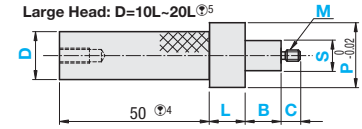


(2) Two-Row Type

Small Head: D=8~25



Large Head: D=10L~20L⑤



①1. For electroless nickel plating, please refer to the alteration MN.
②2. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
③3. When D=8, the screws of handle change from M5 to M4.
④4. For shorter handle length, please refer to the alteration ZC.
⑤5. Dimensions not specified are same as Small Head Type.
There may be a centering hole at tip and a relief groove approx. 1 mm in width (approx. 0.2mm in depth) at joint of each step. For no relief grooves, refer to the alteration NMN.

(1) Single-Row Type: Select Type, Material Code, D Dimension (For details refer to order example below).

Part Number			P	M(P≥M)	1mm Increment	
Type	Material Code	D	0.01mm Increment	Selection	L	B
($P^{0}_{-0.02}$) KJP	M	8	4.00~6.00	3 4	0~35 (L≤Px4)	5~25 (M<B≤Mx3)
		10	5.00~8.00	4 5 6 8		
		12	5.00~10.00	4 5 6 8 10 S10		
	MH	16	8.00~14.00	4 5 6 8 10 S10 12		
		20	10.00~18.00	5 6 8 10 S10 12	When L=0, specify P as 0.	When M3 (5≤B≤Mx2)
(P_{g6}) KJPG	MS	25	15.00~23.00			
		10L	10.00~16.00	4 5 6 8 10 S10		
	MC	12L	12.00~20.00	5 6 8 10 S10 12		
		16L	16.00~25.00	6 8 10 S10 12		(L+B≤50)
		20L	20.00~30.00			

① Large head type (D=10L~20L) is only available in 1.1191/C45E. ② S10 is fine thread (pitch 1.25). ③ KJPND, KJPNDS (right page) are more economical when L=0.

(2)Two-Row Type: Select Type, Material Code, D Dimension (For details refer to order example below).

Part Number			P	S(P≥S)	M(S≥M)	1mm Increment		
Type	Material Code	D	0.01mm Increment	0.1mm Increment	Selection	L	B	C
($S^{0}_{-0.02}$) KJP	MD	8	4.00~6.00	3.0~5.0	3 4	1~20 (L≤Px3)	1~20 (B≤Sx3)	5~20 (M≤C≤Mx3)
		10	5.00~8.00	4.0~7.0	4 5 6			
		12	5.00~10.00	4.0~9.0	4 5 6 8			
	MDH	16	8.00~14.00	7.0~13.0	4 5 6 8 10 S10 12			
		20	10.00~18.00	9.0~17.0	5 6 8 10 S10 12			
(S_{g6}) KJPG	MDS	25	15.00~23.00	14.0~22.0				
		10L	10.00~16.00	5.0~15.0	4 5 6 8 10 S10	When P≤10 (L≤Px2)	When S≤9 (B≤Sx2)	When M≤5 (M≤C≤Mx2)
		12L	12.00~20.00	6.0~19.0	5 6 8 10 S10 12			
		16L	16.00~25.00	8.0~24.0				
		20L	20.00~30.00	10.0~29.0	6 8 10 S10 12			

① Large head type (D=10L~20L) is only available in 1.1191/C45E. ② S10 is fine thread (pitch 1.25).

Order Example

Part Number									
Type	Shape Material Code	D	-	P	S	M	L	B	C
KJP	MH	16	-	P11.20		- M6	- L15	- B10	
KJP	MD	12L	-	P18.50	- S13.5	- M8	- L10	- B10	- C10

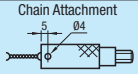
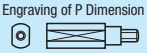
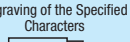
Days to Ship 8 Days — Express A 5.00 EUR/piece — P.88

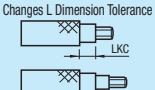
①A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number										
	- P	- S	- M	- L	- B	- C	- (CH · KH · STC · ZC · MN · NMN...etc.)			
KJPMDS10	- P7.00	- S4	- M4	- L10	- B8	- C8	- CH			
KJPM16	- P0		- M8	- L0	- B24		- ZC40			
KJPMH12	- P7.80		- M5	- L15	- B8		- MN			

8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. ①For chains only, refer to **P. 1568**.	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to handle length 10.	3,00
Engraving of the Specified Characters 	KF	Engraves alphabet or number. Ordering Code KF-MISUMI0034 [printable character] alphabet · number · (period) ⊗Not applicable to handle length 10. ①Engraves on the reverse side when combined with KH. ①Up to 8 digits. Z (Handle): 20 (Max. Characters Small Head 5, Large Head –); 30 (10, 5); 40 (12, 10); 50 (12, 10)	8,00
Handle Length 	ZC	Changes handle length 50 to 10, 20, 30 and 40. Ordering Code ZC20 ①Handle length 10 and 20 is only available when P≥5 and pin length L+B(+C)≤30. ①For large head type, handle length 30 and 40 only are applicable. ⊗For handle length 10, there is no tapped hole. ⊗For handle length 10, combination with KH is not available.	2,00

Alterations	Code	Spec.	Price Adder
Changes L Dimension Tolerance 	LKC	Changes the L dimension tolerance to ±0.05 Ordering Code LKC ①When the LKC is used, 0.1mm increment can be specified for L Dimension. ①L≤30 ①P≥4	5,00
No Relief Groove 	NMN	Clears the relief groove between knurled part and straight part on the step. ⊗Not applicable to Large Head	3,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. ①Applicable to Material 1.1191/C45E only. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ①Applicable to Material 1.1191/C45E only. ⊗Combination with MN is not available.	2,00

Price

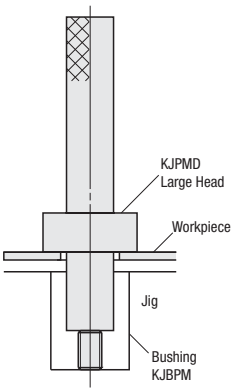
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example

For Two-Row Large Head type, first row can be used as a shoulder.



■(1) Single-Row Type

D		€ Unit Price							
		$P^{0}_{-0.02}$				P_{g6}			
		KJPM	KJPMH	KJPMS	KJPMC	KJPGM	KJPGMH	KJPGMS	KJPGMC
Small Head	8								
	10								
	12								
	16								
	20								
	25								
Large Head	10L								
	12L								
	16L								
	20L								

■(2) Two-Row Type

D		€ Unit Price				
		$S^{0}_{-0.02}$			S_{g6}	
		KJPMD	KJPMDH	KJPMDS	KJPGMD	KJPGMDH
Small Head	8					
	10					
	12					
	16					
	20					
	25					
Large Head	10L					
	12L					
	16L					
	20L					

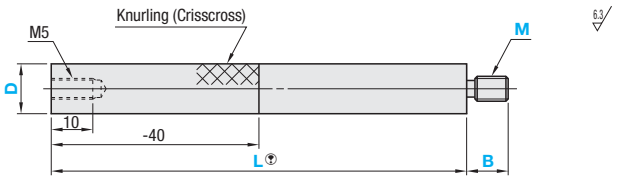
■Features: Suitable when clamping work with threaded part.

■Male Thread Pins

RoHS



Material	Type
1.1191/C45E	KJPND
1.4301/X5CrNi18-10	KJPNDS



When L is less than 40, entire length is knurled.

Part Number Type	D	L 10mm Increment	M Selection	B 1mm Increment	€ Unit Price KJPND L30~50	KJPND L60~100	KJPND L110~150	KJPNDS L30~50	KJPNDS L60~100	KJPNDS L110~150
KJPND KJPNDS	10	30~150	4 5 6 8 10 S10	5~15						
	12									
	16									

S10 is fine thread (pitch 1.25).

Order Example

Part Number	-	L	-	M	-	B
KJPND10		- L80		- M4		- B10

Days to Ship

8 Days | Express A | 5,00 EUR/ piece | P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	L	-	M	-	B	-	(STC)
KJPND10		- L80		- M4		- B10		- STC

8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ⓟApplicable to Material 1.1191/C45E only.	2,00

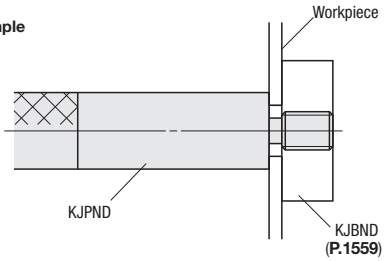
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Slot Pins for Inspection Jigs

-Male Thread Taper (Round, Revolving Diamond-shaped)-

Features: Suitable when clamping work pieces with threaded part and determining the work location with tapered area. For applicable bushings, see P. 1555, P. 1559

Male Thread Taper

–Round–

- D=8~25 - D=10L~20L



Tapered with No Step

- D=8~25



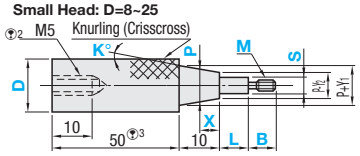
RoHS

M Material	H Hardness	(1) Taper Shape Fixed Type	(1) Taper Shape Fixed Material Code	(2) Angle Selectable Type	(2) Angle Selectable Material Code	(3) X Dimension Selectable Type	(3) X Dimension Selectable Material Code	(4) Tapered with No Step Type	(4) Tapered with No Step Material Code
1.1191/C45E	-	(S$^{0}_{-0.02}$) KJP (Sg6) KJPG	MT	KJP	MK	KJP	MX	KJP	MTN
1.1191/C45E	45HRC~		MTH		MKH		MXH		MTNH
1.4301/X5CrNi18-10	-		MTS		-		-		-
①1 1.4125 /X105CrMo17	45~50HRC		MTC		-		-		-

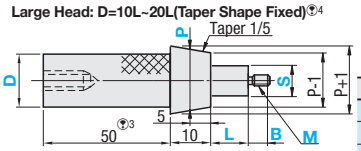
① Refer to the price list to select the available combination.

(1) (2) (3) Taper

Small Head: D=8~25

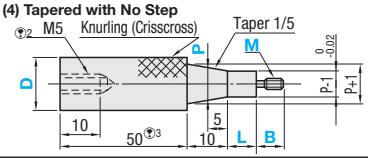


Large Head: D=10L~20L(Taper Shape Fixed)④4



S	g6
4~6	-0.004 -0.012
7~10	-0.005 -0.014
11~18	-0.006 -0.017
19~29	-0.007 -0.020

(4) Tapered with No Step



①1. 1.4125/X105CrMo17 equivalent has an identification groove on D part.
②2. When D=8, the screws of handle change from M5 to M4.
③3. For shorter handle length, please refer to the alteration ZC on the right page.
④4. Dimensions not specified are same as Small Head Type.
⑤The joint of each step may have a relief groove (approx. 1mm in width and approx. 0.2mm in depth) and the tip may have a center hole. For no relief groove, please refer to the alteration NMN on the right page.

(1) Taper Shape Fixed Type: Select Type, Material Code and D Dimension.

Part Number Type	Material Code	D	P 0.01mm Increment	S(P-1≥S) 1mm Increment	M(S≥M) Selection	1mm Increment L	1mm Increment B	X	Y_1 / Y_2	K°
(S$^{0}_{-0.02}$) KJP (Sg6) KJPG	MT MTH MTS MTC	8	5.00~6.00	4~5	3 4	0~25 (L≤Sx3) When L=0, specify S as 0.	5~25 (M≤B≤Mx3) When M3 (M≤B≤Mx2)	5	1	Tapered 1/5
		10	5.00~8.00	4~7	4 5 6					
		12	5.00~10.00	4~9	4 5 6 8					
		16	8.00~14.00	7~13	4 5 6 8 10 S10 12					
		20	10.00~18.00	9~17	5 6 8 10 S10 12					
		25	15.00~23.00	14~19						
		10L	10.00~16.00	5~15	4 5 6 8 10 S10					
		12L	12.00~20.00	6~19	5 6 8 10 S10 12					
		16L	16.00~25.00	8~24	6 8 10 S10 12					
		20L	20.00~30.00	10~29						

① Large head type (D=10L~20L) is only available in 1.1191/C45E. ②S10 is fine thread (pitch1.25).

(2) Angel Selectable Type (X dimension is fixed) (3) X Dimension Selectable Type (Angel K is fixed) :Select Type, Material Code and D Dimension.

Part Number Type	Material Code Angle Selectable	Material Code X Selectable	D	P 0.01mm Increment	S 1mm Increment	M(S≥M) Selection	1mm Increment L	1mm Increment B	K° Selection	K° Fixed	X Selection	X Fixed	Y_1	Y_2	Condition
KJP	MK MKH	MX MXH	10	5.00~8.00	4~7	4, 5, 6 8, 10, 12 (P≥M)	0~25 (L≤Sx3) When L=0, specify S as 0.	5~25 (M≤B≤Mx3)	10 15	1/5	1 2 3	5	Angle Selectable Type 1.8 when K°=10 2.7 when K°=15 X Dimension Selectable Type When X=1, 1.8 When X=2, 1.6 When X=3, 1.4	When X=1, 0.2 When X=2, 0.4 When X=3, 0.6	Angle Selectable Type When K°=10, S<P-2.8 D>P+2.8 When K°=15, S<P-3.7 D>P+2.8 X Dimension Selectable Type When X=1, S<P-1.2 D>P+2.8 When X=2, S<P-1.4 D>P+2.6 When X=3, S<P-1.6 D>P+2.4
			12	5.00~10.00	4~9										
			16	8.00~14.00	4~13										
			20	10.00~18.00	6~17										
			25	15.00~23.00	8~19										

(4) Tapered with No Step Type: Select Type, Material Code and D Dimension.

Part Number Type	Material Code	D	P 0.01mm Increment	M(P–1≥M) Selection	1mm Increment L	1mm Increment B
KJP	MTN MTNH	8	5.00~6.00	3 4	3~25 (L≤(P-1)x3)	5~25 (M≤B≤Mx3) When M3 (M≤B≤Mx2)
		10	5.00~8.00	4 5 6		
		12	5.00~10.00	4 5 6 8		
		16	8.00~14.00	4 5 6 8 10 S10 12		
		20	10.00~18.00	5 6 8 10 S10 12		
		25	15.00~23.00			

②S10 is fine thread (pitch1.25).

Order Example

Part Number	-	P	-	S	-	M	-	L	-	B	-	K	-	X
(1) Taper Shape Fixed		KJPMT12L	-	P14.20	-	S10	-	M5	-	L15	-	B10		
(2) Angle Selectable		KJPMKH16	-	P11.50	-	S8	-	M6	-	L10	-	B10	-	K10
(3) X Dimension Selectable		KJPMXH20	-	P12.50	-	S11	-	M8	-	L13	-	B18	-	X2
(4) Tapered with No Step		KJPMTN8	-	P5.60			-	M4	-	L10	-	B10		

Days to Ship

- Taper Shape Fixed Type, Angle Selectable Type, X Dimension Selectable Type

8 Days | Express A | 5,00 EUR/piece | P. 88

②A Express Charge of 13,50 EUR for 3 or more identical pieces.

- Tapered with No Step type

8 Days

Alterations Next page

Price

Volume Discount (Round down to one Cent.) P. 88

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D		€ Unit Price											
		(1) Taper Shape Fixed							(2) Angle K Selectable Type		(3) X Dimension Selectable		(4) Tapered with No Step	
		S 0 -0.02			Sg6									
		KJPMT	KJPMTH	KJPMTS	KJPGMT	KJPGMTH	KJPGMTS	KJPGMTC	KJPMK	KJPMKH	KJPMX	KJPMXH	KJPMTN	KJPMTNH
Small Head	8													
	10													
	12													
	16													
	20													
	25													
Large Head	10L													
	12L													
	16L													
	20L													

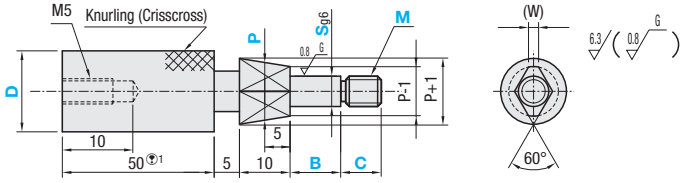
Male Thread Taper
–Revolving Diamond-shaped–



RoHS

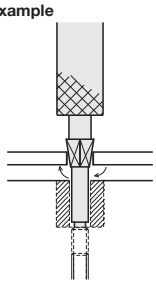
M Material	H Hardness	Type
1.1191/C45E	-	KJPKDT
1.1191/C45E	45HRC~	KJPKDTH

P	(W)
6.00~ 7.99	3.0
8.00~ 9.99	4.0
10.00~14.99	4.5
15.00~19.99	7.0
20.00~23.00	9.5



1. For shorter handle length, please refer to the alteration ZC.

Example



Diamond part rotates.

Part Number Type	D	P 0.01mm Increment	S(P-1≥S) 1mm Increment	M(S≥M) Selection	B 1mm Increment	C 1mm Increment	€ Unit Price Qty. 1~19 KJPKDT	€ Unit Price Qty. 1~19 KJPKDTH
KJPKDT KJPKDTH	10	6.00~10.00	5~9	3 4 5 6 8 10 12	5~40	5~36 (C≤Mx3)		
	12	6.00~12.00	5~11					
	16	6.00~14.00	5~13					
	20	7.00~18.00	6~17					
	25	7.00~23.00	6~22					

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	P	-	S	-	M	-	B	-	C
KJPKDT16	-	P10.00	-	S8	-	M5	-	B15	-	C10
KJPKDT20	-	P10.20	-	S8	-	M5	-	B12	-	C12

Days to Ship

10 Days

Express B | 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

• Male Thread Taper (Left Page)

Part Number	-	P	-	S	-	M	-	L	-	B	-	K	-	X	-	(CH/ KH/ ZC...etc.)
KJPMK10	-	P7.00	-	S4	-	M4	-	L10	-	B10	-	K10			-	CH
KJPMTN25	-	P20.00			-	M12	-	L10	-	B15					-	NMN

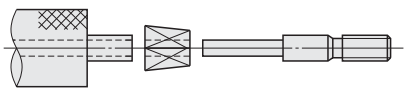
8 Days ⊗Express Service is not available.

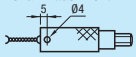
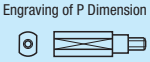
• Revolving Diamond-Shaped

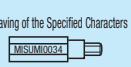
Part Number	-	P	-	S	-	M	-	B	-	C	-	(CH· KH· ZC...etc.)
KJPKDT16	-	P10.00	-	S8	-	M5	-	B15	-	C10	-	KH
KJPKDTH20	-	P16.50	-	S10	-	M6	-	B30	-	C15	-	ZC30

10 Days ⊗Express Service is not available.

■ KJPKDT Structure Diamond part rotates.



Alterations	Code	Spec.	Price Adder
Chain Attachment 	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. For chains only, refer to P.1568	5,00
Engraving of P Dimension 	KH	Machines flats on knurled head and engraves P dimension. ⊗Not applicable to handle length 10.	3,00
Additional Surface Treatment (Electroless Nickel Plating)	MN	Electroless nickel plating is applied. Applicable to Material 1.1191/C45E only. ⊗Combination with STC is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment Applicable to Material 1.1191/C45E only. ⊗Combination with MN is not available.	2,00

Alterations	Code	Spec.	Price Adder
S Dimension Tolerance 	SKC	Changes S dimension tolerance to g6. Applicable to Angle K Selectable Type and X Dimension Selectable Type only.	2,00
Handle Length 	ZC	Changes handle length 50 to 10, 20, 30 and 40. For Revolving Diamond-shaped type, hande length 30 and 40 only are applicable. When Z=30, effective length of tap is 7.5. ⊗For handle length 10, there is no tapped hole. Handle length 10 and 20 is only available when P≥5 and pin length (10+L+B)≤30. For large head type, handle length 30 and 40 only are applicable. ⊗For handle length 10, combination with KH is not available.	2,00
Engraving of the Specified Characters	KF	Engraves alphabet or number. Ordering Code KF-MISUMI0034 [printable character] alphabet / number / . (period) ⊗Not applicable to handle length 10. Engraves on the reverse side when combined with KH. Up to 8 digits.	8,00
No Relief Groove	NMN	Clears the relief groove between knurled part and straight part on the step. ⊗Not applicable to Large Head Type and Revolving Diamond-shaped Type.	3,00

Z (Handle)	Max. Characters Small Head	Max. Characters Large Head
20	5	-
30	10	5
40	12	10
50		

Slot Pins for Inspection Jigs

-Clamp Type (Straight · Taper)-

CAD Data

Features: Suitable when clamping work pieces by turning the collar to measure the dimensions. Diamond and Round shapes are available according to the work shape. For applicable bushings, refer to **P.1549, P.1550, P.1555**

Clamp Type –Diamond · Round Straight–

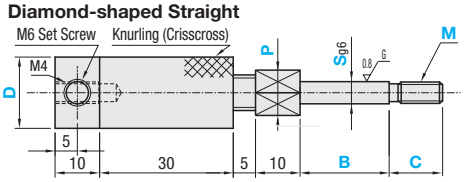


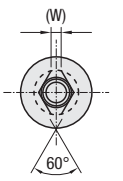
RoHS

Material	Hardness	Type: Diamond-shaped Straight	Type: Round Straight
1.1191/C45E	-	KJPCS	KJPCMS
1.1191/C45E	45HRC~	KJPCSH	KJPCMSH

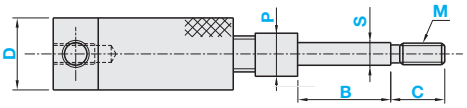
P	(W)
6.00~7.99	3.0
8.00~ 9.99	4.0
10.00~14.99	4.5
15.00~19.99	7.0
20.00	9.5

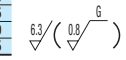
Diamond-shaped Straight



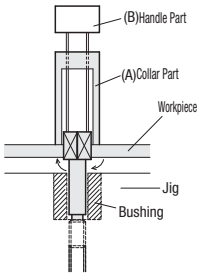


Round Straight Dimensions not specified are the same as Diamond-shaped Straight.





Example



(A) Collar lowers to clamp the work piece.
Diamond and round part rotates.

Part Number Type	D	P 0.01mm Increment	S(P≥S) 0.01mm Increment	M(S≥M) Selection	B 1mm Increment	C 1mm Increment	€ Unit Price Qty. 1~19 Diamond-shaped Straight KJPCS	KJPCSH	Round Straight KJPCMS	KJPCMSH
(Diamond) KJPCS	16	6.00~11.00	5.00~9.00	4 5 6 8 10 12 16	5~40	5~40 (C≤Mx3)				
KJPCSH	20	6.00~15.00	5.00~13.00							
(Round) KJPCMS	25	6.00~20.00	5.00~18.00							
KJPCMSH										

For orders larger than indicated quantity, please request a quotation.

Clamp Type –Diamond · Round Taper–

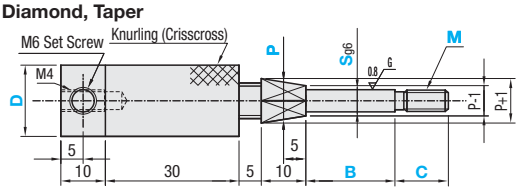


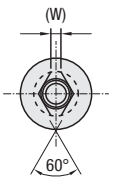
RoHS

Material	Hardness	Type: Diamond, Taper	Type: Round Taper
1.1191/C45E	-	KJPCT	KJPCMT
1.1191/C45E	45HRC~	KJPCTH	KJPCMTH

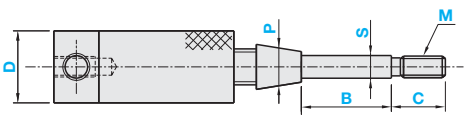
P	(W)
6.00~7.99	3.0
8.00~ 9.99	4.0
10.00~14.99	4.5
15.00~19.99	7.0
20.00	9.5

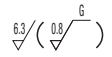
Diamond, Taper





Round Taper Dimensions not specified are the same as diamond taper.





Diamond and round part rotates.

Part Number Type	D	P 0.01mm Increment	S(P-1≥S) 0.01mm Increment	M(S≥M) Selection	B 1mm Increment	C 1mm Increment	€ Unit Price Qty. 1~19 Diamond, Taper KJPCT	KJPCTH	Round Taper KJPCMT	KJPCMTH
(Diamond) KJPCT	16	6.00~11.00	5.00~9.00	4 5 6 8 10 12 16	5~40	5~40 (C≤Mx3)				
KJPCTH	20	6.00~15.00	5.00~13.00							
(Round) KJPCMT	25	6.00~20.00	5.00~18.00							
KJPCMTH										

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	P	S	M	B	C
KJPCMS16	P8.00	S7.00	M5	B15	C10
KJPCT20	P10.20	S8.00	M5	B12	C12

Days to Ship

10 Days — Express B 8,00 EUR/piece P.88

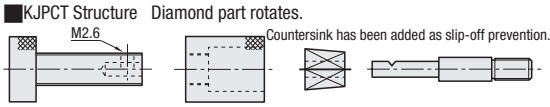
A Express Charge of 21,60 EUR for 3 or more identical pieces.

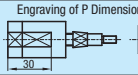
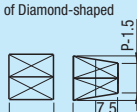
Alterations

Part Number - P - S - M - B - C - (KH · STC · CLH)
KJPCMS16 - P8.00 - S7.00 - M5 - B15 - C10 - KH

10 Days ⊗Express Service is not available.

KJPCT Structure Diamond part rotates.



Alterations	Code	Spec.	Price Adder
Engraving of P Dimension 	KH	Machines 30mm flat on knurled head and engraves P dimension.	6,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00
Rotation Part of Diamond-shaped 	CLH	Lengthens the rotation part of Diamond-shaped. Only applicable to Diamond-shaped. Refer to the table below for Diamond-shaped Taper. P Dimension: D 16 P 6.50~10.00; D 20 P 6.50~14.00; D 25 P 6.50~19.00	3,00

GO / NO-GO Pins / Slot Pins for Inspection Jigs

–Reversible– -With Groove-

CAD Data

Features: GO / NO-GO Pins usable by a single piece.

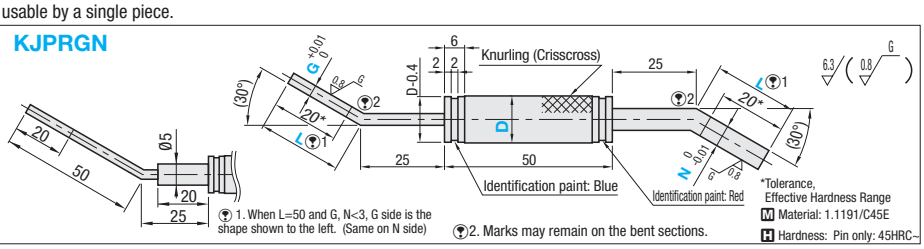
GO / NO-GO Pins –Reversible–



(Alteration MH)

RoHS

KJPRGN



1. When L=50 and G, N<3, G side is the shape shown to the left. (Same on N side)

2. Marks may remain on the bent sections.

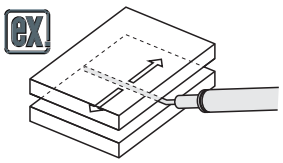
*Tolerance, Effective Hardness Range
M Material: 1.1191/C45E
H Hardness: Pin only: 45HRC~

Part Number Type	D	0.01mm Increment G	N(G<N)	L	€ Unit Price Qty.1~19
KJPRGN	10	1.50~6.00		25	
	10L			50	
	14	1.50~8.00		25	
	14L			50	

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number - G - N
KJPRGN10 - G2.00 - N4.00

Days to Ship 10 Days



Alterations

Part Number - G - N - (KH · STC · MH / CH)
KJPRGN10 - G2.00 - N4.00 - KH
KJPRGN14L - G4.00 - N6.00 - CH

Alterations	Code	Spec.	Price Adder
	KH	Machines flats on knurled head and engraves G dimension and N dimension. Ordering Code KH	8,00
M4	MH	Adds M4 tapped hole for the wire chain on the handle. When combined with KH, the tapped hole is on a flat surface. ⊗Combination with CH is not available.	3,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment Available for pins only.	2,00
Chain Alteration	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. For chains only, refer to P.1568 Added on a flat surface when combined with KH. ⊗Combination with MH is not available.	5,00

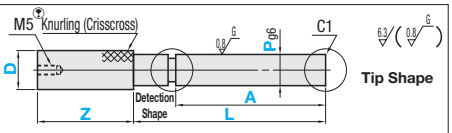
Features: Visually verifies accuracy of work location by checking if bushing end is within the groove or slit.

With Groove

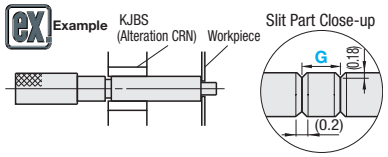


RoHS

Material	Hardness	Type	Detected Shapes	Tip Shape
1.1191/C45E	-	KJPB	S1 S3 S5	N(Standard) D(Stepped) C(Hollow)
1.1191/C45E	45HRC~	KJPBH		



Example KJBS (Alteration CRN) Workpiece



Tip shapes N and D have centering holes at tips. Tip shape D may have a relief groove approx. 1mm in width (0.2mm in depth) at joint of each step.

When handle length (Z dimension) is 0, pin part has M5 tapped. M4 when P dimension is 8 and handle length is 0.

Detector Shape

S1: Groove
S3: 3 Slits
S5: 5 Slits

Tip Shape

N: Standard
D: Stepped
C: Hollow

* When the alteration TN is used, the tolerance is H7.

Part Number Type	Detection Part Shape	Acute-angled Edge Shape	D	Pin Dia. P(P<D) Selection	Pin Length • Slit Width L 1mm Increment	A 1mm Increment	G±0.05 (When S1) 0.5mm Increment	G±0.05 (When S3, S5) Selection	Tip part (Tip Shape D / C only) S 0.1mm Increment	B 1mm Increment	Handle Length Z Selection
KJPB KJPBH	S1 S3 S5	N D C	12 16 20 25	8 10 12 16 20	(When P=8, 10) 50~100 (When P=12~20) 50~150	45~145 (A≤L-5)	1~4.0	0.5 1	3.0~16.0 (When tip shape C, remain 2mm or greater thickness (S≤P-4))	1~40 (When tip shape C, hole depth is twice or less hole dia. (B≤Sx2))	0 30 50

When Tip Shape D, S≤P–2

Order Example Part Number - P - L - A - G - S - B - Z

Type	Detected Shapes	Tip Shape	D							
KJPB	S3	N	16	- P12	- L70	- A50	- G1		- Z30	
KJPBH	S5	D	12	- P10	- L80	- A60	- G0.5	- S4.0	- B2	- Z50

8 Days

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

D	L	€ Unit Price S1 N: Standard	S1 D: Stepped	S1 C: Hollow	S3 N: Standard	S3 D: Stepped	S3 C: Hollow	S5 N: Standard	S5 D: Stepped	S5 C: Hollow
		KJPBS1N / KJPBHS1N	KJPBS1D / KJPBHS1D	KJPBS1C / KJPBHS1C	KJPBS3N / KJPBHS3N	KJPBS3D / KJPBHS3D	KJPBS3C / KJPBHS3C	KJPBS5N / KJPBHS5N	KJPBS5D / KJPBHS5D	KJPBS5C / KJPBHS5C
12	50~100									
	101~150									
16	50~100									
	101~150									
20	50~100									
	101~150									
25	50~100									
	101~150									

Alterations

Part Number - P - L - A - G - S - B - Z - (TM · TN...etc.)
KJPB - S3 - N - 20 - P16 - L100 - A90 - G1.0 - Z30 - STC

Alterations	Code	Spec.	Price Adder
Tapping on Pin End. TM TMx2	TM	Adds a tap on pin end Ordering Code When TM4 (M4) Only applicable for Tip Shape N and D. TM can be selected from M4, 5, 6 and 8. Specify the tap size so that 2mm or more wall thickness remains. (When Tip Shape N, TM≤P-4; When D, TM≤S-4)	2,00
Female Thread Machining for Set Screw M3 TN Str	TN	Adds tapping for Set Screw. Ordering Code TN7.5 Only applicable to Tip Shape C (hollow). 0.5mm Increment 3.5≤TN≤B-4	2,00

Alterations	Code	Spec.	Price Adder
5 Ø4 Chain Alteration	CH	Loss-proof chain (length 600 mm) is attached to the gauge body. For chains only, refer to P. 1568.	5,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00

Alteration TN: Preferable dimension for mounting locating pin in hollow part.

Tap Position TN	Dimensions of pins with groove P	S	B	Positioning Pins and sizes Shape	D	L
5.5	12	6	11	Large Head / Small Head Flat Type (→P. 1298) Circumference Groove Shape	6S	3
9.0	16	10	17		10S	5
10.0	20	12	19		12S	6

Bushings for Inspection Jigs

-Straight (P, L Dimension Configurable · Selectable)-

CAD Data

■Applicable pins: P.1527~P.1529(Round Edge Type) P.1534~P.1541 (Round Edge Type) P.1548

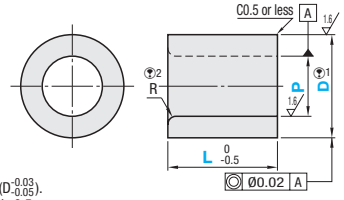
■Straight



RoHS

	M Material	H Hardness	S Surface Treatment	(1) P, L Selectable Type	(1) P, L Selectable Material Code	(2) P, L Configurable Type	(2) P, L Configurable Material Code
Standard Type ($D_{-0.02}^{0}$)	JIS-SKS93 (Raw Material)	-	-	($P^{+0.03}_{+0.01}$) KJB (P_{H7}) KJBH	-	($P^{+0.03}_{+0.01}$) KJB (P_{H7}) KJBH	SN
	JIS SKS93	50~60HRC	-		A		S
	JIS SKS93	50~60HRC	Electroless Nickel Plating		-		SM
	1.4301/X5CrNi18-10	-	-		-		
	1.4125/X105CrMo17	45~50HRC	-		-		SSC
Press Fit Type (D_{p6})	JIS SKS93	50~60HRC	-	-		($P^{+0.03}_{+0.01}$) KJBP (P_{H7}) KJBPH	S
	JIS SKS93	50~60HRC	Electroless Nickel Plating				SM
	1.4301/X5CrNi18-10	-	-				
	1.4125/X105CrMo17	45~50HRC	-				SSC

▼Some combinations are unavailable. Refer to the price list to select the available combination.



6.3 (1.6)

P	H7
2.00~3.00	$^{+0.001}_{0}$
3.01~6.00	$^{+0.012}_{0}$
6.01~10.00	$^{+0.015}_{0}$
10.01~18.00	$^{+0.018}_{0}$
18.01~30.00	$^{+0.021}_{0}$
30.01~32.00	$^{+0.025}_{0}$

▼1. Press-fit type has a 1~3mm guide part ($D_{-0.05}^{-0.03}$).
▼2. When wall is 2mm or less (D–P)/2≤2, R is 0.5.

■(1) P, L Selectable: Select Type, Material Code, D Dimension (For details refer to order example below).

Part Number Type	Material Code	D	P Selection	L Selection	R	€ Unit Price
($P^{+0.03}_{+0.01}$) KJB	A	10	3	10	1.0	
			4	10 15		
			5	10 15		
			6	10 15	0.5	
			8	15		
		12	6	15	2.0	
			8	15 20	0.5	
			10	15		
		16	10	15 20	2.0	
			12	15 20	0.5	

Part Number Type	Material Code	D	P Selection	L Selection	R	€ Unit Price
(P_{H7}) KJBH	A	10	4	10 15	1.0	
			5	15		
			6	15	0.5	
		12	6	15	2.0	
			8	15 20	0.5	
		16	8	20	2.0	
			10	15 20		
			13	20 25	0.5	

■(2) P, L Configurable

Part Number Type	Material Code Standard	Material Code Press Fit	D	P 0.01mm Increment	L 1mm Increment	R	€ Unit Price P$^{+0.03}_{+0.01}$ KJBSN	KJBS KJBPS	KJBSM KJBPSM	KJBSS	KJBSSC KJBPSSC	€ Unit Price P_{H7} KJBHSN	KJBHS KJBPHS	KJBHSM KJBPHSM	KJBHSS KJBPHSS	KJBHSSC
Standard Type ($P^{+0.03}_{+0.01}$) (P_{H7}) KJB KJBH	SN S SM SS▼3 SSC	S SM SS▼3 SSC	8	2.00~ 6.00	5~40 (When P<5 L≤Px4 When P≥5 L≤Px3)	1.0										
			10	2.00~ 8.00												
			12	4.00~10.00		2.0										
			16	8.00~14.00												
Press Fit Type ($P^{+0.03}_{+0.01}$) (P_{H7}) KJBP KJBPH			20	10.00~18.00												
			25	15.00~23.00												
			30▼4	20.00~27.00												
			35▼4	25.00~32.00												

▼3. For 1.4301/X5CrNi18-10, there must be a 2mm or greater wall thickness {(D–P)/2≥2}.▼4. D=30 is applicable to material of JIS SKS93 (except electroless nickel plating) only.

Order Example

Part Number Type	Material Code	D	-	P	-	L
KJB	A	16	-	P12	-	L15
KJB	S	10	-	P3.97	-	L10

Days to Ship
• P, L Selectable: 6 Days → P.87
• P, L Configurable: 8 Days

Price
• P, L Selectable
■Volume Discount (▼Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19
Rate	€ Unit Price	5%	10%

▼For orders larger than indicated quantity, please request a quotation.

• P, L Configurable
■Volume Discount (▼Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

▼For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	L	-	(FC · NC...etc.)
KJBS10	-	P3.00	-	L6	-	STC
KJBSN12	-	P6.00	-	L20	-	CRN

▼ Only applicable to P, L Dimension Configurable.

Alterations	Code	Spec.	Price Adder
Groove (For adhesive reservoir)	FC	Adds groove for accumulating adhesives. ▼D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. ▼Applicable only when L≥10.	2,00
Groove (Retaining)	NC	Adds groove for retaining. ▼D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. ▼Applicable only when L≥10.	3,00
Radius R C Chamfered	RN	Adds C Chamfering (0.5 or less) to R.	Free of charge

Alterations	Code	Spec.	Price Adder
Radius R Square Corner	CRN	Replaces R with square corner. ▼Edge may be burred ⊗Combination with alteration LKC is not available.	Free of charge
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ▼Applicable to material JIS (except electroless nickel plating) only.	2,00
Changes L Dimension Tolerance	LKC	Changes L dimension tolerance to $^{0}_{-0.05}$ ⊗Combination with alteration CRN is not available.	2,00
Flats Machining	HT	Adds a flat on bushing.	2,00

Bushings for Inspection Jigs

-Straight with Shoulder-

CAD Data

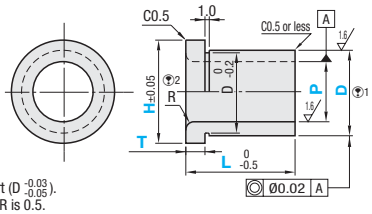
Features: Height is adjustable at shoulder as a shim (2, 3 and 5mm). Applicable pins: **P.1527**~**P.1529** (Round Edge Type) **P.1534**~**P.1541**(Round Edge Type) **P.1548**

Straight with Shoulder



	M Material	H Hardness	S Surface Treatment	(1) T Selectable: Type	(1) T Selectable: Material Code	(2) T, H Configurable Type	(2) T, H Configurable Material Code
Standard Type ($D_{-0.02}^{0}$)	JIS SKS93	50~60HRC	-	($P_{+0.01}^{+0.03}$) KJB (PH7) KJBH	ST	($P_{+0.01}^{+0.03}$) KJBF (PH7) KJBFH	S
	JIS SKS93	50~60HRC	Electroless Nickel Plating		STM		SM
	1.4301/X5CrNi18-10	-	-		STS		-
	1.4125/X105CrMo17	45~50HRC	-		STSC		SSC
Press Fit Type (D_{P6})	JIS SKS93	50~60HRC	-	($P_{+0.01}^{+0.03}$) KJBP (PH7) KJBPH	ST	($P_{+0.01}^{+0.03}$) KJBPF (PH7) KJBPFH	S
	JIS SKS93	50~60HRC	Electroless Nickel Plating		STM		SM
	1.4301/X5CrNi18-10	-	-		STS		
	1.4125/X105CrMo17	45~50HRC	-		STSC		SSC

Refer to the price list to select the available combination.



6.3 (1.6)

P	H7
2.00~3.00	+0.001 0
3.01~6.00	+0.012 0
6.01~10.00	+0.015 0
10.01~18.00	+0.018 0
18.01~30.00	+0.021 0
30.01~32.00	+0.025 0

(1) Press-fit type has a 1~3mm guide part ($D_{-0.05}^{-0.03}$).
(2) When wall is 2mm or less (D–P)/2≤2, R is 0.5.

RoHS

(1)T Selectable: Select Type, Material Code, D Dimension (For details refer to order example below).

Part Number Type	Material Code	D	P 0.01mm Increment	L 1mm Increment	T±0.05 Selection	H	R	€ Unit Price P+0.03 +0.01 KJBST KJBPST	KJBSTM KJBPSTM	KJBSTS KJBPSTS	KJBSTSC KJBPSTSC	PH7 KJBHST KJBPHST	KJBHSTM KJBPHSTM	KJBHSTS KJBPHSTS	KJBHSTSC
Standard Type (P+0.03 +0.01) (PH7) KJB KJBH Press Fit Type (P+0.03 +0.01) (PH7) KJBP KJBPH	ST STM STS(3) STSC	8	2.00~ 6.00	5~40 (When P<4 L≤Px4 When P≥4 L≤Px3)	2 3 5	D+4	1.0								
		10	2.00~ 8.00												
		12	4.00~10.00				2.0								
		16	8.00~14.00												
		20	10.00~18.00												
		25	15.00~23.00												
		30(4)	20.00~27.00												
		35(4)	25.00~32.00												

(3) For 1.4301/X5CrNi18-10, there must be a 2mm or greater wall thickness {(D–P)/2≥2}. (4) D=30 is applicable to material of JIS SKS93 (except electroless nickel plating) only.

(2)T, H Configurable: Select Type, Material Code, D Dimension (For details refer to order example below).

Part Number Type	Material Code	D	P 0.01mm Increment	L 1mm Increment	T±0.01 0.1mm Increment	H 1mm Increment	R	€ Unit Price P+0.03 +0.01 KJBFS KJBPFS	KJBFSM	KJBFSSC KJBPFSSC	PH7 KJBFHS KJBPFHS	KJBPFHSM	KJBPFHSS	KJBPFHSSC
Standard Type (P+0.03 +0.01) (PH7) KJBF KJBFH Press Fit Type (P+0.03 +0.01) (PH7) KJBPF KJBPFH	S SM SS(3) SSC	8	2.00~ 6.00	5~40 (When P<4 L≤Px4 When P≥4 L≤Px3)	2.0~5.5	10~16	1.0							
		10	2.00~ 8.00			12~18								
		12	4.00~10.00			14~20	2.0							
		16	8.00~14.00			18~26								
		20	10.00~18.00			22~37								
		25	15.00~23.00			27~40								

(3) For 1.4301/X5CrNi18-10, there must be a 2mm or greater wall thickness {(D–P)/2≥2}.

Order Example

Part Number										
Type	Material Code	D	-	P	-	L	-	T	-	H
KJB	ST	10	-	P3.97	-	L6	-	T2		
KJBF	S	10	-	P7.00	-	L15	-	T5.0	-	H15

Days to Ship 8 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	L	-	T	-	H	-	(FC · NC...etc.)
KJBFS16	-	P12.00	-	L30	-	T3.3	-	H20	-	FC
KJBST10	-	P8.00	-	L20	-	T3			-	LKC

Alterations	Code	Spec.	Price Adder
Groove (For adhesive reservoir)	FC	Adds groove for accumulating adhesives. (3)D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. (3)Applicable only when L≤15.	2,00
Groove (Retaining)	NC	Adds groove for retaining. (3)D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. (3)Applicable only when L≤15.	3,00
Radius R C Chamfered	RN	Adds C Chamfering (0.5 or less) to R.	Free of charge
Radius R Square Corner	CRN	Replaces R with square corner. (3)Edge may be burred ⊗Combination with TKC and LKC is not available.	Free of charge

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment (3)Applicable to material JIS (except electroless nickel plating) only.	2,00
Shoulder Thickness Tolerance	TKC	Changes shoulder thickness tolerance to ±0.01. (3)Applicable to With Shoulder T Dimension Selectable Type only. ⊗Combination with alteration CRN and LKC is not available.	4,00
Changes L Dimension Tolerance	LKC	Changes L dimension tolerance to $_{-0.05}^{0}$. ⊗Combination with TKC and CRN is not available.	2,00
Flats Machining	HT	Adds a flat on bushing. (3)No flat on shoulder part	2,00

Bushings for Inspection Jigs

-Stepped Straight-

CAD Data

■Applicable pins: **P.1528** (Round Edge Type), **P.1537**

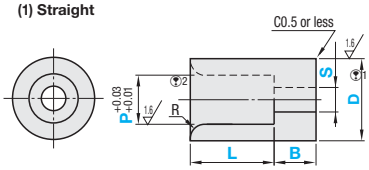
■Stepped Straight



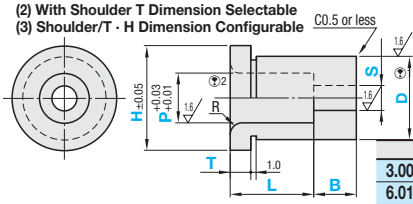
	Material	Hardness	Surface Treatment	(1) Straight Type	(1) Straight Material Code	(2) With Shoulder T Dimension Selectable Type	(2) With Shoulder T Dimension Selectable Material Code	(3) Shoulder/T · H Dimension Configurable Type	(3) Shoulder/T · H Dimension Configurable Material Code
Standard Type ($D^{0}_{-0.02}$)	JIS SKS93	50~60HRC	-	($S^{+0.03}_{+0.01}$) KJB (S_{H7}) KJBH	D	($S^{+0.03}_{+0.01}$) KJB (S_{H7}) KJBH	DT	($S^{+0.03}_{+0.01}$) KJBF (S_{H7}) KJBFH	D
	JIS SKS93	50~60HRC	Electroless Nickel Plating		DM		-		-
	1.4301/ X5CrNi18-10	-	-		DS		-		-
Press Fit Type (D_{P6})	JIS SKS93	50~60HRC	-	-	-	($S^{+0.03}_{+0.01}$) KJBP (S_{H7}) KJBPH	DT	(S_{H7}) KJBPFH	D
	1.4301/ X5CrNi18-10	-	-		-		DTS		-

Refer to the price list to select the available combination.

(1) Straight



(2) With Shoulder T Dimension Selectable
(3) Shoulder/T · H Dimension Configurable



S	H7
3.00~6.00	+0.012 0
6.01~10.00	+0.015 0
10.01~18.00	+0.018 0
18.01~21.00	+0.021 0

1. Press-fit type has a 1~3mm guide part ($D^{-0.03}_{-0.05}$).
2. When wall is 2mm or less {(D−P)/2≤2}, R is 0.5.

RoHS

Select Type, Material Code and D Dimension.

Part Number Type	Material Code Straight	Material Code T Selectable	Material Code T, H yagurable	D	All Types 0.01mm Increment P	All Types 0.01mm Increment S	All Types 1mm Increment L	All Types 1mm Increment B	All Types R	(2) T Selectable Type only $T_{\pm0.05}$ Selection	(2) T Selectable Type only H	(3) T · H Configurable Type only $T_{\pm0.01}$ 0.1mm Increment	(3) T · H Configurable Type only H 1mm Increment
(Standard) KJB KJBH KJBF KJBFH (Press Fit) KJBP KJBPH KJBPFH	D DM DS③	DT DTS③	D	8	4.00~ 6.00	3.00~ 5.00	3~25 L≤Px3 No R for L3 and L4.	5~25 When S≤3.59 B≤Sx2.5 When S≥3.60 B≤Sx3	1.0	2 3 5	D+4	2.0~5.5	10~14
				10	4.00~ 8.00	3.00~ 7.00							12~17
				12	5.00~10.00	3.00~ 9.00							14~20
				16	8.00~14.00	4.00~13.00			2.0				18~26
				20	10.00~18.00	6.00~17.00							22~37
				25	15.00~23.00	8.00~21.00							27~40

3. For 1.4301/X5CrNi18-10, there must be a 2mm or greater wall thickness {(D−P)/2≥2}

Order Example

Part Number - P - S - L - B - T - H

KJBDT12 - P8.00 - S4.00 - L10 - B5 - T3

KJBFD12 - P8.00 - S4.00 - L10 - B5 - T3.5 - H15

Days to Ship **8 Days**

Price

■Volume Discount (Round down to one Cent.) **P. 87**

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price (1) Straight $S^{+0.03}_{+0.01}$ KJBD	KJBDM	KJBDS	(1) Straight S_{H7} KJBHD	KJBHDM	(2) With Shoulder T Dimension Selectable $S^{+0.03}_{+0.01}$ KJBDT	KJBPDTS	(2) With Shoulder T Dimension Selectable S_{H7} KJBHDT KJBPHDT	(3) Shoulder/T · H Dimension Configurable $S^{+0.03}_{+0.01}$ KJBFD	(3) Shoulder/T · H Dimension Configurable S_{H7} KJBFHD KJBPFHD
8										
10										
12										
16										
20										
25										

Alterations

Part Number - P - S - L - B - T - H - (FC / PKC...etc.)

KJBD12 - P8.00 - S4.00 - L10 - B5 - FC

Alterations	Code	Spec.	Price Adder
Groove (For adhesive reservoir)	FC	Adds groove for accumulating adhesives. D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. Applicable when L+B≥10 for Straight Type, L+B≥15 for Shoulder Type.	2,00
Groove (Retaining)	NC	Adds groove for retaining. D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. Applicable when L+B≥10 for Straight Type, L+B≥15 for Shoulder Type.	3,00
Radius R Chamfered	RN	Adds C Chamfering (0.5 or less) to R.	Free of charge
Radius R Square Corner	CRN	Replaces R with square corner. Edge may be burred ⊗Combination with TKC and LKC is not available.	Free of charge

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment Applicable to material JIS(except electroless nickel plating) only.	2,00
P Dimension Tolerance	PKC	Changes P dimension tolerance to H7.	2,00
Shoulder Thickness Tolerance	TKC	Changes shoulder thickness tolerance to ±0.01. Applicable to With Shoulder T Dimension Selectable Type only. ⊗Combination with alteration CRN and LKC is not available.	4,00
L+B Dimension Tolerance	LKC	Changes L+B dimension tolerance to $^{0}_{-0.05}$ ⊗Combination with TKC and CRN is not available. Tolerance is not for L dimension only.	2,00
Flats Machining	HT	Adds a flat on bushing. No flat on shoulder part	2,00

Bushings for Inspection Jigs

-D-Shape-

CAD Data

■Applicable pins: **P.1529**~**P.1533** (D-Shaped Tip Type), **P.1539**~**P.1540** (D-Shaped Tip Type)

■D-Shape

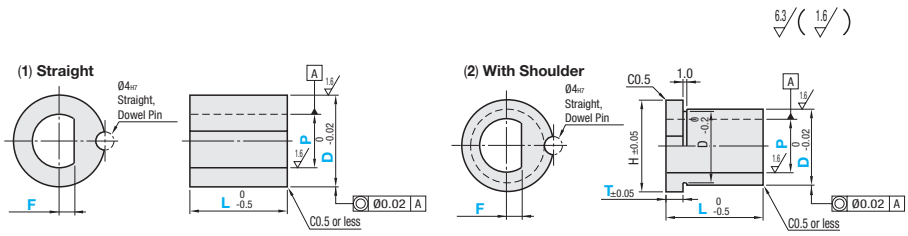


RoHS

M Material	H Hardness	S Surface Treatment	(1) Straight Type	(1) Straight Material Code	(2) With Shoulder Type	(2) With Shoulder Material Code
JIS SKS93	50~60HRC	-	($P^{+0.03}_{+0.01}$ /$F^{+0.05}_{0}$)	SK	($P^{+0.03}_{+0.01}$ /$F^{+0.05}_{0}$)	STK
JIS SKS93	50~60HRC	Electroless Nickel Plating	KJB	SKM	KJB	-
1.4301/X5CrNi18-10	-	-	($PH7/F^{+0.03}_{0}$)	SKS	($PH7/F^{+0.03}_{0}$)	-
1.4125/ equivalent	45~50HRC	-	KJBH	SKC	KJBH	STKC

Refer to the price list to select the available combination.

P	H7
3.00~6.00	$^{+0.012}_{0}$
6.01~10.00	$^{+0.015}_{0}$
10.01~18.00	$^{+0.018}_{0}$
18.01~21.00	$^{+0.021}_{0}$



Select Type, Material Code and D Dimension.

Part Number				All Types			(2) With Shoulder only	
Type	Material Code		D	P 0.01mm Increment	F(F<P/2) 0.1mm Increment	L 1mm Increment	T Selection	H
	(1) Straight	With Shoulder						
($P^{+0.03}_{+0.01}$ /$F^{+0.05}_{0}$) KJB	SK	STK	(3) 8	3.00~ 5.00	0.3~ 2.4	5~25	2 3 5	D+4
($PH7/F^{+0.03}_{0}$) KJBH	SKM	STKC (2)	10	3.00~ 7.00	0.3~ 3.0			
	SKS (2)		12	3.00~ 9.00	0.5~ 4.0			
	SKC (2)		16	4.00~13.00	0.5~ 6.0			
			20	6.00~17.00	1.0~ 8.0			
			25	8.00~21.00	2.0~10.0			

(1) 1. For Straight type, there must be 1mm or greater wall thickness between D bore and dowel hole (D/2−F≥3). For 1.4301/X5CrNi18-10, there must be a 2mm or greater wall thickness (D/2−F≥4).

(3) 3. D=8 is not available for 1.4301/X5CrNi18-10 Straight Type.

(2) 2. For 1.4301/X5CrNi18-10, there must be a 2mm or greater wall thickens between D bore and outer dia. (D−P/2≥2).

Order Example — Part Number - P - F - L - T: KJBSTK12 - P8.00 - F3.0 - L10 - T3

Days to Ship: 8 Days

Price

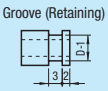
■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price									
	(1) Straight							(2)With Shoulder		
	$P^{+0.03}_{+0.01}$ $F^{+0.05}_{0}$			$PH7$ $F^{+0.03}_{0}$				$P^{+0.03}_{+0.01}$ $F^{+0.05}_{0}$	$PH7$ $F^{+0.03}_{0}$	
	KJBSK	KJBSKM	KJBSKS	KJBHSK	KJBHSKM	KJBHSKS	KJBHSKC	KJBSTK	KJBHSTK	KJBHSTKC
8										
10										
12										
16										
20										
25										

Alterations — Part Number - P - F - L - T - (FC · NC...etc.): KJBSK12 - P8.00 - F2.0 - L10 - FC

Alterations	Code	Spec.	Price Adder
Groove (For adhesive reservoir) 	FC	Adds groove for accumulating adhesives. (1) D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. (2) Applicable when L≥10 for Straight Type, L≥15 for Shoulder Type.	2,00
Groove (Retaining) 	NC	Adds groove for retaining. (1) D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. (2) Applicable when L≥10 for Straight Type, L≥15 for Shoulder Type.	3,00

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment (1) Applicable to material JIS (except electroless nickel plating) only.	2,00
Shoulder Thickness Tolerance 	TKC	Changes shoulder thickness tolerance to ±0.01. (1) Applicable to With Shoulder Type only ⊗Combination with alteration LKC is not available.	4,00
Changes L Dimension Tolerance 	LKC	Changes L dimension tolerance to $^{0}_{-0.05}$ ⊗Combination with TKC is not available.	2,00

Bushings for Inspection Jigs
-Oval-

CAD Data

■Applicable pins: **P.1527**(Diamond-Shaped Edge Type), **P.1531** (Standard)

■Oval

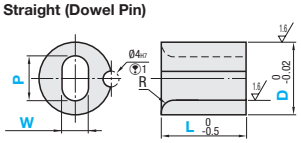


	M Material	H Hardness	(1) Straight Type	(1) Straight Material Code	(2) With Shoulder Type	(2) With Shoulder Material Code
Dowel Pin	JIS SKS93	50~60HRC	($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	SC	($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	STC
	1.4301/ X5CrNi18-10	-		SCS		STCS
	1.4125/X105CrMo17 equivalent	45~50HRC		SCC		STCC
D-cut	JIS SKS93	50~60HRC	($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	SCD	($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	STCD
	1.4301/ X5CrNi18-10	-		SCDS		-
	1.4125/X105CrMo17 equivalent	45~50HRC		-		STCDC

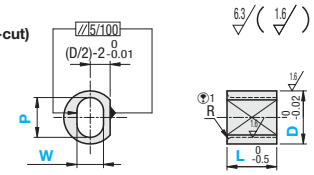
P, W	H7
3.00~6.00	+0.012 0
6.01~10.00	+0.015 0
10.01~18.00	+0.018 0
18.01~27.00	+0.021 0

Some combinations are unavailable. Refer to the price list to select the available combination.

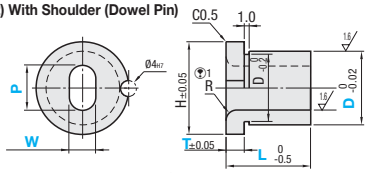
(1) Straight (Dowel Pin)



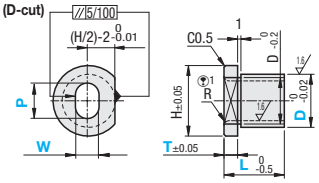
(1) Straight (D-cut)



(2) With Shoulder (Dowel Pin)



(2) With Shoulder (D-cut)



1 When wall is 2mm or less {(D-P)/2≤2}, R is 0.5.

Select Type, Material Code, D Dimension (For details refer to order example below).

Part Number: Type	Material Code: Straight, Dowel 2	Material Code: Straight, D-cut	Material Code: Shoulder, Dowel 2	Material Code: Shoulder, D-cut	D	All Types: 0.01mm Increment P	All Types: 0.01mm Increment W	All Types: L 1mm Increment	All Types: R	(2) With Shoulder only: T Selection	(2) With Shoulder only: H
($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	SC SCS SCC	SCD SCDS	STC STCS STCC	STCD STCDC	8 3	4.00~6.00	P>W (W≥3.00)	(Straight) 5~20 (With Shoulder) 10~20	2.0	2 3 5	D+4
					10	4.00~8.00					
					12	4.00~10.00					
					16	6.00~14.00					
					20	10.00~18.00					
					25	14.00~22.00					
					30 4	20.00~27.00				-	-

2. For Straight type, there must be a 1mm or greater wall thickness between dowel hole and slotted hole ({(D−W)/2}−2≥1).
3. D=8 is applicable to With Shoulder Type only. 4. D=30 is applicable to material of JIS-SKS93 Straight Type only.

Order Example

Part Number										
Type	Material	D	-	P	-	W	-	L	-	T
KJB	STC	12	-	P9.50	-	W4.50	-	L15	-	T2

Days to Ship 8 Days

Price

■Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

(1) Straight € Unit Price

D	Dowel Pin $P^{+0.03}_{+0.01}$ $W^{+0.03}_{+0.01}$	Dowel Pin	Dowel Pin PH7 WH7	Dowel Pin PH7 WH7	Dowel Pin PH7 WH7	D-cut $P^{+0.03}_{+0.01}$ $W^{+0.03}_{+0.01}$	D-cut	D-cut PH7 WH7	D-cut PH7 WH7
	KJBSC	KJBSCS	KJBSCC	KJBHSC	KJBHSCS	KJBHSCC	KJBSCD	KJBSCDS	KJBHSCD	KJBHSCDS
10										
12										
16										
20										
25										
30										

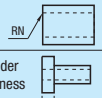
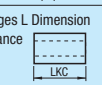
(2) With Shoulder € Unit Price

D	Dowel Pin $P^{+0.03}_{+0.01}$ $W^{+0.03}_{+0.01}$	Dowel Pin	Dowel Pin PH7 WH7	Dowel Pin PH7 WH7	D-cut $P^{+0.03}_{+0.01}$ $W^{+0.03}_{+0.01}$	D-cut	D-cut PH7 WH7
	KJBSTC	KJBSTCS	KJBSTCC	KJBHSTC	KJBHSTCC	KJBSTCD	KJBSTCDC	KJBHSTCD
8								
10								
12								
16								
20								
25								

Alterations

Part Number	-	P	-	W	-	L	-	T	-	(FC · NC...etc.)
KJBHSC20	-	P15.00	-	W12.00	-	L20	-		-	NC

Alterations	Code	Spec.	Price Adder
Groove (For adhesive reservoir) 	FC	Adds a groove for adhesive. D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. Applicable when L≥8 for Straight Type, L≥15 for Shoulder Type.	2,00
Groove (Retaining) 	NC	Adds s groove for retaining. D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. Applicable when L≥8 for Straight Type, L≥15 for Shoulder Type.	3,00

Alterations	Code	Spec.	Price Adder
Radius R Chamfered 	RN	Adds C Chamfering (0.1 or less) to R.	-1,00
Shoulder Thickness Tolerance 	TKC	Changes shoulder thickness tolerance to ±0.01. Applicable to With Shoulder Type only	4,00
Changes L Dimension Tolerance 	LKC	Changes L dimension tolerance to $^{0}_{-0.05}$. Applicable only when L≤19	4,00

Bushings for Inspection Jigs

-Square-

CAD Data

■Applicable pins: **P.1532** (Standard)

■Square

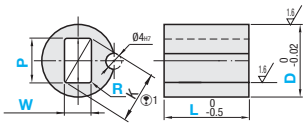


	Material	Hardness	(1) Straight Type	(1) Straight Material Code	(2) With Shoulder Type	(2) With Shoulder Material Code
Dowel Pin	JIS SKS93	50~60HRC	($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	SR	($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	STR
	1.4301/ X5CrNi18-10	-		SRS		-
D-cut	JIS SKS93	50~60HRC	($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	SRD	-	-
	1.4301/ X5CrNi18-10	-		SRDS		-

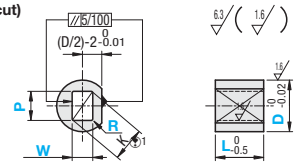
P, W	H7
3.00~6.00	$^{+0.012}_{0}$
6.01~10.00	$^{+0.015}_{0}$
10.01~18.00	$^{+0.018}_{0}$
18.01~22.00	$^{+0.021}_{0}$

(P) Refer to the price list to select the available combination.

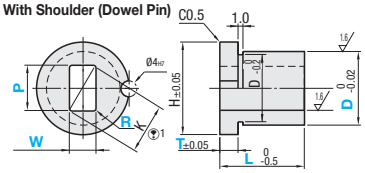
(1) Straight (Dowel Pin)



(1) Straight (D-cut)



(2) With Shoulder (Dowel Pin)



RoHS

(P)1. $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Select Type, Material Code, D Dimension (For details refer to order example below).

Part Number: Type	Material Code: Straight, Dowel (P)2	Material Code: Straight, D-cut	Material Code: Shoulder, Dowel (P)2	D (P)4	All Types: 0.01mm Increment P	W	R	L 1mm Increment	(2) With Shoulder only: T Selection	H
($P^{+0.03}_{+0.01}$ /$W^{+0.03}_{+0.01}$) KJB (PH7 / WH7) KJBH	SR SRS	SRD SRDS	STR	8 (P)3	4.00~6.00	P≥W (W≥3.00)	0.20≤R≤W/2	(Straight) 5~20 (With Shoulder) 10~20	2 3 5	D+4
				10	4.00~8.00					
				12	4.00~10.00					
				16	6.00~14.00					
				20	10.00~18.00					
				25	12.00~22.00					

(P)2. For Straight type, there must be a 1mm or greater wall thickness between Dowel Hole and Square ({(D−P)/2}−2≥1).
(P)3. D=8 is applicable to With Shoulder Type only.(P)4. There must be a 1mm or greater wall thickness between outer dia. and square hole (For D=25, 1.5mm or more). (K≤Pmax)

Order Example

Part Number										
Type	Material	D	- P	- W	- R	- L	- T			
KJB	STR	12	- P9.00	- W4.00	- R0.3	- L15	- T2			

Days to Ship 8 Days

Price

■Volume Discount ((P)Round down to one Cent.) **P.87**

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

D	(1) Straight € Unit Price: Dowel Pin $P^{+0.03}_{+0.01}$ $W^{+0.03}_{+0.01}$	Dowel Pin PH7 WH7	D-cut $P^{+0.03}_{+0.01}$ $W^{+0.03}_{+0.01}$	D-cut PH7 WH7	(2) With Shoulder € Unit Price: Dowel Pin $P^{+0.03}_{+0.01}$ $W^{+0.03}_{+0.01}$	Dowel Pin PH7 WH7
	KJBSR	KJBHSR	KJBSRD	KJBHSRD	KJBSTR	KJBHSTR
	KJBSRS	KJBHSRS	KJBSRDS			
8						
10						
12						
16						
20						
25						

Alterations

Part Number	- P	- W	- R	- L	- T	- (FC · NC...etc.)
KJBHSR20	- P12.00	- W10.00	- R0.3	- L20		- NC

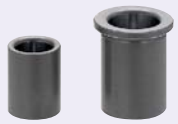
Alterations	Code	Spec.	Price Adder
Groove (For adhesive reservoir) 	FC	Adds a groove for adhesive. (P)D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. (P)Applicable when L≥8 for Straight Type, L≥15 for Shoulder Type.	2,00
Groove (Retaining) 	NC	Adds s groove for retaining. (P)D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. (P)Applicable when L≥8 for Straight Type, L≥15 for Shoulder Type.	3,00

Alterations	Code	Spec.	Price Adder
Shoulder Thickness Tolerance 	TKC	Changes shoulder thickness tolerance to ±0.01. (P)Applicable to With Shoulder Type only	4,00
Changes L Dimension Tolerance 	LKC	Changes L dimension tolerance to $^{0}_{-0.05}$. (P)Applicable only when L≤19	4,00

Bushings for Inspection Jigs
-Stepped and Male Thread-

■Applicable pins: **P.1543**, **P.1547** Straight

■Stepped and Male Thread –For Straight Pin–





RoHS

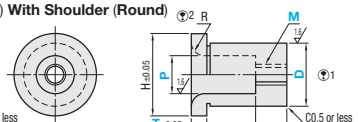
	Material	Hardness	Surface Treatment	(1) Straight Round Type	(1) Straight Round Material Code	(1) Straight Dowel Pin Type	(1) Straight Dowel Pin Mat. Code	(2) With Shoulder Round Type	(2) With Shoulder Round Mat. Code	(2) With Shoulder Dowel Pin Type	(2) With Shoulder Dowel Pin Mat. Code
Standard Type ($D_{-0.02}^{0}$)	JIS SKS93	50~60HRC	-	($P^{+0.03}_{+0.01}$)	M	($P^{+0.03}_{+0.01}$)	M	($P^{+0.03}_{+0.01}$)	MT	($P^{+0.03}_{+0.01}$)	MT
	JIS SKS93	50~60HRC	Electrol. Nickel Plating	KJB	MM	KJBK	-	KJB	-	KJBK	-
	1.4301	-	-	(P_{H7})	MS	(P_{H7})	MS	(P_{H7})	MTS	(P_{H7})	-
	1.4125 eq.	45~50HRC	-	KJBH	MC	KJBKH	-	KJBH	MTC	KJBKH	-
Press Fit Type (D_{p6})	JIS SKS93	50~60HRC	-	($P^{+0.03}_{+0.01}$)	M	-	-	($P^{+0.03}_{+0.01}$)	MT	-	-
	1.4301	-	-	KJBP				KJBP			
				(P_{H7})	-	-	-	(P_{H7})	MTS	-	-
				KJBPH				KJBPH			

Refer to the price list to select the available combination.

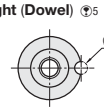
(1)Straight (Round)



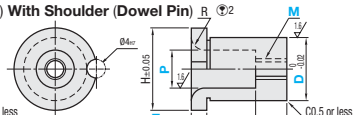
(2) With Shoulder (Round)



(1)Straight (Dowel)



(2) With Shoulder (Dowel Pin)



6.3 / (1.6 /)

P	H7
3.00~6.00	$^{+0.012}_{0}$
6.01~10.00	$^{+0.015}_{0}$
10.01~18.00	$^{+0.018}_{0}$
18.01~23.00	$^{+0.021}_{0}$

1. Press-fit type has a 1~3mm guide part ($D_{-0.05}^{-0.03}$)
2. When wall is 2mm or less (D–P)/2≤2, R is 0.5. 3. When L≤4, no R. 4. When P=M, inner diameter of P dimension will have thread runout.

Select Type, Material Code and D Dimension.

Part Number Type	Material Code (1) Straight	Material Code (2) With Shoulder	D	P 0.01mm Increment	M(P≥M) Selection	L 1mm Increment	B 1mm Increment	(2) With Shoulder only T	(2) With Shoulder only H	R
(Standard) (Round) KJB KJBH (Press Fit) KJBP KJBPH	M MM MS 6 MC	MT MTS 6 MTC	8	3.00~6.00	3 4	0 (When L=0, specify P as 0.) 3~25 (When P≤3.59 L≤Px2.5 When P≥3.60 L≤Px3)	5~25 (M≤B≤Mx3) When M3 (M≤B≤Mx2)	2 3 5	D+4	1.0 2.0
(Dowel Pin) KJBK KJBKH			10	4.00~8.00	4 5 6 8					
			12	4.00~10.00	4 5 6 8 10					
			16	8.00~14.00	5 6 8 10 12					
			20	10.00~18.00						
			25	15.00~23.00						

5. For Straight Dowel Pin Type, there must be a 1mm or grater wall thickness between inner dia. and dowel hole {(D–P)/2≥3}. 6. For 1.4301/X5CrNi18-10, there must be a 2mm or greater wall thickness {(D–P)/2≥2}.

Order Example

Part No.	Type	Material	D		P		M		L		B		T
KJBMT12				-	P8.00	-	M5	-	L10	-	B10	-	T2

Days to Ship 8 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	(1) Straight € Unit Price Round P $^{+0.03}_{+0.01}$ KJBM KJBPM	KJBMM	KJBMS	KJBMC	Round P_{H7} KJBHM KJBPHM	KJBHMM	KJBHMS	Dowel Pin P $^{+0.03}_{+0.01}$ KJBKM	KJBKMS	Dowel Pin P_{H7} KJBKHM	KJBKHMS
8											
10											
12											
16											
20											
25											

D	(2) With Shoulder € Unit Price Round P $^{+0.03}_{+0.01}$ KJBMT	KJBMTS KJBPMTS	KJBMTC	Round P_{H7} KJBHMT KJBPHMT	KJBHMTS	Dowel Pin P $^{+0.03}_{+0.01}$ KJBKMT	Dowel Pin P_{H7} KJBKHMT
8							
10							
12							
16							
20							
25							

Alterations

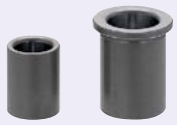
Part Number		P		M		L		B		T		(FC · NC...etc.)
KJBM12	-	P8.00	-	M5	-	L10	-	B10	-		-	FC

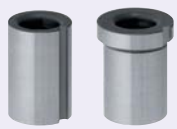
Alterations	Code	Spec.	Price Adder
Groove (to accumulate adhesives)	FC	Adds groove for accumulating adhesives. D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. Applicable when L+B≥10 for Straight Type, L+B≥15 for Shoulder Type.	2,00
Groove (Retaining)	NC	Adds groove for retaining. D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. Applicable when L+B≥10 for Straight Type, L+B≥15 for Shoulder Type.	3,00
Radius R C Chamfered	RN	Adds C Chamfering (0.5 or less) to R.	Free of charge

Alterations	Code	Spec.	Price Adder
Radius R Square Corner	CRN	Replaces R with square corner. Edge may be burred ⊗Combination with TKC is not available.	Free of charge
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment Applicable to material JIS (except electroless nickel plating) only.	2,00
Shoulder Thickness Tolerance	TKC	Changes shoulder thickness tol. to ± 0.01. Applicable to With Shoulder Type only ⊗Combination with alteration CRN is not available.	4,00
Flats Alteration	HT	Adds a flat on bushing. Applicable to Round Type only. No flat on shoulder part	2,00

■Applicable pins: **P.1545**, **P.1547** (Taper)

■Stepped and Male Thread –For Taper Pin–



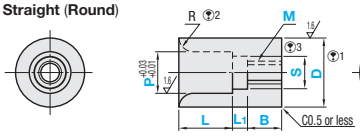


RoHS

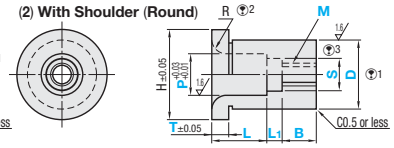
	M Material	H Hardness	S Surface Treatment	(1) Straight Round Type	(1) Straight Round Material Code	(1) Straight Dowel Pin Type	(1) Straight Dowel Pin Mat. Code	(2) With Shoulder Round Type	(2) With Shoulder Round Mat. Code	(2) With Shoulder Dowel Pin Type	(2) With Shoulder Dowel Pin Mat. Code
Standard Type ($D_{-0.02}^{0}$)	JIS SKS93	50~60HRC	-	($S^{+0.03}_{+0.01}$) KJB	W	($S^{+0.03}_{+0.01}$) KJBK	W	($S^{+0.03}_{+0.01}$) KJB	TW	($S^{+0.03}_{+0.01}$) KJBK	TW
	JIS SKS93	50~60HRC	Electroless Nickel Plating	(S_{H7}) KJBH	WM		-	(S_{H7}) KJBH	-	(S_{H7}) KJBKH	-
Press Fit Type (D_{p6})	JIS SKS93	50~60HRC	-	(S_{H7}) KJBPH	W	-	-	(S_{H7}) KJBPH	TW	-	-

Refer to the price list to select the available combination.

(1) Straight (Round)



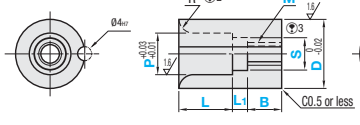
(2) With Shoulder (Round)



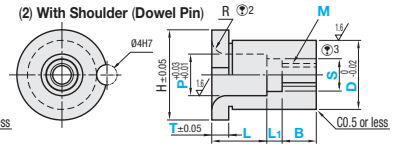
6.3 (1.6)

S	H7
3~6	+0.012 0
7~10	+0.015 0
11~18	+0.018 0
19	+0.021 0

(1) Straight (Dowel Pin) ④4



(2) With Shoulder (Dowel Pin)



①1 Press-fit type has a 1~3mm guide part ($D_{-0.05}^{-0.03}$).
②2 When wall is 2mm or less (D–P)/2≤2, R is 0.5. ③3 When S=M, inner diameter of S dimension will have thread runout.

Select Type, Material Code and D Dimension.

Part Number Type	Material Code (1) Straight	Material Code (2) With Shoulder	D	P 0.01mm Increment	S(S≤P–1) 1mm Increment	M Selection	L 1mm Increment	L_1 1mm Increment	B 1mm Increment	(2) With Shoulder only T	(2) With Shoulder only H	R
(Standard) (Round) KJB (Dowel Pin) KJBK	W	TW	8	4.00~6.00	3~5	3 4	3~25 (L≤Px2.5)	3~25 (L+L1≤Sx2.5)	5~25 (M≤B≤Mx3) When M3 (D8) (M≤B≤Mx2) When S=M L1+B≤Mx3	2 3 5	D+4	1.0
KJBH KJBKH	WM		10	5.00~8.00	4~7	4 5 6 8 10 12 (P≥M) (S≥M)						2.0
(Press Fit) KJBPH			12	5.00~10.00	4~9		3~25 (L≤Px3) No R for L3 and L4.	3≤L1<25-L (L+L1≤Sx3)				
			16	8.00~14.00	4~13							
			20	10.00~18.00	6~17							
			25	15.00~23.00	8~19							

④4. For Straight Dowel Pin Type, there must be 1mm or grater wall thickness between inner dia. and dowel hole {(D–P)/2≥3}.

Order Example

Part Number	Type	Material	D	P	S	M	L	L_1	B	T
KJBTW10				P8.00	S5	M4	L8	4	B10	T2

Days to Ship 8 Days

Price

■Volume Discount (Round down to one Cent.) P 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	(1) Straight € Unit Price Round S +0.03 +0.01 KJBW	(1) Straight € Unit Price Round SH7 KJBWM	(1) Straight € Unit Price Round SH7 KJBHW KJBPHW	(1) Straight € Unit Price Dowel Pin S +0.03 +0.01 KJBKW	(2) With Shoulder € Unit Price Round S +0.03 +0.01 KJBTW	(2) With Shoulder € Unit Price Round SH7 KJBHTW KJBPHTW	(2) With Shoulder € Unit Price Dowel Pin S +0.03 +0.01 KJBKTW	(2) With Shoulder € Unit Price Dowel Pin SH7 KJBKHTW
8								
10								
12								
16								
20								
25								

Alterations

Part Number - P - S - M - L - L_1 - B - T - (FC · PKC · NC...etc.)
KJBW12 - P8.00 - S6 - M5 - L10 - 4 - B10 - FC

Alterations	Code	Spec.	Price Adder
Groove (to accumulate adhesives)	FC	Adds groove for accumulating adhesives. ①D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. ②Applicable when L+L_1+B≥10 for Straight Type, L+L_1+B≥15 for Shoulder Type.	2,00
Groove (Retaining)	NC	Adds groove for retaining. ①D≥P+3: Applicable only when a wall of 1.5mm or thicker is remaining. ②Applicable when L+L_1+B≥10 for Straight Type, L+L_1+B≥15 for Shoulder Type.	3,00
Radius R C Chamfered	RN	Adds C Chamfering (0.5 or less) to R.	Free of charge
Radius R Square Corner	CRN	Replaces R with square corner. ①Edge may be burred ⊗Combination with TKC is not available.	Free of charge

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment ①Applicable to material JIS (except electroless nickel plating) only.	2,00
P Dimension Tolerance	PKC	Changes P dimension tolerance to H7.	2,00
Shoulder Thickness Tolerance	TKC	Changes shoulder thickness tolerance to ±0.01. ①Applicable to With Shoulder Type only ⊗Combination with alteration CRN is not available.	4,00
Flats Alteration	HT	Adds a flat on bushing. ①Applicable to Round Type only. ①No flat on shoulder part	2,00

Bushings for Inspection Jigs
-Retaining Male Thread Bushings-

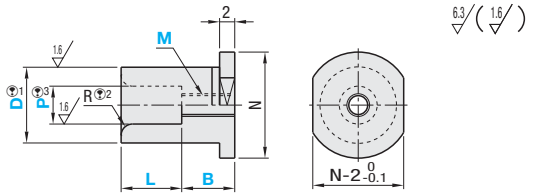
CAD Data

Features: This bushing is machined to prevent from being pulled up when clamped. For applicable pins, refer to **P.1543**

RoHS



	Material	Hardness	P Tolerance	Type
Standard Type ($D^{0}_{-0.02}$)	JIS SKS93	50~60HRC	$P^{+0.03}_{+0.01}$	KJBNM
Press Fit Type (D P6)	JIS SKS93	50~60HRC	$P^{+0.03}_{+0.01}$	KJBPNM



(1) Press-fit type has a 1~3mm guide part ($D^{-0.03}_{-0.05}$).
(2) When thickness is 2 mm or less {(D-P)/2≤2}, R is 0.5. When L≤4, R is nil.
(3) When P=M, inner diameter of P dimension will have thread runout.

Part Number Type	D	P 0.01mm Increment	M(P≥M) Selection	L 1mm Increment	B 1mm Increment	N	R	€ Unit Price KJBNM KJBPNM
Standard ($D^{0}_{-0.02}$) KJBNM	8	3.00~6.00	3 4	0 (When L=0, specify P=0.) / 3~25 (When P≤3.59 L≤Px2.5 When P≥3.60 L≤Px3)	5~25 (M≤B≤Mx3) When M3 (M≤B≤Mx2)	D+4	1.0	
	10	4.00~8.00	4 5 6 8				2.0	
	12	4.00~10.00	4 5 6 8 10					
Press Fit (D P6) KJBPNM	16	8.00~14.00						
	20	10.00~18.00	5 6 8 10 12					
	25	15.00~23.00						

Order Example

Part Number		-	P	-	M	-	L	-	B
Type	D								
KJBNM	10	-	P5.00	-	M4	-	L15	-	B10

Days to Ship

10 Days

Price

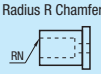
Volume Discount (Round down to one Cent.) **P.87**

Quantity	1~4	5~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	P	-	M	-	L	-	B	-	(STC · RN · CRN)
KJBNM12	-	P6.00	-	M5	-	L15	-	B10	-	RN

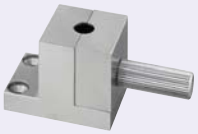
Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00
Radius R Chamfered 	RN	Adds C Chamfering (0.5 or less) to R.	Free of charge
Radius R Square Corner 	CRN	Replaces R with square corner. (3) Edge may be burred	Free of charge

Locating Blocks for Inspection Jigs
-Clip Detaching Blocks for Plastic Panels-

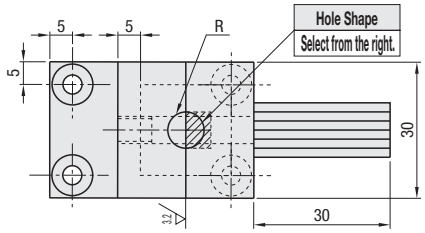
CAD Data

Features: This block facilitates removal and attachment of clips for plastic panels.

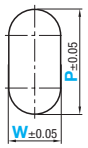
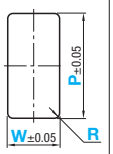
RoHS

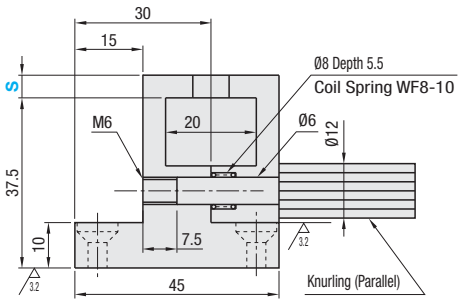


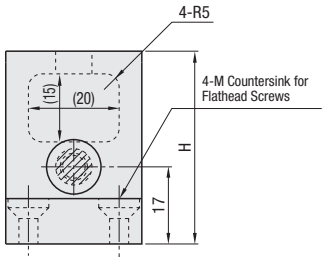
KJRSB(Round)
KJRSBC(Oval)
KJRSBR(Square)



Hole Shape

B(Round)	BC(Oval)	BR(Square)
		





M Material: 1.1191/C45E

Part Number		All Types	Oval, Square	Square			€ Unit Price		
Type	Hole Shape	P 0.05mm Increment	W 0.05mm Increment	R 0.05mm Increment	S 0.05mm Increment	H	KJRSB	KJRSBC	KJRSBR
KJRS	(Round) B (Oval) BC (Square) BR	3.00~22.00	Oval: P>W (W≥3.00) Square: P≥W (W≥3.00)	0.2≤R≤W/2	0.5~5.00	S+37.5			

Order Example

Part Number	-	P	-	W	-	R	-	S
KJRSB	-	P10.0					-	S2.00
KJRSBR	-	P10.0	-	W6.00	-	R2.0	-	S1.65

Days to Ship

10 Days | Express B | 5,00 EUR/ piece | P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

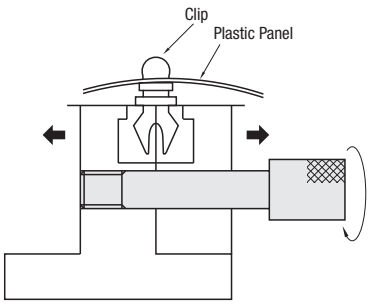
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Example



Turning the knurled pin opens and closes the block.

Bushings for Inspection Jigs

-Male Thread Bushings · For Plastic Panels-

CAD Data

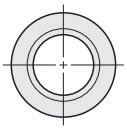
■Male Thread Bushings

RoHS

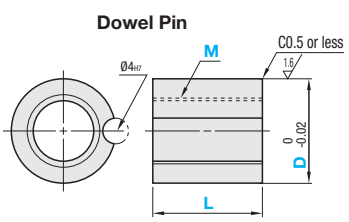


M Material	Round	Dowel Pin
1.1191/C45E	KJBND	KJBKND

Round



Dowel Pin



Part Number Type	D	M Selection	L 1mm Increment	€ Unit Price KJBND	€ Unit Price KJBKND
KJBND KJBKND	10	4 5* 6*	6~25 (L≤Mx3)		
	12	4 5 6 8*			
	16	5 6 8 10 S10			
	20	5 6 8 10 S10			

For KJBKND, M size with * is not available for selection.

S10 is M10 fine thread (pitch 1.25)

Order Example: Part Number - M - L → KJBND16 - M6 - L15

Days to Ship: 8 Days

Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

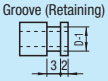
■Volume Discount (Round down to one Cent.) P87

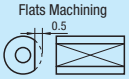
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations: Part Number - M - L - (FC, NC...etc.) → KJBND16 - M6 - L15 - FC

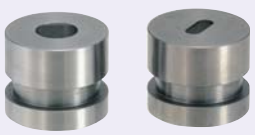
8 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Groove (For adhesive reservoir) 	FC	Adds a groove for adhesive.	2,00
Groove (Retaining) 	NC	Adds s groove for retaining.	3,00

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	2,00
Flats Machining 	HT	Adds a flat on bushing. Applicable to Round Type only.	2,00

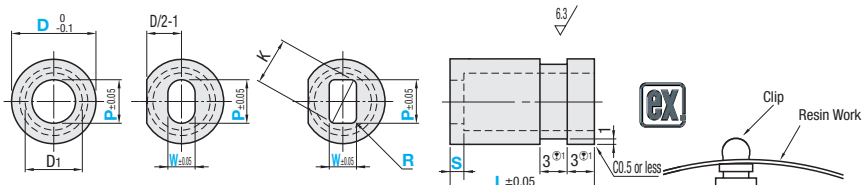
■For Plastic Panels

RoHS



	M Material	H Hardness	Round Type	Round Material Code	Oval Type	Oval Material Code	Square Type	Square Material Code
Standard	1.1191/C45E	17~23HRC	KJR	B	KJR	BC	KJR	BR
	1.4301	-		BS		-		BRS
Thin Wall	1.1191/C45E	17~23HRC	KJRU	B	KJRU	BC	KJRU	BR

Round / Oval[2] / Square[3]



1. 2mm when L is 8mm or less.
2. Oval: P>W
3. Square: P≥W, $0.20 \le R \le \frac{W}{2}$, D-2≥K, $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Use clips at hand.

Part Number Type	Material Code Round	Material Code Oval	Material Code Square	D	P 0.05mm Increment	L 1mm Increment	W 0.05mm Increment	R 0.1mm Increment	S 0.05mm Increment	D1 Standard	D1 Thin Wall	€ Unit Price Standard KJRB	KJRBC KJRBR	KJRBS	KJRBRS	€ Unit Price Thin Wall KJRUB	KJRUBC KJRUBR
Standard KJR Thin Wall KJRU	(Common for KJR, KJRU) B	BC (KJR Only)	BR	16	3.00~8.00	6~25	Oval: P>W (W≥3.00) Square: P≥W (W≥3.00)	0.2≤R≤ W/2	0.50~5.00 (For 1.4301/ X5CrNi18-10) 1.00~5.00	10	12						
				20	4.00~12.00					14	16						
	BS		BRS	25	4.00~17.00					19	21						
				30[4]	4.00~22.00					26	-						

4. D=30 is applicable to standard type only. (For standard type is the thinnest.)

Order Example: Part Number - P - L - W - R - S → KJRUB20 - P6.0 - L15 - S0.80; KJRUBC25 - P10.0 - L10 - W6.5 - S2.00

Alterations: Part Number - P - L - W - R - S - (STC · HT) → KJRBR20 - P8.0 - L6 - W6 - R0.5 - S1.0 - STC

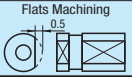
Days to Ship: 8 Days

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment Applicable to Material 1.1191/C45E only.	2,00
Flats Machining 	HT	Adds a flat on bushing. Applicable to Round Type only.	2,00

Shim Plates / Height Adjusting Pins

-Square · Round- -Standard · Male Thread-

CAD Data

■Shim Plates -Square-



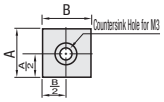
RoHS

Type			M Material	H Hardness
No Hole Type	Hole Type	Blank Type		
KJTC	KJTCH	KJTCB	1.0038/S235JR	-
KJTCY	-	-	1.1191/C45E	40~45HRC

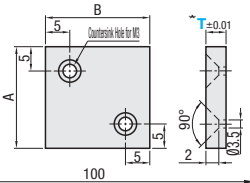
*When T=2, only countersinking is applicable.

■No Hole Type

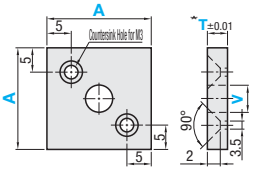
* For 1 countersink hole



* For 2 countersink holes

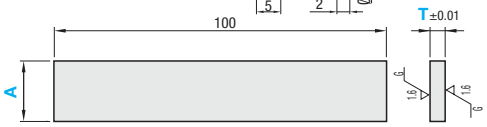


■Hole Type



■Blank Type

(Cut as required.)



■No Hole Type

Part Number Type	No.	Number of Counter-sinks	T Selection	A	B	€ Unit Price KJTC T=2	KJTC 3	KJTC 5	KJTCY T=2・3・5
	10	1	2	10	10				
	10-15			10	15				
	10-20			10	20				
	15			15	15				
(No Hardening) KJTC	15-20			15	20				
	18	2	3	18	18				
	20			20	20				
(Hardening) KJTCY	20S	1		20	20				
	20-25	2	5	20	25				
	20-30			20	30				
	20-40			20	40				
	25			25	25				
	30			30	30				

■Hole Type

Part Number Type	A	T Selection	V Selection	€ Unit Price T=2	3	5
(No Hardening) KJTCH	25	2	6 8 10			
		3	13			
	30	5	12 14 16			
	35		18 20 22			

■Blank Type

Part Number Type	A	T	€ Unit Price
(No Hardening) KJTCB	16	3	
	19		
	20		

Sizes without price indications are not available.

■Shim Plates -Round-

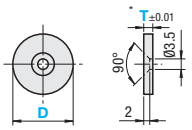


RoHS

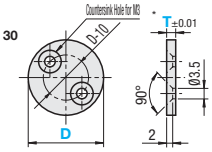
Type	M Material	H Hardness
KJTCC	1.0038/S235JR	-
KJTCCY	1.1191/C45E	40~45HRC

*When T=2, only countersinking is applicable.

D=10, 15



D=20, 25, 30



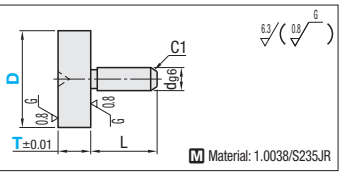
Part Number Type	D	T Selection	€ Unit Price KJTCC	KJTCCY
KJTCC KJTCCY	10	2 3 5		
	15			
	20			
	25			
	30			

■Height Adjusting Pins -Standard-



RoHS

KJTP



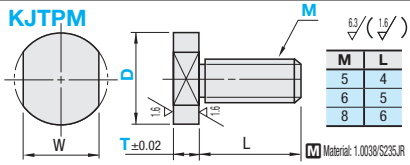
M Material: 1.0038/S235JR

■Height Adjusting Pins -Male Thread-



RoHS

KJTPM



M	L
5	4
6	5
8	6

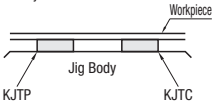
M Material: 1.0038/S235JR

Part Number Type	D	T Selection	d	L	€ Unit Price
KJTP	10	2	4	5	
	12		5	8	
	16	3			
	18	5	10	12	
	20				

Part Number Type	D	T	M	W	€ Unit Price
KJTPM	10	3	5 6	8	
	12		5 6	10	
	16		6 8	14	

Example

Products on this page are for height adjustment.



Order Example

Part Number	-	T	-	V	-	M
KJTC10-2	-	3				
KJTCH30	-	5	-	V12		
KJTCB19	-	3				
KJTPM12	-	3			-	M6

Days to Ship

- KJTCB: 6 Days P.88
- Other Types: 8 Days

Express A | 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~15	16~19	20~49
Rate	€ Unit Price	5%	10%	18%

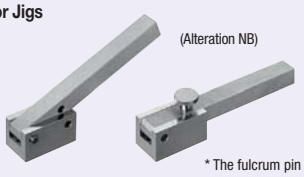
For orders larger than indicated quantity, please request a quotation.

Hinge Units for Jigs / Slide Units for Jigs / Hinge Unit Bases / Slide Unit Bases
-Horizontal · Vertical-

Features: Units with horizontal-move / sliding arms. Machine the arms for work shape measurements.
Alphabetical letters are engraved on the rail and arm. Please use a pair of rail and arm of the matching letters.

Hinge Units for Jigs -Horizontal-

RoHS



(Alteration NB)

* The fulcrum pin is optional. P.819~

Slide Units for Jigs

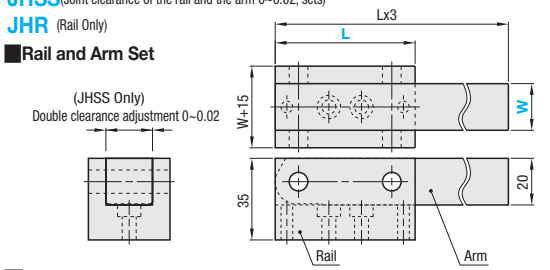
RoHS



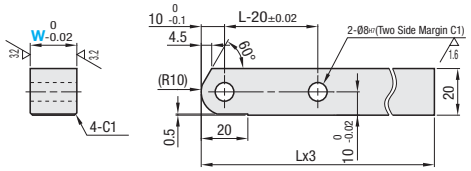
* Rail, lid and arm are not assembled prior to shipping.

JHS (Rail · Arm Set)
JHSS (Joint clearance of the rail and the arm 0~0.02, sets)
JHR (Rail Only)

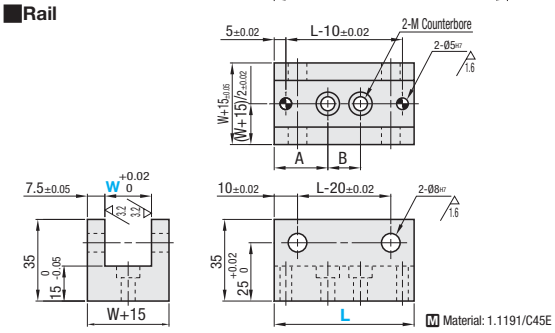
Rail and Arm Set



Arm

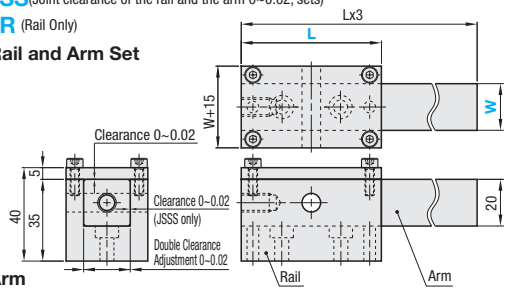


Rail

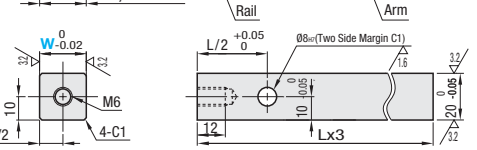


JSS (Rail · Arm Set)
JSSS (Joint clearance of the rail and the arm 0~0.02, sets)
JSR (Rail Only)

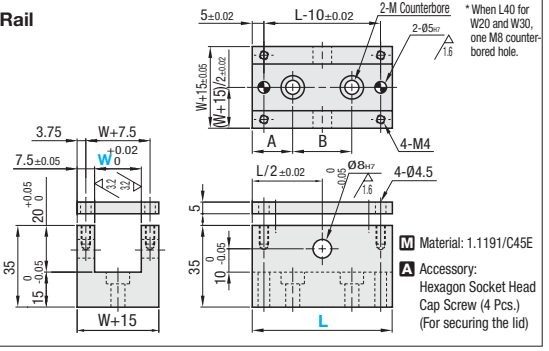
Rail and Arm Set



Arm



Rail



* When L40 for W20 and W30, one M8 counterbored hole.

M Material: 1.1191/C45E
A Accessory: Hexagon Socket Head Cap Screw (4 Pcs.) (For securing the lid)

Hinge Units for Jig

Part Number		L	Counterbored Hole Size M*	Counterbored Hole Position		Alteration NB (Setting Knob Bolts) Dimensions for actual use.				€ Unit Price		
Type	W			A	B	m	Z	h	d	JHS	JHR	JHSS
Rail and Arm Set	10	60	For M5	23	14	-	-	-	-			
JHS (Clearance 0~0.02)	20		For M6			M6	12.5	15	24			
JHSS (Rail Only)	30											
JHR	50	80	For M8	26.5	27	M8	13.5	18	30			

Slide Units for Jig

Part Number		L Selection	Counterbored Hole Size M*	Counterbored Hole Position	€ Unit Price		
Type	W				JSS	JSR	JSSS
(Rail • Arm Set)	10	40	M5 2 holes	L=40:A=13.75 B=12.5 L=60:A=20 B=20			
JSS (Clearance 0~0.02)	20	60	L=40: M8 1 holes L=60: M6 2 holes	L=40:A=20 B=0			
JSSS (Rail Only)	30			L=60:A=20 B=20			
JSR	50	80	M 8 2 holes	A=26.5B=27			

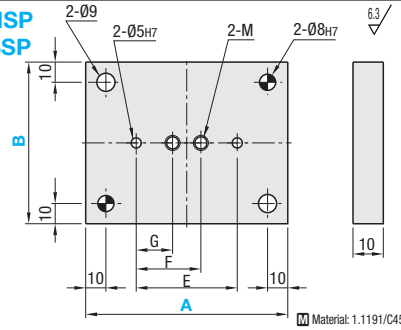
* For detailed sizes of the counterbored holes, refer to Technical Data on P.1958

Hinge, Slide Unit Bases for Inspection



RoHS

JHSP
JSSP



Part Number		B Selection	Applicable Hinge Unit	G	F	E (± 0.02)	€ Unit Price
Type	A						
Hinge Unit Bases JHSP	100	65	JHS_10-60	17	32	50	
		75	JHS_20-60				
		85	JHS_30-60				
	120	105	JHS_50-80	21.5	48.5	70	
Slide Unit Bases JSSP	80	65	JSS_10-40	8.75	21.25	30	
		75	JSS_20-40	15	0		
		85	JSS_30-40				
	100	65	JSS_10-60	15	35	50	
		75	JSS_20-60				
		85	JSS_30-60				
	120	105	JSS_50-80	21.5	48.5	70	

Reduced Delivery Time

CAD Data

Features: Vertically moving arm type. Machine arms for work shape measurement.

Hinge Units for Jigs -Vertical-

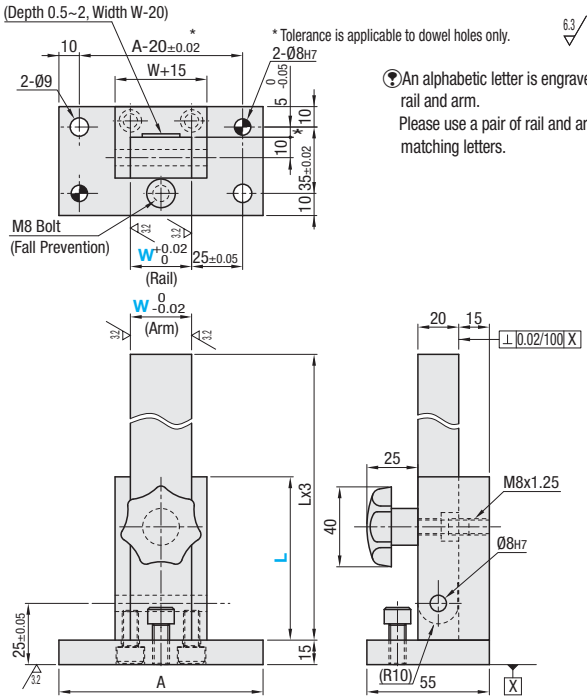
RoHS





* The fulcrum pin is optional. P.819~

JHTS



An alphabetic letter is engraved on each rail and arm.
Please use a pair of rail and arm of the matching letters.

Material: 1.1191/C45E

Part Number Type	W	L Selection	A	€ Unit Price
JHTS	30	60	100	
	50	80	120	

Order Example

Part Number	-	L	-	B
JHS20	-	60		
JSS20	-	40		
JHSP100			-	75
JHTS30	-	60		

Days to Ship 10 Days

Express B 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13, 14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Alterations

Hinge Units for Jigs -Horizontal- / Slide Units for Jigs

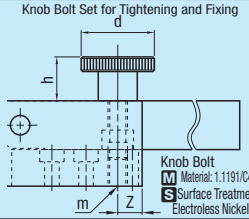
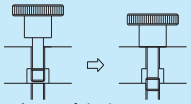
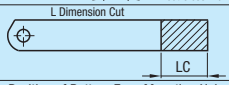
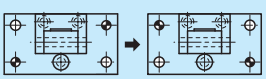
Part Number	-	L	-	(STC / NB / LC)
JHS20	-	60	-	NB
JSS20	-	60	-	LC20

10 Days ⊗Express Service is not available.

Hinge Units for Jigs -Vertical-

Part Number	-	L	-	(STC · LC · SYM)
JHTS50	-	80	-	LC10

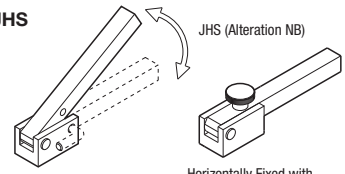
10 Days ⊗Express Service is not available.

Alterations	Code	Spec.	Price Adder
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment	5,00
Knob Bolt Set for Tightening and Fixing 	NB	Instead of L pin hole, a knob bolt is installed. Also includes a special knob bolt (Drop-proof). Only for W20, 30, 50 of JHS.  - Knob bolt has drop-proof structure. - The Knob Bolt's threaded section retracts into the counterbore when the arm is lowered not damage the rail.	4,00
L Dimension Cut 	LC	Cuts L Dimension of the arm. Ordering Code LC20 (10mm Increment) 10≤LC≤Lx2	4,00
Position of Bottom Face Mounting Hole 	SYM	Positions the dowel hole and mounting hole symmetrically. Applicable to JHTS only.	4,00

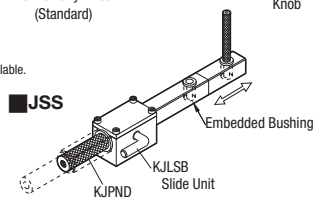
Example

Machine the arm as required.

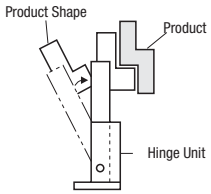
JHS



JSS



JHTS



Angle Plate Sets for Jigs · Angle Plates Support Stands

Features: Machine the arm tip for product inspection and measurement. (Refer to the example on the right page for details.)

Angle Plate Set for Jigs –For Horizontal Rest Position–

For Left Turning



For Right Turning



Angle Plate Set for Jigs –For Vertical Rest Position–

RoHS

For Left Turning



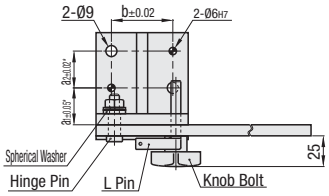
For Right Turning



For Horizontal Rest Position

JIF (Set)

JINF (No Arm)

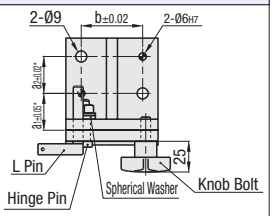


* Tolerance is applicable to the dowel hole only.

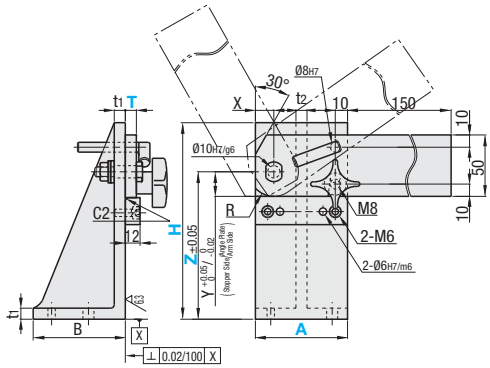
For Vertical Rest Position

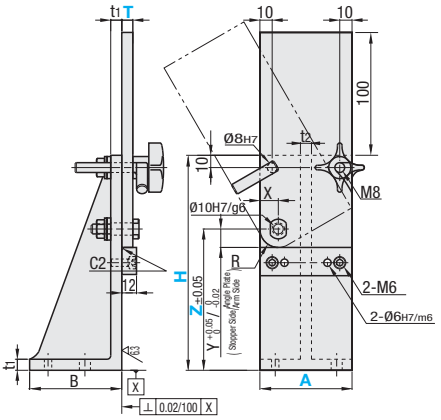
JIL (Set)

JINL (No Arm)



* Tolerance is applicable to the dowel hole only.





- The drawing shows a right facing type. Mounting hole position on bottom is common for right and left facing types. Specify Alteration SYM to change to symmetrical mounting hole positions.
- Height of pivot hole (Z dimension) is selectable.
- Set products have alphabetical letters engraved on the rail and arm. Please use a pair of rail and arm of the matching letters.
- Stopper is assembled, but the arm is not assembled prior to shipping.
- *For no-arm, L pin hole on angle plate is pilot hole (Ø7.8).

M Material:
Angle Plate : 1.0038/S235JR
1040/EN-GJL-250
Arm Stopper : 1.0038/S235JR

A Accessory:
■ For Pivot Hole: Hinge Pins (For H=~200) CLBGNU10-24-FC21
(For H=250) CLBGNU10-27-FC21
Spherical Washer No MISUMI P/N
(1.1191/C45E/32-38HRC/ Black Oxide)

		(MISUMI P / N)
For Arm Fixing	L Pin (Straight)	KJLSB8
	(Tapered)	KJLB8
	Knob Bolt	NCRM8
For Fixing Stoppers	Screws 2	CB6-20
	Dowel Pins 2	MSTM6-20

Part Number			H Selection	T Selection	Z 5mm Increment		L Pin	Pivot Position · Arm Dimensions			Angle Plate Dimensions			Mounting Hole Position Dimensions		
Type	Direction	A			Flat Arm	L Arm		X	Y · R Flat Arm	Y · R L Arm	B	t1	t2	a1	a2	b
JIF	(Left Turning) L	50	100	9 12	45~ 60	60	(Tapered) TP	10	10	10	50	15	8	25	15	30
JIL			150		65~110	60~110										
JINF	(Right Turning) R	75	150		55~120	60~ 90	(Straight) ST	15	20	15	75		14	30	30	50
JINL			200		125~170	60~140										
		100	200		55~170	60~120					120	18	15	50	50	70
			250		175~220	60~170										

Order Example

Part Number	-	X	-	T	-	Z	-	L Pin
JIFL75	-	H150	-	T9	-	Z110	-	TP
JINFR50	-	H100			-	Z50	-	ST

Days to Ship 10 Days — Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

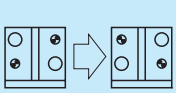
Quantity	1~4	5~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

A	H	€ Unit Price JIF	JIL	JINF JINL
50	100			
	150			
75	150			
	200			
100	200			
	250			

Alterations

Part Number	-	H	-	T	-	Z	-	L Pin	-	(SYM · NNA)
JIFL75	-	H150	-	T9	-	Z110	-	TP	-	SYM

Alterations	Code	Spec.	Price Adder
Position of Bottom Face Mounting Hole 	SYM	Positions the dowel hole and mounting hole symmetrically.	3,00
No Stopper Dowel Hole 	NNA	Eliminates dowel holes on stopper part and assembles L pin hole temporarily at Ø7.8. (Dowel pins and L pins are attached.) Adjust by spot fixing before use. (Adjustments required)	-400

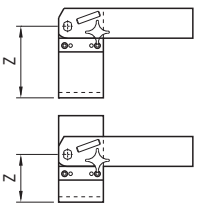
NEW

CAD Data

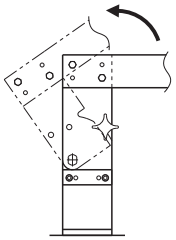
Example

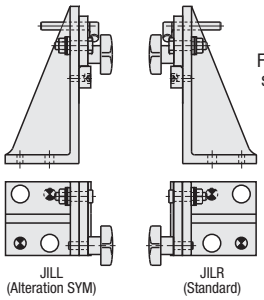
Height of pivot hole is adjustable.

(Positions of stopper and of L pins and knob bolts for horizontal position are adjusted at the same time.)



For Vertical Rest Position Type, connect attachments as required.

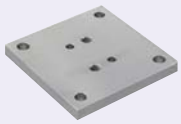




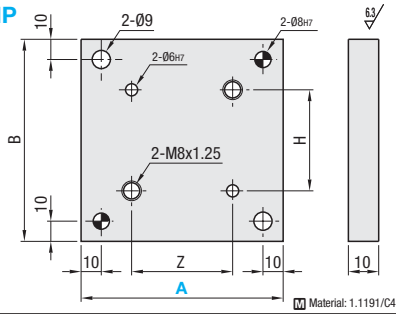
For mounting angle plates symmetrically

■ Angle Plate for Jig

RoHS



JIP



Part Number Type	A	Applicable Angle Plate	B	Z ±0.02	H ±0.02	€ Unit Price
JIP	70	JI_ _ _50	70	15	30	
	115	JI_ _ _75	115	30	50	
	140	JI_ _ _100	160	50	70	

Order Example Part Number: JIP70

Days to Ship 10 Days — Express B 5,00 EUR/piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

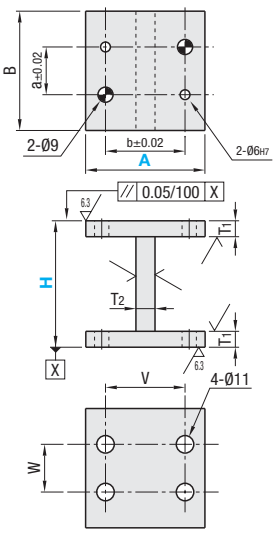
■ Angle Plate Support Stand

RoHS

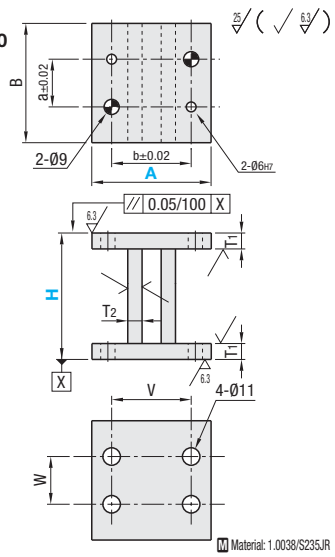


JIST

A=50, 75



A=100



Part Number Type	A	H Selection	B	a	b	T1	T2	V	W	€ Unit Price H100	H150 · H200	H250
JIST	50	100	50	15	30	10	9	35	15			
	75	150 200	75	30	50		25	50	30			
	100	250	120	50	70		9	70	50			

Order Example Part Number: JIST50 - H: 200

Days to Ship 10 Days — Express B 5,00 EUR/piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Clamp Plates for Inspection Components

CAD Data

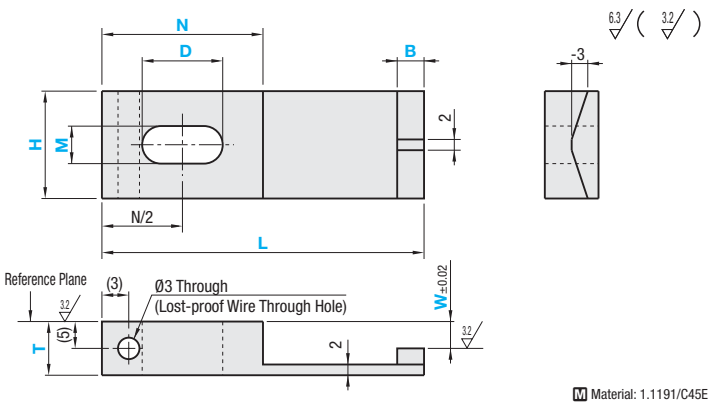
Features: Clamp plates for clamping inspection jigs and panel parts to set reference positions.

Edge Shape Selectable Type



RoHS

KJCLPS



Material: 1.1191/C45E

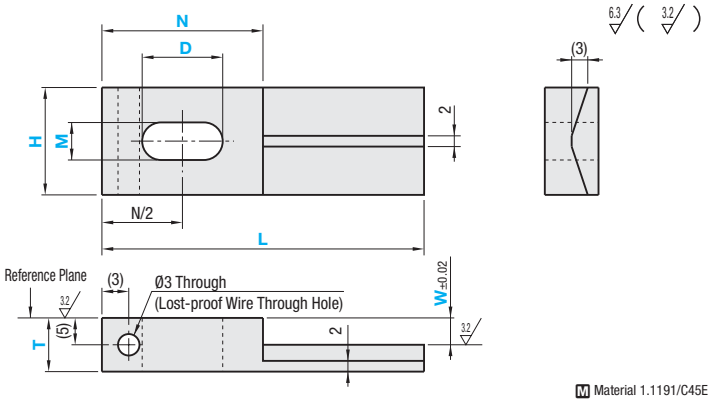
Part Number Type	L	H	B	T	M	D	N	W 0.1mm Increment	€ Unit Price
KJCLPS	40	15	5	10	5	10	20 25 30	When T = 10 0~7	
		20	10			15	20 25		
	60		5	15	7	20	25	When T = 15 0~12	
	80	15 20 30	10			(N>D)	30 35		

Straight Edge Type



RoHS

KJCLP



Material 1.1191/C45E

Part Number Type	L	H	T	M	D	N	W 0.1mm Increment	€ Unit Price
KJCLP	40	15	10	5	10	25	When T = 10 0~7	
	60	20			15 20	30		
	80	15 20 30	15	7	(N>D)	35	When T = 15 0~12	

Order Example

Part Number	-	H	-	B	-	T	-	M	-	D	-	N	-	W
KJCLPS40	-	H15	-	B5	-	T10	-	M5	-	D10	-	N25	-	W2.0
KJCLP60	-	H20			-	T10	-	M7	-	D15	-	N30	-	W3.0

Days to Ship

10 Days | Express B | 5,00 EUR/ piece | P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

L Pin · T Pin

CAD Data

L Pin

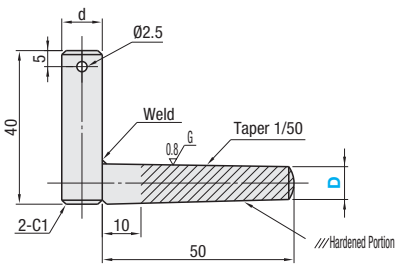
RoHS



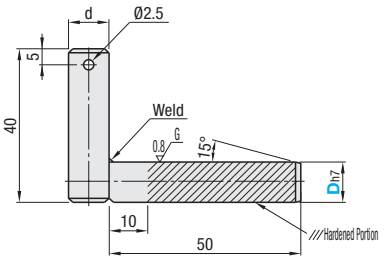


Type		M Material	S Surface Treatment	H Hardness
Tapered	Straight			
KJL	-	1.1191/C45E	Electroless Nickel Plating	23~33HRC
KJLB	KJLSB		Black Oxide	

KJL KJLB



KJLSB



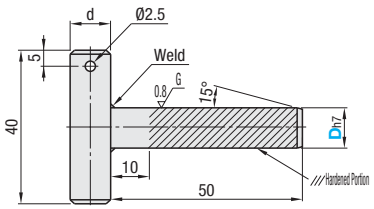
T Pin

RoHS



Type	M Material	S Surface Treatment	H Hardness
KJTSB	1.1191/C45E	Black Oxide	23~33HRC

KJTSB



Part Number		d	€ Unit Price			
Type	D		L Pin			T Pin
			KJL	KJLB	KJLSB	KJTSB
KJL KJLB KJLSB KJTSB	6	7				
	8	9				
	10	11				

Order Example

Part Number
KJL6
KJTSB8

Days to Ship

8 Days

Express A 2,00 EUR/ piece

P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Add. Spec. Components for Inspection Jigs

-Jig Locating Kits · Construction Balls · Pads · Covers-

CAD Data

Features: For locating removable jig parts. (Refer to the example below.)

Jig Locating Kits

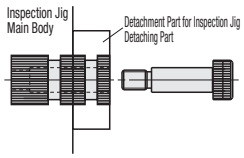
RoHS



Shape		Type	Material · Hardness · Surface Treatment			
Collar Bushing Knurling	Stripper Bolt Shape		Collar Bushing	Stripper Bolt	Only with Wing Screws	
					Wing Screw	Spring Pins
Provided	Hex Socket Head	KJLP	1.0038/S235JR	1.7220/34CrMo4 33~38HRC	1.0038/S235JR Trivalent Chromate	Spring Steel 45~50HRC
	With Wing Screw	KJLPC				
Not Provided	Hex Socket Head	KJLPN				
	With Wing Screw	KJLPNC				

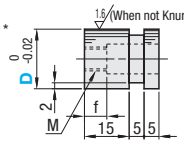
* If only shoulder bolts for wrench are required, order GMSB (P.2-210)

Example

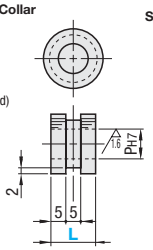


- Bushing

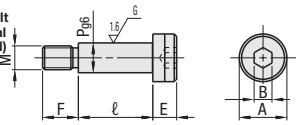
* Tolerance is applicable only with no Knurling.



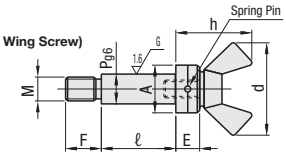
•Collar



•Stripper Bolt (Hexagonal Socket Head)



(With Wing Screw)



Part Number			Inner Diameter · Screw			Stripper Bolt					Wing Screw		€ Unit Price			
Type		D	L				Length			Head						
				P	M	f	F	ℓ	E	A	B	h	d	KJLP	KJLPC	KJLPN	KJLPNC
KJLP KJLPN	KJLPC KJLPNC	12	15	6	M4	6	7	30	4	9	3	15	21				
			25	6	M4	6	7	40	4	9	3	15	21				
		20	15	10	M8	8	12	25	8	16	6	24	31				
			30	10	M8	8	12	40	8	16	6	24	31				

Order Example

Part Number	-	L
KJLP20	-	15

Days to Ship

8 Days — Express A 2,00 EUR/piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~29	30~49	50~99
Rate	€ Unit Price	10%	15%	23%

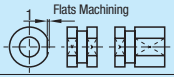
For orders larger than indicated quantity, please request a quotation.

Alterations

Part Number	-	L	-	(HT / STC)
KJLP20	-	15	-	HT

8 Days

Express Service is not available.

Alterations	Code	Spec.	Price Adder
Flats Machining 	HT	Chamfers a side of collar and bushing.	4,00
Additional Surface Treatment (Black Oxide)	STC	Adds Black Oxide Surface Treatment Applicable to collar and bushing only.	3,00

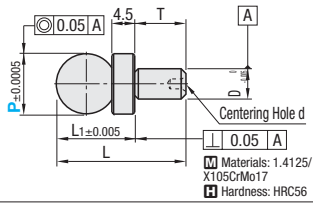
Features: Construction ball size Ø20 and the applicable pad and cover are now available.

Construction Ball

RoHS



CRB

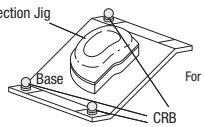


M Materials: 1.4125/ X105CrMo17
H Hardness: HRC56

Part Number		T	D	L	L_1	d	€ Unit Price	
Type	P						Qty. 1~49	Qty. 50-99
CRB	12	10	6	25.73	15.723	2.03		
	20	20	10	43	23	3		

Product CRB12 is shipped if P dimension isn't specified. For orders larger than indicated quantity, please request a quotation.

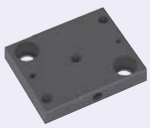
Example



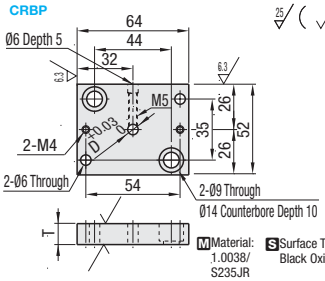
For accuracy control of inspection jigs.

Pad for Construction Ball

RoHS



CRBP



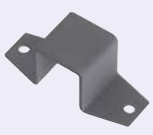
M Material: 1.0038/ S235JR
S Surface Treatment: Black Oxide

Part Number		T	D	Applicable Ball	€ Unit Price	
Type	No.				Qty. 1~49	Qty. 50-99
CRBP	12	12	6	CRB12		
	20	22	10	CRB20		

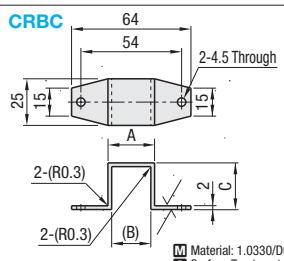
Product CRBP12 is shipped if No. isn't specified.
For orders larger than indicated quantity, please request a quotation.

Cover for Construction Ball

RoHS



CRBC



M Material: 1.0330/DC01
S Surface Treatment: Black Oxide

Part Number		A	(B)	C	Applicable Ball	€ Unit Price	
Type	No.					Qty. 1~49	Qty. 50-99
CRBC	12	25	21	25	CRB12		
	20	35	31	30	CRB20		

Product CRBC12 is shipped if No. isn't specified.
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
CRB20
CRBP20
CRB12

Days to Ship

6 Days P.87

Components for Inspection Jigs
-Pin Clips · Wires for Pins · Chains for Pins-

CAD Data

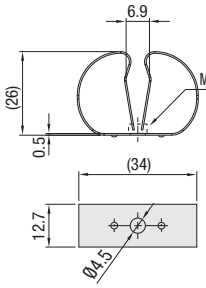
Features: For storing slot pins when not in use.

Pin Clips

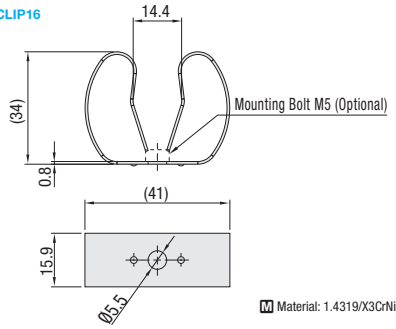


RoHS

CLIP8



CLIP16



M Material: 1.4319/X3CrNiN17-8

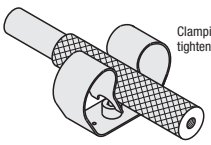
Part Number Type	No.	Applicable Slot Pin Handle Diameter	€ Unit Price Qty. 1-9	Volume Discount Qty. 10-29	Qty. 30-49	Qty. 50-99
CLIP	8	Ø8, 10, 12				
	16	Ø16, 20, 25				

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: CLIP8

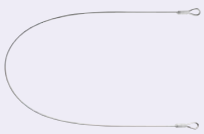
Days to Ship: 6 Days P87

Example — For storing slot pins when not in use.



Clamping force may be adjusted slightly by tightening levels of the mounting screw.

Wires for Slot Pins

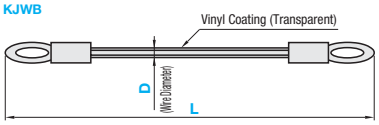


RoHS

KJW



KJWB

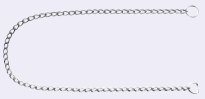


M Material: 1.4301/X5CrNi18-10

Part Number Type	D	L 50mm Increment	Bolt	€ Unit Price KJW L300~500	KJW L550~700	KJWB L300~500	KJWB L550~700
KJW KJWB	1	300~700	M5				
	2						

*D=2 products is shipped if D dimension isn't specified.
*The thickness of KJWB is D (wire diameter) + approx. 0.5mm of vinyl coating thickness.

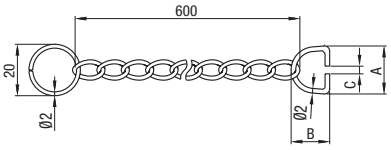
Chains for Slot Pins



RoHS

KJWCH

* Chains for alteration CH on Slot Pins for Inspection Jigs and GO / NO-GO Pins.



M Material: Ring: 1.4301/X5CrNi18-10
Others: JIS SWRM
S Surface Treatment: Nickel Plating

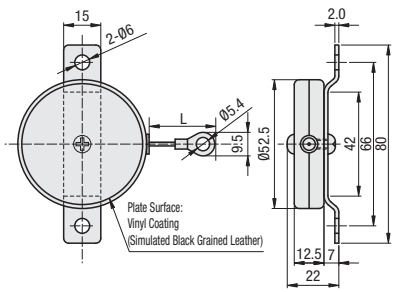
Part Number Type	No.	A	B	C	Applicable Slot Pin Handle Diameter	€ Unit Price
KJWCH	1	14	12	2	8, 10	
	2	17	14.5	4	12	
	3	21	17.5	6	16	
	4	25	20.5	8	20	
	5	30	24	10	25	
	6	36	28	12	30	

Self-Retractable Wires Wires for Slot Pins



RoHS

KJWRT



M Material: Main Body / Plate: 1.0330/DC01
Wire: 1.4301/X5CrNi18-10
Screw: 1.4301/X5CrNi18-10

Part Number Type	L	Wire Diameter	Bolt	€ Unit Price
KJWRT	1100*	1.2	M5	

*Max. length of the wire.

Order Example — Part Number: KJW2 / KJWCH3 / KJWRT - L: 350

Days to Ship

•KJW · KJWB · KJWCH: 8 Days — Express A 2,00 EUR/piece P88
A Express Charge of 5,40 EUR for 3 or more identical pieces.

•KJWRT: 6 Days P87

Price

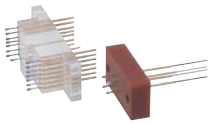
Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Contact Probes

Contact Probes





Price Reduction
Up to 20%

Addition



Price Reduction
Up to 20%

Product Name	Contact Probe Assembly Service	Double Tipped Probes	Contact Probes · Receptacles -Min. Mounting Pitch 0.5mm ~ 4.5mm Series-
Page	1571	1572	1573~1581







Price Reduction
Up to 20%



Turn Probes	Contact Probes Assembly -Standard-	-Male Thread-	-With Resin Sleeve-
1582	1583	1583	1583











-Spring Built-in Type-	-Male Thread-	Switch Probes	Terminals for Probes	Terminals for Probes
1584	1584	1585	1585	1585









Heat / Shrink Tubes	Circuit Board Guide Pins	Circuit Board Pusher Pins	Circuit Board Rough Guides
1585	1586	1586	1586

Contact Probes
-Overview-

■Overview
Contact Probes can be used in connection tests of all electronic circuits.

■How to Use
Press-fit appropriate receptacles in the mating holes drilled in a bakelite or other plastic plate. If the mating holes are loose, use appropriate adhesives (Locktite, etc.) to fill the gap. After press fitting, wire the receptacles. If wires need to be soldered, do not solder past the stopper in the receptacle. After wiring insert Contact Probes. Pressing plungerstoo hard cause damage on the tip and internals of Contact Probes and result in performance decrease.
It is recommended to make several tests under operating environment before actual use.

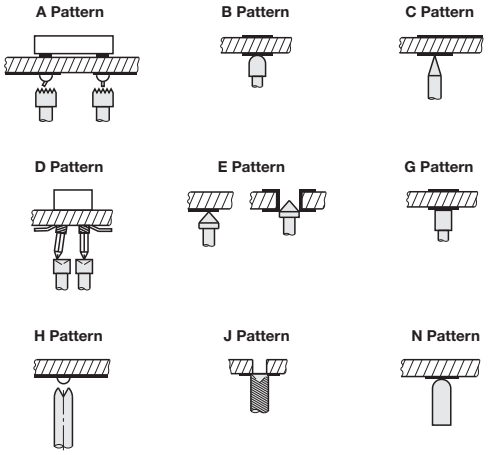
■Major Types and Typical Uses

Type	Typical Uses
Contact Probes	Suitable for extensive use in testing printed circuit boards, mounted circuit boards, semiconductors · in-circuit, harnesses, etc.
Double Tipped Probes	Suitable for small spaces as receptacles are built-in.
Turn Probes	The plunger turns with stroke to destroy flux and oxide film. Successful use proved in open / short circuit tests of printed circuit boards.
Prove Assembly	Contact probe of one-piece construction formed by one continuous pin from the tip to the end. Permits stable electric conduction, regardless of the stroke length.

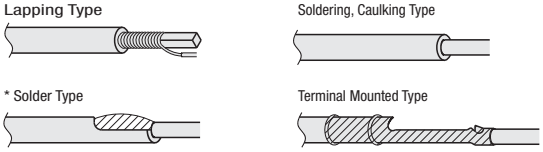
■Selection Table
Indicated in black: Products available on our website

Type	Mounting Pitch (min.)	Full Stroke	Spring Pressure (2/3 Stroke)	Part Number		Page
				Probe	Receptacles	
Both Ends Probes	0.3	1.3	6	RNP20	-	P.1572
	0.5	0.8	15	RNP30	-	
		1.0	15	RNP38	-	
		0.98	25	RNP38N	-	
	0.8	1.0	25	RNP50	-	
		0.98	30	RNP57	-	
		1.0	30	RNP64	-	
		0.5	25	RNP60ST	-	
	1.0	0.98	35	RNP85	-	
		0.5	30	RNP80ST	-	
Contact-less Type Probe	0.50	2.0	16	NP26	NR26	P.1573
	0.60		22	NP31	NR31/NR31S	
			23	NP31HD		
	0.80		35	NP38	NR38/NR38S	
	0.90		50	NP20	NR20K	P.1574
	1.00		50	NP58	NR58	
	1.27	2.5	45	NP30	NR30K/NR30SH-B	P.1575
			46	NP30HD		
			50	NP72	NR72K	
			100	NP72HD		
		4.3	50	NP68S3SF	NR68/NR68S	P.1576
			90	NP68S3		
		6.0	150	NP76	NR76	
	1.40	4.3	50	NP68SF	NR68/NR68S	P.1577
			90	NP68		
	1.50	2.5	50	NP88	NR88	
			100	NP88HD		
	1.70	3.0	50	NP45S3SF	NR45S	
			100	NP45S3		
		5.0	50	NP45SF	NR45/NR45T	P.1578
			100	NP45		
			150	NP45HD		
	2.00	6.5	50	NP120	NR120/NR120T	P.1579
			100	NP120HD		
	2.54	4.0	100	TP604	NR604	
			110	NP604		
			160	NP604HD		
		6.4	50	NP60SF	NR60	P.1580
			100	NP60S		
			150	NP60/NP60H		
			170	NP60HD		
	3.00	6.3	50	NP84SF	NR84	P.1581
			126	NP84		
			200	NP84HD		
	3.50	6.4	50	NP90SF	NR90	
			150	NP90		
			250	NP90HD		
	4.50		100	NP89SF	NR89	
			275	NP89S		
			450	NP89		
Recep-tacles	1.90	7.0	170	NP16	-	-
Turn Probe	1.27	4.5	50	TNP72	NR72	P.1582
	1.90	5.5	140	TNP10	NR10	
	2.54	6.4	165	TNP60	NR60	
Integrated Type Probe	0.80	3.4	80	GNP6	-	P.1583
	1.00			GNP8	-	
	1.50	4.0	95	GNP12	-	
	3.00	4.5	105	FNP10	-	
	5.00	4.0	100	FNP13	-	
	3.00	7.0	100	FNP22SF	-	
			150	FNP22	-	
		8.0	180	FNPS22	-	P.1584
	4.00	8.0	200	FNPS35	-	
	5.00	17.0	220	FNP40SF	-	
			300	FNP40	-	
	7.00	7.6	455	MNP50	-	

■Contact Probe Tip Shapes and Patterns



■Receptacle End Shapes



*Solder Type (C Type and NR68S) have a bulged at the exterior surface of the end due to its manufacturing method. That will present no problem as long as the probe is pushed in firmly, but the O.D. adjustments are allowed as needed.

■General Environmental Conditions
- Operation Temperature 10 ~ 40°C, Humidity 30% or Less
- Operating Atmosphere: Free of dust, corrosive gases and oil components etc., where the contact probe may not be contaminated.

■Stroke Conditions
- Apply load in the axial direction only. Do not apply lateral load.
- Stroking over the specified stroke (2/3 of full stroke) will significantly decrease the lifetime of the Contact Probe.
- Stroking over 60 times per min (constant velocity) may decrease the lifetime of the Contact Probe.

■Electrical Current Application Conditions
- Apply current only after contact is made and the part is seated.
- Applying current while stroking, with irregular strokes, or in open state where the contact subject is not contacted will severely decrease the lifetime of Contact Probes.
- Allowable current shown in the catalog may not be sufficient due to contact probe deterioration. Consider actual applications carefully in the designing stage.

■Voltage Application Conditions
- Apply current only after contact is made and the part is seated.
- Do not energize in open state where the contact subject is not touched. Discharge before contacting will result in damage to Contact Probes.
- When applying high voltage to a contact probe, be sure to satisfy Current Application Conditions and Voltage Application Conditions, and be careful of instantaneous large current including discharge.

■Allowable Current
- Allowable current provided in the catalog is the maximum continuous current for 1 min, under the following conditions, General Environment, Stroke, Current Application, and Voltage Application Conditions.

■Resistance
- Resistance value provided in the catalog is the representative value at rest with 2/3 of full stroke when 10mA current flows under the following conditions, General Environment, Stroke, Current Application, and Voltage Application Conditions.
- Large current may cause deterioration of contact and inner parts, resulting in resistance value increase.
- Stroke cycles repetition may cause deterioration of contact and inner parts, resulting in an increase of resistance value.

■Replacement Cycle (Reference)
- Replacement Cycle provided in the catalog is the typical value when a probe works properly at 10mA current under the following conditions, General Environment, Stroke, Current Application, and Voltage Application Conditions.
- Replacement cycle can vary depending on operating environment and conditions including resistance increase and spring pressure decrease. Replace Contact Probes considering actual applications.

■Spring Pressure
- Spring pressure decreases if temperature of contact probe is higher than 80°C.
- Spring pressure may decrease due to heat generation of a contact probe at larger current.

■Mounting Hole for Press-Fitting (Reference)
- The values provided are for reference. Appropriate dimensions vary depending on material and thickness of resin plate. Please take the dimensions of receptacle press fit part as a guide for your design.

Contact Probes Assembly Service

- Assembly Service

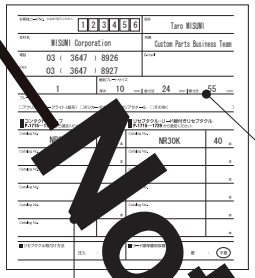
- Holes are machined on each plastic plate, and Probes are installed according to customer supplied drawings.

- How to order assembly service

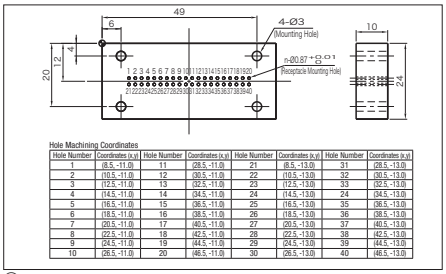
Quotation

(1) Please use Contact Probe Installation and Machining Service RFQ (inserted in the catalog as a separate sheet) to specify plastic plate standards (material, thickness and width/length dimensions), Contact Probes and Receptacles **(P.1573 ~ 1585)**. Please also specify Receptacle mounting hole diameter and positions on plastic plate machining drawings.

Quotation Request Form Example



Example of Technical Drawing of Resin Plate



Hole Number	Coordinates (x,y)	Hole Number	Coordinates (x,y)	Hole Number	Coordinates (x,y)	Hole Number	Coordinates (x,y)
1	(8.5, -11.0)	11	(28.5, -11.0)	21	(8.5, -13.0)	31	(28.5, -13.0)
2	(10.5, -11.0)	12	(30.5, -11.0)	22	(10.5, -13.0)	32	(30.5, -13.0)
3	(12.5, -11.0)	13	(32.5, -11.0)	23	(12.5, -13.0)	33	(32.5, -13.0)
4	(14.5, -11.0)	14	(34.5, -11.0)	24	(14.5, -13.0)	24	(34.5, -13.0)
5	(16.5, -11.0)	15	(36.5, -11.0)	25	(16.5, -13.0)	35	(36.5, -13.0)
6	(18.5, -11.0)	16	(38.5, -11.0)	26	(18.5, -13.0)	36	(38.5, -13.0)
7	(20.5, -11.0)	17	(40.5, -11.0)	27	(20.5, -13.0)	37	(40.5, -13.0)
8	(22.5, -11.0)	18	(42.5, -11.0)	28	(22.5, -13.0)	38	(42.5, -13.0)
9	(24.5, -11.0)	19	(44.5, -11.0)	29	(24.5, -13.0)	39	(44.5, -13.0)
10	(26.5, -11.0)	20	(46.5, -11.0)	30	(26.5, -13.0)	40	(46.5, -13.0)

Be sure to specify Receptacle insert directions on the drawing.

P.1573~P.1585 Please select Contact Probes, Receptacles or Receptacles with lead wires

⊗Assembly for parts from other manufacturers are not available.

⊗Double Tipped Probes are not selectable.

⊗Heat-Shrink Tubes are not available for R26.

Materials of Resin Plates	Color	Thickness Selection	length 1mm increment	width 1mm increment
Acrylic (Antistatic Grade)	Transparent	5 10	15~300	15~300
Bakelite (Paper Base)	Natural Color			
Polycarbonate (Standard Grade)	Transparent			
Polyacetal (Standard Grade)	White			

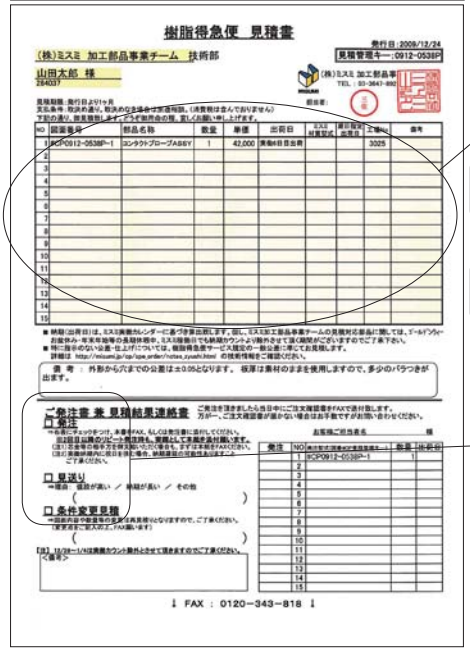
For each plastic plate characteristics, please see **P.2-858~864**

(2) Please fax the quotation request form and the technical drawing to Custom Parts Business Team. Custom Parts Business Team may contact you for inquiries about drawings, etc.

Custom Parts Business Team **Tel: 03-3647-8926**
Office Hours: 9:00~18:00 **Fax: 03-3647-8927**
(Except Saturday, Sunday and New Year Holidays)
E-mail: assycost@misumi.co.jp

(3) Quotation will be sent by Custom Parts Business Team.

Quotation and Ordering Form Example


樹脂得急便 見積書

(株)ミスミ 加工部品事業チーム 技術部

山田太郎 様

Quotation: Price, days to ship and notes are listed.

Order Example **Example of Special Order Code**

*Numbers change depending on the diagram.

Days to Ship **10 Days**

*Days to Ship may change depending on conditions.

Ordering/ Shipping

Order Form: Quotation Result is shown.

For ordering, check the "Order" box below and fax to the number printed on the paper. Also contact us by faxing this paper when changing your conditions for quotation.

Not Available

Double Tipped Probes (For IC Test Socket)

Price Reduction
Up to 20%

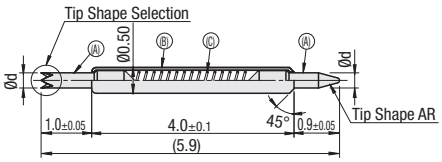
CAD Data

Features: Since there is continuity at both ends of the probe, ICs themselves can be tested before assembled onto IC boards.

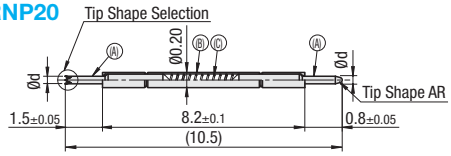
RoHS



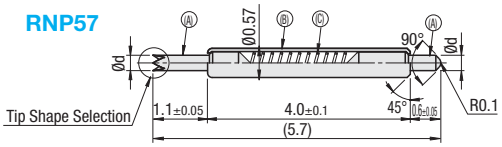
RNP50



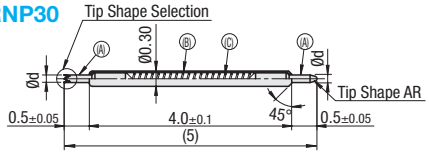
RNP20



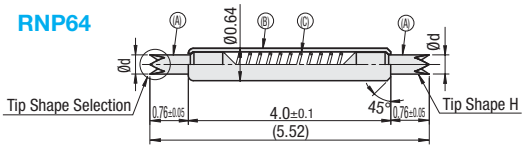
RNP57



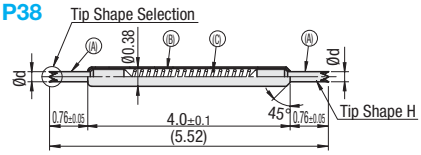
RNP30



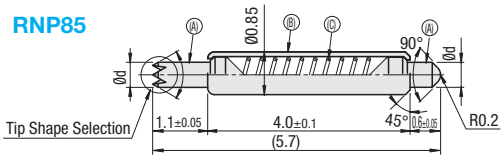
RNP64



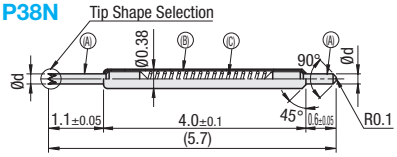
RNP38



RNP85

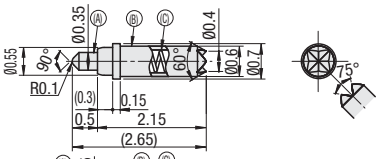


RNP38N



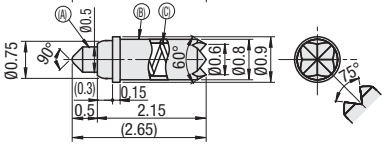
RNP60ST

(High Frequency Compatible)
⊗Tip Shapes cannot be specified.



RNP80ST

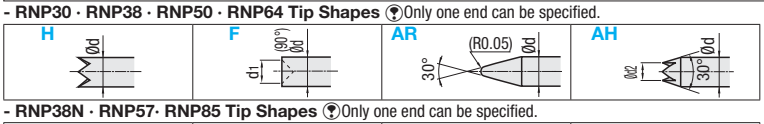
(High Frequency Compatible)
⊗Tip Shapes cannot be specified.



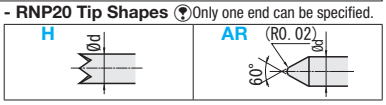
No.	Parts	Material	Surface Treatment
(A)	Plunger	CW101C/CuBe2	Gold Plating on Nickel Undercoat
(B)	Barrel	Brass*	Gold Plating on Nickel Undercoat*
(C)	Spring	JIS SWP	Gold Plating

*ISO TC90 and 38 are treated with gold plating on phosphor bronze.
RNP38N is treated with gold clad plating and RNP57 is treated with gold plating on German silver, nickel undercoat.
RNP60ST and 80ST are treated with gold plating on CW101C/CuBe2 nickel undercoat.
Tip or RNP20 is ISO TC90, the material of barrel is gold clad.

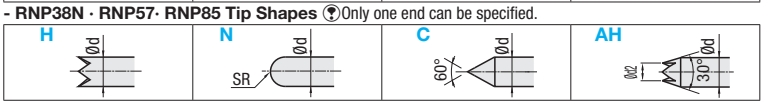
- RNP30 · RNP38 · RNP50 · RNP64 Tip Shapes Only one end can be specified.



- RNP20 Tip Shapes Only one end can be specified.



- RNP38N · RNP57· RNP85 Tip Shapes Only one end can be specified.



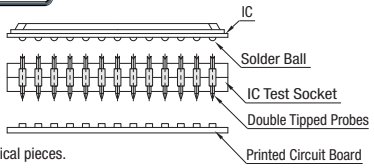
Part Number Type	No.	Mounting Pitch (min.)	Full Stroke	Spring Pressure Initial	Spring Pressure 2/3 Stroke	Allowable Current	Resistance	Ref. Replacement Usage Cycles	d	d_1	d_2	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
RNP	20	0.3mm	1.3mm	2gf	6gf	0.5A	300mΩ	60,000 times	0.12	-	-			
	30	0.5mm	0.8mm	3gf	15gf		60mΩ	100,000 times	0.15	0.1	0.1			
	38		1.0mm	5gf	15gf			200,000 times	0.2	0.15	0.15			
	38N		0.98mm	5gf	25gf			100,000 times	0.22	-	0.15			
	50	0.8mm	1.0mm	3gf	25gf	1A	50mΩ	200,000 times	0.3	0.2	0.2			
	57		0.98mm	13gf	30gf				0.3	-	0.2			
	64		1.0mm	20gf	30gf			300,000 times	0.38	0.3	0.25			
	85	1.0mm	0.98mm	22gf	35gf			200,000 times	0.50	-	0.3			
	60ST	0.8mm	0.5mm	10gf	25gf			100,000 times	-					
	80ST	1.0mm	0.5mm	11gf	30gf									

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	Tip Shape
RNP20	-	AR
RNP85	-	N
RNP60ST		

ex Used for inspecting boards and IC inspection sockets.



Days to Ship 8 Days

Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Reference: Barrel Hole Diameter Tolerance

Part Number	Barrel Outside Diameter	Reference Barrel Hole Ø
RNP20	0.20	0.22
RNP30	0.30	0.32
RNP38	0.38	0.40
RNP38N	0.38	0.40
RNP50	0.50	0.52
RNP57	0.57	0.59
RNP64	0.64	0.66
RNP85	0.85	0.87
RNP60ST	0.6	0.65
RNP80ST	0.8	0.85

Contact Probes / Receptacles

-Minimum Mounting Pitches 0.5mm · 0.6mm · 0.8mm · 0.9mm · 1.0mm Series-

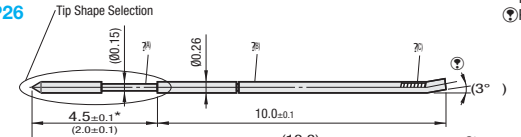
■Features: Receptacle's stopper portion is machined slightly smaller in inner diameter to avoid Probes from being pressed in too far. Included Receptacle lead wires are extended by 1000mm.

■Contact Probes
Minimum Mounting Pitch 0.5mm

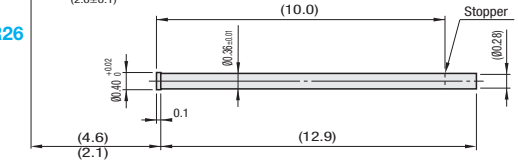
■Receptacles
Minimum Mounting Pitch 0.5mm

RoHS

NP26



NR26



*The tip length of certain tip shape is 2.0.
Probes are machined to have fall-off prevention mechanism.

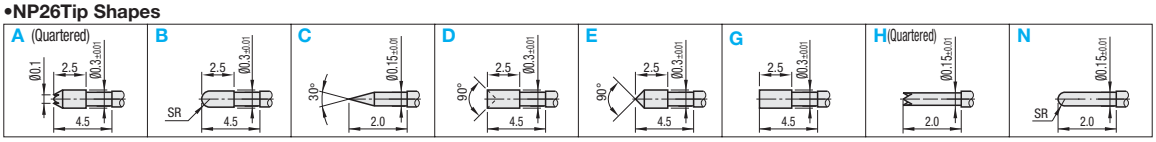
■Contact Probes

No.	Parts	Material	Surface Treatment
(A)	Plunger	ISO TC90	Gold Plating on Nickel Undercoat
(B)	Barrel	Phosphor Bronze	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

■Receptacles

Material	Surface Treatment
Phosphor Bronze	Gold Plating on Nickel Undercoat

•NP26Tip Shapes

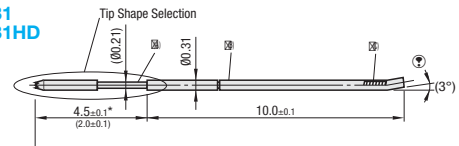


■Contact Probes
Minimum Mounting Pitch 0.6mm

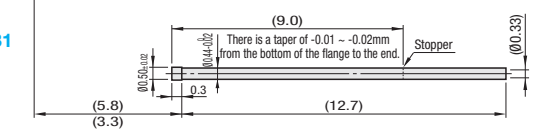
■Receptacles
Minimum Mounting Pitch 0.6mm

RoHS

NP31
NP31HD



NR31



*The tip length of certain tip shape is 2.0.
Probes are machined to have fall-off prevention mechanism.

■Contact Probes

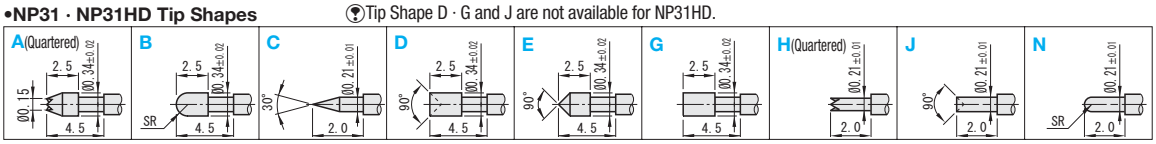
No.	Parts	Material	Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Phosphor Bronze	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

■Receptacles

Material	Surface Treatment
Phosphor Bronze	Gold Plating on Nickel Undercoat

•NP31 · NP31HD Tip Shapes

Tip Shape D · G and J are not available for NP31HD.

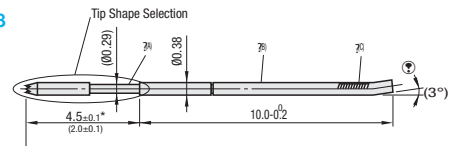


■Contact Probes
Minimum Mounting Pitch 0.8mm

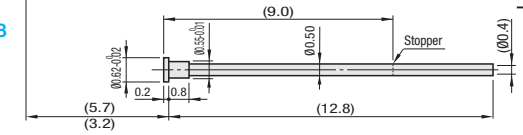
■Receptacles
Minimum Mounting Pitch 0.8mm

RoHS

NP38



NR38



*The tip length of certain tip shape is 2.0.
Probes are machined to have fall-off prevention mechanism.

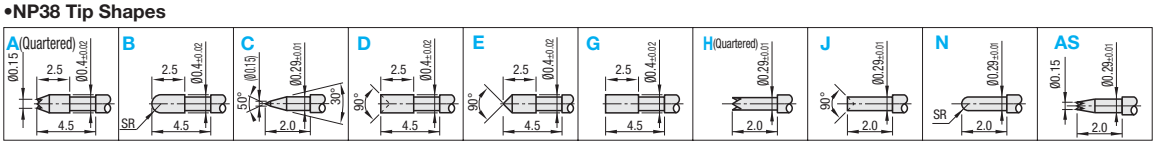
■Contact Probes

No.	Parts	Material	Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Phosphor Bronze	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

■Receptacles

Material	Surface Treatment
Brass	Gold Plating on Nickel Undercoat

•NP38 Tip Shapes



Price Reduction
Up to 20%

CAD Data

■Contact Probes
Minimum Mounting Pitch 0.9mm



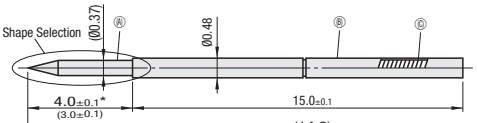
■Receptacles
Minimum Mounting Pitch 0.9mm



RoHS

NP20

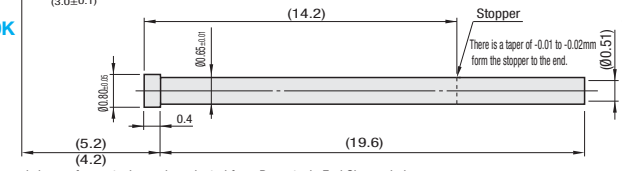
*The tip length of certain tip shape is 3.0.



■Contact Probes

No.	Parts	MMaterial	SSurface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Phosphor Bronze	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

NR20K



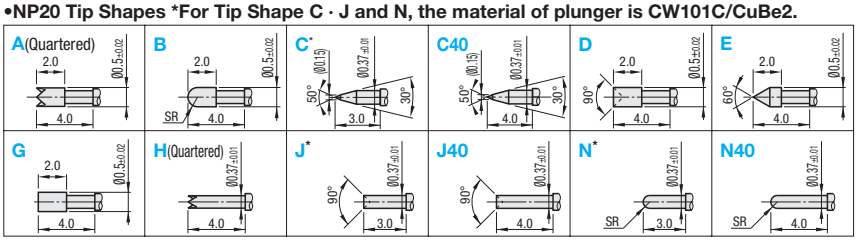
Receptacles offer Probe retaining mechanism.

■Receptacles

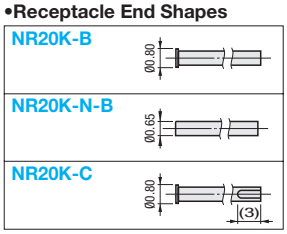
MMaterial	SSurface Treatment
Brass	Gold Plating on Nickel Undercoat

The end shape of receptacle can be selected from Receptacle End Shapes below.

•NP20 Tip Shapes *For Tip Shape C · J and N, the material of plunger is CW101C/CuBe2.



•Receptacle End Shapes



■Contact Probes
Minimum Mounting Pitch 1.0mm

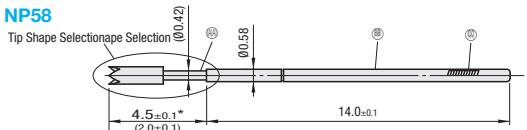


■Receptacles
Minimum Mounting Pitch 1.0mm

RoHS

NP58

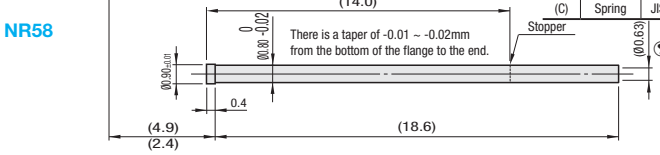
*The tip length of certain tip shape is 2.0.



■Contact Probes

No.	Parts	MMaterial	SSurface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

NR58

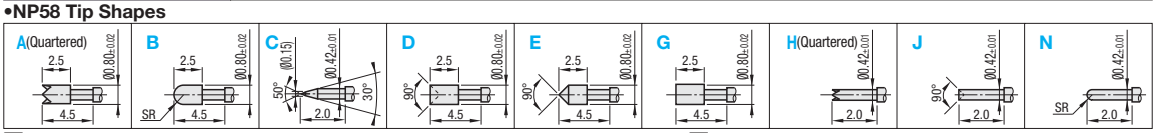


Receptacles offer Probe retaining mechanism.

■Receptacles

MMaterial	SSurface Treatment
Brass	Gold Plating on Nickel Undercoat

•NP58 Tip Shapes



■Contact Probes

Part Number	Mounting Pitch (min.)	Full Stroke	Spring Pressure Initial	Spring Pressure 2/3 Stroke	Allowable Current	Resistance	Ref. Replacement Usage Cycles	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NP26	0.5mm	2.0mm	3gf	16gf	0.5A	250mΩ	10,000 times			
NP31	0.6mm	2.0mm	2gf	22gf	1A	180mΩ	30,000 times			
NP31HD			6gf	23gf						
NP38	0.8mm	2.0mm	15gf	35gf	1A	180mΩ	30,000 times			
NP20	0.9mm	2.0mm (3.0mm)	20gf	50gf	1A	100mΩ	30,000 times			
NP58	1.00mm	2.0mm	25gf	50gf	1A	100mΩ	50,000 times			

Full Stroke in () is applicable to Tip Shape C · J and N. For orders larger than indicated quantity, please request a quotation.

■Receptacles

Part Number	Matching Contact Probes	Mounting Hole for Press-Fitting Dimension (Reference)	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NR26	NP26	0.34~0.35mm			
NR31	NP31 NP31HD	0.42~0.43mm			
NR38	NP38	0.53~0.54mm			
NR20K	NP20	0.63~0.64mm			
NR58	NP58	0.78~0.79mm			

For orders larger than indicated quantity, please request a quotation.

■Receptacles with Lead Wire

RoHS

Part Number	Lead Wire Color Selectable	Lead Wire Length (mm)	Lead Wire	Leads	Receptacles Used	Lead Wire Length 400mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 400mm Volume Discount 70~99	Lead Wire Length 400mm Volume Discount 100~499	Lead Wire Length 1000mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 1000mm Volume Discount 70~99	Lead Wire Length 1000mm Volume Discount 100~499
NRB26	W (White) R (Red) BL (Blue)	400 1000	Ø0.3	Ø0.05x7 pcs	NR26						
NRB31			Ø0.4	Ø0.08x7 pcs.	NR31						
NRB38			Ø0.4	Ø0.08x7 pcs.	NR38						
NRKB20			Ø0.4	Ø0.08x7 pcs.	NR20K-B						
NRB58			Ø0.4	Ø0.08x7 pcs.	NR58						

400mm lead wires are provided when the length is not selected.

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	Tip Shape	Lead Wire Color	Lead Wire Length
NP26	A		
NP38	A		
NR26			
NR20K	B		
NRB26		R	1000
NRB38		R	400

Days to Ship

-Contact Probes · Receptacles
6 Days P.87

-Receptacles with Lead Wire
8 Days Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Contact Probes / Receptacles
-Minimum Mounting Pitch 1.27mm Series-

■Features: Receptacle's stopper portion is machined slightly smaller in inner diameter to avoid Probes from being pressed in too far. Included Receptacle lead wires are extended by 1000mm.

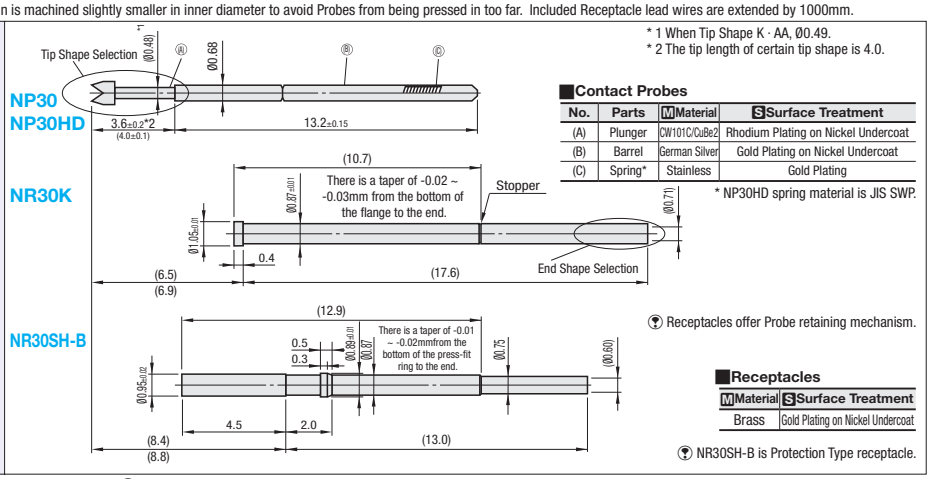
■Contact Probes



■Receptacles



RoHS



* 1 When Tip Shape K · AA, Ø0.49.
* 2 The tip length of certain tip shape is 4.0.

■Contact Probes

No.	Parts	Material	Surface Treatment
(A)	Plunger	CW101C/CuBe2	Rhodium Plating on Nickel Undercoat
(B)	Barrel	German Silver	Gold Plating on Nickel Undercoat
(C)	Spring*	Stainless	Gold Plating

* NP30HD spring material is JIS SWP.

Receptacles offer Probe retaining mechanism.

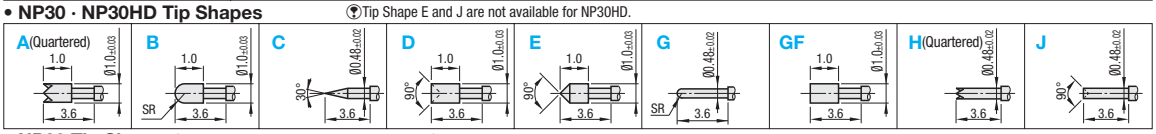
■Receptacles

Material	Surface Treatment
Brass	Gold Plating on Nickel Undercoat

NR30SH-B is Protection Type receptacle.

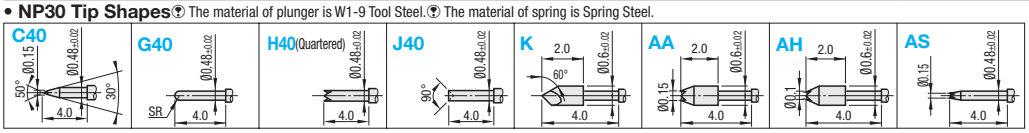
• NP30 · NP30HD Tip Shapes

Tip Shape E and J are not available for NP30HD.

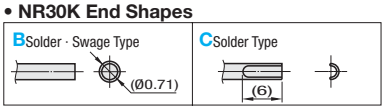


• NP30 Tip Shapes

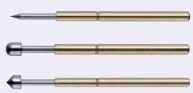
The material of plunger is W1-9 Tool Steel. The material of spring is Spring Steel.



• NR30K End Shapes

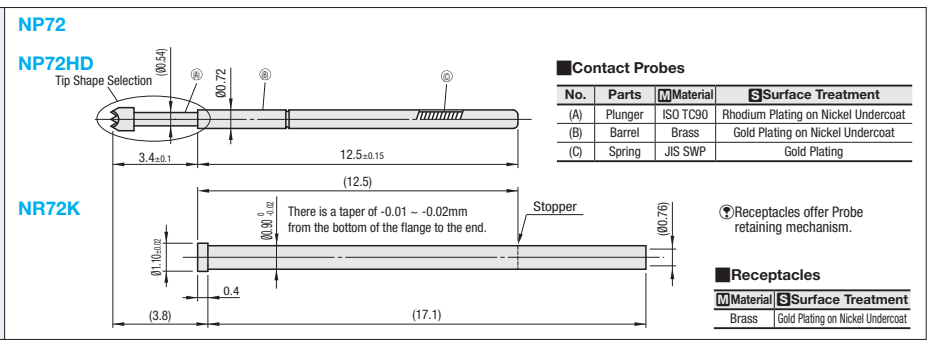


■Contact Probes



■Receptacles

RoHS



■Contact Probes

No.	Parts	Material	Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

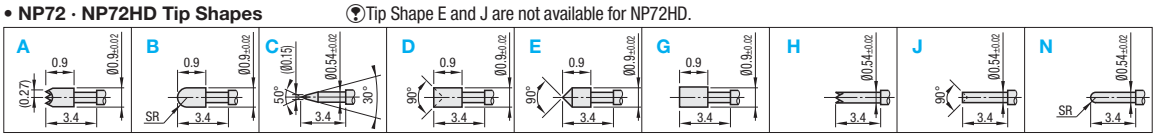
Receptacles offer Probe retaining mechanism.

■Receptacles

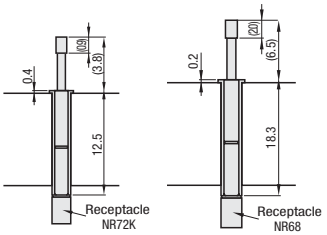
Material	Surface Treatment
Brass	Gold Plating on Nickel Undercoat

• NP72 · NP72HD Tip Shapes

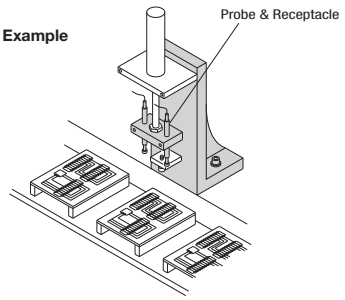
Tip Shape E and J are not available for NP72HD.



■Example of Inserting Contact Probe to Receptacle



ex Example



Price Reduction
Up to 20%

CAD Data

■Contact Probes

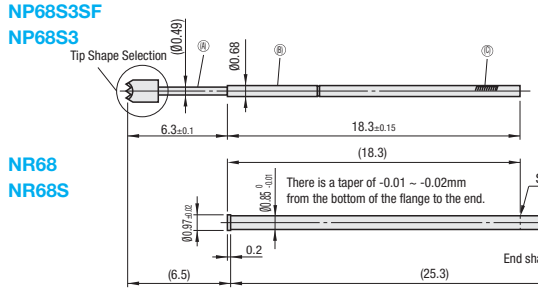


■Receptacles



RoHS

NP68S3SF
NP68S3



■Contact Probes

No.	Parts	M Material	S Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Phosphor Bronze	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

Receptacles offer Probe retaining mechanism.

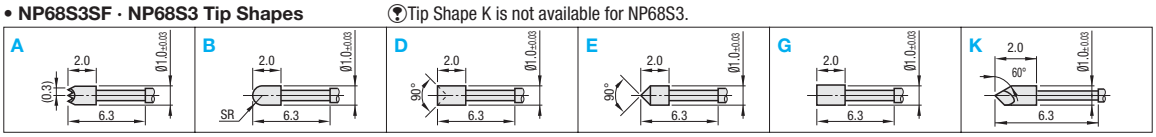
■Receptacles

M Material	S Surface Treatment
Brass	Gold Plating on Nickel Undercoat

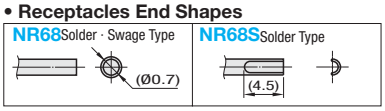
NR68
NR68S

• NP68S3SF · NP68S3 Tip Shapes

Tip Shape K is not available for NP68S3.



• Receptacles End Shapes



■Contact Probes

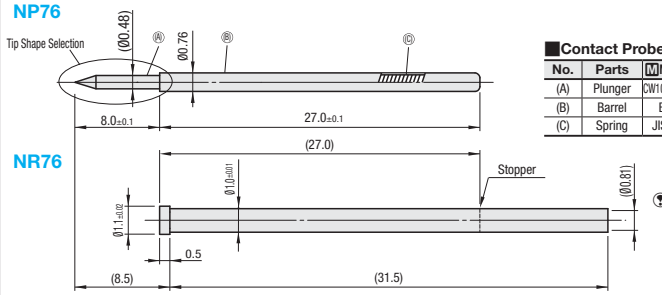


■Receptacles



RoHS

NP76



■Contact Probes

No.	Parts	M Material	S Surface Treatment
(A)	Plunger	CW101C/CuBe2	Gold Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

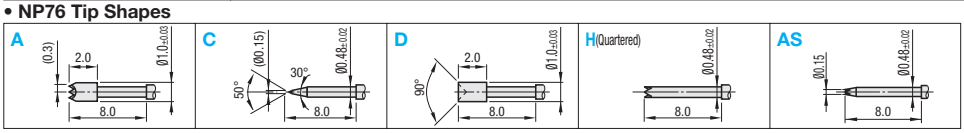
Receptacles offer Probe retaining mechanism.

■Receptacles

M Material	S Surface Treatment
Phosphor Bronze	Gold Plating on Nickel Undercoat

NR76

• NP76 Tip Shapes



■Contact Probes

Part Number	Mounting Pitch (min.)	Full Stroke	Spring Pressure Initial	Spring Pressure 2/3 Stroke	Allowable Current	Resistance	Ref. Replacement Usage Cycles	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NP30	1.27mm	2.5mm (2.0mm)	5gf (40gf)	45gf (80gf)	1A	100mΩ	50,000 times			
NP30HD			15gf	46gf						
NP72	1.27mm	2.5mm	30gf	50gf	1A	80mΩ	25,000 times			
NP72HD			15gf	100gf						
NP68S3SF	1.27mm	4.3mm	25gf	50gf	2A	80mΩ	30,000 times			
NP68S3			30gf	90gf						
NP76	1.27mm	6.0mm	60gf	150gf	1.3A	80mΩ	300,000 times			

(P) Full Stroke in () is applicable to Tip Shape C40 · E40 · G40 · H40 · J40 · K · AA · AH and AS.
(P) For orders larger than indicated quantity, please request a quotation.

■Receptacles

(P) For NR30K, NR68 and NR68S, please select the end shape.

Part Number	Matching Contact-less Type Probe	Mounting Hole for Press-Fitting Dimension (Reference)	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NR30K	NP30 NP30HD	0.85~0.86mm			
NR30SH-B		0.87~0.88mm			
NR72K	NP72 NP72HD	0.88~0.89mm			
NR68	NP68S3SF NP68S3	0.83~0.84mm			
NR68S					
NR76	NP76	0.97 ~ 0.98mm			

(P) For orders larger than indicated quantity, please request a quotation.

■Receptacles with Lead Wire



RoHS

Part Number	Lead Wire Color Selec-table	Lead Wire Length (mm)	Lead Wire	Leads	Receptacles Used	Lead Wire Length 400mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 400mm Volume Discount 70~99	Lead Wire Length 400mm Volume Discount 100~499	Lead Wire Length 1000mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 1000mm Volume Discount 70~99	Lead Wire Length 1000mm Volume Discount 100~499
NRKB30	W (White) R (Red) BL (Blue)	400 1000	Ø0.4	Ø0.08x7 pcs.	NR30K-B						
NRSHB30			Ø0.4	Ø0.08x7 pcs.	NR30SH-B						
NRKB72			Ø0.63	Ø0.12x7 pcs.	NR72K						
NRB68			Ø0.63	Ø0.12x7 pcs.	NR68						
NRB76			Ø0.63	Ø0.12x7 pcs.	NR76						

(P) 400mm lead wires are provided when the length is not selected.
(P) For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	Tip (End) Shape	Lead Wire Color	Lead Wire Length
NP30	A		
NP68S3SF	B		
NR30K	B		
NR72K			
NRSHB30		R	1000
NRB68		W	1000

Days to Ship

• Contact Probes · Receptacles
6 Days P.87

• Receptacles with Lead Wire
8 Days Express A 2,00 EUR/ piece P.88
(P) A Express Charge of 5,40 EUR for 3 or more identical pieces.

Contact Probes / Receptacles

-Minimum Mounting Pitch 1.4mm · 1.5mm · 1.7mm Series-

■Features: Receptacle's stopper portion is machined slightly smaller in inner diameter to avoid Probes from being pressed in too far. Included Receptacle lead wires are extended by 1000mm.

■Contact Probes Minimum Mounting Pitch 1.4mm

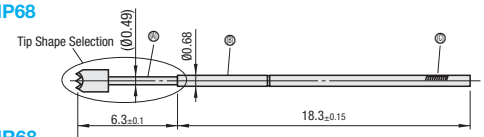


■Receptacles Minimum Mounting Pitch 1.4mm

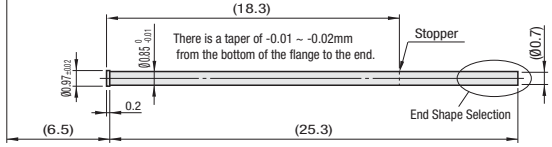


RoHS

NP68SF
NP68



NR68
NR68S



■Contact Probes

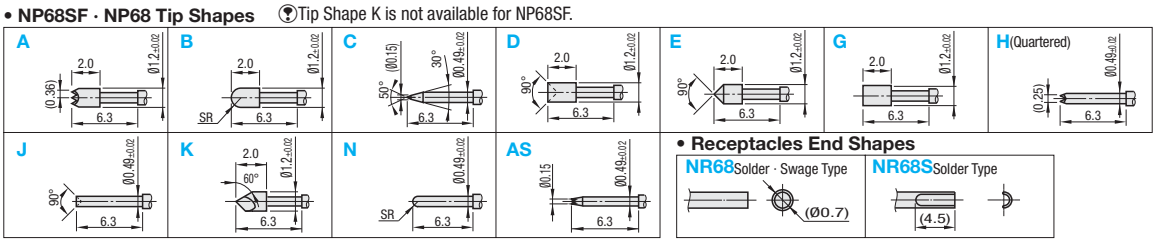
No.	Parts	■Material	■Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Phosphor Bronze	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

Receptacles offer Probe retaining mechanism.

■Receptacles

■Material	■Surface Treatment
Brass	Gold Plating on Nickel Undercoat

• NP68SF · NP68 Tip Shapes Tip Shape K is not available for NP68SF.



• Receptacles End Shapes

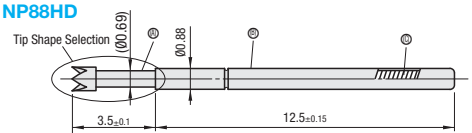
■Contact Probes Minimum Mounting Pitch 1.5mm



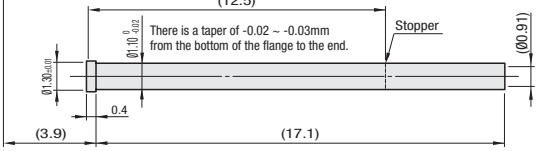
■Receptacles Minimum Mounting Pitch 1.5mm

RoHS

NP88
NP88HD



NR88



■Contact Probes

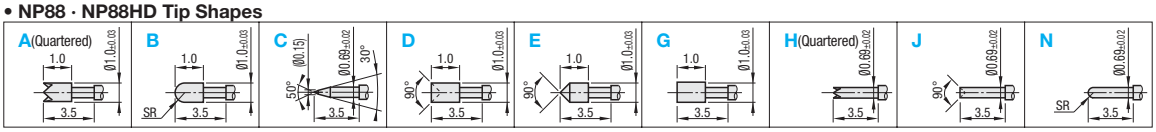
No.	Parts	■Material	■Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

Receptacles offer Probe retaining mechanism.

■Receptacles

■Material	■Surface Treatment
Brass	Gold Plating on Nickel Undercoat

• NP88 · NP88HD Tip Shapes



■Contact Probes Minimum Mounting Pitch 1.7mm

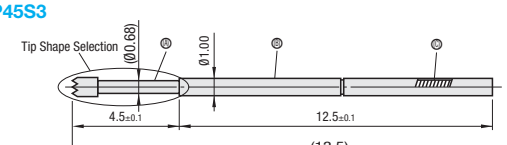


■Receptacles Minimum Mounting Pitch 1.7mm

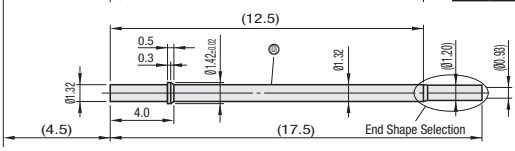


RoHS

NP45S3SF
NP45S3



NR45S



■Contact Probes

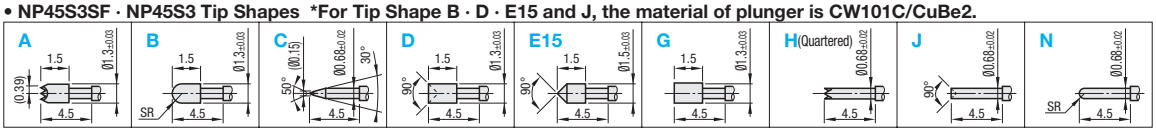
No.	Parts	■Material	■Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	Stainless	-

Receptacles offer Probe retaining mechanism.

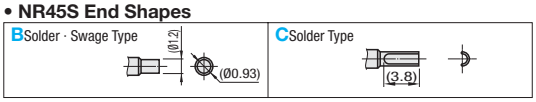
■Receptacles

No.	■Material	■Surface Treatment
(D) (E)	Brass	Gold Plating on Nickel Undercoat

• NP45S3SF · NP45S3 Tip Shapes *For Tip Shape B · D · E15 and J, the material of plunger is CW101C/CuBe2.



• NR45S End Shapes



Price Reduction
Up to 20%

CAD Data

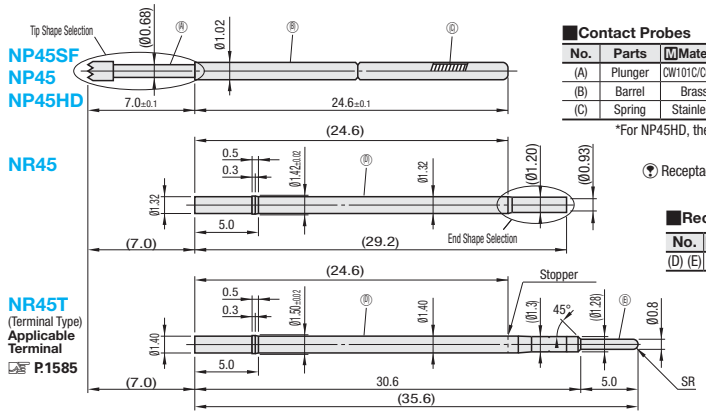
■Contact Probes Minimum Mounting Pitch 1.7mm



■Receptacles Minimum Mounting Pitch 1.7mm



RoHS



■Contact Probes

No.	Parts	Material	Surface Treatment
(A)	Plunger	CW101C/CuBe2	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	Stainless	-

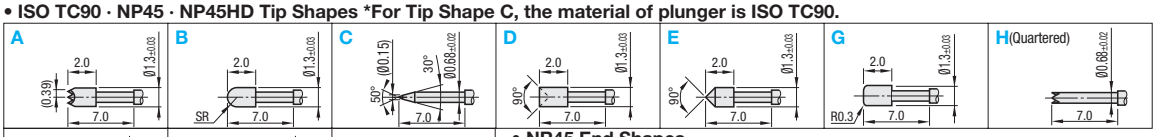
*For NP45HD, the material of spring is JIS SWP.

Receptacles offer Probe retaining mechanism.

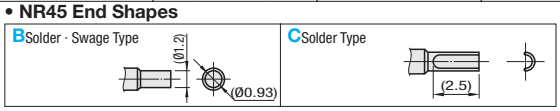
■Receptacles

No.	Material	Surface Treatment
(D) (E)	Brass	Gold Plating on Nickel Undercoat

• ISO TC90 · NP45 · NP45HD Tip Shapes *For Tip Shape C, the material of plunger is ISO TC90.



• NR45 End Shapes



■Contact Probes

Part Number	Mounting Pitch (min.)	Full Stroke	Spring Pressure Initial	Spring Pressure 2/3 Stroke	Allowable Current	Resistance	Ref. Replacement Usage Cycles	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NP68SF	1.4mm	4.3mm	25gf	50gf	1A	80mΩ	30,000 times			
NP68			30gf	90gf						
NP88	1.5mm	2.5mm	10gf	50gf	1.3A	80mΩ	250,000 times			
NP88HD			30gf	100gf						
NP45S3SF	1.7mm	3.0mm	25gf	50gf	1.5A	80mΩ	300,000 times			
NP45S3			30gf	100gf						
NP45SF	1.7mm	5.0mm	10gf	50gf	1.5A	80mΩ	300,000 times			
NP45			30gf	100gf						
NP45HD			40gf	150gf						

For orders larger than indicated quantity, please request a quotation.

■Receptacles

For NR68, NR68S, NR45S and NR45, please select the end shape.

Part Number	Matching Contact-less Type Probe	Mounting Hole for Press-Fitting Dimension (Reference)	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NR68	NP68SF NP68	0.83 ~ 0.84mm			
NR68S					
NR88	NP88 NP88HD	1.08~1.09mm			
NR45S	NP45S3SF NP45S3	1.39~1.41mm			
NR45	NP45SF NP45 NP45HD	1.39~1.41mm			
NR45T		1.47~1.49mm			

For orders larger than indicated quantity, please request a quotation.

■Receptacles with Lead Wire



RoHS

Part Number	Lead Wire Color Selectable	Lead Wire Length (mm)	Lead Wire	Leads	Receptacles Used	Lead Wire Length 400mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 400mm Volume Discount 70~99	Lead Wire Length 400mm Volume Discount 100~499	Lead Wire Length 1000mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 1000mm Volume Discount 70~99	Lead Wire Length 1000mm Volume Discount 100~499
NRB68	W (White) R (Red) BL (Blue)	400 1000	Ø0.63	Ø0.12x7 pcs.	NR68						
NRB88			Ø0.63	Ø0.12x7 pcs.	NR88						
NRSB45			Ø1.0	Ø0.08x40 pcs.	NR45S-B						
NRB45			Ø1.0	Ø0.08x40 pcs.	NR45-B						

400mm lead wires are provided when the length is not selected.

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	Tip (End) Shape	-	Lead Wire Color	-	Lead Wire Length
NP68SF	-	A				
NP88	-	C				
NR88						
NR45S	-	B				
NRB68			-	W	-	1000
NRSB45			-	W	-	400

Days to Ship

• Contact Probes · Receptacles

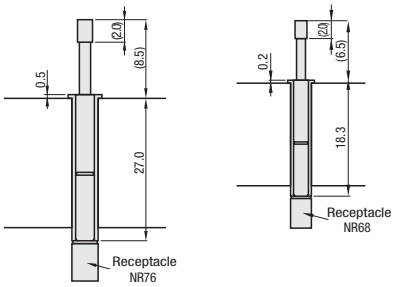
6 Days P.87

• Receptacles with Lead Wire

8 Days | Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

■Example of Inserting Contact Probe to Receptacle



Contact Probes / Receptacles

-Minimum Mounting Pitch 2.0mm · 2.54mm Series-

■Features: Receptacle's stopper portion is machined slightly smaller in inner diameter to avoid Probes from being pressed in too far. Included Receptacle lead wires are extended by 1000mm.

■**Contact Probes Minimum Mounting Pitch 2.0mm**

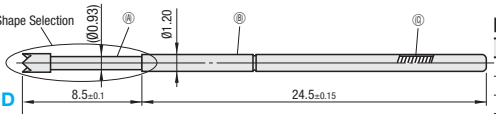


■**Receptacles Minimum Mounting Pitch 2.0mm**

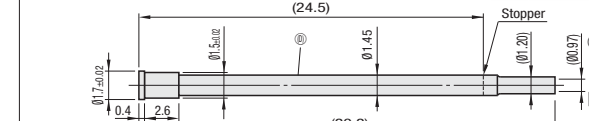


RoHS

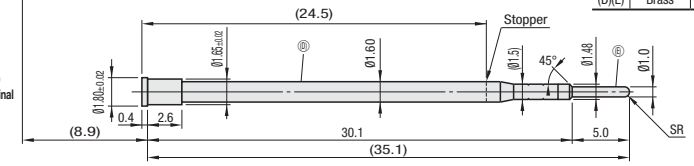
NP120
NP120HD



NR120



NR120T
(Terminal Type)
Applicable Terminal
P.1585



■**Contact Probes**

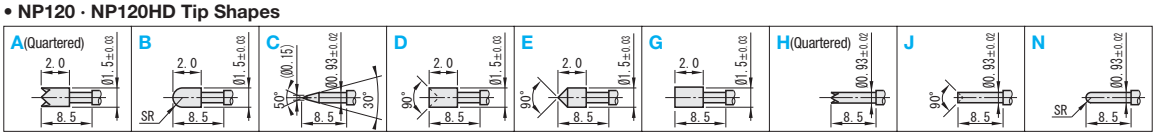
No.	Parts	Material	Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating

Receptacles offer Probe retaining mechanism.

■**Receptacles**

No.	Material	Surface Treatment
(D)(E)	Brass	Gold Plating on Nickel Undercoat

• **NP120 · NP120HD Tip Shapes**



■**Contact Probes Minimum Mounting Pitch 2.54mm**

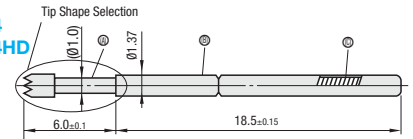


■**Receptacles Minimum Mounting Pitch 2.54mm**

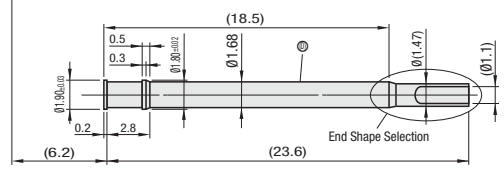


RoHS

TP604
NP604
NP604HD



NR604



■**Contact Probes**

No.	Parts	Material	Surface Treatment
(A)	Plunger	CW101C/CuBe2	Rhodium Plating on Nickel Undercoat
(B)	Barrel	German Silver	Gold Plating on Nickel Undercoat
(C)	Spring	* Stainless Steel	-

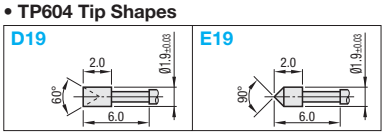
* For NP604HD, the material of spring is JIS SWP.
* For TP604, the ball material is brass.

Receptacles offer Probe retaining mechanism.

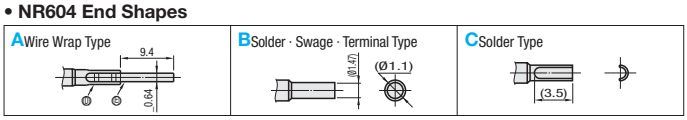
■**Receptacles**

No.	Material	Surface Treatment
(D)(E)	Brass	Gold Plating on Nickel Undercoat

• **TP604 Tip Shapes**

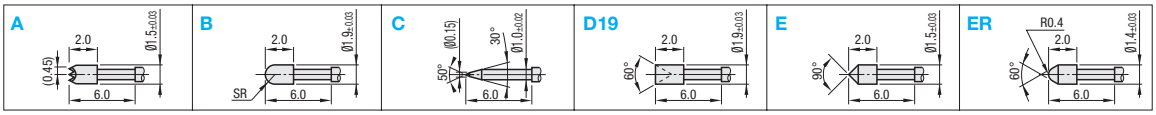


• **NR604 End Shapes**

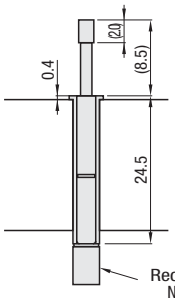


Applicable Terminal P.1585

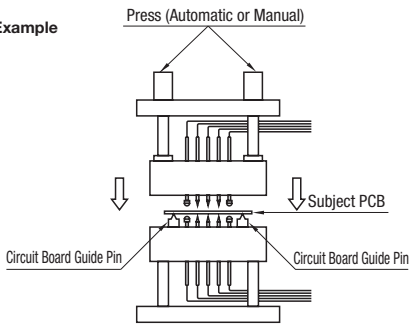
• **NP604 · NP604HD Tip Shapes**



■Example of Inserting Contact Probe to Receptacle



Example



Price Reduction
Up to 20%

CAD Data

■Contact Probes
Minimum Mounting Pitch 2.54mm

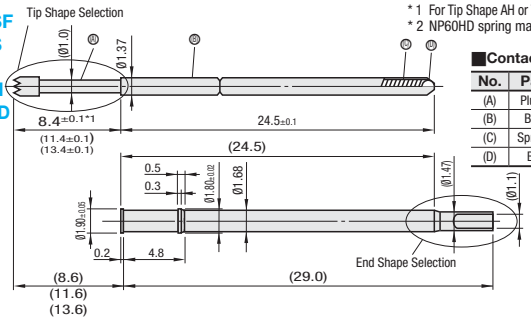


■Receptacles
Minimum Mounting Pitch 2.54mm



RoHS

NP60SF
NP60S
NP60
NP60H
NP60HD
NR60



*1 For Tip Shape AH or TH, the full tip length is 11.4, while for Tip Shape SH, it is 13.4.
*2 NP60HD spring material is JIS SWP, and is treated with gold plating.

■Contact Probes

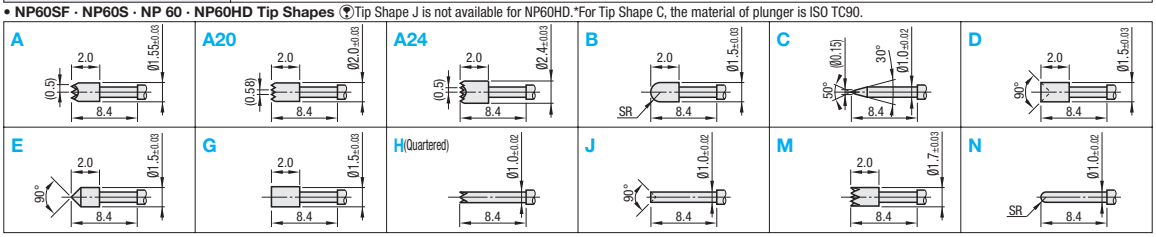
No.	Parts	M Material	S Surface Treatment
(A)	Plunger	CW101C/CuBe2	Rhodium Plating on Nickel Undercoat
(B)	Barrel	German Silver	Gold Plating on Nickel Undercoat
(C)	Spring*2	Stainless	-
(D)	Balls	Brass	Gold Plating

Receptacles offer Probe retaining mechanism.

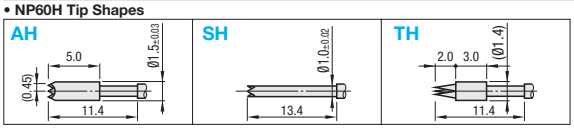
■Receptacles

No.	M Material	S Surface Treatment
(D)(E)(E)	Brass	Gold Plating on Nickel Undercoat

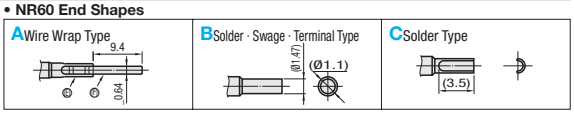
• NP60SF · NP60S · NP 60 · NP60HD Tip Shapes Tip Shape J is not available for NP60HD.*For Tip Shape C, the material of plunger is ISO TC90.



• NP60H Tip Shapes



• NR60 End Shapes



Applicable Terminal P.1585

■Contact Probes

Part Number	Mounting Pitch (min.)	Full Stroke	Spring Pressure Initial	Spring Pressure 2/3 Stroke	Allowable Current	Resistance	Ref. Replacement Usage Cycles	€ Unit Price Qty. 1 ~ 69	Volume Discount Rate 70~99	Volume Discount Rate 100~499
NP120	2.0mm	6.5mm	15gf	50gf	1.5A	80mΩ	250,000 times			
NP120HD			25gf	100gf						
TP604	2.54mm	4mm	36gf	100gf	1.5A	80mΩ	300,000 times			
NP604			10gf	110gf						
NP604HD			39gf	160gf						
NP60SF	2.54mm	6.4mm	20gf	50gf	1.5A	80mΩ	300,000 times			
NP60S			20gf	100gf						
NP60			30gf	150gf						
NP60H										
NP60HD				170gf			100,000 times			

For orders larger than indicated quantity, please request a quotation.

■Receptacles
For NR604 and NR60, please select the end shape.

Part Number	Matching Contact-less Type Probe	Mounting Hole for Press-Fitting Dimension (Reference)	€ Unit Price Qty. 1 ~ 69	Volume Discount Rate 70~99	Volume Discount Rate 100~499
NR120	NP120 NP120HD	1.48~1.49mm			
NR120T		1.62~1.64mm			
NR604	TP604 NP604 NP604HD	1.78~1.79mm			
NR60	NP60SF NP60S NP60 NP60H NP60HD	1.78~1.79mm			

For orders larger than indicated quantity, please request a quotation.

■Receptacles with Lead Wire



RoHS

Part Number	Lead Wire Color Selectable	Lead Wire Length (mm)	Lead Wire	Leads	Receptacles Used	Lead Wire Length 400mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 400mm Volume Discount Rate 70~99	Lead Wire Length 400mm Volume Discount Rate 100~499	Lead Wire Length 1000mm € Unit Price Qty. 1 ~ 69	Lead Wire Length 1000mm Volume Discount Rate 70~99	Lead Wire Length 1000mm Volume Discount Rate 100~499
NRB120	W (White) R (Red) BL (Blue)	400 1000	Ø1.0	Ø0.08x40 pcs.	NR120						
NRB604			Ø1.0	Ø0.08x40 pcs.	NR604-C						
NRB60			Ø1.0	Ø0.08x40 pcs.	NR60-C						

400mm lead wires are provided when the length is not selected.
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number		Tip (End) Shape		Lead Wire Color		Lead Wire Length
NP120	-	D				
NP60SF	-	B				
NR120						
NR604	-	B				
NRB120			-	W	-	1000
NRB604			-	W	-	400

Days to Ship

• Contact Probes · Receptacles
6 Days P.87

• Receptacles with Lead Wire
8 Days

Express A 2,00 EUR/ piece P.88

A flat charge of 5,40 EUR for 3 or more identical pieces.

Contact Probes / Receptacles

-Minimum Mounting Pitch 3.0mm / 3.5mm / 4.5mm Series-

CAD Data

■Features: Receptacle's stopper portion is machined slightly smaller in inner diameter to avoid Probes from being pressed in too far. Included Receptacle lead wires are extended by 1000mm.

■Contact Probes
Minimum Mounting Pitch 3.0mm

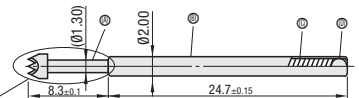


■Receptacles
Minimum Mounting Pitch 3.0mm

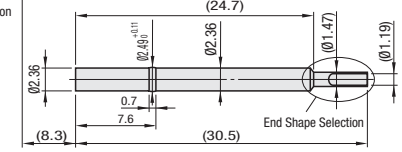


RoHS

NP84SF
NP84
NP84HD



NR84



■Contact Probes

No.	Parts	MMaterial	SSurface Treatment
(A)	Plunger	CW101C/CuBe2	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	Stainless	-
(D)	Balls		-

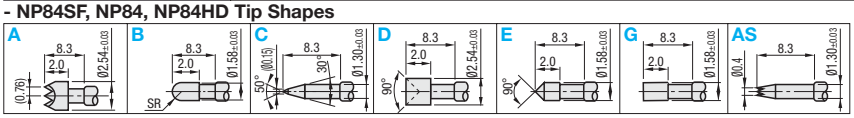
Grease is used for the barrel interior surfaces.

The receptacle has a stopper that prevents the probe from falling out.

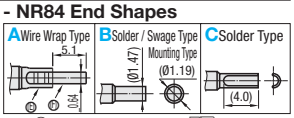
■Receptacles

No.	MMaterial	SSurface Treatment
(E)	German Silver	Gold Plating on Nickel Undercoat
(F)	Brass	Gold Plating on Nickel Undercoat

- NP84SF, NP84, NP84HD Tip Shapes



- NR84 End Shapes



Applicable Terminal P.1585

■Contact Probes
Minimum Mounting Pitch 3.5mm

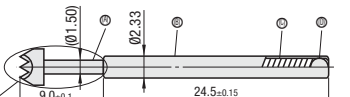


■Receptacles
Minimum Mounting Pitch 3.5mm

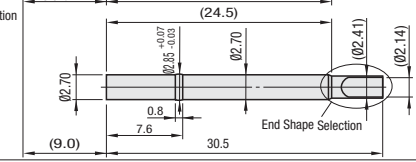


RoHS

NP90SF
NP90
NP90HD



NR90



■Contact Probes

No.	Parts	MMaterial	SSurface Treatment
(A)	Plunger	CW101C/CuBe2	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating
(D)	Balls	JIS SUJ	Gold Plating

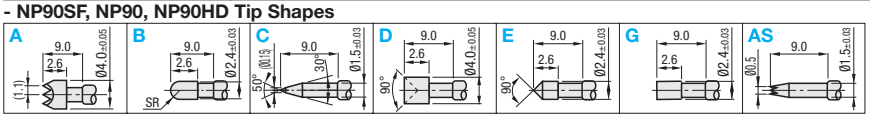
Grease is used for the barrel interior surfaces.

The receptacle has a stopper that prevents the probe from falling out.

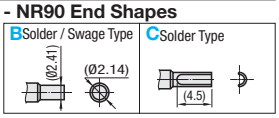
■Receptacles

MMaterial	SSurface Treatment
German Silver	Gold Plating on Nickel Undercoat

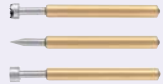
- NP90SF, NP90, NP90HD Tip Shapes



- NR90 End Shapes



■Contact Probes
Minimum Mounting Pitch 4.5mm

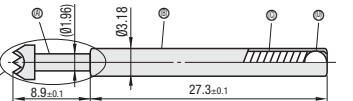


■Receptacles
Minimum Mounting Pitch 4.5mm

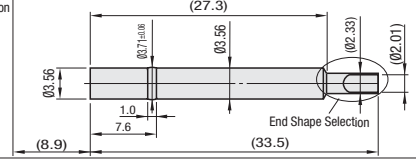


RoHS

NP89SF
NP89S
NP89



NR89



■Contact Probes

No.	Parts	MMaterial	SSurface Treatment
(A)	Plunger	CW101C/CubBe2	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass	Gold Plating on Nickel Undercoat
(C)	Spring	Stainless	Gold Plating
(D)	Balls	JIS SUJ	Gold Plating

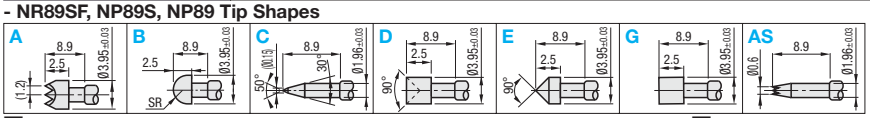
Grease is used for the barrel interior surfaces.

The receptacle has a stopper that prevents the probe from falling out.

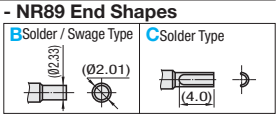
■Receptacles

MMaterial	SNylon 6 (Glass Fiber 30%)
German Silver	Gold Plating on Nickel Undercoat

- NR89SF, NP89S, NP89 Tip Shapes



- NR89 End Shapes



■Contact Probes

Part Number	Mounting Pitch (min.)	Full Stroke	Spring Pressure Initial	Spring Pressure 2/3 Stroke	Allowable Current	Resistance	Ref. Replacement Usage Cycles	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NP84SF	3.0mm	6.3mm	10gf	50gf	1.5A	80mΩ	300,000 times			
NP84			45gf	126gf						
NP84HD			77gf	200gf						
NP90SF	3.5mm (4.5mm)	6.4mm	10gf	50gf	1.5A	80mΩ	300,000 times			
NP90			40gf	150gf						
NP90HD			146gf	250gf						
NP89SF	4.5mm	6.4mm	30gf	100gf	1.5A	80mΩ	300,000 times			
NP89S			84gf	275gf						
NP89			170gf	450gf						

Mounting Pitch in () is applicable to Tip Shape G8.

For orders larger than indicated quantity, please request a quotation.

■Receptacles

For NR84, NR89 and NR90, please select the end shape.

Part Number	Matching Contact-less Type Probe	Mounting Hole for Press-Fitting (Reference) Dimension (Reference)	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
NR84	NP84SF NP84 NP84HD	2.41~2.46mm			
NR90	NP90SF NP90 NP90HD	2.77~2.82mm			
NR89	NP89SF NP89S NP89	3.58~3.63mm			

For orders larger than indicated quantity, please request a quotation.

■Receptacles with Lead Wire



RoHS

Part Number	Lead Wire Color Selectable	Lead Wire Length (mm)	Lead Wire	Leads	Receptacles Used	Lead Wire Length 400mm Standard € Unit Price Qty. 1 ~ 69	Lead Wire Length 400mm Volume Discount 70~99	Lead Wire Length 400mm Volume Discount 100~499	Lead Wire Length 1000mm Standard € Unit Price Qty. 1 ~ 69	Lead Wire Length 1000mm Volume Discount 70~99	Lead Wire Length 1000mm Volume Discount 100~499
NRB84	W (White) R (Red) BL (Blue)	400 1000	Ø1.0	Ø0.08x40 pcs.	NR84-C						
NRB90			Ø1.0	Ø0.08x40 pcs.	NR90-C						
NRB89			Ø1.0	Ø0.08x40 pcs.	NR89-C						

400mm lead wires are provided when the length is not selected.

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	Tip (End) Shape	-	Lead Wire Color	-	Lead Wire Length
NP84	-	G				
NR90	-	B				
NRB84			-	W	-	1000
NRB90			-	BL	-	400

Days to Ship -Contact Probes, Receptacles: 6 Days P.87

-Receptacles with Lead Wire: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Turn Probes

CAD Data

■Features: The Plunger rotates while performing strokes, and destroys flux and oxide film. Mainly used for PC board open-shot. Receptacle stopper is machined smaller in inner diameter to prevent fall-off of Probe.

■Turn Probes



■Receptacles for Turn Probes



RoHS

■Turn Probes

No.	Parts	Material	Surface Treatment
(A)	Plunger	ISO TC90	Rhodium Plating on Nickel Undercoat
(B)	Barrel	Brass*	Gold Plating on Nickel Undercoat
(C)	Spring	JIS SWP	Gold Plating on Nickel Undercoat
(D)	Ball*	Brass	Gold Plating on Nickel Undercoat

* For TNP60, the material of barrel is German silver. * Ball is not included in TNP72.

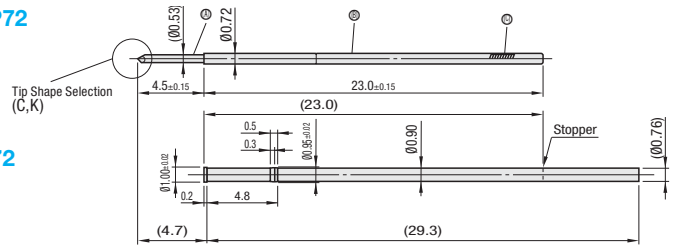
Grease is used for the barrel interior surfaces.

■Receptacles

No.	Parts	Material	Surface Treatment
(E)	Receptacles	Brass	Gold Plating on Nickel Undercoat
(F)	Wire Wrap Post	Brass	Gold Plating on Nickel Undercoat

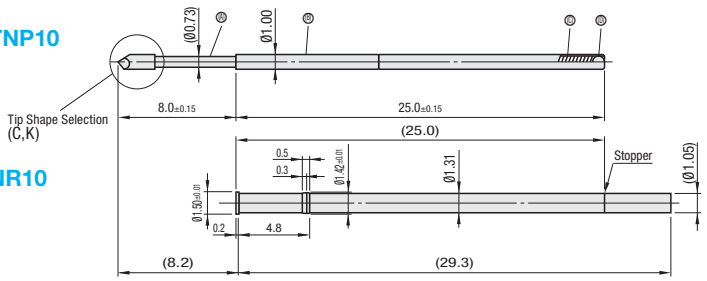
The receptacle has a stopper that prevents the probe from falling out.

TNP72



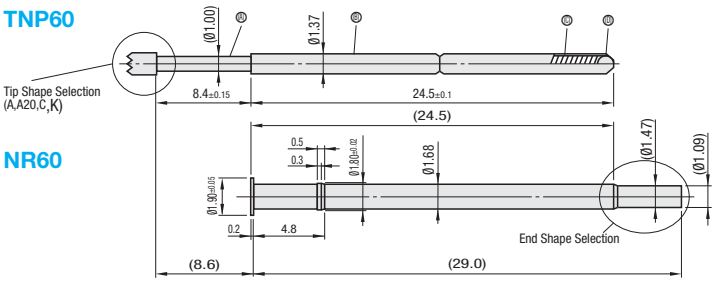
NR72

TNP10



NR10

TNP60

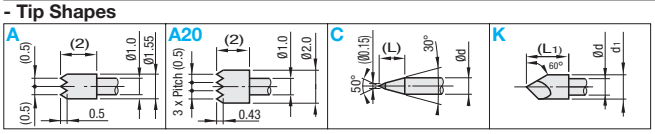


NR60

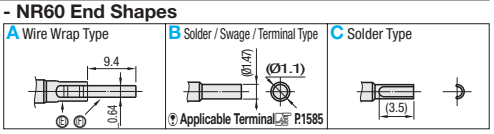
Turn Probe Tip Shape (C / K) Dimensions

Part Number	d	d1	(L)	(L1)
TNP72	0.53	0.53	1.0	-
TNP10	0.73	1.0	1.4	2.5
TNP60	1.0	2.0	1.9	2.0

- Tip Shapes



- NR60 End Shapes



■Turn Probes

Part Number	Mounting Pitch (min.)	Full Stroke	Spring Pressure		Allowable Current	Resistance	Ref. Replacement Usage Cycles	€ Unit Price	Volume Discount	
			Initial	2/3 Stroke				Qty. 1 ~ 69	70~99	100~499
TNP72	1.27mm	4.5mm	10gf	50gf	0.5A	250mΩ	300,000 times			
TNP10	1.9mm	5.5mm	20gf	140gf	1A	200mΩ	300,000 times			
TNP60	2.54mm	6.4mm	50gf	165gf	1.3A	200mΩ	100,000 times			

For orders larger than indicated quantity, please request a quotation.

■Receptacles for Turn Probes

Part Number	Matching Turn Probes	Mounting Hole for Press-Fitting (Reference) Dimension (Reference)	€ Unit Price	Volume Discount	
			Qty. 1 ~ 69	70~99	100~499
NR72	TNP72	0.93~0.94mm			
NR10	TNP10	1.39~1.41mm			
NR60	TNP60	1.77~1.79mm			

For NR60, please select the end shape. For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	Tip (End) Shape
TNP72	-	C
TNP60	-	A
NR60	-	C

Days to Ship

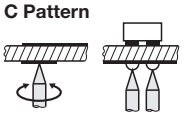
-NR60: 6 Days P.87

-TNP_ / NR72 / NR10: 8 Days | Express A | 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Example

C Pattern



One Structure Contact Probes

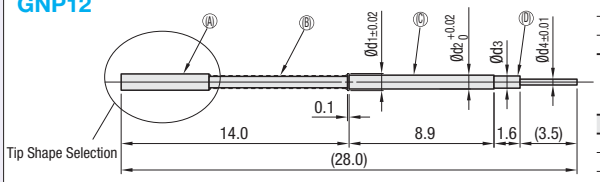
-Standard Type · Screw Mounting Type · Resin Sleeve Type · Spring-loaded Type · Thread Wire Connection Type-

■One-Piece Probe Features: One-piece Contact Probe is constructed by one continuous pin from the tip to the end.
Less contact points and good conductivity enables stable electrical continuity, regardless of the stroke length.

■Standard



GNP6
GNP8
GNP12



RoHS

Applicable Terminal ☞ P.1585

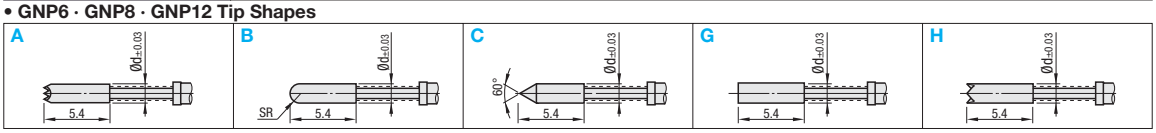
Ⓣ The matching end also strokes according to the stroke of the contact component.

Part Number	d	d1	d2	d3	d4
GNP6	0.6	0.65	0.5	(0.45)	0.3
GNP8	0.8	0.8	0.6	(0.55)	0.4
GNP12	1.2	1.25	1.05	(0.95)	0.8

No.	Parts	M Material	S Surface Treatment
(A)	Plunger	ISO TC90	Gold Plating on Nickel Undercoat
(B)	Spring	JIS SWP	Gold Plating
(C)	Sleeves	Brass*	Gold Plating on Nickel Undercoat
(D)	Collars	Brass	Nickel Plating

* The material of GNP6 is Phosphor Bronze.

• GNP6 · GNP8 · GNP12 Tip Shapes

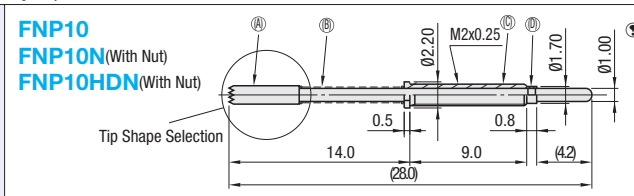


■Features: Screw Mounting Type allows height adjustments.

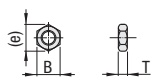
■Male Thread



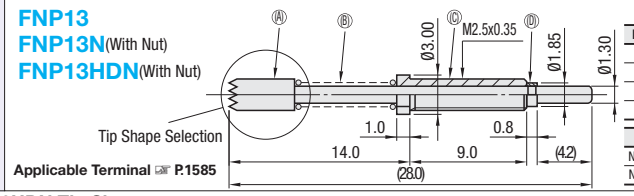
FNP10
FNP10N(With Nut)
FNP10HDN(With Nut)



Ⓣ The matching end also strokes according to the stroke of the contact component.



FNP13
FNP13N(With Nut)
FNP13HDN(With Nut)



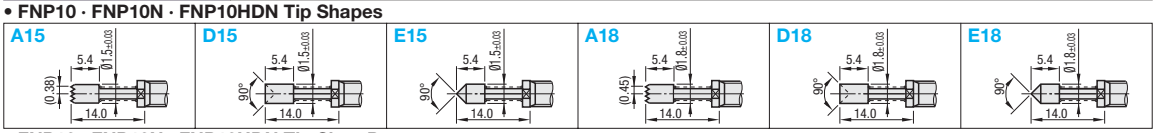
RoHS

Applicable Terminal ☞ P.1585

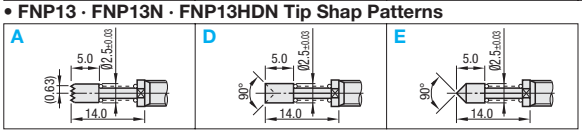
No.	Parts	M Material	S Surface Treatment
(A)	Plunger	ISO TC90	Gold Plating on Nickel Undercoat
(B)	Spring	JIS SWP	Gold Plating
(C)	Sleeves	ISO TC90	Nickel Plating
(D)	Collars	Brass	Gold Plating on Nickel Undercoat

Parts	M Material	B	(e)	T
Nut (FNP10N)	1.4301/X5CrNi18-10	4	4.6	1.6
Nut (FNP13N)	1.4301/X5CrNi18-10	5	5.8	2

• FNP10 · FNP10N · FNP10HDN Tip Shapes



• FNP13 · FNP13N · FNP13HDN Tip Shap Patterns

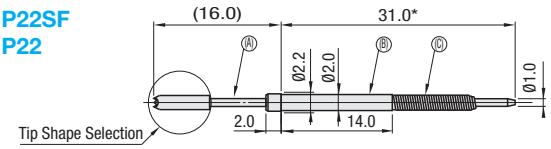


■Features: Resin Sleeve Type has resin sleeves, and can be used to avoid electrical continuity of jigs.

■Resin Sleeve

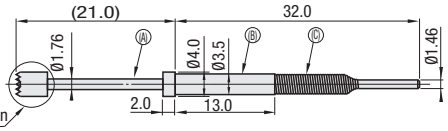


FNP22SF
FNP22



*For TH shape, this dimension is 34.0.
Ⓣ The matching end also strokes according to the stroke of the contact component.
Applicable Terminal ☞ P.1585

FNP40SF
FNP40

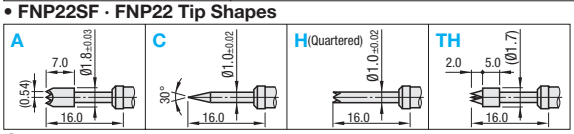


RoHS

Ⓣ FNP22SF with TH tip shape is not applicable for RoHS

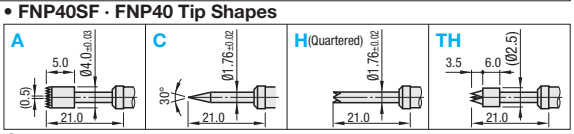
No.	Parts	M Material	S Surface Treatment
(A)	Plunger	ISO TC90	Nickel Plating
(B)	Sleeves	Polyacetal	-
(C)	Spring	Stainless	-

• FNP22SF · FNP22 Tip Shapes



Ⓣ For Shape TH, the material of holder is BS and that of needle is JIS SWRH.

• FNP40SF · FNP40 Tip Shapes



Ⓣ For Tip Shape C, the material of plunger is JIS SWP.
Ⓣ For Shape TH, the material of holder is BS and that of needle is JIS SWRH.

Price Reduction
Up to 20%

CAD Data

■Features: Spring-loaded Type houses a spring, which causes no external interference and keeps out dust.

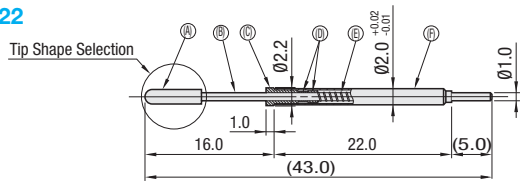
■Spring Built-in



RoHS

※FNPS22 with B and HT tip shape is not applicable for RoHS

FNPS22

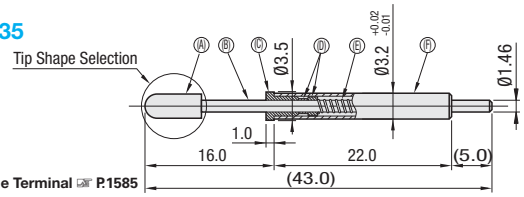


※The matching end also strokes according to the stroke of the contact component.

■FNPS22

No.	Parts	M Material	S Surface Treatment
(A)	Head	Brass	Electroless Nickel Plating
(B)	Plunger	JIS SWRH	Nickel Plating
(C)	Bearings	Brass	Electroless Nickel Plating
(D)	Collars	JIS SUS	-
(E)	Spring	JIS SWP	Gold Plating
(F)	Sleeves	German Silver	Electroless Nickel Plating

FNPS35

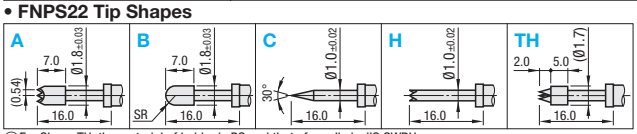


Applicable Terminal ☞P.1585

■FNPS35

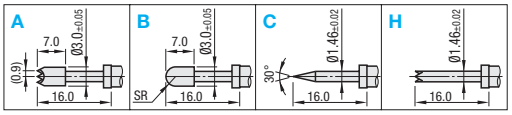
No.	Parts	M Material	S Surface Treatment
(A)	Head	Brass	Electroless Nickel Plating
(B)	Plunger	ISO TC90	Electroless Nickel Plating
(C)	Bearings	Brass	Electroless Nickel Plating
(D)	Collars	Brass	Electroless Nickel Plating
(E)	Spring	JIS SUS	-
(F)	Sleeves	Brass	Electroless Nickel Plating

• FNPS22 Tip Shapes



※For Shape TH, the material of holder is BS and that of needle is JIS SWRH.

• FNPS35



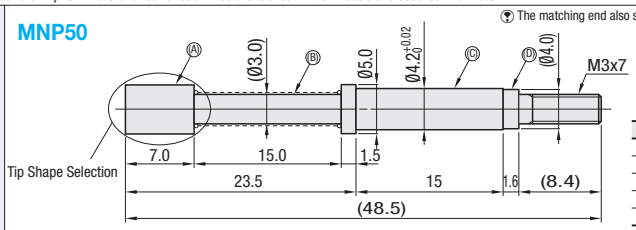
■Features: No soldering is required as round crimp terminals and round lead wires are tucked in the threads and secured with nuts.

■Male Thread

RoHS



MNP50



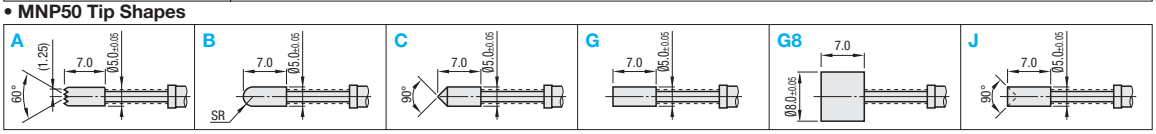
※The matching end also strokes according to the stroke of the contact component.

A Included: Nuts (2 pcs)



No.	Parts	M Material	S Surface Treatment
(A)	Plunger	ISO TC90	Gold Plating on Nickel Undercoat
(B)	Spring	JIS SWP	Gold Plating
(C)	Sleeves	Brass	Gold Plating on Nickel Undercoat
(D)	Collars	Brass	Nickel Plating
(E)	Nuts	JIS SUS	-

• MNP50 Tip Shapes



Part Number	Mounting Pitch (min.)	Full Stroke	Spring Pressure Initial	Spring Pressure 2/3 Stroke	Allowable Current	Resistance	Ref. Replacement Usage Cycles	Mounting Hole for Press-Fitting (Reference) Dimension (Reference)	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~499
GNP6	0.8mm	3.4mm	26gf	80gf	0.5A	50mΩ	100,000 times	0.48~0.5mm			
GNP8	1.0mm	3.4mm	23gf	80gf	1A			0.58~0.6mm			
GNP12	1.5mm	4.0mm	32gf	95gf	3A		300,000 times	1.03~1.05mm			
FNP10	3.0mm (6.0mm)	4.5mm	60gf	105gf	3A	80mΩ	300,000 times	M2x0.25			
FNP10N(With Nut)											
FNP10HDN(With Nut)			56gf	175gf							
FNP13	5.0mm (7.0mm)	4.0mm	60gf	100gf	3A	80mΩ	300,000 times	M2.5x0.35			
FNP13N(With Nut)											
FNP13HDN(With Nut)			58gf	175gf							
FNP22SF	3.0mm	7.0mm	0gf	100gf	3A	80mΩ	300,000 times	1.98~2.00mm			
FNP22				150gf							
FNP40SF	5.0mm	17.0mm*	0gf	220gf				3.48~3.50mm			
FNP40				300gf							
FNPS22	3.0mm	8.0mm	51gf	180gf	3A	80mΩ	300,000 times	1.98~2.00mm			
FNPS35	4.0mm	8.0mm	66gf	200gf				3.17~3.19mm			
MNP50	7.0mm<9.0mm>	7.6mm	228gf	455gf	5A	35mΩ	300,000 times	4.18~4.2mm			

※Mounting Pitches in () are applicable to the contact probes with nut. ※MNP50 mounting pitches in <> are applied to G8 tip shape.
* Tip shape A is 14.0mm, and TH is 9.5mm.

※For orders larger than indicated quantity, please request a quotation.

Order Example

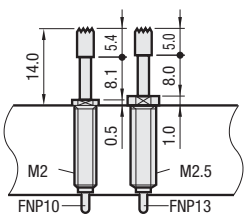
Part Number	-	Tip Shape
GNP12	-	G
FNP10N	-	E15
FNP13	-	A
MNP50	-	G8

Days to Ship

8 Days

Express A 2,00 EUR/ piece ☞P.88

※A Express Charge of 5,40 EUR for 3 or more identical pieces.



Switch Probes / Terminals for Probe / Heat-Shrink Tubes

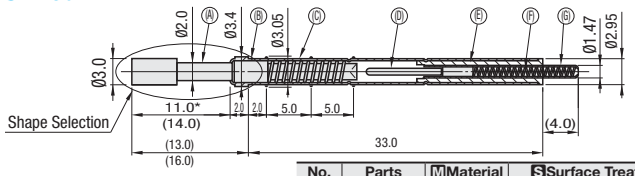
CAD Data

■Switch Probes

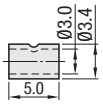


SNP30

* For Tip Shape GP8, tip length is 14.0.



A Included: Set Ring



With Probe retaining mechanism.

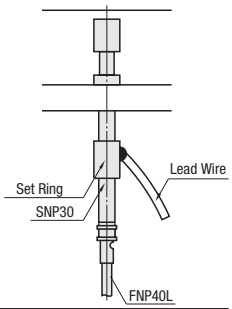
M Material: Brass

S Surface Treatment: Gold Plating on Nickel Undercoat

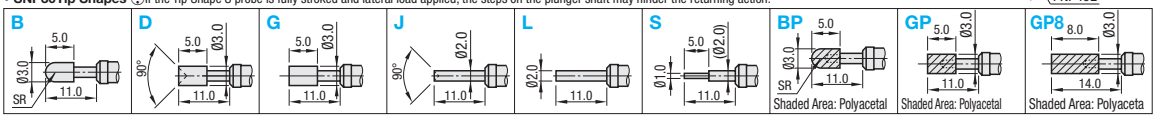
No.	Parts	M Material	S Surface Treatment
(A)	Plunger	Brass	Gold Plating on Nickel Undercoat
(B)	Barrel	Brass	Electroless Nickel Plating
(C)	Spring	JIS SUS	-
(D)	Plunger	CW101C/CuBe2	Gold Plating on Nickel Undercoat
(E)	Sleeves	Polyacetal	-
(F)	Spring	JIS SWP	Gold Plating
(G)	Hollow	CW508L/CuZn37	Gold Plating on Nickel Undercoat

RoHS

Example



• SNP30Tip Shapes If the Tip Shape S probe is fully stroked and lateral load applied, the steps on the plunger shaft may hinder the returning action.



Part Number	Full Stroke	Operating Point	Spring Pressure		Maximum Operating Voltage	Ref. Replacement Usage Cycles	Mounting Hole for Press-Fitting (Reference) Dimension (Reference)	Tip Shape B · G · L · S · BP · GP · GP8			Tip Shape D · J		
			Initial	2/3 Stroke				€ Unit Price	Volume Discount		€ Unit Price	Volume Discount	
								Qty. 1 ~ 69	70~99	100~149	Qty. 1 ~ 69	70~99	100~149
SNP30	6.0mm	1.0mm from Tip	10gf	80gf	15V	100,000 times	3.00~3.03mm						

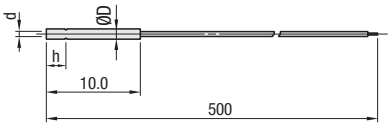
* For connected equipment, input impedance must not be less than 10kΩ as a standard, and voltage must not be more than 1.5mA.

For orders larger than indicated quantity, please request a quotation.

■Terminals for Probes



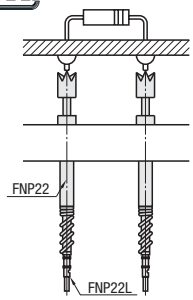
TNR8 TNR13



M Material: Brass S Surface Treatment: Gold Plating on Nickel Undercoat

RoHS

Example

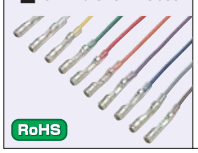


Part Number	Lead Wire Color Selection	Applicable Probes Receptacles	D	d	h	Lead Wire Standards		With Lead Wire			Terminal Only		
						Diameter	Leads	€ Unit Price	Volume Discount		€ Unit Price	Volume Discount	
								Qty. 1 ~ 69	70~99	100~499	1~9 Packs	10~29	30~49
TNR8	W(White) R(Red) BL(Blue) N(Terminal Only)*	NR45ST NR45T GNP12	1.05	0.84	2.0	(Ø0.6)	Ø0.12x7 pcs.						
TNR13		FNP13 FNP13HD	1.7	1.35	3.0	(Ø1.0)	Ø0.08x40 pcs.						

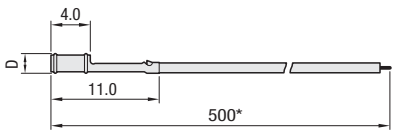
* For ordering terminals only, the minimum order is a pack of 10 pcs.

For orders larger than indicated quantity, please request a quotation.

■Terminals for Probes



FNP22L FNP40L



Lead Wire Standards
Outer Diameter Ø1.0 Rated Voltage 30 V
Lead Ø0.12x10 pcs. Operation Temperature 60
* FNP22L is 600.

M Material: Phosphor Bronze (Terminal)
S Surface Treatment: Silver Plating (Terminal)

RoHS

Part Number	Lead Wire Color Selectable		D	Applicable Probes · Receptacles			With Lead Wire			Terminal Only		
							€ Unit Price	Volume Discount		€ Unit Price	Volume Discount	
							Qty. 1 ~ 69	70~99	100~499	1~9 Packs	10~29	30~49
FNP22L	B(Black) Y(Yellow) R(Red) P(Purple) GR(Gray) N(Terminal Only)*	W(White) G(Green) OR(Orange) BL(Blue) BR(Brown)	2	NR120T FNP10HD FNPS22	NP16 FNP22SF FNPS22HD	FNP10 FNP22						
FNP40L			2.6	NR604-B FNP40SF FNPS35	NR60-B FNP40 FNPS35HD	NR84-B SNP30						

* For ordering terminals only, the minimum order is a pack of 10 pcs.

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number - Tip Shape - Lead Wire Color
SNP30 - B
TNR8 - BL
FNP40L - B

Days to Ship: 8 Days | Express A | 2,00 EUR/piece* | P.88

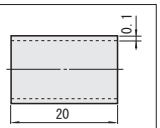
A Express Charge of 5,40 EUR for 3 or more identical pieces.
*For terminal only, 2,00 EUR per package.

■Features: Heat shrinking can be induced by hair-driers and other heating device to be served as protection, insulation and fall-off prevention for solder-joined Receptacle and lead wires.

■Heat / Shrink Tubes

THUS(Black)





M Material: Electron Beam Cross-Bridge Soft Polyolefin Resin

RoHS

Part Number		Standard Dimensions			Dim. After Complete Shrinking		€ Unit Price	Volume Discount	
Type	Nominal No.	Inner Dia.	Thickness	Length	Inner Dia. (max)	Thickness (min)	1~9 Packs	10~19	20~49
THUS (Black)	0.8	0.8±0.25	0.1	20	0.4	0.25			
	1.0	1.4±0.25			0.5				
	1.5	1.9±0.25			0.75				
	2.0	2.3±0.25			1.0				

* The products are sold by package (100 pcs.).

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number THUS1.0

Days to Ship: 8 Days | Express A | 2,00 EUR/package | P.88

A Express Charge of 5,40 EUR for 3 or more identical packages.

Circuit Board Guide Pins / Circuit Board Pusher Pins / Circuit Board Rough Guides

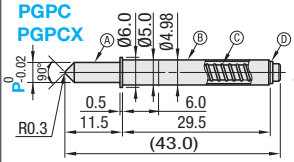
CAD Data

■Circuit Board Guide Pins

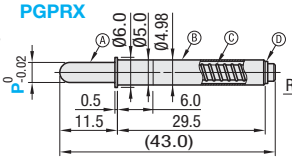


RoHS

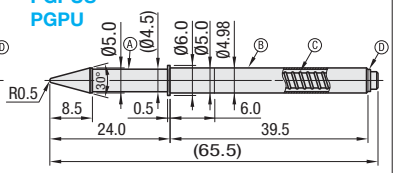
PGPCS PGPC PGPCX



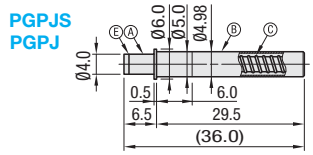
PGPR PGPRX



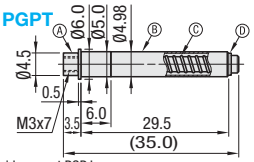
PGPUS PGPU



PGPJS PGPJ



PGPT



There is a taper of 0 to –0.02mm from the bottom of the flange to the end.

No.	Parts	M Material	S Surface Treatment
(A)	Shaft	* Brass	Electroless Nickel Plating
(B)	Sleeves	Brass	Electroless Nickel Plating
(C)	Spring	1.4301/X5CrNi18-10	-
(D)	Retaining Ring-E Type	1.4301/X5CrNi18-10	-
(E)	Head	Polyacetal	-

* When P dimension is 1.0 ~ 1.9, the material of shaft is JIS STKM.

Guide pins extrude as much as the stroke to the other side except PGPJ_.

Part Number	P 0.1mm Increment	Full Stroke	Load min	Load max	Mounting Hole Dimensions (Reference) Resin Plate Type (Press Fit)	Mounting Hole Dimensions (Reference) Metal Plate Type (Adhesion)	€ Unit Price Qty. 1 ~ 69	Volume Discount 70~99	Volume Discount 100~149
PGPCS	1.0~4.5	11mm	70gf	200gf	4.98~5.00mm	5.00~5.02mm			
PGPC			100gf	450gf					
PGPCX			200gf	600gf					
PGPR			70gf	200gf					
PGPRX			200gf	600gf					
PGPUS	-	15mm	75gf	200gf					
PGPU			91gf	450gf					
PGPJS		6mm	150gf	230gf					
PGPJ			200gf	400gf					
PGPT		3mm	215gf	340gf					

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number PGPR - P 4.0

Days to Ship: 8 Days

Express A 2,00 EUR/ piece P.88

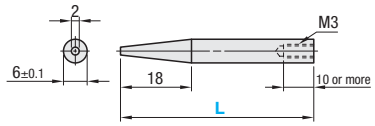
A Express Charge of 5,40 EUR for 3 or more identical pieces.

■Circuit Board Pusher Pins

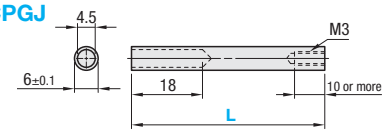
RoHS



CPTJ



CPGJ



M Material: Polyacetal (White)

Part Number	L1mm Increment	€ Unit Price
CPTJ	49~54	
CPGJ		

Similar Products P.1362 Work Pusher Pins

Order Example: Part Number CPTJ - L 51

Days to Ship: 8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~29	30~34	35~39	40~49
Rate	€ Unit Price	5%	10%	18%

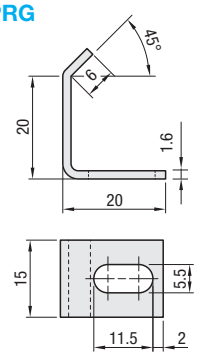
For orders larger than indicated quantity, please request a quotation.

■Circuit Board Rough Guides

RoHS



CPRG



M Material: 1.0330/DC01
S Surface Treatmentl: Electroless Nickel Plating

Part Number	€ Unit Price
CPRG	

Order Example: Part Number CPRG

Days to Ship: 6 Days P.87

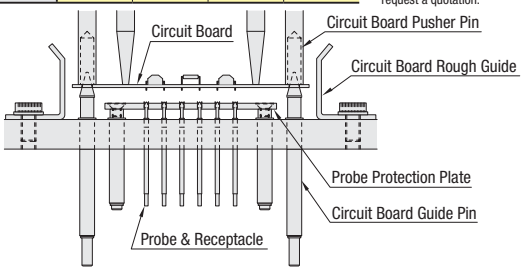
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Simplified Adjustment Units

Simplified Adjustment Units

Addition



Addition



NEW



Product Name	[Simplified Adjustment] X Axis Feed Screw Standard Type	[Simplified Adjustment] X Axis Feed Screw Configurable Type	[Simplified Adjustment] X Axis Feed Screw Large Lead Type
Page	1589	1591	1593





Price Reduction
15%

Addition





[Simplified Adjustment] X Axis Push Screw Standard Type	[Simplified Adjustment] X Axis Feed Screw Compact Type	[Simplified Adjustment] X Axis Feed Screw Selectable Stroke Type	[Simplified Adjustment] X Axis Open/Close Adjustable Unit
1594	1595	1595	1596



NEW



Addition





[Simplified Adjustment] X Axis Rack and Pinion Standard Type	[Simplified Adjustment] Z Axis Rack and Pinion Post Mount Unit w/Scale	[Simplified Adjustment] Z Axis Feed Screw Standard Type	[Simplified Adjustment] Z Axis Push Screw Standard Type
1597	1598	1599	1600







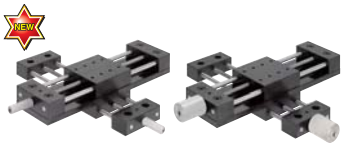
[Simplified Adjustment] Z Axis Medium Load Capacity for Setup Change	[Simplified Adjustment] Z Axis Medium Load Capacity for Initial Setups	[Simplified Adjustment] Dispenser Mounting Accessories
1601	1601	1602

Addition





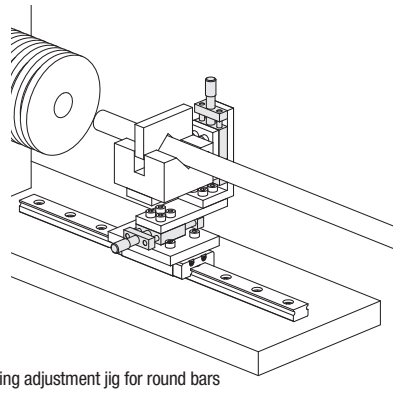
NEW



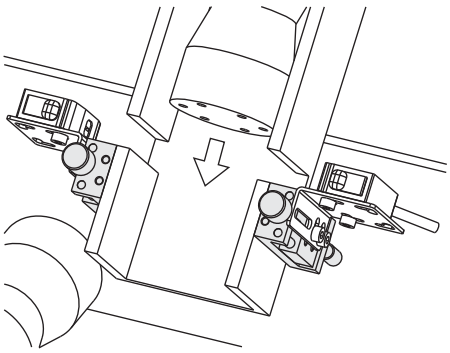


[Simplified Adjustment] XY Axes Feed Screw Standard Type	[Simplified Adjustment] XY Axes Rack and Pinion Type	[Simplified Adjustment] XY Axes Feed Screw Large Lead Type	[Simplified Adjustment] XY Axes Push Screw Standard Type
1603	1604	1605	1606

ex Example



Centering adjustment jig for round bars



Sensor position adjustments for product counter station

Overview of Simplified Adjustment Units

[Simplified Adjustment Units]

MISUMI's Simplified Adjustment Units are designed with simple guide and feed mechanisms for manual positioning and adjustments.
The products were developed based on our many customer voices such as "Slotted hole adjustments for setup changes are time consuming!", "Precision stages are too costly!"
Ideal for adjusting applications non-demanding on accuracies such as jig fixtures, cameras, sensors, nozzles, and conveyor width.
Since the products utilize simplified mechanisms, there are some clearances. For accurate adjustments without clearances, see the Stage Products on **P.1607**
See each product page for accuracy standards and clearances.

[Three major merits to selecting the Simplified Adjustment Units]

1.Cost reduction
Greatly economical compared to producing precision stages in-house (designing, materials, machining, and assembly).

2.Reduced time and tool-less adjustments
Screw tightening tasks commonly associated with in-place adjustments are eliminated. Factory floor work hours can be reduced by tool-less tasking.
* Some products require tools. See each product page for details.

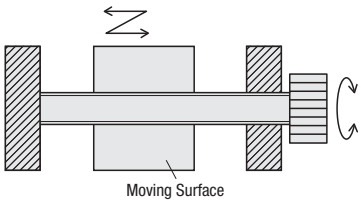
3.Wide product variety
Select from a wide variety of table sizes, feeds, axis selections, and patters. (See table below)

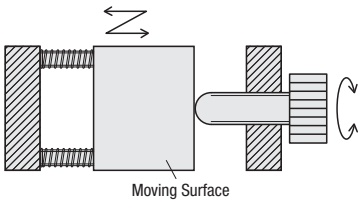
[Feed mechanisms]

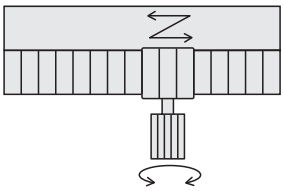
1. Feed Screw
A feed screw runs through the nut, and the table is moved by a screw feed.
Since the table moves by the screw/nut feed mechanism, even in vertical applications, load capacity is higher than the Push Screw type.

2.Push Screw
The table is pushed by a screw. The table is axially loaded with springs from the other side to reduce backlash.
Suitable for feeding light objects in small increments.
The handle protruding location changes as the table moves.

3.Rack & Pinion Type
The table is moved by a combination of rack gear and a pinion.
Features 19mm rapid feed per handle rotation.







Product Lineup

[X Axis] Can be used for fine adjustments in horizontal direction and vertical direction.

*Load capacities listed below are for horizontal use references.
See each product page for vertical load capacities.

Feeding Method	Feed Screw				Left/Right Screw Type	Push Screw	Rack & Pinion Type
Product Name	Standard Type/ Configurable Type/	Large Lead Type	Compact Type	Stroke Selectable Type	Open/Close Width Adjusting Unit	Standard Type	Standard Type
Part Number	XKNEJ/XKNEF	XKS/XKSL	XSEN	XSENC	XANON	XKNG	XKRG/XKRKG
Page	1589, 1591	1593	1595	1595	1596	1594	1597
Table size (mm)	_20~80	_40~80	13x27	6.7x16~6.7x31.4	40x20, 60x40	_20~60	25x40~40x90
Travel Distance (mm)	±7~70	±25~75	±2.5	2.8~77	±15, ±37.5	±5~±7.5	12~±23
One turn of the handle Travel Distance (mm)	0.7~10	3.0	0.5	0.8	1.25 1.75	0.5	19
Load Capacity (N)	39.2~78.4	49.0~68.6	19.6	9.8	49~98	9.8~14.7	29.4~39.2
External Photo							

[Z Axis] Can be used for vertical adjustments.

Feeding Method	Feed Screw		Push Screw	Rack & Pinion Type
Product Name	Standard Type	Intermediate Load Capacity	Standard Type	Post unit with a scale
Part Number	ZKNEJ/ZKNL	XKDSP/XKEMA	ZKNG	ZKB
Page	1599	1601	1600	1598
Table size (mm)	_20~60	_40~60	_20~25	36~28
Travel Distance (mm)	±7~13	±3~±6	±5	±50
One turn of the handle Travel Distance (mm)	0.7	0.7~1.5	0.5	19
Load Capacity (N)	9.8~19.6	19.6~98	2	25
External Photo				

[XY Axes] Can be used for XY positioning and fine adjustments.

Feed Screw		Push Screw	Rack & Pinion Type
Standard Type	Large Lead Type	Standard Type	Standard Type
XYKNEJ/XYKJL	XYKS/XYKSL	XYKNG	XYKRG
1603	1605	1606	1604
_20~60	_40~80	_20~60	40x60
±7~13	±25	±5~±7.5	±14
0.7	0.7~1.5	0.5	19
18.6~36.2	56.8~62.7	9.8~14.7	34.3
			

[Simplified Adjustments] Z Axis Fee Screw Standard Type

-Standard Handle - Large Handle - M6 Mounting Holes-

Features: Economical products with low profiles. Models are also available with large handles and M6 mounting holes that are easy to machine brackets for.

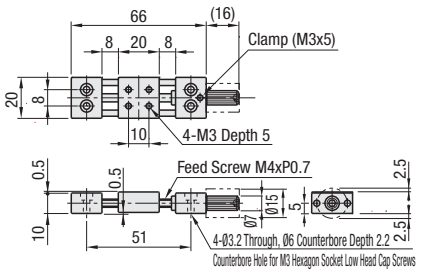


Travel per rotation 0.7mm

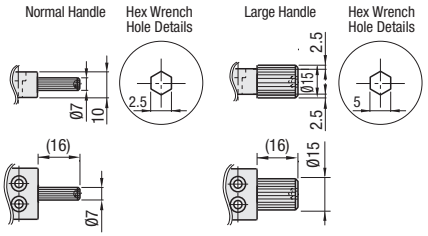
	Type		Main Body		Shaft	Knob	Feed Screws	A
	Normal Handle	Large Handle	M Material	S Surface Treatment	M Material	M Material	M Material	Accessory
Standard	XKNEJ	XKJL	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4301/ X5CrNi18-10	1.4305	1.4301/ X5CrNi18-10	No.20: CBSST3-12, 4 pcs. No.25: SCB3-10, 4 pcs. No.40, 40A, 60, 60A: SCB4-10, 4 pcs.
M6 Mounting Holes	XKJM	XKJML						

Table surfaces and bottoms are 0.5mm higher than the end mounts.

XKNEJ20 XKJL20



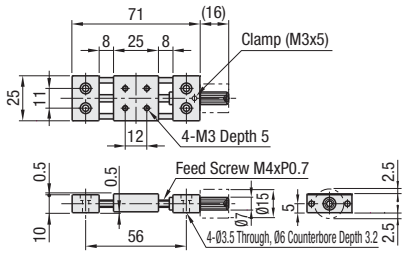
Handle Shape Comparisons



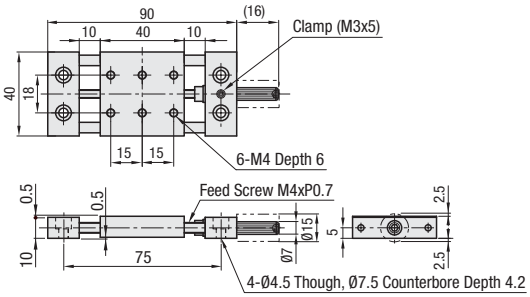
Note for possible interferences of the large handle (if used) with the plate, since the handle diameter is larger than the plate thickness.

Large handle interference can be avoided if Scaled Plate option is ordered as an alteration.

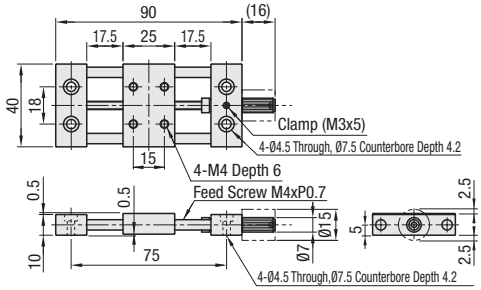
XKNEJ25 XKJL25



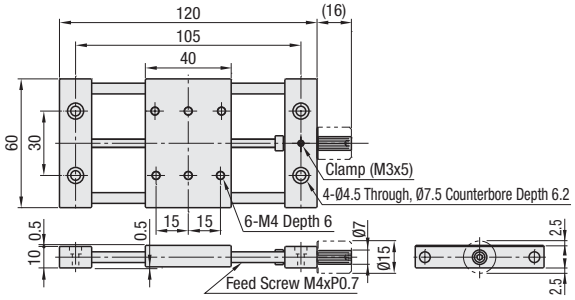
XKNEJ40 XKJL40



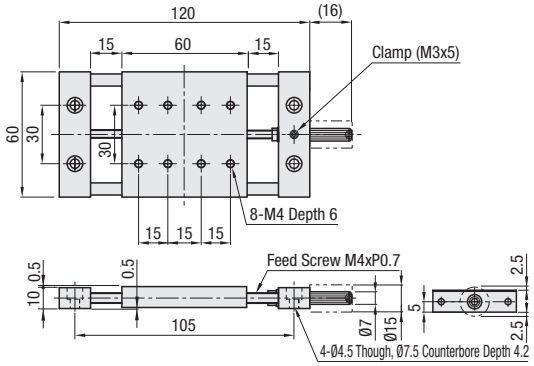
XKNEJ40A XKJL40A



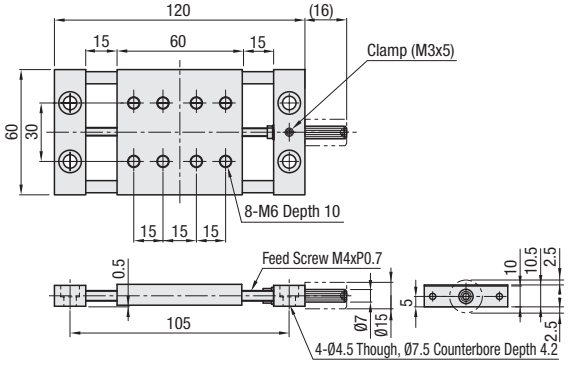
XKNEJ60A XKJL60A



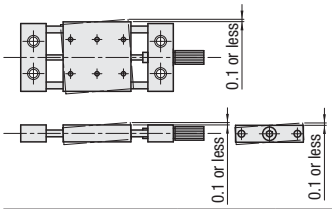
XKNEJ60 XKJL60



XKJM60 XKJML60

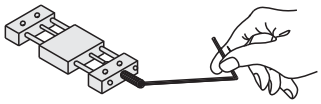


Accuracy Standards



Unsuitable for precise positioning due to backlash shown on the left.

One Point
Long stroke moves can be made easier with use of ball-point hex wrench.



Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Loa Capacity (N) Horizontal	Loa Capacity (N) Vertical	Weight (g)	€ Unit Price 1~9 pcs. XKNEJ XKJM	€ Unit Price 1~9 pcs. XKJL XKJML
XKNEJ XKJL	20	20x20	±7	19.6	9.8	39		
	25	25x25				49		
	40	40x40	±9	39.2	19.6	104		
	40A	40x25	±17			91		
	60	60x60	±13			176		
	60A	60x40	±23			147		
XKJM XKJML	60	60x60	±13			176		

Travel per rotation 0.7mm

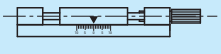
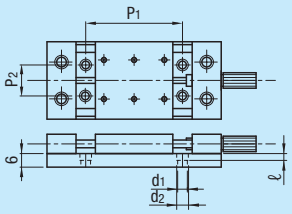
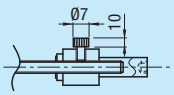
For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number: XKNEJ40, XKJML60 | Days to Ship: 8 Days | Express A: 8,00 EUR/piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations | Part Number: XKJL40A - MMR (MMR · CLC) | 8 Days

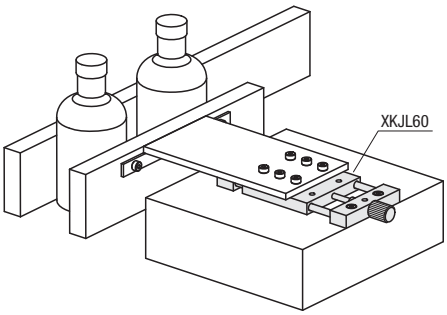
Express Serviceis not available.

Alterations	Mount a plate with scaled label on the stage	Change of Clamp (Knurled Knob)
Spec.	Mount a scaled plate to the stage. Minimum Graduation: 0.5mm Included screws have been changed as shown below right.  **Material** EN AW-6063/AlMg0,7Si **Surface Treatment** Black Anodize	 Scaled Plate alteration will change the mounting hole pitch since a plate is attached to the stage. Included (4pcs.) No.20 :SCB2-5 No.25:SCB3-6 No.40 (A) :CBSST4-8 No.60 (A):CBSST4-8	Change Clamp Screw to Knurled Knob 

No.	P1	P2	d1	d2	ℓ
20	26	8	2.5	4.3	4
25	31	11	3.5	6.0	3.5
40 (A)	50	18	4.5	7.5	3
60 (A)	75	30	4.5	7.5	3

Code	MMR	CLC
Price Adder	(No.20·25) 12,00 (No.40·40A·60·60A) 14,00	2,00

Example

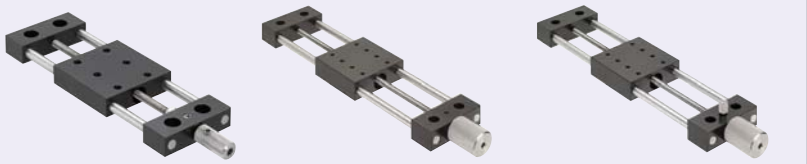


Conveyor width adjustments during setup changes

[Simplified Adjustments] X Axis Feed Screw - Configurable Type

-Standard Handle · Large Handle · M6 Mounting Holes-

Features: This series features freely selectable long stroke length/table size combinations. Easy to use large handle type in vertical applications is also included.



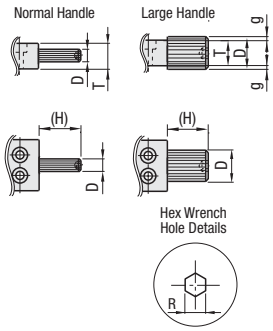
RoHS

- Travel Distance Per Handle Rotation: 0.7mm (T=10) 1.0mm (T=20)
- Table's top and bottom surfaces are designed to be 0.5mm higher than the end brackets.
- See the right page for accuracy standards.

	Type		Main Body		Shaft	Knob	Feed Screws	A
	Normal Handle	Large Handle	M Material	S Surface Treatment	M Material	M Material	M Material	Accessory
Standard	XKNEF	XKFL	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4301	1.4305	1.4301	T=10 SCB4-10, 4pcs. T=20 SCB5-20, 4pcs.
M6 Mounting Holes	XKFM	XKFML						

Type	T	D	(H)	C	MxPitch	M_1	d_1	d_2	ℓ	R	g	t
XKNEF XKFM	10	7	16	15	M4xP0.7	3	4.5	7.5	4.2	2.5	-	5
	20	10	30	25	M6xP1.0	4	5.5	9	5.2	4	-	10
XKFL XKFML	10	15	16	15	M4xP0.7	3	4.5	7.5	4.2	5	2.5	5
	20	24	30	25	M6xP1.0	4	5.5	9	5.2	8	2	10

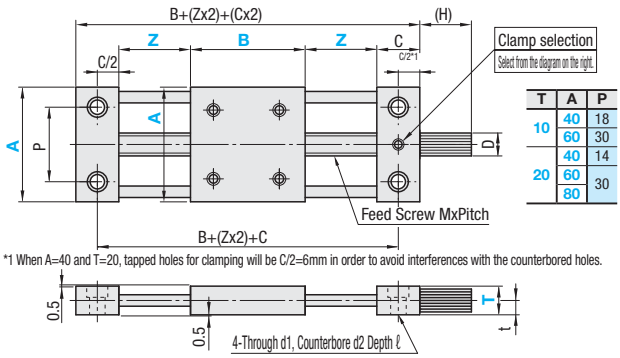
Handle Shape Comparisons



Hex Wrench Hole Details

- There are two handle sizes available to accommodate the T dimension. Please see the table on upper left for details. Note the interferences of a Large Handle, if selected, with the Plate as shown in the illustration above.
- The large handle can be used in horizontal mounting if a scale plate alteration is selected.

XKNEF XKFL XKFM XKFML

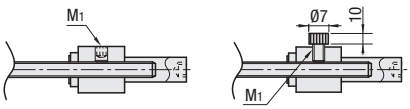


T	A	P
10	40	18
	60	30
20	40	14
	60	30
	80	

*1 When A=40 and T=20, tapped holes for clamping will be C/2=6mm in order to avoid interferences with the counterbored holes.

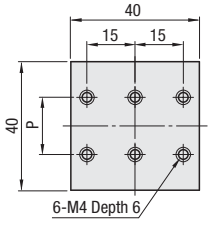
Clamp Selection

S(Standard Set Screw) K(Knurled Knob)

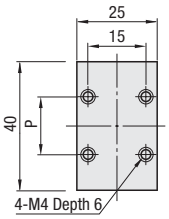


Dimensions of the upper mounting holes (A-B)

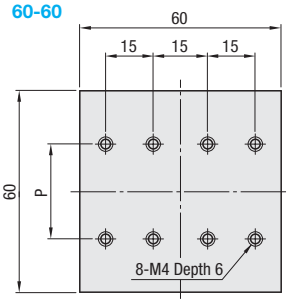
40-40



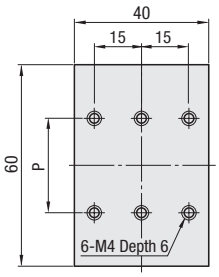
40-25



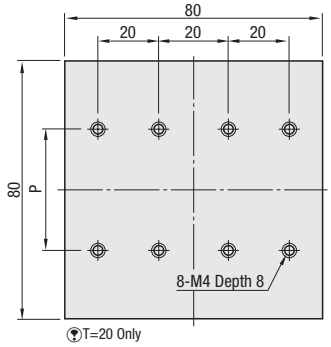
60-60



60-40

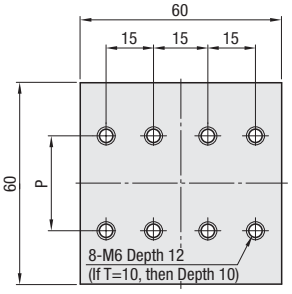


80-80

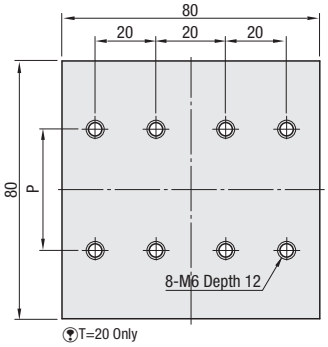


T=20 Only

XKFM60-60 (M6 Mounting Holes)
XKFML60-60 (M6 Mounting Holes)

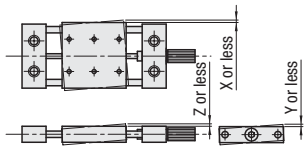


XKFM80-80 (M6 Mounting Holes)
XKFML80-80 (M6 Mounting Holes)



T=20 Only

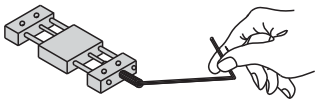
Accuracy Standards



T	X	Y	Z
10	0.1	0.1	0.1
20	0.15	0.15	0.15

There are some mechanical clearances as indicated above, and not recommended for positioning applications requiring accuracies.

One Point
Long stroke moves can be made easier with use of ball-point hex wrench.



Part Number			Z	Clamp Selection	Load Capacity (N)			
					T=10		T=20	
Type	T	A-B	Travel Distance (Zx2)		Z=10~30	Z=40~70	Z=10~30	Z=40~70
XKNEF XKFL	10 20	40-40	(10) 25 40 60	(Standard) S (Knurled Knob) K	39.2 (Horizontal) 19.6 (Vertical)	34.3 (Horizontal) 17.2 (Vertical)	78.4 (Horizontal) 39.2 (Vertical)	68.6 (Horizontal) 34.3 (Vertical)
		40-25	10 25 40 60					
		60-60	(15) 30 50 70					
		60-40	15 30 50 70					
		80-80 (T=20 Only)	15 30 50 70		-	-		
XKFM XKFML	10 20	60-60	(15) 30 50 70		39.2 (Horizontal) 19.6 (Vertical)	34.3 (Horizontal) 17.2 (Vertical)		
		80-80 (T=20 Only)	15 30 50 70		-	-		

Dimensions in ( ) are not selectable when T=10. Travel per Handle 1 Rotation: 0.7mm (T=10), 1.0mm (T=20)

Order Example

Part Number	-	Z	-	Clamp selection
XKNEF10-40-25	-	Z40	-	S
XKFM20-60-60	-	Z50	-	K

Days to Ship: **10 Days**

Express B: 10,00 EUR/ piece P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Price

T	A-B	€ Unit Price 1~9 pcs.							
		XKNEF XKFM				XKFL XKFML			
		Z				Z			
		10 15	25 30	40 50	60 70	10 15	25 30	40 50	60 70
10	40-40								
	40-25								
	60-60								
	60-40								
20	40-40								
	40-25								
	60-60								
	60-40								
	80-80								

For orders larger than indicated quantity, please request a quotation.

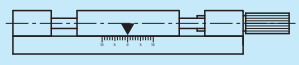
Alterations

Part Number	-	Z	-	Clamp selection	-	(MMR)
XKNEF10-40-25	-	Z40	-	S	-	MMR

10 Days

Express Serviceis not available.

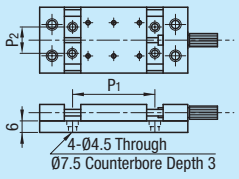
Alteration	Mount a plate with scaled label on the stage
Spec.	Attaches a scaled plate on the stage. Included mounting screws will change to CBSST4-8, 4 pcs. Minimum Reading 0.5mm



Large Handle Mounted



When the scale plate alteration is selected, the plate attached to the stage bottom will alter the stage base mounting hole pitch.



T	A	P2
10	40	18
	60	30
20	40	14
	60	30
	80	

A-B	Z	P1
40-40	10 25	50
	40 60	110
40-25	10 25	35
	40 60	95
60-60	15 30	75
	50 70	145
60-40	15 30	55
	50 70	125
80-80	15 30	95
	50 70	165

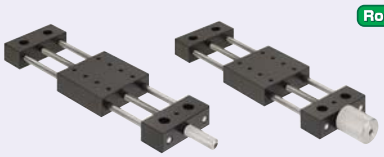
Code	MMR
Price Adder	14,00

[Simplified Adjustments] X Axis Feed Screw - Large Lead Type

-Standard Handle · Large Handle · M6 Mounting Holes-

CAD Data

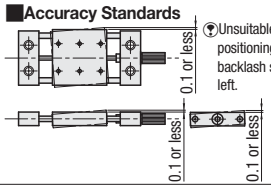
Features: A feed screw type simplified adjustment unit with a 3-starts screw. Suitable for rapid feeding such as making quick jig moves during setup changes.



RoHS

Travel Distance Per Handle Rotation: 3.0mm

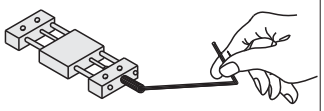
Accuracy Standards



Unsuitable for precise positioning due to backlash shown on the left.

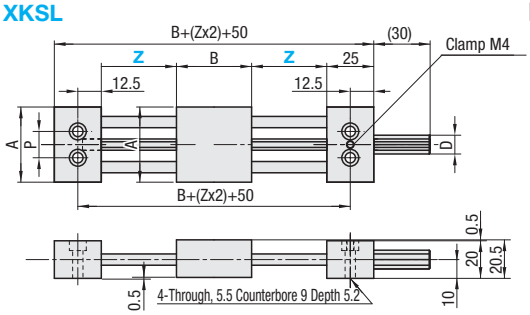
One Point

Long stroke moves can be made easier with use of ball-point hex wrench.



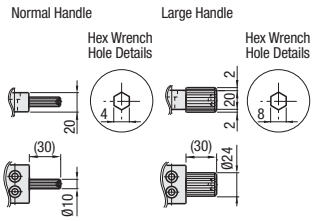
	Type		Main Body		Shaft	Knob	Feed Screws	Accessory
	Normal Handle	Large Handle	M Material	S Surface Treatment	M Material	M Material	M Material	A Accessory
Standard	XKS	XKSL	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4301/ X5CrNi18-10	1.4305/ X10CrNiS18-9	1.4301/ X5CrNi18-10	SCB5-20x4pcs.
M6 Mounting Holes	XKSM	XKSML						

XKS XKSL



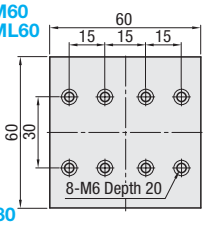
Table's top and bottom surfaces are designed to be 0.5mm higher than the end brackets.

Handle Shape Comparisons

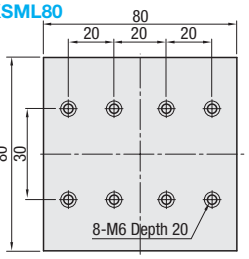


Note for possible interferences of the large handle (if used) with the plate, since the handle diameter is larger than the plate thickness.

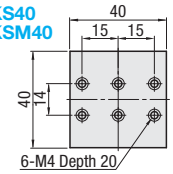
XKSM60 XKSML60



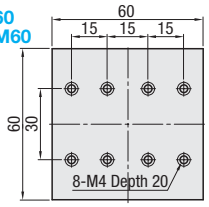
XKSM80 XKSML80



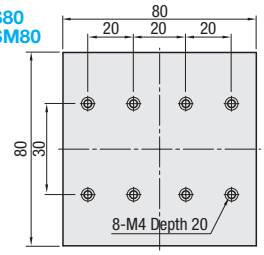
XKS40 XKSM40



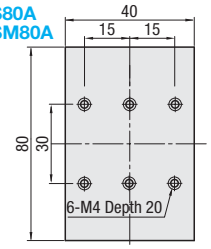
XKS60 XKSM60



XKS80 XKSM80



XKS80A XKSM80A



Part Number Type	No.	Z Travel Distance (Zx2)	Stage Surface A-B (mm)	D	P	Load Capacity (N)	€ Unit Price 1~9 pcs. XKS XKSM	€ Unit Price 1~9 pcs. XKSL XKSML
XKS XKSL	40	25	40x40	10 (Standard Handle) 24 (Large Handle)	14	68.6		
		40 50				58.8		
	60	25	60x60		30	68.6		
		50				58.8		
		75						
	80	25	80x80			63.7		
		50				53.9		
		75						
	80A	25	80x40			68.6		
		40 50				58.6		
XKSM XKSML	60	25	60x60			68.6		
		50				58.8		
		75						
	80	25	80x80			49.0		
		50						
		75						

Travel Distance Per Handle Rotation: 3.0mm

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number XKSL60 - Z Z50

Days to Ship: 10 Days

Express B 10,00 EUR/piece P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations: Part Number XKSM80 - Z Z50 - (MMR · CLC) MMR

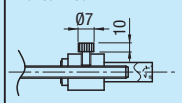
10 Days

Express Serviceis not available.

Alteration	Mount a plate with scaled label on the stage	Change of Clamp (Knurled Knob)
Spec.	Mounts a scaled plate. CBSST4-8, 4pcs. included. Minimum Reading 0.5mm Scaled Plate alteration will change the mounting hole pitch since a plate is attached to the stage. 4-Ø4.5 Through Ø7.5 Counterbore Depth 3	Change Clamp Screw to Knurled Knob
Code	MMR	CLC
Price Adder	(No.40 · 60) 14,00 (No.80 · 80A) 16,00	2,00



A	Z	P1	P2
40	25	65	14
	40	95	
	50	115	
60	25	85	30
	50	135	
	75	185	
80	25	105	
	50	155	
	75	205	
80A	25	65	
	40	95	
	50	115	



[Simplified Adjustments] X Axis Push Screw Standard Type

-Standard Handle · Screw Length Specified-

CAD Data

Features: Economical adjustment unit for applications not requiring high precision. Springs are utilized to minimize backlash. A screw length specifiable type is provided for remote operating applications.

Standard Type



Screw Length Configurable Type (CL alteration)

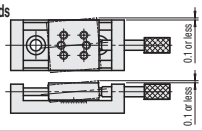




RoHS

Travel Distance Per Handle Rotation: 0.5mm

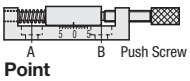
Accuracy Standards



Unsuitable for precise positioning due to backlash shown on the left.

How to Mount

(1) Remove the Push Screw
(2) Screw down the A side
(3) Move the table manually to the A side.
(4) Screw down the B side.
(5) Re-install the Push Screw.



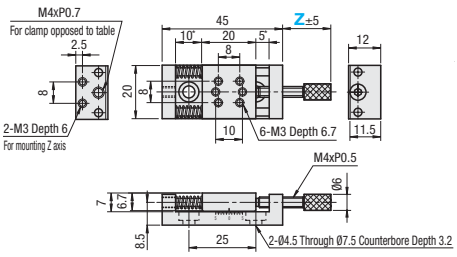
One Point

The push screw and clamp screw can be reinforced by combining with an extra nut to form a double-nut arrangement.

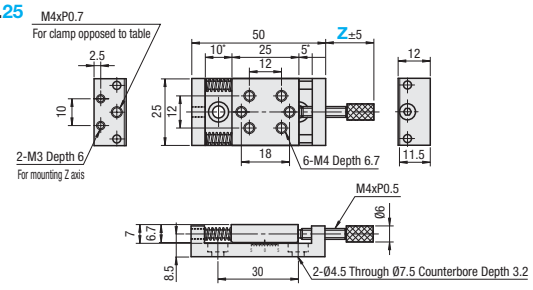
Z Dimension Configurable	Type	Main Body		Shaft		Spring	Push Screw		Accessory
		M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	A Accessory
Standard (Z dim. fixed)	XKNG	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4125/ X105CrMo17	56HRDC~	1.4568/ X7CrNiAl17-7	1.1191/ C45E	Electroless Nickel Plating	No.:20·25CBS4-6x2pcs. No.:40·60CBSS5-8x4pcs.
Screw Length Configurable (Z Dimension Selectable)	XKNGZ								

* Low Head Hex Socket Cap Screw CBS P.2-189, Ultra Low Head Hex Socket Cap Screw CBSS P.2-190

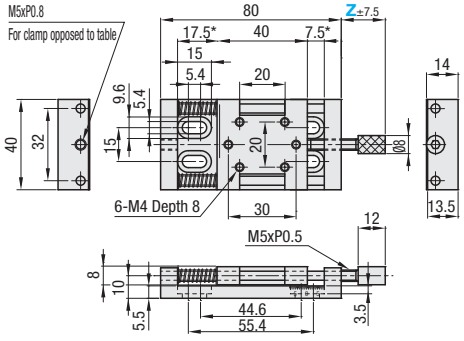
No.20



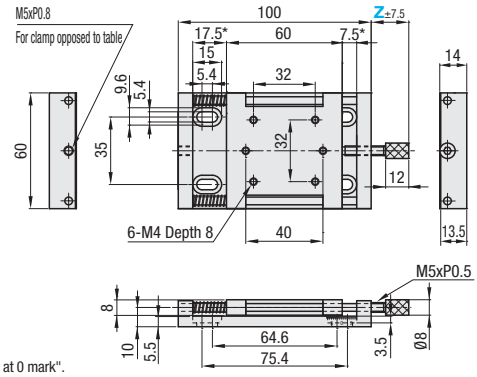
No.25



No.40



No.60



Stroke has been set up based on max. deflection of the spring. Using beyond the stroke limits could deteriorate accuracies.

* Dimensions are for "Scale aligned at 0 mark".

Part Number Type	No.	Z Available for XKNGZ only.		Z XKNG Fixed	Stage (mm)	Travel Distance (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Weight (g)	€ Unit Price 1~19 pcs. XKNG	€ Unit Price 1~19 pcs. XKNGZ
(Standard Type) XKNG	20	28	38	18	20x20	±5	9.8	2	38		
	25	28	38		25x25				55		
(Screw Length Configurable) XKNGZ	40	30	40	19.5	40x40	±7.5	14.7	8	104		
	60	40	60		60x60				193		

Minimum Graduation: 0.5mm Travel Distance Per Handle Rotation: 0.5mm Vertical load capacity will be lower than the Feed Screw Type since springs are utilized. For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number - Z → XKNG20 - Z30 / XKNGZ40 - Z30

Days to Ship: - XKNG 6 Days P.87

Example

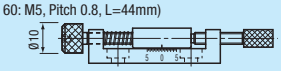
- XKNGZ 8 Days | Express A | 8,00 EUR/ piece P.88

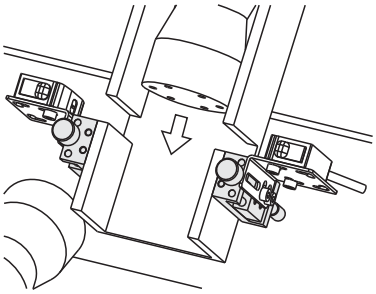
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations: Part Number - (CL) → XKNG20 - CL

- XKNG 6 Days - XKNGZ 8 Days

Express Serviceis not available.

Alteration	Opposed Clamp Bolt
Spec.	Adds Opposing Clamp Screws to immobilize the tables: (No.20 · 25: M4, Pitch 0.7, L=30mm; No.40 · 60: M5, Pitch 0.8, L=44mm) 
Code	CL
Price Adder	3,00



Sensor position adjustments for product counter station

[Simplified Adjustments] X Axis Feed Screw Compact Type / Stroke Selectable Type

Price Reduction 15%

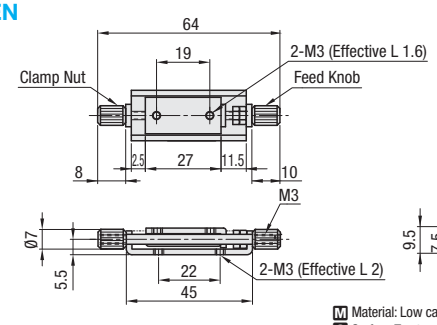
CAD Data

Features: Eliminates frustrations when positions are lost at the final one turn of screws in slotted holes. The low profile of 9.5mm is effective in narrow spaces.

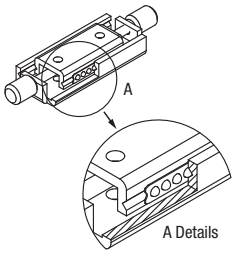
Compact Type RoHS



XSEN



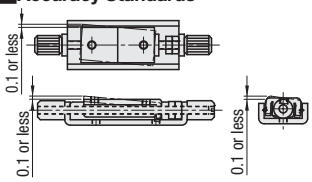
Slides smoothly with ball guides on each side.



Travel Distance Per Handle Rotation: 0.5mm

M Material: Low carbon steel (1.0330/DC01)
S Surface Treatment: Salt-bath nitro carburizing

Accuracy Standards



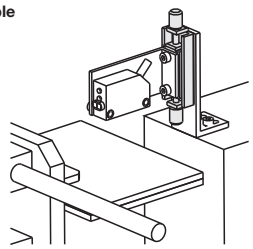
Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)	€ Unit Price 1~10 pcs.	Volume Discount 11~29 pcs.
XSEN	5	13x27	±2.5	19.6	30		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number XSEN5

Days to Ship: 6 Days P.87

Example



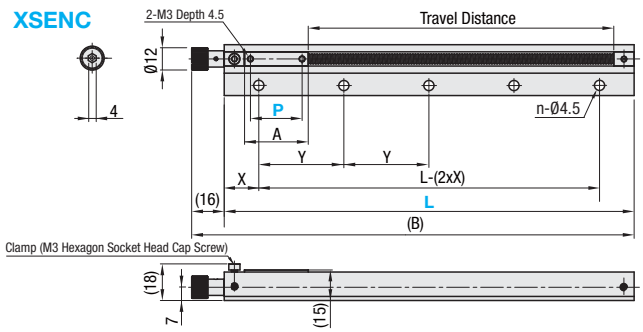
Fine adjustments of product counter sensors.

Features: Five stroke lengths from 60mm to 200mm are offered, mainly for sensor adjustments during setup change-over work.

Stroke Selectable Type RoHS



XSENC



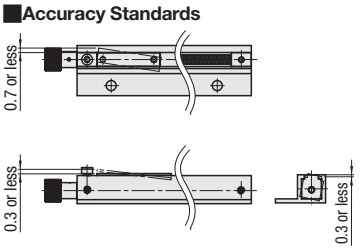
M Material: Aluminum (Clear Anodizing)
A Accessories: Hexagon Socket Head Cap Screw (P.2-174 SCB4-6) 2pcs.

Stage (mm) P	A
10	16
12	18
19	25
25.4	31.4

Travel per rotation : 0.8mm

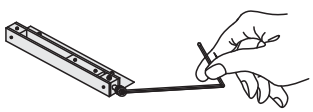
There will be no anodizing on rail ends and holes.

Accuracy Standards



There are some mechanical clearances as indicated above, and not recommended for positioning applications requiring accuracies.

One Point
Long stroke moves can be made easier with use of ball-point hex wrench.



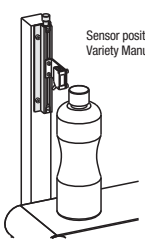
Part Number Type	L	P (Selection)	X	Y (When 150Y and 200Y)	Holes (N)	(B)	Dist. Between End Taps L-(2xX)	Travel Distance	Load Capacity (N)	€ Unit Price 1~19 pcs.
XSENC	60	10 12 19 25.4	10	-	2	76	40	L-A-23	9.8	
	70		14	-	2	86	42	L-A-25		
	80		18	-	2	96	44			
	150		20	-	2	166	110	L-A-30		
	150Y(*)		15	40	4		120			
	200		22	-	2	216	156			
	200Y (*)		20	40	5		160			

Models denoted by (*) will have added qty. of holes on the mounting surface. For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number XSENC150 - P 25.4

Days to Ship: 10 Days

Example



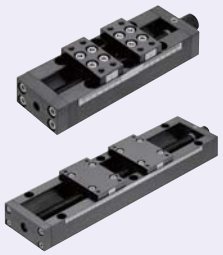
Sensor position adjustments for Large Variety Manufacturing schemes.

[Simplified Adjustments] X Axis Left/Right Screw Width Adjust Unit

CAD Data

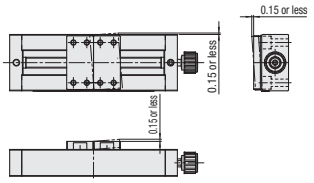
Features: Two tables open and close with an operation of a single knob, utilizing a left/right screw. For guide width adjustments and centering jig fixtures.

Open/Close Width Adjusting Unit RoHS



See the table below for Travel Per Handle Rotation.

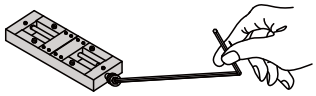
Accuracy Standards



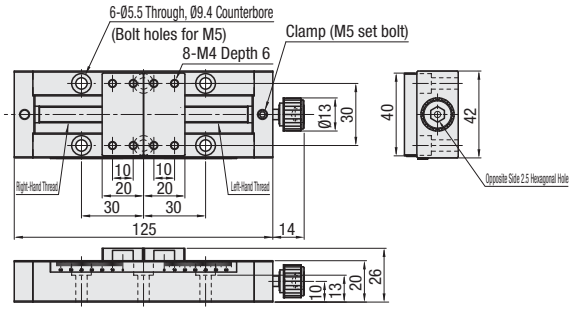
There are some clearances as shown in an illustration above, and not suitable for positioning requiring accuracies.

One Point

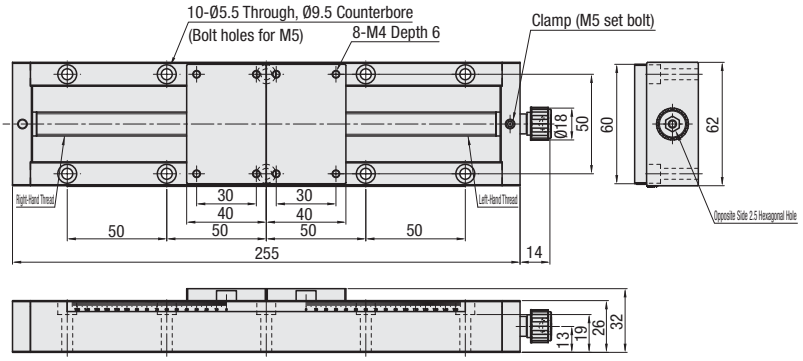
Long stroke moves can be made easier with use of ball-point hex wrench.



XANON60



XANON150



M Material: 1.1191/C45E (Black Oxide)
A Accessories: Hex Socket Cap Screws (P.2-174 SCB5-20) 4pcs.

Part Number		Stage (mm)	Travel Distance (mm)	Travel Distance Per Handle Rotation (mm)	Load Capacity (N)	Weight (g)	€ Unit Price
Type	No.						1~9 pcs.
XANON	60	40x20	60 (30 per side)	2.5 (1.25 per side)	98 (49 per side)	640	
	150	60x40	150 (75 per side)	3.5 (1.75 per side)	196 (98 per side)	2160	

Minimum Graduation : 1mm

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XANON150

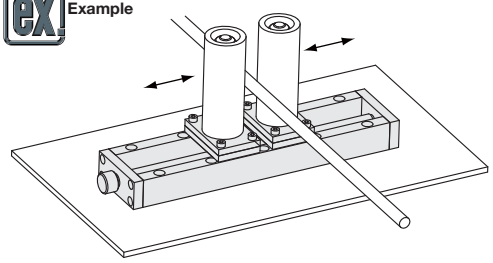
Days to Ship — 10 Days | Express B | 10,00 EUR/piece | P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

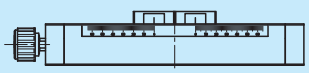
Alterations — Part Number - (R) → XANON60 - R; 10 Days

Express Serviceis not available.

Example



Guide width adjustments for a winding machine

Alteration	Position of Clamp (Right and Left side reversed)
Spec.	
Code	R
Price Adder	Free of Charge

[Simplified Adjustments] Z Axis Rack & Pinion - Standard Type - Standard Grade / Precision Grade

CAD Data

■ **Features:** Simplified construction stages with large rapid feeds. Select from Standard and Precision grades based on application needs

■Standard Grade XKRG

■Precision Grade XKRKG



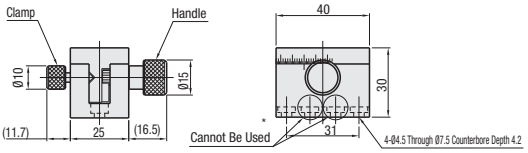
RoHS

Part Number are not applicable

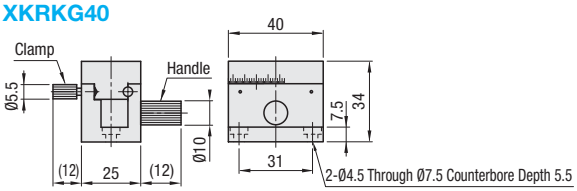
M Material: EN AW-6063/AlMg0,7Si
S Surface Treatment: Black Anodize
A Accessories:
(XKRG) Low Head Hex Socket Cap Screws (CBS4-6) 4pcs.
(XKRKG)
Hex Socket Cap Screws (SCB4-6) 4pcs.
* 2pcs. for No.40

Minimum Reading 0.5mm
Travel per Rotation: approx. 19mm
*XKRG40/60 counterbored holes are NOT useable since permanently covered by the table top plate.

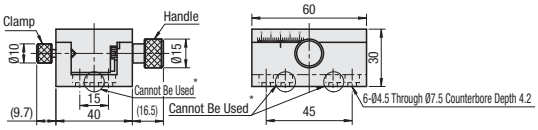
XKRG40



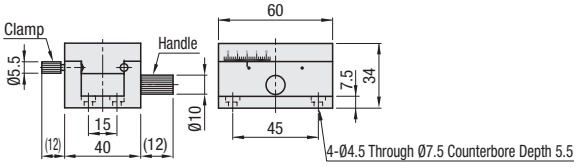
XKRKG40



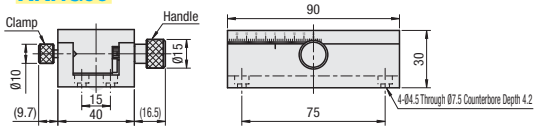
XKRG60



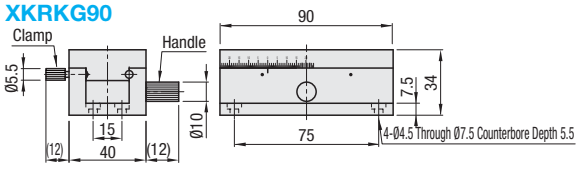
XKRKG60



XKRG90

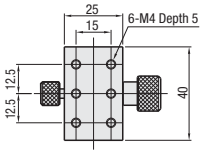


XKRKG90

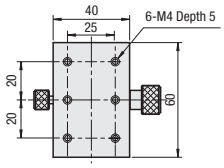


■Upper Mounting Hole Dimensions

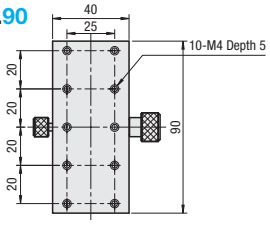
No.40



No.60

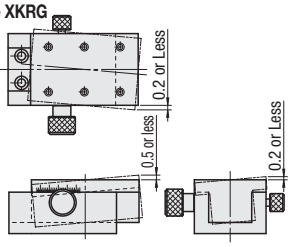


No.90

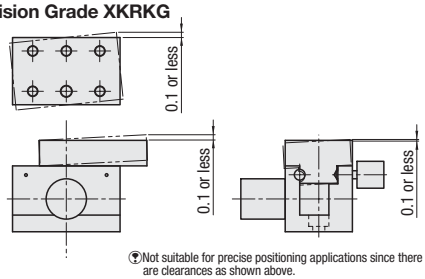


■ Accuracy Standards

Standard Grade XKRG



Precision Grade XKRKG



Not suitable for precise positioning applications since there are clearances as shown above.

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (kg)	€ Unit Price 1~9 pcs. XKRG	XKRKG
XKRG XKRKG	40	25x40	±12	29.4	0.10		
	60	40x60	±14	39.2	0.21		
	90	40x90	±23		0.30		

For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number | XKRG60

Days to Ship | 6 Days | P.87

[Simplified Adjustments] Z Axis Rack & Pinion - Scaled Post Unit

CAD Data

■ Long stroke adjustment units developed for height adjustments during setup changes that require long travels.

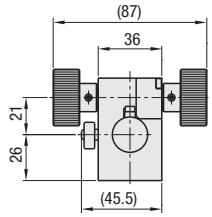


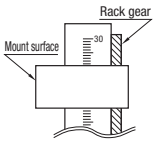
Type	Posts	Block		Handle	Rack Gear	Pinion Gears
	M Material	M Material	S Surface Treatment	M Material	M Material	M Material
ZKB	1.4301/X5CrNi18-10	EN AW-6063/AlMg0,7Si	Clear Anodize	EN AW-5056/AlMg5	1.1191/C45E	1.1191/C45E

Bracket sold separately. Product matching the mounting configuration can be selected by referring to the details in the drawings.

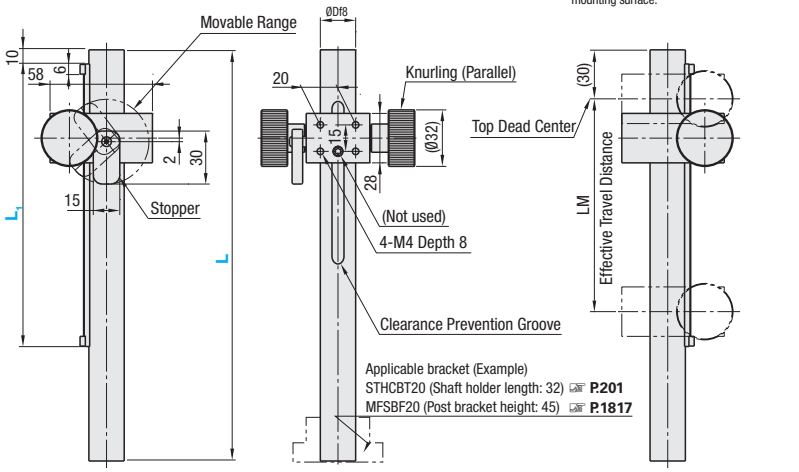
ZKB

Scale graduation is expressed in centimeters.
Use the scale as a reference only.
Scale characters are printed by laser markings. The characters may fade if wiped using volatile solvents.



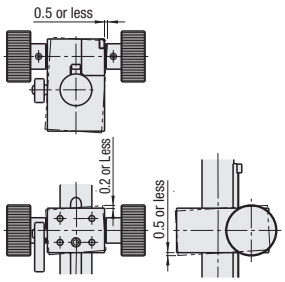


The scale is placed on the right side facing the mounting surface.



Applicable bracket (Example)
STHCBT20 (Shaft holder length: 32) ☞ P.201
MFSBF20 (Post bracket height: 45) ☞ P.1817

■ Accuracy Standards



Part Number			L	L1	Travel Distance (LM) (mm)	Load Capacity (N)	Weight (kg)	€ Unit Price
Type	Df8							1~5 pcs.
ZKB	20	-0.020 -0.053	150	110	70	25	0.6	
			200		70		0.7	
				160	120		0.7	
			250		120		0.9	
			300	210	170		1.0	

Travel per Handle Rotation: Approx. 19mm

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L	-	L1
ZKB20	-	300	-	210

Days to Ship: **10 Days** | Express B | 10,00 EUR/ piece | P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations

Part Number	-	L	-	L1	-	(U · L)
ZKB20	-	300	-	210	-	U30

10 Days ⊗Express Serviceis not available.

Alterations	Alter Rack Gear mounting position.	Alter Scale placement position.
Spec.	Lower the rack gear placed at 10mm from the top end in 10mm increments. Applicable size [L-L1] 200-110, 250-160 300-210 U≤40 Mount method U30	Move the scale position from the right side to the left side facing the mounting surface. Mount method L
Code	U	L
Price Adder	Free of Charge	Free of Charge

One Point



Combined image with MISUMI Shaft Support product

[Simplified Adjustments] Z Axis Feed Screw - Standard Type

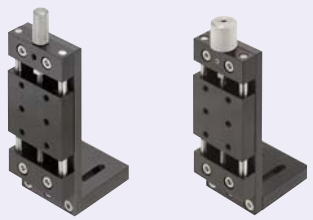
-Standard Handle · Large Handle-

CAD Data

Features: Product configured for Z axis use by adding a bracket to a feed screw type X axis stage. Compared to the push screw type shown on the right page, the feed screw excels in load capacities.

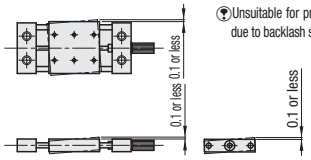
Feed Screw

RoHS



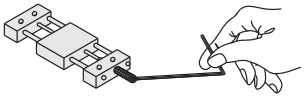
Type		Main Body		Shaft	Knob	Feed Screws	A Accessory
Normal Handle	Large Handle	M Material	S Surface Treatment	M Material	M Material	M Material	
ZKNEJ	ZKJL	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4301/ X5CrNi18-10	1.4305/ X10CrNiS18-9	1.4301/ X5CrNi18-10	Hexagon Socket Head Cap Screw (ISO4762) 2pcs.

Accuracy Standards



Unsuitable for precise positioning due to backlash shown on the left.

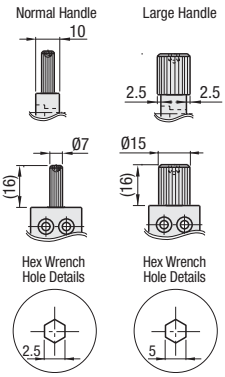
One Point



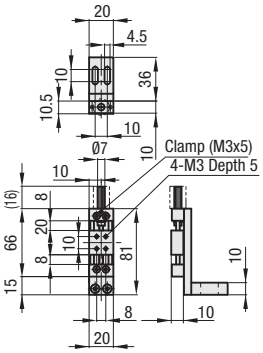
Long stroke moves can be made easier with use of ball-point hex wrench.
Long stroke adjustments are easily made.

Travel per rotation 0.7mm

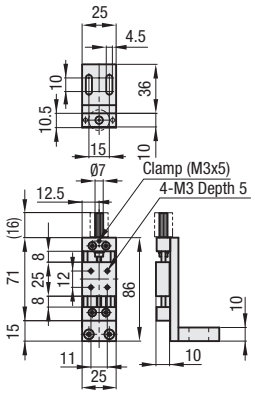
Handle Shape Comparisons



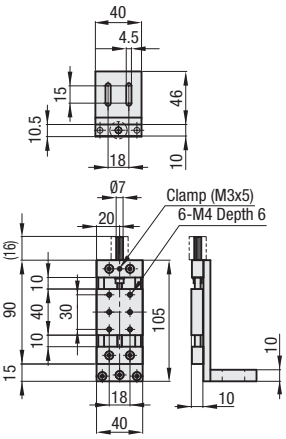
ZKNEJ20 ZKJL20



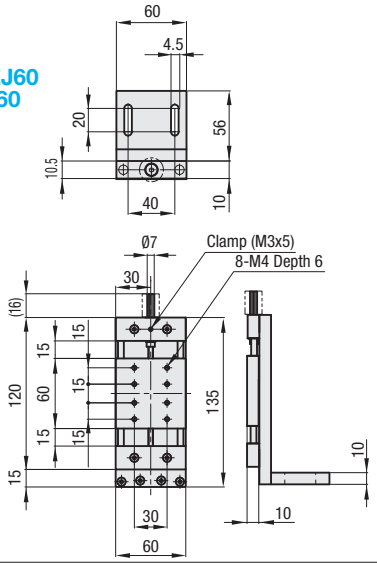
ZKNEJ25 ZKJL25



ZKNEJ40 ZKJL40



ZKNEJ60 ZKJL60



Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)	€ Unit Price 1~9 pcs. ZKNEJ	ZKJL
ZKNEJ ZKJL	20	20x20	± 7	9.8	80		
	25	25x25			104		
	40	40x40	± 9	19.6	217		
	60	60x60	± 13		388		

Travel distance per handle rotation: 0.7mm

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZKJL40

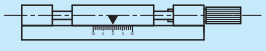
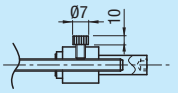
Days to Ship — 8 Days — Express A 8,00 EUR/ piece

A Express Charge of 21,60 EUR for 3 or more identical pieces. P.88

Alterations

Part Number - (MMR · CLC)
ZKNEJ40 - MMR

8 Days
Express Serviceis not available.

Alterations	Attach a Scaled Label	Change of Clamp (Knurled Knob)
Spec.	Adds a scaled label on a Z axis bracket. Minimum Graduation: 0.5mm 	Change Clamp Screw to Knurled Knob 
Code	MMR	CLC
Price Adder	(No.20 · 25) 12,00, (No.40 · 60) 14,00	2,00

[Simplified Adjustments] Z Axis Push Screw - Standard Type

CAD Data

Features: A push screw type X axis unit is configured into a Z axis use unit with a bracket added. Compared to the feed screw type shown on the right page, the unit is more compact and has finer feeding characteristic. Utilize for light loads.

Push Screw

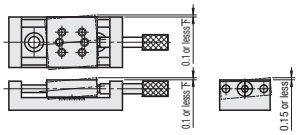
RoHS



Type	Main Body		Shaft	Spring	Push Screw	Accessory
	M Material	S Surface Treatment	M Material	M Material	M Material	A Accessory
ZKNG	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4125 (56HRC)	1.4568/ X7CrNiAl17-7	1.1191/C45E (Electroless Nickel Plating)	Hexagon Socket Low Head Cap Screw (CBS4-6) 2pcs.

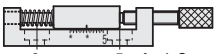
Accuracy Standards

Unsuitable for precise positioning due to backlash shown on the left.



How to Mount

(1) Remove the Push Screw.
(2) Screw down the A side.
(3) Move the table manually to the A side.
(4) Screw down the B side.
(5) Re-install the Push Screw.

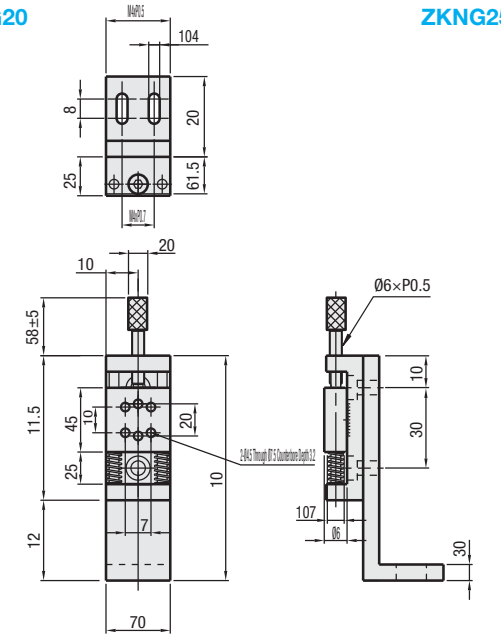


One Point

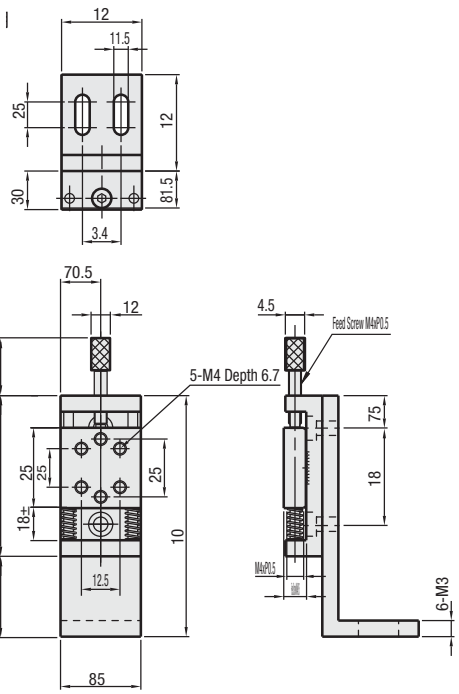
The screw clamp can be reinforced by combining with an extra nut to form a double-nut arrangement.

Minimum Reading 0.5mm * Dimensions are for "Scale aligned at 0 mark".
Travel Distance Per Handle Rotation: 0.5mm

ZKNG20



ZKNG25



Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)	€ Unit Price 1~19 pcs.
ZKNG	20	20x20	±5	2	54	
	25	25x25			72	

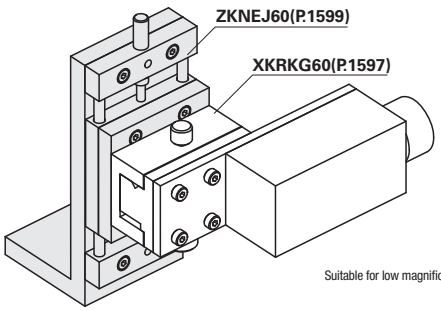
Travel distance per handle rotation: 0.5mm

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZKNG20

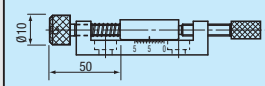
Days to Ship: 6 Days P.87

Example



Suitable for low magnification camera XZ axes adjustments by combining with an X Axis Rack & Pinion Unit on **P.1597**

Alterations — Part Number: ZKNG20 - (CL) CL; Days to Ship: 6 Days

Alteration	Opposed Clamp Bolt
Spec.	Opposing clamp screw for table immobilizing (M4, Pitch 0.7) will be included. 
Code	CL
Price Adder	3,00

[Simplified Adjustments] Z Axis Medium Load Capacity
- For Frequent Setups / For Infrequent Setups

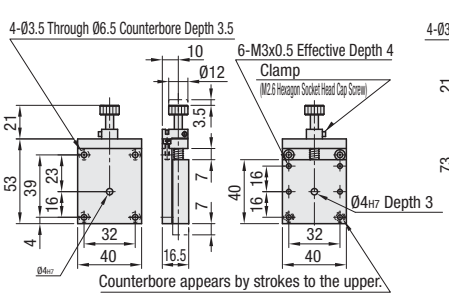
CAD Data

Features: A Z axis unit that can support a load. Suitable for camera and dispenser setup changes, with little backlash and a scale.

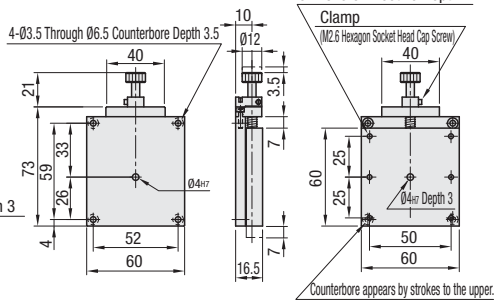
For Set-up Change RoHS



XKDSP40



XKDSP60



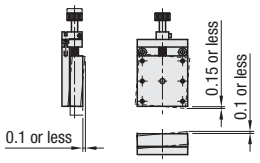
Travel Distance Per Handle Rotation: 1.5mm

Minimum Reading 0.5mm

M Material: EN AW-5052/AlMg2,5 (Black anodized)

A Accessories: Included: Hex Socket Cap Screws CB3-10, 4pcs.

Accuracy Standards



Unsuitable for precise positioning due to backlash shown on the left.

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)	€ Unit Price 1~19 pcs.
XKDSP	40	40x40	±6	19.6	100	
	60	60x60		39.2	190	

The allowable loads are for using in Z-Axis configuration (in the orientation shown in the photo).
For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number **XKDSP60**

Days to Ship: **6 Days** P.87

Features: A Z axis unit that can support a load. The nylon coated nut used has little backlash. Suitable for infrequently adjusted axis such as cameras, etc.

For First Time Installment RoHS

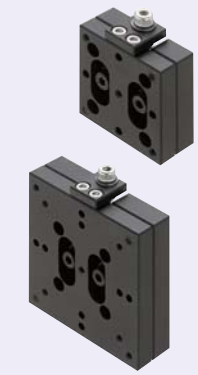
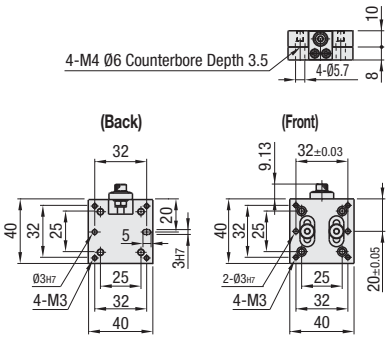
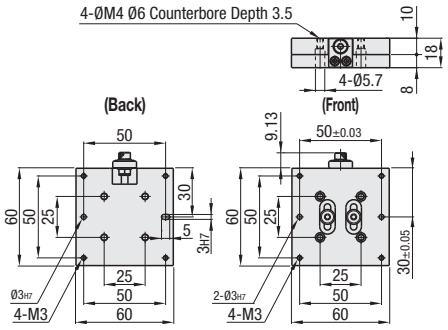


Photo: Front Side

XKEMA40



XKEMA60



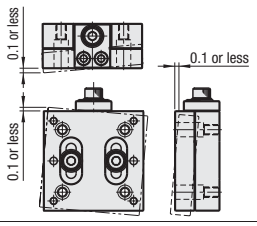
Can be tightened from the front with M3 hexagon socket head cap screws and from back with M4.

Travel Distance Per Handle Rotation: 0.7mm

M Material: EN AW-5052/AlMg2,5 (Black Anodize)

A Accessories: Included Dowel Pins MS3-10, 2pcs.
Hexagon Socket Head Cap Screw CB3-10, 4pcs.

Accuracy Standards



Not suitable for precise positioning applications since there are clearances as shown on left.
Values are obtained before shipping.

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)	€ Unit Price 1~19 pcs.
XKEMA	40	40x40	±3	49	70	
	60	60x60	±5	98	160	

The allowable loads are for using in Z-Axis configuration (in the orientation shown in the photo).
For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number **XKEMA40**

Days to Ship: **6 Days** P.87

[Simplified Adjustment] Dispenser Mounting Accessories
-Syringe Clamps / Needle Holders / Attachment Plates-

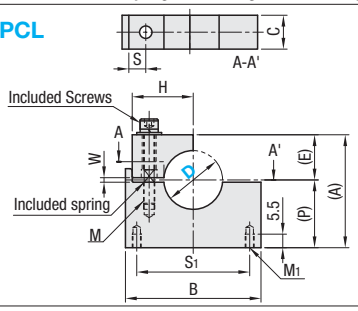
CAD Data

Features : This attachment can be used to attach a syringe to the stage. Can be softly clamped since the syringe mount consists of 2 sections.

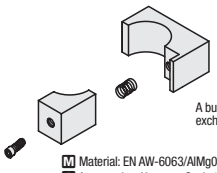
Syringe Clamp RoHS



DSPCL



Structure of DSPCL



A built-in compression spring improves syringe exchange work.

M Material: EN AW-6063/AlMg0,7Si (Black Anodize)
A Accessories: Hexagon Socket Low Head Cap Screws (for mounting a product) CBSST4-8, 2pcs.

Part Number Type	D	(P)	(A)	B	C	(E)	H	S1	M1	S	M	W	Applicable Mounting Plate	Included Screws	€ Unit Price 1~9 pcs.
DSPCL	7	20	30	40	12	10	18	32	4	7.0	4	1.5	DSPPT7	SCB4-15	
	11									6.0			DSPPT11		
	12									5.8			DSPPT12		
	15	30	50	60	15	20	27	50	4	9.8	5	2	DSPPT15	SCB5-25	
	16									9.5			DSPPT16		
	18									9.0			DSPPT18		
	26									7.0			DSPPT26		

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: DSPCL11

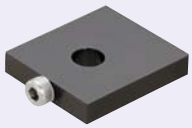
Days to Ship: 8 Days

Express A 8,00 EUR/piece P.88

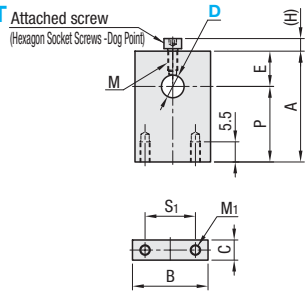
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Features : This attachment can be used to attach a syringe to the stage. Prevents syringe from falling by combination use with a syringe clamp.

Needle Holder RoHS



NDPLT



M Material: EN AW-6063/AlMg0,7Si (Black Anodize)
A Accessories: Hexagon Socket Low Head Cap Screws (for mounting a product) CBSST4-8 x2 pcs.

Part Number Type	No.	D (Selection)	P	E	A	B	C	M	(H)	S1	M1	Applicable Mounting Plate	Included Screws	€ Unit Price 1~9 pcs.
NDPLT	40	8	20	14	34	30	6	4	6	20	4	DSPPT 7 · 11 · 12	CBBGS4-12	
		9							6.5					
	60	8	30	14	44	40			6	30		DSPPT 15 · 16 · 18 · 26		
		9							6.5					

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: NDPLT40 - 9

Days to Ship: 8 Days

Express A 8,00 EUR/piece P.88

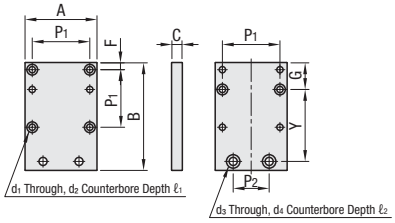
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Features: Plates for mounting DSPCL · NDPLT to XKDSP · XKEMA.

Fixing Plates RoHS



DSPPT



ex

A syringe height adjustment unit can be economically configured by combining with the stages (XKDSP · XKEMA) shown on the left page.



M Material: EN AW-6063/AlMg0,7Si (Black Anodize)
A Accessories: Hexagon Socket Head Cap Screw SCB3-6, 4pcs.

Part Number Type	No.	A	B	C	F	d1	d2	ℓ1	P1	d3	d4	ℓ2	P2	Y	G	Applicable Positioning Stages	€ Unit Price 1~9 pcs.
DSPPT	7	40	60	6	4	3.5	6	3.5	32	4.5	7.5	3	20	40	15	XKDSP40 XKEMA40	
	11		50											30			
	12		60											40			
	15	60	65	6	5	3.5	6	3.5	50	4.5	7.5	3	30	40	18	XKDSP60 XKEMA60	
	16		60											30			
	18		75											50			
	26		85											60			

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: DSPPT11

Days to Ship: 8 Days

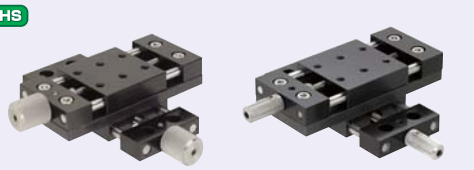
Express A 8,00 EUR/piece P.88.

A Express Charge of 21,60 EUR for 3 or more identical pieces.

[Simplified Adjustments] XY Axes Feed Screw Standard Type / XY Axes Rack& Pinion Type
-Standard Handle · Large Handle-

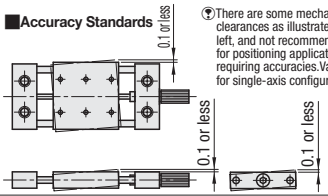
Features: Feed screw units are combined into XY arrangements. Operability improving large handles are available.

RoHS



Travel per rotation 0.7mm

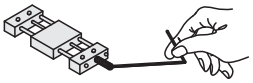
Accuracy Standards



There are some mechanical clearances as illustrated on left, and not recommended for positioning applications requiring accuracies.Values are for single-axis configuration

One Point

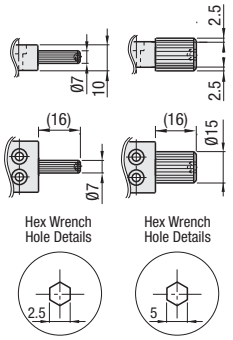
Use of a hexagonal wrench with ball point makes long stroke actuation easy.



Type		Main Body		Shaft	Knob	Feed Screws	A
Normal Handle	Large Handle	M Material	S Surface Treatment	M Material	M Material	M Material	Accessory
XYKNEJ	XYKJL	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4301/ X5CrNi18-10	1.4305/ X10CrNiS18-9	1.4301/ X5CrNi18-10	No.20: CBSST2-12, 4pcs. No.25: SCB3-10, 4pcs. No.40, 60: SCB4-10, 4pcs.

Handle Shape Comparisons

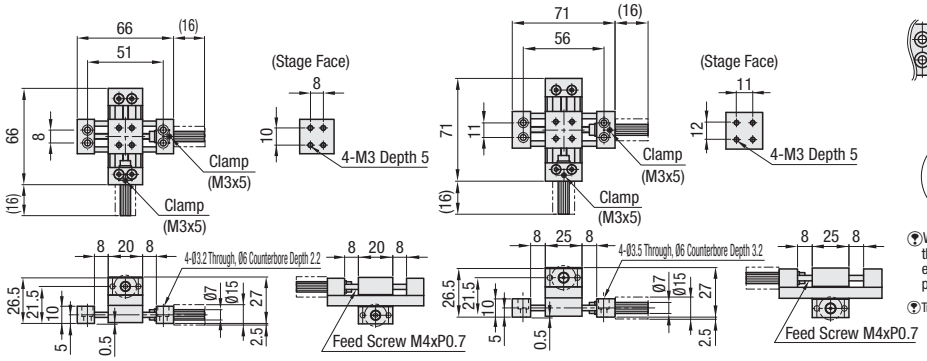
Normal Handle / Large Handle



When the large handle is selected, the handle diameter will exceed the end plate height. Please be aware of potential interferences.

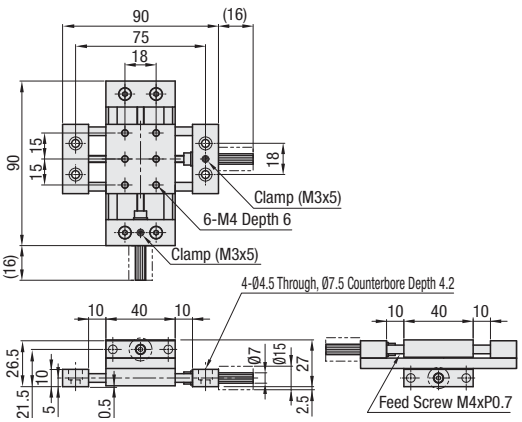
Travel Distance Per Handle Rotation: 0.7mm

No.20

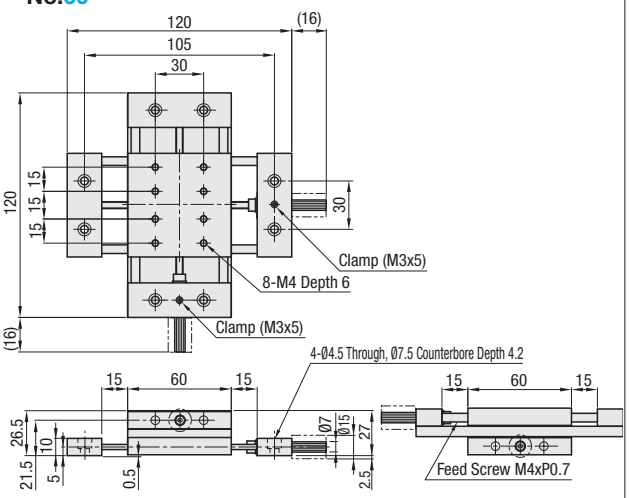


No.25

No.40



No.60



Part Number			Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)	€ Unit Price 1~9 pcs.		
Type	No.	Large Handle Selected					XYKNEJ	XYKJL_L	XYKJL_A XYKJL_B
(Standard Handle) XYKNEJ (Large Handle) XYKJL	20	(Large Handle Top & Bottom) L (Large Handle Top Only) A (Large Handle Bottom Only) B	20x20	±7	18.6	100			
	25		25x25			129			
	40		40x40	±9	36.2	272			
	60		60x60	±13	36.2	476			

Travel distance per handle rotation: 0.7mm

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYKNEJ40, XYKJL60L

Days to Ship: 8 Days

Express A | 8,00 EUR/pc P.88

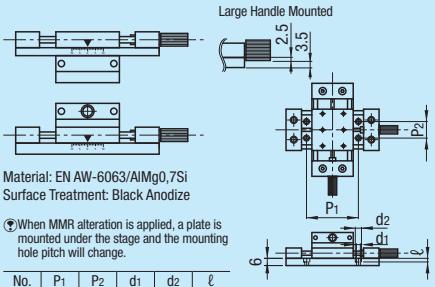
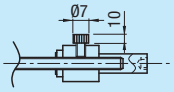
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number: XYKNEJ20 - (MMR · CLC) - MMR

8 Days

Express Serviceis not available.

Alteration	Mount a plate with scaled label on the stage	Change of Clamp (Knurled Knob)
Spec.	Mount a scaled plate to the stage. Minimum Graduation: 0.5mm Included screws are changed as shown on below right. Large Handle Mounted  Material: EN AW-6063/AlMg0,7Si Surface Treatment: Black Anodize When MMR alteration is applied, a plate is mounted under the stage and the mounting hole pitch will change. Included (4pcs.) No.20:SCB2-5 No.25:SCB3-6 No.40:CBSST4-8 No.60:CBSST4-8	Change Clamp Screw to Knurled Knob Changes are for both X and Y axes. 
Code	MMR	CLC
Price Adder	(No.20 · 25) 12,00 (No.40 · 60) 14,00	3,00

No.	P1	P2	d1	d2	ℓ
20	26	8	2.5	4.3	4
25	31	11	3.5	6.0	3.5
40	50	18	4.5	7.5	3
60	75	30	4.5	7.5	3

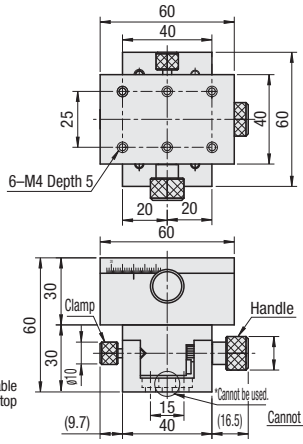
Features: Rack & Pinion mechanism enables rapid and large distance adjustments.

RoHS

XYKRG60



Travel per Rotation: approx. 19mm

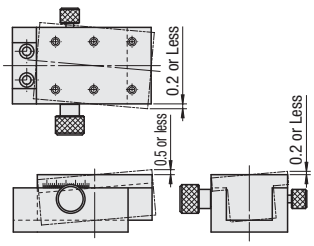


Not suitable for precise positioning (See Accuracy Standards Chart)

Minimum Reading 0.5mm (Dimensions when scale set at 0)

*These counterbored holes are NOT useable since permanently covered by the table top plate. (For XY stacking purpose only)

Accuracy Standards



Not suitable for precise positioning applications since there are clearances as shown above. Values are for single-axis configuration.

One Point

The XYKNG screw and clamp screw can be reinforced by combining with an extra nut to form a double-nut arrangement.

M Material: EN AW-6063/AlMg0,7Si
S Surface Treatment: Black Anodize
A Accessories: Hexagon Socket Low Head Cap Screws (P.2-189 CBS4-6) 4pcs.

Part Number Type	Part Number No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (kg)	€ Unit Price 1~19 pcs.
XYKRG	60	40x60	±14	34.3	0.42	

Travel Distance Per Handle Rotation: 19mm approx.

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYKRG60

Days to Ship: 6 Days P.87

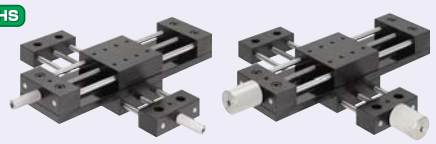
[Simplified Adjustments] XY Axes Push Screw - Large Lead Type

-Standard Handle / Large Handle Selectable-

CAD Data

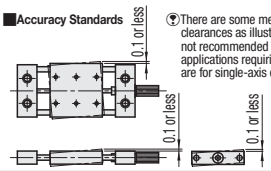
Features: 3.0mm lead feed screw stages are combined into XY arrangement, convenient when rapid feeding characteristic is desired

RoHS



Travel Distance Per Handle Rotation: 3.0mm

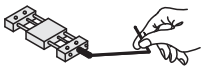
Accuracy Standards



There are some mechanical clearances as illustrated on left, and not recommended for positioning applications requiring accuracies.Values are for single-axis configuration

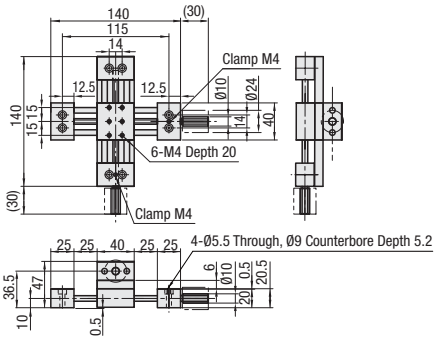
One Point

Use of a hexagonal wrench with ball point makes long stroke actuation easy.

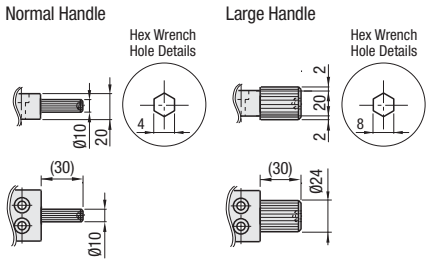


Type		Main Body		Shaft	Knob	Feed Screws	A
Normal Handle	Large Handle	M Material	S Surface Treatment	M Material	M Material	M Material	Accessory
XYKS	XYKSL	EN AW-6063/ AlMg0,7Si	Black Anodize	1.4301/ X5CrNi18-10	1.4305/ X10CrNiS18-9	1.4301/ X5CrNi18-10	SCB5-20, 4pcs.

No.40

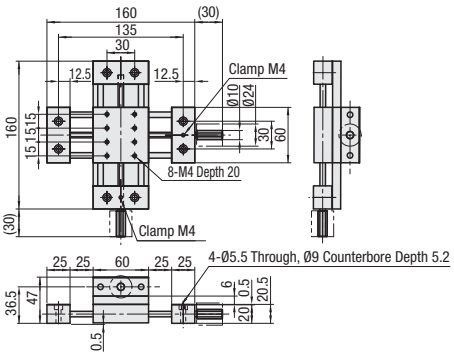


Handle Shape Comparisons

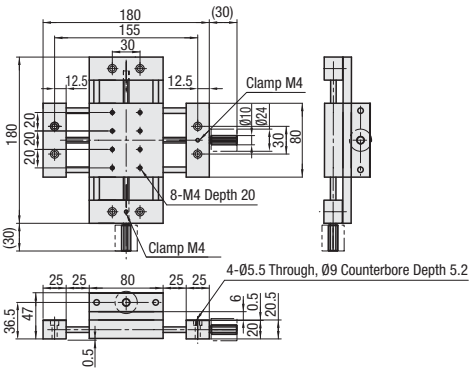


When the large handle is selected, the handle diameter will exceed the end plate height. Please be aware of potential interferences.

No.60



No.80



Part Number			Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (kg)	€ Unit Price 1~9 pcs.		
Type	No.	Large Handle Selected					XYKS	XYKSL_L	XYKSL_A XYKSL_B
(Standard Handle) XYKS (Large Handle) XYKSL	40	(Large Handle Top & Bottom) L	40x40	±25	62.7	0.66			
	60	(Large Handle Top Only) A	60x60	±25	62.7	1.17			
	80	(Large Handle Bottom Only) B	80x80	±25	56.8	1.64			

Travel Distance Per Handle Rotation: 3.0mm

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYKS40 XYKSL60L

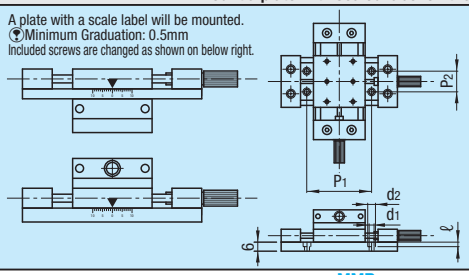
Days to Ship — 10 Days — Express B 10,00 EUR/piece P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations — Part Number: XYKSL40A - (MMR · CLC): MMR

10 Days — Express Services not available.

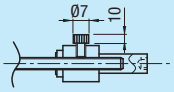
Alterations	Mount a plate with scaled label on the stage	Change of Clamp (Knurled Knob)
Spec.	A plate with a scale label will be mounted. Minimum Graduation: 0.5mm Included screws are changed as shown on below right.	Change Clamp Screw to Knurled Knob Changes are for both X and Y axes.
Code	MMR	CLC
Price Adder	(No.40 · 60) 14,00 (No.80) 16,00	3,00



When MMR alteration is applied, a plate is mounted under the stage and the mounting hole pitch will change.

No.	P1	P2	d1	d2	ℓ
40	65	14	4.5	7.5	3
60	85	30	4.5	7.5	3
80	105	30	4.5	7.5	3

Included (4pcs.)
No.40:CBSST4-8 No.60:CBSST4-8
No.80:CBSST4-8



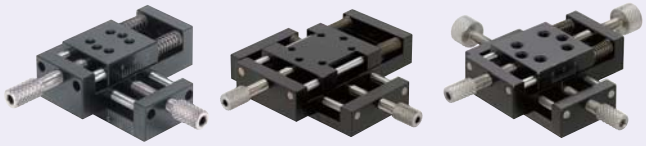
[Simplified Adjustments] XY Axes Push Screw - Standard Type
-Standard Handle-

CAD Data

Features: Economical unit for applications not requiring high accuracies. The springs used keep backlash low.

RoHS

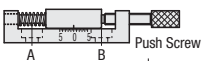
(CL alteration)



Travel distance per handle rotation: 0.5mm

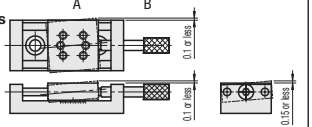
How to Mount

(1) Remove the Push Screw.
(2) Screw down the A side.
(3) Move the table manually to the A side.
(4) Screw down the B side.
(5) Re-install the Push Screw.

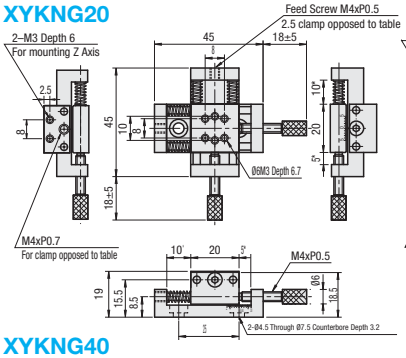


Accuracy Standards

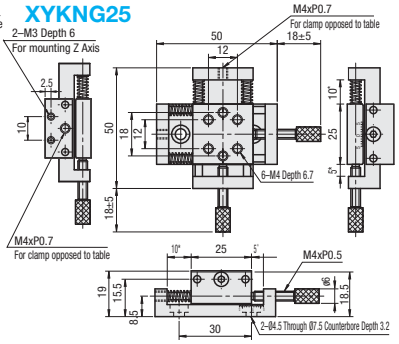
There are some mechanical clearances as indicated above, and not recommended for positioning applications requiring accuracies. The value is for single axis configuration.



XYKNG20



XYKNG25



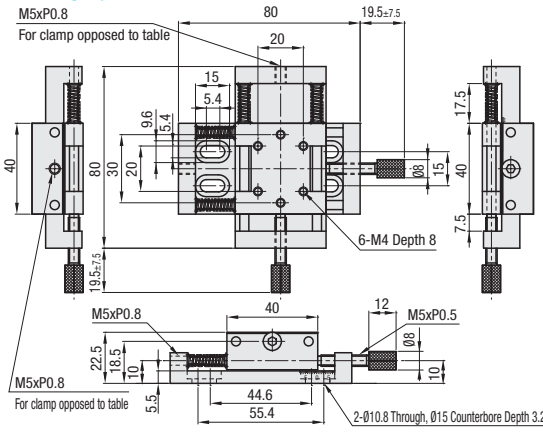
M Material:

Body	EN AW-6063/AlMg0,7Si (Black) Anodize
Shaft	1.4125 (56HRC~)
Spring	1.4568/X7CrNiAl17-7
Push Screw	1.1191/C45E (Electroless Nickel Plating)

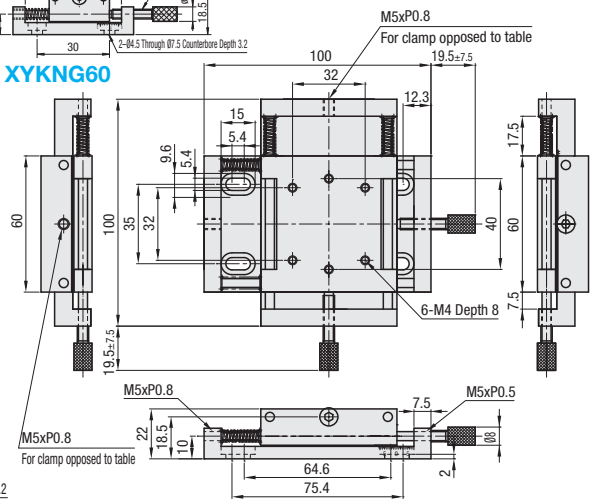
A Accessories:
Hexagon Socket Low Head Cap Screw
No.20 · 25 CBS4-6, 2pcs.
No.40 · 60 CBSS5-8, 4pcs.

Not suitable for precise positioning (See Accuracy Standards Chart)
Minimum Reading 0.5mm
* Dimensions are for "Scale aligned at 0 mark".

XYKNG40



XYKNG60



Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Weight (g)	€ Unit Price 1~19 pcs.
XYKNG	20	20x20	±5	9.8	38	
	25	25x25			55	
	40	40x40	±7.5	14.7	202	
	60	60x60			358	

Travel distance per handle rotation: 0.7mm

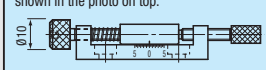
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYKNG20

Days to Ship — 6 Days P.87

Alterations — Part Number - (CL): XYKNG20 - CL

One Point
The XYKNG screw and clamp screw can be reinforced by combining with an extra nut to form a double-nut arrangement.

Alteration	Opposed Clamp Bolt
Spec.	Opposing clamp screws for table immobilizing (No.20 · 25: P=0.7, L=30mm; No.40 · 60: M5 P=0.8, L=44mm) are included. Mounted as shown in the photo on top. 
Code	CL
Price Adder	3,00

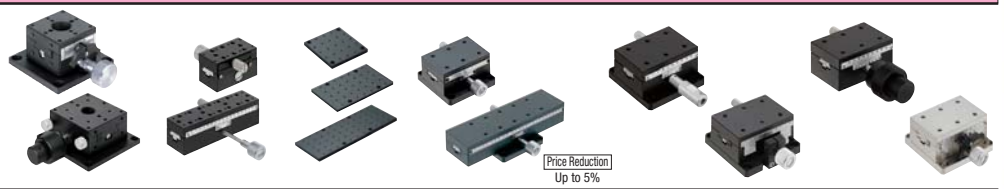
Standard / High Precision Stages

Standard/ Stages



Product Name	[Standard] Dovetail Basic / Long / Low Profile	[Standard] Dovetail Basic / Low Profile	[Standard] Dovetail Basic / Long / Low Profile	[Standard] Cross Roller
Page	1614- 1615	1616- 1617	1618- 1619	1620- 1621

High Precision Stages



Price Reduction
Up to 5%

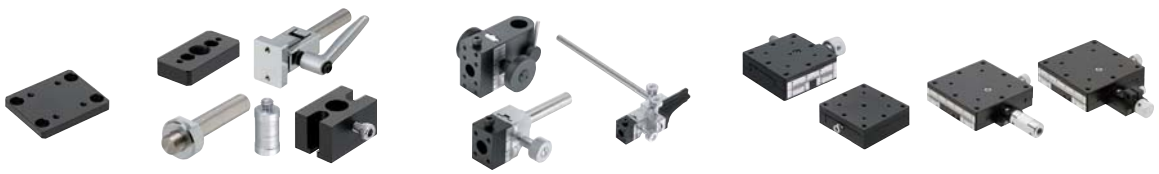
Product Name	[High Precision] Dovetail Slide Rack & Pinion Square Basic / Coarse-Fine / Slim	Set-Up Plates	[High Precision] Dovetail Slide Rack & Pinion Rectangular Basic / Extended Handle / Reinforced Clamp / Coarse-Fine / High Load Capacity
Page	1622- 1623	1623	1624~1627

Addition

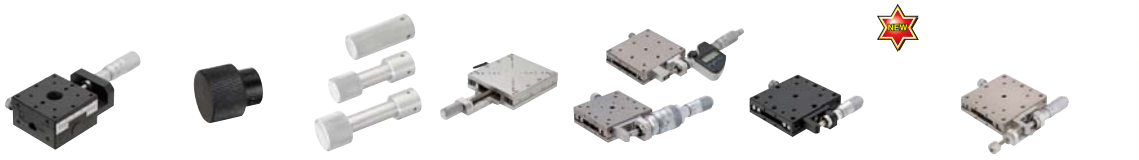


Price Reduction
Up to 8%

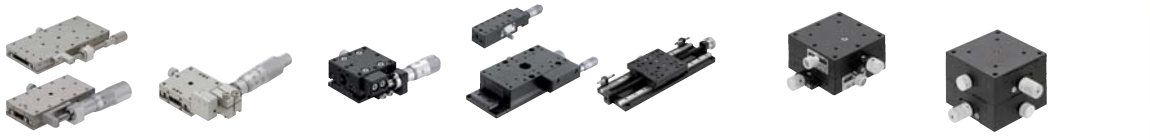
[High Precision] Dovetail Rack & Pinion Long	[High Precision] Dovetail Feed Screw Square Basic / Extended Handle / Rectangular Basic / Reinforced Clamp / Low Profile / Narrow Table
1628~1630	1631~1633



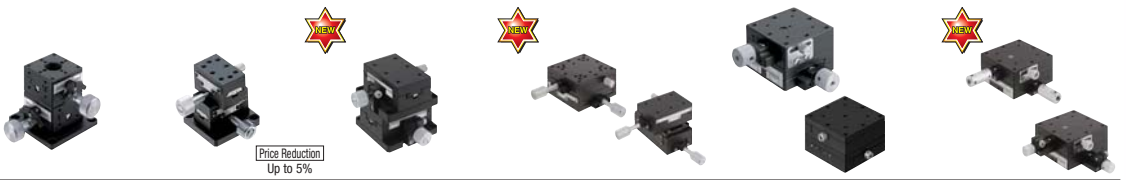
XY-Axes Joint Plates	Accessories for Dovetail Slide Stages	Post Mounted Dovetail Slide	[High Precision] Dovetail Slide Feed Screw Basic / Hex Wrench Drive / Extended Handle / Reinforced Clamp
1633	1634	1635	1636- 1637



[Precision] Dovetail Slide w/Micrometer / Knob Cover / High Load Capacity	[High Precision] Linear Ball Slide Micrometer / Feed Screw / Opposed Clamp w/Knob
1638~1640	1641~1643

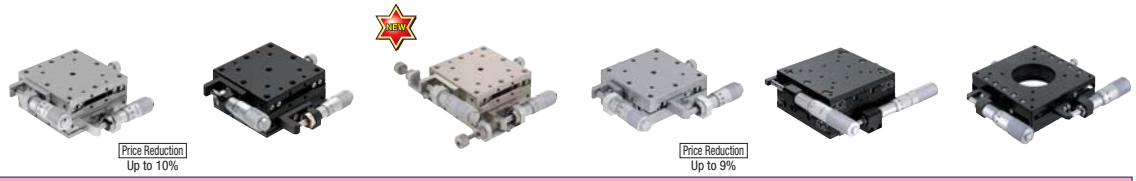


[High Precision] Linear Ball Guide Slim / Improved Clamp Operability	[High Precision] Cross Roller Micrometer / Long / Linear Guide Type	Left/Right Symmetrical Use Stages
1644- 1645	1647- 1648	1649- 1650

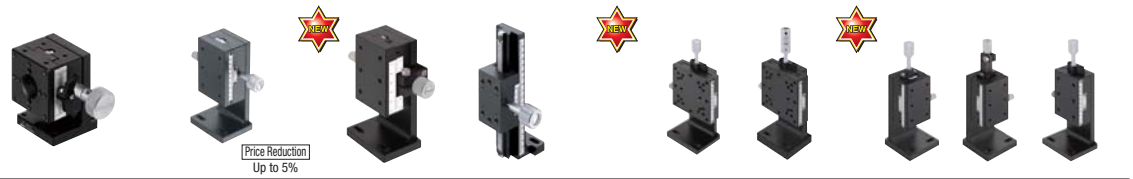


Price Reduction
Up to 5%

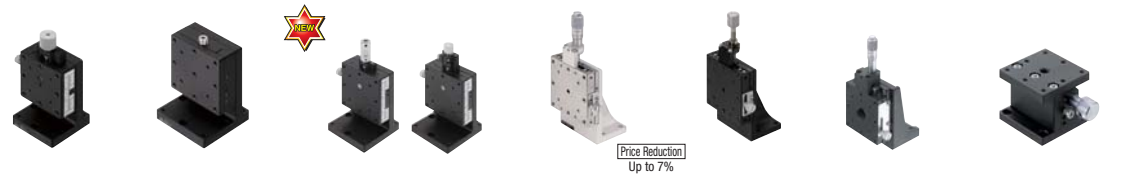
[High Precision] Dovetail Rack & Pinion Square / Rectangular / Reinforced Clamp	[High Precision] Dovetail Feed Screw Square / Rectangular	[High Precision] Dovetail Feed Screw Square Basic / Hex Wrench Drive	[High Prec.] Dovetail Feed Screw Extended Handle / Reinforced Clamp
1651~1653	1654- 1655	1656	1657



[High Precision] Linear Ball Slide Micrometer Head / Feed Screw / Opposed Clamp w/Knob 1658~1661 | [High Precision] Cross Roller Basic / w/Dowel Holes / Through Opening 1662- 1663



[High Precision] Dovetail Rack & Pinion Square / Rectangular / Reinforced Clamp / Long 1664~1667 | [High Precision] Dovetail Feed Screw Square / Extended Handle / Rectangular / Reinforced Clamp / Low Profile 1668- 1669



[High Precision] Dovetail Slide Feed Screw Basic / Hex Wrench Drive / Extended Handle / Reinforced Clamp 1670- 1671 | [High Precision] Linear Ball Slide 1672 | [High Precision] Cross Roller 1673 | [High Precision] Dovetail Rack & Pinion 1674



[High Precision] Cross Roller / Linear Guide / Low Profile 1674~1676 | [High Precision] Helicoid Screw Stage 1677 | Lab Jacks 1678 | High Precision] X / XY / Z Axis Stages -Selectable Config. Type- 1679 | [High Precision] Dovetail Rack & Pinion / Feed Screw 1681- 1682



[High Precision] Linear Ball Slide 1683 | [High Precision] Cross Roller 1684 | [High Precision] Dovetail Rack & Pinion / Feed Screw 1685- 1686 | [High Precision] Linear Ball Slide 1687- 1688



[High Precision] Combination Stages 1689 | [High Precision] Rotary Coarse Feed / Micrometer / Cross Roller / High Load Capacity 1691~1694 | [High Precision] Goniometer Dovetail / Cross Roller 1695- 1696



Micrometer Heads 1697- 1698 | Feed Screws | Stage Maintenance Parts | Product Name Page | [Motorized] Linear Ball Slide X / XY / Z 1701~1704 | [Motorized] Rotary | [Motorized] Stage Peripherals 1705- 1706

Stages - Overview

■Overview

MISUMI stages can be utilized for various positioning tasks in inspection, assembling, and other processes. They can be used as an X-axis stage in a single axis configuration, and as an XY-axes stage in a two axes configuration. AZ Axes can be added for a height adjustment.

■Features

- Fine or rapid feeding can be selected depending on the feed mechanism.
- Travel amounts can be numerically managed with on-board scales.
- The carriages can be clamped at arbitrary positions.
- Pre-integrated XY and XZ stages are accurately aligned before they are shipped. This can save assembly steps on the customer's end.

■Selection Criteria

MISUMI has various stage products based on moving axes, positioning resolutions, and load capacities on a lineup. Please select optimum products based on your application requirements.
See the page bottom for explanations on ◎, ○, and △

■Rack & Pinion Stage Travel per handle rotation: 17~20mm: Suited for rapid feeding.

Listed page	P.1614		P.1615	P.1622	P.1624	P.1625	P.1626	P.1627	P.1628
Product Characteristics	[Standard] Basic	[Standard] Long	[Standard] Low Profile	Square Basic	Rectangular Basic	Extended Handle	Reinforced Clamp	High Load Capacity	Long Stroke
Representative Type	XDTS	XDTLS	XDTSC	XFG	XWG	XWGL	XWGCL	XWGSR	XLWG · XLONG · XLARGE
Photo									
Stroke	±16~35	±40~65	±15~35	±5~20	±12~60	±12~60	±12~60	±12~35	±15~180
Face Size	30x50~40x90	30x50	30x50~40x90	_25~_60	24.8x42~40x140	24.8x42~40x140	24.8x42~40x140	24.8x40~40x90	25x42~40x50
Thickness	△	○	○	△	△	△	△	△	△
Horizontal Load Capacity	○	○	△~○	○	○	○	○	◎	○
Accuracy (Straightness)	△	△	△	○	○	○	○	○	△
Clamp Compatible	△	△	△	△	△	△	◎	△	△
Price (Size 60 equivalent)	◎	◎	○	○	○	○	△	△	0

■Feed Screw Stages Travel per handle rotation 4.2mm: Suitable for rapid feeding in low profile packages.

Listed page	P.1631		P.1632			P.1633	
Product Characteristics	Square Basic	Extended Handle	Rectangular Basic	Reinforced Clamp	Low Profile	Slim Carriage	Slim Carriage Low Profile Type
Representative Type	XSC	XSCL	XSL	XSLCL	XSLC	XSSL	XSSLC
Photo							
Stroke	±11~21	±11~21	±21~35	±21~35	±21~35	±12~40	±12
Face Size	_40, _60	_40, _60	40x60, 40x90	40x60, 40x90	40x60, 40x90	24.8x42~24.8x100	24.8x42
Thickness	◎	◎	○	○	◎	○	◎
Horizontal Load Capacity	△~○	△~○	○	○	○	○	△
Accuracy (Straightness)	○	○	○	○	○	○	○
Clamp Compatible	△	△	△	◎	△	△	△
Price (Size 60 equivalent)	○	△	○	△	○	○	○

■Feed Screw Stages Travel per handle rotation 0.5~2mm: Suited for fine carriage feeds.

Listed page	P.1636		P.1637		P.1639	P.1640
Product Characteristics	Basic	Hex Wrench Drive	Extended Handle	Reinforced Clamp	High Load Capacity Dovetail	High Load Capacity Cross Roller
Representative Type	XEG	XEEG	XEGL	XEGCL	XWGSS	XTOUGH
Photo						
Stroke	±5~9	±3~7	±5~9	±5~9	±30~70	±20~50
Face Size	_25~_60	_25~_60	_25~_60	_25~_60	_100~_200	_80~_200
Thickness	◎	◎~○	◎	◎	△	△
Horizontal Load Capacity	○	○	○	○	◎	◎
Accuracy (Straightness)	○	○	○	○	○	◎
Clamp Compatible	△	△	△	◎	△	△
Price (Size 60 equivalent)	◎	◎	○	○	△	△

■Micrometer Head Stage One rotation travel 0.5mm: Suitable when move distances need to be numerically managed finely.

P.1620	P.1638	P.1641	P.1644	P.1647	P.1648
[Standard] Cross Roller	Dovetail	Linear Ball	Linear Ball Slim	Cross Roller	Cross Roller Long
XCRS	XMFG	XSG	XSGL	XPG	XLPG
					
±6.5	±6.5~12.5	±3.2~12.5	±12.5~25	±3.2~25	±6.5~26.5
_40~_80	_40, _60	_25~_100	40x80, 60x120	_25~_120	25x60, 60x110
◎	○~△	◎	◎	○~◎	○~◎
△~◎	△~○	○~◎	◎	△~◎	△~◎
○	○	◎	◎	◎	◎
△	△	○	△	○	△
◎	◎	○	△	△	△

■Flat Bed Z Axis Stage: Top plate rises and lowers.

Listed page	P.1674	P.1675	P.1676	P.1677	P.1678
Product Characteristics	Dovetail	Cross Roller	Linear Guide Low Profile	Helicoid Screw Type	Lab Jacks
Representative Type	ZLFG	ZLPG	ZLTG	ZHRD	ZLJG
Photo					
Stroke	±2.5~10	±2~5	±3	30	40~70
Face Size	_25~_60	_25~_80	_40~_80	_60, _90	80x120-120x180
Thickness	◎~○	△~◎	◎	△	△
Horizontal Load Capacity	△	△~◎	△~○	◎	◎
Accuracy*	○	◎	○	○	△
Clamp Compatible	△	△	△	△	△
Price (Size 60)	◎	△~○	△	○	△

■Rotary & Goniometer Stages: Excellent for rotary and angular positioning.

P.1691	P.1691	P.1692	P.1694	P.1695	P.1696
Suitable for rotary and angular positioning applications. Feed Screw	Suitable for rotary and angular positioning applications. Coarse Movement	Suitable for rotary and angular positioning applications. Micrometer Type	Suitable for rotary and angular positioning applications. High Load Capacity	Goniometer Dovetail	Goniometer Cross Roller
RPGE	REG	RPG	RTOUGH	GFG	GPG
					
Coarse 360° Fine ±3°	Coarse Movement 360°	Coarse 360° Fine ±5°	Coarse Movement 360°	±8~25°	±2.5~7°
φ24	Ø25~Ø60	Ø38~Ø110	Ø100	_25~_80	_40~_70
◎	◎	◎	△	◎	◎
△	△~◎	△~○	◎	△~◎	○
○	○	○	△	-	◎
◎	△	◎	△	△	△
◎	◎	○	△	○	△

■Single Axis Spec. Ranges

		◎	○	△
Thickness		20mm or less	21mm or more, 30mm or less	31mm or more
Horizontal Load Capacity		50N or more	29.5~49N or less	29.4N or less
Accuracy (Straightness)		10μm or less	11~100μm or less	101μm or more
Clamp Compatible		Clamp Reinforced Type	Available as options	Standard Clamp
Prices	Rack & Pinion	120,00 EUR or less	120,01 EUR or more, 170,00 EUR or less	170,01 EUR or more
	Feed Screw (4.2mm)	120,00 EUR or less	120,01 EUR or more, 170,00 EUR or less	170,01 EUR or more
	Feed Screw (0.5~2.0mm)	120,00 EUR or less	120,01 EUR or more, 170,00 EUR or less	170,01 EUR or more
	w/Micrometer Head	150,00 EUR or less	150,01 EUR or more, 200,00 EUR or less	200,01 EUR or more

■Flat Bed Z-Axis / Rotary / Goniometer Stage Spec. Ranges

	◎	○	△
Thickness	35mm or less	36mm or more, 60mm or less	60mm or more
Load Capacity	49N or more	29.5N or more, 49N or less	Less than 29.4N
Accuracy*	10μm or less	11~100μm or less	101μm or more
Clamp Compatible	Clamp Reinforced Type	Available as options	Standard Clamp
Prices	200,00 EUR or less	200,01 EUR or more, 500,00 or less	500,01 EUR or more

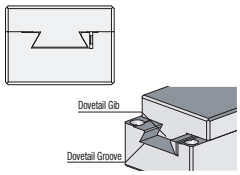
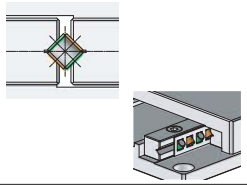
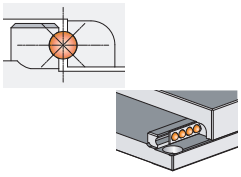
*The accuracy values indicated for various stage types are as follows: Flat Bed Z-Axis Stage=Straightness, Rotary Stages=Concentricity, Goniometer Stages=Position deviation of rotation center.

Stages Technical Information (1)

About Feed Mechanisms

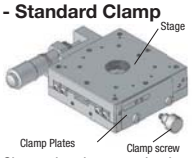
	Rack & Pinion	Feed Screws	Micrometer Heads	Coarse Fine Adjustment Handle / Micro Meter Head
Features				
	- Best when rapid feeding is needed. - Not suitable for accurate positioning	- Suitable for fine feeding - Used on many stage products since more economical than the micrometer heads.	- High resolution graduation of 0.01mm. Suitable for precise positioning. (Minimum graduation notch: 0.005mm available)	- Both coarse feed (normal feeding) and fine feed (fine feeding) can be selected depending on purpose. - Special feed mechanism is not suitable for cost sensitive applications.
Travel per Rotation	17~20mm	0.5~4.2mm	0.25~0.5mm	Coarse/ Fine Handle: 18~20mm (Coarse) 2.3~1.6mm (Fine) Coarse/ Fine Micrometer Head: 0.5mm (Coarse) 0.025mm (Fine)
Guide Structure Used	- Dovetail Slide	- Dovetail Slide - Cross Roller Slide - Linear Ball Slide	- Dovetail Slide - Cross Roller Slide - Linear Ball Slide	- Dovetail Slide (Coarse Feed Handle) - Linear Ball Slide (Coarse Fine Micrometer Head)

Linear Guidance Structures

		Structure	Features	Straightness Guideline	Prices
Dovetail		- This is a method to guide a stage by sliding interlocking male and female trapezoidal grooves.	- Sliding movement of male and female grooves realized a smooth travelling. - Economical - Large variety in combinations	[Standard] 50µm [High Precision] 30µm	[Standard] 85,00 EUR~ [High Precision] 85,00 EUR~
Cross Roller		- Rollers are alternately aligned orthogonally and placed between two grooved rails. The rolling motion of the rollers facilitates the guiding.	- Traditionally used high accuracy slide mechanism	[Standard] 30µm [High Precision] 3µm	[Standard] 115,00 EUR~ [High Precision] 190,00 EUR~
Linear Balls		- Steel balls are aligned in gothic arch grooves machined on the body of stage. The rolling balls guide a stage.	- Integrated guides make the stages low profile. - Four-point-contact guide structure is more rigid and higher in load capacity than the cross roller stages.	[High Accuracy - Motorized] 1µm	[High Precision] 130,00 EUR~ [Motorized] 741,00 EUR~

About clamp mechanism

- Standard Clamp



Clamp plate is pressed aginst the side of the stage by a clamp screw. Most inexpensive and standard way.

- Disc Clamp



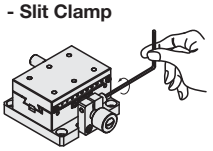
The stage is immobilized by clamping a disc, and no load is applied on the stage surface. Position drift can be prevented when stationary.

- Opposed Clamp



The carriage is braced by a bolt from the other side of the micrometer head. The bolt is secured with a nut for vibration resistance and strong holding capacity.

- Slit Clamp



The feed handle shaft is clamped directly. Compared to the conventional model, larger retaining force can be obtained. For stationary position drifts, the conventional clamp can be used.

- Lever Clamp

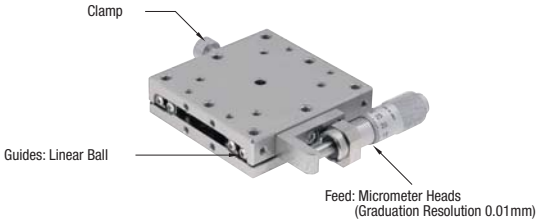


The final tightening action of the clamp screw is managed with a lever for easy operation.

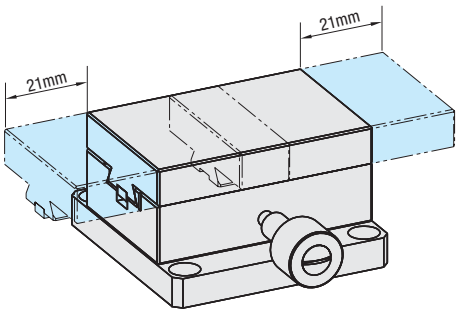
Stages Technical Information (2)

■What is a Stage?

A Stage is a combination of Guiding, Feeding, and Clamping mechanism.
(For details of each mechanism, see Technical Info. (1) on P.1610)
The available mounting surface sizes and feeding options are selected on each product page.
(Clamping methods and feed mechanism position changes can be specified as "Alterations". Some options may not be available. Refer to each product page.)



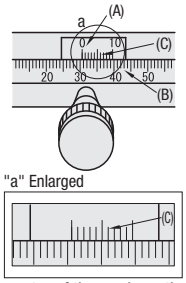
Description of available Stroke (Travel distance)
For a catalog description of "±21mm Stroke", the available stroke is a total of 42mm (21mm each to either side of the Center Position shown in the drawing).



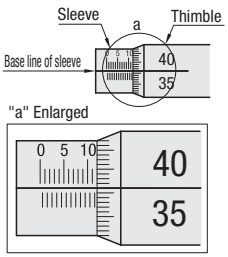
■About Position Readings

There are 3 ways of position reading options; Scale Plates, Vernier Scales and Micrometer Heads.
These position indicating options can be used as references for applications requiring positional repeatability.

<How to read Vernier scale>
(1)The scale (B) value is read at the 0 position of the sub-scale (A) in 1mm resolution.
(The right figure indicates 30mm)
(2)Look for an aligning set of division marks on (A) and (B) scales, as a 0.1mm reading.
(0.6mm in the right figure)
(3)The total of (1) and (2) is the value.
(30.6mm in the right figure)



<How to read 0.01mm Micrometer Head>
(1)Read where the position of end face of the thimble is located on the scale of sleeve by 0.5mm scale.
(11.5mm in the right figure)
(2)Read a value of the thimble on the position where the base line of sleeve coincides with the scale line of the thimble.
(0.36mm in the right figure)
(3)The total value of (1) and (2) is the current position of the stage.
(11.86mm in the right figure)



■About Load Capacity

Definition of Load Capacity

This is a load, with its center of gravity located at the center of the carriage, the stage can withstand and operate normally. The stage may malfunction if used with loads exceeding this value. The load capacity values listed on product pages assume the stages are mounted on horizontal surfaces. See "Horizontal" and "Vertical" columns for load capacity values for each case. Please note that the stages may not achieve the catalog published accuracies when mounted in vertical or inverted orientations.

Definition of Moment Load Capacity

This is a load the stages can withstand when the center of gravity of the loads are off-centered on carriages. The unit used to express this load is Nm.
When the center of gravity is away from the center of the carriage, both the Moment Load Capacity and the Load Capacity will need to be evaluated.
When this value is high, it is called High Rigidity.

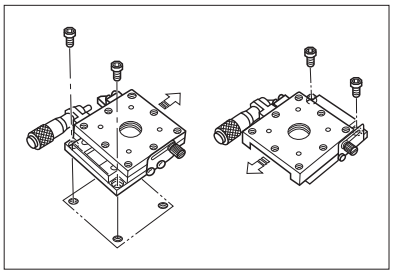
■Handling of stages

Operating Environment: **10~50°C, 20~70%RH (No condensation)**
Recommended Operating Environment: **22±5°C, 20~70%RH (No condensation)**

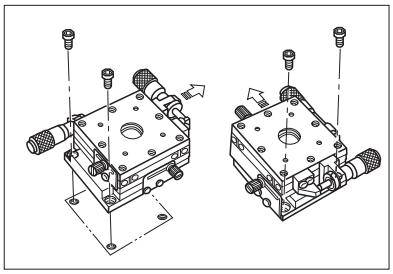
Stage Mounting

To mount the stages on base surfaces, move the carriages for mounting hole access as shown below.
When mounting in vertical orientation, note the directions of the feed mechanisms and springs. (P.1642 · 1678)

- Mounting an X Stage
Move the carriage forward and backward for screw access as illustrated.



- Mounting an XY Stage
Mount as same as the X stage.



Notes on mounting surface accuracies

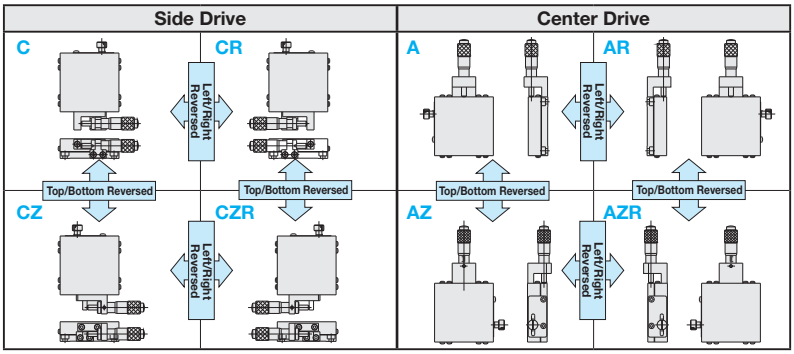
Intended product performances may not be achieved if the stage mounting surface or the carried object's mounting surface do not have sufficient flatness. (General flatness guideline: 10μm or better.)

Notes on Clamps

The XY stage clamp holds the carriage in position by frictional force generated when the clamp lever is actuated. If any external forces overcoming the clamp's frictional force is applied, the carriage will be moved out of position. Customer measures are recommended to securely immobilize the carriages. Below are the standard reinforcement alternatives we offer.
- Selecting the Reinforced Clamp Type stages.
- Change the clamp type when available as "Alteration Option" (i.e. to Opposed Clamps, Slit Type Clamp, etc.)

■Reversed Options

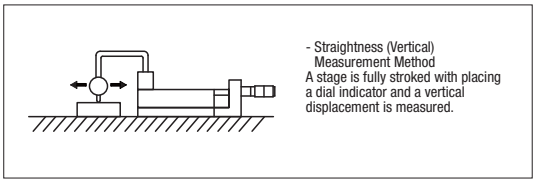
Dovetail slide stages with reversed clamp position options can be specified by adding "-R" identifier.
Others such as cross roller and linear ball stages options are listed as "Alterations" on each product page.



■About Accuracy Standards

Definition of Straightness

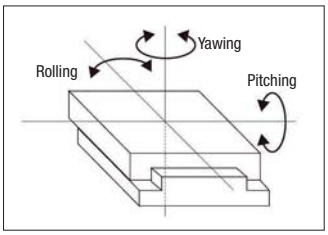
Straightness is a value represented by a maximum difference between an ideal straight line of travel and the actual travel of a carriage, over the entire stroke range of the stage. Both horizontal and vertical deviation are measured, and the largest value is taken.



- Straightness (Vertical)
  Measurement Method
A stage is fully stroked with placing a dial indicator and a vertical displacement is measured.

Definition of Pitching · Yawing · Rolling

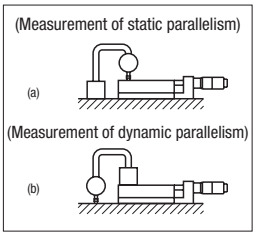
These indicate the amounts of carriage top inclinations during linear motion.
To direction of travelling
Leaning forward and back : Pitching
Rotation in a horizontal plane: Yawing
Leaning right and left : Rolling



Allowable moment capacity (see Overview page) and moment rigidity (carriage attitude in angles against these forces) are used to represent the stage's rigidness.

Definition of Parallelism

A value indicating how parallel the carriage top is in relation to the bottom surface. The illustrations on the right show how (a) Static Parallelism, and (b) Dynamic Parallelism are measured.

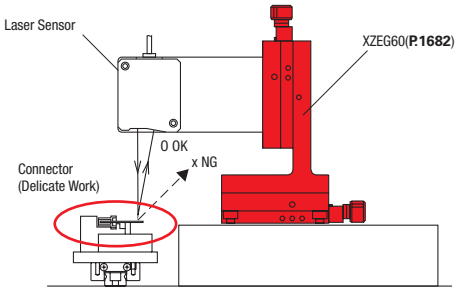


Cautions

Travel accuracy values shown are for single axis configuration.

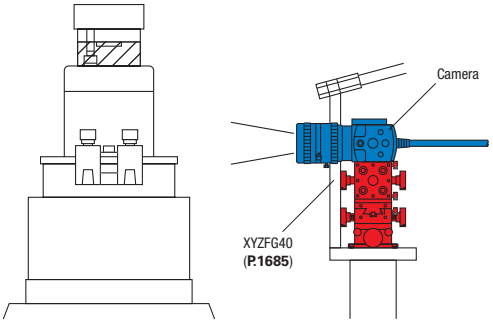
■Stage Application Examples

Conventional slotted hole position adjustments replaced with an XY stage, eliminating position drift problems frequent when the screws are tightened down.



Unit with returning laser beam detecting work-piece defects

Scale plates on stages make adjustments requiring high repeatability easy. Setup change time can possibly be reduced from one hour to 20 minutes.



Standard Stage Comparison Chart

-High Accuracy Stages and Standard Stages-

Similar Product References

Guides	Photo	Axes	(Standard Stages) Surface Dimensions	High Accuracy Stage (existing product)	Listed Page	Standard Stage	Listed Page
Cross Roller		X	40x40	XPG40	P.1647	XCRS40	P.1620
			60x60	XPG60		XCRS60	
			80x80	XPG80		XCRS80	
		XY	40x40	XYPG40	P.1662	XYCRS40	P.1620
			60x60	XYPG60		XYCRS60	
			80x80	XYPG80		XYCRS80	
		Z	40x40	ZPG40	P.1673	ZCRS40	P.1621
			60x60	ZPG60		ZCRS60	
			80x80	ZPG80		ZCRS80	
Guides	**Photo**	**Axes**	**(Standard Stages) Surface Dimensions**	**High Accuracy Stage (existing product)**	**Listed Page**	**Standard Stage**	**Listed Page**
Dovetail		X	30x50	XWG40	P.1624	XDTS50	P.1614
			40x60	XWG60		XDTS60	
			40x90	XWG90		XDTS90	
		XY	30x50	XYWG40	P.1652	XYDTS50	P.1616
			40x60	XYWG60		XYDTS60	
			40x90	XYWG90		XYDTS90	
		Z	30x50	ZWG40	P.1665	ZDTS50	P.1618
			40x60	ZWG60		ZDTS60	
			40x90	ZWG90		ZDTS90	
Guides	**Photo**	**Axes**	**Overall Length**	**High Accuracy Stage (existing product)**	**Listed Page**	**Standard Stage**	**Listed Page**
Dovetail (Long Stroke Stages)		X	100	XLWG100	P.1628	XDTLS100	P.1614
			150	XLWG150		XDTLS150	
		Z	100	ZLWG100	P.1667	ZDTLS100	P.1618
			150	ZLWG150		ZDTLS150	

Cross Roller Stage Comparison Chart

Part Number		High Accuracy Stage (existing product) XPG60	Standard Stage XCRS60
Carriage surface size		60x60mm	
Carriage thickness		20mm	
Travel Distance		±6.5mm	
Travel per handle rotation		0.5mm	
Guiding Mechanism		Cross Roller	
Load Capacity		49.0N	
Travel Accuracy	Straightness	3μm	30μm
	Pitching	25"	35"
	Yawing	15"	25"
Moment Capacity	Pitching	5.2Nm	
	Yawing	4.3Nm	
	Rolling	5.5N·m	
Rigidity	Pitching	0.12"/Ncm	
	Yawing	0.11"/Ncm	
	Rolling	0.07"/Ncm	
Parallelism (See P.1-1612)		30μm	50μm
Dynamic Parallelism (See P.1-1612)		10μm	30μm
Weight		0.25kg	0.24kg
Top/Bottom Plates	Material	Aluminum Alloy	
	Surface Treatment	Back Anodized	
Change Micrometer Head mounting position		○	X
Feed Screw Selection		○	X
Reinforced Clamp Availability		○	X
€ Prices			
Delivery Time		8th Day Express A	In-Stock

Dovetail Stage Comparison Chart

Part Number		High Accuracy Stage (existing product) XWG60	Standard Stage XDTS60
Carriage surface size		40x60mm	
Carriage thickness		34mm (Plate 8mm)	34mm (Plate 6mm)
Travel Distance		±21mm	
Travel per handle rotation		18mm	16.7mm
Resolution		0.1mm	
Load Capacity		39.2N	
Travel Accuracy	Straightness	30μm	50μm
Weight		0.29kg	0.26kg
Top/Bottom Plates	Material	Aluminum Alloy	
	Surface Treatment	Back Anodized	
€ Prices			
Delivery Time		In-Stock	

Dovetail Long Stage Comparison Chart

Part Number		High Accuracy Stage (existing product) XLWG100	Standard Stage XDTLS100
Carriage surface size		25x42	30x50
Carriage thickness		25mm	28mm
Travel Distance		±40mm	
Travel per handle rotation		18mm	16.7mm
Resolution		0.1mm	
Load Capacity		29.4N	
Travel Accuracy	Straightness	30μm	50μm
Weight		0.14kg	0.18kg
Top/Bottom Plates	Material	Aluminum Alloy	
	Surface Treatment	Back Anodized	
€ Prices			
Delivery Time		In-Stock	

[Standard] Dovetail Rack & Pinion Type
-Basic / Long-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

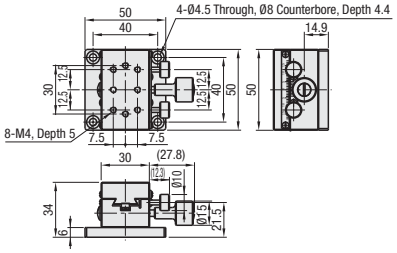
Features: Rapid feeding rack and pinion stage. More economical than the conventional products. For high accuracy version, see XWG on **P.1624**

X-Axis Basic

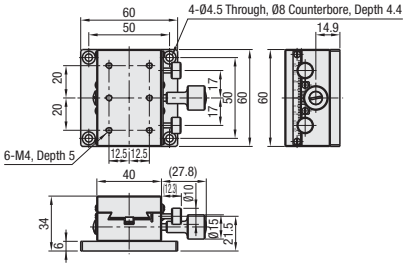


RoHS

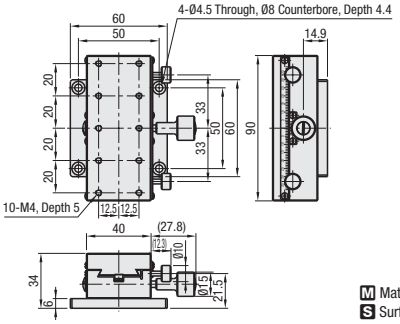
XDTS50



XDTS60



XDTS90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
XDTS	50	30x50	±16	16.7	29.4	14.7	50µm	0.20	
	60	40x60	±21		39.2	19.6	50µm	0.26	
	90	40x90	±35				50µm	0.36	

Order Example Part Number XDTS60

Days to Ship 6 Days P.87

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR15 (Sold separately): Increases knob diameter by attaching to the Ø15 adjustment screw. P.1615

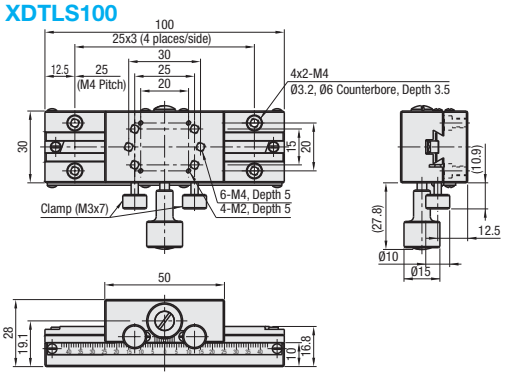
Features: Economically priced long stroke rack & pinion stage. For high accuracy version, see XLWG on **P.1628**

X-Axis Long

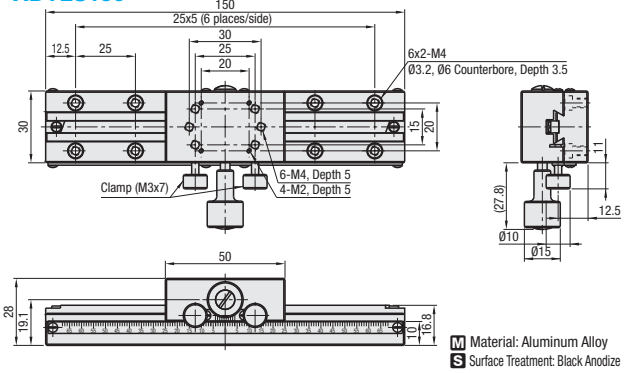


RoHS

XDTLS100



XDTLS150



Use M3 screws for mounting from top, M4 screws for mounting from bottom.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
XDTLS	100	30x50	±40	16.7	29.4	14.7	50µm	0.18	
	150	30x50	±65				60µm	0.23	

Order Example Part Number XDTLS100

Days to Ship 6 Days P.87

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR15 (Sold separately): Increases knob diameter by attaching to the Ø15 adjustment screw. P.1615

[Standard] Dovetail Rack & Pinion Type / Knob Cover -Low Profile-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Low Profile Rack & Pinion X-Axis Stages. The profile height is kept low to 26mm, 8mm lower than the 34mm height XWG Type (**P.1624**)

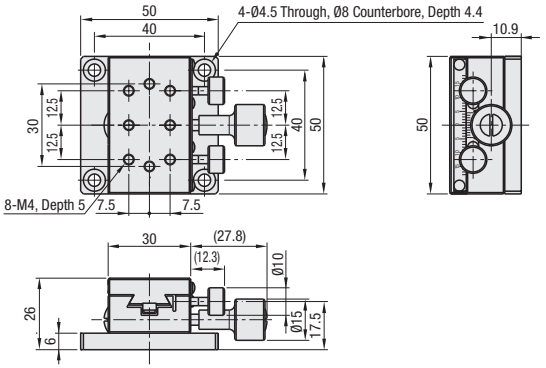
X-Axis Low Profile

RoHS

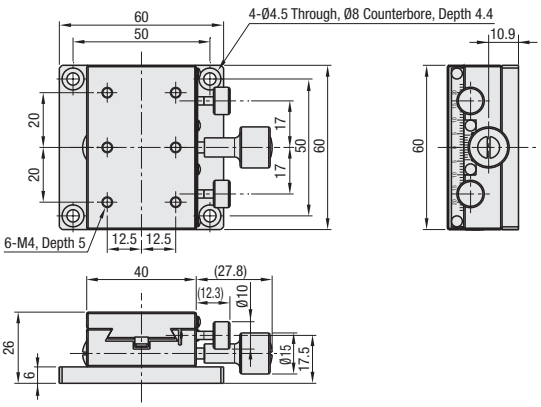


Actual products may be different from the photos. Please see the CAD data for the details.

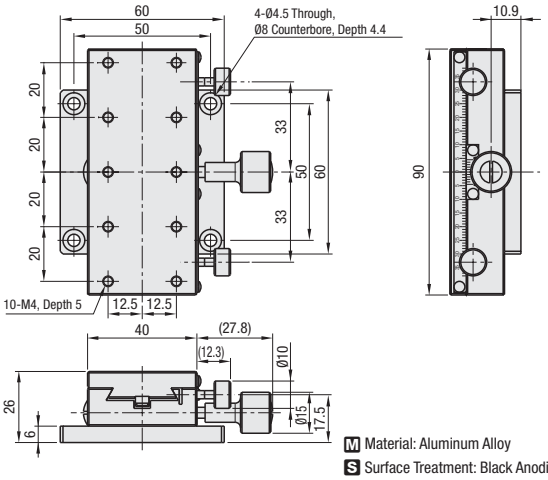
XDTSC50



XDTSC60



XDTSC90



See the CAD data for dimension details.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
XDTSC	50	50x30	±15	16.7	19.6	9.8	50µm	0.17	
	60	60x40	±20		29.4	14.7		0.21	
	90	90x40	±35		29.4	14.7		0.28	

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob Covers HDCVR (Sold separately): The feed handle diameter can be increased by attaching on Ø15 handles listed below.

Order Example | Part Number XDTSC50 | Days to Ship 6 Days P.87

Features: Knob diameter can be increased by attaching the cover on Ø15 knobs. See below for the list of compatible stages.

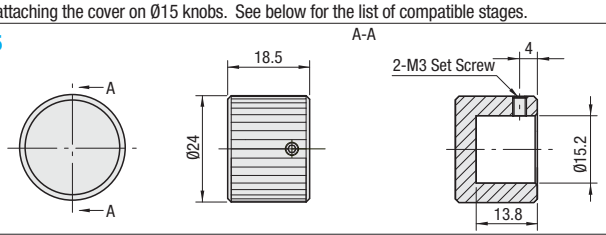
Knob Covers

RoHS



*Set of 3 units

HDCVR15



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Applicable Stage	€ Unit Price 1~9 Packs
HDCVR	15	XWG (**P.1624**) · XYWG (**P.1652**) · ZWG (**P.1665**) · XLWG (**P.1628**) · ZLWG (**P.1667**) · XSP (**P.1623**) (Handle dia. Ø15)	

*Three Knob Covers (HDCVR15) come in a package per order.
For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number HDCVR15 | Days to Ship 6 Days P.87

[Standard] Dovetail Rack & Pinion Type -Basic-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

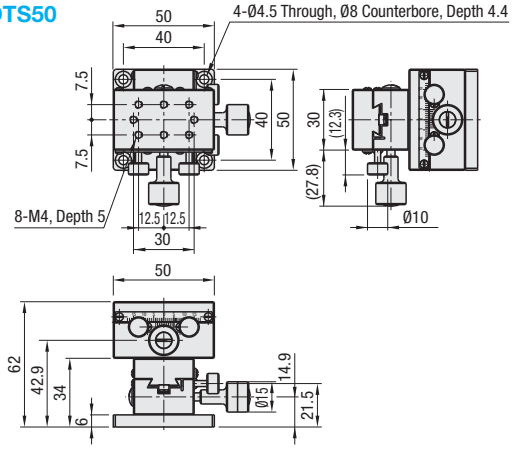
Features: Rapid feed Rack & Pinion Stages in XY axes configurations. For the high accuracy versions, see XYWG on P.1652

XY-Axes Basic

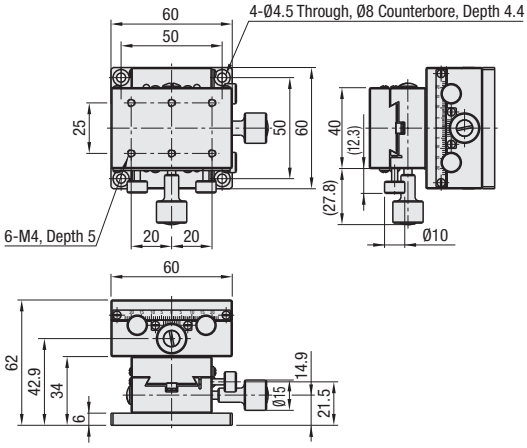


RoHS

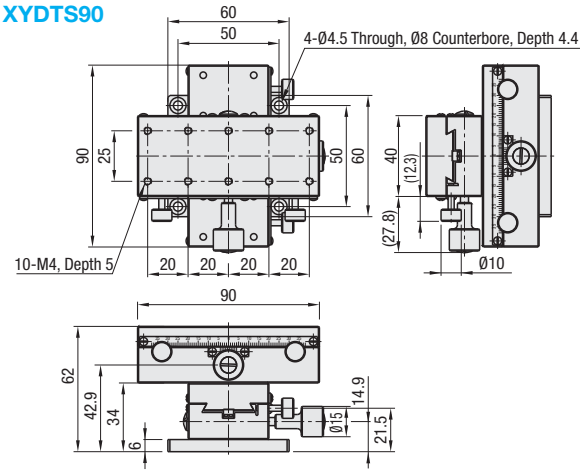
XYDTS50



XYDTS60



XYDTS90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
XYDTS	50	30x50	±16	16.7	24.5	50µm	0.39	
	60	40x60	±21		34.3	50µm	0.52	
	90	40x90	±35		34.3	50µm	0.72	

Order Example — Part Number: XYDTS60

Days to Ship — 6 Days P.87

Resolution (Vernier Scale Indication) : 0.1mm/division
Knob cover HDCVR15 (Sold separately):
Increases knob diameter by attaching to the Ø15 adjustment screw.
P.1615

For orders larger than indicated quantity, please request a quotation.

[Standard] Dovetail Rack & Pinion Type
-Low Profile-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Rack and Pinion XY Stages with low 40mm profile height. 14mm lower profile compared to XYWG60 on **P.1652**

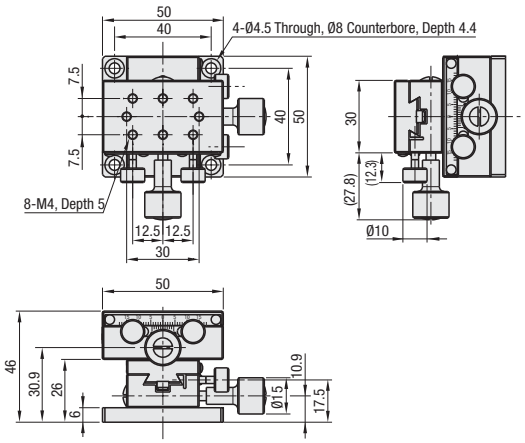
XY-Axes Low Profile

RoHS

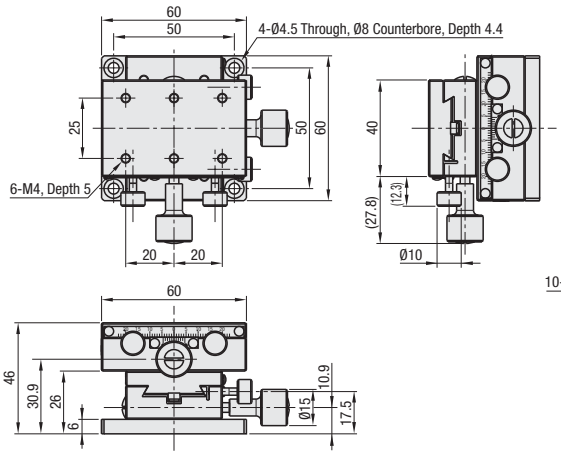


Actual products may differ from the photos.
See CAD data for the details.

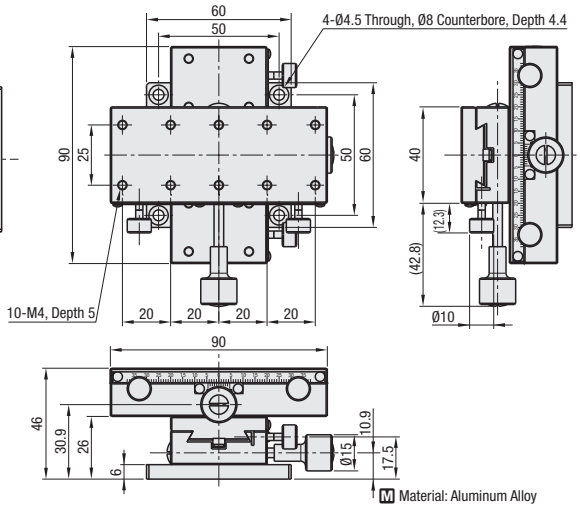
XYDTSC50



XYDTSC60



XYDTSC90



Refer to data on CAD for dimension details.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
XYDTSC	50	50x30	±15	16.7	14.7	50µm	0.33	
	60	60x40	±20		24.5		0.42	
	90	90x40	±35		24.5		0.57	

Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number XYDTSC60 | Days to Ship 6 Days | P.87

Knob cover HDCVR15 (Sold separately): Increases knob diameter by putting on Ø15 feed handle. **P.1615**
(Caution) Please note that increased handle diameter may interfere with the stage mounting base surfaces.

[Standard] Dovetail Rack & Pinion Type
-Basic / Long-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

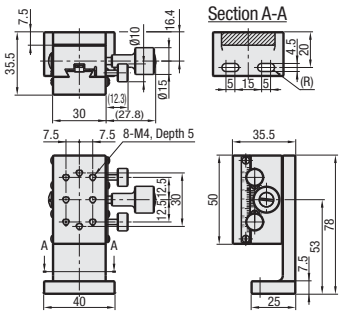
Features: Standard Z-Axis stage with moderate accuracy and price. For the high accuracy version, see ZWG on **P.1665**

Z-Axis Basic

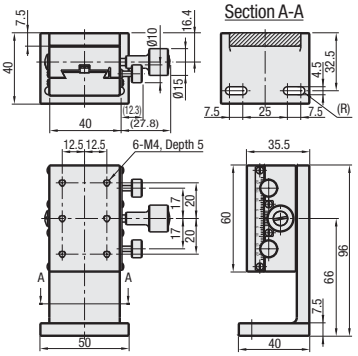


RoHS

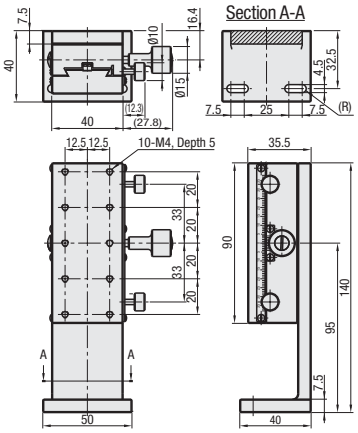
ZDTS50



ZDTS60



ZDTS90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	A	Stage (mm)	Travel Distance (mm)	Travel Per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
ZDTS	50	30x50	±16	16.7	14.7	50µm	0.26	
	60	40x60	±21		19.6	50µm	0.38	
	90	40x90	±35		19.6	50µm	0.51	

Order Example: Part Number ZDTS50

Days to Ship: 6 Days P.87

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR15 (Sold separately): Increases knob diameter by attaching to the Ø15 adjustment screw. P.1615

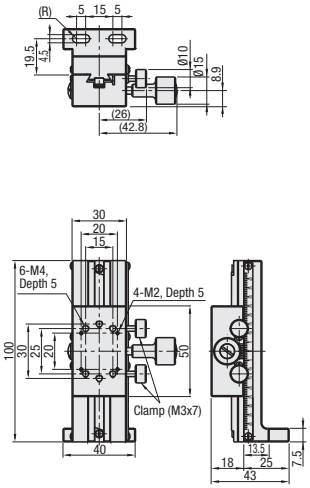
Features: Z-Axis long version of the standard XDTLS. For the high accuracy version, see ZLWG on **P.1667**

Z-Axis Long

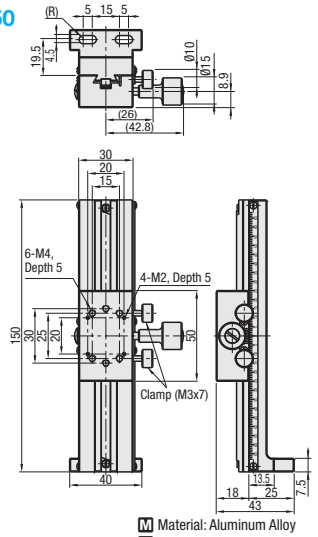


RoHS

ZDTLS100



ZDTLS150



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
ZDTLS	100	30x50	±40	16.7	14.7	50µm	0.19	
	150	30x50	±65		14.7	60µm	0.24	

Order Example: Part Number ZDTLS100

Days to Ship: 6 Days P.87

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR15 (Sold separately): Increases knob diameter by attaching to the Ø15 adjustment screw. P.1615

[Standard] Dovetail Rack & Pinion Type
-Low Profile-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Z-Axis type stages with low 20mm thickness.

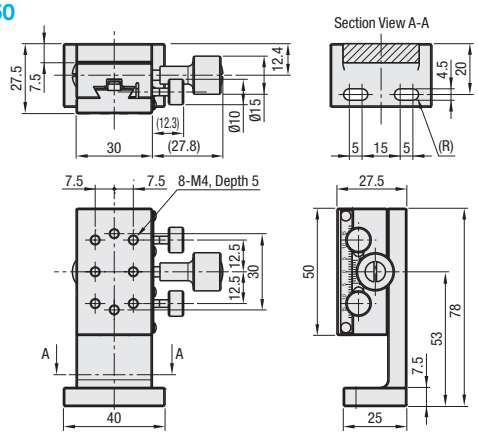
Z-Axis Low Profile



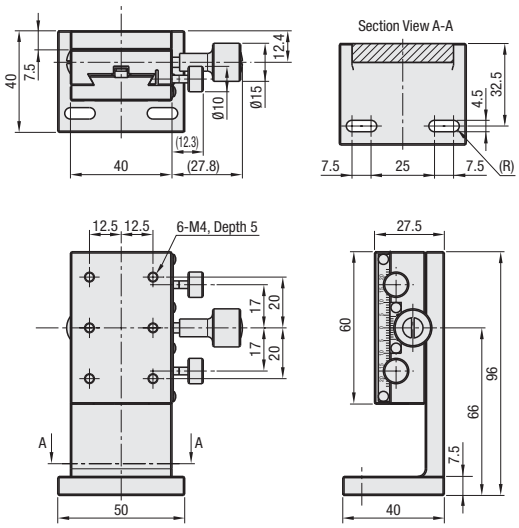
Actual products may differ from the photos. See CAD data for the details.

RoHS

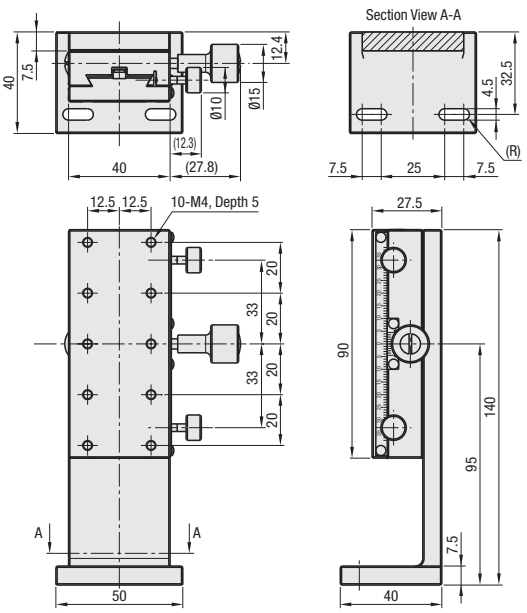
ZDTSC50



ZDTSC60



ZDTSC90



Refer to data on CAD for dimension details.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	A	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~4
ZDTSC	50	50x30	±15	16.7	9.8	50µm	0.23	
	60	60x40	±20		14.7		0.33	
	90	90x40	±35		14.7		0.43	

Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZDTSC60

Days to Ship: 6 Days P.87

Knob cover HDCVR15 (Sold separately): Increases knob diameter by putting on Ø15 feed handle. P.1615

[Standard] Cross Roller

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

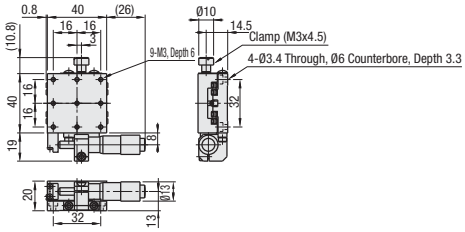
Features: Economy stage version with the modest accuracy and price. Micrometer head enables 0.01mm resolution adjustments. For the high accuracy version, see XPG on **P.1647**

X-Axis Stages

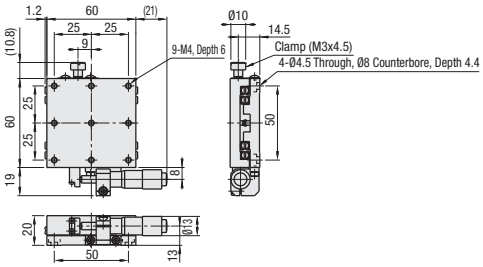


RoHS

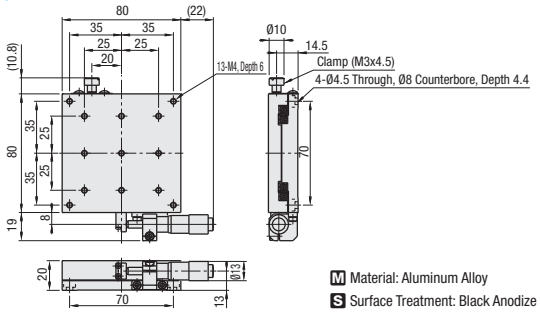
XCRS40



XCRS60



XCRS80



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Travel Accuracy Pitching	Travel Accuracy Yawing	Moment Capacity (N・m) Pitching	Moment Capacity (N・m) Yawing	Moment Capacity (N・m) Rolling	Moment Rigidity (N/N・cm) Pitching	Moment Rigidity (N/N・cm) Yawing	Moment Rigidity (N/N・cm) Rolling	Parallelism	Weight (kg)	€ Unit Price Qty. 1~4
XCRS	40	40x40	±6.5	19.6	9.8	30μm	30μm	35"	25"	2.7	2.2	2.0	0.38	0.42	0.28	50μm	0.14	
	60	60x60	±6.5	49.0	19.6	30μm	30μm	35"	25"	5.2	4.3	5.5	0.12	0.11	0.07	50μm	0.24	
	80	80x80	±6.5	98.0	49.0	30μm	30μm	35"	25"	19.2	15.1	17.3	0.05	0.05	0.04	60μm	0.39	

Micrometer head resolution: 10μm/division.
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. P.1638 Travel per one Micrometer handle rotation is 0.5mm

Order Example Part Number XCRS60 Days to Ship 6 Days P.87

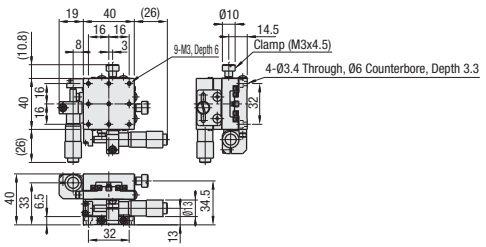
Features: An XY stage with moderate accuracy and price. For the high accuracy version, see XYPG on **P.1662**

XY-Axes

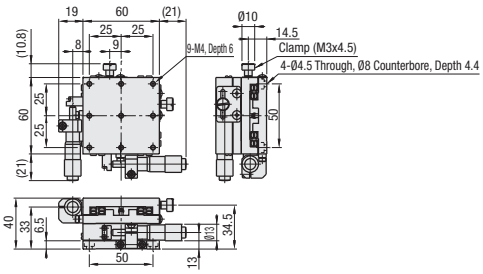


RoHS

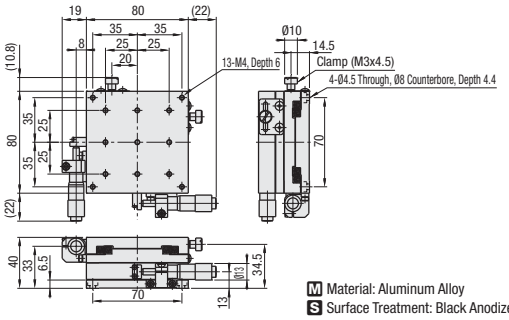
XYCRS40



XYCRS60



XYCRS80



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness	Travel Accuracy Parallelism	Travel Accuracy Pitching	Travel Accuracy Yawing	Moment Capacity (N・m) Pitching	Moment Capacity (N・m) Yawing	Moment Capacity (N・m) Rolling	Moment Rigidity (N/N・cm) Pitching	Moment Rigidity (N/N・cm) Yawing	Moment Rigidity (N/N・cm) Rolling	Parallelism	Weight (kg)	€ Unit Price Qty. 1~4
XYCRS	40	40x40	±6.5	17.6	30μm	60μm	35"	25"	2.0	2.2	2.0	0.66	0.84	0.66	100μm	0.28	
	60	60x60	±6.5	44.1	30μm	60μm	35"	25"	5.2	4.3	5.2	0.19	0.22	0.19	100μm	0.48	
	80	80x80	±6.5	93.1	30μm	60μm	35"	25"	17.3	15.1	17.3	0.09	0.10	0.09	120μm	0.77	

Micrometer head resolution: 10μm/division.
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. P.1638 Travel per one Micrometer handle rotation is 0.5mm

Order Example Part Number XYCRS60 Days to Ship 6 Days P.87

[Standard] Cross Roller

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

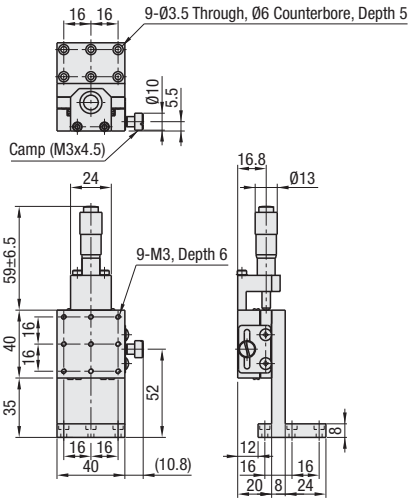
Features: Z-Axis Cross Roller Guide stage with the modest accuracy and price. For the high accuracy version, see ZPG on **P.1673**

Z-Axis

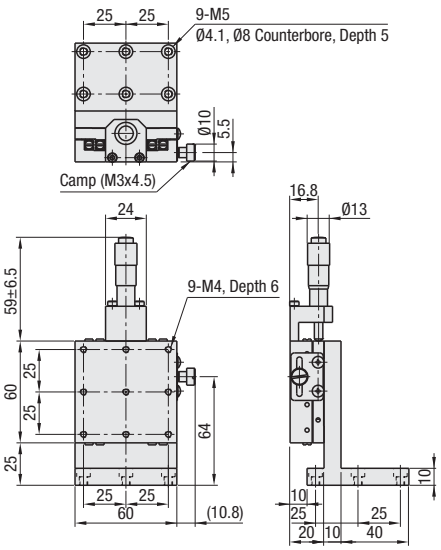


RoHS

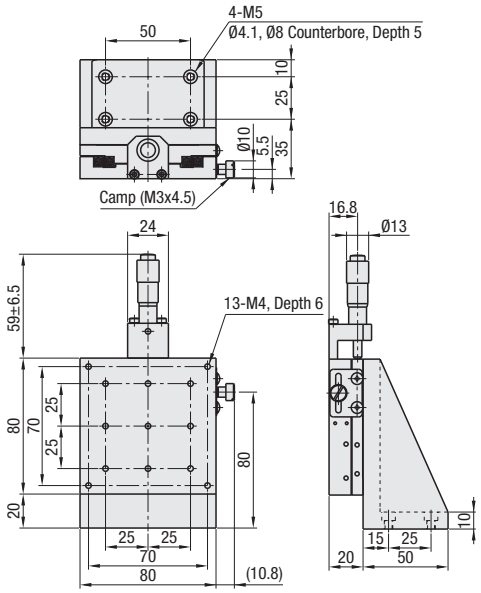
ZCRS40



ZCRS60



ZCRS80



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness	Travel Accuracy Pitching	Travel Accuracy Yawing	Moment Capacity (N·m) Pitching	Moment Capacity (N·m) Yawing	Moment Capacity (N·m) Rolling	Moment Rigidity ("/N·cm) Pitching	Moment Rigidity ("/N·cm) Yawing	Moment Rigidity ("/N·cm) Rolling	Weight (kg)	€ Unit Price Qty. 1~4
ZCRS	40	40x40	±6.5	9.8	30μm	35"	25"	2.7	2.2	2.0	0.38	0.42	0.28	0.24	
	60	60x60	±6.5	19.6	30μm	35"	25"	5.2	4.3	5.5	0.12	0.11	0.07	0.46	
	80	80x80	±6.5	49.0	30μm	35"	25"	19.2	15.1	17.3	0.05	0.05	0.04	0.76	

Micrometer head resolution: 10μm/division.
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. P.1638
Travel per one Micrometer handle rotation is 0.5mm

Order Example — Part Number: ZCRS40

Days to Ship: 6 Days P. 87

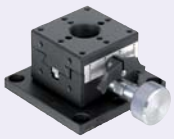
[High Precision] Dovetail Slide Rack & Pinion Type
- Basic / Coarse/Fine Feeds -

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

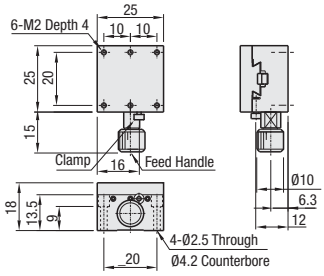
Features: Square form factor Dovetail Slide Rack & Pinion stage. The 40 and 60 sizes can be ordered with the bottom plates removed, as alterations.

X-Axis Square Basic RoHS

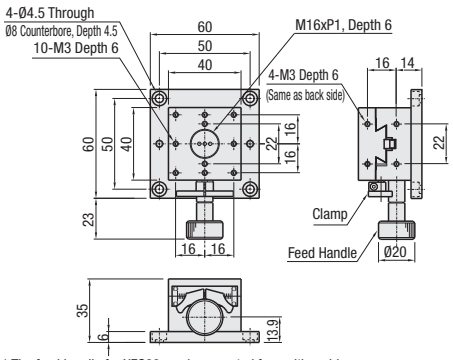


XY-Axis P.1651
Z-Axis P.1664

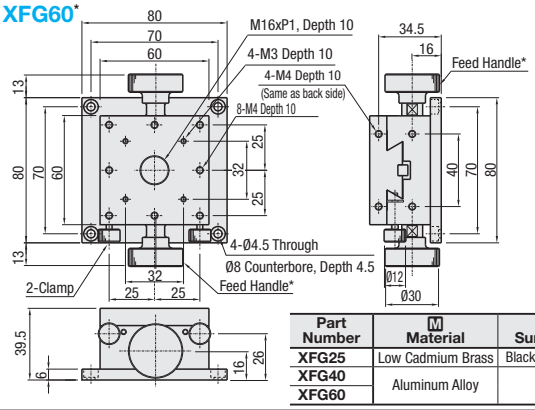
XFG25



XFG40



XFG60*



Part Number	M Material	S Surface Treatment
XFG25	Low Cadmium Brass	Black Fluororesin Treatment
XFG40	Aluminum Alloy	Black Anodize
XFG60		

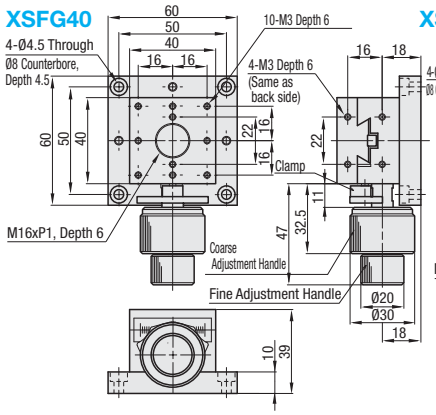
* The feed handle for XFG60 can be operated from either side.

Features: Square form factor Dovetail Slide Rack & Pinion stage with Coarse/Fine combination feeds. The coarse feed handle provides 18mm travel, and the fine feed handle provides 2.3mm travel per one handle rotation.

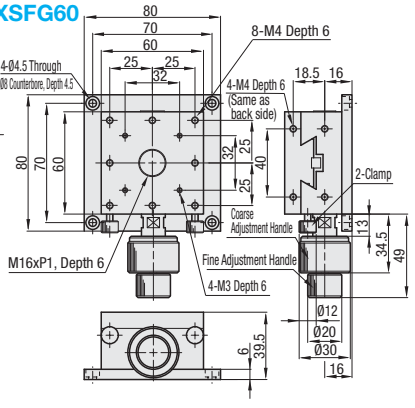
X-Axis Coarse/Fine Feeds RoHS



XSFG40



XSFG60



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel Per Handle Rotation (mm) Coarse	Fine	Load Capacity (N) Horizontal	Vertical	Travel Accuracy (μm) Straightness	Parallelism of Motion	Moment Capacity (N·m) Pitching	Yawing	Rolling	Parallelism (μm)	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XFG	25	25x25	±5	17	-	29.4	6.9	30	80	0.5	0.5	0.5	50	0.09	SCB2-12	
	40	40x40	±10	20	-		14.7	20	30	3.0	3.0	2.0	40	0.21	SCB4-6	
	60	60x60	±20	18	-	39.2	19.6	30	50	7.0	5.0	7.0	60	0.64	SCB4-6	
XSFG	40	40x40	±10	20	≈2.6	29.4	14.7	20	30	3.0	3.0	2.0	40	0.30	SCB4-10	
	60	60x60	±20	18	≈2.3	39.2	19.6	30	50	7.0	5.0	7.0	60	0.51	SCB4-6	

Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.

Refer to data on CAD for dimension details.

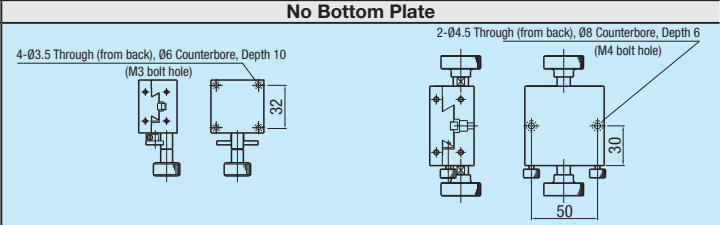
Order Example Part Number: XFG40, XSFG60

Days to Ship
- XFG: 8 Days
- XSFG: 10 Days

Express B 10,00 EUR/piece P. 88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations Part Number - (M) XSFG40 - M

Alteration	No Bottom Plate
Spec.	
Code	M
Price Adder	-10,00

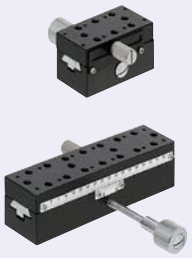
[High Precision] Dovetail Slide Rack & Pinion Type / Breadboard -Slim-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

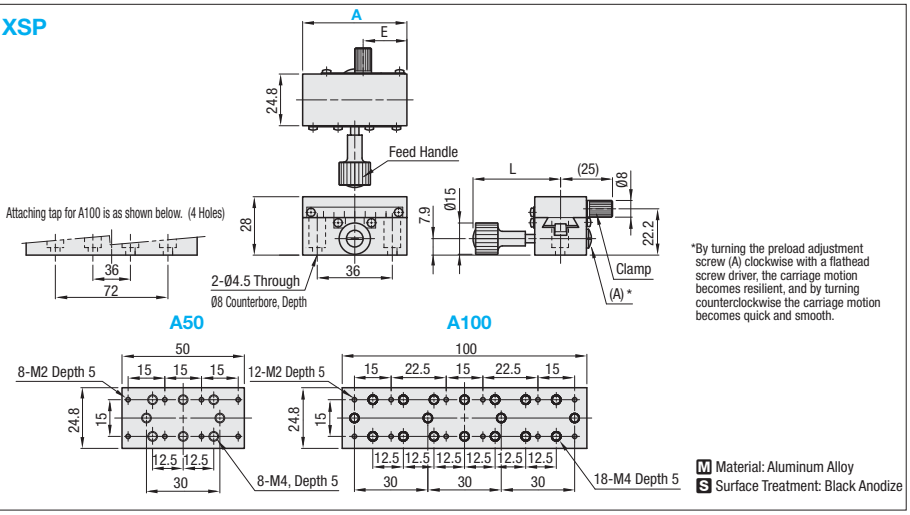
CAD Data

Features: Slim Dovetail Slide Stages (width: 24.8mm) with 18mm travel per handle rotation.

X-Axis Slim RoHS



XSP



Part Number Type	A	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	L	E	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Weight (kg)	Accessory (2 pcs.) Type M-L	€ Unit Price Qty. 1~9
XSP	50	50x24.8	±16	18	42	21	29.4	14.7	30μm	0.13	SCB4-8	
	100	100x24.8	±40		63	46	39.2	19.6		0.24		

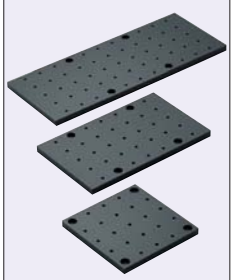
Resolution (Vernier Scale Indication) : 0.1mm/division
Knob cover HDCVR15 (Sold separately): Increases the knob diameter by putting on the Ø15 screws. P.1615
Adjustable Plate XPLT: Use for connecting stages with non-matching mounting holes. P.1625
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XSP100

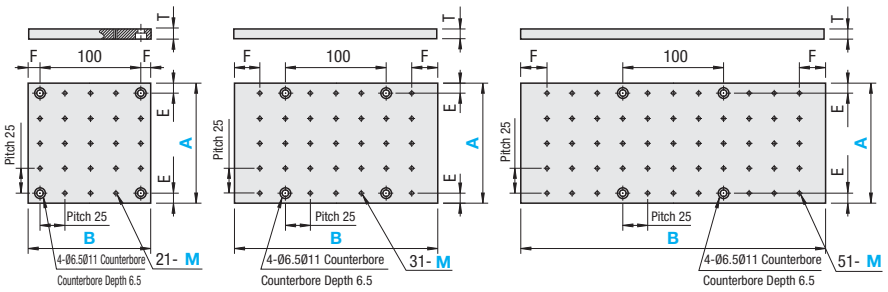
Days to Ship: 6 Days P.87

Features: Stages and holders are unitized to be fixed to an anti-vibration base. Female Thread holes are selectable from M4 and M6.(Hole pitch 25mm)

Breadboards RoHS



BBA



Mounting holes for M6 screws with a 100mm pitch are centrally located on the boards.
M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	M	A	B	Drawing	Female Thread Holes	T	E	F	€ Unit Price Qty. 1~9
BBA	4	120	120	(1)	21	10	10	10	
		150	150			10	25	25	
		200	200		45	10	25	25	
	6	120	200	(2)	31	10	10	25	
		150				10	25	25	
		120	300	(3)	51	10	10	25	
		150				10	25	25	
		200			73	10	25	25	

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: Type M - A - B
BBA 4 - 120 - 200

Days to Ship: 10 Days

[High Precision] Dovetail Slide Rack & Pinion Type / XY Mounting Plate

NEW

Price Reduction
Up to 5%

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

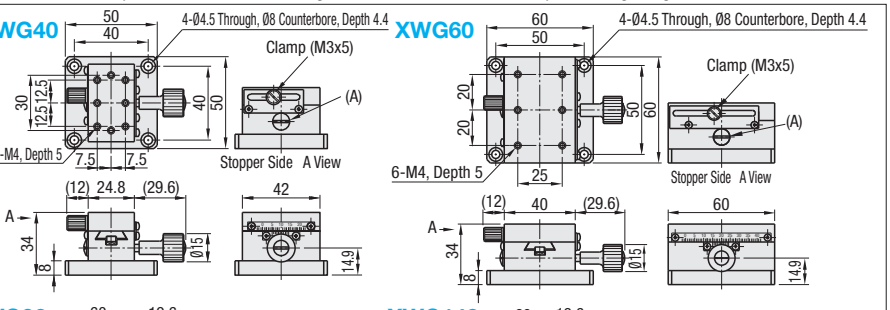
CAD Data

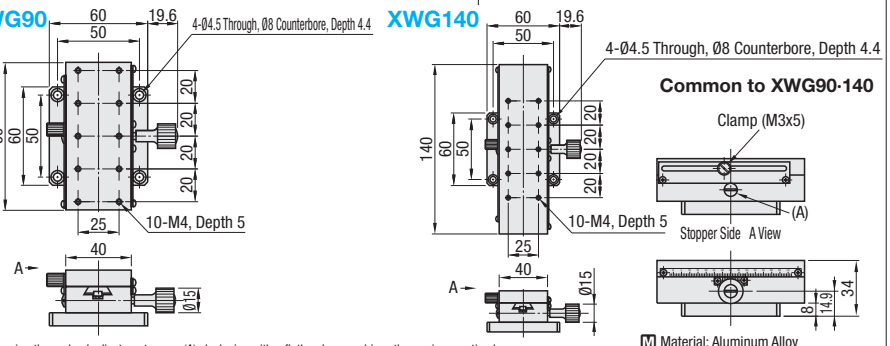
Features: Dovetail slide stages with 18mm travel per handle rotation. Rectangular form factor contributes to space saving designs.

X-Axis Rectangular Basic

RoHS







*By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

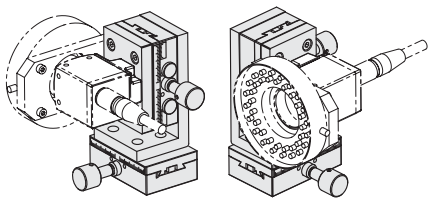
Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~9
XWG	40	24.8x42	±12	18	29.4	14.7	30µm	0.17	
	60	40x60	±21		39.2	19.6		0.29	
	90	40x90	±35					0.40	
	140	40x140	±60					0.56	

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR15 (Sold separately): Increases knob diameter by putting on Ø15 feed handle. P.1615

Order Example — Part Number: XWG40

Days to Ship: 6 Days P.87

Example
Camera adjustments for image processing application (Stage used: XWG, ZGW (P.1665))

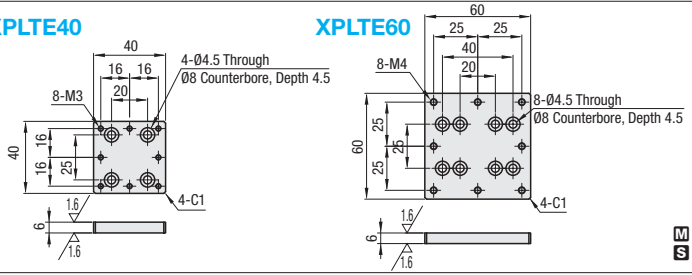


Features: XY mounting plates that can be used for combinations of rapid feed stage (bottom) and fine feed stage (top). Convenient when feeding the X in rapid, Y in fine modes.

Adjustable Plates for XY-Axes Stages

RoHS





M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	€ Unit Price Qty. 1~9
XPLTE	40	
	60	

For orders larger than indicated quantity, please request a quotation.

Applicable Stage (Applicable) Lower Stages Type	No.	(Applicable) Upper Stages Part Number	Applicable Plate Part Number
XWG, XWGL, XWGCL, XSL*, XWGC*, XWGSR*, XDTS*	60, 90, 140	XFG40-M (P.1622), XEG40 (P.1636), XEEG40(P.1636) Linear Ball Stage _40 (P.1641~) Cross Roller Stage _40 (P.1647~)	XPLTE40
		XEG60 (P.1636), XEEG60 (P.1636) Linear Ball Stage _60 (P.1641~) Cross Roller Stage _60 (P.1647~)	XPLTE60

⊗No.140 cannot be selected for * marked types.

Order Example — Part Number: XPLTE40

Days to Ship: 6 Days P.87

[High Accuracy] Dovetail Slide Rack & Pinion Type / Adjustable Plate
-Handle Extension-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Effective when feed handles are difficult to turn due to the carriage mounted objects interfere, or when the handles are hard to reach since the stage is deeply embedded inside a machine. Possible to combine knobs and etc. on the handles.

X-Axis Handle Extension

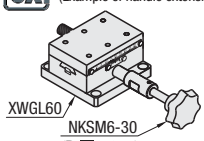
RoHS



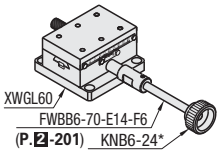
XY-Axes **P1657**
Z-Axis **P1668**

Application Example

(Example of handle extension (1))



(Example of handle extension (2))



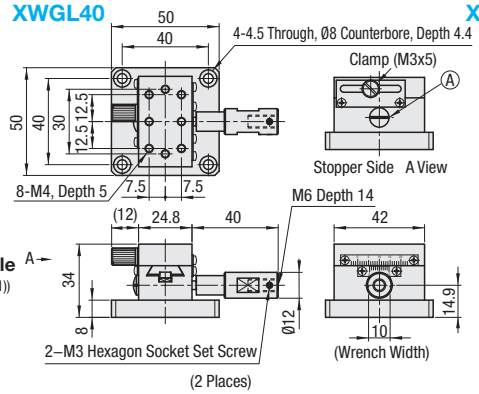
*Apply adhesive to prevent loosening.

Handle Extending Method
Use M6 tapped hole with the depth of 14 on the handle.
The feed handle length and diameter can be modified for applications where large objects are to be mounted on carriages.

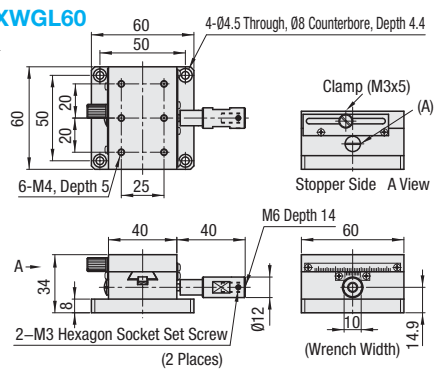
(Example (1)) Seven Lobed Knob (**P.2-1031**) NKSM6-30 can be mounted to extend the handle by 36mm.

(Example (2)) Length Specified Hex Socket Cap Screw (**P.2-201**) FWBB6-70-E14-F6 and Clamp Knob (**P.2-1025**) KNB6-24 can be combined to extend the handle further by 63mm.

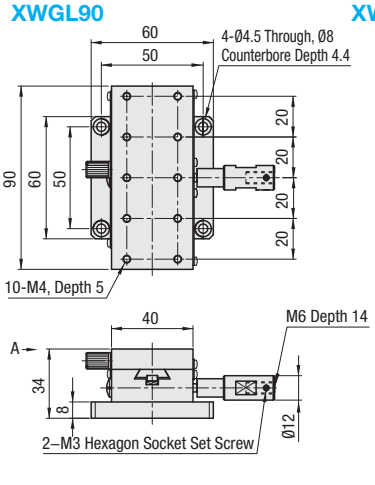
XWGL40



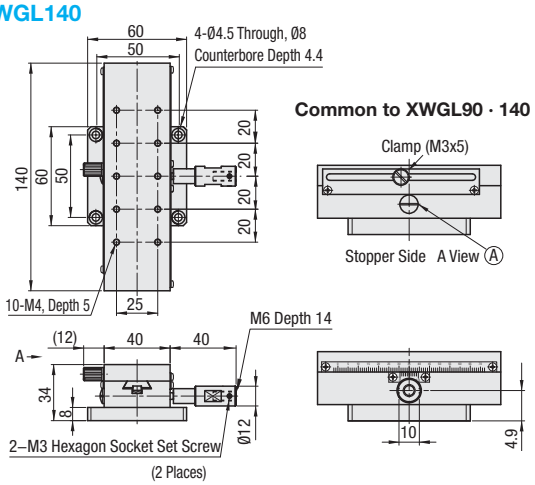
XWGL60



XWGL90



XWGL140



Common to XWGL90 · 140

By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.(A)

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Weight (kg)	€ Unit Price Qty. 1~9
XWGL	40	24.8x42	±12	18	29.4	14.7	20µm	30µm	0.17	
	60	40x60	±21		39.2	19.6	30µm		0.29	
	90	40x90	±35						0.40	
	140	40x140	±60						0.56	

Order Example — Part Number: XWGL40

Days to Ship: 13 Days

Résolution (Indication de l'échelle du vernier) : 0.1mm/division

Pour les commandes supérieures aux quantités indiquées, demander un devis.

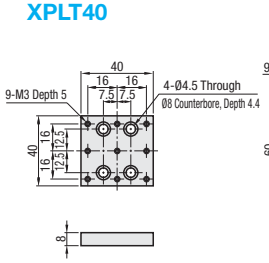
Feature: Offers a square mounting surface by attaching on top of a rectangular stage.

Adjustable Plates

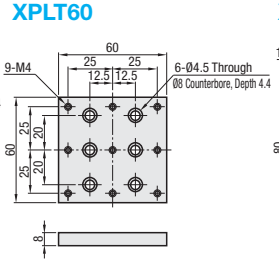
RoHS



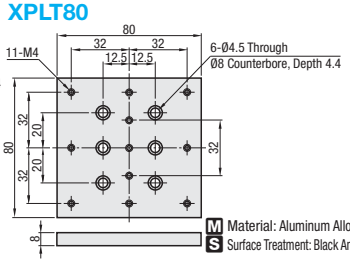
XPLT40



XPLT60



XPLT80



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	€ Unit Price Qty. 1~9
XPLT	40	
	60	
	80	

For orders larger than indicated quantity, please request a quotation.

Compatible Stages

Part Number Type	No.	Face Size (mm)	Applicable Stage
XPLT	40	40x40	XWG40 (**P.1624**) · XYWG40 (**P.1652**) · ZWG40 (**P.1665**) REG40 ·60 (**P.1691**) XLWG (**P.1628**) ZLWG (**P.1667**) XSSL (**P.1633**) XSSLC (**P.1633**) XSP (**P.1623**)
	60	60x60	XWG60 · 90 · 140 (**P.1624**) XYWG60 · 90 · 140 (**P.1652**) ZWG60 · 90 · 140 (**P.1665**) XSL (**P.1632**) XSLC (**P.1632**) XSB (**P.1626**) REG60 (**P.1691**)
	80	80x80	

Order Example — Part Number: XPLT40

Days to Ship: 6 Days P87

[High Precision] Dovetail Slide Rack & Pinion Type
-Reinforced Clamp / Coarse / Fine Feed Handle-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Feartures: Feed screw handle can be directly clamped for improved retaining performance over the standard XWG on **P.1624**

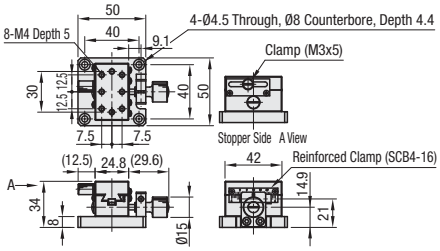
X-Axis Clamp Reinforcement



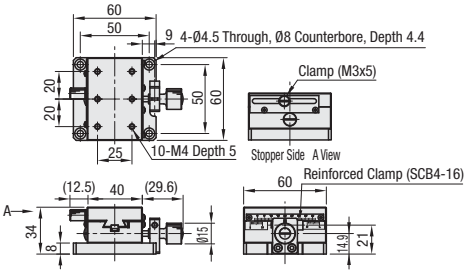
XY-Axis **P.1657**
Z-Axis **P.1666**

RoHS

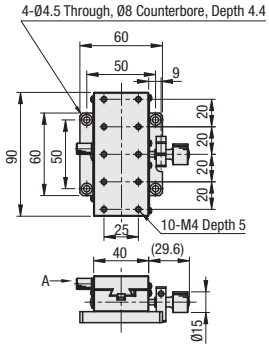
XWGCL40



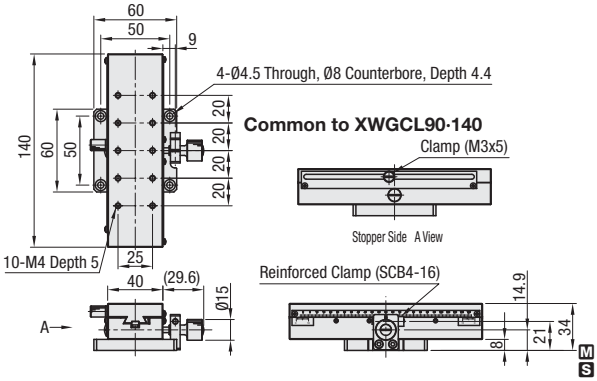
XWGCL60



XWGCL90



XWGCL140



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

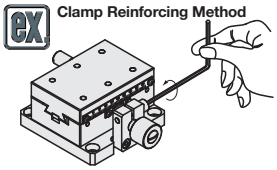
Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Weight (kg)	€ Unit Price Qty. 1~9
XWGCL	40	24.8x42	±12	18	29.4	14.7	20µm	30µm	0.17	
	60	40x60	±21		39.2	19.6	30µm		0.29	
	90	40x90	±35						0.40	
	140	40x140	±60						0.56	

Knob Cover HDCVR15 (Sold separately): Knob diameter can be increased by attaching a cover on Ø15 knob. **P.1615**
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XWGCL40

Days to Ship: 10 Days

ex Clamp Reinforcing Method



There will be residual clearances with carriage retaining only with a Reinforced Clamp. Use a Clamp Screw in combination.

Features: Suitable for use when both fast feeding and ease of fine adjustments are required.

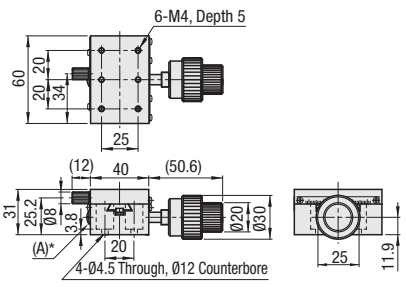
X-Axis Coarse/Fine Feed Handle

RoHS

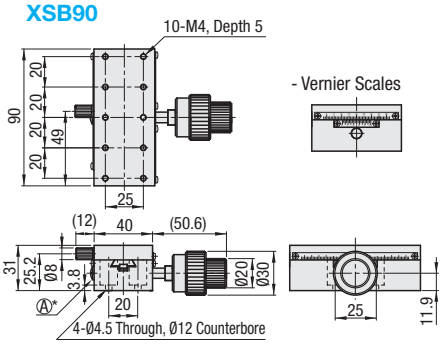


By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.

XSB60



XSB90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel Per Handle Rotation (mm) Coarse	Travel Per Handle Rotation (mm) Fine	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XSB	60	40x60	±21	18	2.3	39.2	19.6	30µm	30µm	0.35	SCB4-8	
	90	40x90	±35							0.46		

Resolution of the vernier scales for Corse/Fine Handle Stages is 0.05mm.
Adjustable Plate XPLT: Use this plate when connecting stages with non-matching mounting holes. **P.1625**
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XSB60

Days to Ship: 13 Days

[High Precision] Dovetail Slide Rack & Pinion Type
-High Load Capacity-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

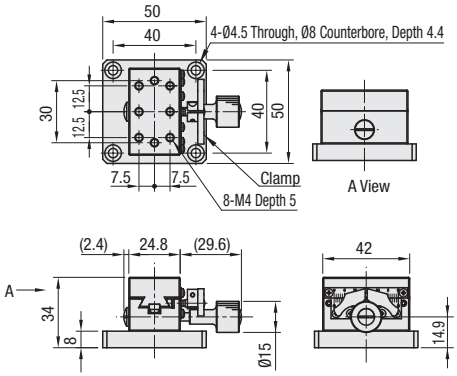
CAD Data

Features: XWGSR stages are made of steel, with higher load capacities and impact resistance compared to the XWG Series (**P.1624**).

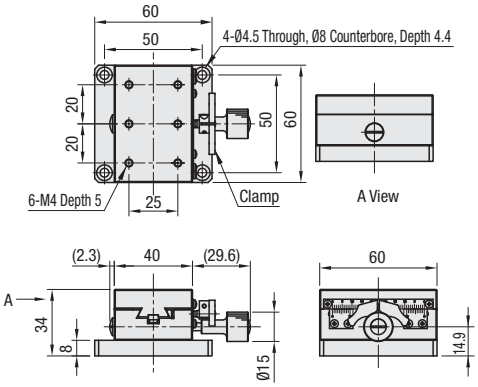
X-Axis High Load Capacity- RoHS



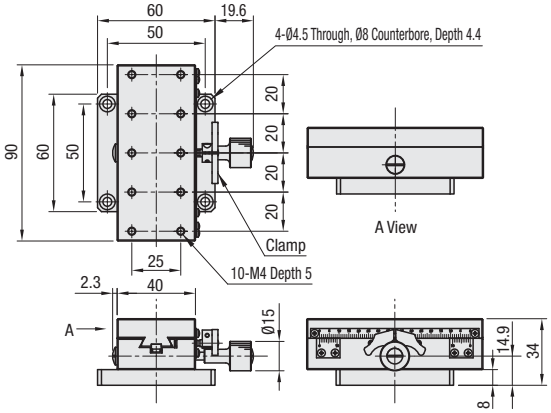
XWGSR40



XWGSR60



XWGSR90



M Material: 1.1191/C45E
S Surface Treatment: Electroless Nickel Plating

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Horizontal Load Capacity (N)	Moment Capacity (Nm) Pitching	Yawing	Rolling	Travel Accuracy (µm) Straightness	Parallelism	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~4
XWGSR	40	24.8x40	±12	18	98	5.0	3.3	2.6	30	40	50µm	0.36	SCB4-10	
	60	40x60	±21		196	15.0	7.8	10.4				0.70		
	90	40x90	±35		294	27.5	16.5	28.6				0.94		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob Cover HDCVR15 (Sold separately): Knob diameter can be increased by attaching a cover on Ø15 knob. **P.1615**

Order Example Part Number XWGSR40

Days to Ship 10 Days

Add. Spec. [High Precision] Dovetail Slide Rack & Pinion Type · XY Mounting Plate-Long-

Price Reduction Up to 8%

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

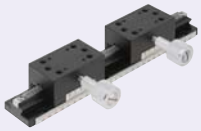
CAD Data

Features: Long stroke stages made of lightweight aluminum alloy. Select a size based on strokes needed. For stages with ±140mm stroke, see P.1629

X-Axis Long

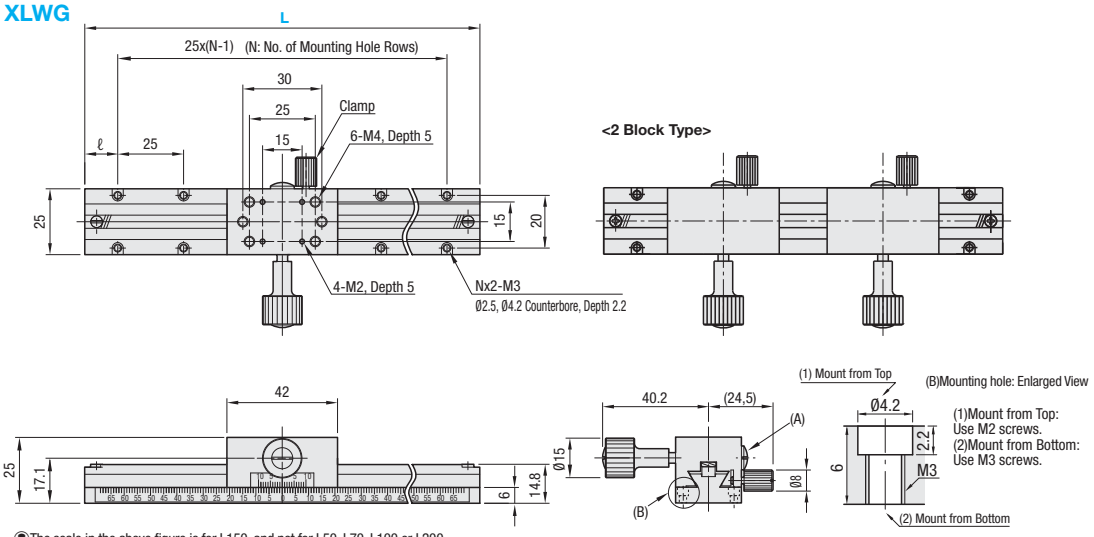
RoHS





Use XY Mounting Plates (XYPLT) to combine the Long Stroke Stages together. See below

XLWG



The scale in the above figure is for L150, and not for L50, L70, L100 or L200.
By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	L	Number of Blocks	Travel Distance (mm)	Travel per Rotation (mm)	N No. of Hole Rows	ℓ (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (μm) Straightness	Travel Accuracy (μm) Parallelism	Weight (kg)	€ Unit Price Qty. 1-9
XLWG	50	50	1	±15	18	2	12.5	29.4	14.7	30	30	0.10	
	70	70	1	±25		3	10.0					0.12	
	100	100	1	±40		4	12.5					0.14	
	150	150	1	±65		6				40	40	0.17	
	150-2		2									0.24	
	200	200	1	±90		8				50	50	0.21	
	200-2		2									0.28	

Order Example: Part Number XLWG100

Days to Ship: 6 Days P.87

Resolution (Vernier Scale Indication): 0.1mm/division
XLWG150-2 and 200-2 have two blocks. Please note that the stroke distances will be shorter than the one block versions.
Knob cover HDCVR15 (Sold separately): Increases knob diameter by attaching to the Ø15 adjustment screw. P.1615
Resolution (Vernier Scale Indication): 0.1mm/division P.1625
For orders larger than indicated quantity, please request a quotation.

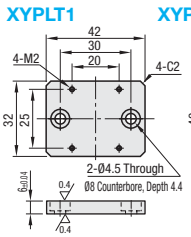
Feature: Plates to assemble Long Stroke Stages. Use in multi-axis configuration.

Adjustable Plates for XY-Axes Stages

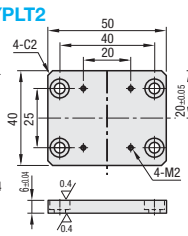
RoHS

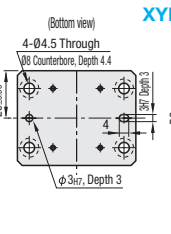


XYPLT1

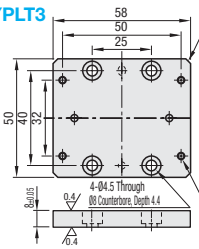


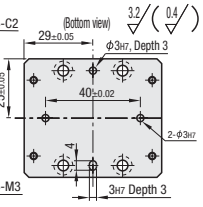
XYPLT2





XYPLT3





M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Applicable Stage Combinations Stage (Top)	Stage (Bottom)	€ Unit Price Qty. 1-2	Volume Discount Qty. 3-9
XYPLT	1	XLWG · ZLWG(P.1628, 1667)	XLWG		
	2	XLONG (P.1629)	XLWG		
	3	XLONG (P.1629)	XLONG (P.1629)		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number XYPLT1

Days to Ship: 6 Days P.87

Example

Stages with different L lengths can be combined.



[High Precision] Dovetail Slide Rack & Pinion Type
-Long Stroke-

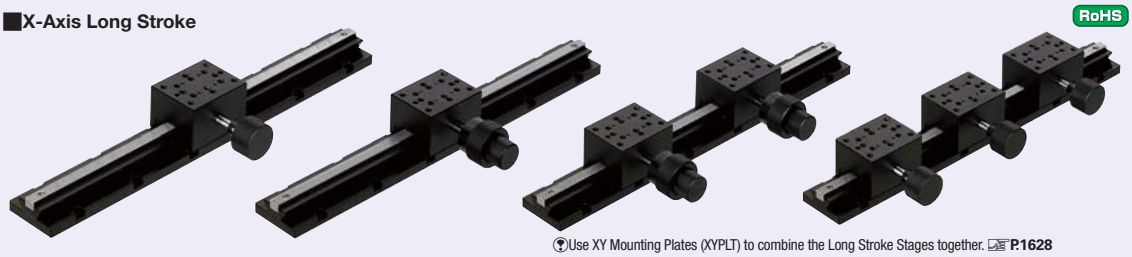
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Feature: Compatible with M size board (330mm x 250mm). Suitable for sensor adjustments and tooling changes.

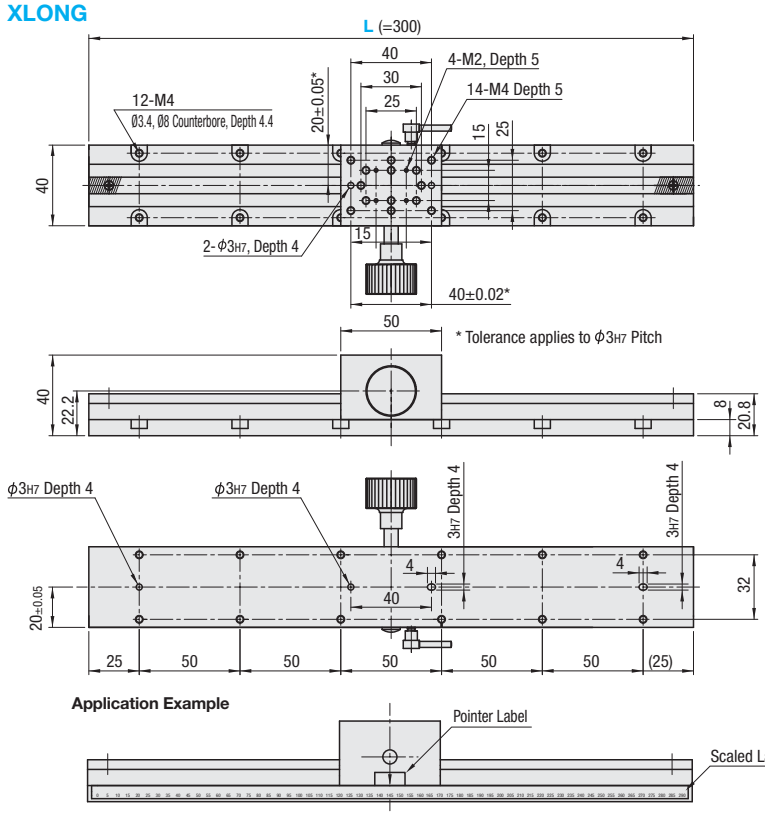
X-Axis Long Stroke

RoHS

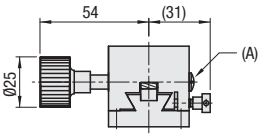


Use XY Mounting Plates (XYPLT) to combine the Long Stroke Stages together. P.1628

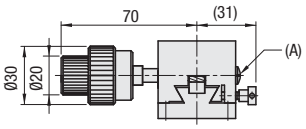
XLONG



Standard Knob



Coarse/Fine Feed Handle



Use M3 screws for mounting from top, M4 screws for mounting from bottom.
By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.
Dowel holes on top and bottom plates can be used to obtain locating repeatability.
Do not remove blocks from bottom plate, as blocks are preloaded and ground fit for precision, and shipped after inspection.

Application Example

* Adhesive vernier scale label included can be placed at desired position in accordance with a required adjustment range.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize
A Accessory: Adhesive ruler label (PET)
Index label (PET)

Part Number		Block		Travel Distance (mm)	Travel Per Handle Rotation (mm)		Load Capacity (N)		Travel Accuracy	Weight (kg)	€ Unit Price
Type	L-No.	Handle	Qty.		Coarse	Fine	Horizontal	Vertical	Straightness		Qty. 1~9
XLONG	300	Standard Handle	1	±140	18	-	49	24.5	150µm	0.63	
	300-2		2							0.81	
	300-3		3							0.99	
	300-SB	Coarse/ Fine Feed Handle	1	±140	18	2.3			150µm	0.70	
	300-2SB		2							0.95	
	300-3SB		3							1.20	

Resolution: 1mm/division

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
XLONG300
XLONG300-2SB

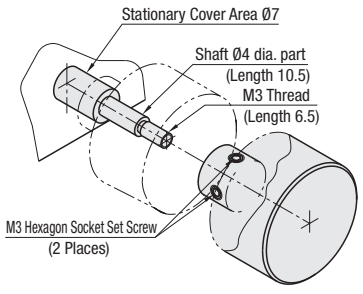
Days to Ship

■XLONG300 · XLONG300-SB
6 Days P.87

■XLONG300-2 · -3 · -2SB · -3SB
13 Days

Example

Assembly of Standard Knob



XLONG300 Standard Handle Type has an M3 set screw for the handle.

[High Precision] Dovetail Slide Rack & Pinion Type
-Long Stroke Block Combination-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Useable for tooling changes. Number, type and direction of blocks and rail length are selectable.

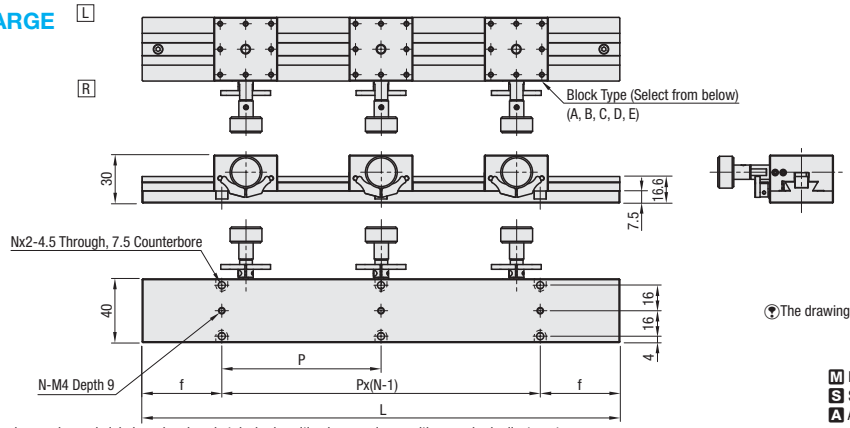
X-Axis Long Stroke Blocks Combination

RoHS



Moved distance can be read with the mark on the carriage and the scale on the base. Resolution is 1mm

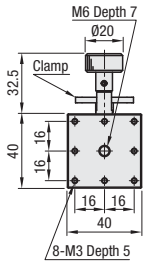
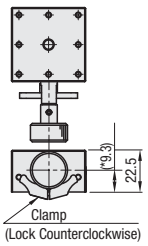
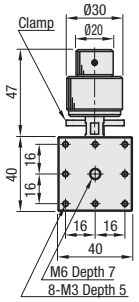
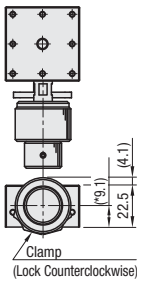
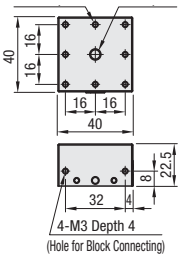
XLARGE



The drawing is a XLARGE3-B-B-B

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize
A Accessory: Scaled label (PET)
Pointer label (PET)

* Adhesive vernier scale label can be placed at desired position in accordance with a required adjustment range.

Block Type	Directions	Standard Handle (Left) A	Standard Handle (Right) B	Coarse Feed Handle (Left) C	Coarse Feed Handle (Right) D	Connecting Block E
Shape	L ↑ R ↓					Block Connecting Holes There are same holes on the mating side also. The Connecting Block (**E**) includes hooks for connections, and connected blocks can carry larger objects. 
Additional price to the rail price.		+90,00	+90,00	+180,00	+180,00	+60,00

Dimension of * part will vary ±0.3mm due to its structure.

(Rail)

Part Number Type	No.	L	Block (1)	Block (2)	Block (3)	Travel Distance*1 (mm)	Horizontal Load Capacity (N)	f	P	N	Weight*3 (kg)	Accessories TypeM-L	Accessories Quantity	€ Unit Price Qty. 1~4
XLARGE	1	100	A B C D E	A B C D E	A B C D E	60	29.4	12.5	75*2	2	0.15	CBM4-8	4	
	2	200				160		25	150	2	0.29		4	
	3	300				260		50	100	3	0.43		6	
	4	400				360		50	100	4	0.57		8	

When L (Rail Length) = 100, only one block can be selected.
When L (Rail Length) = 200, two blocks can be selected.
Joint Block has a stopper to prevent falling off.
Travel distance of *1 is the value obtained with one block. Addition of every one block shortens the travel distance by 40mm.
*2 M4 (backside) is P=100
*3 Weight of the rail itself. Unit weight should be calculated by adding the weight of the selected number of blocks.

For orders larger than indicated quantity, please request a quotation.

(Block)

Block Type		Weight (kg)	€ Unit Price Qty.1-3
A	Standard Handle (Left)	0.12	
B	Standard Handle (Right)	0.12	
C	Coarse Feed Handle (Left)	0.17	
D	Coarse Feed Handle (Right)	0.17	
E	Connecting Block	0.08	

For orders larger than indicated quantity, please request a quotation.

Order Example

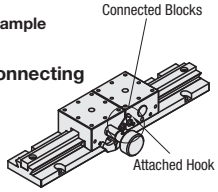
Part Number	Block (1)	Block (2)	Block (3)
XLARGE2	A	A	
XLARGE3	A	E	C
XLARGE4	E	B	C

Days to Ship

10 Days

Example

Block Connecting Method



Price Calculation Example

Ex.1) XLARGE2-A-A
120,00 EUR + 90,00 EUR + 90,00 EUR =300,00 EUR
(Rail € Unit Price) + (Block € Unit Price (1)) + (Block € Unit Price (2))

Ex.2) XLARGE4-E-B-C
120,00 EUR + 90,00 EUR + 90,00 EUR + 300,00 EUR =180,00 EUR€
Unit Price (Rail € Unit Price) + (Block € Unit Price (1)) + (Block € Unit Price (2)) + (Block € Unit Price (3))

[High Precision] Dovetail Slide Feed Screw Type
-Basic / Extended Handle (Lead 4.2mm)-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

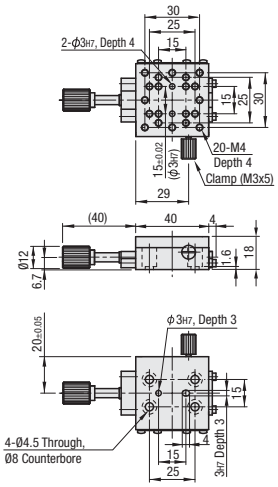
Features: Low Profile Dovetail Slides with smooth 4.2mm lead feed screws. Easy XY integration with dowel holes.

X-Axis Square Basic
(With dowel holes - Lead 4.2mm) RoHS

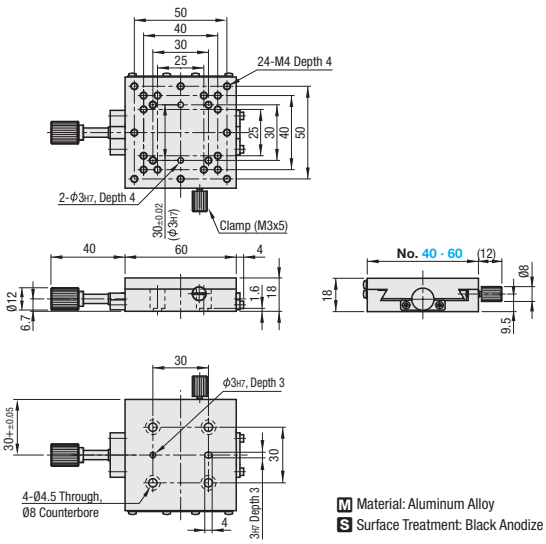


XY-Axes P.1654
Z-Axis P.1668

XSC40



XSC60

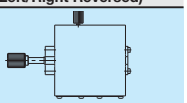


M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Vertical	Travel Accuracy Straightness	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XSC	40	40x40	±11	4.2	19.6	9.8	20μm	30μm	0.10	SCB4-5	
	60	60x60	±21		29.4	14.7			0.19		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XSC40
Days to Ship: 6 Days P.87
Alterations — Part Number: XSC40 - (R); 10 Days

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

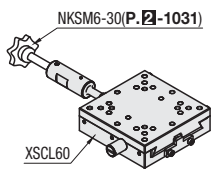
Features: Effective when feed handles are difficult to turn due to the carriage mounted objects interfere, or when the handles are hard to reach since the stage is deeply embedded inside a machine.

X-Axis Handle Extension
(With dowel holes - Lead 4.2mm) RoHS

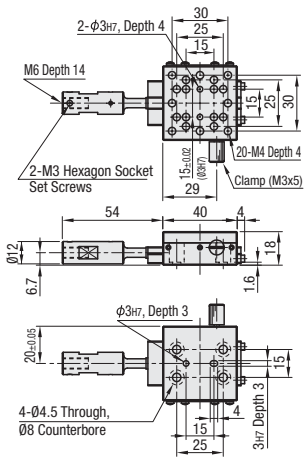


XY-Axes P.1654
Z-Axis P.1668

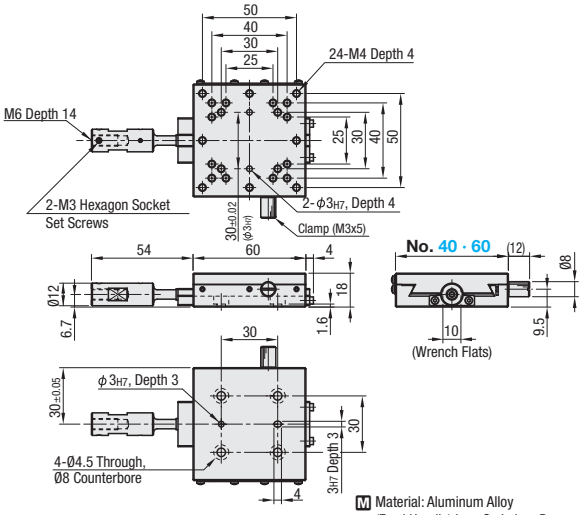
EX (Extended Handle)



XSCL40



XSCL60

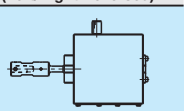


M Material: Aluminum Alloy (Feed Handle) Low Cadmium Brass
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Vertical	Travel Accuracy Straightness	Parallelism	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~9
XSCL	40	40x40	±11	4.2	19.6	9.8	20μm	30μm	0.10	SCB4-6	
	60	60x60	±21		29.4	14.7			0.19		

Resolution (Vernier Scale Indication): 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Adjustable Plate XPLT : Use this plate when connecting stages with non-matching mounting holes. P.1625

Order Example — Part Number: XSCL60
Days to Ship: 10 Days
Alterations — Part Number: XSCL60 - (R)
Refer to data on CAD for dimension details.

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

[High Precision] Dovetail Slide Feed Screw Type

-Basic / Reinforced Clamp / Low Profile (Lead 4.2mm)-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Dovetail Slide Stages with smooth feeding 4.2mm screw lead. Reinforced Clamp Type, Low Profile Type (18mm height), and Left/Right Reversed Type are offered.

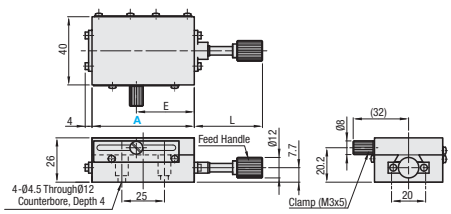
X-Axis Rectangular Basic

(Lead 4.2mm) RoHS



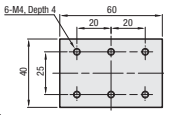
XY-Axes P.1655
Z-Axis P.1669

XSL

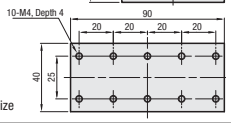


Upper Mounting Hole Dimensions

A60



A90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	A	Stage (mm)	Travel (mm)	Travel per Rotation (mm)	L	E	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XSL	60	40x60	±21	4.2	40	34	39.2	19.6	30µm	30µm	0.20	SCB4-8	
	90	40x90	±35		60	49					0.29		

Resolution (Vernier Scale Indication) : 0.1mm/Scale
Extension Cover HDEXT12 (Sold separately): Ø12 feed screw handle can be extended. P.1638
Adjustable Plates XPLT: Use this plate when connecting stages with non-matching mounting holes. P.1625

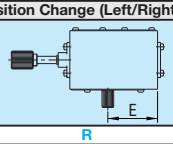
For orders larger than indicated quantity, please request a quotation.
Refer to data on CAD for dimension details.

Order Example: Part Number XSL60

Alterations: Part Number XSL60 - (R) R

Days to Ship: 6 Days P.87

Alterations: 10 Days

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Features: The feed handle is directly retained with a split clamp, resulting in less position drift.

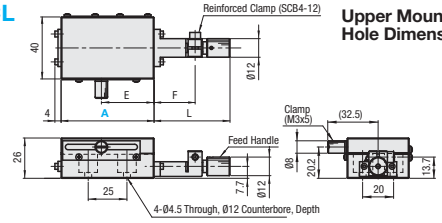
X-Axis Clamp Reinforcement

(Lead 4.2mm) RoHS



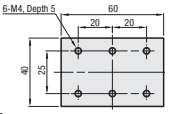
XY-Axes P.1655
Z-Axis P.1669

XSLCL

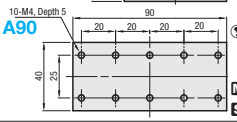


Upper Mounting Hole Dimensions

A60



A90



ex

Improved retention force over the Basic Type is obtained by tightening the reinforced Clamp with a hex wrench.
M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	A	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	L	E	F	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XSLCL	60	40x60	±21	4.2	49	34	26.5	39.2	19.6	30µm	30µm	0.18	SCB4-8	
	90	40x90	±35		63	49	40.5					0.26		

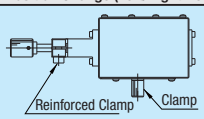
Resolution (Vernier Scale Indication) : 0.1mm/division
Extension Cover HDEXT12 (Sold separately)Ø12 feed screw handle can be extended. P.1638
Adjustable Plates XPLT:Use this plate when connecting stages with non-matching mounting holes. P.1625

For orders larger than indicated quantity, please request a quotation.
Refer to data on CAD for dimension details.

Order Example: Part Number XSLCL60

Alterations: Part Number XSLCL60 - (R) R

Days to Ship: 10 Days

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	 Reinforced Clamp Clamp The reinforced clamp and the clamp screw are tightened in the same direction.
Code	R
Price Adder	Free of Charge

Features: Travel distance per handle rotation is approx. 1/4 of the Rack & Pinion Type. Suitable for fine pitch travels over a long stroke.

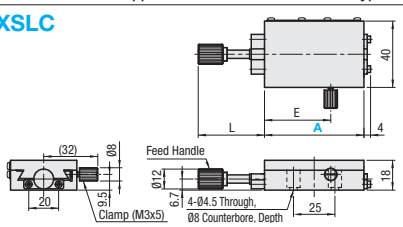
X-Axis Low Profile

(Lead 4.2mm) RoHS



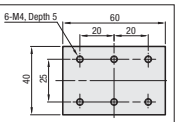
XY-Axes P.1655
Z-Axis P.1669

XSLC

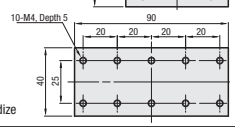


Upper Mounting Hole Dimensions

A60



A90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	A	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	L	E	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XSLC	60	40x60	±21	4.2	40	40	29.4	14.7	30µm	30µm	0.14	SCB4-5	
	90	40x90	±35		60	55					0.19		

Resolution (Vernier Scale Indication) : 0.1mm/division
Extension Cover HDEXT12 (Sold separately): Ø12 feed screw handle can be extended. P.1638
Adjustable Plates XPLT: Use this plate when connecting stages with non-matching mounting holes. P.1625

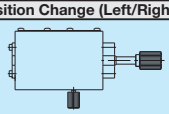
For orders larger than indicated quantity, please request a quotation.
Refer to data on CAD for dimension details.

Order Example: Part Number XSLC90

Alterations: Part Number XSLC90 - (R) R

Days to Ship: 6 Days P.87

Alterations: 10 Days

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

[High Precision] Dovetail Slide Feed Screw Type / XY Joint Plate
-Slim / Slim Low Profile (Lead 4.2mm)-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Dovetail Slide Stages with smooth 4.2mm lead feed screw. Space saving slim form factor (24.8mm width) compared to the Basic Type XSL (P.1632)

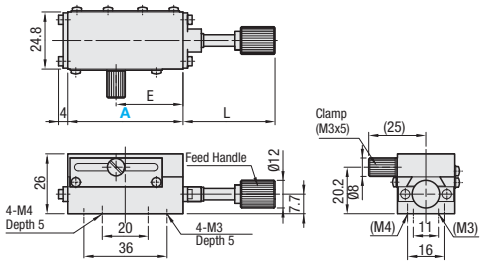
X-Axis Slim
(Lead 4.2mm)

RoHS

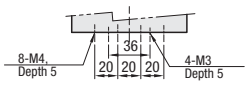




XSSL

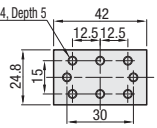


For No.100, tapped mounting holes are as shown below.

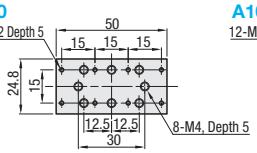


Upper Mounting Hole Dimensions

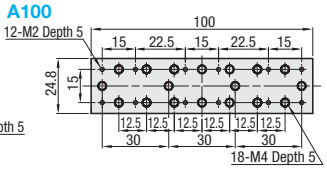
A40



A50



A100



M Material: Aluminum Alloy S Surface Treatment: Black Anodize

Part Number Type	A	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	L	E	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (µm) Straightness	Travel Accuracy (µm) Parallelism	Weight (kg)	Accessories Type M-L	Accessories Qty.	€ Unit Price Qty. 1~9
XSSL	40	24.8x42	±12	4.2	40	25	29.4	14.7	20	30	0.11	SCB4-8	4	
	50	24.8x50	±16		40	29			30		0.12	SCB3-6		
	100	24.8x100	±40		60	54	39.2	19.6			0.22	SCB4-8 SCB3-6	8 4	

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. ☞P.1638
Adjustable Plate XPLT : Use this plate when connecting stages with non-matching mounting holes. ☞P.1625

Alterations

Part Number - (R)
XSSL100 - R

10 Days

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Order Example — Part Number: XSSL50

Days to Ship: 6 Days ☞P.87

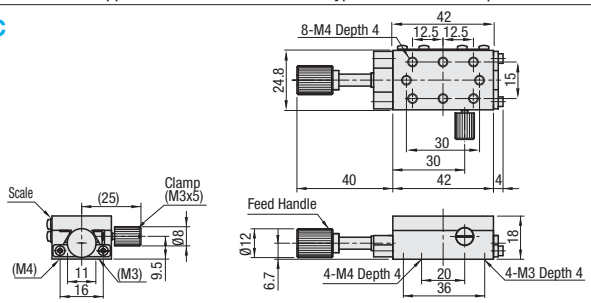
Features: Travel distance per handle rotation is approx. 1/4 of the Rack & Pinion Type. Suitable for fine pitch travels over a long stroke.

X-Axis Stages Slim Low Profile Type
(Lead 4.2mm)

RoHS



XSSLC



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (µm) Straightness	Travel Accuracy (µm) Parallelism	Weight (kg)	Accessories Type M-L	Accessories Qty.	€ Unit Price Qty. 1~9
XSSLC	40	24.8x42	±12	4.2	19.6	9.8	30	30	0.08	SCB4-6	4	

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. ☞P.1638
Adjustable Plate XPLT : Use this plate when connecting stages with non-matching mounting holes. ☞P.1625

Alterations

Part Number - (R)
XSSLC40 - R

10 Days

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

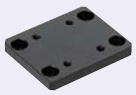
Order Example — Part Number: XSSLC40

Days to Ship: 6 Days ☞P.87

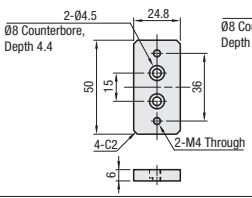
Features: Joint plates for combining two stages. Reversed handle types and different feed systems can be combined.

XY-Axes Joint Plates

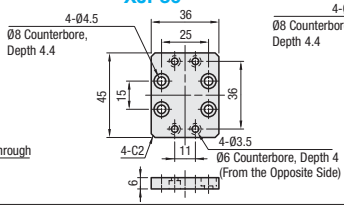
RoHS



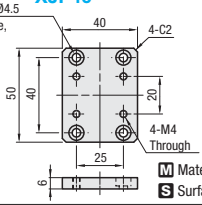
XJP25



XJP36



XJP40



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Accessories Type M-L	€ Unit Price Qty. 1~9
XJP	25	SCB4-6 (4pcs.)	
	36	SCB4-6 (4pcs.) SCB3-6 (4pcs.)	
	40	SCB4-6 (8pcs.)	

For orders larger than indicated quantity, please request a quotation.

Applicable Stages

Bottom \ Top	XSSL XSSLC	XSL XSLC XSB	XSP
XSSL / XSSLC	XJP36	-	XJP25
XSL / XSLC (P.1632) / XSB(P.1626)	-	XJP40	-
XSP(P.1626)	XJP36	-	XJP25
XWG40(P.1624)	XJP36	-	XJP25
XWG60, 90, 140(P.1624)	-	XJP40	-

Order Example — Part Number: XJP40

Days to Ship: 6 Days ☞P.87

Accessories for Dovetail Slide Stages

-Base / Shaft / CCD Camera Adapter / Holder-

CAD Data

Feature: Accessories can be combine with dovetail stages to form a variety of Post Mounted Stages.

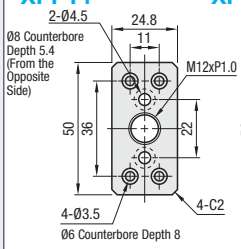
Bases for Stages

RoHS

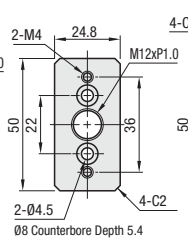


- Base Plates to connect the Dovetail Stages (**P.1623 · 1626 · 1632 · 1633**) and XPST1 · 2 · 3 (below).
·For corresponding stages, see the table below.

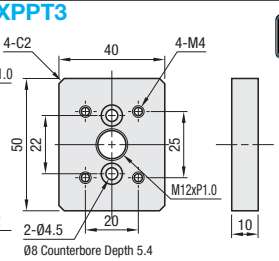
XPPT1



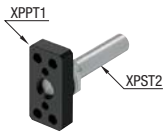
XPPT2



XPPT3



ex Example



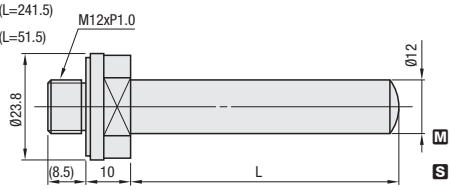
M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Shafts for Stages (Ø12)

RoHS

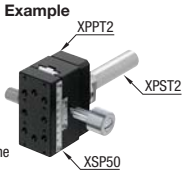


XPST1 (L=241.5)
XPST2 (L=51.5)



M Material: 1.4305/X10CrNiS18-9, Low Cadmium Brass
S Surface Treatment: Nickel Chrome Plating

ex Example



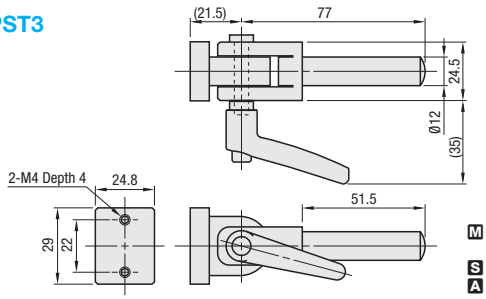
Shafts for Stages (With Lever Handle)

RoHS



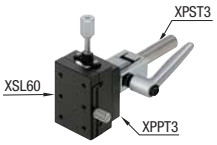
Tilt angle can be adjusted easily. (180° Max.)

XPST3



M Material: 1.4305/X10CrNiS18-9
Low Cadmium Brass
S Surface Treatment: Nickel Chrome Plating
A Accessories: SCB4-8 (2 pcs.)

ex Example



Order Example — Part Number: XPPT1, XPST1, XPST3

Days to Ship — 6 Days P.87

Part Number	Applicable Stage	Accessory Type M-L (Quantity)	€ Unit Price Qty. 1~9
XPPT1	XSSL · XSSLC	SCB4-8 (2 pcs.) SCB3-6 (4 pcs.)	
XPPT2	XSP	SCB4-8 (4 pcs.)	
XPPT3	XSL · XSLC · XSB	SCB4-8 (6 pcs.)	

⊗Not compatible with XSC.

For orders larger than indicated quantity, please request a quotation.

Part Number	€ Unit Price Qty. 1~9
XPST1	
XPST2	
XPST3	

For orders larger than indicated quantity, please request a quotation.

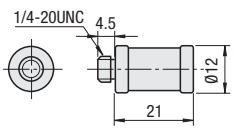
Features: Common to all camera manufacturers.

CCD Camera Attachment Adapters

RoHS

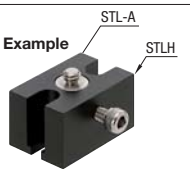


STL-A



M Material: 1.4305/X10CrNiS18-9

ex Example

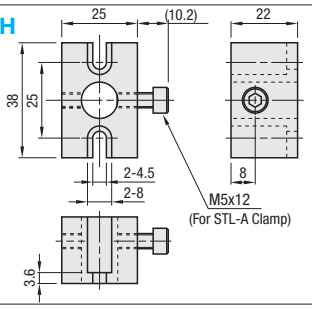


CCD Camera Attachment Holders

RoHS



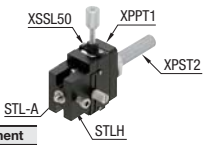
STLH



For orders larger than indicated quantity, please request a quotation.

Can be combined with Dovetail Stages such as XWG (**P.1455**) · XYWG (**P.1478**) · ZWG (**P.1488**) · XLWG (**P.1459**) · ZLWG (**P.1489**) · REG (**P.1511**).

ex Example



Part Names	M Material	S Surface Treatment
Body	Aluminum Alloy	Black Anodize
Screw	1.4567	-

A Accessories: SCB4-8 (2 pcs.), Flat Washers (2 pcs.)

Order Example — Part Number: STL-A, STLH

Days to Ship — 6 Days P.87

- STL-A

Part Number	€ Unit Price 1 pc.	Volume Discount Qty. 2-3	Qty.4-9
STL-A			

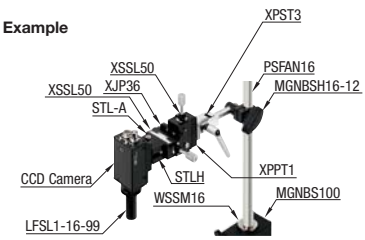
For orders larger than indicated quantity, please request a quotation.

- STLH

Part Number	€ Unit Price Qty. 1~9
STLH	

For orders larger than indicated quantity, please request a quotation.

ex Example



[High Precision] Dovetail Slide Post Mounted Type

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Stages mountable on posts. STLC48 can be mounted directly on Ø12 posts. STLX35 and STLXYZ can be used with Ø12 Post Clamps.

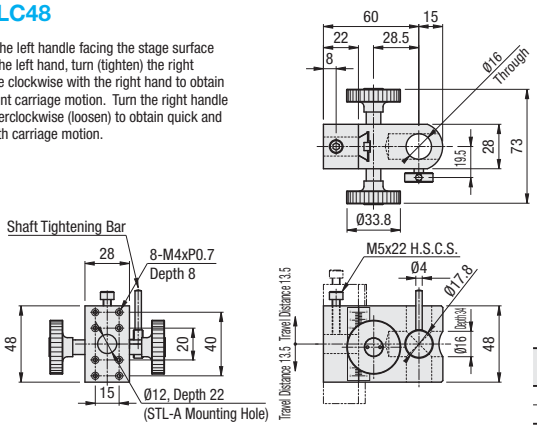
1-Axis Slide with Crossed Mounting Bores



RoHS

STLC48

Hold the left handle facing the stage surface with the left hand, turn (tighten) the right handle clockwise with the right hand to obtain resilient carriage motion. Turn the right handle counterclockwise (loosen) to obtain quick and smooth carriage motion.



Part Names	Material	Surface Treatment
Positioning Stages	Aluminum Alloy	Black Anodize
Holder		

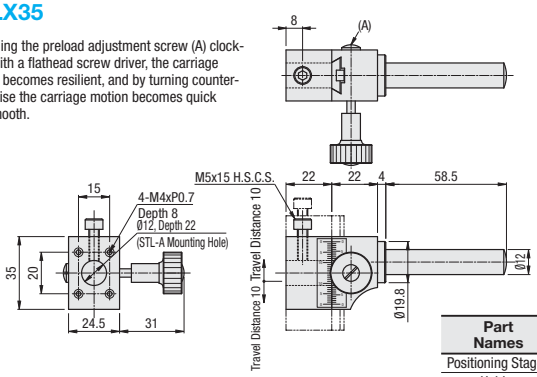
1-Axis Slide with a Shaft



RoHS

STLX35

By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.



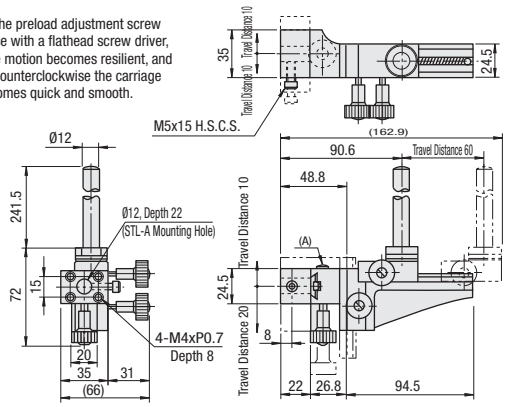
Part Names	Material	Surface Treatment
Positioning Stages	Aluminum Alloy	Black Anodize
Holder	Low Cadmium Brass	Nickel Chrome Plating
Shaft	1.4305/X10CrNiS18-9	-
Washer	Low Cadmium Brass	Nickel Chrome Plating

3-Axes Slide with a Shaft



STLXYZ35

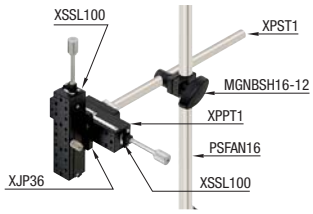
By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.



Part Names	Material	Surface Treatment
Positioning Stages	Aluminum Alloy	Black Anodize
Holder	Brass	Nickel Chrome Plating
Shaft	1.4305/ X10CrNiS18-9	-
Washer	Brass	Nickel Chrome Plating

* When a stage with a clamp is needed, combine a Dovetail Stage (**P.1631~1633**), Base Plate, and Shaft for stages (**P.1634**).

Example



Order Example

Part Number
STLC48
STLXYZ35

Days to Ship 6 Days P. 87

Part No. / Type	Travel Distance (mm) X-Axis	Y-Axis	Z-Axis	Travel per Rotation (mm)	Load Capacity (N)	Weight (kg)	€ Unit Price Qty. 1~9
STLC48	27	-	-	18	29.4	0.35	
STLX35	20	-	-		19.6	0.26	
STLXYZ35	20	30	60		19.6	0.96	

For orders larger than indicated quantity, please request a quotation.

[High Precision] Dovetail Slide Feed Screw Type -Basic / Hex Wrench Type-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Economical and low profile (height 15mm~) dovetail slide stages with feed screws. Suitable as replacements for fine adjustment mechanisms such as adjust bolts, etc.

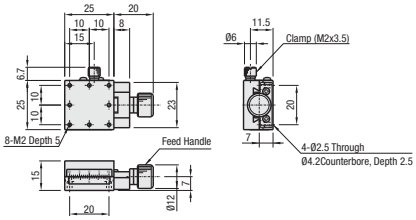
X Axis Basic
(Pitch 0.5mm)

RoHS

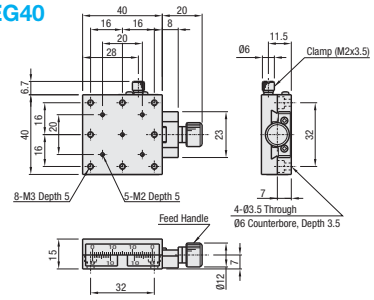


XY-Axes P.1656
Z-Axis P.1670

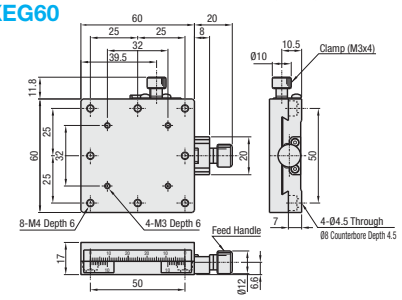
XEG25



XEG40



XEG60



M Materials: (Body) Low Cadmium Brass
(Feed Handle) Aluminum

S Surface Treatment: Black Fluororesin Treatment

Part No. Type	No.	Stage (mm)	Travel Dist. (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (μm) Straightness	Travel Accuracy (μm) Parallelism	Moment Capacity (N·m) Pitching	Moment Capacity (N·m) Yawing	Moment Capacity (N·m) Rolling	Parallelism	Weight (kg)	Accessories Type M-L	Accessories Qty.	€ Unit Price Qty. 1~9
XEG	25	25x25	±5	0.5	29.4	9.8	30	30	2.0	1.5	1.3	40μm	0.07	SCB2-8	4	
	40	40x40	±7						4.0	3.0	3.0		0.19	SCB3-6		
	60	60x60	±9		39.2	19.6			5.0	4.0	4.0		0.60	SCB4-6		

Resolution (Vernier Scale Indication) : 0.1mm/division
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
XY-Axes Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. P.1624

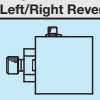
For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number XEG25

Days to Ship: 8 Days

Alterations: Part Number XEG25 - (R) R

10 Days

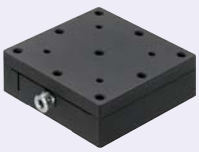
Alteration	Clamp Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

Features: No handle is required since a hex wrench is used to feed the stage, making for a space saving form factor.
Unintended position changes can be prevented since the stage cannot be operated without a hex wrench.

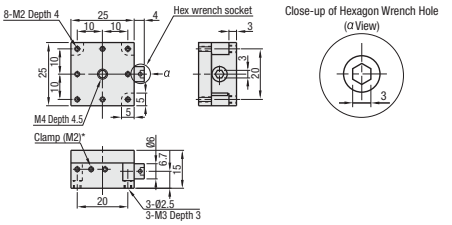
X-Axis Hex Wrench Drive Type
(Pitch 0.5mm)

RoHS

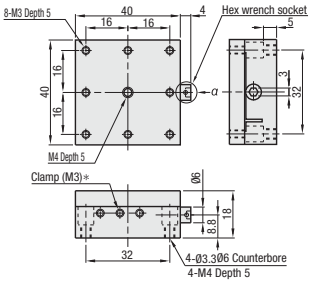


XY-Axes P.1656
Z-Axis P.1670

XEEG25

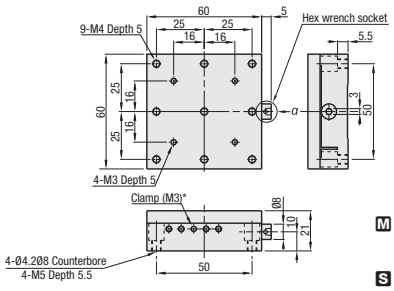


XEEG40



*A tapped hole in the center can be used as a clamp by using a included hex socket set screw. Other taped holes on the side are for factory preload adjustments and are sealed. They cannot be used.

XEEG60



M Materials:
(Body) Low Cadmium Brass
(Hex Wrench Access Hole) Aluminum

S Surface Treatment:
Black Fluororesin Treatment

Part No. Type	No.	Stage (mm)	Travel Dist. (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (μm) Straightness	Travel Accuracy (μm) Parallelism	Moment Capacity (N·m) Pitching	Moment Capacity (N·m) Yawing	Moment Capacity (N·m) Rolling	Parallelism	Weight (kg)	Accessories Type M-L	Accessories Qty.	€ Unit Price Qty. 1~9
XEEG	25	25x25	±3	0.5	29.4	9.8	30	80	2.0	1.5	1.3	50μm	0.07	SCB2-8	4	
	40	40x40	±5						4.0	3.0	3.0		0.19	SCB3-6		
	60	60x60	±7		39.2	19.6			5.0	4.0	4.0		0.60	SCB4-6		

Resolution (Vernier Scale Indication): 0.1mm/division (XEEG has no vernier scale)
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
XY-Axes Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. P.1624

For orders larger than indicated quantity, please request a quotation.

Order Example: Part No. XEEG60

Days to Ship: 10 Days

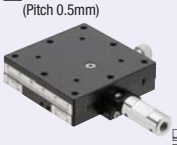
[High Precision] Dovetail Slide Feed Screw Type
-Handle Extension / Reinforced Clamp-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

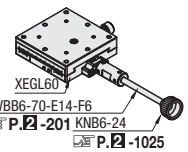
CAD Data

Features: Effective when feed handles are difficult to turn due to the carriage mounted objects interfering, or when the handles are hard to reach since the stage is deeply embedded inside a machine.Use adhesive to prevent the handle extension from pulling off.

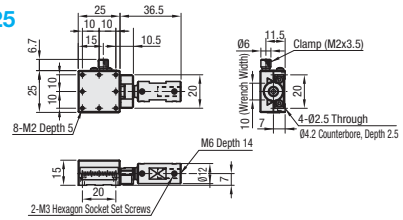
X-Axis Handle Extension RoHS
(Pitch 0.5mm)



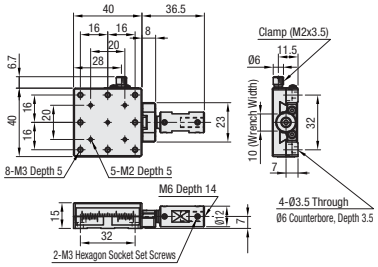
XY-Axes P.1657
Z-Axis P.1671



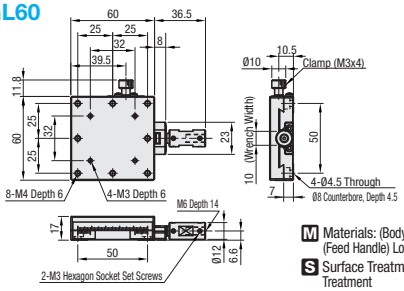
XEGL25



XEGL40



XEGL60



M Materials: (Body) Low Cadmium Brass
(Feed Handle) Low Cadmium Brass
S Surface Treatment: Black Fluororesin Treatment

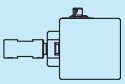
Part Number Type	No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (μm) Straightness	Travel Accuracy (μm) Parallelism	Moment Load Capacity (N·m) Pitching	Moment Load Capacity (N·m) Yawing	Moment Load Capacity (N·m) Rolling	Parallelism	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~9
XEGL	25	25x25	±5	0.5	29.4	9.8	30	30	2.0	1.5	1.3	40μm	0.10	SCB2-8	
	40	40x40	±7						4.0	3.0	3.0		0.20	SCB3-6	
	60	60x60	±9		39.2	19.6			5.0	4.0	4.0		0.50	SCB4-6	

Resolution (Vernier Scale Indication) : 0.1mm/division
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
XY-Axes Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. P.1624

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number **XEGL60**

Alterations: Part Number **XEGL60** - (R) **R**

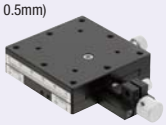
Alteration	Clamp Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

Days to Ship: **10 Days**

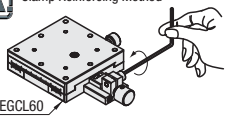
Features: Position retaining force has been enhanced by clamping the feed handle shaft directly.

X-Axis Clamp Reinforcement RoHS
(Pitch 0.5mm)



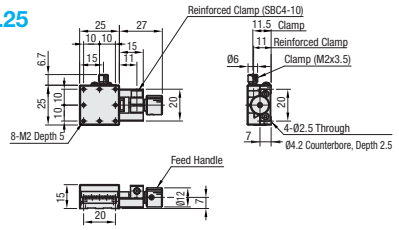
XY-Axes P.1657
Z-Axis P.1671

Clamp Reinforcing Method

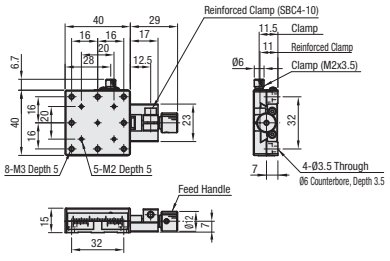


Retention by only the reinforced clamp is not sufficient to obtain zero backlash. Using with a clamp screw is recommended.

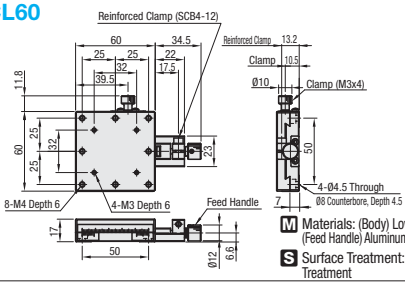
XEGCL25



XEGCL40



XEGCL60



M Materials: (Body) Low Cadmium Brass
(Feed Handle) Aluminum
S Surface Treatment: Black Fluororesin Treatment

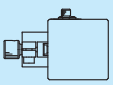
Part Number Type	No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy (μm) Straightness	Travel Accuracy (μm) Parallelism	Moment Load Capacity (N·m) Pitching	Moment Load Capacity (N·m) Yawing	Moment Load Capacity (N·m) Rolling	Parallelism	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~9
XEGCL	25	25x25	±5	0.5	29.4	9.8	30	30	2.0	1.5	1.3	40μm	0.08	SCB2-8	
	40	40x40	±7						4.0	3.0	3.0		0.20	SCB3-6	
	60	60x60	±9		39.2	19.6			5.0	4.0	4.0		0.50	SCB4-6	

Resolution (Vernier Scale Indication) : 0.1mm/division
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
XY-Axes Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. P.1624

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number **XEGCL40**

Alterations: Part Number **XEGCL60** - (R) **R**

Alteration	Clamp Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.
Reinforced Clamp position will not change when an alteration R is specified.

Days to Ship: **10 Days**

[High Precision] Dovetail Slide Micrometer Head Type/ Knob Cover / Extension Cover

Price Revision

: New Price

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

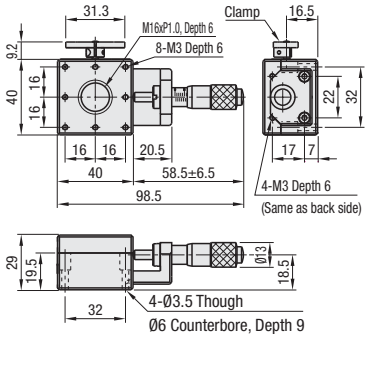
Features: Dovetail Slide Stage fed by Micrometer Heads. Axial clearance is suppressed by a pulling spring, compared to the feed screw types. XMFG is to be discontinued as of March, 2011.

X-Axis Stages
Dovetail Slide Stages with Micrometer Heads

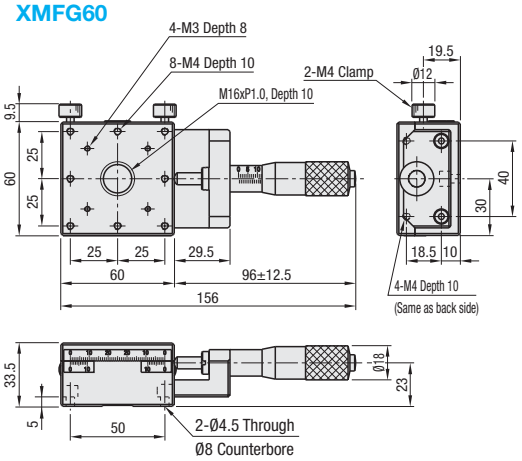
RoHS



XMFG40



XMFG60



Do not replace the clamp screws as sliding malfunctions and housing damages may result.
For Micrometer Head material details, see **P.1697**

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N) Horizontal	Vertical	Travel Accuracy (µm) Straightness	Parallelism	Moment Capacity (N • m) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	Accessories TypeM-L	Quantity	€ Unit Price Qty. 1~4
XMFG	40	40x40	±6.5	0.5	24.5	14.7	20	30	3.0	3.0	2.0	30µm	0.16	SCB3-14	4	
	60	60x60	±10		34.3	19.6	30		7.0	5.0	7.0	40µm	0.44	SCB4-8	2	

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XMFG40

Days to Ship: 10 Days

Features: Increases knob diameter by simply attaching to Ø13 micrometer head or feed screw.

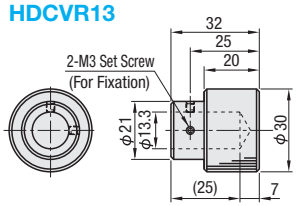
Knob Covers

RoHS



*Set of 3 units

HDCVR13



ex Example



M Materials: ABS Resin (Black)

Part Number Type	No.	€ Unit Price 1~9 Packs
HDCVR	13	

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: HDCVR13

Days to Ship: 8 Days

Three pieces of Knob Covers (HDCVR13) are included in one order.

Features: Increases knob diameter by simply attaching to Ø12 and Ø13 micrometer head or feed screw.

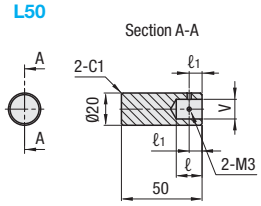
Extended Knob

RoHS

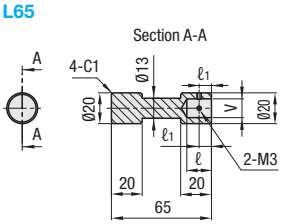


HDEXT

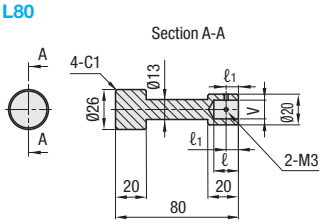
L50



L65



L80



M Material: EN AW-2017/AlCu4MgSi
S Surface Treatment: Clear Anodize
A Accessory: Set Screw MSSK3-3 (2 pcs.)

Part Number Type	No.	L	Applicable Handle	Handle Outer Diameter	V	ℓ	ℓ1	€ Unit Price Qty. 1~9
HDEXT	12	50	Ø12	Ø20	12.3	16	8	
		65						
		80		Ø26				
	13	50	Ø13	Ø20	13.3	14	7	
		65						
		80		Ø26				

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: HDEXT12-65

Days to Ship: 6 Days

P.87

[High Precision] Dovetail Slide Feed Screw Type
-High Load Capacity-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

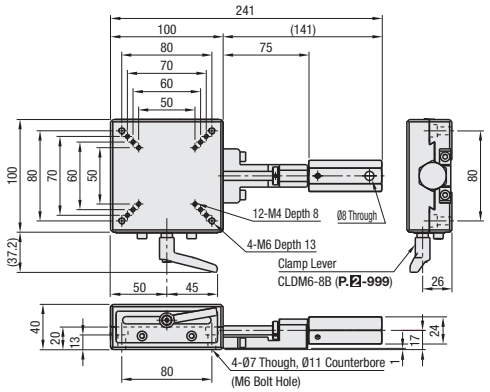
Features: Steel construction can withstand up to 980N loads.

X-Axis High Load Capacity

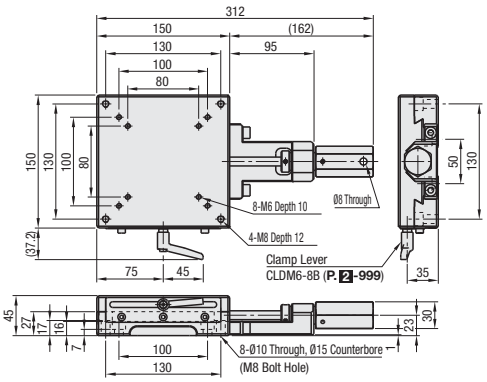
RoHS



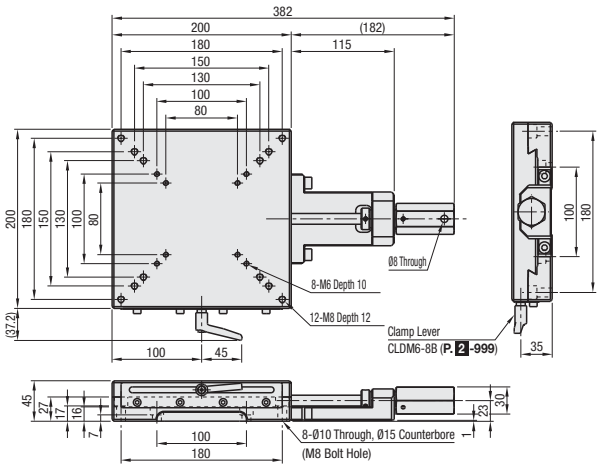
XWGSS100



XWGSS150



XWGSS200



See the CAD data for dimension details.

M Material: 1.1191/C45E
S Surface Treatment: Electroless Nickel Plating

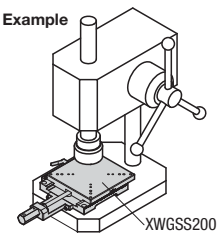
Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Horizontal Load Capacity (N)	Moment Capacity (N · m) Pitching	Yawing	Rolling	Travel Accuracy (μm) Straightness	Parallelism	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~4
XWGSS	100	100x100	±30	1.25	588	140	108	128	100	150	150μm	3.16	SCB6-20	
	150	150x150	±50	1.5	784	240	198	234				8.04	SCB8-25	
	200	200x200	±70	1.75	980	350	320	350				14.04		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Knob Cover HDCVR15 (Sold separately): Knob diameter can be increased by attaching a cover on Ø15 knob. P.1615

Order Example — Part Number: XWGSS100

Days to Ship: 10 Days

Example



Uses for work/fixture position adjustments for hand-presses, etc.

[High Precision] Cross Roller
-High Load Capacity-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

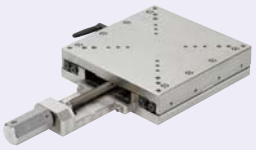
CAD Data

Features: Cross rollers larger than usual are used, and the stage top mounting holes are provided in M4, M6, and M8 sizes. The stage can position 40~120kgf loads accurately.

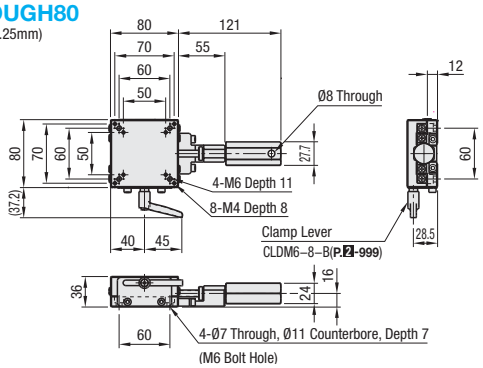
RoHS

X-Axis High Load Capacity

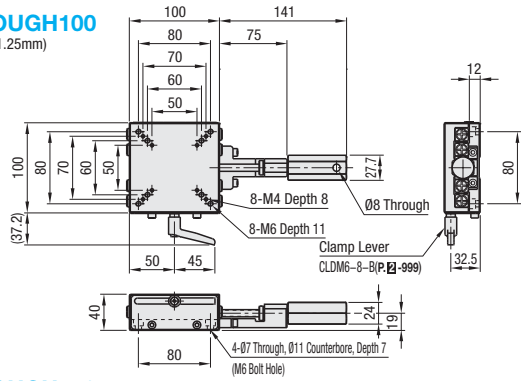




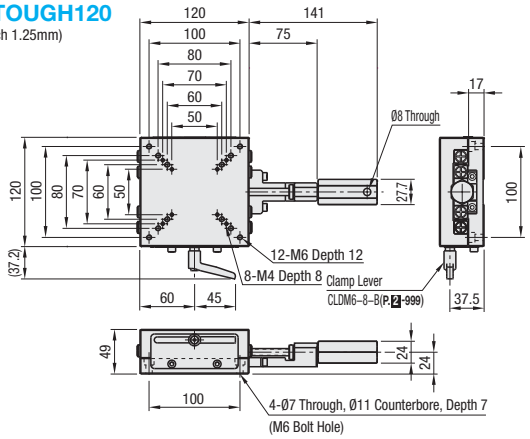
XTOUGH80
(Pitch 1.25mm)



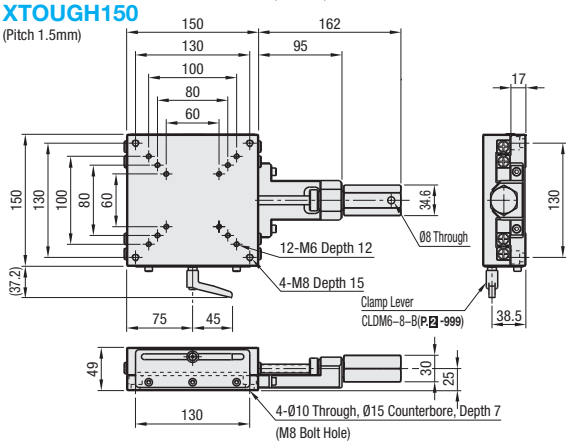
XTOUGH100
(Pitch 1.25mm)



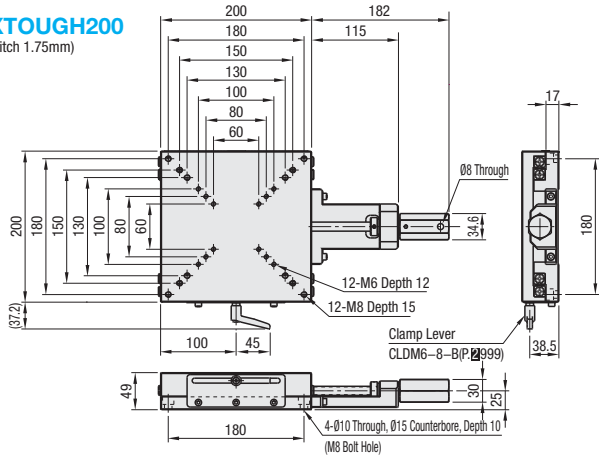
XTOUGH120
(Pitch 1.25mm)



XTOUGH150
(Pitch 1.5mm)



XTOUGH200
(Pitch 1.75mm)



M Material: (Main Body)1.1191/C45E (Feed Screw)1.4301/X5CrNi18-10
S Surface Treatment:Electroless Nickel Plating

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Horizontal Load Capacity (N)	Travel Accuracy Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N・m) Pitching	Yawing	Rolling	Moment Rigidity (°/N・cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~4
XTOUGH	80	80x80	±20	1.25	392	6μm	15μm	50"	30"	30.1	25.1	23.0	0.228	0.139	0.059	50μm	1.78	SCB6-16	
	100	100x100	±25		588					70.3	58.6	56.0	0.033	0.015	0.021		2.98		
	120	120x120	±30		784					142.9	119.1	120.0	0.024	0.014	0.015		5.18	SCB6-20	
	150	150x150	±40	1.5	980	10μm	20μm	80"	50"	252.9	210.7	219.9	0.009	0.008	0.003		8.48	SCB8-25	
	200	200x200	±50	1.75	1176					527.9	439.9	479.8	0.004	0.002	0.003		13.82		

Order Example Part Number XTOUGH150

Days to Ship 10 Days

For orders larger than indicated quantity, please request a quotation.

[High Precision] Linear Ball Slide

-Micrometer Heads / Feed Screws / Digital Micrometer Heads / Coarse/Fine Micrometer Heads-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

Features: Highly accurate, rigid, and economical stages. If the feed scale reading is not needed, further economy can be achieved by the screw feed types. The XSGK type has a fine feed 0.25 pitch.

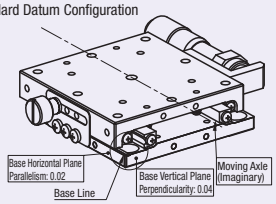
X-Axis Stages

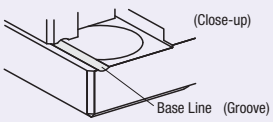
RoHS



XY-Axes P.1658
Z-Axis P.1672

Standard Datum Configuration

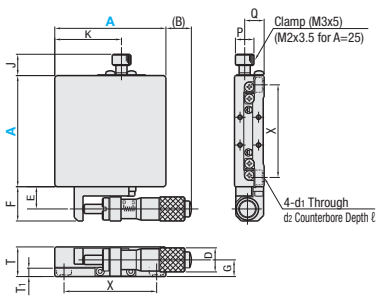




MISUMI's Linear Ball Stages have Parallel and Orthogonal datums in relation to the motion axis.
The Datums are as illustrated.

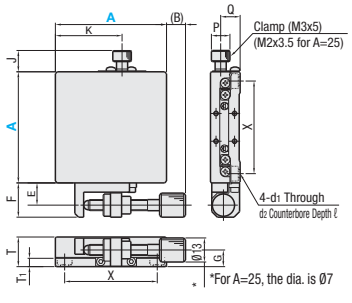
Micrometer Heads

XSG(25≤A≤100)
XSGB(LTBC Plated)
(A=25, 40, 60, 80)



Feed Screws

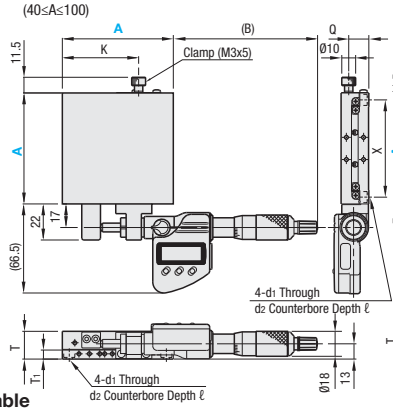
XSCG(Pitch 0.5)
(25≤A≤100)
XSBG(Pitch 1.0)
(40≤A≤100)
XSCGB(Low Temp. Chrome Plated Pitch 0.5)
(A=25, 40, 60, 80)



*For A=25, the dia. is Ø7

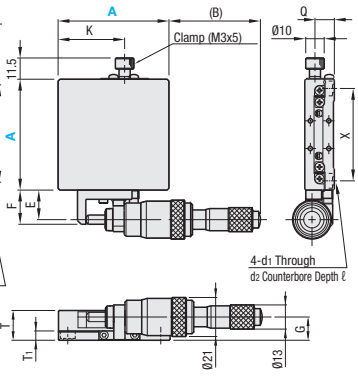
Digital Micrometer Head

XSDG
(40≤A≤100)



Coarse/Fine Micrometer Head

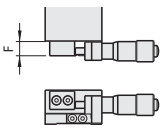
XSKG
(40≤A≤80)



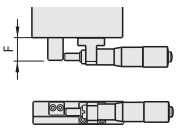
• Shapes of Feed Brackets

A25, 80 and 100 have different shape of feed brackets.

A25



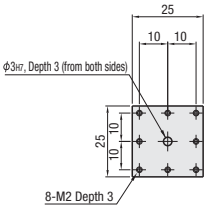
A80 / A100



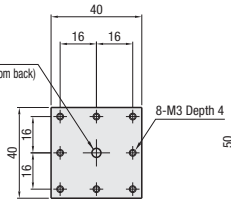
•Mounting Hole Dimensions of the Top Table

* Tolerance for the centrally located bores for LTBCd XSGB and XSCGB is H8. (A=25, 40, 60, 80)

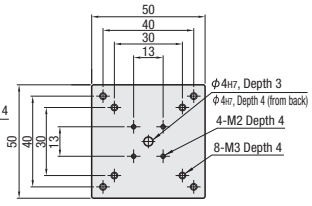
A25



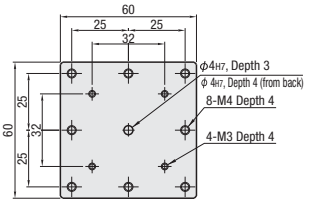
A40



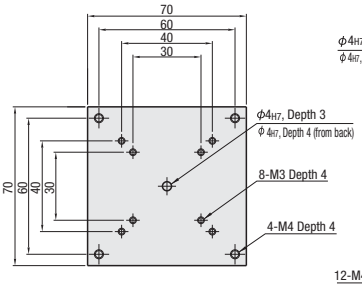
A50



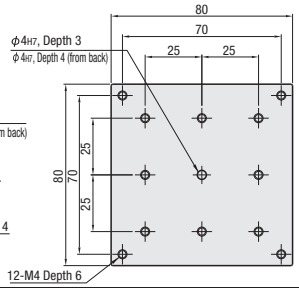
A60



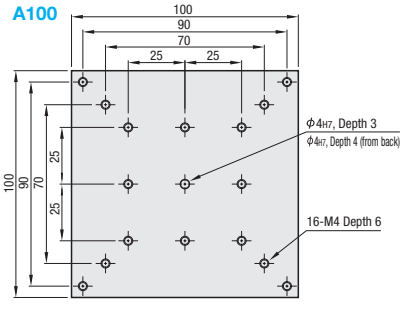
A70



A80



A100



See CAD data for the detailed dimensions.

Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
XSG XSCG XSBG XSDG XSKG	1.4125/ X105CrMo17	Aluminum Alloy	1.4125/ X105CrMo17	58HRC~	1.4301/ X5CrNi18-10-WPB	EN AW-5052/ AlMg2,5	Clear Anodize	1.4305/ X10CrNiS18-9	-
XSGB XSCGB		Black Anodize					Black Anodize		Black Anodize

For Micrometer Head & Feed Screw material details, see **P.1697, 1698**

Price Reduction
Up to 10%

CAD Data

■Micrometer Head (XSG · XSGB) · Feed Screw (XSCG · XSBG · XSCGB)

Part Number Type	A	Top View (B) Micrometer	(B) Feed Screws	Travel Distance (mm)	E	F	J	K	Front View D	G	T	T1	Side View P	Q	X	d1	d2	ℓ	Accessory (4 pcs.) TypeM-L
XSG XSCG XSBG (40≤A≤100) XSGB (*only) XSCGB (*only)	25*	25	11	±3.2	7	9	6.8	15	9.3	7	12	3.7	6	8.5	20	2.5	4.2	2.5	SCB2-4
	40*	24	20.3	±6.5	12	18.5	11.5	26	13	9	16	4.5	10	10.5	32	3.5	6	3.5	SCB3-6
	50	19	15.3		12	18.5	11.5	31	13	9	16	4.5	10	10.5	40	3.5	6	3.5	SCB3-6
	60*	14	10.3		12	18.5	11.5	36	13	9	16	5	10	10.5	50	4.5	8	4	SCB4-6
	70	14.5	10.8		12	18.5	11.5	46.5	13	10	18	6	10	11.5	60	4.5	8	4.5	SCB4-6
	80*	43.5	10	±12.5(*1)	17	22(*3)	11.5	55	18	11	20	6.5	10	14.5	70	4.5	8	5.3	SCB4-6
	100	28.5	-5(*2)		17	22(*3)	11.5	67.5	18	11	20	6.5	10	14.5	90	4.5	8	5.3	SCB4-6

(*1) Stroke for XSCG80/100 is ±6.5mm.(*2) Ends of feed screw handle are at 5mm inside of the carriage edges for XSCG and XSCGB. (*3) Dimension A of Feed Screw Type XSCG and XSCGB are 80 or 100, F will be 20

Performance

Part Number Type	A	Stage (mm)	Load Capacity (N) Horizontal	Vertical	Travel Accuracy Straightness	Parallelism of Motion	Pitching	Yawing	Moment Capacity (N · m) Pitching	Yawing	Rolling	Moment Rigidity (°/N · cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg) Micrometer	Feed Screws	€ Unit Price Qty. 1~9 XSG	XSCG	XSBG	XSGB	XSCGB
XSG XSCG XSBG (40≤A≤100) XSGB (*only) XSCGB (*only)	25*	25x25	39.2	9.8	3µm	10µm	30"	25"	2.0	2.0	3.5	1.9	1.1	1.1	30µm	0.07	0.09					
	40*	40x40	98	49	1µm	7µm	25"	15"	5.0	5.0	5.0	0.42	0.35	0.21	15µm	0.23	0.23					
	50	50x50	147						6.8	6.8	6.0	0.15	0.14	0.09		0.28	0.28					
	60*	60x60	196						10.0	10.0	9.0	0.08	0.08	0.05		0.40	0.40					
	70	70x70	225.4						13.8	13.8	12.9	0.06	0.05	0.03		0.58	0.58					
	80*	80x80	264.6		3µm	8µm			18.2	18.2	17.7	0.04	0.04	0.02	20µm	0.90	0.84					
	100	100x100	343						31.8	31.8	30.7	0.02	0.02	0.01		1.33	1.27					

(?)XSG, XSGB Micrometer Heads Resolution 10µm/division*Straightness of XSGB and XSCGB40/60 is 3µm.

(?)For orders larger than indicated quantity, please request a quotation.

■Digital Micrometer Head (XSDG) · Coarse/Fine Feed Micrometer Head (XSKG)

Part Number Type	A	Top View XSDG (B)	XSDG Travel Distance (mm)	XSKG (B)	XSKG Travel Distance (mm)	E	F	K	Front View G	T	T1	Side View Q	X	d1	d2	ℓ	Accessory (4 pcs.) TypeM-L
XSDG	40	121.5	±6.5	60	Coarse Feed ±6.5 Fine Feed 0.2	16	18.5	26	11.6	16	4.5	10.5	32	3.5	6	3.5	SCB3-6
	50	116.5		55		16	18.5	31	11.6	16	4.5	10.5	40	3.5	6	3.5	SCB3-6
	60	111.5		50		16	18.5	36	11.6	16	5	10.5	50	4.5	8	4	SCB4-6
XSKG (40≤A≤80)	70	112		50.5		16	18.5	46.5	12.5	18	6	11.5	60	4.5	8	4.5	SCB4-6
	80	104	±12.5	49.5		17	25	55	11	20	6.5	14.5	70	4.5	8	5.3	SCB4-6
	100	89		-		-	-	67.5	-	20	6.5	14.5	90	4.5	8	5.3	SCB4-6

Performance

Part Number Type	A	Stage (mm)	Load Capacity (N) Horizontal	Vertical	Travel Accuracy Straightness	Parallelism of Motion	Pitching	Yawing	Moment Capacity (N · m) Pitching	Yawing	Rolling	Moment Rigidity (°/N · cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg) XSDG	XSKG	€ Unit Price Qty. 1~9 XSDG	XSKG
XSDG	40	40x40	98	49	1µm	7µm	25"	15"	5.0	5.0	5.0	0.42	0.35	0.21	15µm	0.43	0.30		
	50	50x50	147						6.8	6.8	6.0	0.15	0.14	0.09		0.48	0.35		
	60	60x60	196						10.0	10.0	9.0	0.08	0.08	0.05		0.60	0.47		
XSKG	70	70x70	225.4						13.8	13.8	12.9	0.06	0.05	0.03		0.78	0.65		
(40≤A≤80)	80	80x80	264.6		3µm	8µm			18.2	18.2	17.7	0.04	0.04	0.02	20µm	1.10	0.97		
	100	100x100	343						31.8	31.8	30.7	0.02	0.02	0.01		1.53	-		

(?)XSKG Coarse/Fine Micrometer Head: Coarse resolution 10µm, Fine resolution 0.5µm, Digital Micrometer Head resolution 1µm

(?)For orders larger than indicated quantity, please request a quotation.

(?)Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638

(?)Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. P.1638

Order Example Part Number: XSG80

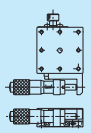
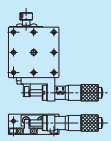
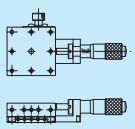
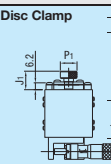
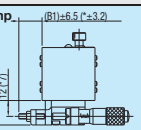
Alterations Part Number - (CR · CZ · A…etc.): XSG60 - MN; XSG50 - CR-P; XSCG40 - A

Days to Ship • XSG · XSCG · XSBG · XSDG · XSKG: 8 Days • XSGB · XSCGB: 10 Days

10 Days

(?)Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products.

(?) Refer to data on CAD for dimension details.

Alterations	Position of Micrometer and Feed Screw			Reinforced Clamp		No Micrometer Head
	Side Mount - Left/ Right Reversed	Side Mount - Top/ Bottom Reversed *	Center	Disc Clamp	Opposed Clamp	No Micrometer Head
Spec.	 ⊗Not applicable to XSDG.	 ⊗XSGB / XSCGB / XSDG Not applicable		 A J1 P1 40 50 60 70 80 100 15.8 10 14.8 15 ⊗Not applicable to 25 square. (?)A disc clamping mechanism that does not apply any load on the carriage plate. Holds the carriage in position better than the Standard Clamp.	 A (B1) *25 17.5 40 24.5 50 19.5 60 14.5 70 4.0 (?)Applicable to XSG only. ⊗Not applicable to 80 and 100 Square Stages. ⊗Not applicable in combination with alterations CZ and A. (?)The Micrometer shaft is opposed by a screw (M4x25, Pitch 0.5) from the tip end. Good vibration immunity and position holding performance. (?)Dimensions denoted by * are for A=25 stages, and the specification table dimensions (B) will be 30, and G will be 6.	 (?)Applicable only to XSG and XSGB. (?)Micrometer head and bracket will be removed before shipment. (?)Since there is a spring inside, the carriage will not be stationary unless the clamp is tightened. ⊗Combination with alteration H is not available.
Code	CR	CZ	A	H	P	MN
Price Adder	Free of Charge	Free of Charge	Free of Charge	70,00	30,00	-40,00

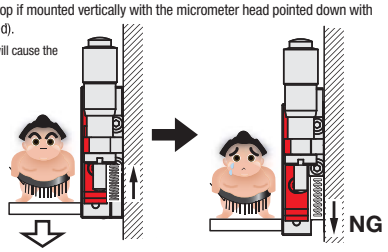
*CZ: Attach Micrometer (or Feed Screw) on the upper table (Standard Type has them attached to the bottom plate).

(?)If the Micrometer mounting positions other than the shown above are needed, please select from the "Specifications Selectable Type on (P.1679)

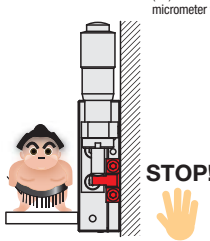
(?)One Point Advice: When using an X-Axis Stage in a vertical orientation.

(Not Good) The carriage may drop if mounted vertically with the micrometer head pointed down with XSG_ _ (or -CR, -AR, -A selected).

A load exceeding the spring pull force will cause the carriage to drop.



(OK)The carriage does not drop since the load is supported by the micrometer when XSG_ _-CZ alteration is specified.



(?)However, do not apply a load exceeding the specified vertical load capacity.

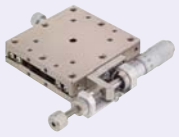
[High Precision] Linear Ball
-Opposed Clamp w/Knob-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

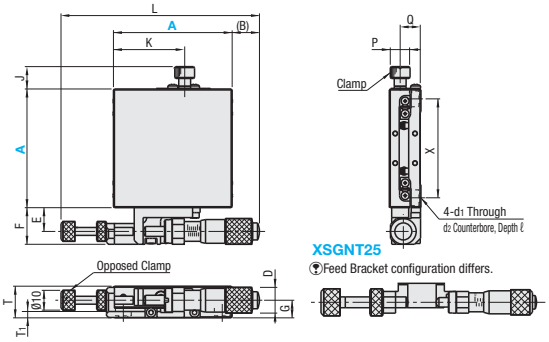
CAD Data

Features: Side mounted Micrometer shaft is opposed by a knobbed screw for vibration resistant position holding performance without a tool.

X-Axis Knobbed Opposed Clamp RoHS



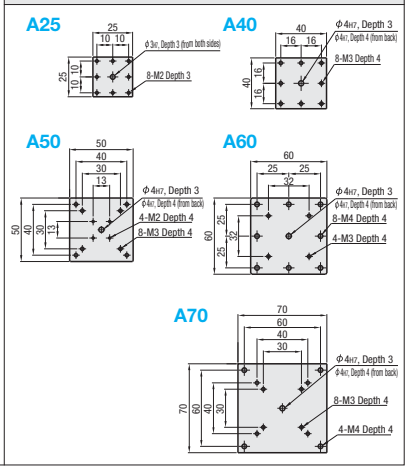
Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material
XSGNT	1.4125/ X105CrMo17	Aluminum Alloy	1.4125/ X105CrMo17	58HRC~	1-4301/X5CrNi18-10-WPB	EN AW-5052/ AlMg2,5	Clear Anodize	1.4305/ X10CrNiS18-9



XSGNT25
Feed Bracket configuration differs.

For the Micrometer Head Opposed Clamp material details, see Adjust Screw ANKSS (**P.1418**)
There is hex socket (2.5mm hex, depth 2.5) on the end of the Opposed Clamp screw.

Dimensions of mounting holes on the table



Part Number		Top View						Front View				Side View						Accessory (4 pcs.)
Type	A	(B)	E	F	J	K	L	D	G	T	T1	P	Q	X	d1	d2	ℓ	Type M-L
XSGNT	25	30	7	12	6.8	15	84.5	9.3	6.7	12	3.7	6	8.5	20	2.5	4.2	2.5	SCB2-4
	40	23.8	12	18.5	11.3	26	100.3	13	8.9	16	4.5	10	10.5	32	3.5	6	3.5	SCB3-6
	50	18.8				31								40				
	60	13.8				36					5			50	4.5	8	4	SCB4-6
	70	14.3				46.5			10	18	6		11.5	60			4.5	

Performance

Part Number		Stage (mm)	Travel Distance (mm)	Load Capacity (N)		Travel Accuracy				Moment Capacity (N・m)			Moment Rigidity (°/N・cm)			Parallelism	Weight (kg)	€ Unit Price
Type	A			Horizontal	Vertical	Straight-ness	Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling			Qty. 1~4
XSGNT	25	25x25	±3.2	39.2	9.8	3μm	10μm	30"	25"	2.0	2.0	3.5	1.9	1.1	1.1	30μm	0.07	
	40	40x40	±6.5	98	49	1μm	7μm	25"	15"	5.0	5.0	5.0	0.42	0.35	0.21	15μm	0.23	
	50	50x50		147						6.8	6.8	6.0	0.15	0.14	0.09		0.28	
	60	60x60		196						10.0	10.0	9.0	0.08	0.08	0.05		0.40	
	70	70x70		225.4						13.8	13.8	12.9	0.06	0.05	0.03		0.58	

Micrometer Head Resolution 10μm/division

For orders larger than indicated quantity, please request a quotation.

Knob Cover HDCVR13 (Sold separately): Handle diameter can be increased to Ø30 by attaching the cover on the Ø13 Micrometer head or feed screw knob. **P.1638**

Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

Order Example — Part Number: XSGNT60

Days to Ship: 10 Days

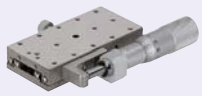
[High Precision] Linear Ball -Slim-

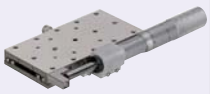
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Compact stages with ±12.5~±25mm strokes.

X-Axis High Load Capacity Slim RoHS

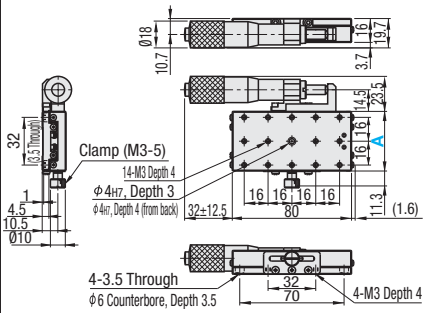




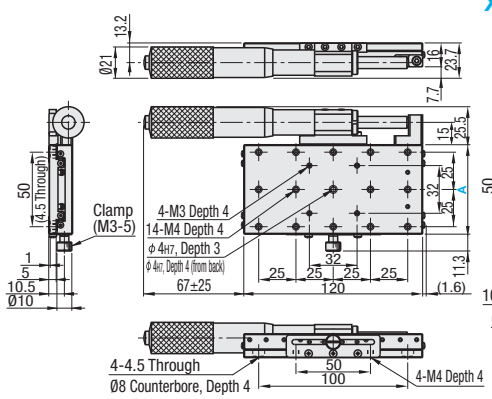


Micrometer Heads

XSGL40

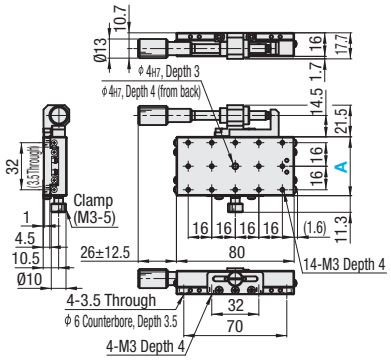


XSGL60

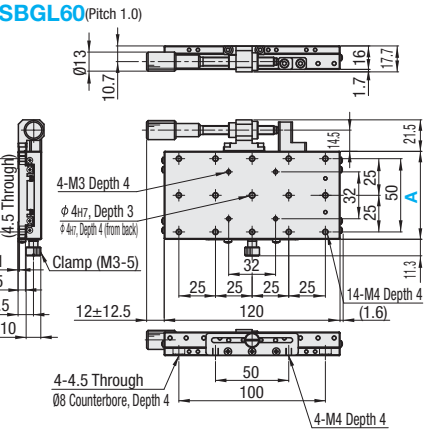


Feed Screws

XSBGL40 (Pitch 1.0)



XSBGL60 (Pitch 1.0)



Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material
1.4125/X105CrMo17	Aluminum Alloy	1.4125/X105CrMo17	58HRC	1.4301/X5CrNi18-10-WPB	EN AW-5052/AlMg2,5	Clear Anodize	1.4305/X10CrNiS18-9

For Micrometer Head & Feed Screw material details, see **P.1697, 1698**

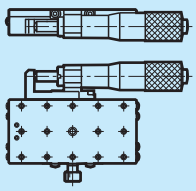
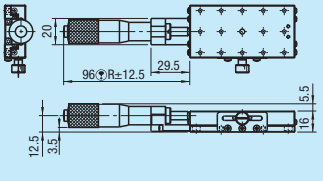
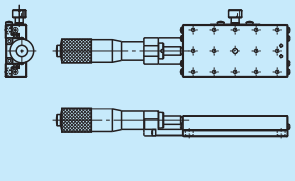
Part Number Type	A	Stage (mm)	Travel Distance (mm)	Load Capacity (N) Horizontal	Vertical	Travel Accuracy Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N・m) Pitching	Yawing	Rolling	Moment Rigidity ("/N・cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~9 XSGL	XSBGL
XSGL	40	40x80	±12.5	147	49	3µm	8µm	25"	15"	6.8	6.8	5	0.15	0.13	0.25	20µm	0.44	CBM3-6		
XSBGL	60	60x120	±25*	196						10	10	6.8	0.08	0.07	0.14		0.98	CBM4-6		

XSGL: Micrometer resolution 10µm/division * Feed Screw Type (XSBGL) stroke is ±12.5mm
For orders larger than indicated quantity, please request a quotation.
Knob Cover HDCVR13 (Sold separately): Knob diameter can be increased by attaching the cover on the Ø13 feed screw knob. **P.1638**
Extension cover HDEXT13 (Sold separately): Ø13 feed screw knob can be extended. **P.1638**

Order Example — Part Number: XSGL40, XSBGL60

Days to Ship: 10 Days

Alterations — Part Number - (CR・A・AR): XSGL40 - A

Alterations	Micrometer Head Position		
Spec.	Side Mount - Left/ Right Reversed	Center	Center Mount Mirrored
		 Applicable to A40 only. 90±12.5 for XSBGL40	 Applicable to A40 only.
Code	CR	A	AR
Price Adder	Free of Charge	Free of Charge	Free of Charge

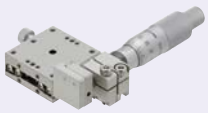
[High Precision] Linear Ball
-Improved Clamp Operability-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

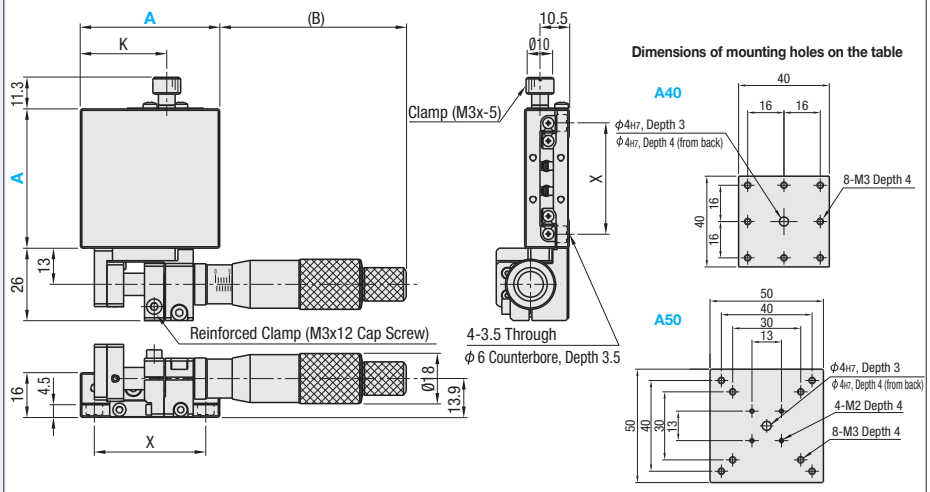
CAD Data

Features: The linear travel type micrometer heads used have non-rotating spindles. Since the spindles are directly clamped, the position holding capability is improved. (XSGC will be discontinued as of March, 2011.

X-Axis Stages RoHS
Improved Clamp Operability



XSGG



(Loosen the clamp cap screw when adjusting the micrometer head. Micrometer head may be damaged.

(Refer to data on CAD for dimension details.

Main Body		Ball		Spring	Bracket for micrometer and tip supports	
M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment
1.4125/X105CrMo17	Aluminum Alloy	1.4125/X105CrMo17	58HRC	1.4301/X5CrNi18-10-WPB	EN AW-5052/AlMg2,5	Clear Anodize

(Material for micrometer head, see **P.1697, 1698**

Linear Travel Micrometer Head (XSGG)

Part Number Type	A	Top View (B)	Travel Distance (mm)	K	Side View X	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~4
XSGG	40	72	±6	26	32	SCB3-6	
	50	62	±6	31	40		

(For orders larger than indicated quantity, please request a quotation.

Performance

Part Number Type	A	Stage (mm)	Load Capacity (N) Horizontal	Load Capacity (N) Vertical	Travel Accuracy Straightness	Travel Accuracy Parallelism	Travel Accuracy Pitching	Travel Accuracy Yawing	Moment Capacity (N・m) Pitching	Moment Capacity (N・m) Yawing	Moment Capacity (N・m) Rolling	Moment Rigidity (°/N・cm) Pitching	Moment Rigidity (°/N・cm) Yawing	Moment Rigidity (°/N・cm) Rolling	Parallelism	Weight (kg)
XSGG	40	40x40	98	49	3μm	7μm	25"	15"	5.0	5.0	5.0	0.42	0.35	0.21	15μm	0.35
	50	50x50	147						6.8	6.8	6.0	0.15	0.14	0.09		0.40

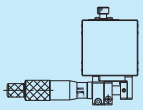
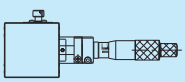
(XSGG Micrometer Head: Resolution 10μm/division, Travel per handle rotation 0.5mm

Order Example — Part Number: XSGG40

Days to Ship — 10 Days

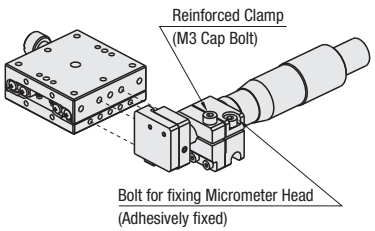
Alterations — Part Number - (CR・A): XSGG40 - CR

(Mounting dimensions of micrometer head and clamp are different from those of standard products.
(Refer to data on CAD for dimension details.

Alterations	Micrometer Head Position	
Spec.	Side Mount - Left/Right Reversed	Center
		
Code	CR	A
Price Adder	Free of Charge	Free of Charge

Example

Clamp Enlarged View



Standard Stage Comparison Chart

-High Accuracy Stages and Standard Stages-

Similar Product References

Guides	Photo	Axes	(Standard Stages) Surface Dimensions	High Accuracy Stage (existing product)	Listed Page	Standard Stage	Listed Page
Cross Roller		X	40x40	XPG40	P.1647	XCRS40	P.1620
			60x60	XPG60		XCRS60	
			80x80	XPG80		XCRS80	
		XY	40x40	XYPG40	P.1662	XYCRS40	P.1620
			60x60	XYPG60		XYCRS60	
			80x80	XYPG80		XYCRS80	
		Z	40x40	ZPG40	P.1673	ZCRS40	P.1621
			60x60	ZPG60		ZCRS60	
			80x80	ZPG80		ZCRS80	
Guides	**Photo**	**Axes**	**(Standard Stages) Surface Dimensions**	**High Accuracy Stage (existing product)**	**Listed Page**	**Standard Stage**	**Listed Page**
Dovetail		X	30x50	XWG40	P.1624	XDTS50	P.1614
			40x60	XWG60		XDTS60	
			40x90	XWG90		XDTS90	
		XY	30x50	XYWG40	P.1652	XYDTS50	P.1616
			40x60	XYWG60		XYDTS60	
			40x90	XYWG90		XYDTS90	
		Z	30x50	ZWG40	P.1665	ZDTS50	P.1618
			40x60	ZWG60		ZDTS60	
			40x90	ZWG90		ZDTS90	
Guides	**Photo**	**Axes**	**Overall Length**	**High Accuracy Stage (existing product)**	**Listed Page**	**Standard Stage**	**Listed Page**
Dovetail (Long Stroke Stages)		X	100	XLWG100	P.1628	XDTLS100	P.1614
			150	XLWG150		XDTLS150	
		Z	100	ZLWG100	P.1667	ZDTLS100	P.1618
			150	ZLWG150		ZDTLS150	

Cross Roller Stage Comparison Chart

Part Number		High Accuracy Stage (existing product) XPG60	Standard Stage XCRS60
Carriage surface size		60x60mm	
Carriage thickness		20mm	
Travel Distance		±6.5mm	
Travel per handle rotation		0.5mm	
Guiding Mechanism		Cross Roller	
Load Capacity		49.0N	
Travel Accuracy	Straightness	3μm	30μm
	Pitching	25"	35"
	Yawing	15"	25"
Moment Capacity	Pitching	5.2N・m	
	Yawing	4.3N・m	
	Rolling	5.5N・m	
Rigidity	Pitching	0.12"/N・cm	
	Yawing	0.11"/N・cm	
	Rolling	0.07"/N・cm	
Parallelism		30μm	50μm
Parallelism of Motion		10μm	30μm
Weight		0.25kg	0.24kg
Top/Bottom Plates	Material	Aluminum Alloy	
	Surface Treatment	Back Anodized	
Change Micrometer Head mounting position		O	X
Feed Screw Selection		O	X
Reinforced Clamp Availability		O	X
€ Prices			
Delivery Time		8th Day Express A	In-Stock

Dovetail Stage Comparison Chart

Part Number		High Accuracy Stage (existing product) XWG60	Standard Stage XDTS60
Carriage surface size		40x60mm	
Carriage thickness		34mm (Plate 8mm)	34mm (Plate 6mm)
Travel Distance		±21mm	
Travel per handle rotation		18mm	16.7
Resolution		0.1mm	
Load Capacity		39.2N	
Travel Accuracy	Straightness	30μm	50μm
Weight		0.29kg	0.26kg
Top/Bottom Plates	Material	Aluminum Alloy	
	Surface Treatment	Back Anodized	
€ Prices			
Delivery Time		In-Stock	

Dovetail Long Stage Comparison Chart

Part Number		High Accuracy Stage (existing product) XLWG100	Standard Stage XDTLS100
Carriage surface size		25x42	30x50
Carriage thickness		25mm	28mm
Travel Distance		±40mm	
Travel per handle rotation		18mm	16.7
Resolution		0.1mm	
Load Capacity		29.4N	
Travel Accuracy	Straightness	30μm	50μm
Weight		0.14kg	0.18kg
Top/Bottom Plates	Material	Aluminum Alloy	
	Surface Treatment	Back Anodized	
€ Prices			
Delivery Time		In-Stock	

[High Precision] Cross Roller

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

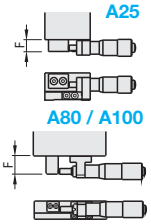
Features: High precision lightweight X-Axis Stages with cross roller slides.

X-Axis Stages RoHS



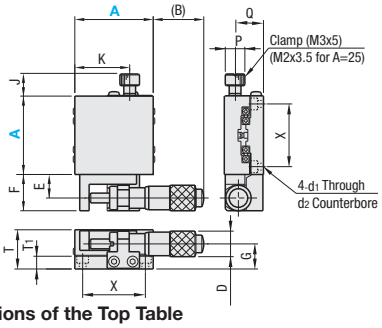
XY-Axes P.1662
Z-Axis P.1673

A25 · 80 and 100 have different feed bracket configuration.

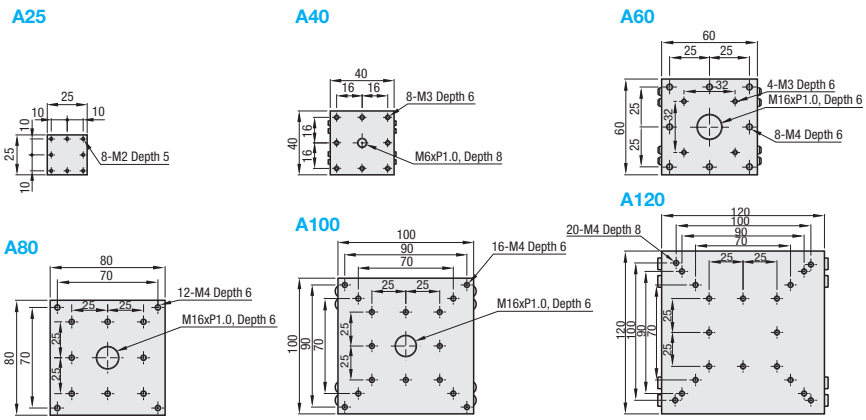


Refer to data on CAD for dimension details.

XPG



•Mounting Hole Dimensions of the Top Table



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	A	Top View (B)	Travel Distance (mm)	E	F	J	K	Front View D	G	T	T1	Side View P	Q	X	d1	d2	ℓ
XPG	25	25	±3.2	4.5	6.5	6.8	15.0	9.3	8.5	15	4.5	6	10.5	20	2.5	4.2	2.0
	40	26	±6.5	12.0	18.5	11.5	28.0	13.0	13.0	20	6.5	10	14.5	32	3.5	6.0	3.5
	60	20		12.0	18.5	11.5	42.5	13.0	13.0	20	6.5	10	14.5	50	4.5	8.0	4.0
	80	43.5	±12.5	17.0	22.0	11.5	55.0	18.0	11.0	20	5.7	10	14.5	70	4.5	8.0	4.5
	100	28.5		17.0	22.0	11.5	67.5	18.0	11.0	20	5.7	10	14.5	90	4.5	8.0	4.5
	120	67.5	±25	13.0	20.0	11.5	67.5	21.0	18.0	30	9.5	10	18.0	100	4.5	8.0	4.5

- Specifications

A	Stage (mm)	Load Capacity (N) Horizontal	Vertical	Travel Accuracy Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N•m) Pitching	Yawing	Rolling	Moment Rigidity (N/N•cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~9
25	25x25	9.8	4.9	3µm	10µm	30"	20"	1.1	0.8	0.4	3.03	2.85	1.80	30µm	0.04	SCB2-6	
40	40x40	19.6	9.8					2.7	2.2	2.0	0.38	0.42	0.28		0.14	SCB3-6	
60	60x60	49.0	19.6			25"	15"	5.2	4.3	5.5	0.12	0.11	0.07		0.25	SCB4-6	
80	80x80	98.0						19.2	15.1	17.3	0.05	0.05	0.04		0.50	SCB4-6	
100	100x100	147.0	49.0					36.0	30.0	33.0	0.06	0.07	0.05		0.70	SCB4-6	
120	120x120	196.0				50"	30"	57.2	44.7	66.7	0.03	0.02	0.01		1.60	SCB4-10	

Micrometer Resolution: 10µm/division, Travel per handle rotation 0.5mm

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number XPG60

Days to Ship - A25 · 40 · 60 · 80: 8 Days — Express A, 8,00 EUR/piece P.88

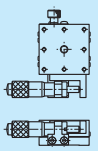
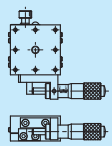
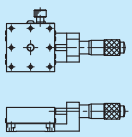
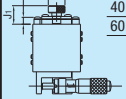
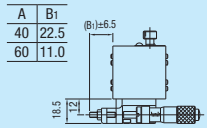
A Express Charge of 21,60 EUR for 3 or more identical pieces.

- A100 · 120: 10 Days — Express B, 10,00 EUR/piece P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations Part Number XPG40 - (CR · CZ · A...etc) CZ

10 Days Express Service is not available.

Alterations	Micrometer Head Position			Reinforced Clamp		No Micrometer Head
	Side Mount - Left/ Right Reversed	Side Mount - Top/ Bottom Reversed	Center	Disc Clamp	Opposed Clamp	No Micrometer Head
Spec.		 Not applicable for XPG100 and 200		 A: 40, J1: 14.8, P: 15; 60, 14.8, 15. Applicable to 40 · 60 Square only. Not applicable in combination with alterations CZ and A. A disc clamping mechanism that does not apply any load on the carriage plate. Holds the carriage in position better than the Standard Clamp.	 A: 40, B1: 22.5; 60, 11.0. Not applicable in combination with alterations CZ and A. Side mounted Micrometer shaft is opposed by a screw (M4x25, Pitch 0.4) for reliable and vibration resistant position holding performance.	 Micrometer head and bracket will be removed before shipment. Since there is an internal spring, the carriage will not be stationary unless the clamp is tightened. Combination with alteration H is not available.
Code	CR	CZ	A	H	P	MN
Price Adder	Free of Charge	Free of Charge	Free of Charge	70,00	30,00	-40,00

* CZ : Micrometer head is attached on the upper side of table (for Standard type, Micrometer head is attached on a fixed plate).

Mounting dimensions of micrometer head and clamp are different from those of standard products. Refer to data on CAD for details of dimension.

If other Micrometer Head mounting positions are desired, select from the "Specification Selectable Type" (**P.1679**)

Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. **P.1638**

Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

[High Precision] Cross Roller / Linear Guide

-Long Stroke-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: High precision long stroke stages with Cross Roller Guides. The XLPG60 has two handles, Coarse Feed (3mm/rev.) and Fine Feed (0.5mm/rev.).

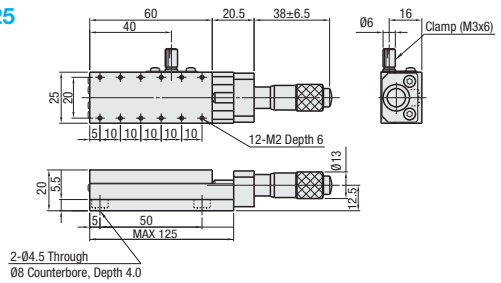
X-Axis Long Stroke

RoHS

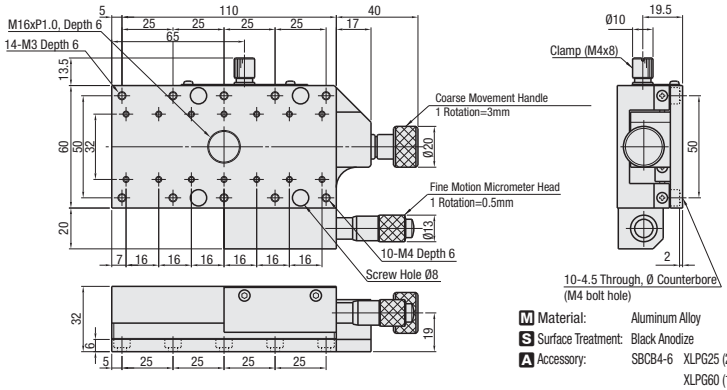




XLPG25



XLPG60



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize
A Accessory: SBCB4-6 XLPG25 (2 pcs.)
XLPG60 (10 pcs.)

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N) Horizontal	Travel Accuracy Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N * m) Pitching	Yawing	Rolling	Moment Rigidity (°/N * cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	€ Unit Price Qty. 1~9
XLPG	25	25x60	±6.5mm	19.6	3µm	10µm	25"	15"	3.8	3.2	1.5	0.19	0.19	1.38	30µm	0.1	
	60	60x110	* Coarse ±20mm Fine Feed ±6.5 mm	78.4					8.1	7.0	5.3	0.02	0.03	0.07		0.8	

Resolution (Micrometer Head): 10µm/division * XLPG60 max. stroke is 53mm.
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by simply putting on the Ø13 screws. P.1638

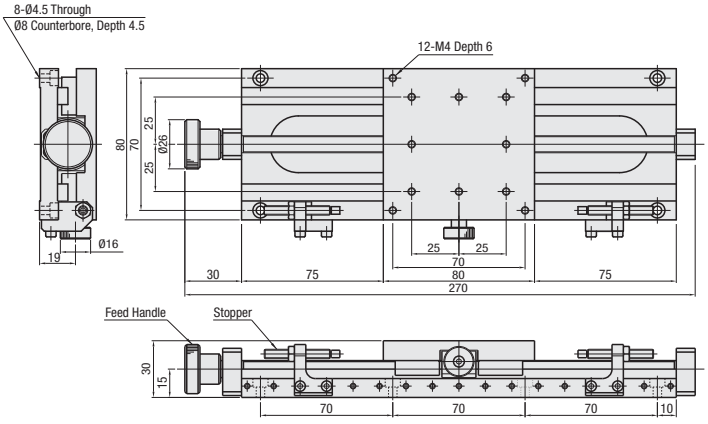
Features: 128mm stroke stages. Well suited for positioning and setup changes of large and heavy objects.

X-Axis Linear Guide

RoHS



XLSG80



M Material: Aluminum Alloy S Surface Treatment: Black Anodize A Accessory: SCB4-10 (8 pcs.)

Part Number Type	No.	Stage (mm)	Travel Per Rotation (mm)	Travel Distance (mm)	Load Capacity (N) Horizontal	Parallelism of Motion	Moment Capacity (N * m) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	€ Unit Price Qty. 1~4
XLSG	80	80x80	24	128mm	147	25µm	10.6	7.5	11.5	50µm	0.9	

Travel distance per rotation: 24mm
For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number XLPG25 XLSG80

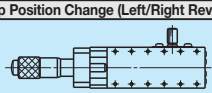
Days to Ship: 10 Days

Express B 10,00 EUR/ piece P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations: Part Number - (R) XLPG25 - R; 10 Days

Express Serviceis not available.
Only applicable to XLPG25

Alteration	Clamp Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

[High Precision] Dovetail Slide / Linear Ball Slide Symmetrical Stack / Space Saving

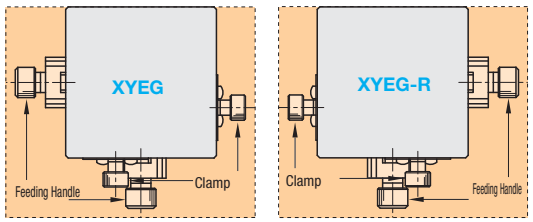
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features

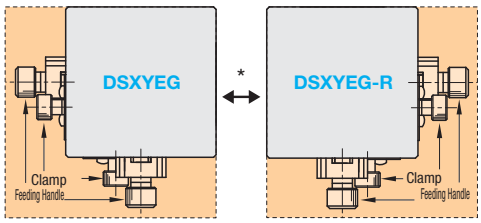
Normally, 2-axes stages are configured by stacking two normal 1-axis stages where the feed handles and clamps occupy three stage sides hindering operator access in certain installations.
This product is a combination of one Normal and one Reversed configuration stages to make 2 sides obstruction-free, enabling installations in space-savings for space saving machine designs.

XYEG



(Three open sides are needed for Feed Handles and Clamps)

DSXYEG



* Realization of space saving

Accessible Space

Dovetail Slide Feed Screw Stage: DSXYEG

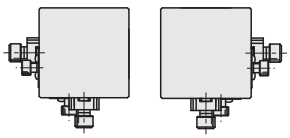
DSXYEG(Combination XY of XEG)

RoHS



Dovetail
DSXYEG

(Right and Left side reversed : -R)



(Note): For dimension details, see the CAD data or the catalog's X-Axis stage dimension details (P.1656)

Part Number Type	No.	Stage Configuration (XEG:P.1636) Top	Bottom	Travel Distance (mm)	Load Capacity (N)	Reference Part Number (Page)	€ Unit Price Qty. 1~9
DSXYEG	25	XEG25-R	XEG25	±5	28.4	XYEG (P.1656)	
	25-R	XEG25	XEG25-R				
	40	XEG40-R	XEG40	±7	27.4		
	40-R	XEG40	XEG40-R				
	60	XEG60-R	XEG60	±9	33.3		
	60-R	XEG60	XEG60-R				

Order Example — Part Number: DSXYEG60

Days to Ship: 8 Days

Linear Ball Slide Stages: DSXYSGB / DSXYSCG

For orders larger than indicated quantity, please request a quotation.

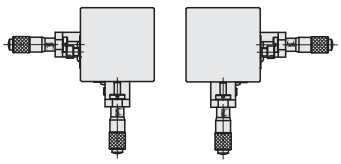
DSXYSGB(Combination XY of XSGB) DSXYSCG(Combination XY of XSCG)

RoHS



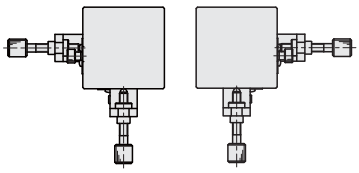
Black Linear Ball Slide - Micrometer Head
DSXYSGB

(Right and Left side reversed : - AR)



Linear Ball Slide - Feed Screw
DSXYSCG

(Right and Left side reversed : - AR)



(Note): For dimension details, see the CAD data or the catalog's X-Axis stage dimension details (P.1658)

Part Number type	No.	Stage Configurations Top	Bottom	Travel Distance (mm)	Load Capacity (N)	Reference Part Number (Page)	€ Unit Price Qty. 1~9 DSXYSGB	DSXYSCG
Black Linear Ball Slide Micrometer Head DSXYSGB / Linear Balls Feed Screws DSXYSCG	25-A	X_ _ _ -AR	X_ _ _ -A	±3.2	38.2	XYSGB_ -A (P.1658) XYSCG_ -A (P.1658)		
	25-AR	X_ _ _ -A	X_ _ _ -AR					
	40-A	X_ _ _ -AR	X_ _ _ -A	±6.5	95.2			
	40-AR	X_ _ _ -A	X_ _ _ -AR					
	50-A	X_ _ _ -AR	X_ _ _ -A		144.2			
	50-AR	X_ _ _ -A	X_ _ _ -AR					
	60-A	X_ _ _ -AR	X_ _ _ -A		192.1			
	60-AR	X_ _ _ -A	X_ _ _ -AR					
	70-A	X_ _ _ -AR	X_ _ _ -A		329.6			
	70-AR	X_ _ _ -A	X_ _ _ -AR					
	80-A	X_ _ _ -AR	X_ _ _ -A	±12.5 (*)	255.8			
	80-AR	X_ _ _ -A	X_ _ _ -AR					
	100-A	X_ _ _ -AR	X_ _ _ -A		329.6			
	100-AR	X_ _ _ -A	X_ _ _ -AR					

* Stroke is ±6.5mm for Feed Screw type.

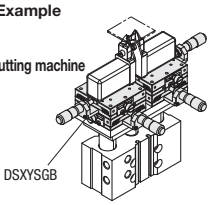
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: DSXYSGB80-AR

Days to Ship: 10 Days

Example

Lead wire cutting machine



[High Precision] Goniometer Stage Symmetrical Stack / Space Saving

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

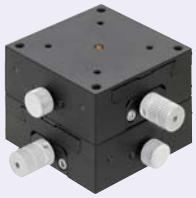
Features

Normally, 2-axes stages are configured by stacking two normal 1-axis stages where the feed handles and clamps occupy three stage sides hindering operator access in certain installations.
This product is a combination of one Normal and one Reversed configuration stages to make 2 sides obstruction-free, enabling installations in space-savings for space saving machine designs.
(Note): For dimension details, see the catalog's 1 axis stage dimension details or the CAD data.

Dovetail Goniometer Stage: DSGFWG

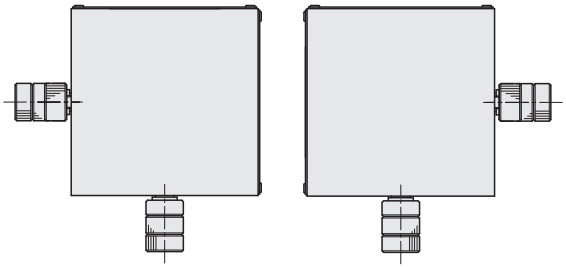
DSGFWG (2 axes combination of GFG)

RoHS



Goniometer
DSGFWG

(Right and Left side reversed : -R)



(Note): For dimension details, see the CAD data or the catalog's X-Axis stage Dimension Details (**P.1695**)

Part Number		Stage Configurations (GFG: P.1695)		Travel (O) (Top / Bottom)	Horizontal Load Capacity (N)	Reference Part Number (Page)	€ Unit Price
Type	No.	Top	Bottom				Qty. 1~9
DSGFWG	25-20	GFG25-20-NR	GFG25-35	±15 / ±10	19.6	GFWG (P.1695)	
	25-20-R	GFG25-20	GFG25-35-NR				
	30-30	GFG30-30-NR	GFG30-44	±10 / ±10	9.8		
	30-30-R	GFG30-30	GFG30-44-NR				
	40-25	GFG40-25-NR	GFG40-40	±20 / ±15	27.4		
	40-25-R	GFG40-25	GFG40-40-NR				
	40-40	GFG40-40-NR	GFG40-60	±15 / ±10	26.4		
	40-40-R	GFG40-40	GFG40-60-NR				
	50-50	GFG50-50-NR	GFG50-68	±10 / ±10	24.5		
	50-50-R	GFG50-50	GFG50-68-NR				
	50-68	GFG50-68-NR	GFG50-86	±10 / ±8			
	50-68-R	GFG50-68	GFG50-86-NR				
	60-35	GFG60-35-NR	GFG60-60	±25 / ±20	51.9		
	60-35-R	GFG60-35	GFG60-60-NR				
	60-60	GFG60-60-NR	GFG60-80	±20 / ±15	52.9		
	60-60-R	GFG60-60	GFG60-80-NR				
	80-100	GFG80-100-NR	GFG80-130	±18/ ±15	42.1		
	80-100-R	GFG80-100	GFG80-130-NR				

For orders larger than indicated quantity, please request a quotation.

Order Example

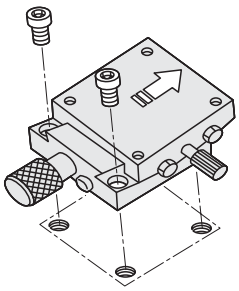
Part Number
DSGFWG60-60
DSGFWG80-100-R

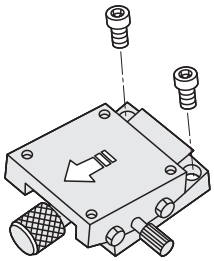
Days to Ship: 10 Days

Extension Cover HDEXT12 (Sold separately)
Ø12 feed screw handle can be extended. **P.1638**

How to mount a Goniometer Stage

The carriage is moved to gain access to the mounting holes. See illustrations below.





[High Precision] Dovetail Slide Rack & Pinion Type

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

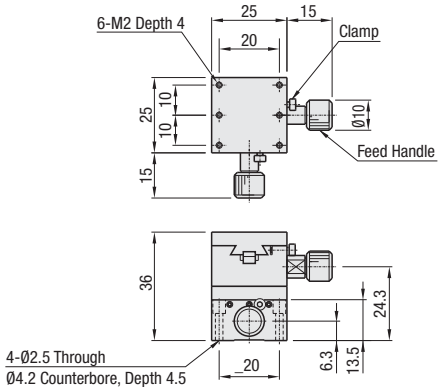
Features: Dovetail Slide XY stages in a square form factor with approx. 18mm travel per handle rotation. Each size with a different clamp configuration. The XYFG40 has a lever type clamp. (For details, see P.1681)

XY-Axes Square Basic

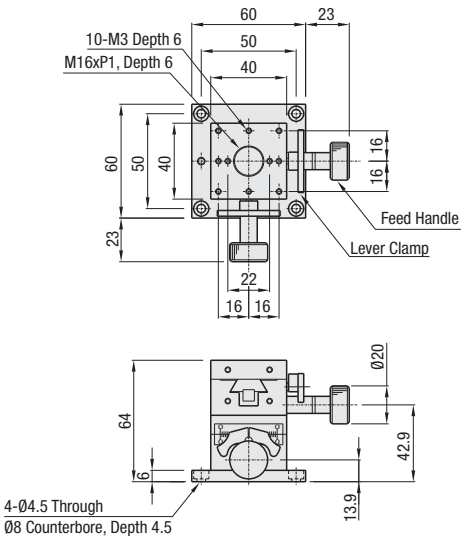
RoHS



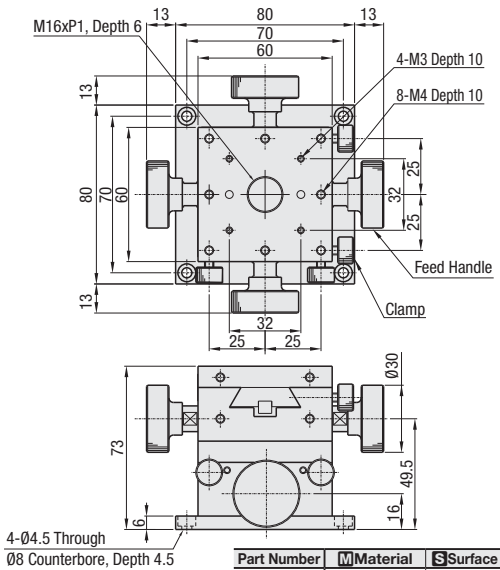
XYFG25



XYFG40



XYFG60



Part Number	Material	Surface Treatment
XYFG25	Low Cadmium Brass	Black Fluororesin Treatment
XYFG40	Aluminum Alloy	Black Anodize
XYFG60		

Refer to data on CAD for dimension details.

Part Number		Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Weight (kg)	Accessory (4 pcs.)	€ Unit Price
Type	No.					Straightness		Type M-L	Qty. 1~9
XYFG	25	25x25	±5	17	28.4	20µm	0.18	SCB2-12	
	40	40x40	±10	20	27.4		0.37	SCB4-6	
	60	60x60	±20	18	29.4	30µm	1.19	SCB4-6	

Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYFG40

Alterations — Part Number - (M): XYFG40 - M

Refer to data on CAD for dimension details.

Days to Ship: 8 Days

Alteration	No Bottom Plate
Spec.	XYFG40: 4-Ø4.3 Through (from back), Ø6 Counterbore, Depth 10 (M3 bolt hole); 32 XYFG60: 2-Ø4.5 Through (from back), Ø8 Counterbore, Depth 6 (M4 bolt hole); 30; 50 ⊗Not applicable to XYFG25. The feed handles will interferer with the mating bases.
Code	M
Price Adder	-10,00

[High Precision] Dovetail Slide Rack & Pinion Type

Price Reduction
Up to 5%

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

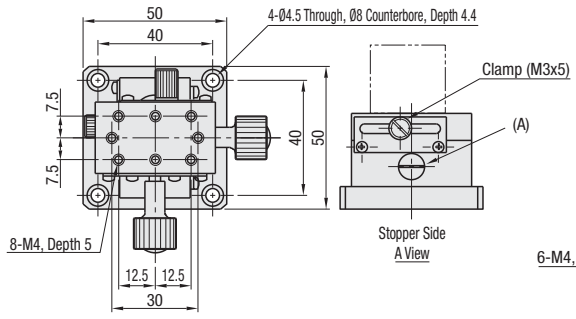
Features: Dovetail Slide XY stages in a rectangular form factor with approx. 18mm travel per handle rotation. Suitable for feeing over large distances smoothly.

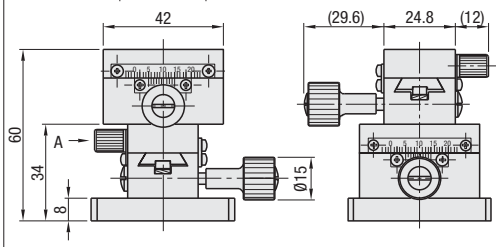
XY-Axes Rectangular Basic

RoHS

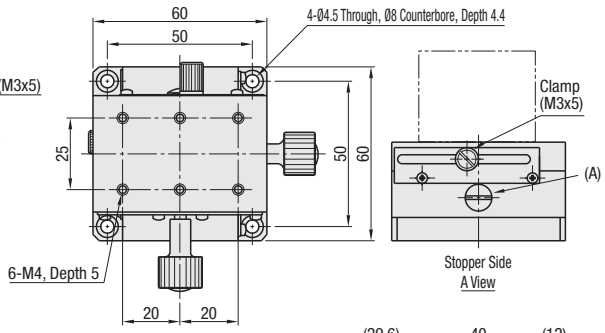


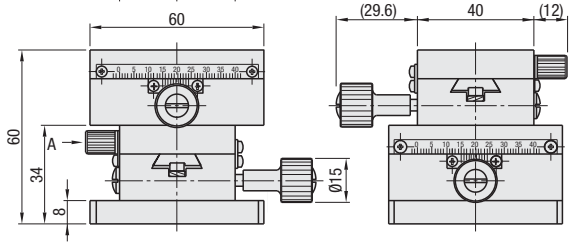
XYWG40



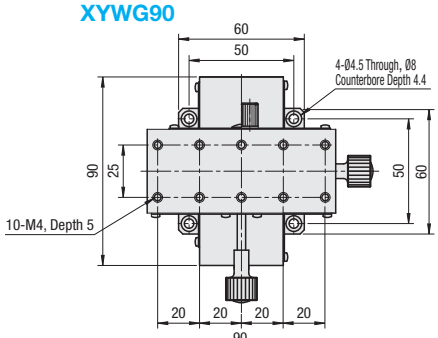


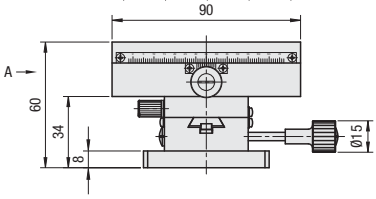
XYWG60



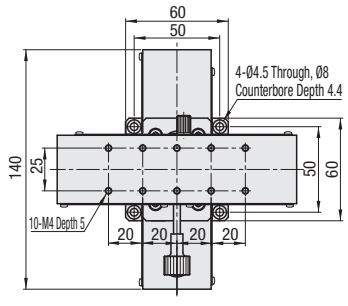


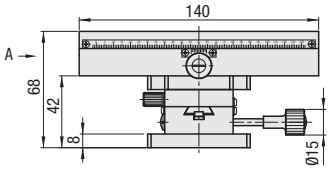
XYWG90



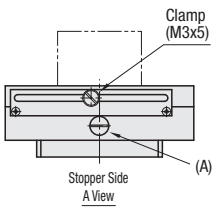


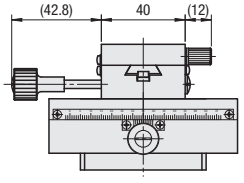
XYWG140





Common to XYWG90 · 140





By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~9
XYWG	40	24.8x42	±12	18	24.5	30μm	0.29	
	60	40x60	±21		34.3		0.51	
	90	40x90	±35				0.73	
	140	40x140	±60				1.08	

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
XYWG90

Days to Ship

6 Days

P. 87

Resolution (Vernier Scale Indication) : 0.1mm/division
Knob cover HDCVR15 (Sold separately): Increases knob diameter by putting on Ø15 feed handle. P.1615

[High Precision] Dovetail Slide Rack & Pinion Type
-Reinforced Clamp-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

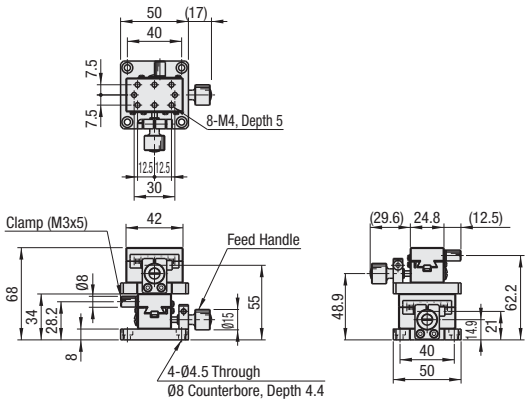
Features: The feed handle shaft is clamped directly for improved position holding performance over XYWG type (**P.1652**)

XY-Axes Reinforced Clamp

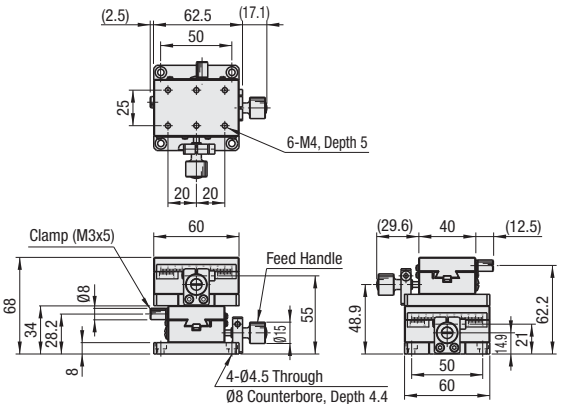
RoHS



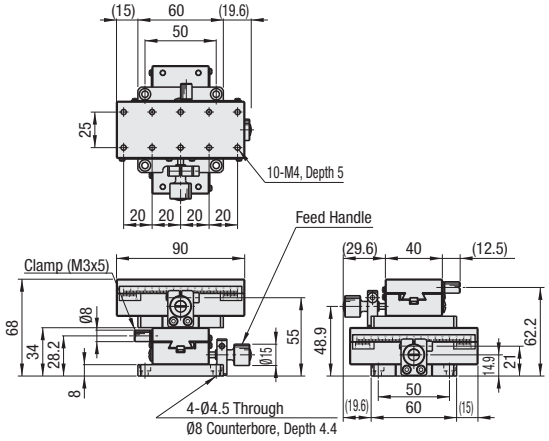
XYWGCL40



XYWGCL60

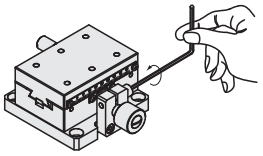


XYWGCL90



Example

Clamp Reinforcing Method



There will be residual clearances with carriage retaining only with a Reinforced Clamp. Use a Clamp Screw in combination.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

For clamp reinforcing details, see **P.1626**

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness (µm)	Orthogonality (µm)	Weight (kg)	€ Unit Price Qty. 1~4
XYWGCL	40	24.8x42	±12	18	24.5	30	100	0.35	
	60	40x60	±21		34.3			0.59	
	90	40x90	±35					0.81	

Resolution (Vernier Scale Indication) : 0.1mm/division
Knob Cover HDCVR12 (Sold separately): By mounting on Ø15 handle, the diameter can be creased to Ø24. ☞**P.1615**
For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number: XYWGCL140 | Days to Ship: 10 Days

[High Precision] Dovetail Slide Feed Screw
-Basic / Extended Handle (Lead 4.2mm)-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

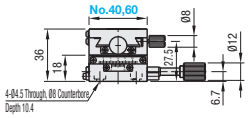
Features: Low profile (18mm height/axis) Dovetail Slide XY Stages with smooth feeding 4.2mm lead.

XY-Axes Square Basic
(With dowel holes - Lead 4.2mm)

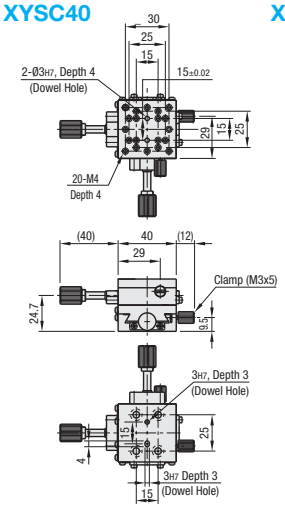
RoHS



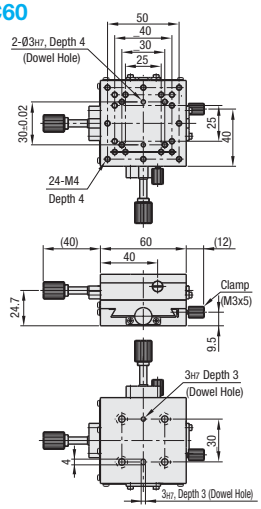
XYSC40, 60 (common)



XYSC40



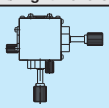
XYSC60



M Material: Aluminum Alloy S Surface Treatment: Black Anodize

Part No. Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYSC	40	40x40	±11	4.2	14.7	20	30	0.20	SCB4-5	
	60	60x60	±21		24.5	30		0.38		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

Order Example: Part No. XYSC60

Days to Ship: 10 Days

Alterations: Model XYSC40 - R

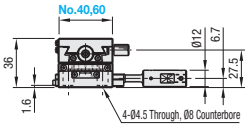
Features: Effective when positioned object is larger than the carriage area, or the stage is embedded deep inside a machine and hard to reach.

XY-Axis Extended Handles
(With dowel holes - Lead 4.2mm)

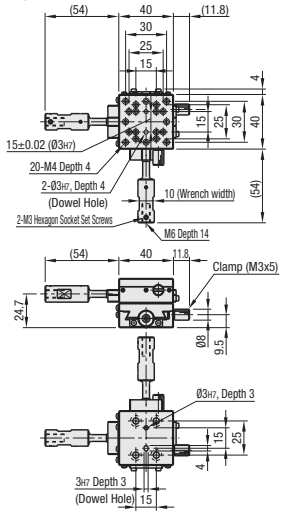
RoHS



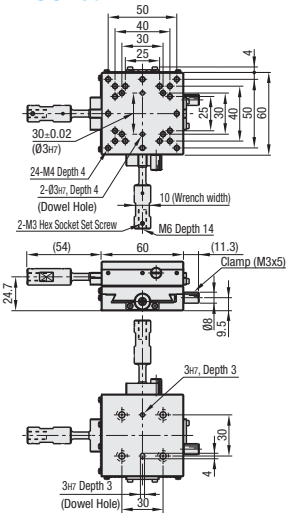
XYSCL40, 60 (common)



XYSCL40



XYSCL60

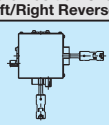


For handle extension methods, see P.1625, 1631

M Material (Main body): Aluminum Alloy S Surface Treatment: Black Anodize (Feed Knob) Low Cadmium Brass

Part No. Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYSCL	40	40x40	±11	4.2	18.6	30	30	0.21	SCB4-6	
	60	60x60	±21		17.7			0.39		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

Order Example: Part No. XYSCL40

Days to Ship: 10 Days

Alterations: Model XYSCL60 - R

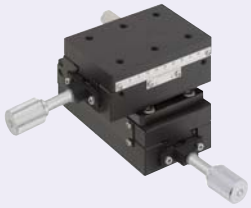
[High Precision] Dovetail Slide Feed Screw
-Basic / Reinforced Clamp / Low Profile (Lead 4.2mm)-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

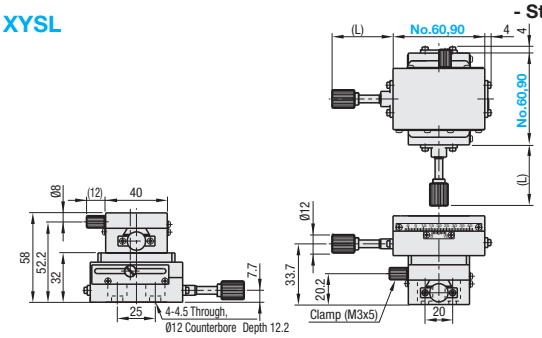
CAD Data

Features: Smooth feeding 4.2mm lead Dovetail Slide Feed Screw Stages.

XY-Axes Rectangular Basic (Lead 4.2mm) RoHS

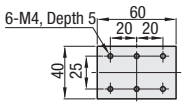


XYSL

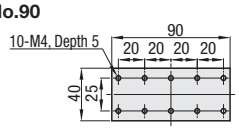


- Stage Top Mounting Hole Dimensions

No.60

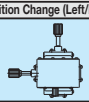


No.90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	(L)	E	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYSL	60	40x60	±21	40	34	4.2	34.3	30	30	0.45	SCB4-8	
	90	40x90	±35	60	49					0.63		

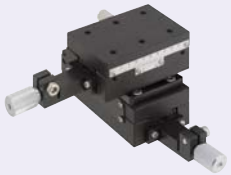
Alteration	Handle Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
Refer to data on CAD for dimension details.

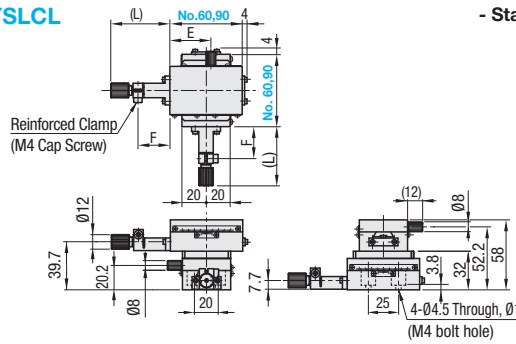
Order Example — Part Number: XYSL60 — Days to Ship: 10 Days — Alterations: Part Number XYSL90 - R

The feed handle is clamped directly with a split clamp for minimized position drift.

XY-Axes Reinforced Clamp (Lead 4.2mm) RoHS

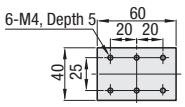


XYSLCL

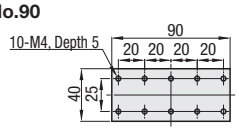


- Stage Top Mounting Hole Dimensions

No.60



No.90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	(L)	E	F	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYSLCL	60	40x60	±21	49	34	26	4.2	37.4	30	30	0.37	SCB4-8	
	90	40x90	±35	63	49	40.5		36.7			0.53		

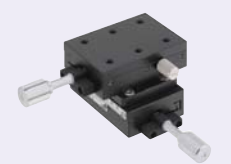
Alteration	Handle Position Change (Left/Right Reversed)
Spec.	 The reinforced clamp and the clamp screw are tightened in the same direction.
Code	R
Price Adder	Free of Charge

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
Refer to data on CAD for dimension details.

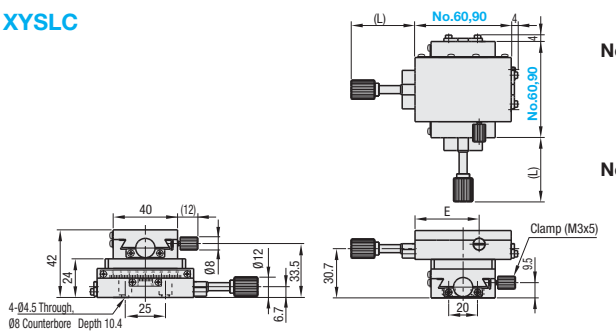
Order Example — Part Number: XYSLCL90 — Days to Ship: 10 Days — Alterations: Part Number XYSCL60 - R

Travel distance per handle rotation is approx. 1/4 of the Rack & Pinion type. Best suited for fine pitch positioning over a long stroke.

XY Axes Low Profile (Lead 4.2mm) RoHS

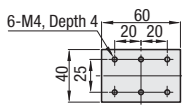


XYSLC

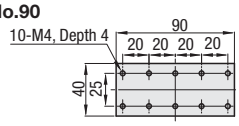


- Stage Top Mounting Hole Dimensions

No.60



No.90



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	(L)	E	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYSLC	60	40x60	±21	40	40	4.2	24.5	30	30	0.33	SCB4-5	
	90	40x90	±35	60	55					0.43		

Alteration	Handle Position Change (Left/Right Reversed)
Spec.	 The reinforced clamp and the clamp screw are tightened in the same direction.
Code	R
Price Adder	Free of Charge

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
Refer to data on CAD for dimension details.

Order Example — Part Number: XYSLC60 — Days to Ship: 10 Days — Alterations: Part Number XYSLC90 - R

[High Precision] Dovetail Slide Feed Screw
-Basic / Hex Wrench Type-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Feature: Economical and low profile (30mm height~) Dovetail Slide Feed Screw Stages. Good replacement for conventional fine adjustment mechanisms such as adjust bolts, etc.

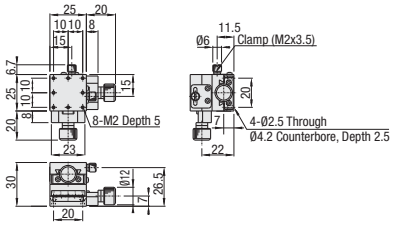
XY-Axes Basic
(Pitch 0.5mm)

RoHS

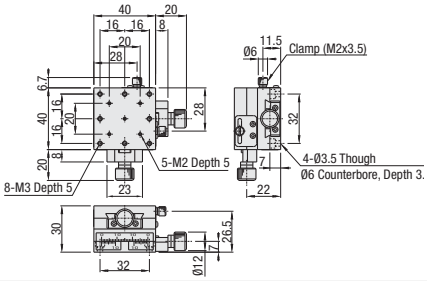


X-Axis Stages P.1636
Z-Axis P.1670

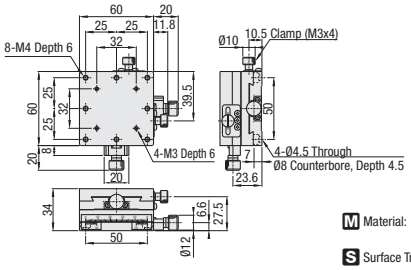
XYEG25



XYEG40



XYEG60



M Material: (Body) Low Cadmium Brass (Feed Handle) Aluminum

S Surface Treatment: Black Fluororesin Treatment

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Moment Capacity (N・m) Pitching	Yawing	Rolling	XY Orthogonality	Weight (kg)	Accessories Type M-L	Quantity	€ Unit Price Qty. 1~9
XYEG	25	25x25	±5	0.5	28.4	30μm	1.3	1.5	1.3	70μm	0.15	SCB2-8	4	
	40	40x40	±7		27.4		3.0	3.0	3.0		0.38	SCB3-6		
	60	60x60	±9		33.3		4.0	4.0	4.0		1.20	SCB4-6		

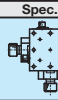
Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.

Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638

Order Example — Part Number: XYEG25 — Days to Ship: 8 Days

Alterations — Part Number: XYEG25 - (R) - R — 10 Days

Alteration	Spec.	Code	Price Adder
Clamp Position Change (Left/Right Reversed)		R	Free of Charge

Refer to data on CAD for dimension details.

Feature: No handle is required since a hex wrench is used to feed the stage, making for a space saving form factor. Unintended position changes can be prevented since the stage cannot be operated without a hex wrench.

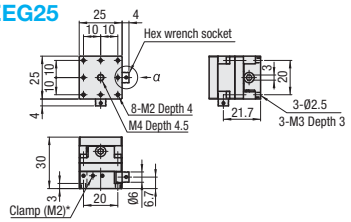
XY-Axes Hex Wrench Drive
(Pitch 0.5mm)

RoHS

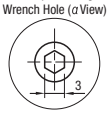


X-Axis Stages P.1636
Z-Axis P.1670

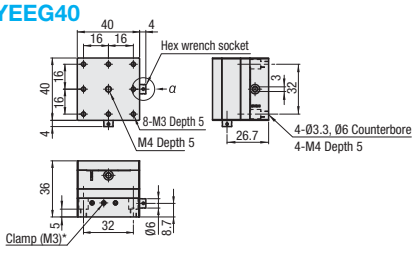
XYEEG25



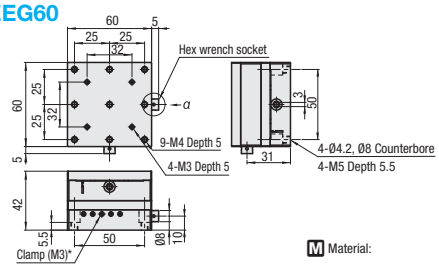
Close-up of Hexagon Wrench Hole (α View)



XYEEG40



XYEEG60



*The tapped hole in the center can be used as a clamp by utilizing an included hex socket set screw and a hex wrench. Other tapped holes cannot be used as they are fixed with adhesive after factory preload adjustment inspection.

M Material: (Body) Low Cadmium Brass (Hex Wrench Access Hole) Aluminum

S Surface Treatment: Black Fluororesin Treatment

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Moment Capacity (N・m) Pitching	Yawing	Rolling	XY Orthogonality	Weight (kg)	Accessories Type M-L	Quantity	€ Unit Price Qty. 1~9
XYEEG	25	25x25	±3	0.5	28.4	30μm	1.3	1.5	1.3	70μm	0.15	SCB2-8	3	
	40	40x40	±5		27.4		3.0	3.0	3.0		0.38	SCB3-6	4	
	60	60x60	±7		33.3		4.0	4.0	4.0		1.20	SCB4-6		

Resolution (Vernier Scale Indication): 0.1mm/division (XYEEG has no scale)

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYEEG25 — Days to Ship: 10 Days

[High Precision] Dovetail Slide Feed Screw
-Handle Extension / Reinforced Clamp-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

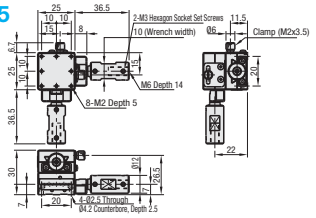
CAD Data

Features: Effective when feed handles are difficult to turn due to the carriage mounted objects interfering, or when the handles are hard to reach since the stage is deeply embedded inside a machine. Use an adhesive to prevent the handle from coming off.

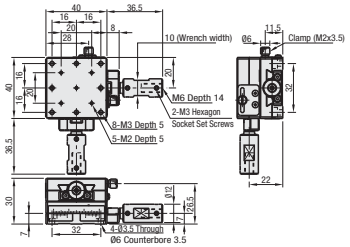
XY-Axes Extended Handles
(Pitch 0.5mm) RoHS



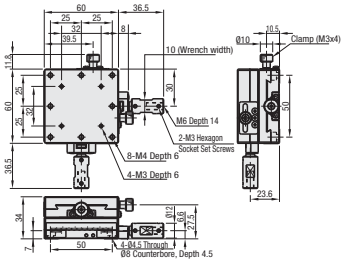
XYEGL25



XYEGL40



XYEGL60



Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Moment Capacity (Nm) Pitching	Yawing	Rolling	Orthogonality (μm)	Weight (kg)	€ Unit Price Qty. 1~4
XYEGL	25	25x25	±5	0.5	28.4	30	1.3	1.5	1.3	70	0.20	
	40	40x40	±7		27.4		3.0	3.0	3.0		0.40	
	60	60x60	±9		33.3		4.0	4.0	4.0		1.01	

Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638

Handle Extending Method
Use the M6-Depth 14 tapped hole on the handle. Handle length and diameter can be increased for large objects and plates placed on the carriage.
(Example (1)) Seven Lobed Knob (2-P.1031) NKSM6-30 can be mounted to further lengthen the handle by 36mm.

Order Example: Part Number XYEGL60

Days to Ship: 10 Days

Alterations: Part Number XYEGL60 - (R) R

See CAD data for dimension details.

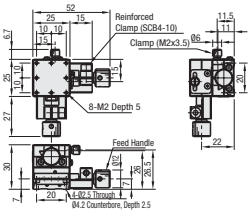
Alteration	Spec.	Code	Price Adder
Clamp Position Change (Left/Right Reversed)		R	Free of Charge

Feature: The feed handle shaft is clamped directly for improved position holding performance of the XY Dovetail Slide Stage.

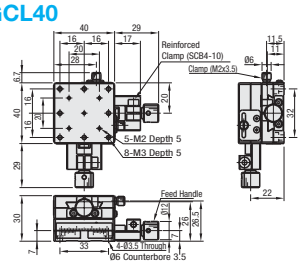
XY-Axes Reinforced Clamp
(Pitch 0.5mm) RoHS



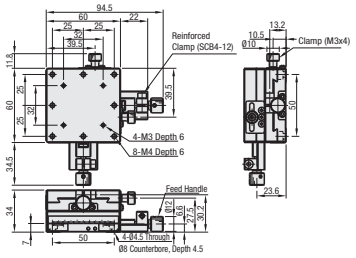
XYEGCL25



XYEGCL40



XYEGCL60



Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Moment Capacity (Nm) Pitching	Yawing	Rolling	Orthogonality (μm)	Weight (kg)	€ Unit Price Qty. 1~4
XYEGCL	25	25x25	±5	0.5	28.4	30	1.3	1.5	1.3	70	0.20	
	40	40x40	±7		27.4		3.0	3.0	3.0		0.40	
	60	60x60	±9		33.3		4.0	4.0	4.0		1.01	

Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638

Order Example: Part Number XYEGCL60

Days to Ship: 10 Days

Alterations: Part Number XYEGCL60 - (R) R

Refer to data on CAD for dimension details.

Alteration	Spec.	Code	Price Adder
Clamp Position Change (Left/Right Reversed)		R	Free of Charge

[High Precision] Linear Ball Slide
-Micrometer Head / Feed Screw-

Price Reduction
Up to 10%

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

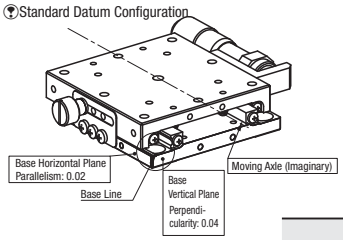
Features: High precision and high rigidity stages at economical prices. Even an XY stack is only 40mm high or less, and orthogonality aligning is not needed.

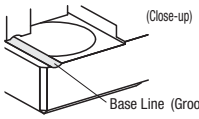
XY-Axes

RoHS



Standard Datum Configuration

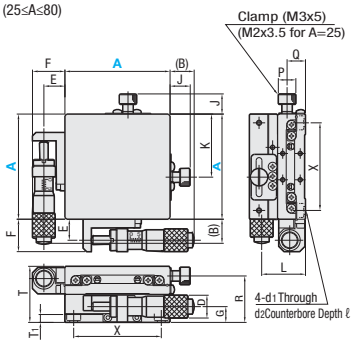




MISUMI's Linear Ball Guide Stages have Parallel and Orthogonal datums in relation to the motion axis as shown in the illustrations.

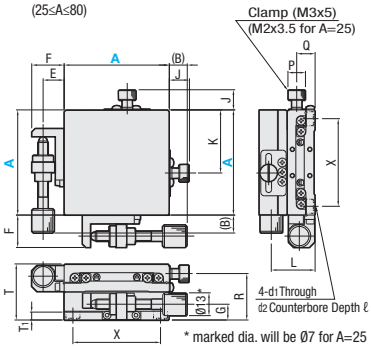
Micrometer Heads

XYSG
(25≤A≤100)
XYSGB (LTBC Plated)
(25≤A≤80)



Feed Screw (Pitch 0.5)

XYSCG
(25≤A≤100)
XYSCGB (LTBC Plated)
(25≤A≤80)



Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
XYSG (Micrometer)	1.4125/ X105CrMo17	Electroless Nickel Plating	1.4125/ X105CrMo17	58HRC~	1.4301/ X5CrNi18-10 WPB	EN AW-5052/ AlMg2,5	Clear Anodize	1.4305/ X10CrNiS18-9	-
XYSCG (Feed Screw)									
XYSGB (Micrometer - LTBC Plating)		LTBC Plating					Black Anodize		LTBC Plating
XYSCGB (Feed Screw - LTBC Plating)									

For Micrometer Head & Feed Screw material details, see **P.1697**
For table top mounting dimensions, see Linear Ball Slide X-Axis Stages on (**P.1641**) Refer to data on CAD for dimension details.

Micrometer Head (XYSG · XYSGB) · Feed Screw (XYSCG · XYSCGB)

Part Number Type	A	Top View (B) Micrometer	(B) Feed Screws	Travel Distance (mm)	E	F	J	K	Front View D	G	R	T	T1	Side View P	Q	L	X	d1	d2	ℓ	Accessory (4 pcs.) Type M-L
XYSG XYSCG XYSGB (*only) XYSCGB (*only)	25*	25	11	±3.2	7	9	6.8	15	9.3	7	20.5	24	3.7	6	8.5	19	20	2.5	4.2	2.5	SCB2-4
	40*	24	20.3	±6.5	12	18.5	11.5	26	13	9	26.5	32	4.5	10	10.5	25	32	3.5	6	3.5	SCB3-6
	50	19	15.3					31									40		6	3.5	SCB3-6
	60*	14	10.3					36					5				50	4.5	8	4	SCB4-6
	70	14.5	10.8					46.5		10	29.5	36	6		11.5	28	60		8	4.5	SCB4-6
	80*	43.5	10	±12.5*2	17	22*3		55	18	11	34.5	40	6.5		14.5	31	70		8	5.3	SCB4-6
	100	28.5	-5*1					67.5									90		8	5.3	SCB4-6

*1 Ends of feed screw handle are at 5mm inside of the carriage edges for XYSCG and XYSCGB.*2 Stroke of XYSCG80 and 100 is ±6.5mm.*3 Dimension A of Feed Screw Type XYSCG and XYSCGB are 80 or 100, F will be 20

Performance

Part Number Type	A	Stage (mm)	Horizontal Load Capacity (N)	Travel Accuracy Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N * m) Pitching	Yawing	Rolling	Moment Rigidity (/N * cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	€ Unit Price Qty. 1~9 XYSG	XYSCG	XYSGB	XYSCGB
XYSG	25*	25x25	38.2	3μm	10μm	30	25	2.0	2.0	2.0	3.00	2.20	3.00	30μm	0.14				
XYSCG	40*	40x40	95.2	1μm*	12μm	25	15	5.0	5.0	5.0	0.63	0.70	0.63		0.46				
XYSGB	50	50x50	144.2					6.0	6.8	6.0	0.24	0.28	0.24		0.56				
(*only)	60*	60x60	192.1					9.0	10.0	9.0	0.13	0.16	0.13		0.80				
XYSCGB	70	70x70	219.7					12.9	13.8	12.9	0.09	0.10	0.09		1.16				
(*only)	80*	80x80	255.8	3μm	15μm			17.7	18.2	17.7	0.06	0.08	0.06	40μm	1.80				
	100	100x100	329.6					30.7	31.8	30.7	0.03	0.04	0.03		2.66				

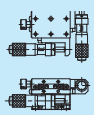
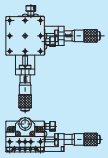
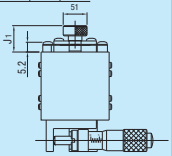
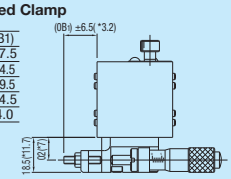
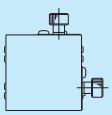
XYSG, XYSGB: Micrometer resolution 10μm/division *XYSGB, XYSCGB40 and 60 straightness is 3μm.

For orders larger than indicated quantity, please request a quotation.

Order Example
Part Number: XYSG40, XYSCGB60
Days to Ship: - XYSG / XYSCG: 8 Days; - XYSGB / XYSCGB: 10 Days

Alterations
Part Number: XYSCG40 - A (CR / A / H / P / MN)
10 Days

Knob Cover HDCVR13 (Sold separately): Ø13 Micrometer Head or Feed Screw handles can be increased in diameter by installing the cover. **P.1638**
Extension Cover HDEXT13 (Sold separately): Ø13 Micrometer Head or Feed Screw handles can be extended by installing the cover. **P.1638**

Alterations	Position of Micrometer and Feed Screw		Reinforced Clamp		No Micrometer Head
	Side Mount - Left/Right Reversed	Center	Disc Clamp	Opposed Clamp	No Micrometer Head
Spec.			A / J1 / P1: 40, 50, 60, 70 / 15.8 / 10; 80, 100 / 14.8 / 15  Not applicable to 25 square. Combination with alteration A is not available. A disc clamping mechanism that does not apply any load on the carriage plate. Holds the carriage in position better than the Standard Clamp.	A / (B1): *25 / 17.5; 40 / 24.5; 50 / 19.5; 60 / 14.5; 70 / 4.0  Applicable to XYSG only. Not applicable to 80 and 100 Square. Combination with alteration A is not available. The Micrometer shaft is opposed by a screw (M4x25, Pitch 0.5) from the tip end. Good vibration immunity and position holding performance. When A=25, the dimension will be *. Also, the dimensions will be (B)=30, and G=6	 Applicable to XYSG and XYSGB only. Micrometer head and bracket will be removed before shipment. Since there is a spring inside, the carriage will not be stationary unless the clamp is tightened. Combination with alteration H is not available.
Code	CR	A	H	P	MN
Price Adder	Free of Charge	Free of Charge	140,00	60,00	-80,00

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.
For Micrometer Head or Feed Screw mounted in positions other than shown below, see "Specification Selectable Type" (**P.1679**)

[High Precision] Linear Ball Slide
-Coarse/Fine Feed Micrometer Heads-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

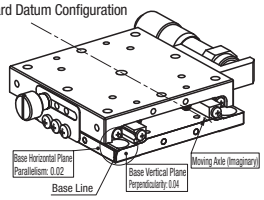
CAD Data

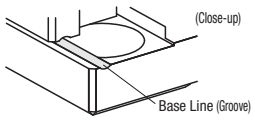
Features: High precision and high rigidity stages at economical prices. Even an XY stack is only 40mm high or less, and orthogonality aligning is not needed.

XY-Axes Coarse/Fine Micrometer Head RoHS



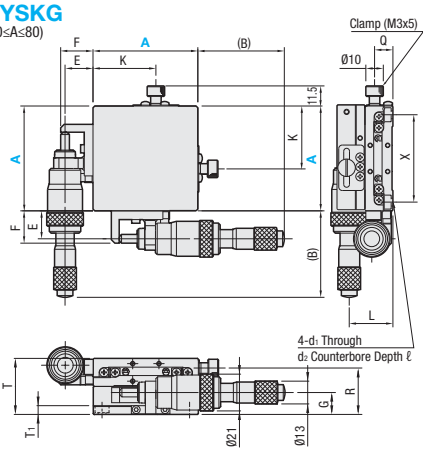
Standard Datum Configuration





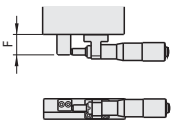
MISUMI's Linear Ball Guide Stages have Parallel and Orthogonal datums in relation to the motion axis as shown in the illustrations.

XYSKG
(40≤A≤80)



A80 and 100 Feed Brackets are different configuration.

A80 · A100



Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material
XYSKG	1.4125/ X105CrMo17	Aluminum Alloy	1.4125/ X105CrMo17	58HRC~	1.4301/ X5CrNi18-10WPB	EN AW-5052/ AlMg2,5	Clear Anodize	1.4305/ X10CrNiS18-9

For Micrometer Head and Feed Screw materials, see **P.1697**

For table top mounting dimensions, see Linear Ball Slide X-Axis Stages (**P.1641**) Refer to data on CAD for dimension details.

Part Number		Top View				Front View				Side View						Accessory (4 pcs.)
Type	A	(B)	E	F	K	G	R	T	T1	Q	L	X	d1	d2	ℓ	Type M-L
XYSKG	40	60	16	18.5	26	11.6	26.5	32	4.5	10.5	27.6	32	3.5	6	3.5	SCB3-6
	50	55			31							40				
	60	50			36				5			50	4.5	8	4	SCB4-6
	70	50.5			46.5	12.5	29.5	36	6	11.5	30.5	60			4.5	
	80	49.5	17	25	55	11	34.5	40	5.5	14.5	31	70			5.3	

Performance

Part Number		Stage (mm)	Travel Distance (mm)	Horizontal Load Capacity (N)	Travel Accuracy				Moment Capacity (N • m)			Moment Rigidity (/N • cm)			Parallelism	Weight (kg)	€ Unit Price
Type	A				Straightness	Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling			Qty. 1~9
XYSKG	40	40x40	Coarse ±6.5mm Fine Feed 0.2 mm	95.2	1µm	12µm	25	15	5.0	5.0	5.0	0.63	0.70	0.63	30µm	0.44	
	50	50x50		144.2					6.0	6.8	6.0	0.24	0.28	0.24		0.54	
	60	60x60		192.1					9.0	10.0	9.0	0.13	0.16	0.13		0.78	
	70	70x70		219.7					12.9	13.8	12.9	0.09	0.10	0.09		1.14	
	80	80x80		255.8	3µm	15µm			17.7	18.2	17.7	0.06	0.08	0.06	40µm	1.78	

Coarse/Fine Micrometer Head Resolution Coarse:10µm, Fine: 0.5µm

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number: XYSKG40

Days to Ship: 8 Days

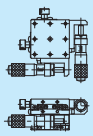
Alterations

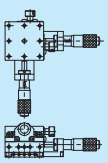
Part Number - (CR · A · H)

XYSKG40 - A

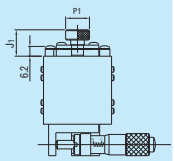
10 Days

Alterations	Position of Micrometer and Feed Screw		Reinforced Clamp
Spec.	Side Mount - Left/Right Reversed	Center	Disc Clamp
Code	CR	A	H
Price Adder	Free of Charge	Free of Charge	140,00





A	J1	P1
40 · 50 · 60 · 70	15.8	10
80	14.8	15



Combination with alteration A is not available.
A disc clamping mechanism that does not apply any load on the carriage plate. Holds the carriage in position better than the Standard Clamp.

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.

For Micrometer Head or Feed Screw mounted in positions other than shown below, see "Specification Selectable Type" (**P.1679**)

Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. **P.1638**

Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

NEW

[High Precision] Linear Ball Slide
-Opposed Clamp w/Knob-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

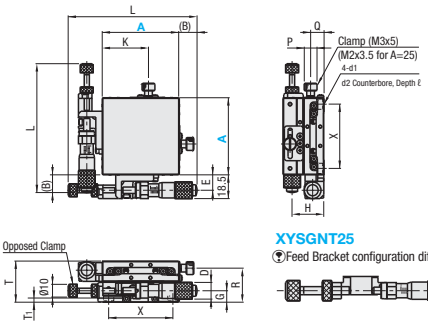
CAD Data

Features: Side mounted Micrometer shaft is opposed by a knobbed screw for vibration resistant position holding performance without a tool.

XY-Axes Opposed Clamp with Knobs RoHS

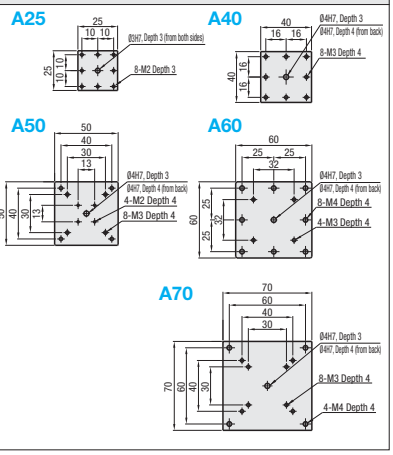


Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material
XYSGNT	1.4125	Aluminum Alloy	1.4125	58HRC~	1.4301-WPB	EN AW-5052	Clear Anodize	1.4305



For Micrometer Head and Opposed Clamp materials, see Adjust Screws (ANKSS **P.1418**)
Opposed Clamp shaft has a hex socket (2.5 hex, depth 2.5) on the end.

Dimensions of mounting holes on the table



Part Number		Top View				Front View					Side View							Accessory (4 pcs.)
Type	A	(B)	E	K	L	D	G	T	T1	R	H	P	Q	X	d1	d2	ℓ	Type M-L
XYSGNT	25	30	7	15	84.5	9.3	6.7	24	3.7	20.5	19	6	8.5	20	2.5	4.2	2.5	SCB2-4
	40	23.8	12	26	100.3	13	8.9	32	4.5	26.5	24.9	10	10.5	32	3.5	6	3.5	SCB3-6
	50	18.8		31										40				
	60	13.8		36					5					50	4.5	8	4	SCB4-6
	70	14.3		46.5			10	36	6	29.5	28		11.5	60			4.5	

- Specifications

Part Number		Stage Surface (mm)	Travel Distance (mm)	Horizontal Load Capacity (N)	Travel Accuracy				Moment Load Capacity (N • m)			Moment Rigidity (″/N • cm)			Parallelism	Orthogonality	Weight (kg)	€ Unit Price
Type	A				Straightness	Parallelism	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling				Qty. 1~4
XYSGNT	25	25x25	±3.2	38.2	3μm	10μm	30″	25″	2.0	2.0	3.5	3.0	2.2	2.2	30μm	10μm	0.14	
	40	40x40	±6.5	95.1	1μm	12μm	25″	15″	5.0	5.0	5.0	0.63	0.70	0.63			0.46	
	50	50x50		144.1					6.0	6.8	6.0	0.24	0.28	0.24			0.56	
	60	60x60		192.1					9.0	10.0	9.0	0.13	0.16	0.13			0.8	
	70	70x70		219.5					12.9	13.8	12.9	0.09	0.10	0.90			1.16	

Micrometer Head resolution 10μm/division

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYSGNT60

Days to Ship: 10 Days

Knob Cover HDCVR13 (Sold separately): Ø13 Micrometer Head or Feed Screw handles can be increased in diameter to Ø30 by installing the cover. **P.1638**

Extension Cover HDEXT13 (Sold separately): Ø13 Micrometer Head or Feed Screw handles can be extended by installing the cover. **P.1638**

[High Precision] Linear Ball Slide
-Low Profile-

Price Reduction
Up to 9%

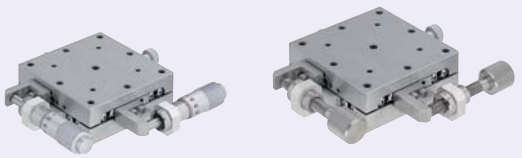
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Extra low profile achieved by XY axes unitized construction in comparison to XYSG **(P.1658)**. 26mm height or less and no need for orthogonal aligning.

XY-Axes Low Profile

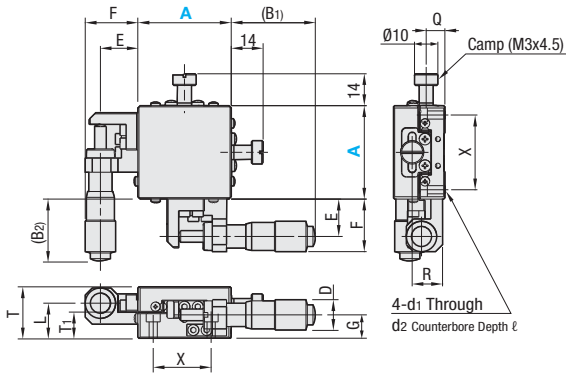
RoHS



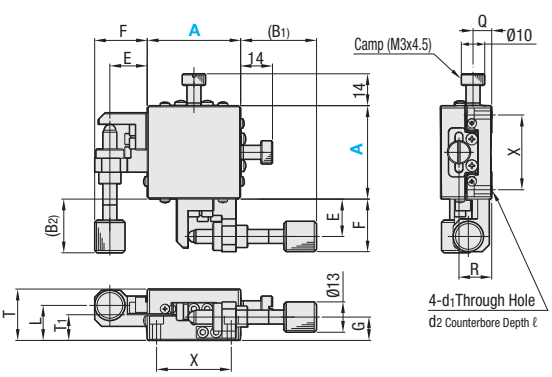
Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material
1.4125/ X105CrMo17	Aluminum Alloy	1.4125/ X105CrMo17	58HRC~	1.4301/ X5CrNi18-10-WPB	EN AW-5052/ AlMg2,5	Clear Anodize	1.4305/ X10CrNi S18-9

For Micrometer Head and Feed Screw materials, see **P.1697,1698**
For table top mounting dimensions, see Linear Ball Slide X-Axis Stages on (**P.1641**)

Micrometer Heads
XYSSG (A=40, 60, 80, 100)



Feed Screw (Pitch 0.5)
XYSSCG (A=40, 60, 80, 100)



Micrometer Head (XYSSG)- Feed Screw (XYSSCG)

Part Number Type	A	Top View: Micrometer (B1)	Micrometer (B2)	Feed Screws (B1)	Feed Screws (B2)	Distance (mm)	E	F	Front View: D	G	T	L	T1	Side View: Q	R	X	d1	d2	ℓ	Accessory (4 pcs.) Type M-L
XYSSG XYSSCG	40	36	26.5	32.5	23	±6.5	16	22.5	13	10	22	15	10.5	8	14	32	3.5	6	3.5	SCB3-10
	60	20.3	16.5	16.8	13	±6.5	16	22.5	13	10	22	15	10.5	8	14	50	4.5	8	4.5	SCB4-10
	80	39	32	0	-7*1	±12.5*2	23	32*2	18*2	15	26	17	12.5	9.5	16.5	70	4.5	8	6.5	SCB4-10
	100	29	22	-10	-17	±12.5*2	23	32*2	18*2	15	26	17	12.5	9.5	16.5	90	4.5	8	6.5	SCB4-10

*1 The feed screw's end is at 7mm inside of the stage end face.*2 For XYSSCG feed screw type A=80, travel distance per rotation is ±6.5, F=30, and D=13.

- Specifications

Part Number Type	A	Stage (mm)	Load Capacity (N)	Travel Accuracy: Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N • m): Pitching	Yawing	Rolling	Moment Rigidity (/N • cm): Pitching	Yawing	Rolling	Parallelism	Weight (kg)	€ Unit Price Qty. 1~9: XYSSG	XYSSCG
XYSSG XYSSCG	40	40x40	88	3µm	12µm	40"	20"	4.5	5.0	4.5	0.80	0.68	0.85	30µm	0.34		
	60	60x60	186					9.0	8.1	9.0	0.21	0.19	0.20		0.64		
	80	80x80	196		15µm			16.4	15.9	16.4	0.09	0.06	0.08	40µm	1.32		
	100	100x100	245					27.6	28.6	27.6	0.06	0.03	0.06		2.00		

XYSSG: Micrometer resolution 10µm/division

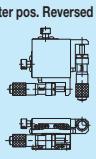
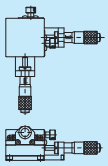
For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number **XYSSG40**

Days to Ship: **8 Days**

Alterations: Part Number **XYSSG40** - (CR · A · MN) **CR**

10 Days

Alterations	Position of Micrometer and Feed Screw		No Micrometer Head
Spec.	Micrometer pos. Reversed 	Center 	No Micrometer Head  Applicable to XYSSG only. Micrometer head and bracket will be removed before shipment. Since there is an internal spring, the carriage will not be stationary unless the clamp is tightened.
Code	CR	A	MN
Price Adder	Free of Charge	Free of Charge	-80,00

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. **P.1638**
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

[High Precision] Cross Roller / Cross Roller with Dowel Holes

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: High mounting repeatability is obtained with the dowel holes of XYPGN.

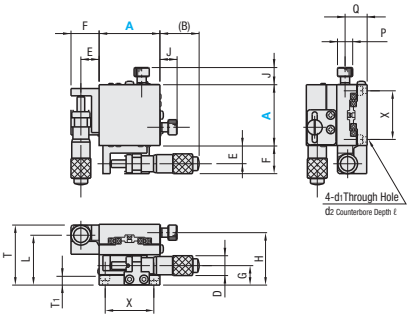
XY-Axes

RoHS



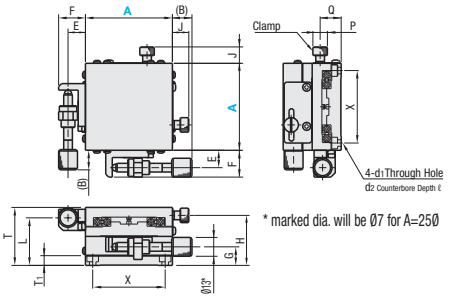
Micrometer Heads

XYPG(25≤A≤120)
XYPGN(A=40 • 60) (with Dowel Hole)



Feed Screw (Pitch 0.5)

XYPCG(25≤A≤80)



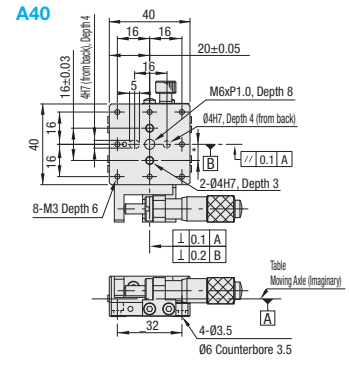
* marked dia. will be Ø7 for A=25Ø

For Standard Cross Roller Stage table top mounting dimensions, see **P.1647**

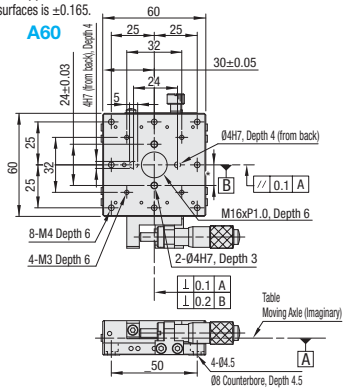
- Mounting Hole Dimensions on the top/bottom of the table of XY-Axes Stages with Dowel Holes

H7 hole and H7 long hole on bottom surface, and 2 H7 holes on upper surface.
Theoretical dimension tolerance of dowel holes on upper and bottom surfaces is ±0.165.

A40

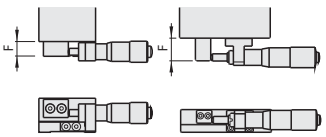


A60



A25 · 80 and 100 have different shape of feed brackets.

A25 **A80 · A100**



Refer to data on CAD for dimension details.

M Materials: Aluminum Alloy
S Surface Treatment: Black Anodize

For a comparison chart with economical standard Stages, see **P.1613**

Micrometer Head (XYPG, XYPGN) / Feed Screw (XYPCG)

Part Number Type	A	Top View: Standard Micrometer (B)	Standard Micrometer Travel Distance (mm)	Feed Screws (B)	Feed Screws Travel Distance (mm)	E	F	J	Front View: D	G	H	T1	L	T	Side View: P	Q	X	d1	d2	ℓ
XYPG XYPCG XYPGN (with dowel holes)	25	25	±3.2	11	±3.2	4.5	6.5	6.8	9.3	8.5	25.9	4.5	23.5	30	6	10.5	20	2.5	4.2	2
	40	26	±6.5	22.3	±6.5	12	18.5	11.5	13	13	34.5	6.5	33	40	10	14.5	32	3.5	6	3.5
	60	20		16.3		12	18.5	11.5	13	13	34.5	6.5	33	40	10	14.5	50	4.5	8	4
	80	43.5	±12.5	10		17	22*	11.5	18	11	34.5	5.7	31	40	10	14.5	70	4.5	8	4.5
	*100	28.5		-	-	17	22	11.5	18	11	34.5	5.7	31	40	10	14.5	90	4.5	8	4.5
	*120	67.5	±25	-	-	13	20	11.5	21	18	48.0	9.5	48	60	10	18	100	4.5	8	4.5

⊗* A100 and 120 are not available for Feed Screw Type (XYPCG). * When A=80 for the Feed Screw Type (XYPG, XYPGN), F dimension will be 20

Performance

A	Stage (mm)	Load Capacity (N)	Travel Accuracy: Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N * m): Pitching	Yawing	Rolling	Moment Rigidity (°/N * cm): Pitching	Yawing	Rolling	Parallelism	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9: XYPG	XYPCG	XYPGN
25	25x25	9.8	3µm	20µm	30"	20"	0.4	0.8	0.4	4.83	5.70	4.83	60µm	0.08	SCB2-6			⊗
40	40x40	17.6					2.0	2.2	2.0	0.66	0.84	0.66		0.28	SCB3-6			
60	60x60	44.1			25"	15"	5.2	4.3	5.2	0.19	0.22	0.19		0.50	SCB4-6			
80	80x80	93.1					17.3	15.1	17.3	0.09	0.10	0.09		1.00	SCB4-6			⊗
100	100x100	140					33.0	30.0	33.0	0.11	0.14	0.11		1.40	SCB4-6		⊗	⊗
120	120x120	180					57.2	44.7	57.2	0.04	0.04	0.04		3.20	SCB4-10		⊗	⊗

XYPG and XYPGN: Micrometer resolution 10µm/division

For orders larger than indicated quantity, please request a quotation.
⊗Express Serviceis not available.

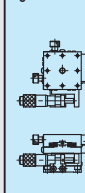
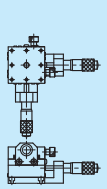
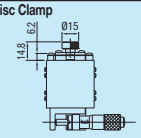
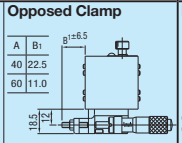
Order Example: Part Number **XYPG80**

Days to Ship:

- XYPG · XYPCG (A=25 · 40 · 60 · 80): **8 Days**
  Express A | 8,00 EUR/piece | P.88
  A Express Charge of 21,60 EUR for 3 or more identical pieces.
- XYPG(A=100 · 120) XYPGN (With · dowel holes): **10 Days**
  Express B | 10,00 EUR/piece | P.88
  A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations

Part Number - (CR ·A…etc)
XYPG60 - A
10 Days

Alterations	Position of Micrometer and Feed Screw: Side Mount - Left/ Right Reversed	Center	Reinforced Clamp: Disc Clamp	Opposed Clamp	No Micrometer Head
Spec.			 Applicable to 40 · 60 Square only. ⊗Combination with alteration A is not available ⓨA disc clamping mechanism that does not apply any load on the carriage plate. Holds the carriage in position better than the Standard Clamp.	 ⓨOnly applicable to 40, 60 of XYPG and XYPGN. ⊗Combination with alteration A is not applicable. ⓨThe Micrometer shaft is opposed by a screw (M4x25, Pitch 0.5) from the tip end. Good vibration immunity and position holding performance.	 ⓨApplicable to XYPG only. ⓨMicrometer head and bracket will be removed before shipment. ⓨSince there is an internal spring, the carriage will not be stationary unless the clamp is tightened. ⊗Combination with alteration H is not available.
Code	CR	A	H	P	MN
Price Adder	Free of Charge	Free of Charge	140,00	60,00	-80,00

ⓨMounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.
ⓨFor Micrometer Head or Feed Screw mounted in positions other than shown, see "Specification Selectable Type" on (**P.1679**)
ⓨKnob cover HDCVR13 (sold separately): Increases knob diameter by putting on Ø13 feed handles. **P.1638**
ⓨExtension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

[High Precision] Cross Roller
-Low Profile / Through Hole-

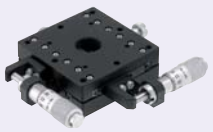
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

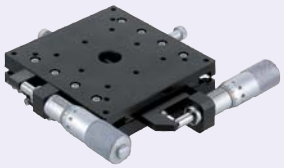
CAD Data

Features: Extra low profile achieved by XY axes unitized construction in comparison to XYPG **(P.1662)**. 28mm height or less and no need for orthogonal aligning.

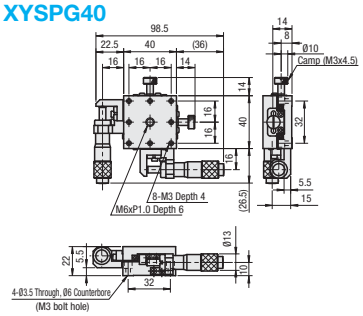
XY-Axes Low Profile

RoHS

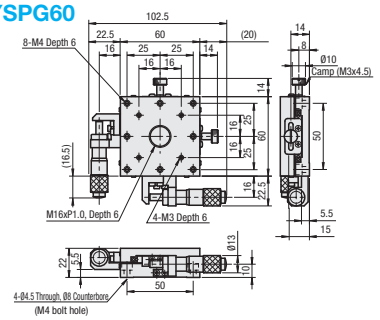




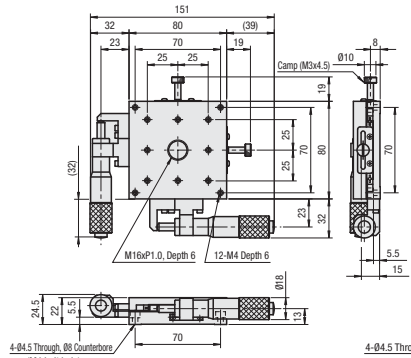
XYSPG40



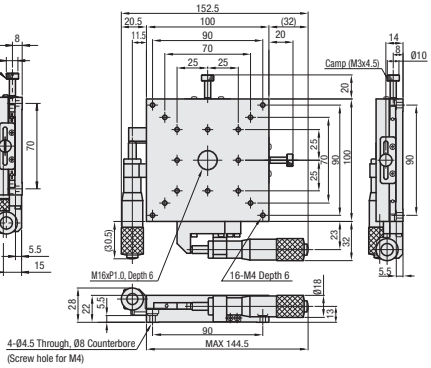
XYSPG60



XYSPG80



XYSPG100



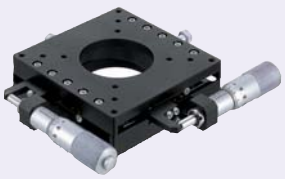
M Material: Aluminum Alloy
S Surface Treatment: Black Anodize
A Accessories:

XYSPG	40	SCB3-10	4 pcs.
	60	SCB4-10	
	80		
	100		

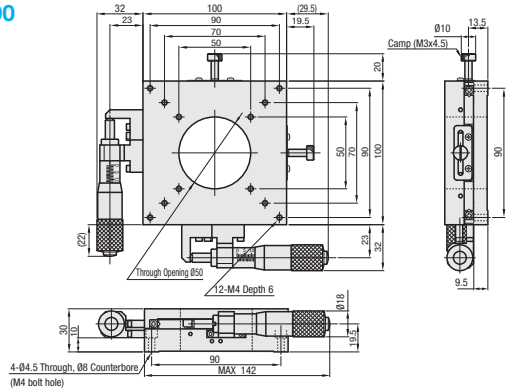
Features: There is a Ø50 through hole in the stage center. Useful for illuminating from directly below.

XY-AxesThrough Hole

RoHS



XYPPG100



M Material: Aluminum Alloy
S Surface Treatment:Black Anodize
A Accessory: SCB4-14 (4 pcs.)

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness	Parallelism	Pitching	Yawing	Moment Capacity (N • m) Pitching	Yawing	Rolling	Moment Rigidity ("/N • cm) Pitching	Yawing	Rolling	Paral-lelism	Weight (kg)	€ Unit Price Qty. 1~9
XYSPG	40	40x40	±6.5	9.8	3µm	20µm	40"	20"	0.7	0.8	0.7	0.57	0.50	0.64	50µm	0.2	
	60	60x60		29.4					2.3	1.9	2.3	0.19	0.13	0.15		0.4	
	80	80x80	±12.5	39.2					5.1	4.2	5.1	0.13	0.13	0.11		0.7	
	100	100x100							5.1	4.2	5.1	0.08	0.10	0.08		1.1	
XYPPG	100	100x100	±12.5	63.7	3µm	20µm	25"	15"	4.6	3.9	4.6	0.07	0.08	0.10	50µm	1.0	

Micrometer Head resolution: 10um/division

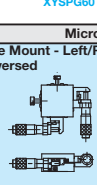
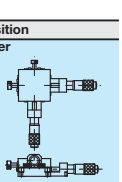
For orders larger than indicated quantity, please request a quotation.

Order Example Part Number: XYSPG80

Days to Ship

- No. 40, 60, 80: 8 Days
  - Express A: 8,00 EUR/piece — P.88
  - A Express Charge of 21,60 EUR for 3 or more identical pieces.
- No.100: 10 Days
  - Express B: 10,00 EUR/piece — P.88
  - A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations Part Number: XYSPG60 - (CR・A): CR — 10 Days — Express Serviceis not available.

Alterations	Micrometer Position	
	Side Mount - Left/Right Reversed	Center
Spec.		
Code	CR	A
Price Adder	Free of Charge	Free of Charge

Mounting dimensions of micrometer head and clamp are different from those of standard products. Refer to data on CAD for details of dimension.

Knob cover HDCVR13 (Sold separately): Increases knob diameter by simply putting on the Ø13 screws. P.1638

Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. P.1638

[High Precision] Dovetail Slide Rack & Pinion Type

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

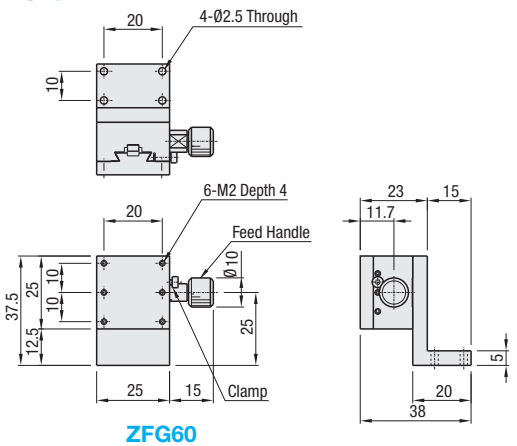
Features: Square Dovetail Slide Stages with 18mm travel per handle rotation. Suitable for smooth long distance moves.

Z-Axes Square Basic

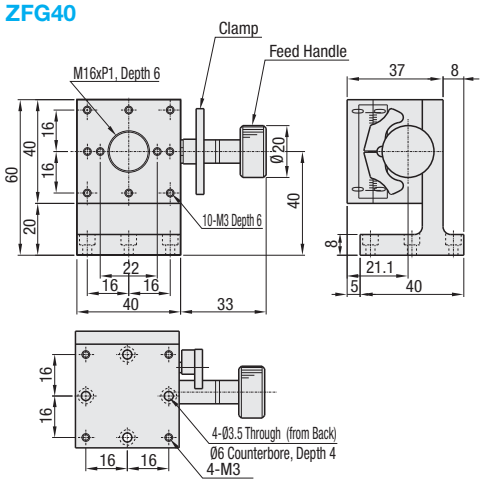
RoHS



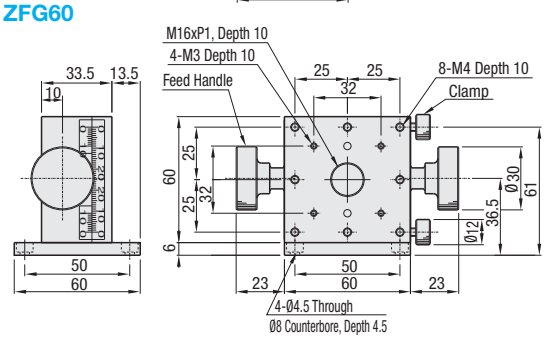
ZFG25



ZFG40



ZFG60



Vernier scale of ZFG25 will be on the opposite side of the clamp mount side.

Part Number	Material		Surface Treatment	
	Main Body	Bracket	Main Body	Bracket
ZFG25	Low Cadmium Brass	Aluminum Alloy	Black Fluororesin Treatment	Black Anodize
ZFG40	Aluminum Alloy		Black Anodize	
ZFG60				

Part Number		Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy	Weight (kg)	Accessory (4 pcs.)	€ Unit Price
Type	No.					Straightness		Type M-L	Qty. 1~9
ZFG	25	25x25	±5	17	6.9	20µm	0.11	SCB2-8	
	40	40x40	±10	20	14.7		0.23	SCB3-8	
	60	60x60	±20	18	19.6	30µm	0.60	SCB4-6	

Resolution (Vernier Scale Indication) : 0.1mm/division

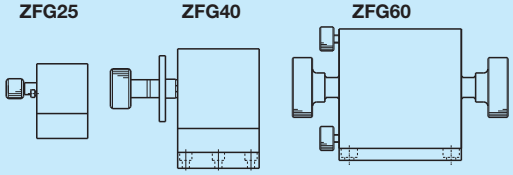
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZFG40

Days to Ship: 8 Days

Alterations — Part Number - (R); ZFG40 - R

Refer to data on CAD for dimension details.

Alteration	Feed Handle Position Change (Left/Right Reversed)
Spec.	ZFG25 / ZFG40 / ZFG60 
Code	R
Price Adder	Free of Charge

[High Precision] Dovetail Slide Rack & Pinion Type

Price Reduction
Up to 5%

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Rectangular Dovetail Slide Stages with 18mm travel per handle rotation. Narrower widths compared to ZFG (**P.1664**) are provided.

Z-Axis Rectangular Basic

RoHS



Example



XWG60 (**P.1624**) and ZWG60 Combination

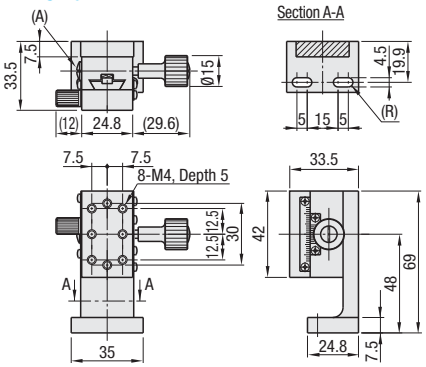


XYWG60 (**P.1652**) and ZWG60 Combination

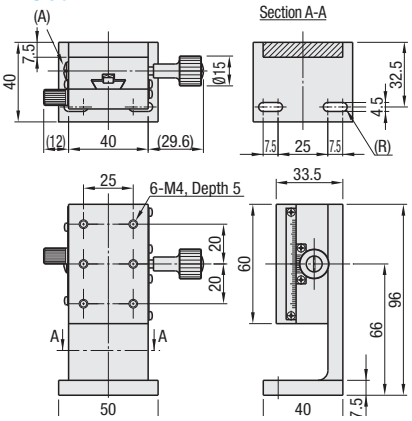


XYWG60 (**P.1652**) and ZWG90 Combination

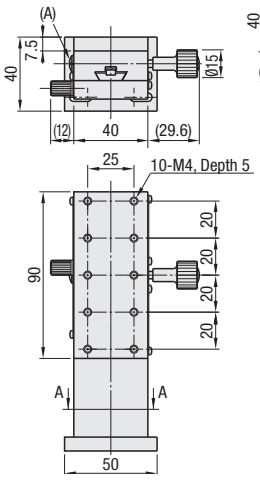
ZWG40



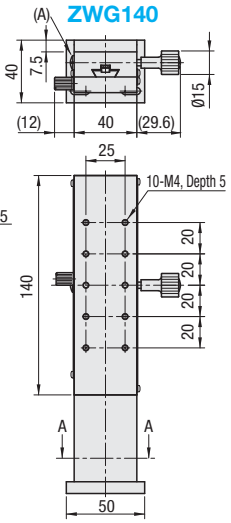
ZWG60



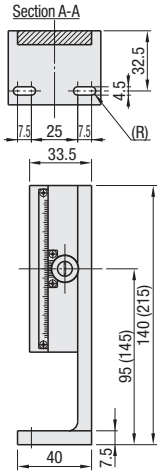
ZWG90



ZWG140



Common to ZWG90 · 140



Dimensions in ( ) are for ZWG140.
By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize
A Accessories: CBST4-12 (2 pcs.)

Part Number Type	Part Number No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Travel Accuracy (μm) Straightness	Load Capacity (N)	Weight (kg)	€ Unit Price Qty. 1~9
ZWG	40	24.8x42	±12	18	20	14.7	0.17	
	60	40x60	±21		30	19.6	0.33	
	90	40x90	±35				0.45	
	140	40x140	±60				0.68	

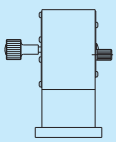
Resolution (Vernier Scale Indication) : 0.1mm/division
Knob Cover HDCVR15 (Sold separately): Dovetail Stage Ø15 handles can be increased in diameter by installing the cover. **P.1615**

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number **ZWG60**

Days to Ship: **6 Days** P.87

Alterations: Part Number **ZWG60** - (R) **R** — **10 Days**

Alteration	Feed Handle Position Change (Left/Right Reversed)
Spec.	 Scale letters will be horizontal.
Code	R
Price Adder	Free of Charge

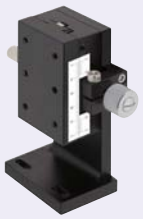
[High Precision] Dovetail Slide Rack & Pinion Type
-Reinforced Clamp-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

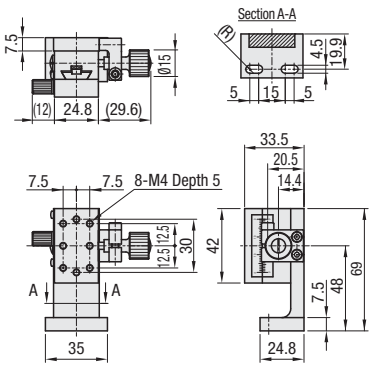
CAD Data

Features: Feed Handle shaft is directly clamped for improved position holding performance compared to ZWG (**P.1665**)

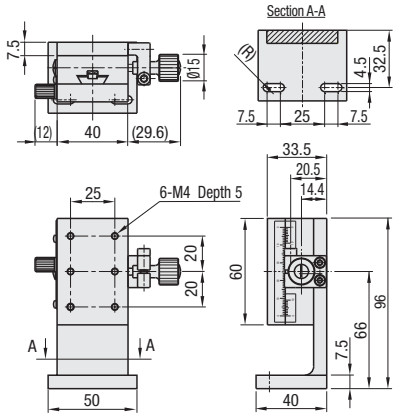
Z-Axis Reinforced Clamp RoHS



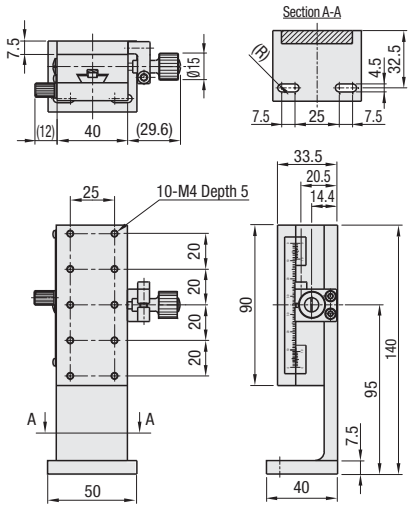
ZWGCL40



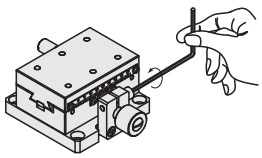
ZWGCL60



ZWGCL90



ex Example **Clamp Reinforcing Method**



There will be residual clearances with carriage retaining only with a Reinforced Clamp. Use a Clamp Screw in combination.

M Material: Aluminum Alloy S Surface Treatment: Black Anodize

Part Number Type	A	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Weight (kg)	Accessory (2 pcs.)	€ Unit Price Qty. 1~4
ZWGCL	40	24.8x42	±12	14.7	30	0.23	CBST4-12	
	60	40x60	±21	19.6		0.38		
	90	40x90	±35			0.51		

Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.

Knob Cover HDCVR15 (Sold separately): Ø15 handles can be increased in diameter by installing the cover. P.1615

Order Example **Part Number** ZWGCL60

Days to Ship **10 Days**

[High Precision] Dovetail Slide Rack & Pinion Type
-Long-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Lightweight long stages made of aluminum alloy. Length selectable in accordance with the stroke required.

Z-Axis Long

RoHS

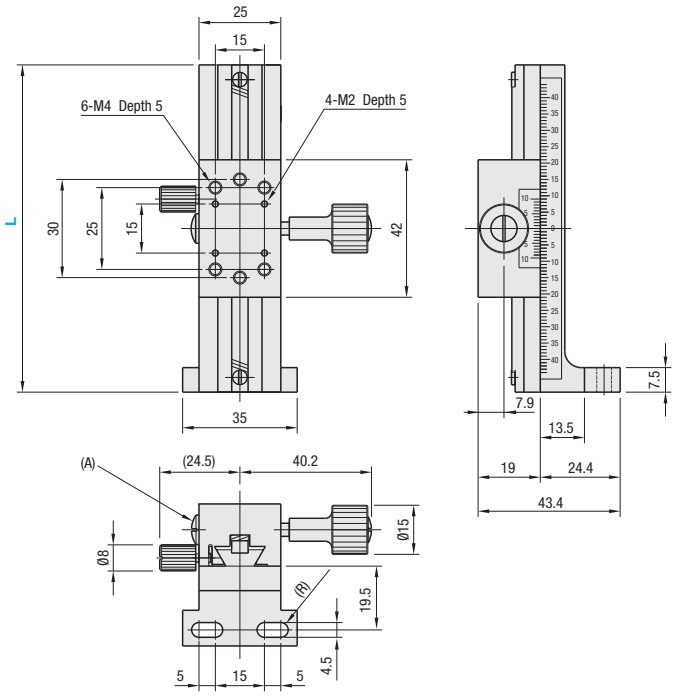
ZLWG





ZLWG

(L=50, 70, 100, 150, 150-2)



- The scale shown is for L100. Scales will be different for L50, L70, L150, and L150-2.
- By turning the preload adjustment screw (A) clockwise with a flathead screw driver, the carriage motion becomes resilient, and by turning counterclockwise the carriage motion becomes quick and smooth.
- See CAD data for detailed dimensions.

M Material: Aluminum Alloyl
S Surface Treatment: Black Anodize
A Accessories: Included: CBST4-12 (2pcs.)

Part Number Type	Part Number No.	L	Number of Blocks	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	€ Unit Price Qty. 1~9
ZLWG	50	50	1	±15	18	14.7	30µm	0.120	
	70	70	1	±25				0.135	
	100	100	1	±40				0.160	
	150	150	1	±65			40µm	0.215	
	150-2		2	±44				0.285	

- Resolution (Vernier Scale Indication) : 0.1mm/division
- For orders larger than indicated quantity, please request a quotation.
- Knob cover HDCVR15 (Sold separately): Increases knob diameter by simply putting on Ø15 adjustment screws of dovetail stages. P.1615
- ZLWG150-2 has two blocks. Please note that travel distance for each block will be shorter.
- Can be combined with Dovetail Slide Stages on (**P.1623**~**1626**,**1628**,**1631**~**1633**), REG (**P.1691**)

Order Example

Part Number
ZLWG100

Days to Ship

6 Days P.87

[High Precision] Dovetail Slide Feed Screw
-Basic / Extended Handle (4.2mm)-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

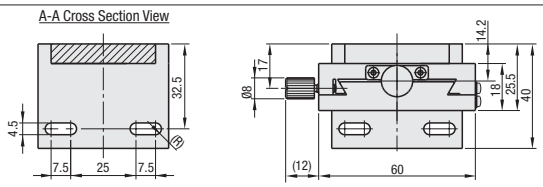
Features: Low Profile Dovetail Slide Stages with a smooth feeding 4.2mm lead.

Z-Axis Square Basic
(Lead 4.2mm)

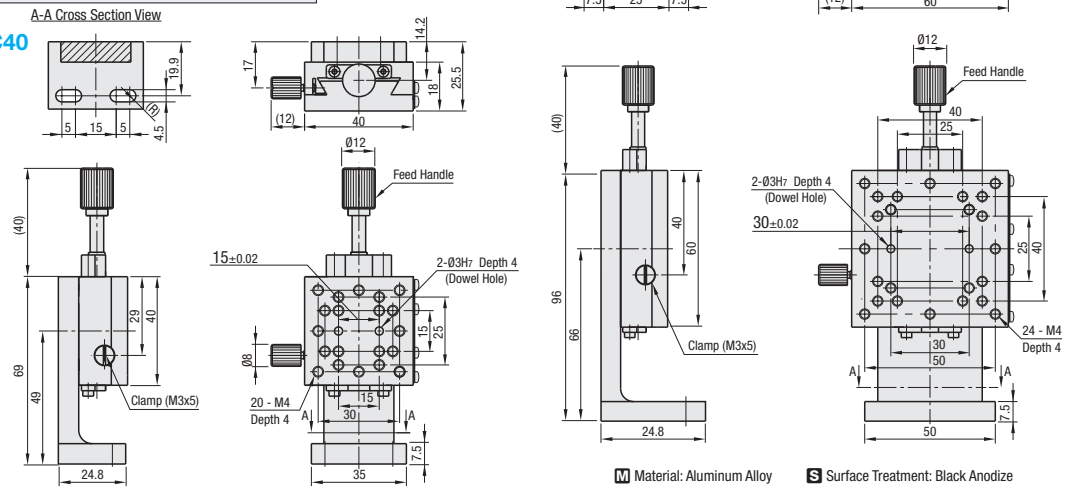
RoHS



ZSC60



ZSC40



M Material: Aluminum Alloy S Surface Treatment: Black Anodize

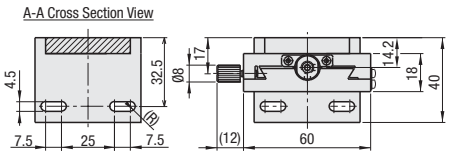
Features: ZSC handle can be extended for larger work pieces and hard to reach installations.

Z-Axis Extended Handle
(Lead 4.2mm)

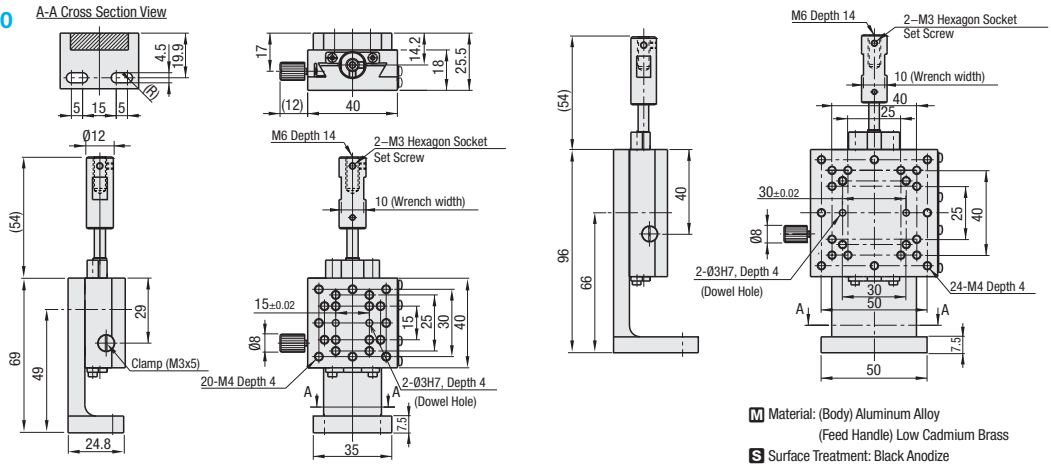
RoHS



ZSCL60



ZSCL40



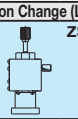
M Material: (Body) Aluminum Alloy
(Feed Handle) Low Cadmium Brass
S Surface Treatment: Black Anodize

Part Number Type	Part Number No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy (µm) Straightness	Weight (kg)	Accessories Type M-L	€ Unit Price Qty. 1~4
ZSC	40	40x40	±11	4.2	9.8	20	0.16	CBST4-12 (2pcs.)	
	60	60x60	±21		14.7	30	0.31	CBST4-12 (2pcs.)	
ZSCL	40	40x40	±11		9.8	30	0.15	SCB4-14 (2pcs.)	
	60	60x60	±21		14.7		0.28	SCB4-14 (2pcs.)	

Resolution (Vernier Scale Indication) : 0.1mm/division
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. ☞P.1638
XY-Axis Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. ☞P.1624

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number ZSC40 Days to Ship 10 Days Alterations Part Number ZSC40 - (R) R

Alteration	Handle Position Change (Left/Right Reversed)	
	ZSC__-R	ZSCL__-R
Spec.		
Code	R	
Price Adder	Free of Charge	

One Point: Handle Extension Method

Handle length and diameter can be increased by utilizing the M6, Depth 14 tapped hole.
(Example) Seven Lobed Knob ☞P.1031) NKSM6-30 can be mounted to extend the handle by 36mm further.
Use an adhesive to retain the cover to the handle.

Refer to data on CAD for dimension details.

[High Precision] Dovetail Slide Feed Screw
-Basic / Reinforced Clamp / Low Profile (Lead 4.2mm)-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

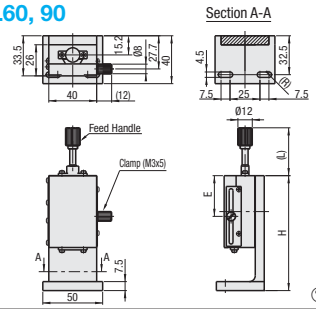
Features: Dovetail Slide Stages with smooth feeding 4.2mm lead feed screw. Left/Right Reversed configuration is also offered.

Z-Axis Rectangular Basic
(Lead 4.2mm)

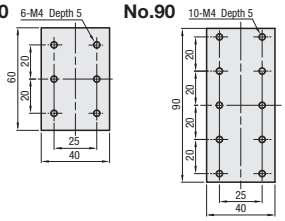
RoHS



ZSL60, 90



Upper Mounting Hole Dimensions



M Material: Aluminum Alloy
Refer to data on CAD for dimension details. S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation Travel Distance (mm)	H	(L)	E	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)	Accessory (2 pcs.) Type M-L	€ Unit Price Qty. 1~9
ZSL	60	60x40	±21	4.2	96	40	26	19.6	30	0.33	CBST4-12	
	90	90x40	±35		140	60	41			0.45		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
Adjustable Plates XPLT: Use this plate when connecting stages with non-matching mounting holes. P.1625

Order Example Part Number ZSL60
Days to Ship 10 Days
Alterations Part Number ZSL60 - (R) R

Alteration	Spec.	Code	Price Adder
Handle Position Change (Left/Right Reversed)		R	Free of Charge

Refer to data on CAD for dimension details.

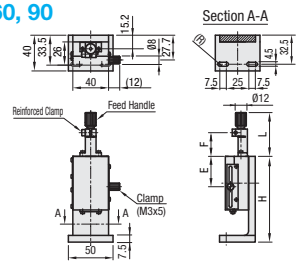
Features: The feed handle is clamped directly with a split clamp for minimized position drift.

Z-Axis Reinforced Clamp
(Lead 4.2mm)

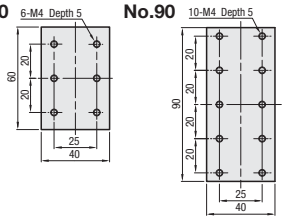
RoHS



ZSLCL60, 90



Upper Mounting Hole Dimensions



M Material: Aluminum Alloy
Refer to data on CAD for dimension details. S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation Travel Distance (mm)	H	(L)	E	F	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)	Accessory (2 pcs.) Type M-L	€ Unit Price Qty. 1~9
ZSLCL	60	60x40	±21	4.2	96	49	34	26.5	19.6	30	0.32	CBST4-12	
	90	90x40	±35		140	63	49	40.5			0.40		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
Adjustable Plates XPLT:Use this plate when connecting stages with non-matching mounting holes. P.1625
Use a Clamp Screw in combination, as the Reinforced Clamp alone will generate a clearance and play.

Order Example Part Number ZSLCL60
Days to Ship 10 Days
Alterations Part Number ZSLCL60 - (R) R

Alteration	Spec.	Code	Price Adder
Handle Position Change (Left/Right Reversed)		R	Free of Charge

Refer to data on CAD for dimension details.

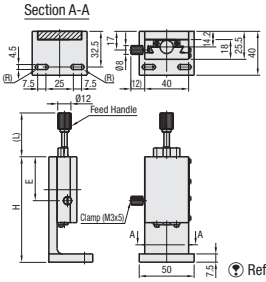
Features: Travel per handle rotation is 1/4 of the Rack & Pinion type. Most suitable for fine pitch positioning moves over a long distance.

Z-Axis Low Profile
(Lead 4.2mm)

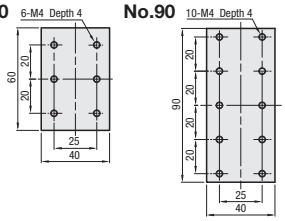
RoHS



ZSLCL60, 90



Upper Mounting Hole Dimensions



M Material: Aluminum Alloy
Refer to data on CAD for dimension details. S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	H	(L)	E	Load Capacity (N)	Travel Accuracy (μm) Straightness	Weight (kg)	Accessory (2 pcs.) Type M-L	€ Unit Price Qty. 1~9
ZSLC	60	60x40	±21	4.2	96	40	35	14.7	30	0.27	CBST4-12	
	90	90x40	±35		140	60	40			0.35		

Resolution (Vernier Scale Indication) : 0.1mm/division
For orders larger than indicated quantity, please request a quotation.
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
Adjustable Plates XPLT:Use this plate when connecting stages with non-matching mounting holes. P.1625

Order Example Part Number ZSLC90
Days to Ship 10 Days
Alterations Part Number ZSLC60 - (R) R

Alteration	Spec.	Code	Price Adder
Handle Position Change (Left/Right Reversed)		R	Free of Charge

Refer to data on CAD for dimension details.

[High Precision] Dovetail Slide Feed Screw
-Basic / Hex Wrench Type-

Travel per Rotation / Travel Distance	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

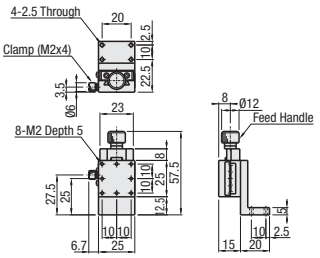
Features: Dovetail Slide is applied as a guide mechanism to realize smooth operation.

Z-Axis Basic
(Pitch 0.5mm)

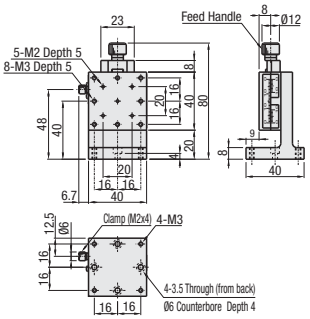
RoHS



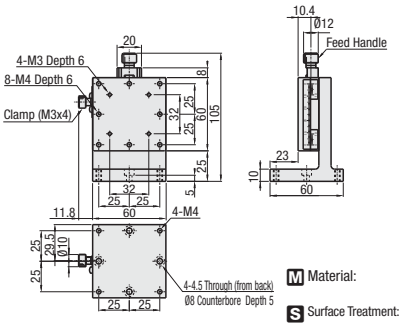
ZEG25



ZEG40



ZEG60



M Material: (Body) Low Cadmium Brass / (Feed Handle) Aluminum

S Surface Treatment: Black Fluororesin Treatment

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Straightness	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
ZEG	25	25x25	±5	0.5	9.8	30μm	0.09	SCB2-8	
	40	40x40	±7				0.26	SCB3-8	
	60	60x60	±9		19.6		0.75	SCB4-10	

Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.

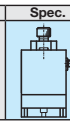
Order Example — Part Number: ZEG25 — Days to Ship: 8 Days

Alterations

Part Number - (R) → ZEG25 - R

10 Days

See CAD data for dimension details.

Alteration	Spec.	Code	Price Adder
Clamp Position Change (Left/Right Reversed)		R	Free of Charge

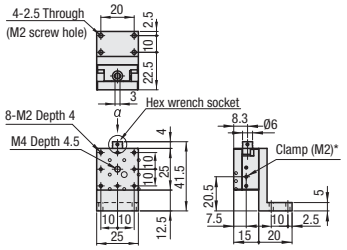
Features: Hex wrench feed drives prevent inadvertent position changes.

Z-Axis Hex Wrench Drive
(Pitch 0.5mm)

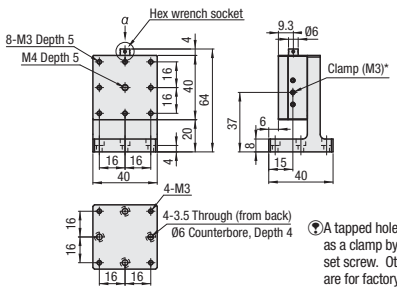
RoHS



ZEEG25

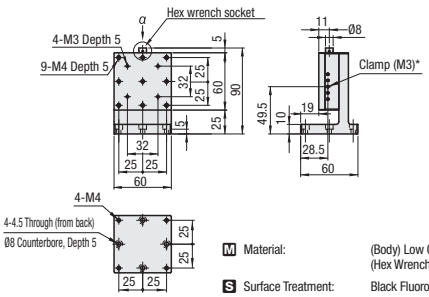


ZEEG40



A tapped hole in the center can be used as a clamp by using a included hex socket set screw. Other taped holes on the side are for factory preload adjustments and are sealed. They cannot be used.

ZEEG60



M Material: (Body) Low Cadmium Brass / (Hex Wrench Access Hole) Aluminum

S Surface Treatment: Black Fluororesin Treatment

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Straightness	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
ZEEG	25	25x25	±3	0.5	9.8	20μm	0.08	SCB2-8	
	40	40x40	±5				0.27	SCB3-8	
	60	60x60	±7		19.6		0.65	SCB4-10	

Resolution (Vernier Scale Indication): 0.1mm/division (ZEEG has no scale)

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZEEG60 — Days to Ship: 10 Days

[High Precision] Dovetail Slide Feed Screw
-Handle Extension / Reinforced Clamp-

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

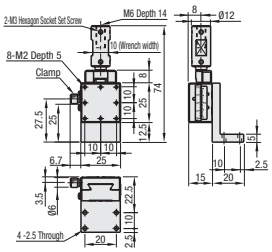
Features: Suitable for larger work pieces and hard to reach installations.

Z-Axis Extended Handle
(Pitch 0.5mm)

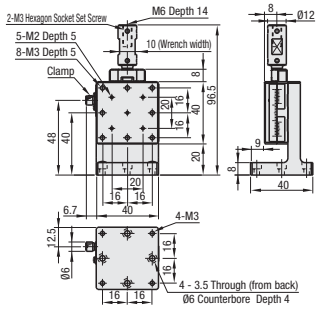
RoHS



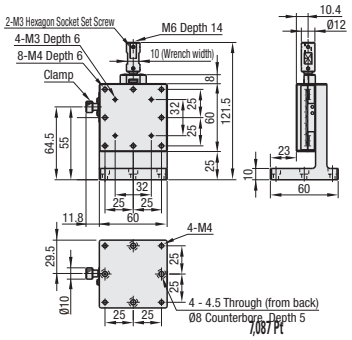
ZEGL25



ZEGL40



ZEGL60



7,087 Pt

M Materials: (Body) Low Cadmium Brass
(Feed Handle) Low Cadmium Brass

S Surface Treatment: Black Fluororesin Treatment

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Moment Capacity (N・m) Pitching	Yawing	Rolling	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~4
ZEGL	25	25x25	±5	0.5	9.8	30	2.0	1.5	1.5	0.12	SCB2-8	
	40	40x40	±7		9.8		4.0	3.0	3.0	0.27	SCB3-8	
	60	60x60	±9		19.6		5.0	4.0	4.0	0.71	SCB4-10	

Resolution (Vernier Scale Indication) : 0.1mm/division
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
XY-Axes Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. P.1624
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZEGL60

Days to Ship: 10 Days

Alterations — Part Number ZEGL60 - (R) - R

Alteration	Clamp Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

One Point: Handle Extension Method
Handle length and diameter can be increased by utilizing the M6, Depth 14 tapped hole.
(Example) Seven Lobed Knob 2-P.1031) NKSM6-30 can be mounted to extend the handle by 36mm further. Use an adhesive to retain the cover to the handle.

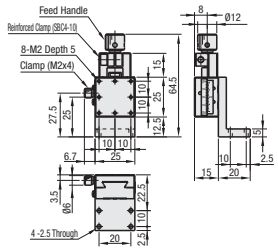
Features: Z-Axis stage feed handle shaft is directly clamped with a split clamp for improved position holding performance.

Z-Axis Reinforced Clamp
(Pitch 0.5mm)

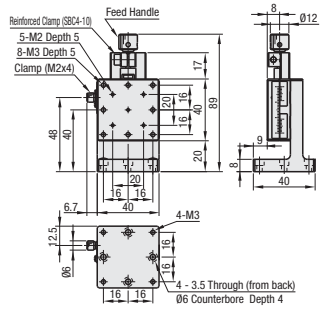
RoHS



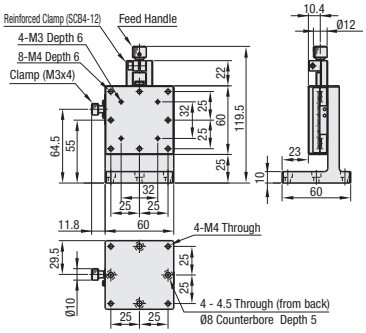
ZEGCL25



ZEGCL40



ZEGCL60



M Materials: (Body) Low Cadmium Brass
(Feed Handle) Aluminum

S Surface Treatment: Black Fluororesin Treatment

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Moment Capacity (N・m) Pitching	Yawing	Rolling	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~4
ZEGCL	25	25x25	±5	0.5	9.8	30	2.0	1.5	1.5	0.10	SCB2-8	
	40	40x40	±7		9.8		4.0	3.0	3.0	0.27	SCB3-8	
	60	60x60	±9		19.6		5.0	4.0	4.0	0.71	SCB4-10	

Resolution (Vernier Scale Indication) : 0.1mm/division
Extension cover HDEXT12 (Sold separately): Ø12 feed screw knob can be extended. P.1638
XY-Axis Mounting Plate XPLTE: Use this plate when connecting stages with non-matching mounting holes. P.1624
Retention by only the reinforced clamp is not sufficient to obtain zero backlash. Using with a clamp screw is recommended.
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZEGCL40

Days to Ship: 10 Days

Alterations — Part Number ZEGCL60 - (R) - R

Alteration	Clamp Position Change (Left/Right Reversed)
Spec.	
Code	R
Price Adder	Free of Charge

Refer to data on CAD for dimension details.
When R alteration is specified for ZEGCL, reinforced clamp position does not change.

[High Precision] Linear Ball Slide
-Micrometer Head / Feed Screw-

Price Reduction
Up to 7%

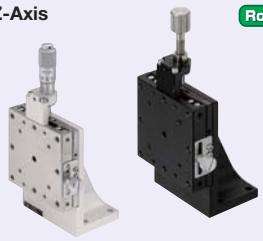
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: High Precision/Rigidity Linear Ball Slide Z-Axis Stages. Further cost savings is possible by selecting Feed Screw types. LTBC plated types are also offered. Suitable for applications where light reflections are to be avoided.

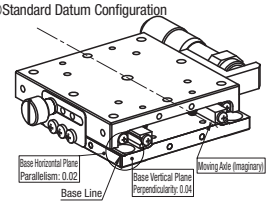
Z-Axis

RoHS



Z-Axis of A25 has different bracket shape.
For mounting hole dimensions and feed bracket shapes of Linear Ball Guide Black Chrome Plated X-Axis stage, see (**P.1641**)
Refer to data on CAD for dimension details.

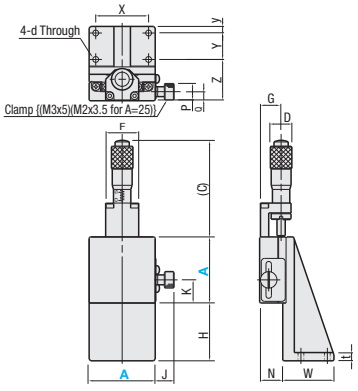
Standard Datum Configuration



MISUMI's Linear Ball Guide Stages have Parallel and Orthogonal datums in relation to the motion axis. The Datums are as illustrated.

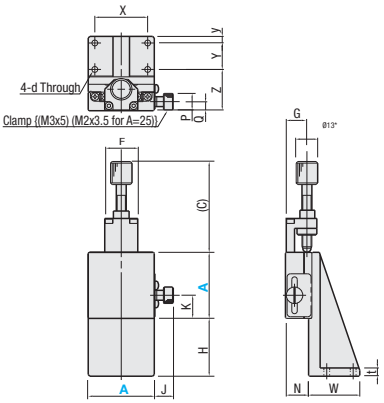
Micrometer Heads

ZSG (25≤A≤80)
ZSGB (LTBC Plating A25 · 40 · 60 · 80)



Feed Screw (Pitch 0.5)

ZSCG (25≤A≤80)
ZSCGB (LTBC Plating A25 · 40 · 60 · 80)



* A=25 will be Ø7

Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
ZSG ZSCG	1.4125/ X105CrMo17	Electroless Nickel Plating	1.4125/ X105CrMo17	58HRC~	1.4301/ X5CrNi18-10	EN AW-5052/ AlMg2,5	Clear Anodize	1.4305/ X10CrNiS18-9	-
ZSGB ZSCGB		LTBC Plating					Black Anodize		LTBC Plating

For Micrometer Head & Feed Screw material details, see **P.1697- 1698**
LTBC Characteristics **P.118**

Micrometer Head (ZSG / ZSGB) / Feed Screw (ZSCG / ZSGCB)

Part Number Type	A	Front View H	(C) Micrometer	(C) Feed Screws	Travel Distance (mm)	F	K	J	Side View D	G	N	W	t	Top View P	Q	X	Y	y	Z	d	Accessory (4 pcs.) Type M-L
ZSG ZSCG ZSGB (* only) ZSCGB (* only)	25*	12.5	37	23	±3.2	13	10	6.8	9.3	10	12	20	5	6	3.5	20	10	2.5	19.5	2.5	SCB2-8
	40*	35	58.5	55	±6.5	20	14	11.5	13	13	14	31	5	10	5.5	32	16	4	25	3.5	SCB3-10
	50	30				20	19	11.5	13	13	14	57	5	10	5.5	40	40	6	25	3.5	SCB3-10
	60*	25				20	24	11.5	13	13	14	42	8	10	5.5	50	25	5	26	4.5	SCB4-12
	70	25				20	23.5	11.5	13	14	16	55	8	10	6.5	40	40	4	27	3.5	SCB3-12
	80*	20	96		±12.5*1	24	25	11.5	18	16.5	20	45	7	10	5.5	50	25	5	35	4.5	SCB4-12

*1 When A=80, the feed screw (ZSCG / ZSCGB) travel is ±6.5.

Performance

Part Number Type	A	Stage (mm)	Load Capacity (N)	Travel Accuracy Straightness	Pitching	Yawing	Moment Capacity (N · m) Pitching	Yawing	Rolling	Moment Rigidity (/N · cm) Pitching	Yawing	Rolling	Weight (kg)	€ Unit Price Qty. 1~9 ZSG	ZSCG	ZSGB	ZSCGB
ZSG ZSCG ZSGB (* only) ZSCGB (* only)	25*	25x25	9.8	3µm	30"	25"	2.0	2.0	3.5	1.90	1.10	1.10	0.09				
	40*	40x40	49	1µm *2	25"	15"	5.0	5.0	5.0	0.42	0.35	0.21	0.32				
	50	50x50					6.8	6.8	6.0	0.15	0.14	0.09	0.44				
	60*	60x60					10.0	10.0	9.0	0.08	0.08	0.05	0.58				
	70	70x70					13.8	13.8	12.9	0.06	0.05	0.03	0.84				
	80*	80x80		3µm			18.2	18.2	17.7	0.04	0.04	0.02	1.20				

ZSG and ZSGB: Micrometer Head resolution 10µm/division *2 ZSG / ZSCGB straightness is 3µm.
For orders larger than indicated quantity, please request a quotation.

Order Example
Part Number
ZSG60
ZSGB60

Days to Ship
- ZSG · ZSCG: 8 Days
- ZSGB · ZSCGB: 10 Days

Alterations
Part Number - (C · CR · CU · H · P)
ZSG40 - C
10 Days

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.
For Micrometer Head or Feed Screw mounted in positions other than shown below, see "Specification Selectable Type" (**P.1679**)

Alterations	Position of Micrometer and Feed Screw			Reinforced Clamp	
Spec.	Side up	Side up and right and left reversed	Side down	Disc Clamp	Opposed Clamp
			Not applicable to ZSGB and ZSCGB.	Not applicable to 25 square. A disc clamping method that does not apply loads on the stage surface. Better position holding performance than the standard clamping method.	Not applicable to ZSCG, ZSGB, and ZSCGB. Applicable only when C/CR alterations are selected with ZSG25, 40, 50, 60, and 70. The Micrometer shaft is opposed by a screw (M4x25, Pitch 0.5) from the tip end. Good vibration immunity and position holding performance. When A=25, * dimensions are applicable, and the G dimension in the table will be 6. Additionally, the Micrometer protrudes 17.5mm (±3.2) from the Z axis bracket.
Code	C	CR	CU	H	P
Price Adder	Free of Charge	Free of Charge	Free of Charge	70,00	30,00

Disc Clamp

A	J1	P1
40 · 50 · 70	15.8	10
80	14.8	15

Opposed Clamp

A	(B1)
25	17.5
40	24.5
50	19.5
60	14.5
70	4.0

Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. **P.1638**
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

[High Precision] Cross Roller

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

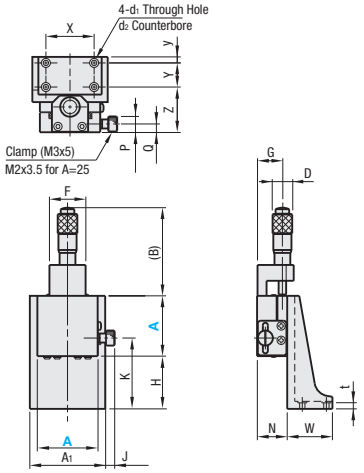
Features: Cross Roller Slide Z-Axis Stages made of lightweight aluminum alloy.

Z-Axis

RoHS



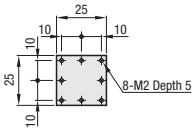
ZPG



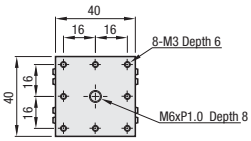
For a comparison chart with economical standard Stages, see **P.1646**

•Mounting Hole Dimensions of the Top Table

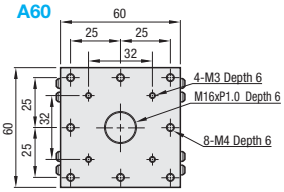
A25



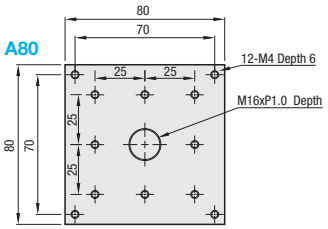
A40



A60



A80



Refer to data on CAD for dimension details.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Micrometer Head (ZPG)

Part Number		Front View							Side View					Top View								Accessory (4 pcs.)
Type	A	A1	H	(B)	Travel Distance (mm)	F	K	J	D	G	N	W	t	P	Q	X	Y	y	Z	d1	d2	Type M-L
ZPG	25	25	12.5	37.0	±3.2	11	22.5	6.8	9.3	12.5	15	20	5	6	4.5	20	10	2.5	22.5	2.5	-	SCB2-8
	40	50	35.0	58.5	±6.5	24	47.0	6.5	13.0	17.0	20	30	4	10	5.5	32	16	4.0	30.0	3.5	6	SCB3-8
	60	70	20.0	58.5	±6.5	24	37.5	6.5	13.0	17.0	20	45	7	10	5.5	50	25	5.0	35.0	4.5	8	SCB4-12
	80	80	20.0	96.0	±12.5	24	45.0	11.5	18.0	16.5	20	45	7	10	5.5	50	25	5.0	35.0	4.5	8	

Performance

Part Number		Stage	Load Capacity (N)	Travel Accuracy			Moment Capacity (N • m)			Moment Rigidity (°/N • cm)			Weight	€ Unit Price
Type	A	(mm)		Straightness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling	(kg)	Qty. 1~9
ZPG	25	25x25	4.9	3μm	30"	20"	1.1	0.8	0.4	3.03	2.85	1.80	0.06	
	40	40x40	9.8		25"	15"	2.7	2.2	2.0	0.38	0.42	0.28	0.20	
	60	60x60	19.6				5.2	4.3	5.5	0.12	0.11	0.07	0.45	
	80	80x80	49.0				19.2	15.1	17.3	0.05	0.05	0.04	0.80	

Micrometer Head Resolution: 10μm/scale

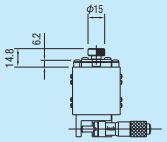
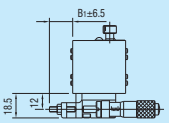
For orders larger than indicated quantity, please request a quotation.

Order Example Part Number ZPG60

Days to Ship 8 Days — Express A 8,00 EUR/piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations Part Number - (C · CR · CU · H · P)
ZPG80 - CU
10 Days ⊗Express Serviceis not available.

Alterations	Micrometer Head Position			Reinforced Clamp	
Spec.	Side up	Side up and right and left reversed	Side down	Disc Clamp	Opposed Clamp
	A / H 25 / 12.5 40 / 35 60 / 20 80 / 50	A / H 25 / 12.5 40 / 35 60 / 20 80 / 50	A / H 25 / 12.5 40 / 20 60 / 20 80 / 20		A / B1 40 / 22.5 60 / 11.0 
	H dimension is changed.	H dimension is changed.	H dimension is changed.	⊗Not applicable to 25 , 80 Square A disc clamping mechanism that does not apply any load on the carriage plate. Holds the carriage in position better than the Standard Clamp.	Applicable for ZPG40/60 with alteration C/CR. The Micrometer shaft is opposed by a screw (M4x25, Pitch 0.5) from the tip end. Good vibration immunity and position holding performance.
Code	C	CR	CU	H	P
Price Adder	Free of Charge	Free of Charge	Free of Charge	70,00	30,00

Mounting dimensions of micrometer head and clamp are different from those of standard products. Depending on size, the shape of bracket differs. See CAD data for detailed dimensions.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by simply putting on the Ø13 screws. P.1638
Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. P.1638

[High Precision] Dovetail Slide Rack & Pinion / Cross Roller

CAD Data

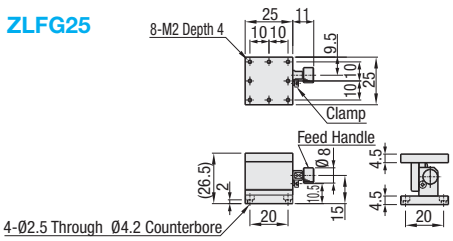
Features: Rack & Pinion Stages with horizontal surface moving vertically.

Horizontal Surface Z-Axis Stage Rack & Pinion Type

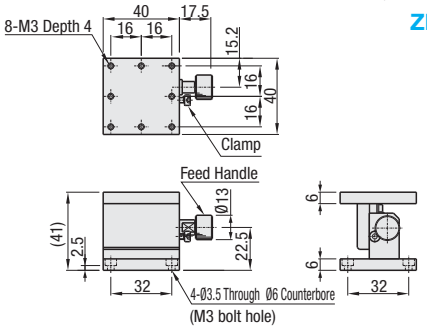
RoHS



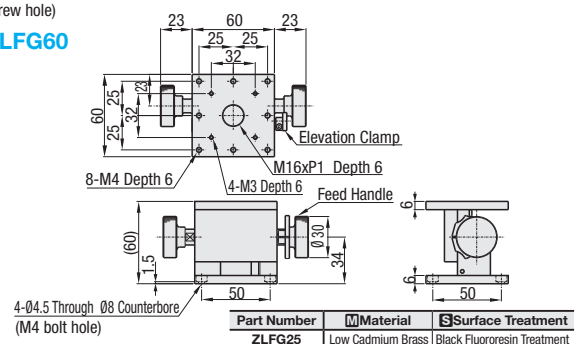
ZLFG25



ZLFG40



ZLFG60



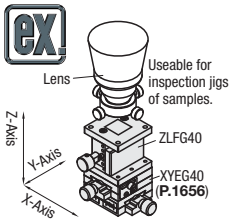
Part Number	Material	Surface Treatment
ZLFG25	Low Cadmium Brass	Black Fluororesin Treatment
ZLFG40	Aluminum Alloy	Black Anodize
ZLFG60		

Vernier scale will be on the opposite side of clamp mounting side.

Part Number Type	No.	Stage Surface (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Moment Load Capacity (Nm) Pitching	Yawing	Rolling	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
ZLFG	25	25x25	±2.5	≈8	6.9	30µm	0.6	1.0	1.5	0.08	SCB2-8	
	40	40x40	±5	≈13	9.8		0.6	1.0	1.5	0.12	SCB3-6	
	60	60x60	±10	≈17	14.7		4.0	4.0	2.5	0.47	SCB4-6	

Resolution (Vernier Scale Indication) : 0.1mm/division

For orders larger than indicated quantity, please request a quotation.



Order Example — Part Number: ZLFG60

Days to Ship: 8 Days

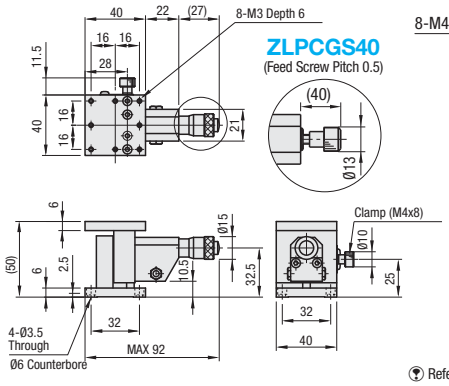
Features: High precision Z-Axis stages with vertically moving horizontal surfaces. ZLPGS has higher load capacity compared to the same size ZLPG (**P.1675**)

Horizontal Surface Z-Axis Cross Roller (Stainless Steel)

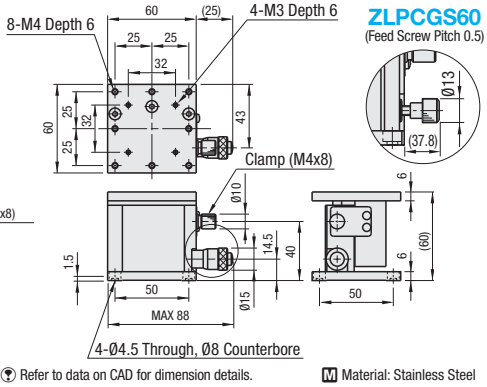


RoHS

ZLPGS40 (Micrometer Head Pitch 0.5)



ZLPGS60 (Micrometer Head Pitch 0.5)



Refer to data on CAD for dimension details.

M Material: Stainless Steel

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness	Moment Capacity (N・m) Pitching	Yawing	Rolling	Moment Rigidity (°/N・cm) Pitching	Yawing	Rolling	Parallelism (µm)	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~9
ZLPGS	40	40x40	±3	29.4	3µm	1.8	1.1	1.2	0.81	0.22	0.30	100	0.49	SCB3-6	
	60	60x60	±3	58.8		3.3	2.4	3.1	0.42	0.18	0.12		0.99	SCB4-6	
ZLPCGS	40	40x40	±3	29.4	3µm	1.8	1.1	1.2	0.81	0.22	0.30	100	0.47	SCB3-6	
	60	60x60	±3	29.4		3.3	2.4	3.1	0.42	0.18	0.12		0.97	SCB4-6	

Micrometer Head resolution: 10um/division

Knob Cover HDCVR15 (Sold separately): Ø15 Micrometer Head or Feed Screw handles can be increased by installing the cover. P.1615

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZLPGS40

Days to Ship: - ZLPGS 8 Days; - ZLPCGS 10 Days

[High Precision] Cross Roller
-Micrometer Head / Feed Screw-

CAD Data

Features: Optimal for fine adjustment of high-precision horizontal plane of Z axis.

RoHS

Horizontal Surface Z-Axis Cross Roller

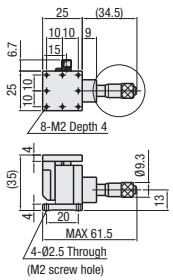
ZLPG (Micrometer Head Pitch 0.5)



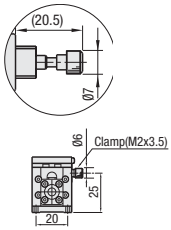
ZLPCG (Feed Screw Pitch 0.5)



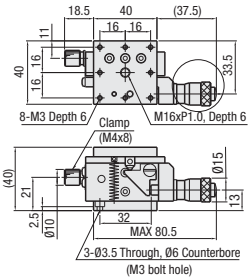
ZLPG25
(Micrometer Head)



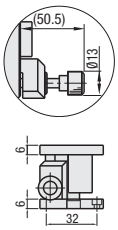
ZLPCG25
(Feed Screw)



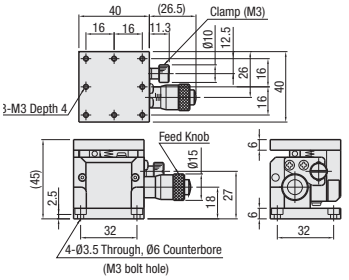
ZLPG40
(Micrometer Head)



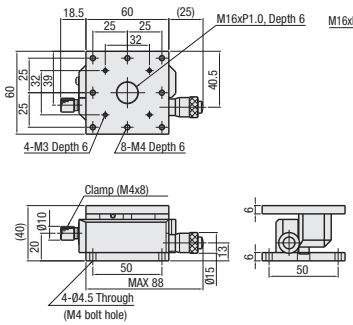
ZLPCG40
(Feed Screw)



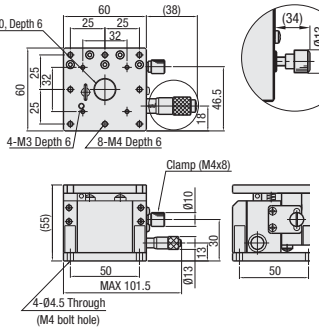
ZLPG40H
(Micrometer Head)



ZLPG60L
(Micrometer Head)

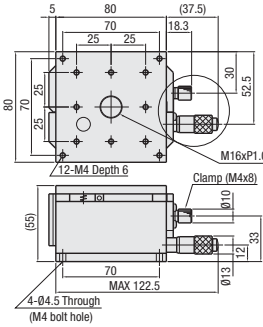


ZLPG60
(Micrometer Head)

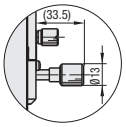


ZLPCG60
(Feed Screw)

ZLPG80
(Micrometer Head)



ZLPCG80
(Feed Screw)



Refer to data on CAD for dimension details.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness	Moment Capacity (N · m) Pitching	Yawing	Rolling	Moment Rigidity ("/N · cm) Pitching	Yawing	Rolling	Parallelism	Weight (kg)	Accessories TypeM-L	Qty.	€ Unit Price (1~9pcs.) ZLPG	ZLPCG
ZLPG ZLPCG (* only)	25*	25x25	±2	9.8	3μm	0.7	0.5	0.5	4.08	2.50	2.37	50μm	0.06	SCB2-8	4		
	40*	40x40	±3			2.3	1.5	2.0	1.96	1.63	0.97		0.20	SCB3-6	3		
	40H	40x40	±3	19.6		4.0	2.5	2.5	1.50	1.07	1.14		0.20	SCB3-6			
	60L	60x60	±3			2.3	1.5	4.2	1.01	0.72	0.21	100μm	0.30	SCB4-10	4		
	60*	60x60	±5	39.2*		6.2	4.1	6.2	0.11	0.23	0.17		0.60	SCB4-10			
	80*	80x80	±5	29.4		3.8	2.5	6.3	0.55	0.22	0.06		1.00	SCB4-10			

Micrometer Head resolution 10μm/division *ZLPCG60 (feed screw) load capacity is 29.4.

For orders larger than indicated quantity, please request a quotation.

Knob cover HDCVR13 (Sold separately): Increases knob diameter by simply putting on Ø13 adjustment screws of dovetail stages. P.1638

Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. P.1638

Order Example

Part Number
ZLPG40

Days to Ship

- ZLPG: 8 Days
- ZLPCG: 10 Days

[High Precision] Linear Guide Low Profile
-Micrometer Head / Feed Screw-

CAD Data

Features: Low profile horizontal surface Z-Axis stages with 33mm profile height. Height can be kept low even for an XYZ configuration.

RoHS

Horizontal Surface Z-Axis Low Profile

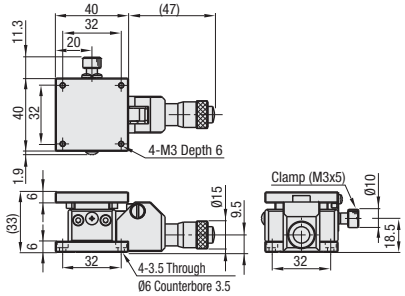
ZLTG (Micrometer Head Pitch 0.5)



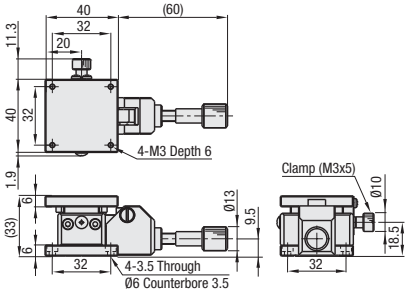
ZLTCG (Feed Screw Pitch 0.5)



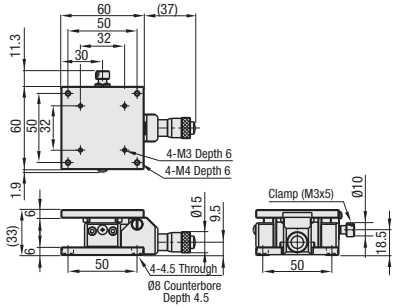
ZLTG40



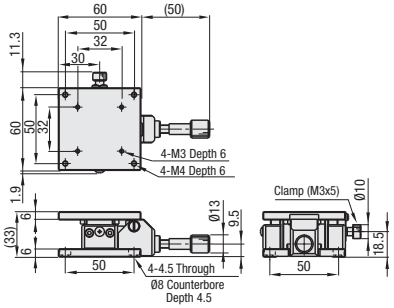
ZLTCG40



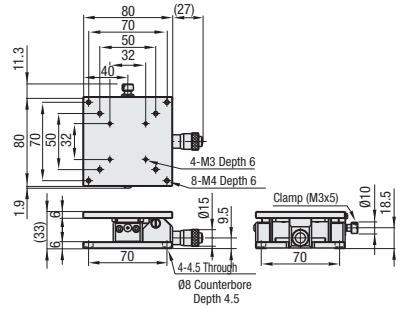
ZLTG60



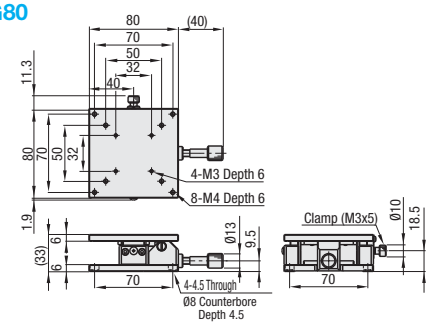
ZLTCG60



ZLTG80



ZLTCG80



Refer to data on CAD for dimension details.
Feed Screw and Micrometer Head materials, see **P.1697- 1698**

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part No. Type	A	Stage (mm)	Travel Distance (mm)	Load Capacity (N)	Travel Accuracy Straightness (μm)	Moment Capacity (N · m) Pitching	Yawing	Rolling	Moment Rigidity ("/N · cm) Pitching	Yawing	Rolling	Parallelism (μm)	Weight (kg)	Accessory (4 pcs.)	€ Unit Price Qty. 1~9
ZLTG	40	40x40	±3	19.6	5	0.9	1.5	0.5	3.66	0.91	5.64	100	0.16	SCB3-6	
	60	60x60	±3	29.4			2.3	0.7	3.67	0.25	4.81		0.24	SCB4-6	
	80	80x80	±3				3.0	0.6	3.52	0.07	4.99		0.32	SCB4-6	
ZLTCG	40	40x40	±3	19.6	5	0.9	1.5	0.5	3.66	0.91	5.64	100	0.14	SCB3-6	
	60	60x60	±3	29.4			2.3	0.7	3.67	0.25	4.81		0.22	SCB4-6	
	80	80x80	±3				3.0	0.6	3.52	0.07	4.99		0.30	SCB4-6	

Micrometer Head resolution 10μm

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: ZLTG80

Days to Ship: 10 Days

[High Precision] Helicoid Screw Horizontal Surface Z-Axis Stages
-High Load Capacity-

CAD Data

Features: Longer strokes than the Cross Roller Horizontal Surface Z-Axis stages and equivalent load capacities to the Lab Jacks. The multi-start screws used prevent plays.

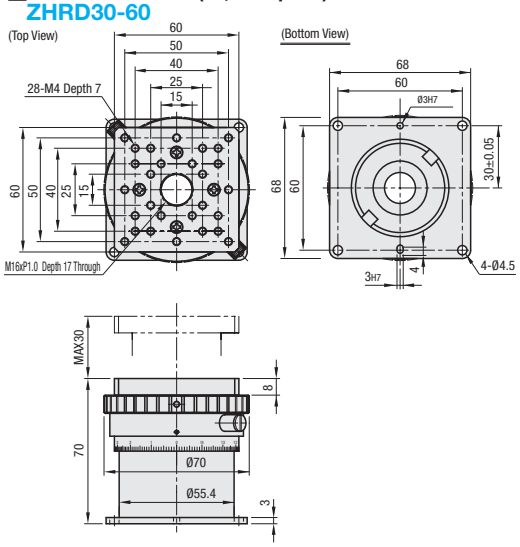
Helicoid Screw Horizontal Surface Z-Axis Stage

RoHS

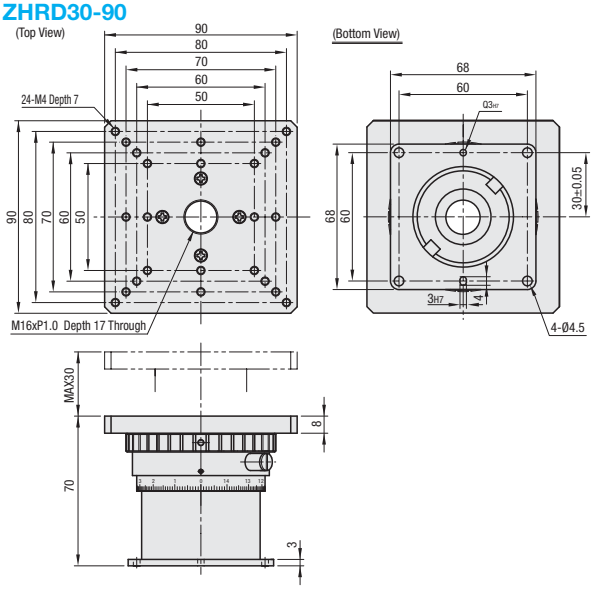


With Mount Plates (60, 90 square)

ZHRD30-60

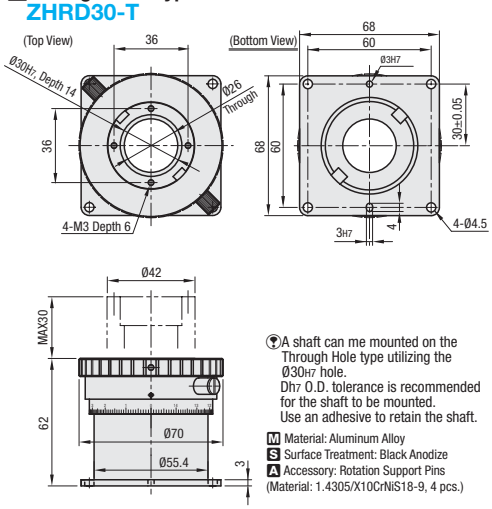


ZHRD30-90



Through Hole Type

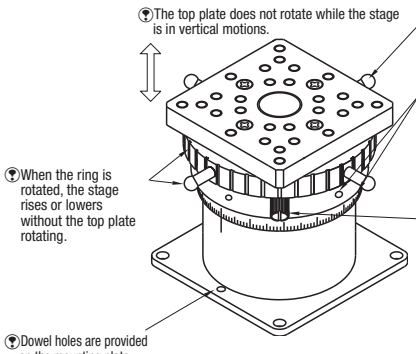
ZHRD30-T



A shaft can me mounted on the Through Hole type utilizing the Ø30H7 hole.
Dh7 O.D. tolerance is recommended for the shaft to be mounted.
Use an adhesive to retain the shaft.

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize
A Accessory: Rotation Support Pins (Material: 1.4305/X10CrNiS18-9, 4 pcs.)

[Overview: Helicoid Screw Horizontal Surface Z-Axis Stage]



The top plate does not rotate while the stage is in vertical motions.

When the ring is rotated, the stage rises or lowers without the top plate rotating.

Dowel holes are provided on the mounting plate to assure installation accuracies.

The pins (4 included) are removable. The stage can be used without the pins if the surrounding space is limited.

The scale-engraved dial can be rotate.
Set a desired position as the zero position and lock the dial with the set screw.

Use the scale graduations as references.

Although two locking clamps are provided for better operability, the stage can be locked with a single clamp. (The multistart screw used is not susceptible to back-driving if used within the given load capacity.

Part Number Type	Part Number No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Parallelism (µm)	Weight (kg)	Accessory (4 pcs.)	€ Unit Price Qty. 1~9
ZHRD	30-60	60x60	30	15	68.6	50µm	0.50	SCB4-8	
	30-90	90x90					0.59		
	30-T	-					0.42		

There may be some play felt when moment loads are applied on the stage.

For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number ZHRD30-60 | Days to Ship 6 Days | P.87

Lab Jack Horizontal Surface Z-Axis Stages

-High Load Capacity-

CAD Data

Features: Suitable for Z axis applications requiring long stroke adjustments.

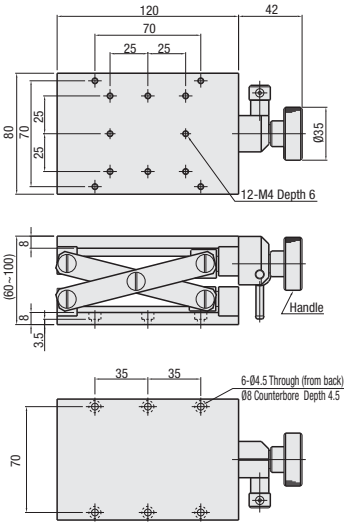
Lab Jacks



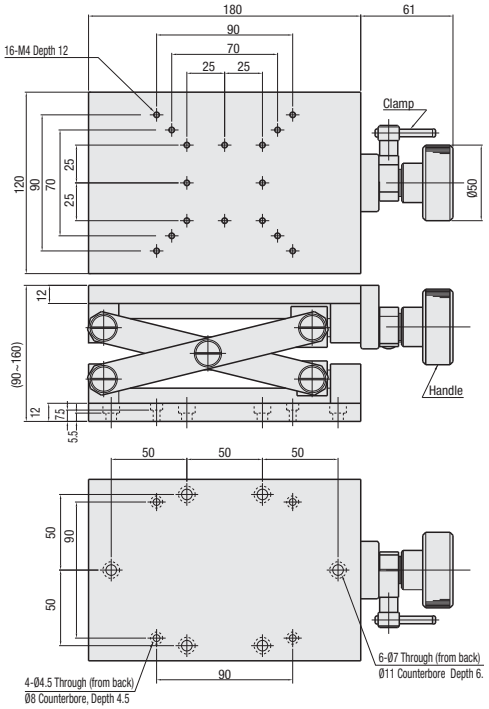
RoHS

Part Number are not applicable

ZLJG80



ZLJG120



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize
A Accessory: Hexagon Socket Head Cap Screw (Stainless Steel)
ZLJG80: SCB4-10 (6 pcs.)
ZLJG120: SCB4-12,SCB6-12 (4 pcs. Each)

Handle operated elevating table with relatively high load capacity. A split clamp on the operating shaft securely holds the load in position.
Counterclockwise rotation of the handle elevates the stage surface.

Part Number Type	Part Number No.	Stage (mm)	Travel Distance (mm)	Travel Per Ring Rotation (mm)	Load Capacity (N)	Parallelism (μm)	Weight (kg)	€ Unit Price Qty. 1~4
ZLJG	80	80x120	40	2	68.6	200μm	1.25	
	120	120x180	70	3	98.0		3.50	

For orders larger than indicated quantity, please request a quotation.

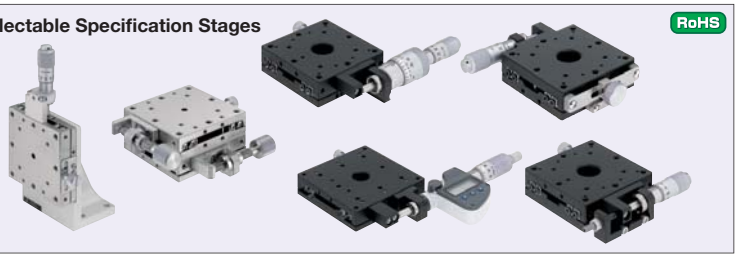
Order Example | Part Number ZLJG80 | Days to Ship 10 Days | Express B 10,00 EUR/ piece | P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

[High Precision] X / XY / Z Specification Selectable

■**Features:** Various X, XY, and Z-Axis Linear Ball Guide/Cross Roller stages (**P.1647 P.1641~1642 P.1658~1659 P.1672**) that can be customer specified on (1) feed mechanism mount position, (2) feed type, (3) clamp type, and (4) grease type.

■**Selectable Specification Stages** RoHS



Part Number			Applicable Positioning Stages
Type	Shaft	Guides	
FS	X	R	XSG (P.1641)
		C	XPG (P.1647)
	XY	R	XYSG(P.1658)
	Z	R	ZSG (P.1672)

* Refer to the stage with the same size as the table.
Guide Type R: Linear Ball Slides
C: Cross Roller Slides

Positioning Stages				(1) Feed Position	(2) Feed Type				(3) Clamp Type		(4) Grease	
Axes	Type	Size	€ Unit Price Qty. 1~9	Center/Side	Micrometer Heads (Stroke: mm)	Price	Feed Screws (Pitch/Stroke: mm)	Price	Selection	Price	Selection	Price
X	FSXR (Linear Ball)	25		(Center): A AR : AZ AZR (Side): C CR : CZ CZR	N(Standard ±3.2)		F(Hexagon Socket 0.5/±3.2) B(Feed Screw 0.5/±3.2)		S(Standard)		G(Standard) R(Clean Env. Compatible)	
		40			N(Standard ±6.5) M(Coarse Fine Feed ±6.5)		F(Hexagon Socket 0.5/±6.5) B(Feed Screw 0.5/±6.5) J(Feed Screw 1.0/±6.5)		S(Standard) H(Disc) P(Opposed) Applicable only to C/CR and the feed types N/F.			
		50										
		60										
		70										
		80			N(Standard ±12.5) M(Coarse Fine Feed ±6.5) D(Digital Micrometer ± 12.5) *Only applicable to feed position A /AR/C.				S(Standard) H(Disc)			
	FSXC (Cross Roller)	25		(Center): A AR : AZ AZR (Side): C CR : CZ CZR	N(Standard ±3.2)		F(Hexagon Socket 0.5/±3.2) B(Feed Screw 0.5/±3.2)		S(Standard)		G(Standard) R(Clean Env. Compatible)	
		40			N(Standard ±6.5) M(Coarse Fine Feed ±6.5)		F(Hexagon Socket 0.5/±6.5) B(Feed Screw 0.5/±6.5) J(Feed Screw 1.0/±6.5)		S(Standard) H(Disc) P(Opposed) Applicable only to C/CR and the feed types N/F.			
		60										
		80			N(Standard ±12.5) M(Coarse Fine Feed ±6.5) D(Digital Micrometer ± 12.5) *Only applicable to feed position A /AR/C.				S(Standard)			
XY	FSXYR (Linear Ball)	25		(Center): A AR (Side): C CR	N(Standard ±3.2)		F(Hexagon Socket 0.5/±3.2) B(Feed Screw 0.5/±3.2)		S(Standard)		G(Standard) R(Clean Env. Compatible)	
		40			N(Standard ±6.5) M(Coarse Fine Feed ±6.5)		F(Hexagon Socket 0.5/±6.5) B(Feed Screw 0.5/±6.5) J(Feed Screw 1.0/±6.5)		S(Standard) H(Disk) C, CR only P(Opposed) Applicable only to C/CR and the feed types N/F.			
		50										
		60										
		70										
		80			N(Standard ±12.5) M(Coarse Fine Feed ±6.5) D(Digital Micrometer ± 12.5) *Only applicable to feed position A /AR.				S(Standard) H(Disc) Only applicable to C, CR.			
Z	FSZR (Linear Ball)	25		(Center): AZ AZR (Side): C CR : CZ CZR Feeding direction of C, CR is upward; that of the others is downwards.	N(Standard ±3.2)		F(Hexagon Socket 0.5/±3.2) B(Feed Screw 0.5/±3.2)		S(Standard)		G(Standard) R(Clean Env. Compatible)	
		40			N(Standard ±6.5) M(Coarse/Fine Feeds ±6.5) Not applicable to C, CR.		F(Hexagon Socket 0.5/±6.5) B(Feed Screw 0.5/±6.5) J(Feed Screw 1.0/±6.5)		S(Standard) H(Disc) P(Opposed) Applicable only to C/CR and the feed types N/F.			
		50										
		60										
		70										
		80			N(Standard ±12.5) M(Coarse/Fine Feeds ±6.5) Not applicable to C, CR.				S(Standard) H(Disc)			

*1 Only clamp position will be changed for Digital Micrometer A, AR. *2 When feed type M (coarse/fine feeds) or D (digital micrometer) is selected, grease R (clean env. compatible) is not applicable.

Order Example

Part Number	-	(1) Feed Position	-	(2) Feed Type	-	(3) Clamp Type	-	(4) Grease
FSXYR40	-	C	-	F	-	S	-	R

Days to Ship 10 Days | Express B | 10,00 EUR/ piece P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Price (Ex.) FSXYR40-C-F-S-R

Stage € Unit Price	+	(2) Feed Type	+	(3) Clamp Type	+	(4) Grease	=	Prices
	+	74,00	+	0	+	40,00	=	320,00 EUR

Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638

Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. P.1638

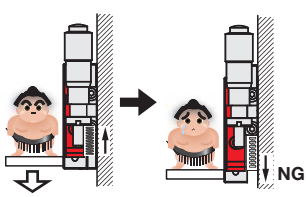
One Point: Differences of using X-Axis stages (XSG P.1641 and XPG P.1647) vertically versus the true Z-Axis stages (ZSG P.1672 and ZPG P.1673)

The true Z-Axis stages are designed and constructed with considerations given to the micrometer head/feed screw drive directions and the spring force direction to prevent the stage surfaces from falling due to the loads. (Center drive is the standard)

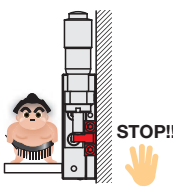
Cautions on vertical uses of X axis stages.

(NG) The stage surface may fall if XSG__ (or -CR, -A options) mounted with the micrometer tip end down.

A load exceeding the spring pull force will cause the carriage to drop.

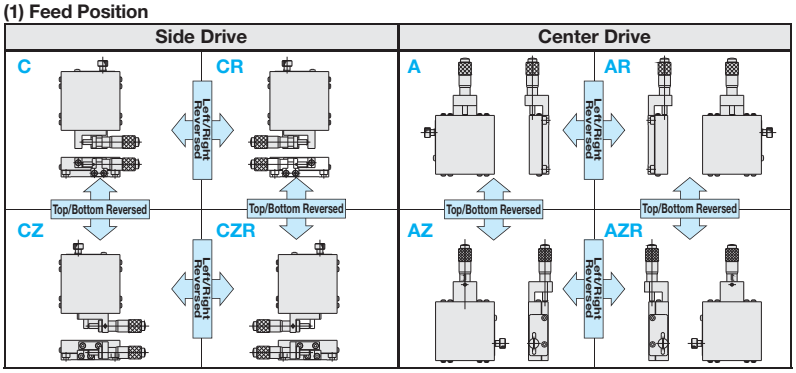


(OK) By applying ZSG__-CU as an alteration, the micrometer supports the load and the stage surfacedoes not fall.



However, do not apply a load exceeding the specified vertical load capacity.

(1) Feed Position



(2) Feed Type

N (Standard Micrometer Head)

Table Size 25 (Stroke ±3.2mm, Resolution 0.01mm)

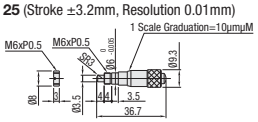


Table Size 40~70 (Stroke ±6.5mm, Resolution 0.01mm)

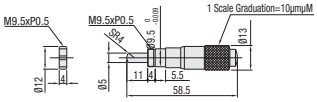
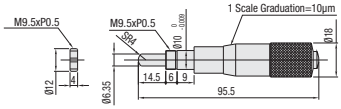


Table Size 80 (Stroke ±12.5mm, Resolution 0.01mm)



F (Hexagon Socket Screw Pitch 0.5 Type)

Table Size 25 (M3xP0.5, Stroke ±3.2mm)

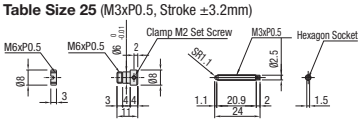
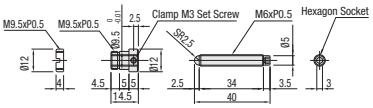


Table Size 40~80 (M6xP0.5, Stroke ±6.5mm)



The screw shaft can be locked with a set screw on the bushing

B (Feed Screw Pitch 0.5)
J (Feed Screw Pitch 1.0)

Table Size 25 (B M3xP0.5, Stroke ±3.2mm)

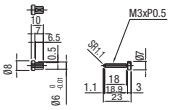
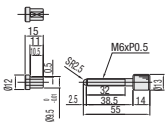


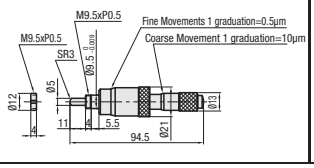
Table Size 40~80 (B M6xP0.5, Stroke ±6.5mm)
(J M6xP1.0, Stroke ±6.5mm)



M (Coarse Fine Micrometer Head)

Table Size 40~80

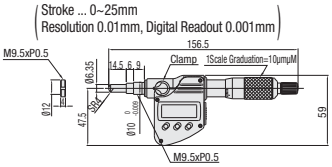
(Stroke...Coarse Feed: ±6.5mm, Fine Feed: 0.2mm
Resolution ...Coarse Feed: 10μm, Fine Feed: 0.5μm)



D (Digital Micrometer Head)

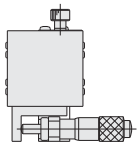
Table Size 80

(Stroke ... 0~25mm
Resolution 0.01mm, Digital Readout 0.001mm)



(3) Clamp Type

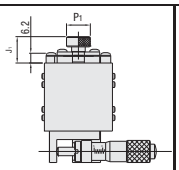
S (Standard)



The stage side surface is held with a clamp plate by tightening the clamp screw.

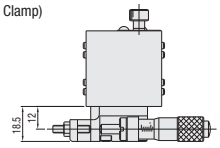
H (Disc Clamp)

Guides	A	J_1	P_1
Linear Balls	40 · 50 · 60 · 70	15.8	10
	80	14.8	15
Cross Roller	40 · 60	14.8	15



A disc clamping mechanism that does not apply any load on the carriage plate. Holds the carriage in position better than the Standard Clamp.

P (Opposed Clamp)



The side drive Micrometer Head is opposed by a screw (M4x25, pitch 0.5). A vibration immune secure holding performance is obtained.

(4) Grease

	Item	Conditions		Unit	Measurement Method	G (Standard) Guide Mechanism Surfaces	G (Standard) Drive Components	R (Clean Env. Compatible)
Grease Performance	Thickener	-		-	-	Lithium Soap	Urea	Lithium Soap
	Base Oil	-		-	-	Mineral Oil	Mineral Oil (Mixture)	Ether Synthetic Oil
	Base Oil Kinetic Viscosity	40°C		mm²/s	JIS K2220 5.19	130	-	-
		100°C				12.2	-	-
	Miscible Consistency	-		-	JIS K2220 7	275	275	315
	Dropping Point	-		°C	JIS K2220 8	185°C	280°C	216
	Evaporation Amount	-		wt%	-	0.24	-	0.43
	Oil Separation	100°Cx24hr		wt%	JIS K2220 5.7	2.8	-	0.57
	Low Temperature Torque	(Starting)	-30°C	Nm	JIS K2220 514	-	-	0.22
		(Rotation)				-	-	0.04
	Operation Temperature	In Air		°C	-	-25~120°C	-15~150°C	-40~120°C

* The guide mechanism grease for the Linear Ball Guide stages are R (clean environment compatible) by default.
The only change applicable when the R (clean environment compatible) alteration is specified is the grease for other drive components.

[Grease change locations]

- Guide mechanism surfaces (slide surfaces, slide contacts, guides) - Drive components (micrometer heads, feed screws)

[High Precision] Dovetail Slide Rack & Pinion Type / X: Feed Screw - Z: Rack & Pinion Type

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

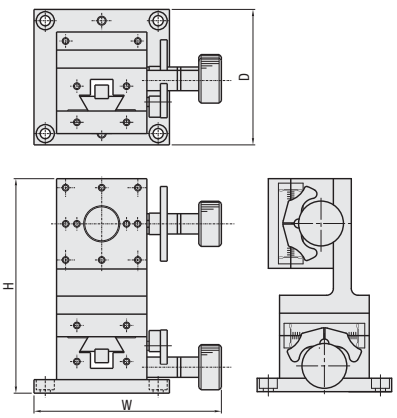
Features: Rapid feeding XZ-Axes stages with 18mm travel per handle rotation. Shipped orthogonally aligned to alleviate customer's assembly steps.

X+Z Axis Rack & Pinion

RoHS



XZFG



Part No.	Material	Surface Treatment
XZFG25	Low Cadmium Brass	Black Fluororesin Treatment
XZFG40	Aluminum Alloy	Black Anodize
XZFG60		

Part No. Type	No.	Stage Config. Bottom	Top	Stage (mm)	External Dim. (mm) W	D	H	Travel Distance (mm) X	Z	Load Capacity (N)	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XZFG	25	XFG25	ZFG25	25x25	40	38	55.5	±5	±5	6.9	0.20	SCB2-12	
	40	XFG40	ZFG40	40x40	83	60	95.0	±10	±10	14.7	0.45	SCB4-6	
	60	XFG60	ZFG60	60x60	106	80	105.5	±20	+20	19.6	1.25	SCB4-6	

For dimension details, see the CAD data and the catalog page for each stage. (XFG **P.1622**, ZFG **P.1664**)

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XZFG25

Days to Ship: 8 Days

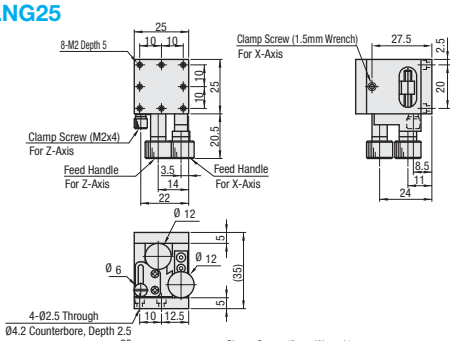
Features: Travel per handle rotation for X is 0.5mm, and for Z is 14/20mm. The X-Axis can be fine fed and the Z-Axis can be rapid fed.

X: Feed Screw Z: Rack & Pinion

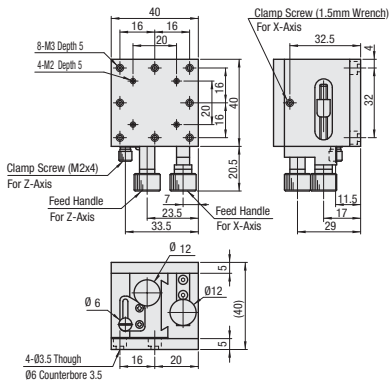
RoHS



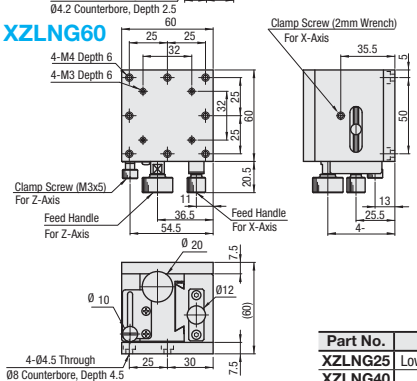
XZLNG25



XZLNG40



XZLNG60



Part No.	Material	Surface Treatment
XZLNG25	Low Cadmium Brass	Black Fluororesin Treatment
XZLNG40	Aluminum Alloy	Black Anodize
XZLNG60		

Part Number Type	No.	Stage (mm)	Travel Distance (mm)	Travel per Rotation (mm)	Load Capacity (N)	Travel Accuracy Straightness	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XZLNG	25	25x25	X: ±5 Z: +10	X: 0.5Z≈14	9.8	30µm	0.17	SCB2-5	
	40	40x40	X: ±7 Z: +10				0.51	SCB3-6	
	60	60x60	X: ±10 Z: +26	X: 0.5Z≈20			0.62	SCB4-8	

No graduated scale on XZLNG.

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XZLNG60

Days to Ship: 8 Days

[High Precision] Dovetail Slide Feed Screw

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

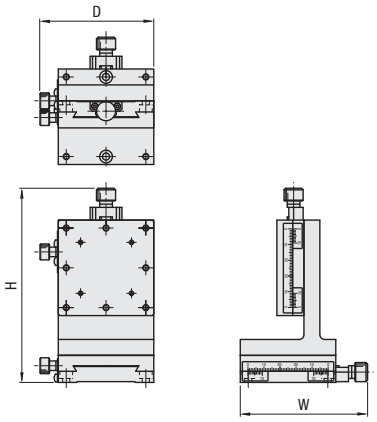
CAD Data

Features: Economical XZ-Axis dovetail slide stages with 15mm thickness. Shipped orthogonally aligned to alleviate customer's assembly steps.

X+Z Axis Feed Screw (Pitch 0.5mm) RoHS



XZEG



M Material: (body): Low Cadmium Brass
(Feed Handle) Aluminum
S Surface Treatment: Black Fluororesin Treatment

Part No.		Stage Config.		Stage	External Dim. (mm)			Travel Distance (mm)		Load	Weight	Accessory (4 pcs.)	€ Unit Price
Type	No.	Bottom	Top	(mm)	W	D	H	X	Z	Capacity (N)	(kg)	Type M-L	Qty. 1~9
XZEG	25	XEG25	ZEG25	25x25	45	31.7	72.5	±5	±5	9.8	0.17	SCB2-8	
	40	XEG40	ZEG40	40x40	60	46.7	95.0	±7	±7		0.46	SCB3-6	
	60	XEG60	ZEG60	60x60	80	71.8	122.0	±9	±9	19.6	1.35	SCB4-6	

For dimension details, see the CAD data and the catalog page for each stage. (XEG **P.1636**, ZEG **P.1670**)

For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number: XZEG25

Days to Ship: 8 Days

One Point: Lever Clamp 3D View

Some models are equipped with "Lever Clamps" as shown below. The standard clamp knobs are small in diameter and may require significant forces for sufficient clamping. The wing-shaped lever clamp can be operated with an index finger and the thumb with little effort. Please note that the actual clamping force obtained is the same as the standard clamps. The lever clamps can not be removed due to its construction.

Clamp screw	Holding Force	Features	Cautions
Standard Clamp		Economical / Space Saving	Small Knob
Lever Clamp		Good Operability	Limited to some models only

Lever Clamp Models
XFG40 (P.1622)
XYFG40 (P.1651)
XZFG40 (P.1681)
XYZFG40 (P.1685)



[High Precision] Linear Ball Slide

Price Reduction
Up to 8%

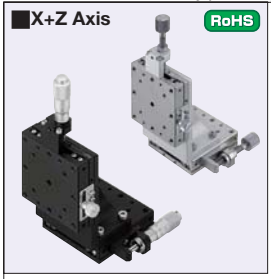
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: Economically priced high precision/rigidity Linear Ball Slide Stages. The feed screw types offer further savings.

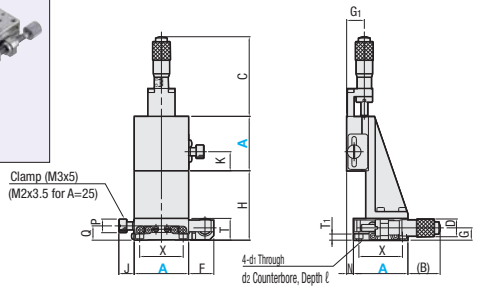
X+Z Axis

RoHS



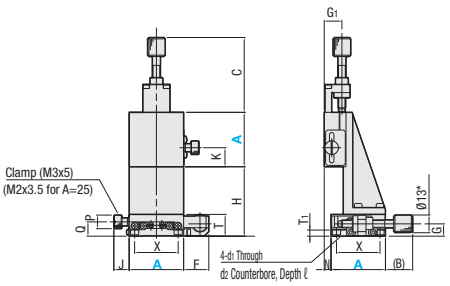
Micrometer Heads

XZSG
XZSGB (Black)



Feed Screws (Pitch 0.5)

XZSCG



* marked dia. will be Ø7 for A=250* Ø7 when A=25

For top surface mounting dimensions and feed bracket shapes, see Linear Ball Slide X-Axis Stages (**P.1641**)
Z-Axis of A=25 has different bracket shape. **P.1672**

- Features of Raydent P.118

Type	Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
XZSG XZSCG	1.4125/ X105CrMo17	Aluminum Alloy	1.4125/ X105CrMo17	58HRC~	1.4301/ X5CrNi18-10WPB	EN AW-5052/ AlMg2,5	Clear Anodize	1.4305/ X10CrNiS18-9	-
XZSGB		Black Anodize					Black Anodize		Black Anodize

For Micrometer Head & Feed Screw material details, see **P.1697, 1698**

Micrometer Head (XZSG · XZSGB) · Feed Screw (XZSCG)

Part Number		Front View									Side View										Accessory (4 pcs.)
Type	A	H	C Micro-meter	C Feed Screw	K	Q	P	J	F	T	T1	N	(B) Micro-meter	(B) Feed Screw	Travel Distance (mm)	D	G	G1	X	d1	d2	ℓ	Type M-L
XZSG XZSCG XZSGB(* only)	25*	24.5	37.0	23	10	8.5	6	6.8	9	12	3.7	7	25	11	±3.2	9.3	7	10	20	2.5	4.2	2.5	SCB2-4
	40*	51	58.5	55	14	10.5	10	11.5	18.5	16	4.5	5	24	20.3	±6.5	13	9	13	32	3.5	6	3.5	SCB3-6
	50	46			19							20	19	15.3					40				
	60*	41			24							5	21	14	10.3				50			4.0	
	70	43			23.5	11.5				18	6	12	14.5	10.8			10	14	60	4.5	8	4.5	SCB4-6
	80*	40	96.0		25	14.5			22*	20	6.5	20	43.5	10	±12.5*	18	11	16.5	70			5.3	

* When feed screw A = 80, F = 20

* Feed Screw Type XZSCG80 stroke is ±6.5mm.

Performance

Part Number		Stage (mm)	Load Capacity (N)	Travel Accuracy			Moment Capacity (N · m)			Moment Rigidity (/N · cm)			Weight (kg)	€ Unit Price Qty. 1~9		
Type	A			Straight-ness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		XZSG	XZSCG	XZSGB
XZSG XZSCG XZSGB(* only)	25*	25x25	49.0	3µm	30"	25"	2.0	2.0	2.0	3.80	2.20	2.20	0.16			
	40*	40x40		1µm*		15"	5.0	5.0	5.0	0.84	0.56	0.56	0.55			
	50	50x50			25"		6.0	6.0	6.0	0.30	0.23	0.23	0.72			
	60*	60x60					10.0	9.0	9.0	0.16	0.13	0.13	0.98			
	70	70x70					13.8	12.9	12.9	0.12	0.08	0.08	1.42			
	80*	80x80		3µm			18.2	17.7	17.7	0.08	0.06	0.06	2.10			

XZSG and XZSGB Micrometer Head resolution 10µm/division * XZSGB Straightness is 3µm.
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638
Knob Extension HDEXT13 (Sold separately):Features: Ø13 Micrometer handles and feed screw handles can be extended. P.1638

Order Example

Part Number
XZSG80

Days to Ship

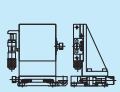
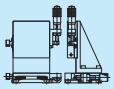
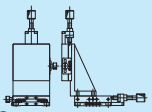
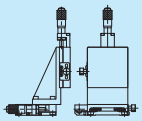
XZSG · XZSCG: 8 Days

XZSGB: 10 Days

Alterations

Part Number - (C · CU · A · R)
XZSG40 - C

10 Days

Alterations	Position of Micrometer and Feed Screw			
Spec.	Side up	Side down	Center	Reversed
		 ⊗Not applicable to XZSGB.	 ⊗Not applicable to XZSGB.	
Code	C	CU	A	R
Price Adder	Free of Charge	Free of Charge	Free of Charge	Free of Charge

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.

[High Precision] Cross Roller

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

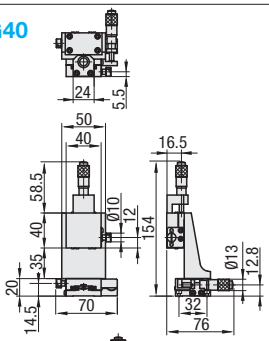
Features: Cross Roller XZ-Axes Stages made of lightweight aluminum alloy.

X+Z Axis

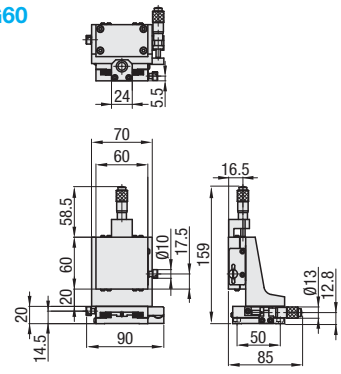
RoHS



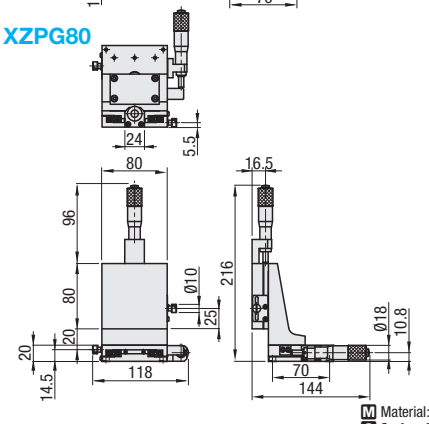
XZPG40



XZPG60



XZPG80



For top surface mounting dimensions, see Cross Roller X-Axis stages (**P.1647**)

M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage Configurations Bottom	Stage Configurations Top	Stage (mm)	Travel Distance (mm) X	Travel Distance (mm) Z	Load Capacity (N)	Weight (kg)	€ Unit Price Qty. 1~4
XZPG	40	XPG40	ZPG40	40x40	±6.5	±6.5	9.8	0.34	
	60	XPG60	ZPG60	60x60			19.6	0.70	
	80	XPG80	ZPG80	80x80	±12.5	±12.5	49.0	1.30	

For dimension details, see the CAD data and the catalog page for each stage.
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. **P.1638**
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

Order Example | Part Number: XZPG60 | Days to Ship: 10 Days | Express B 10,00 EUR/piece | **P.88**
A Express Charge of 27,00 EUR for 3 or more identical pieces.

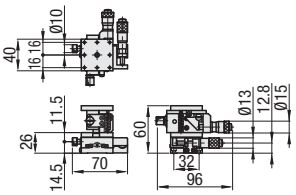
Features: Cross Roller XZ-Axes Stages made of lightweight aluminum alloy. The horizontal surfaces move vertically.

X+Horizontal Surface Z-Axis

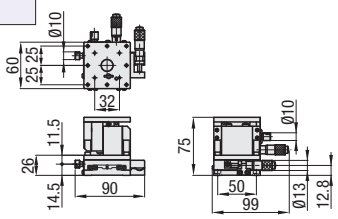
RoHS



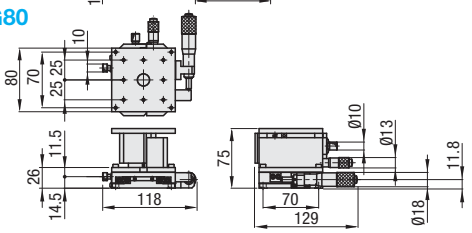
XZLPG40



XZLPG60



XZLPG80



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number Type	No.	Stage Configurations Bottom	Stage Configurations Top	Stage (mm)	Travel Distance (mm) X	Travel Distance (mm) Z	Load Capacity (N)	Weight (kg)	€ Unit Price Qty. 1~4
XZLPG	40	XPG40	ZLPG40	40x40	±6.5	±3.0	9.8	0.34	
	60	XPG60	ZLPG60	60x60		±5.0	19.6	0.85	
	80	XPG80	ZLPG80	80x80	±12.5		29.4	1.50	

For dimension details, see the CAD data and the catalog page for each stage.
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. **P.1638**
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. **P.1638**

Order Example | Part Number: XZLPG80 | Days to Ship: 10 Days | Express B 10,00 EUR/piece | **P.88**
A Express Charge of 27,00 EUR for 3 or more identical pieces.

[High Precision] Dovetail Slide Rack & Pinion / XY: Feed Screw, Z: Rack & Pinion

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

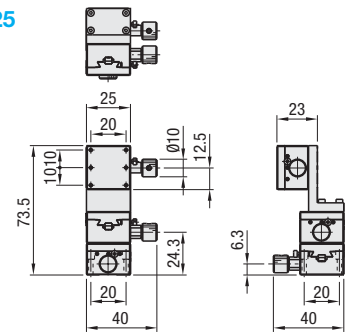
CAD Data

Features: Dovetail Slide stages with approx.18mm of travel per rotation

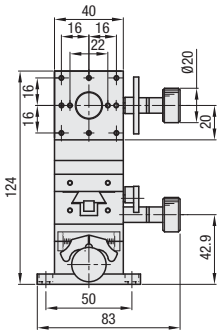
XY+Z-Axis Rack & Pinion RoHS

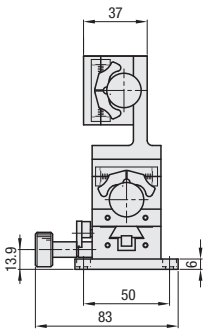


XYZFG25



XYZFG40





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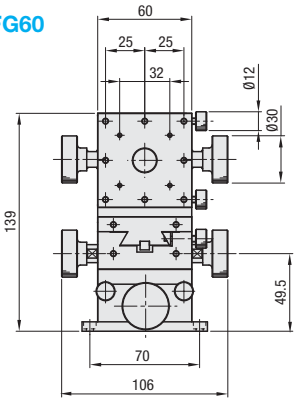
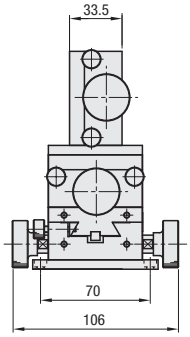




Part Number Type	No.	Stage Configurations Bottom	Top	Stage (mm)	Travel Distance (mm) X	Y	Z	Load Capacity (N)	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYZFG	25	XYFG25	ZFG25	25x25	±5	±5	±5	6.9	0.29	SCB2-12	
	40	XYFG40	ZFG40	40x40	±10	±10	±10	14.7	0.61	SCB4-6	
	60	XYFG60	ZFG60	60x60	±20	±20	+20	19.6	1.79	SCB4-6	

For dimension details, see the CAD data and the catalog page for each stage. XYFG **P.1651** ZFG **P.1664**

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYZFG25

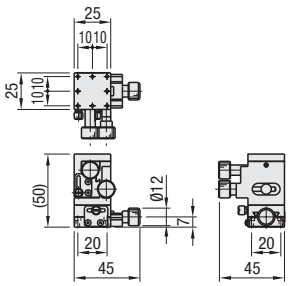
Days to Ship: 8 Days

Features: XYZ-Axes Stages with a vertically moving horizontal surface Z axis.

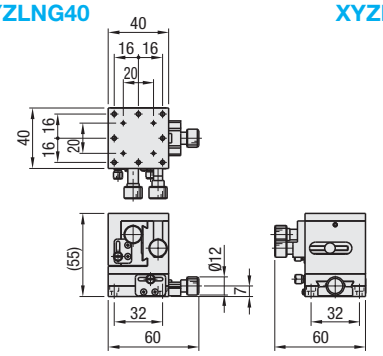
XY+Horizontal Surface Z-Axis RoHS



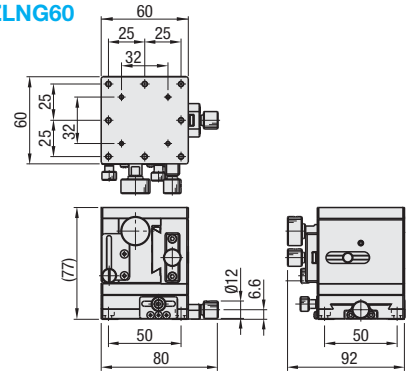
XYZLNG25



XYZLNG40



XYZLNG60



Part Number Type	No.	Stage Configurations Bottom	Top	Stage (mm)	Travel Distance (mm) X	Y	Z	Load Capacity (N)	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYZLNG	25	XEG25-R	XZLNG25	25x25	±5	±5	+10	9.8	0.24	SCB2-8	
	40	XEG40-R	XZLNG40	40x40	±7	±7			0.70	SCB3-6	
	60	XEG60-R	XZLNG60	60x60	±9	±10	+26		1.22	SCB4-6	

For detailed dimensions, material and characteristics, see description pages and the CAD data of the individual stages. XEG_-R **P.1636** XZLNG **P.1681**

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: XYZLNG25

Days to Ship: 8 Days

[High Precision] Dovetail Slide Feed Screw

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

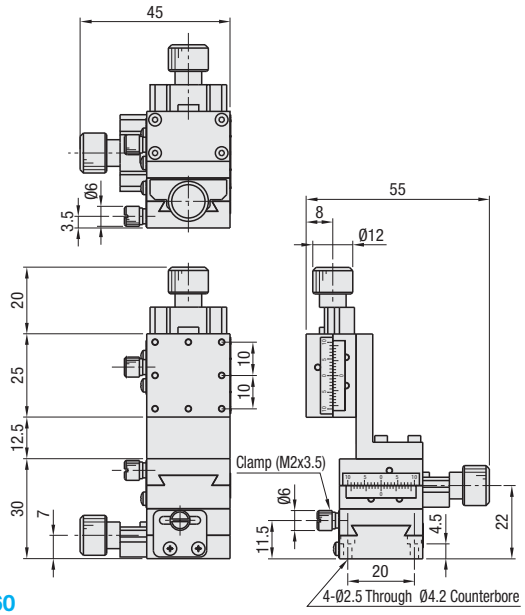
CAD Data

Features: Economical XYZ Stages with the smallest thickness (15mm~) of all the stages in the lineup.

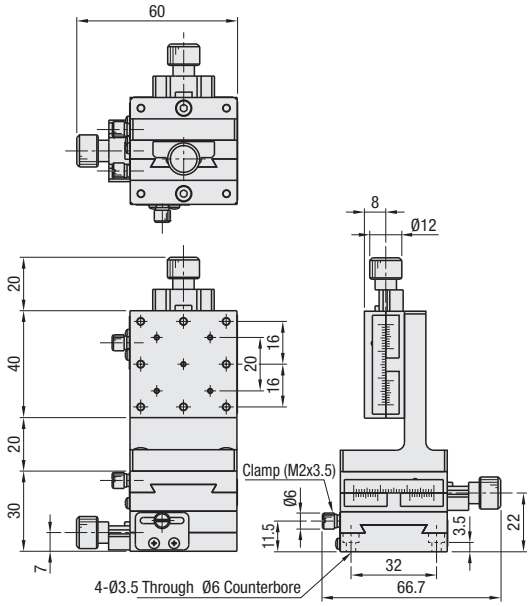
XY+Z-Axis Feed Screw RoHS
(Pitch 0.5mm)



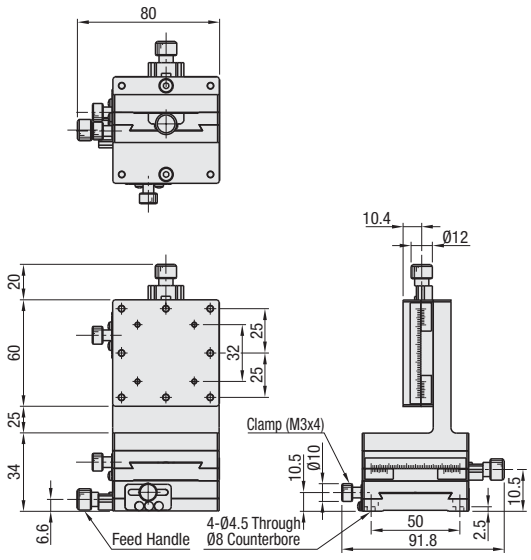
XYZEG25



XYZEG40



XYZEG60



Material: (Body): Low Cadmium Brass
(Feed Handle) Aluminum
Surface Treatment: Black Fluororesin Treatment

Part Number Type	No.	Stage Configurations Bottom	Top	Stage (mm)	Travel Distance (mm) X	Y	Z	Load Capacity (N)	Weight (kg)	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1~9
XYZEG	25	XYEG25	ZEG25	25x25	±5	±5	±5	9.8	0.24	SCB2-8	
	40	XYEG40	ZEG40	40x40	±7	±7	±7		0.65	SCB3-6	
	60	XYEG60	ZEG60	60x60	±9	±9	±9	14.7	1.95	SCB4-6	

For detailed dimensions, material and characteristics, see description pages and the CAD data of the individual stages. XYEG P.1656 ZEG P.1670
Knob cover HDEXT12 (Sold separately) : Ø12 feed screw knobs can be extended. P.1638
For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number XYZEG25 | Days to Ship 8 Days

[High Precision] Linear Ball Slide

Price Reduction
Up to 8%

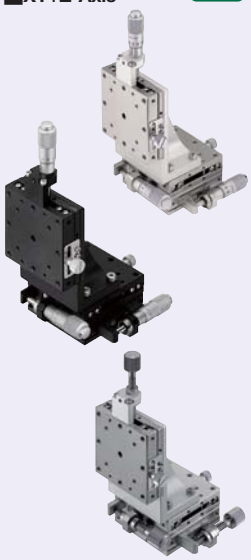
Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: High precision/rigidly and economical Linear Ball Slide XYZ-Axes Stages. The feed screw types offer further savings.

XY+Z-Axis

RoHS



For top surface mounting dimensions and feed bracket shapes, see Linear Ball Slide X-Axis Stages (P.1641)

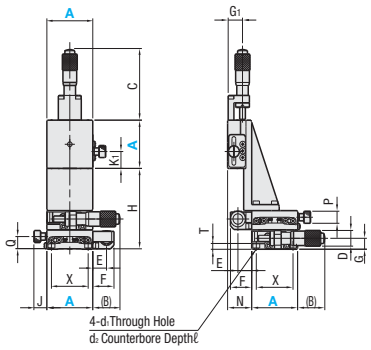
Micrometer Heads

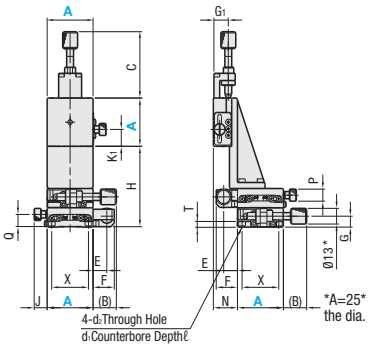
XYZSG
(25≤A≤80)

XYZSGB(Black)
(A=25 / 40 / 60 / 80)

Feed Screw (Pitch 0.5)

XYZSCG
(25≤A≤80)





A=25 For A=25, the dia. is Ø7Ø7

Type		Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder	
Micrometer Heads	Feed Screws	M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material	S Surface Treatment
XYZSG	XYZSCG	1.4125/	Aluminum Alloy	1.4125	58HRC~	1.4301/ X5CrNi18-10	EN AW-5052/	Clear Anodize	1.4305	-
XYZSGB	-	1.4125/	Black Anodize	1.4125	58HRC~	1.4301/ X5CrNi18-10	EN AW-5052/	Black Anodize	1.4305	Black Anodize

For Micrometer Head & Feed Screw material details, see P.1697- 1698 Characteristics of Black Chrome Plating P.118

Micrometer Head (XYZSG · XYZSGB) / Feed Screw (XYZSCG)

Part Number		Front View										Side View										Accessory (4 pcs.)
Type	A	H	(C) Micrometer	(C) Feed Screws	K1	Q	J	(B) Micrometer	(B) Feed Screws	Travel Distance (mm)	E	F	N	T	D	G	P	G1	X	d1	d2	ℓ	Type M-L
XYZSG XYZSCG XYZSGB(* only)	25*	36.5	37	23	10	8.5	6.8	25	11	±3.2	7	9	7	3.7	9.3	7	6	10	20	2.5	4.2	2.5	SCB2-4
	40*	67	58.5	55	14	10.5	11.5	24	20.3	±6.5	12	18.5	5	4.5	13	9	10	13	32	3.5	6	3.5	SCB3-6
	50	62	58.5	55	19	10.5	11.5	19	15.3	±6.5	12	18.5	20	4.5	13	9	10	13	40	3.5	6	3.5	SCB3-6
	60*	57	58.5	55	24	10.5	11.5	14	10.3	±6.5	12	18.5	21	5	13	9	10	13	50	4.5	8	4	SCB4-6
	70	61	58.5	55	23.5	11.5	11.5	14.5	10.8	±6.5	12	18.5	12	6	13	10	10	14	60	4.5	8	4.5	SCB4-6
	80*	60	96	55	25	14.5	11.5	43.5	10	±12.5*1	17	26*2	20	6.5	18	11	10	16.5	70	4.5	8	5.3	SCB4-6

- Specifications

Part Number		Stage (mm)	Load Capacity (N)	Travel Accuracy			Moment Capacity (N • m)			Moment Rigidity (/N • cm)			Weight (kg)	€ Unit Price Qty. 1~9		
Type	A			Straightness	Pitching	Yawing	Pitching	Yawing	Rolling	Pitching	Yawing	Rolling		XYZSG	XYZSCG	XYZSGB
XYZSG XYZSCG XYZSGB(* only)	25*	25x25	9.8	3μm	30"	25"	2.0	2.0	2.0	4.10	3.30	4.90	0.23			
	40*	40x40	49	1μm Black Black Linear Ball Slides: 3μm	25"	15"	5.0	5.0	5.0	0.98	0.91	1.05	0.78			
	50	50x50					6.0	6.0	6.0	0.38	0.37	0.39	1.00			
	60*	60x60					9.0	9.0	9.0	0.21	0.21	0.21	1.38			
	70	70x70					12.9	12.9	12.9	0.14	0.13	0.15	2.00			
	80*	80x80		3μm			17.7	17.7	17.7	0.10	0.10	0.10	3.00			

XYZSG and XYZSGB: Micrometer Head resolution 10μm/division
For orders larger than indicated quantity, please request a quotation.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. P.1638

Order Example

Part Number
XYZSG40

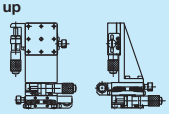
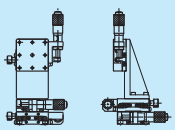
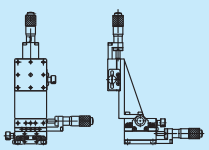
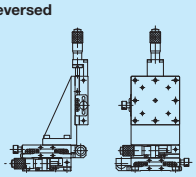
Days to Ship

- XYZSG · XYZSCG: 8 Days
- XYZSGB (Black): 10 Days

Alterations

Part Number XYZSG40 - (C · CU · A · R) C

10 Days

Alterations	Position of Micrometer and Feed Screw			
	Side up	Side down	Center	Reversed
Spec.	 The micrometer heads may interfere depending on each axis stroke position. Please check and verify the usable stroke ranges with the CAD data.	 Not applicable to XYZSGB.		
Code	C	CU	A	R
Price Adder	Free of Charge	Free of Charge	Free of Charge	Free of Charge

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.

[High Precision] Linear Ball Slide
-Low Profile-

Price Reduction
Up to 7%

Travel per Rotation	Small	Medium	Large
Stroke	Short	Medium	Long
Load Capacity	Light	Medium	Heavy

CAD Data

Features: XYZ-Axes Stages with low profile Linear Ball Slide XY axes.

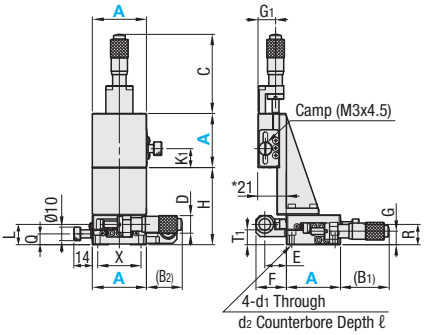
XY+Z-Axis RoHS



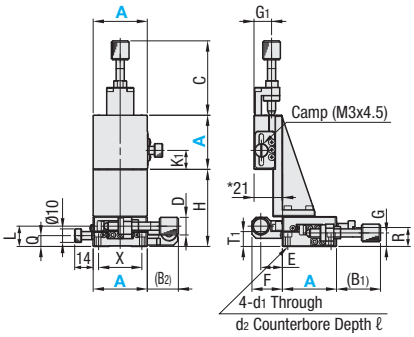


For top surface mounting dimensions and feed bracket shapes, see Linear Ball Slide X-Axis Stages (P.1641)

Micrometer Heads
XYZSSG



Feed Screw (Pitch 0.5)
XYZSSCG



* When A=80, the bracket shape will be different, and the stage protrusion from the bracket will be 20.

Main Body		Ball		Spring	Micrometer Head Bracket		Tip Holder
M Material	S Surface Treatment	M Material	H Hardness	M Material	M Material	S Surface Treatment	M Material
1.4125	Aluminum Alloy	1.4125	58HRC~	1.4301-WPB	EN AW-5052	Clear Anodize	1.4305

For Micrometer Head & Feed Screw material details, see **P.1697- 1698**

Micrometer Head (XYZSSG)- Feed Screw (XYZSSCG)

Part Number Type	A	Front View H	K1	C Micrometer	C Feed Screws	(B2) Micrometer	(B2) Feed Screws	Travel Distance (mm)	D	L	Q	X	Side View R	G	G1	T1	E	F	(B1) Micrometer	(B1) Feed Screws	d1	d2	ℓ	Accessory (4 pcs.) Type M-L
XYZSSG XYZSSCG	40	57	14	58.5	55	26.5	23	±6.5	13	15	8	32	14	10	13	10.5	16	22.5	36	32.5	3.5	6	3.5	SCB3-10
	60	47	24	58.5	55	16.5	13	±6.5	13	15	8	50	14	10	13	10.5	16	22.5	20.3	16.8	4.5	8	4.5	SCB4-10
	80	46	25	96	55	32	-7*1	±12.5*2	18*2	17	9.5	70	16.5	15	16.5	12.5	23	32*2	39	0	4.5	8	6.5	SCB4-10

* 1 Feed Screw XYZSSCG end surface is located at 7mm inside of the stage end surface. * 2 Feed Screw XYZSSCG A=80, stroke=±6.5, D=13, F=30.

- Specifications

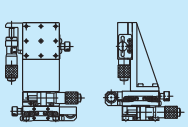
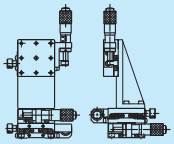
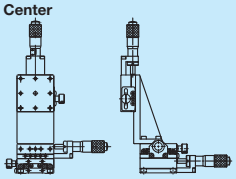
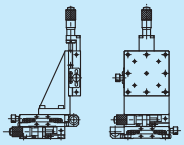
Part Number Type	A	Stage (mm)	Load Capacity (N)	Travel Accuracy Straightness	Pitching	Yawing	Moment Capacity (N・m) Pitching	Yawing	Rolling	Moment Rigidity (/N・cm) Pitching	Yawing	Rolling	Weight (kg)	€ Unit Price Qty. 1~9 XYZSSG	XYZSSCG
XYZSSG XYZSSCG	40	40x40	49	3μm	40"	20"	4.5	5.0	4.5	1.15	0.89	1.27	0.66		
	60	60x60					9.0	8.1	9.0	0.35	0.28	0.35	1.22		
	80	80x80					16.4	15.9	16.4	0.13	0.08	0.12	2.52		

XYZSSG: Micrometer Head resolution 10μm/division
Knob cover HDCVR13 (Sold separately): Increases knob diameter by putting on Ø13 feed handles. P.1638
Extension cover HDEXT13 (Sold separately): Feed screw Ø13 handle can be extended. P.1638

For orders larger than indicated quantity, please request a quotation.

Order Example
Part Number: XYZSSG40
Days to Ship: 8 Days

Alterations
Part Number - (C · CU · A · R)
XYZSSG40 - C
10 Days

Alterations	Position of Micrometer and Feed Screw			
Spec.	Side up 	Side down 	Center 	Reversed 
Code	C	CU	A	R
Price Adder	Free of Charge	Free of Charge	Free of Charge	Free of Charge

Mounting dimensions of micrometer head, feed screw and clamp are different from those of standard products. Refer to data on CAD for dimension details.

[High Precision] Combination Stages

Features: Lightweight XYZ Cross Roller Stages made of aluminum alloy. Choose from combinations of XY profile heights and Z axis stoke requirements.

Combination Stages

RoHS



XYZPG



XYZLPG



XYZLSPG

Features: Combined stages of Cross Roller, as the base, and Rotary/Goniometer Stages.

Combination Stages

RoHS



(1)XYRPG



(3)XYRSPG



(2)XYZLRPG



(4)XYZLRSPG

Part Number		Stage Configurations		Stage (mm)	External Dimensions (mm)			Travel Distance (mm)			Load Capacity (N)	Weight (kg)	€ Unit Price
Type	No.	Bottom	Top		W	D	H	X	Y	Z			Qty. 1~4
XYZPG	40	XYPG40 (P.1662)	ZPG40 (P.1673)	40x40	85	78	174	±6.5	±6.5	±6.5	9.8	0.48	
	60	XYPG60 (P.1662)	ZPG60 (P.1673)	60x60	99	92	179				19.6	0.95	
	80	XYPG80 (P.1662)	ZPG80 (P.1673)	80x80	150	135	236	±12.5	±12.5	±12.5	49.0	1.80	
XYZLPG	40	XYPG40 (P.1662)	ZLPG40 (P.1675)	40x40	96	77	80	±6.5	±6.5	±3.0	9.8	0.48	
	60	XYPG60 (P.1662)	ZLPG60 (P.1675)	60x60	115	92	95			±5.0	39.2	1.12	
	80	XYPG80 (P.1662)	ZLPG80 (P.1675)	80x80	150	135	95	±12.5	±12.5		29.4	2.00	
XYZLSPG	40	XYSPG40 (P.1663)	ZLPG40 (P.1675)	40x40	100	81	62	±6.5	±6.5	±3.0	7.8	0.40	
	60	XYSPG60 (P.1663)	ZLPG60 (P.1675)	60x60	119	97	77			±5.0	23.5	1.00	
	80	XYSPG80 (P.1663)	ZLPG80 (P.1675)	80x80	151	132	77	±12.5	±12.5		29.4	1.70	

For detailed dimension, material and characteristics, see description pages and CAD data of individual stages.
For orders larger than indicated quantity, please request a quotation.
For included screw sizes, see the pages for the bottom stages.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by simply putting on the Ø13 screws. P.1638
Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. P.1638

Combinations of cross roller stages listed in this catalog.

Part Number		Stage Configurations			Stage (mm)	External Dimensions (mm)			Travel Distance (mm)				Load Capacity (N)	Weight (kg)	€ Unit Price
Type	No.	Bottom	Middle	Top		W	D	H	X	Y	Z	θ			Qty. 1~4
(1)XYRPG (XY+Rotary)	38	XYPG40 (P.1662)	RPG38 (P.1692)	-	ϕ38	85	84	60	±6.5	±6.5	-	Coarse Movement 360° Fine Feed ±5°	9.8	0.37	
	60	XYPG60 (P.1662)	RPG60 (P.1692)	-	ϕ38	99	98	65			-		29.4	0.78	
	85	XYPG80 (P.1662)	RPG85 (P.1692)	-	ϕ38	150	137	65	±12.5	±12.5	-		39.2	1.48	
(2)XYZLRPG (By-Axes+Horizontal Surf. Z-Axis+Rotary)	38	XYPG40 (P.1662)	ZLPG40 (P.1675)	RPG38 (P.1692)	ϕ38	96	84	100	±6.5	±6.5	±3.0	Coarse Movement 360° Fine Feed ±5°	8.9	0.57	
	60	XYPG60 (P.1662)	ZLPG60 (P.1675)	RPG60 (P.1692)	ϕ38	115	98	120			±5.0		29.4	1.40	
	85	XYPG80 (P.1662)	ZLPG80 (P.1675)	RPG85 (P.1692)	ϕ38	150	137	120	±12.5	±12.5			24.7	2.48	
(3)XYRSPG (Low Profile XY-Axes+Rotary)	38	XYSPG40 (P.1663)	RPG38 (P.1692)	-	ϕ38	99	84	42	±6.5	±6.5	-	Coarse Movement 360° Fine Feed ±5°	8.9	0.29	
	60	XYSPG60 (P.1663)	RPG60 (P.1692)	-	ϕ38	103	101	47			-		26.7	0.68	
	85	XYSPG80 (P.1663)	RPG85 (P.1692)	-	ϕ38	151	132	47	±12.5	±12.5	-		34.5	1.18	
(4)XYZLRSPG (Low Profile XY-Axes+Horizontal Surf. Z+Rotary)	38	XYSPG40 (P.1663)	ZLPG40 (P.1675)	RPG38 (P.1692)	ϕ38	100	84	82	±6.5	±6.5	±3.0	Coarse Movement 360° Fine Feed ±5°	7.0	0.49	
	60	XYSPG60 (P.1663)	ZLPG60 (P.1675)	RPG60 (P.1692)	ϕ38	119	101	102			±5.0		20.6	1.28	
	85	XYSPG80 (P.1663)	ZLPG80 (P.1675)	RPG85 (P.1692)	ϕ38	151	132	102	±12.5	±12.5			24.7	2.18	

For detailed dimension, material and characteristics, see description pages and CAD data of individual stages.
For orders larger than indicated quantity, please request a quotation.
For included screw sizes, see the pages for the bottom stages.
Knob cover HDCVR13 (Sold separately): Increases knob diameter by simply putting on the Ø13 screws. P.1638
Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. P.1638

Order Example Part Number XYRPG38

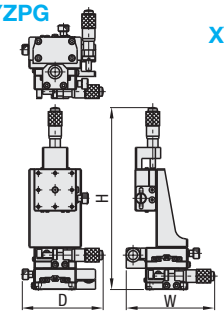
Days to Ship 10 Days

Express B 10,00 EUR/ piece P.88

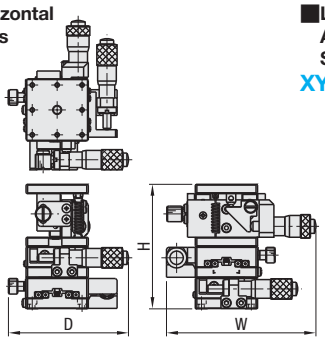
A Express Charge of 27,00 EUR for 3 or more identical pieces.

CAD Data

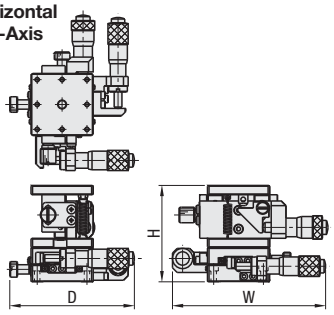
■XY-Axes + Z-Axis
XYZPG



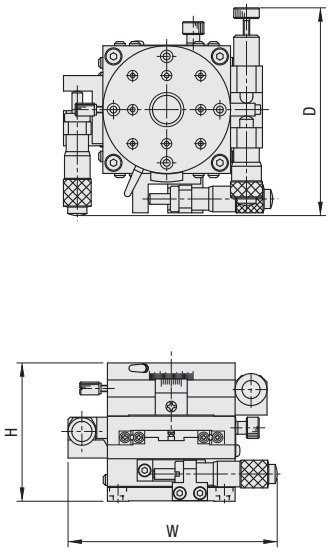
■XY-Axes+Horizontal Surface Z-Axis
XYZLPG



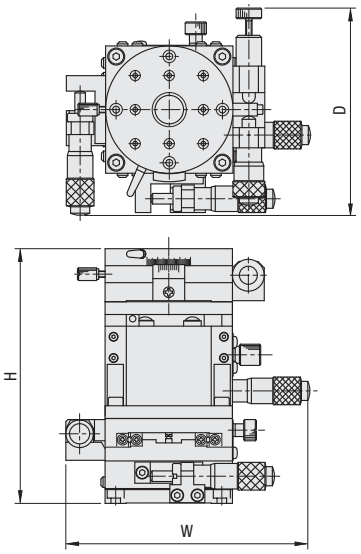
■Low Profile XY-Axes+Horizontal Surface Z-Axis
XYZLSPG



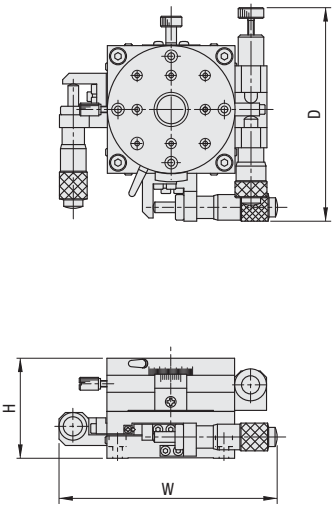
■(1)XYRPG
(XY-Axes+Rotary)



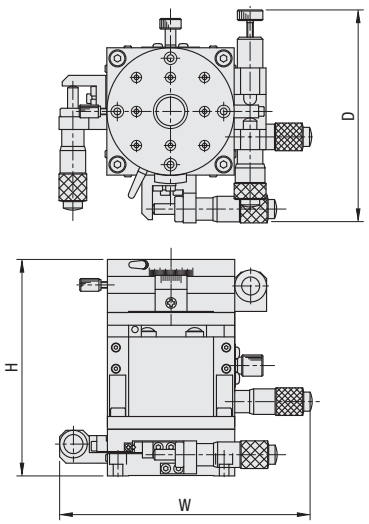
■(2)XYZLRPG
(XY-Axes+Horizontal Surf. Z-Axis+Rotary)



■(3)XYRSPG
(Low Profile XY-Axes+Rotary)



■(4)XYZLRSPG
(Low Profile XY-Axes+Horizontal Surf. Z-Axis+Rotary)



The shapes are different depending on the size. See details on CAD data.

[High Precision] Rotary Stages

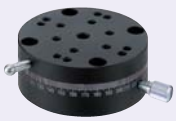
-Coarse Feed / Feed Screw-

Price Reduction
Up to 8%

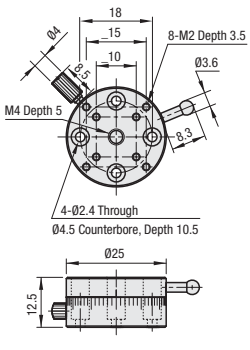
CAD Data

Features: Suitable for large angle positioning applications such as LED lighting and sensor positioning.

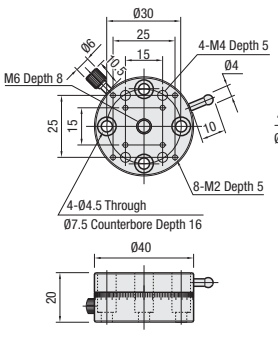
Coarse Feed RoHS



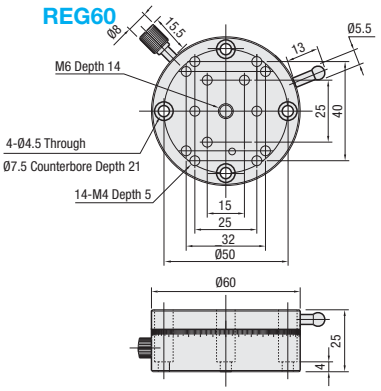
REG25



REG40



REG60



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number		Stage (mm)	Travel Distance	Resolution	Load Capacity (N)		Eccentricity (mm)	Weight (kg)	Accessory (4 pcs.)	€ Unit Price
Type	No.				Horizontal	Vertical			Type M-L	Qty. 1~9
REG	25	Ø25	Coarse Feed 360°	5°	29.4	9.8	0.05	0.02	SCB2-5	
	40	Ø40		2°	49.0	16.3		0.06	SCB4-8	
	60	ϕ38		1°	68.6	22.8		0.20	SCB4-8	

⊗REG25 can not be combined with other stages.
For orders larger than indicated quantity, please request a quotation.
XWG (P.1624) · XYWG (P.1652) · ZWG (P.1665) · XLWG (P. 1628) · ZLWG (P. 1667) · Dovetail Slide Stage (P.1631~1633) combinable. (REG60 needs XPLT60 (P.1625))

Order Example | Part Number: REG40

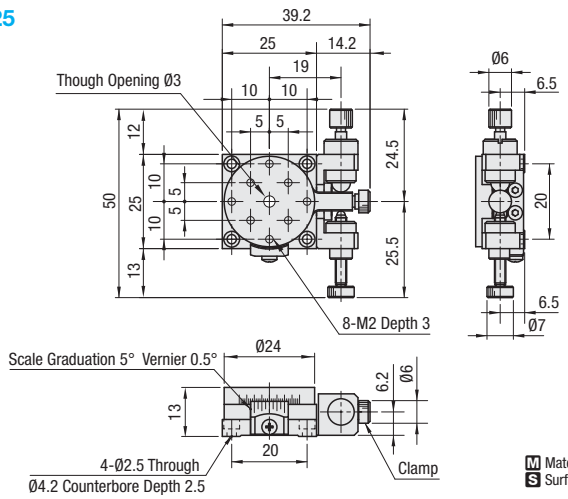
Days to Ship: 6 Days P.87

Features: Small Ø24 diameter rotary stage capable of fine screw feeds.

Feed Screw RoHS



RPGE25



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number		Stage (mm)	Travel Distance	Resolution	Load Capacity (N)	Eccentricity (mm)	Weight (kg)	Accessory (4 pcs.)	€ Unit Price
Type	No.			Vernier	Horizontal			TypeM-L	Qty. 1~9
RPGE	25	ϕ24	Coarse Feed 360° Fine Feed ±3°	0.5°	9.8	0.05	0.03	SCB2-6	

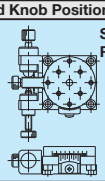
For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number: RPGE25

Days to Ship: 10 Days

Alterations: Part Number - (NR)
RPGE25 - NR

Refer to data on CAD for dimension details.

Alteration	Feed Knob Position Change
Spec.	Side Mount - Left/ Right Reversed 
Code	NR
Price Adder	Free of Charge

[High Precision] Rotary Stages
-Micrometer Head-

CAD Data

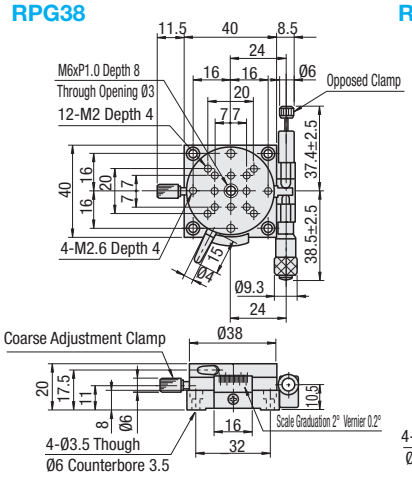
Features: Micrometer equipped rotary stages capable of fine feeds.

Micrometer Heads

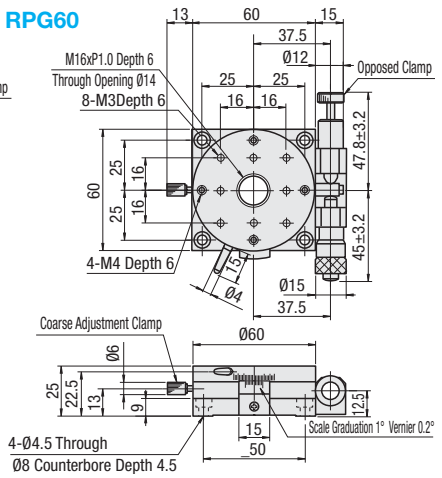
RoHS



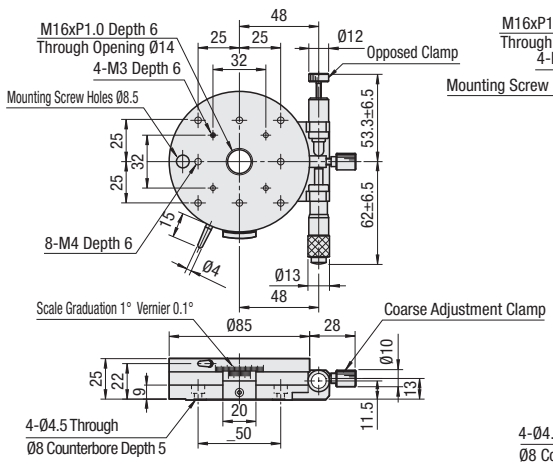
RPG38



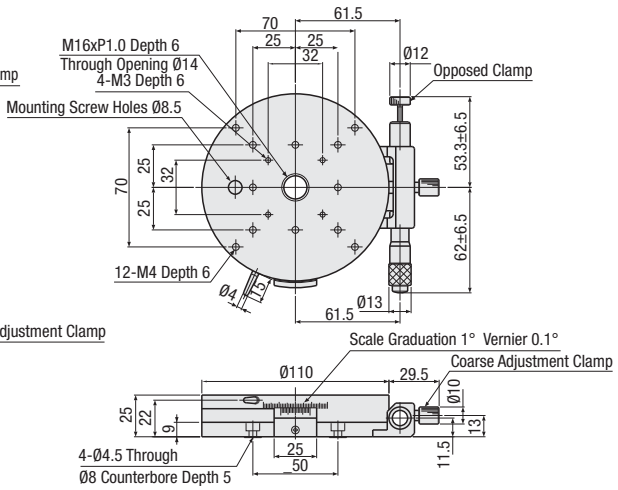
RPG60



RPG85



RPG110



M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

Part Number		Stage (mm)	Travel Distance	Resolution		Load Capacity (N)	Eccentricity (mm)	Weight (kg)	Accessory (4 pcs.)	€ Unit Price
Type	No.			Vernier	Micrometer	Horizontal			TypeM-L	Qty. 1~9
RPG	38	ϕ38	Coarse Feed 360° Fine Feed ±5°	0.2°	≈1'26"/Scale Graduation	9.8	0.05	0.09	SCB3-8	
	60	ϕ38			≈55"/Scale Graduation	29.4		0.28	SCB4-10	
	85	ϕ38		0.1°	≈43"/Scale Graduation	39.2		0.48	SCB4-8	
	110	ϕ 110			≈34"/Scale Graduation	49.0		0.75	SCB4-8	

Knob cover HDCVR13 (Sold separately): Increases knob diameter by simply putting on the Ø13 screws. P.1638
Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. P.1638
Coarse Clamps and Opposed Clamps are available for sale as special order items. Please inquire our customer service.
For orders larger than indicated quantity, please request a quotation.

Order Example Part Number: RPG38

Days to Ship 8 Days

Alterations Part Number RPG60 - (NR) NR, 10 Days

Mounting dimensions of micrometer head and clamp are different from those of standard products. Refer to data on CAD for details of dimension.

Alteration	Micrometer Head Position Change
Spec.	Side Mount - Left/ Right Reversed
Code	NR
Price Adder	Free of Charge

[High Precision] Rotary Cross Roller Bearing

-Stainless Steel / w/Through Hole-

CAD Data

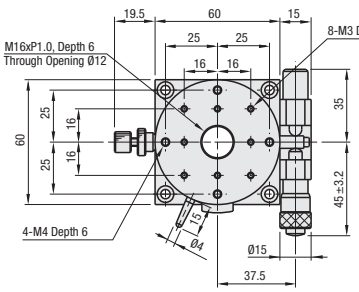
Features: Stainless steel material used has improved rigidity over aluminum alloy rotary stages.

Stainless Steel

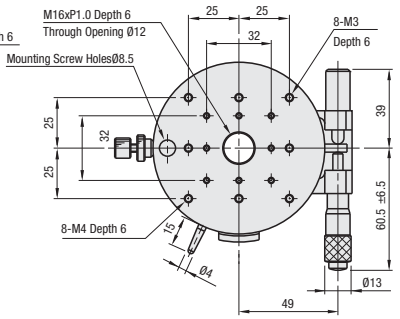
RoHS

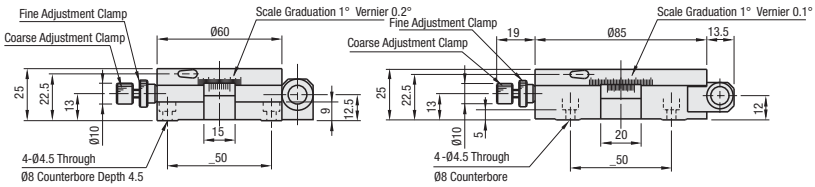


RPGS60



RPGS85





M Material: Stainless Steel

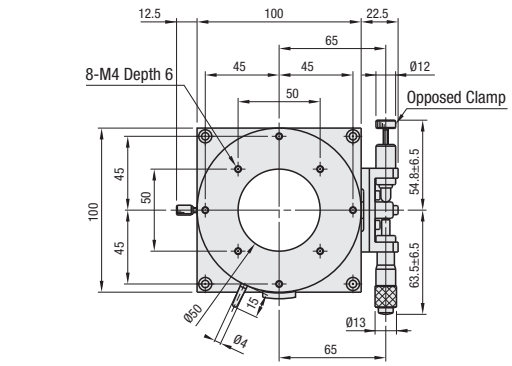
Features: There is a through hole in the center of the stage allowing passages of laser, wiring and etc.

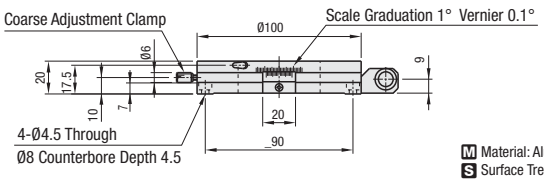
With a Through Hole

RoHS



RPGT100





M Material: Aluminum Alloy
S Surface Treatment: Black Anodize

XYPPG (Through Hole XY Stage:**P.1663**) and GPPG (Through Hole Goniometer Stage) can be combined with RPG_ for wide variety of positioning applications.

Part Number Type	No.	Stage (mm)	Travel Distance	Resolution Vernier	Resolution Micrometer	Load Capacity (N) Horizontal	Eccentricity (mm)	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~4
RPGS	60	Ø38	Coarse Feed 360° Fine Feed ±5°	0.2°	≈55"/Scale Graduation	49.0	0.05	0.58	SCB4-8	
	85	Ø38		0.1°	≈42"/Scale Graduation	58.8		0.97	SCB4-10	
RPGT	100	Ø100	Coarse Feed 360° Fine Feed ±5°	0.1°	≈32"/Scale Graduation	58.8	0.05	0.45	SCB4-6	

Knob Cover HDCVR13 (Sold separately): Ø13 Micrometer handle diameter can be increased by installing the cover. **P.1638**

Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. **P.1638**

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
RPGS60

Days to Ship

10 Days

Express B | 10,00 EUR/ piece **P.88**

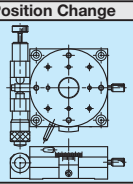
A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations

Part Number - (NR)
RPGS60 - NR

10 Days ⊗Express Serviceis not available.

Mounting dimensions of micrometer head and clamp are different from those of standard products. Refer to data on CAD for details of dimension.

Alteration	Micrometer Head Position Change
Spec.	Side Mount - Left/Right Reversed 
Code	NR
Price Adder	Free of Charge

[High Precision] Rotary
-High Load Capacity-

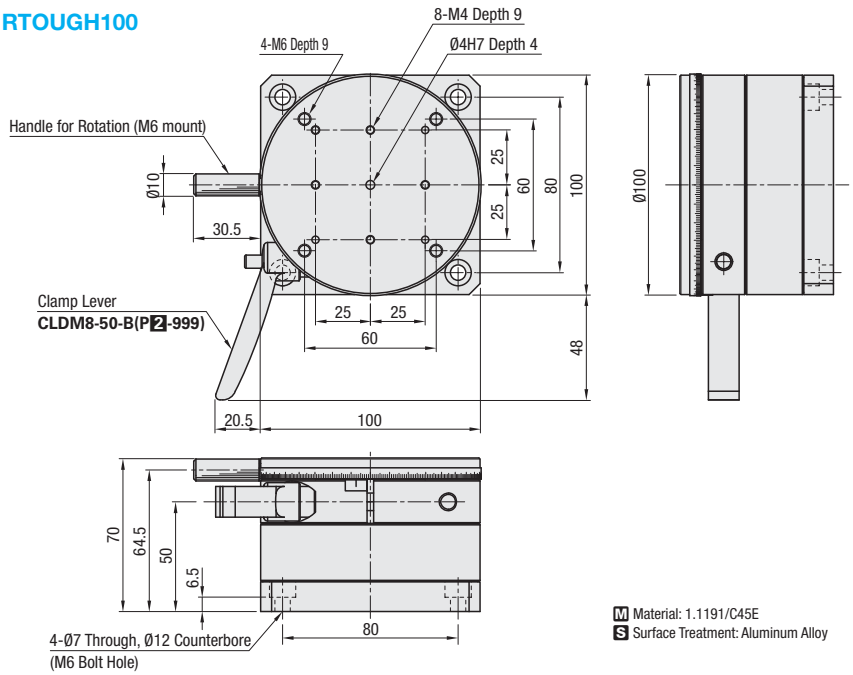
CAD Data

Features: Rotary Stage with a load capacity of 588N for machining and inspection of heavier objects.

High Load Capacity RoHS



RTOUGH100



M Material: 1.1191/C45E
S Surface Treatment: Aluminum Alloy

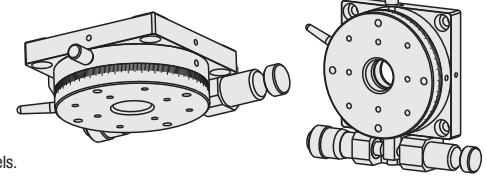
Part Number Type	Part Number No.	Stage (mm)	Travel Distance	Resolution	Load Capacity (N)	Travel Accuracy (μm) Eccentricity	Parallelism	Surface Wobble	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~4
RTOUGH	100	Ø100	Coarse Feed 360°	1°	588	100	70	80	4.36	SCB6-20	

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number: RTOUGH100

Days to Ship 10 Days

(Inverted Mounting) (Vertical Side Mounting)



One Point: About Mounting Orientation of Rotary Stages

Care must be taken for installations shown on the right.

Product	Inverted Mounting	Vertical Side Mounting
Surface Contact Slides	Δ	Δ
Cross Roller Bearing	○	Δ
High Load Capacity (RTOUGH)	○	○

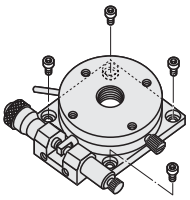
○ : Usable, though limitations apply for loads and moments.
Δ : Performance could be considerably deteriorated depending on ways of use or in some models.

One Point:About Rotary Stage Installations

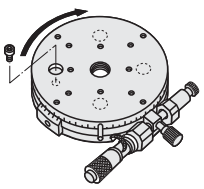
(1) Plate Type: Use the included screws with the mounting holes on the bottom plate.

(2) No Plate Type: Rotate the top plate to align the mounting holes on the bottom plate.Then mount with the included screws.

(1) Plate Type



(2) No Plate Type



[High Precision] Goniometer Stages
Dovetail Slide 1 & 2 Axes

CAD Data

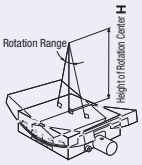
Features: Circular arc motion stages with arc centers located on central perpendicular line above the stage tops.

1-Axis

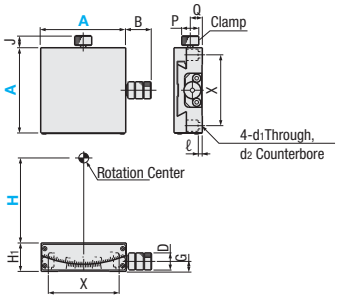
RoHS



The height of Rotation Center is as shown below.



GFG



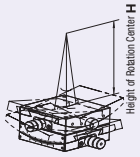
M Material: Low Cadmium Brass
S Suface Treatment: Black Fluororesin Treatment

2-Axes

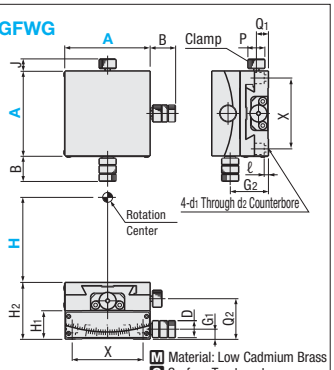
RoHS



The height of Rotation Center is as shown below.



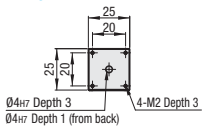
GFWG



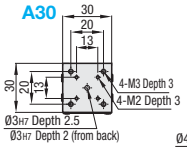
M Material: Low Cadmium Brass
S Surface Treatment: Black Fluororesin Treatment

- Table Mounting Hole Dimension

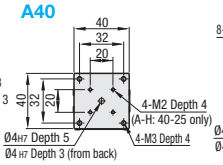
A25



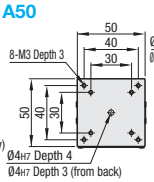
A30



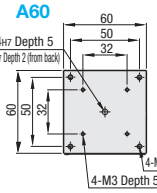
A40



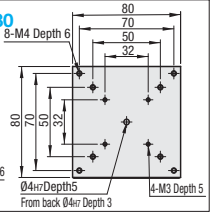
A50



A60



A80



1-Axis

Part Number Type	A-H	Top View B	J	Front View H1	D	G	Side View P	Q	X	ℓ	d1	d2	Accessory (4 pcs.) Type M-L
GFG	25-20	19	9	15	10	5.5	10	6.15	20	3	2.5	4.2	SCB2-6
	25-35	19	9	15	10	6	10	7.65	20	3	2.5	4.2	
	30-30	19.5	9	14	10	6.5	6	6.3	13	5	2.5	4.2	SCB2-8
	30-44	19.5	9	13	10	6.5	6	6.3	13	5	2.5	4.2	
	40-25	17.5	8	15	9	4.8	10	5.8	32	2	3.5	6	SCB3-6
	40-40	18	8	20	12	8.5	10	9.7	32	5	3.5	6	SCB3-8
	40-60	18	8	20	12	8.5	10	9.7	32	5	3.5	6	
	50-50	18	7.7	18	12	7	10	7	40	3	3.5	6	SCB3-6
	50-68	18	7.7	18	12	8	10	8	40	3	3.5	6	
	50-86	18	7.7	18	12	8	10	8	40	3	3.5	6	
	60-35	18	8.6	25	12	9	12	10	50	3	4.5	8	SCB4-8
	60-60	18	8.6	20	12	7	12	8.5	50	3	4.5	8	
	60-80	18	8.6	20	12	7	12	8.5	50	3	4.5	8	
	80-100	25	14	30	15	11	15	14	70	7	4.5	8	SCB4-12
	80-130	25	14	30	15	11	15	13	70	7	4.5	8	

Performance

Part Number Type	A-H	Stage (mm)	Height of Rotation Center H (mm)	Travel Distance	Travel per Rotation	Load Capacity (N)	Weight (kg)	€ Unit Price Qty. 1~4
GFG	25-20	25x25	20±0.1	±15°	≈2.0°	19.6	0.07	
	25-35		35±0.1	±10°				
	30-30	30x30	30±0.1	±10°	≈2.06°	9.8	0.10	
	30-44		44±0.1		≈1.5°			
	40-25	40x40	25±0.1	±20°	≈2.2°	29.4	0.18	
	40-40		40±0.1	±15°	≈1.89°		0.24	
	40-60		60±0.1	±10°	≈1.33°			
	50-50	50x50	50±0.1		≈1.55°		0.36	
	50-68		68±0.1		≈1.2°			
	50-86		86±0.1	±8°	≈0.97°			
	60-35	60x60	35±0.1	±25°	≈2.0°	58.8	0.72	
	60-60		60±0.1	±20°	≈1.3°		0.58	
	60-80		80±0.1	±15°	≈1.0°			
	80-100	80x80	100±0.1	±18°	≈1.0°	49.0	0.64	
	80-130		130±0.1	±15°				

Resolution (Vernier Scale Indication): 0.1°/division

For orders larger than indicated quantity, please request a quotation.

2-Axes

Part Number Type	A-H	Top View B	J	Front View H1	H2	D	G1	Q2	Side View P	Q1	G2	X	ℓ	d1	d2	Accessory (4 pcs.) Type M-L
GFWG	25-20	19	9	15	30	10	6	21.1	10	7.7	20.5	20	3	2.5	4.2	SCB2-6
	30-30	19.5	9	13	27	10	6.5	19.3	6	6.3	19.5	13	5	2.5	4.2	SCB2-8
	40-25	17.5/18*	8	20	35	12	8.5	25.8	10	9.7	24.8	32	5	3.5	6	SCB3-6
	40-40	18	8	20	40	12	8.5	29.7	10	9.7	28.5	32	5	3.5	6	SCB3-8
	50-50	18	7.7	18	36	12	8	25	10	8	25	40	3	3.5	6	SCB3-6
	50-68	18	7.7	18	36	12	8	26	10	8	26	40	3	3.5	6	
	60-35	18	8.6	20	45	12	7	30	12	8.5	29	50	3	4.5	8	SCB4-8
	60-60	18	8.6	20	40	12	7	28.5	12	8.5	27	50	3	4.5	8	
	80-100	25	14	30	60	15	11	44	15	13	41	70	7	4.5	8	SCB4-12

* GFWG40-25 handle length (B): Top 17.5, Bottom 18mm

Performance

Part Number Type	A-H	Stage (mm)	Height of Rotation Center H (mm)	Travel Distance	Travel per Rotation	Load Capacity (N)	Weight (kg)	€ Unit Price Qty. 1~4
GFWG	25-20	25x25	20±0.1	(Top)±15°/(Bottom)±10°	(Top)≈2.0°/(Bottom)≈2.0°	19.6	0.14	
	30-30	30x30	30±0.1	(Top)±10°/(Bottom)±10°	(Top)≈2.06°/(Bottom)≈1.5°	9.8	0.20	
	40-25	40x40	25±0.1	(Top)±20°/(Bottom)±15°	(Top)≈2.2°/(Bottom)≈1.89°	27.4	0.42	
	40-40		40±0.1	(Top)±15°/(Bottom)±10°	(Top)≈1.89°/(Bottom)≈1.33°	26.4	0.48	
	50-50	50x50	50±0.1	(Top)±10°/(Bottom)±10°	(Top)≈1.55°/(Bottom)≈1.2°	24.5	0.72	
	50-68		68±0.1	(Top)±10°/(Bottom)±8°	(Top)≈1.2°/(Bottom)≈0.97°			
	60-35	60x60	35±0.1	(Top)±25°/(Bottom)±20°	(Top)≈2.0°/(Bottom)≈1.3°	51.9	1.30	
	60-60		60±0.1	(Top)±20°/(Bottom)±15°	(Top)≈1.3°/(Bottom)≈1.0°	52.9	1.16	
	80-100	80x80	100±0.1	(Top)±18°/(Bottom)±15°	(Top)≈1.0°/(Bottom)≈1.0°	42.1	1.28	

Resolution (Vernier Scale Indication): 0.1°/division

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
GFG40-25
GFWG60-60

Days to Ship

10 Days — P88

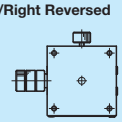
Express B — 10,00 EUR/piece

A Express Charge of 27,00 EUR for 3 or more identical pieces.
Express Serviceis not available for A=25 and 80.

Alterations

Part Number - (NR)
GFG40-25 - NR

10 Days — Express Serviceis not available.

Alteration	Feed Knob Position Change
Spec.	Side Mount - Left/Right Reversed 
Code	NR
Price Adder	Free of Charge

Refer to data on CAD for dimension details.

[High Precision] Goniometer Stage Cross Roller 1 & 2 Axes

CAD Data

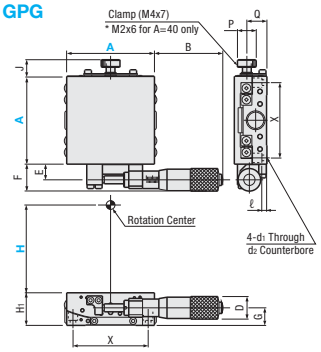
Features: High precision stage with Cross Roller Guides. Excellent operating characteristics are suitable for frequent positioning applications. Capable of fine feeds.

1-Axis

RoHS



GPG



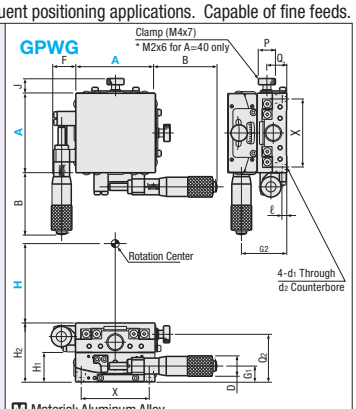
M Material: Aluminum Alloy
S Surface Treatment: GPG40/60: Black Anodize
PG50/70: Clear Anodize

2-Axes

RoHS

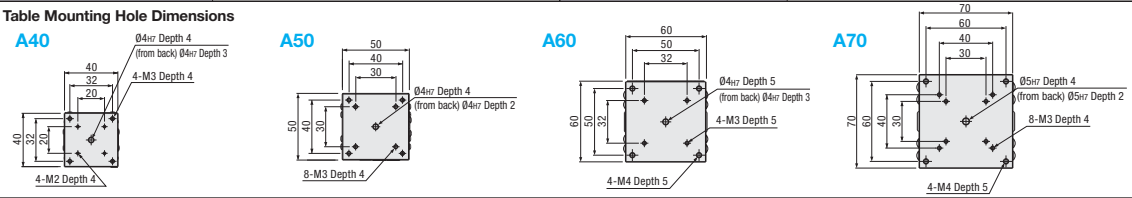


GPWG



M Material: Aluminum Alloy
S Surface Treatment: GPWG40/60: Black Anodize
PWG50/70: Clear Anodize

- Table Mounting Hole Dimensions



Part Number Type	A-H	Top View B	J	E	F	Front View H1	D	G	P	Side View Q	X	ℓ	d1	d2
GPG	40-40	38	5.5	7.5	14	20	13	11	3.8	14	32	3	3.5	6
	40-60													
	40-80									15				
	50-50	31	13	11.5	18	18	13	9.3	15	9	40	3	3.5	6
	50-68									10				
	50-86													
	60-50	31	13.5	8	14	25	13	12.5	15	15.5	50	5	4.5	8
	60-75									16				
	60-100									16.5				
	60-125													
	70-70	54.5	13	12.5	21.5	26	18	14	15	16	60	4	4.5	8
	70-96									17.5				
	70-122													

Part Number Type	A-H	Top View B	J	F	Front View H1	H2	D	G1	Q2	Side View P	Q1	G2	X	ℓ	d1	d2
GPWG	40-40	38	5.5	14	20	40	13	11	34	3.8	14	31	32	3	3.5	6
	40-60								34		15					
	50-50	31	13	18	18	36	13	9.3	27	15	10	27.3	40	3	3.5	6
	50-68								28							
	60-50	31	13.5	14	25	50	13	12.5	40.5	15	16	37.5	50	5	4.5	8
	60-75								41		16.5					
	60-100								41.5							
	70-70	54.5	13.3	21.5	26	52	18	14	42	15	17.5	40	60	4	4.5	8
	70-96								43.5							

Performance

Part Number Type	A-H	Stage (mm)	Height of Rotation Center H (mm)	Rotation Center Runout	Travel Distance	Resolution (/division) (Micrometer)	Load Capacity (N)	Moment Capacity (Nm) Pitch	Yaw	Roll	Moment Rigidity (°/N-cm) Pitch	Yaw	Roll	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~4
GPG	40-40	40x40	40±0.2	0.01mm or Less	±7°	≈42	29.4	1.0	0.8	0.9	1.30	1.15	0.27	0.13	SCB3-6	
	40-60		60±0.2		±4°	≈30										
	40-80		80±0.2			≈23										
	50-50	50x50	50±0.2		±3°	≈53		1.5	1.2	2.5	0.60	0.26	0.37	0.23	SCB3-6	
	50-68		68±0.2			≈40										
	50-86		86±0.2			≈33										
	60-50	60x60	50±0.2		±4°	≈33	49.0	1.5	2.0	2.6	0.27	0.09	0.10	0.31	SCB4-10	
	60-75		75±0.2			≈24										
	60-100		100±0.2		±3°	≈18								0.30		
	60-125		125±0.2		±2.5°	≈15										
	70-70	70x70	70±0.2		±3°	≈25		3.6	2.8	5.7	0.13	0.05	0.05	0.53	SCB4-8	
	70-96		96±0.2			≈19										
	70-122		122±0.2			≈15										

For orders larger than indicated quantity, please request a quotation.

Part Number Type	A-H	Stage (mm)	Height of Rotation Center H (mm)	Travel Distance	Resolution (/division) (Micrometer)	Load Capacity (N)	Moment Capacity (Nm) Pitch	Yaw	Roll	Moment Rigidity (°/N-cm) Pitch	Yaw	Roll	Weight (kg)	Accessory (4 pcs.) TypeM-L	€ Unit Price Qty. 1~4
GPWG	40-40	40x40	40±0.4	(Top)±7°/(Bottom)±4°	(Top)≈42 /(Bottom)≈30	27.4	0.9	0.8	0.9	1.57	2.30	1.57	0.26	SCB3-6	
	40-60		60±0.4	(Top)±4°/(Bottom)±4°	(Top)≈30 /(Bottom)≈23										
	50-50	50x50	50±0.4	(Top)±3°/(Bottom)±3°	(Top)≈53 /(Bottom)≈40	26.4	1.5	1.2	1.5	0.97	0.52	0.97	0.46	SCB3-6	
	50-68		68±0.4		(Top)≈40 /(Bottom)≈33										
	60-50	60x60	50±0.4	(Top)±4°/(Bottom)±4°	(Top)≈33 /(Bottom)≈24	46.0	1.5	2.0	1.5	0.37	0.18	0.37	0.62	SCB4-10	
	60-75		75±0.4	(Top)±4°/(Bottom)±3°	(Top)≈24 /(Bottom)≈18										
	60-100		100±0.4	(Top)±3°/(Bottom)±2.5°	(Top)≈18 /(Bottom)≈15								0.60		
	70-70	70x70	70±0.4	(Top)±3°/(Bottom)±3°	(Top)≈25 /(Bottom)≈19	44.1	3.6	2.8	3.6	0.27	0.32	0.27	1.06	SCB4-8	
	70-96		96±0.4		(Top)≈19 /(Bottom)≈15										

Knob Cover HDCVR13 (Sold separately): Ø13 Micrometer handle diameter can be increased by installing the cover. P.1638

Extension cover HDEXT13 (Sold separately): Ø13 Micrometer Head handle can be extended. P.1638

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
GPG40-40
GPWG70-96

Days to Ship

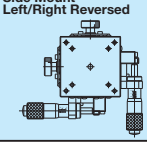
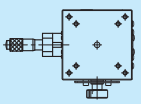
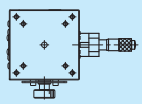
10 Days | Express B | 10,00 EUR/piece P.88

A Express Charge of 27,00 EUR for 3 or more identical pieces.

Alterations

Part Number - (NR · A · AR)
GPG40-40 - NR
GPWG50-50 - A

10 Days
Express Serviceis not available.

Alterations	Micrometer Head Position Change		
Spec.	Side Mount - Left/Right Reversed 	Center  Only applicable for A=50, 70	Center Mount Mirrored  Only applicable for A=50, 70
Code	NR	A	AR
Price Adder	Free of Charge	Free of Charge	Free of Charge

Mounting dimensions of micrometer head and clamp are different from those of standard products. Refer to data on CAD for details of dimension.

Stage Maintenance Parts
-Micrometer Head-

CAD Data

Features: Micrometer head which enables fine adjustment can be ordered separately. Repeatability is ensured as 0.01mm scale reading is possible.

Micrometer Heads RoHS

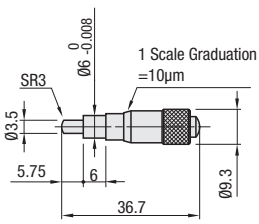




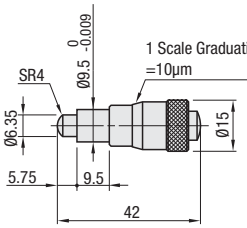




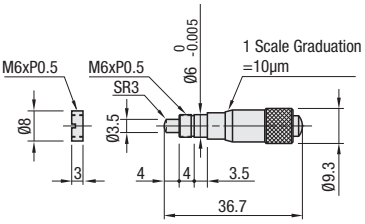
MCLN1
(Stroke ±3.25mm)



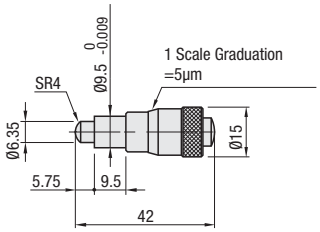
MCLN2
(Stroke ±3.25mm)



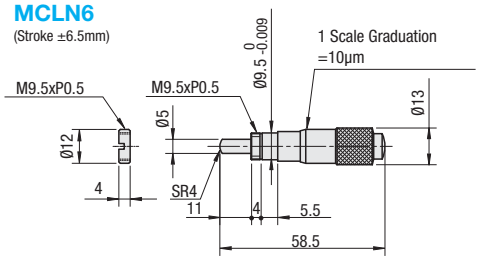
MCLN3
(Stroke ±3.25mm)



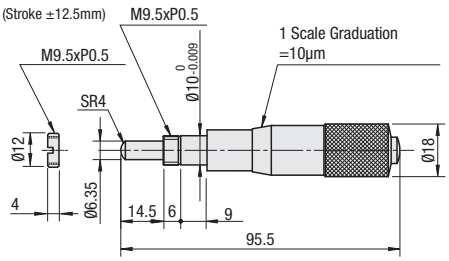
MCLN4
(Stroke ±3.25mm)



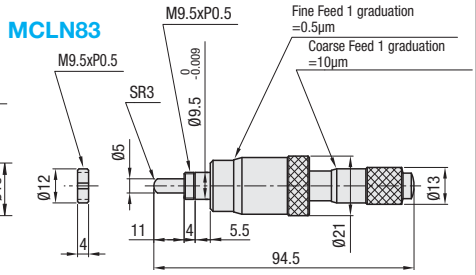
MCLN6
(Stroke ±6.5mm)



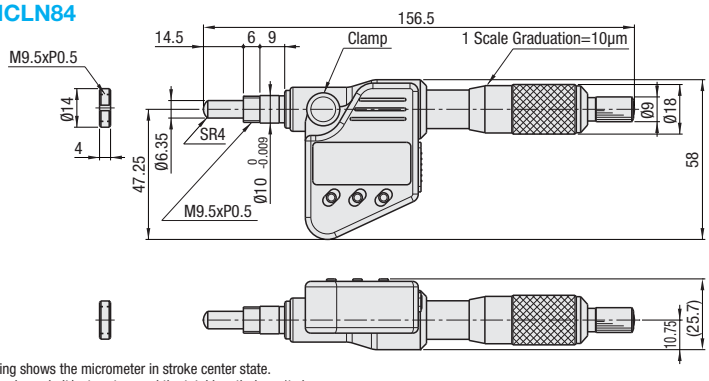
MCLN12
(Stroke ±12.5mm)



MCLN83



MCLN84



The drawing shows the micrometer in stroke center state.
Micrometer has a bolt/nut system and the total length doesn't change.

M Material: Spindle: JIS SKS Handle: JIS SUM Nut: Low Cadmium Brass

A Accessory: Special Wrench

Part Number Type	No.	Stroke (mm)	Resolution (mm)	Travel Per Rotation (mm)	Weight (kg)	€ Unit Price Qty. 1~9
MCLN	1	±3.25	0.01	0.5	0.01	
	2				0.03	
	3				0.01	
	4		0.005	0.25	0.03	
	6	±6.5	0.01	0.5		
	12	±12.5			0.09	
	83	Coarse Feed ±6.5 Fine Feed 0.2	Coarse Feed ±0.01 Fine Feed 0.0005	0.5	0.10	
	84	0~25	0.001	0.5	0.235	

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: MCLN6

Days to Ship

- MCLN1~12: 10 Days
- MCLN83 · 84: 6 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

P.87

Stage Maintenance Parts

- Feed Screws / Clamp Screws with Levers / Vernier Scales-

CAD Data

Features: Precision finished screw/bushing fits minimizes play.

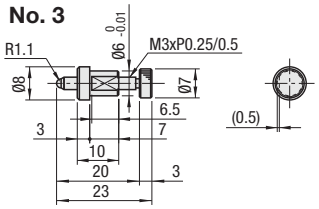
Feed Screws RoHS



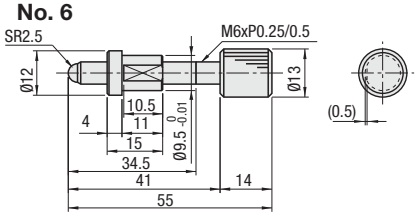
Knob Type

XBMF (Pitch 0.25) (No.3, 6)
XBM (Pitch 0.5) (No.3, 6, 12)

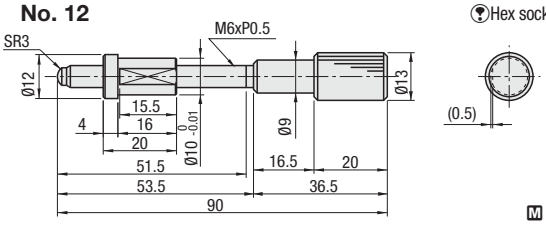
No. 3



No. 6



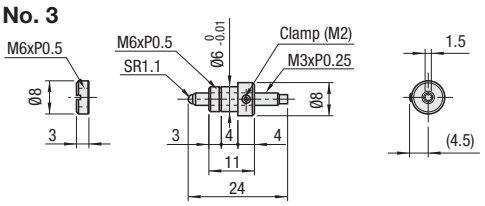
No. 12



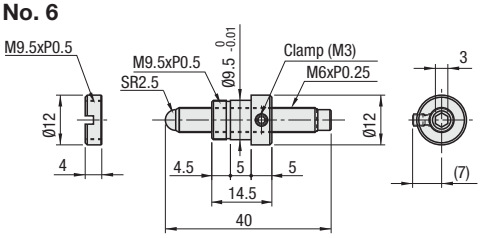
Hexagon Socket Head Type

XBRF(Pitch 0.25) (No.3, 6)

No. 3



No. 6



Hex socket type can be locked with a set screw on the bushing.

Material: Screw: 1.4301/X5CrNi18-10 Nut: Low Cadmium Brass

Feed Screws	Part Number (Pitch) Type	No.	Stroke	Linear Ball Slide Type · Cross Roller Type Applicable Stage Surface Size	Weight (g)
With Knob	(0.25)XBMF (* only) (0.5)XBM	3*	±3.5	25 Square	5
		6*	±6.5	40~80 square	30
		12	±12.5	100 / 120 Square	50
Hexagon Socket Head Cap Screw	(0.25)XBRF	3	±3.5	25 Square	5
		6	±6.5	40~80 square	15

A special wrench is included with XBRF.

Part Number Type	No.	€ Unit Price Qty. 1~9
XBM	3	
	6	
	12	

For orders larger than indicated quantity, please request a quotation.

Part Number Type	No.	€ Unit Price Qty. 1-2	Volume Discount Qty. 3-9
XBMF	3		
	6		
XBRF	3		
	6		

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number XBMF3

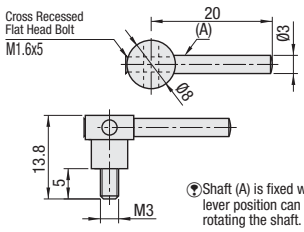
Days to Ship 8 Days

Features: Clamp Screws with Lever ...More torque can be applied for clamping compared to the standard clamp screws. Dovetail slide stage clamps can be reinforced.

Clamp Screws with Lever for Dovetail Stages RoHS

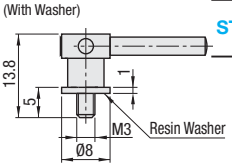


STRONG3



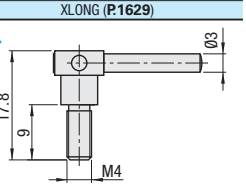
STRONG3W

(With Washer)



Type	No.	Applicable Stages
STRONG	3	XLWG (P.1628) · XSLC (P.1632) · XSC (P.1631) · XSSLC (P.1633)
	3W	XWG (P.1624) · XSL (P.1632) · XSSL (P.1633) · XSP (P.1623) · XSB (P.1626)
	4	XLONG (P.1629)

STRONG4



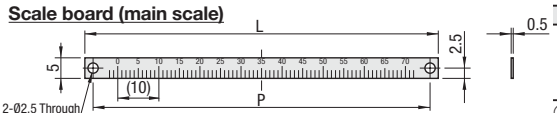
Shaft (A) is fixed with cross-recessed flat head screw (M1.6x5) and lever position can be turned by 90 degrees taking out the screw and rotating the shaft.

Material: Lever: Stainless Steel Screw: Low Cadmium Brass

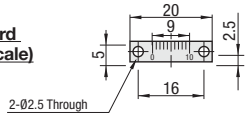
Vernier Scales RoHS



Scale board (main scale)



Scale board (vernier scale)



Type	No.	L	P	Applicable Stage
VNIR	40	36	32	XWG · XYWG · XSL · XSLC · XSC · XSSL · XSSLC
	60	56	52	
	90	86	82	Select the size that corresponds to the stage.
	140	136	132	

Resolution: 0.1mm

See the XY Stage Overview pages for vernier scale reading instructions. P.1611

Material: EN AW-1050A/Al99,5

Part Number Type	No.	€ Unit Price Qty. 1~4	Volume Discount Qty.5-7	Qty.8-9
STRONG	3			
	3W			
	4			

For orders larger than indicated quantity, please request a quotation.

Part Number Type	No.	€ Unit Price Qty. 1~9
VNIR	40	
	60	
	90	
	140	

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number STRONG3 VNIR60

Days to Ship 6 Days P.88

Motorized Stage Overview

■Advantages of Motorized Stages

- Remote Control: Stages can be remote controlled by the Handset Terminal (HDT100) or a computer. Cable length can be specified.

- High Precision: Controllable at a step of 1µm. (refer to specs of respective stages for details.) Suitable for use in applications where high precision level not achievable with a manual positioning stage is required.

- Automation: Can be programmed to reciprocate between predetermined points along coordinates (learning function; see below).

■Features

- Plug and play with only 5 minutes of setup time
  Usable by simply connecting the motorized stage controller and cable.
- Handset Terminal (HDT100) enables direct control without connecting to a PC.

■Operations of Motorized Stages

There are three major operation modes for the motorized stages.

(1) Continuous Jog Jogs while the button on the Handset Terminal (HDT100) is pressed.
⇒ Effective when the stage is not easily accessible for manual operation.

(2) Step Move Preset distance steps can be commanded to move.
⇒ Movements at fixed pitches (such as 1mm increment) is possible.

(3) Coordinate Positioning Mode Command moves from 0 (Home) to specified coordinate points.
⇒ Instruction such as "move to point C from A via B" is configurable.

Functions below are provided to support the Coordinate Positioning Mode.

- Homing Since the controller does not know the current mechanical position of the stage axis upon power-up, this mode seeks for the Home Position and initializes the controller's internal coordinate system.

- Teaching Function Moves the stage to specified registered coordinate (up to six axes).
⇒ By automating repetitive processes, reduction of cycle time can be achieved.

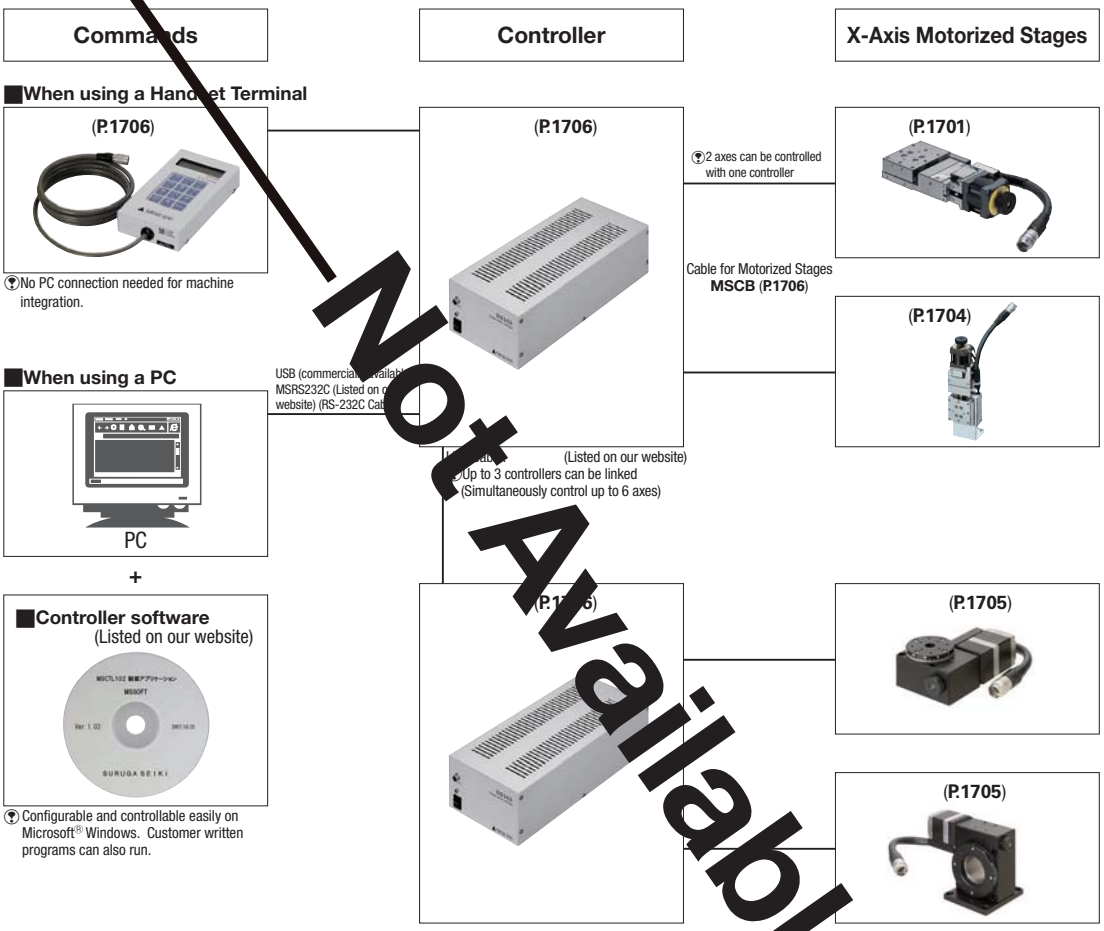
■Operating Environment

Operating Environment : 10~50°C, 20~70%RH* (No condensation)
Recommended Operating Environment: 22±5°C, 20~70%RH* (No condensation)
*RH represents Relative Humidity (a term used to describe the amount of water vapor in the air).

Not Available

■Motorized Stages Recommended Connection Examples

When using MSCTL102 Controller (Recommended)



Consult us for setting options other than the above.

■Motorized Stage Technical Support Center
Optical Scientific Technology (OST) Division Suruga Seiki Co. Ltd. (MISUMI Group)
TEL: 0120-343-559
FAX: 0120-343-588
Office Hours: From Monday through Friday (Except for Holidays)
From 9:00~12:00, 13:00~17:00

Not Available

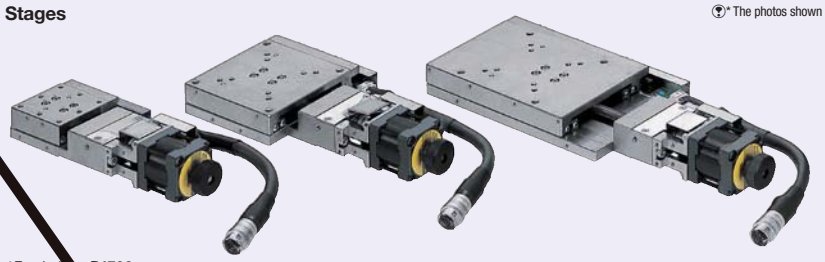
[Motorized] X-Axis Linear Ball Guides

Features: Integrated Linear Ball Guide stage with high accuracy and rigidity, yet economical. The carriage height is 20mm.

X-Axis Motorized Stages

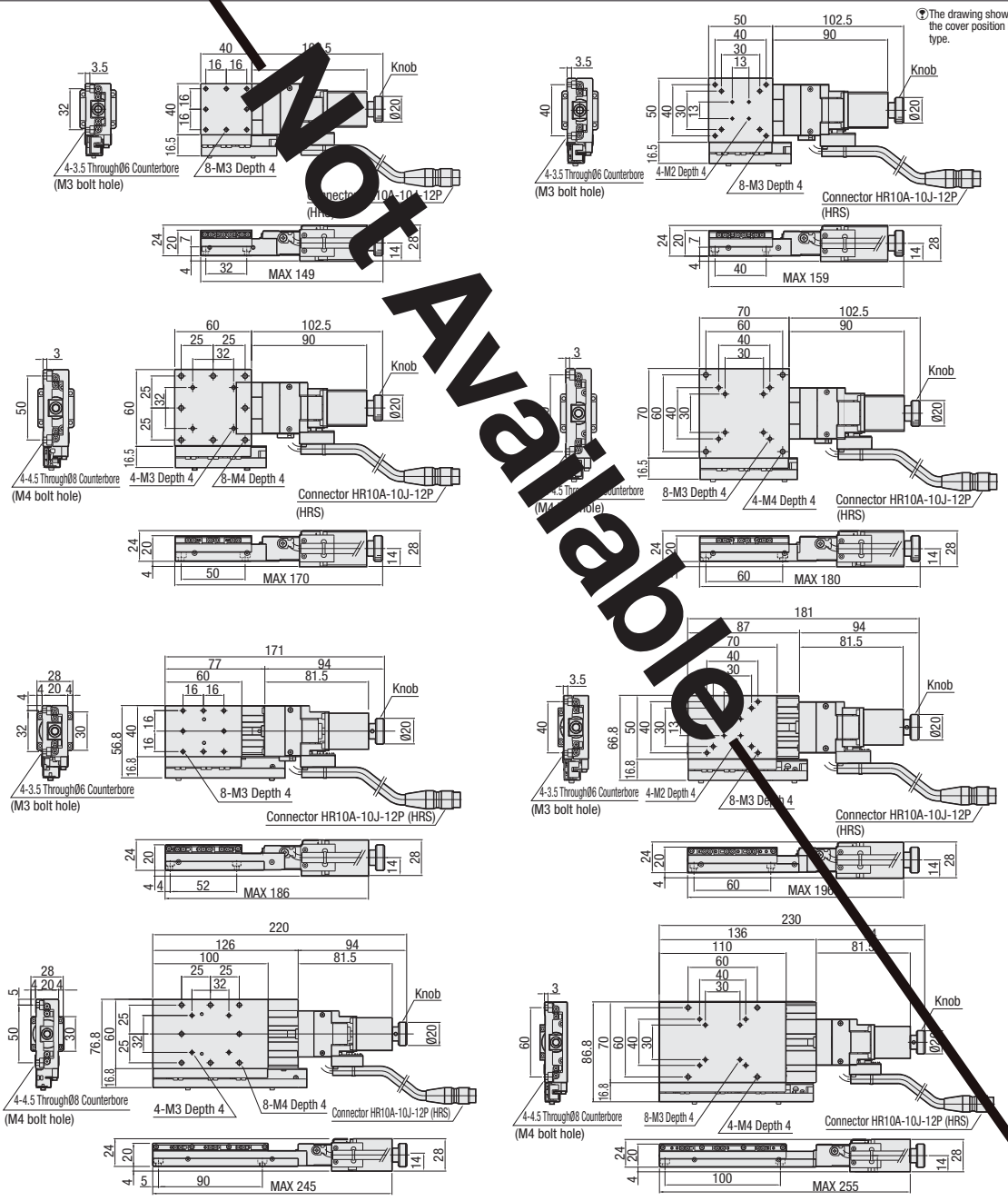
* The photos shown are cover position R type.

RoHS



For the controller and Handset Terminal, see **P.1706**

The drawing shows the cover position L type.



Material: 1.4125/X105CrMo17
Surface Treatment: Electroless Nickel Plating

Not Available

■Motorized Stage Technical Support Center
Optical Scientific Technology (OST) Division Suruga Seiki Co. Ltd. (MISUMI Group)
TEL: 0120-343-559
FAX: 0120–343–588
Office Hours: From Monday through Friday (Except for Holidays)
9:00 ~ 12:00 13:00 ~ 17:00

CAD Data

Part Number Type	No.	Sensor: Cover Position	Sensor: Logic	Sensor: Voltage (V)	Stage (mm)	Travel Distance (mm)	Weight (kg)	Positioning Accuracy	Moment Rigidity (*/N-cm): Pitch	Yaw	Roll	Motion Straightness	Motion Parallelism	Pitching	Yawing	Accessory (4 pcs.) Type M-L	€ Unit Price Qty. 1-9
	413	R	A(All N.C.)	5	40x40	13	0.5	6µm or less	0.22	0.17	0.12	1µm or less	5µm or less	15" or less	10" or less	SCB3-8	
	513				50x50	13	0.6		0.14	0.10	0.06					SCB3-8	
	615				60x60	15	0.7		0.08	0.07	0.03					SCB4-8	
	715				70x70	15	0.9		0.03	0.03	0.01					SCB4-8	
	430	L	C (Limit Switches are N.C. Home Sensor is N.O.)	24	40x60	30	0.6	12µm or less	0.24	0.18	0.26	2µm or less	10µm or less	20" or less	15" or less	SCB3-8	
	530				50x70	30	0.8		0.12	0.13	0.10					SCB3-8	
	650				60x100	50	1.1		0.05	0.05	0.05					SCB4-8	
	750				70x110	50	1.2		0.03	0.03	0.03					SCB4-8	

Photos shown on the right page are Cover Position R type, and the drawings are Cover Position L type.

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number - Sensor → - LA5

Days to Ship: 10 Days

24VDC sensors cannot be operated from the MSCTL102 controller.
If the 5V sensors are selected, applying voltages exceeding 5V will damage the sensors.

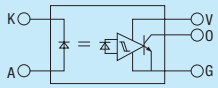
[Common Specifications]

Feed Screws	Ball Screw Ø6, Lead 1
Guides	Linear Ball Guide
Resolution*1	2µm/Pulse (Full) 1µm/Pulse (Half)
MAX Speed*2	10mm/sec (Pulse Rate: 5kHz)

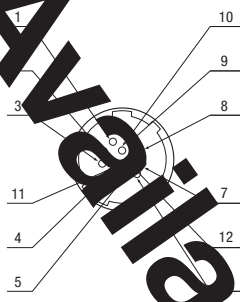
Repeatability	Less than ±0.5µm
Load Capacity*3	98N
Lost Motion	Less than 1µm
Backlash	Less than 0.5µm
Parallelism	Less than 15µm

*1 Stage travel per one pulse.
*2 Max. speed capable with our controller (MSCTL102) driving in Full Step mode, stage loaded at a max load capacity. (This value changes depending on the driver and controller used, or the load.)
*3 The load capacity is reduced to 49N for vertical use.

■Electrical Specifications

Motor	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)
	Step Angle	0.72°
Compatible Receptacle Connector		HR10A-10P-12S (Hirose Electric Co., LTD.)
Sensor	Current Consumption	100mA or less (25mA per sensor)
	Control Outputs	NPN Open Collector Output DC5~24V, 16mA or less Residual Voltage 0.4V or less (when load current is 16mA)
	Output Logic	N.C….Light seen N.O….Lights not seen <Internal Circuit>  K: Emitter Cathode V: Receptor Supply+ A: Receptor Anode O: Output G: Receptor Supply-

■Connector Pin Arrangement ■Connecting Diagram



1	Motor Lead	Blue
2	Motor Lead	Red
3	Motor Lead	Orange
4	Motor Lead	Green
5	Motor Lead	Black
6	CWLS Output	
7	CCWLS Output	
8	ORG2	
9	Power Supply (+)	
10	ORG1	
11	Power Supply (-)	
12	F.G.	

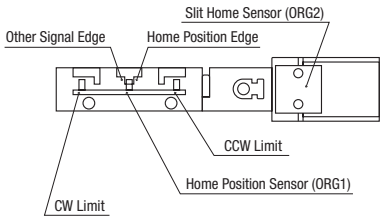
MOTOR

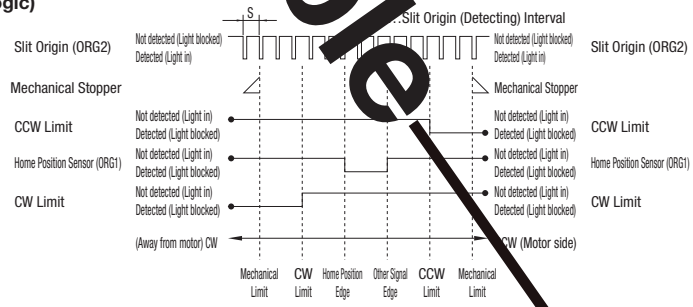
Limit SW, Position Home Sensor Board (ORG1)

Slit Home Position Sensor Board (ORG2)

* The dotted line connections are not functional when a standard cable is used.

■Included Sensor Timing Chart (For A sensor logic)





CW Direction ◄ ► CCW Direction

Travel Distance	Reference Position	Mechanical Limit	CW Limit	Origin	Other Signal Edge	CCW Limit	Mechanical Limit
13	Homing	7.5	7	0	2	7	7.5
15	Homing	8.5	8	0	2	8	8.5
30	Homing	16	15.5	0	2	15.5	16
50	Homing	26	25.5	0	2	25.5	26
All Types			Slit Home Position (Detecting) Interval S=1				

- Homing routine above: MSCTL102 controller used, and Homing Routine Type 3 (see below) executed.
- The coordinates shown are design values, and there may be approx. ±0.5mm on the physical dimensions.

(Unit: mm)

■Recommended Homing Method (MSCTL102 P.1-1706) used.

Type 3	Seeks in CCW rotation for an ORG1 signal on the CCW side edge.
Type 4	Seeks in CW rotation for an ORG1 signal on the CW side edge.
Type 9	Pattern (1) is executed, then the TIMING signal detection routine on the CCW side edge is processed.
Type 10	Pattern (2) is executed, then the TIMING signal detection routine on the CW side edge is processed.

Not Available

[Motorized] XY-Axes Linear Ball Slide

Motorized Stage Technical Support Center
Optical Scientific Technology (OST) Division Suruga Seiki Co. Ltd. (MISUMI Group)
TEL: 0120-343-559
FAX: 0120–343–588
Office Hours: From Monday through Friday (Except for Holidays)
9:00 ~ 12:00 13:00 ~ 17:00

CAD Data

Features: Integrated Linear Ball Guides with high accuracy and rigidity. Orthogonality is within 5µm. Capable of highly accurate two axes positioning as well as full stroke moves.

XY-Axis Motorized Stages

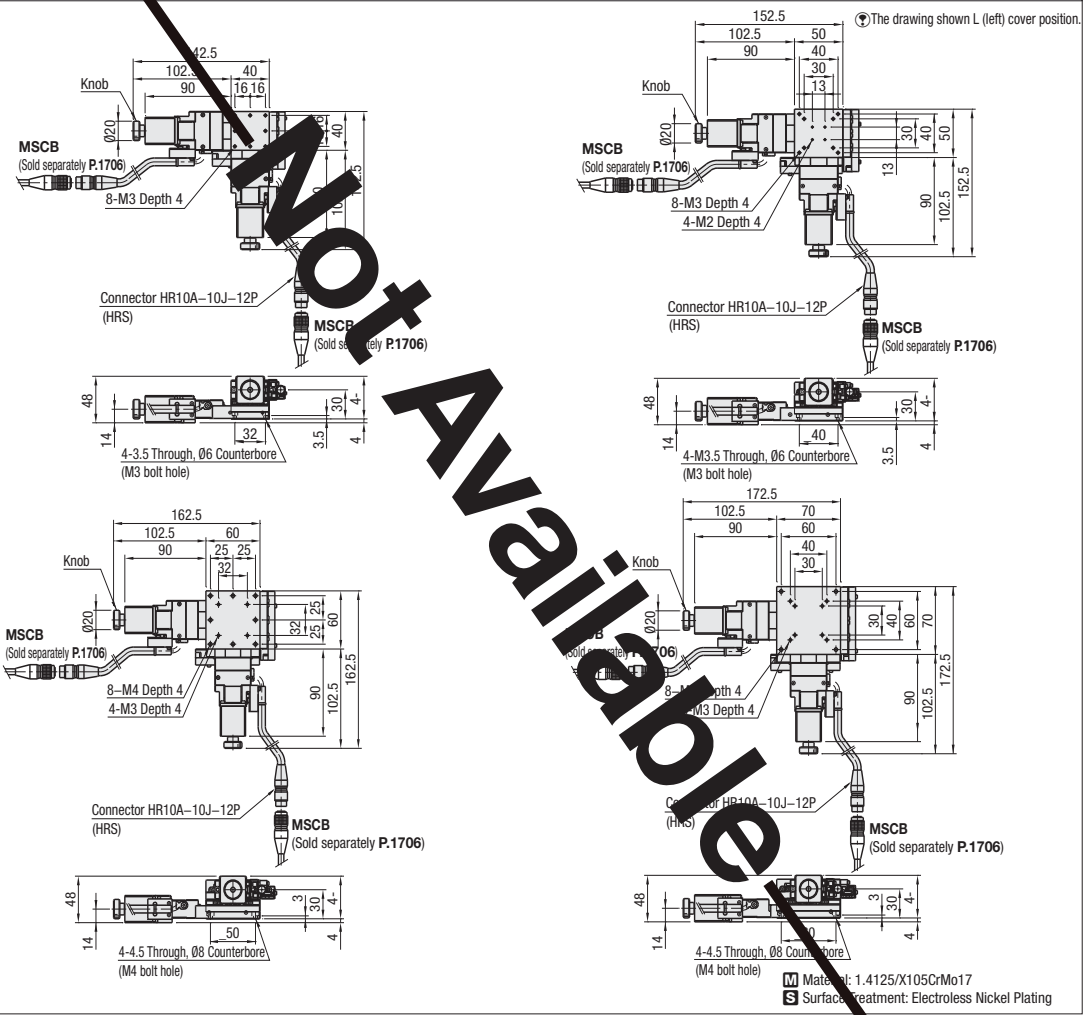
*The products shown here is cover position R type.

RoHS





For electrical specifications, connector pin assignments, wiring diagram, and a timing chart, see **P.1702**
For the controller and Handset Terminal, see **P.1706**



Not Available

Part Number		Sensor			Stage (mm)	Travel Distance (mm)	Weight (kg)	Positioning Accuracy	Motion Straightness	Pitching	Yawing	Load Capacity (N)	Accessory (4 pcs.)	€ Unit Price
Type	No.	Cover Position	Logic	Voltage (V)									Type M-L	Qty. 1~4
	413	L R	A((All N.C.))	5	40x40	13	1.0	6µm or less	1µm or less	15" or less	10" or less	93.1	SCB3-8	
	513				50x50		1.2					92.1	SCB3-8	
	615		C (Limit Switches are N.C. Home Sensor is N.O.)	24	60x60	15	1.7					91.1	SCB4-8	
	715				70x70		1.8					89.2	SCB4-8	

Product images above are all for cover position R, and the drawings are all for cover position L type.

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number - Sensor
- RA5

24VDC sensors cannot be operated from the MSCTL102 controller.
If the 5V sensors are selected, applying voltages exceeding 5V will damage the sensors.

Days to Ship: 10 Days

[Common Specifications]

The accuracy specifications below are certified for: Single axis horizontal mounting orientation.

Feed Screws	Ball Screw Ø6, Lead 1
Guides	Linear Ball Guide
Resolution*1	2µm/Pulse (Full) 1µm/Pulse (Half)
MAX Speed*2	10mm/sec (Pulse Rate: 5kHz)

Repeatability	Less than ±0.5µm
Lost Motion	Less than 1µm
Backlash	Less than 0.5µm
Motion Orthogonality	Within 5µm/Full Stroke

* 1 Stage travel per one pulse.
* 2 Max. speed capable with our controller (MSCTL102) driving in Full Step mode, stage loaded at a max load capacity. (The value changes depending on the driver and controller used, or the load.)

[Motorized] Z-Axis Linear Ball Slide

Motorized Stage Technical Support Center
Optical Scientific Technology (OST) Division Suruga Seiki Co. Ltd. (MISUMI Group)
TEL: 0120-343-559
FAX: 0120–343–588
Office Hours: From Monday through Friday (Except for Holidays)
9:00 ~ 12:00 13:00 ~ 17:00

CAD Data

Features: Z-Axis Stage with integrated Linear Ball Guides, with high accuracy and rigidity.

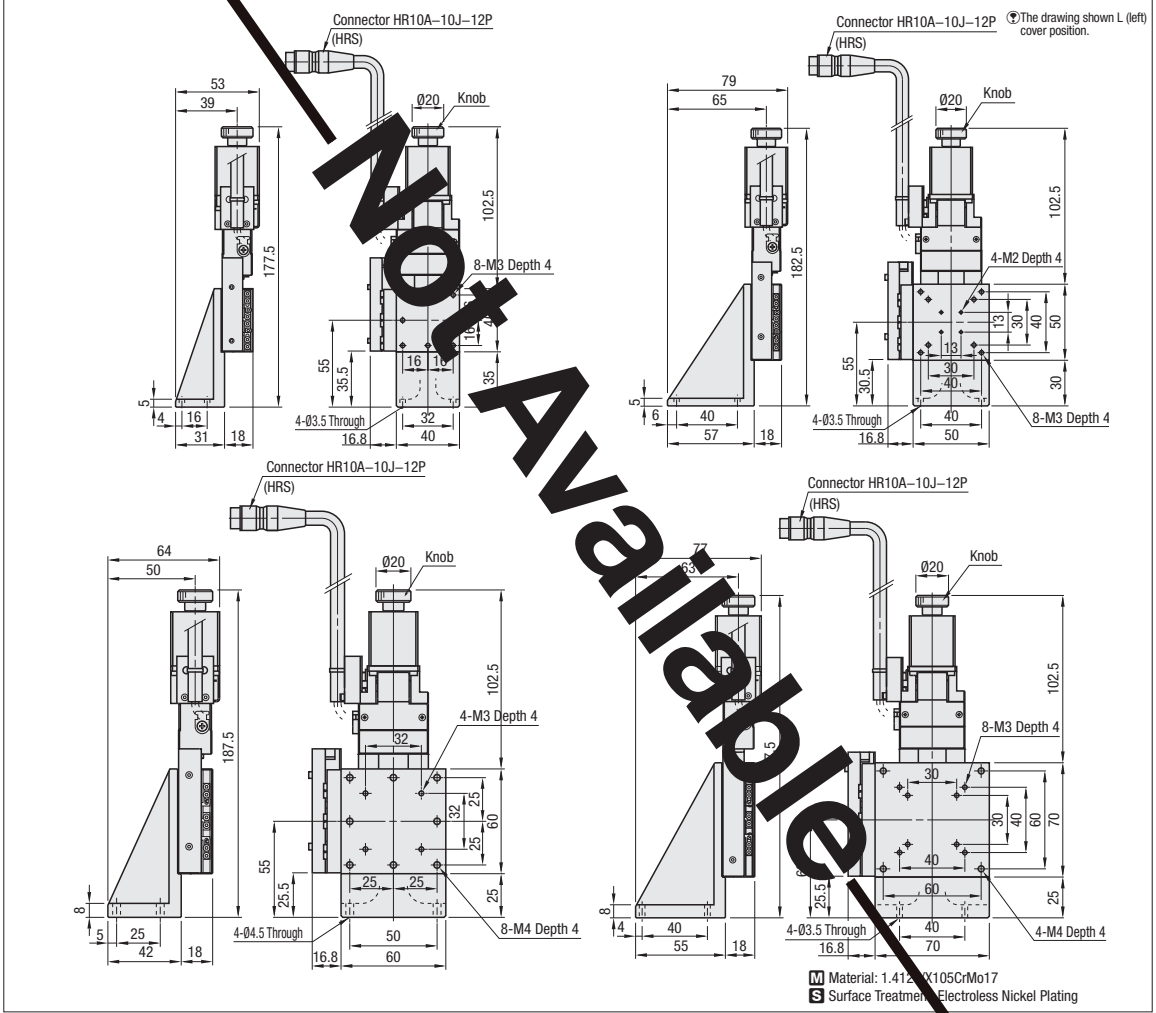
Z-Axis Motorized Stages

*The products shown here is cover position R type.

RoHS



For electrical specifications, connector pin assignments, wiring diagram, and a timing chart, see **P.1702**
For the controller and Handset Terminal, see **P.1706**



Not Available

Part Number		Sensor			Stage (mm)	Travel Distance (mm)	Weight (kg)	Positioning Accuracy	Motion Straightness	Pitching	Yawing	Load Capacity (N)	Accessory (4 pcs.)	€ Unit Price
Type	No.	Cover Position	Logic	Voltage (V)									Type M-L	Qty. 1~4
	413	L R	A (All N.C.)	5	40x40	13	0.6	6µm or less	1µm or less	15" or less	10" or less	49.0	SCB3-8	
	513				50x50		0.8						SCB3-8	
	615		C (Limit Switches are N.C. / Home Sensor is N.O.)	24	60x60	15	0.9						SCB	
	715				70x70		1.2						SCB4-	

Product images above are all for cover position R, and the drawings are all for cover position L type.

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number - Sensor
- RA5

24VDC sensors cannot be operated from the MSCTL102 controller.
If the 5V sensors are selected, applying voltages exceeding 5V will damage the sensors.

Days to Ship: 10 Days

[Common Specifications]

The accuracy specifications below are certified for: Single axis horizontal mounting orientation.

Feed Screws	Ball Screw Ø6, Lead 1
Guides	Linear Ball Guide
Resolution*1	2µm/Pulse (Full) 1µm/Pulse (Half)
MAX Speed*2	10mm/sec (Pulse Rate: 5kHz)

Repeatability	Less than ±0.5µm
Lost Motion	Less than 1µm
Backlash	Less than 0.5µm

* 1 Stage travel per one pulse.
* 2 Max. speed capable with our controller (MSCTL102) driving in Full Step mode, stage loaded at a max load capacity. (The value changes depending on the driver and controller used, or the load.)

Add. Spec.

[Motorized] Rotary Stages

Price Revision

: New Price

Motorized Stage Technical Support Center
Optical Scientific Technology (OST) Division Suruga Seiki Co. Ltd. (MISUMI Group)
TEL: 0120-343-559
FAX: 0120-343-588
Office Hours: From Monday through Friday (Except for Holidays)
From 9:00~12:00, 13:00~17:00

CAD Data

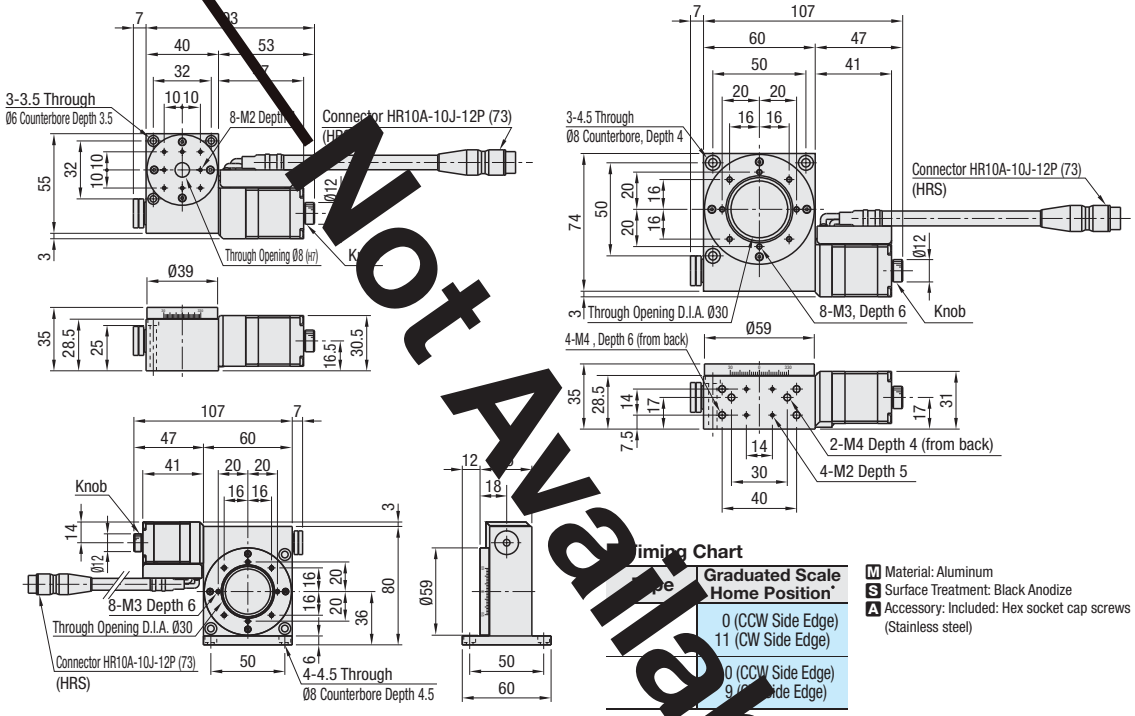
These stages are equipped with sensors compatible with 5VDC~24VDC. RMPG40 and RMPG60 has been discontinued as of April, 2010.

Motorized Rotary Stages

RoHS







Not Available.

Timing Chart

Graduated Scale Home Position*
0 (CCW Side Edge) 11 (CW Side Edge)
0 (CCW Side Edge) 9 (CW Side Edge)

M Material: Aluminum
S Surface Treatment: Black Anodize
A Accessory: Included: Hex socket cap screws (Stainless steel)

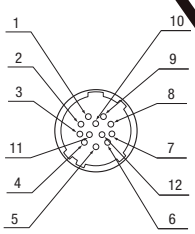
Part Number Type	No.	Sensor Voltage (V)	Mechanical Specifications: Positioning Stages Surface (mm)	Travel Distance	Weight (kg)	Motion Mechanism (Reduction Ratio)	Guides	Accuracy Specifications: Positioning Accuracy	Moment Rigidity (*/N-cm)	Resolution (/Pulse)	Maximum Speed /sec[5kHz]	Lost Motion	Backlash	Parallelism (µm)	Eccentricity (µm)	Surface Runout (µm)	€ Unit Price Qty. 1~4
	40W	DC5~24V	Ø39	360°	0.4	Worm Gear (Reduction Ratio 1/120)	Deep Groove Ball Bearings	0.05° or less	0.74	0.006° (Full)	30°	±0.01° or less	0.1° or less	50 or less	5 or less	30 or less	
	60W		Ø59		0.6	Worm Gear (Reduction Ratio 1/180)			0.84	0.004° (Full)	20°		0.05° or less				
	60Z				0.7												

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number

Days to Ship: 10 Days

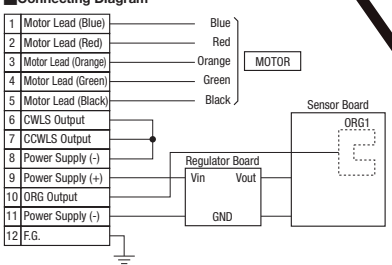
Pin-outs



Electrical Specifications

Stage Type		
Motor	Type	5-Phase Stepping Motor 0.75A/Phase (Oriental Motor Co., Ltd.)
	Step Angle	0.72°
Connector	Part Number	HR10A-10J-12P (73) (Hirose Electric Co., LTD.)
	Compatible Receptacle Connector	HR10A-10P-12S (73) (Hirose Electric Co., LTD.)
Sensor	Limit Switch	-
	Home Sensor	Provided
	Near Home Sensor	-
	Part Number	Photomicro Sensor EE-SX4134 (OMRON Corp.)
	Power Supply Voltage	DC5~24V±10%
	Current Consumption	35mA or less
	Control Outputs	NPN Open Collector Output 5~24VDC, 8mA or less Residual Voltage 0.3V or less (When Load Current 2mA)
	Output Logic	Detecting (Dark): Output Transistor OFF (Non-Conducting)

Connecting Diagram



Peripherals for Motorized Stages
-Controller / Handset Terminal / Cable

Motorized Stage Technical Support Center
Optical Scientific Technology (OST) Division Suruga Seiki Co. Ltd. (MISUMI Group)
TEL: 0120-343-559
FAX: 0120–343–588
Office Hours: From Monday through Friday (Except for Holidays)
From 9:00~12:00, 13:00~17:00

Features: Controller for the motorized stages. See our web page for MSSOFT control software.

Controller for Motorized Stages

RoHS



Part Number	€ Unit Price Qty. 1~9

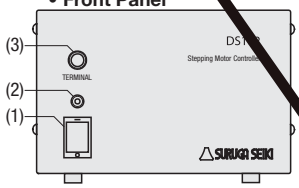
For orders larger than indicated quantity, please request a quotation.

Alterations

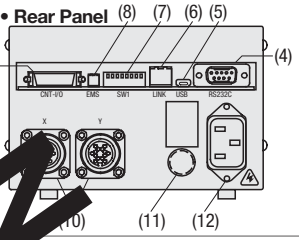
Part Number - (MS)
- MS

Alteration	Change Diver Type
Code	MS
Spec.	Changes the driver (integrated in the controller) type to a Micro Step Type. (No dimensional changes)
Price Adder	250,00

• Front Panel



• Rear Panel



(1) Power Switch
(2) POWER LED
(3)TERMINAL
(Specifications: Connector for Handset Terminal HDT100)
(4) RS232C (Specification: D-Sub 9P Male)
(5) USB connector (Mini B type)
(6) LINK connector
(7) DIP Switch
(8) EMS connector
(9) I/O connector for controller
(10) Stage connector
(11) Fuse Holder
(12) AC Plug

Basic Specifications

External Dimensions	140(W)x300(D)x[illegible](H) mm
Operating Environment	0~40°C, 20~80% RH (No Condensation)
Storage Environment	-20~60°C, 20~80% RH (No Condensation)
Input Power Supply	AC100~240V±10%, 50/60

Driver Performance Specification

Driver Type	Normal (FULL/HALF Selectable)
Rated Current	0.75A/Phase

Functions

Homing Function	1 point/axis (configurable freely within effective range)
Link	(Link cable listed on our web) can externally control up to 3 stages, up to 6 axes
Programming	8 programs (100 steps/1 program; Starts and stops by control I/O signals)
Teaching	64 points (positioning is commendable from signal I/O)
Interpolation	2-axis linear interpolation (linear interpolation between linked stages not possible)

Controller Performance Specifications

Number of Control Axes	2
Coordinate Setting Range	±99,999,999pls
Speed Setting Range	1~999,999pps
Pulse Rate Rise Setting Range	1~9,999pps
Acceleration/Deceleration Time Range	1~9,999ms
Mechanical Limits	2 for each axis CW/CCW direction (Input logic reversal is possible)
Near Home Detection	1 for each axis (Input logic reversal is possible)
Home Detection	1 for each axis, 12 routine types (Input logic reversal is possible)
External Communication I/F	RS232C: 4800~38400bps
	USB2.0: Compatible with Full/Low Speed only
	Control I/O: 9 Inputs (24VDC Opto-coupler inputs), 12 Outputs (Open Collector Outputs)
Max. Power Consumption	70W (When AC100V)
	2.2kg

Sensor power supply voltage for controller is 5VDC. 24VDC sensors cannot be operated from this controller.
(though linear semi-interpolation between the linked stages is possible)

Features: Motorized stages can be operated immediately by connecting the Pendant.

Handset Terminal

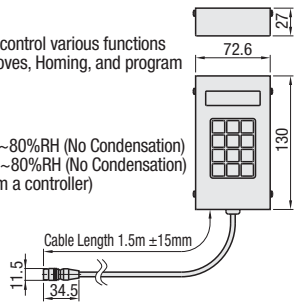
RoHS



Part Number		€ Unit Price
Type	No.	Qty. 1~9
	100	

For orders larger than indicated quantity, please request a quotation.

The Pendant enables the operator to control various functions such as Continuous Jogging, Step Moves, Homing, and program executions.
* PC required for program editing



Basic Specifications
- Operating Environment: 0~40°C, 20~80%RH (No Condensation)
- Storage Environment: -20~46°C, 20~80%RH (No Condensation)
- Power Supply: DC24V (supplied from a controller)
- Weight: 0.28kg

Features: Select cable lengths for application specific requirements.

Cable for Motorized Stages

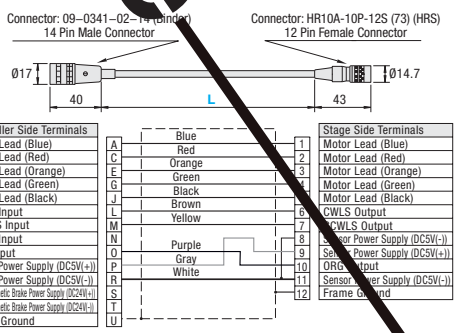
RoHS



Material: Insulation PVC

Part Number		€ Unit Price
Type	L(m)	Qty. 1~9
	2	
	4	
	6	

For orders larger than indicated quantity, please request a quotation.



Controller Side Terminals			Stage Side Terminals
Motor Lead (Blue)	A	Blue	1 Motor Lead (Blue)
Motor Lead (Red)	C	Red	2 Motor Lead (Red)
Motor Lead (Orange)	E	Orange	3 Motor Lead (Orange)
Motor Lead (Green)	G	Green	4 Motor Lead (Green)
Motor Lead (Black)	J	Black	5 Motor Lead (Black)
CWLS Input	L	Brown	6 CWLS Output
CCWLS Input	M	Yellow	7 CCWLS Output
NORG Input	N		8 Sensor Power Supply (DC5V(-))
ORG Input	O	Purple	9 Sensor Power Supply (DC5V(+))
Sensor Power Supply (DC5V(+))	P	Gray	10 ORG Output
Sensor Power Supply (DC5V(-))	R	White	11 Sensor Power Supply (DC5V(-))
Electromagnetic Brake Power Supply (DC24V(+))	S		12 Frame Ground
Electromagnetic Brake Power Supply (DC24V(-))	T		
Frame Ground	U		

* When XMSG · XYMSG · ZMSG are connected, ORG2 sensors do not function.

Dotted line represents shield. Connect shields to U pins and [illegible] pins.

Order Example Part Number

Days to Ship 10 Days

Not Available

Image Processing · Measuring Instruments Mounting Hardware

Image Processing · Measuring Instruments Mounting Hardware






Product Name	Macro Lens -Low Magnification Type-	-High Magnification Type-	Objective Lenses	Auto Extension Ring for Objective Lenses
Page	1709	1709	1709	1709

Addition






Mega-pixel CCTV Lenses / CCTV Lenses	Auto Extension Rings	Rear Converter	Setscrews
1711	1711	1711	1711









LED Lamps for Image Processing -Multi Lighting Type-	-Direct Ring Type-	-Backlight Type (Embedded light)-	Power Controller for LED Lamps
1714	1715	1715	1716







Free Guide Arms Set	Free Guide Arms	Flexible Arms	Free Angle Arms
1718	1719	1719	1720

Addition







Holders for Free Angle Arms	Bases for Free Angle Arms	Magnetic Bases	Shaft Mounts -Built-in Springs-
1720	1720	1721	1721





Shaft Mounts	Dial / Indicator Fittings	Dial Holders
1721	1721~1722	1722

Information

LED Lightings for Cabinetry is newly launched from 2010 Catalog. Best for Aluminum Frame device covers, etc. (**P.2-929~938**)

Product (1) The Standard Type which covers wide variety of L dimensions(**P.2-929**)
Product (2) The Low Profile Type, 8mm in thickness. This type is suitable for the devices in spaces with insufficient headroom. (**P.2-931**)
Product (3) The Embedded Type which can be mounted to the top panel and does not occupy the space. (**P.2-933**)



Macro Lenses · Objective Lenses · CCTV Lenses

-Features · How to Select-

■Types and Features of Lenses

Type	Feature
Macro Lenses	This is suitable for the observation by expansion in a narrow range. When it becomes a high magnification, the view becomes little dark..
Objective Lenses	Although generally used for microscopes, the installation to C mounting(*) is made possible with the auto extension ring. Can be used as an economical macro lens. However, the view becomes little darker in comparison with a usual macro lens due to lens characteristic difference.
CCTV Lenses	This is suitable for the observation by expansion in a wide range. Mounted adjusting screws enables adjustment of lens focus / diaphragm while observing the images. **The new type, Mega-pixel CCTV Lens, is now available. This type reproduces images with higher resolution and less distortion as well as enables close-up photography.**

(*)C Mounting: The screw standards of the optic field. M (1 inch) x P (1/32 inch)

■How to Select Lenses

(1) Macro Lens and Objective Lens(P.1709)

$$\text{Field of View (Object area)} = \frac{\text{CCD Camera Sensor Dimensions (Length x Width)}}{\text{Lens (Optics) Magnification}}$$

Calculate the appropriate lens magnification by using the Work Size and CCD Camera Pixel Dimensions. If no appropriate one is found, refer to **P.1710** to select and combine a Macro Lens.

(2) CCTV Lens(P.1711)

$$\text{Focal Distance} = \frac{\text{WD (Shooting Distance)} \times \text{CCD Camera Sensor Dimensions (Length)}}{\text{Field of View}}$$

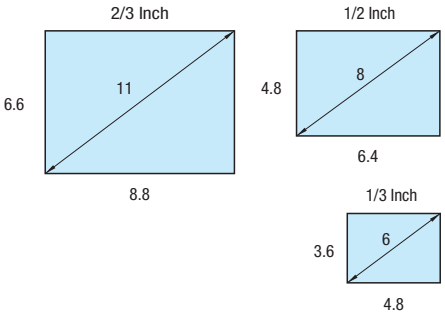
Select an appropriate focal distance from WD (Shooting Distance), Field of View and CCD Camera Sensor Dimensions (Length) selections. If no appropriate one is found, refer to **P.1712** to select and combine a Macro Lens.

(Table 1) CCD Camera Size and Field of View in Each Lens Magnification

Magnification	CCD Camera Size and Field of View (Length x Width mm)		
	2/3 Inch	1/2 Inch	1/3 Inch
0.3	22.0 x 29.3	16.0 x 21.3	12.0 x 16.0
0.5	13.2 x 17.6	9.6 x 12.8	7.2 x 9.6
0.7	9.4 x 12.5	6.8 x 9.1	5.1 x 6.9
1.0	6.6 x 8.8	4.8 x 6.4	3.6 x 4.8
2.0	3.3 x 4.4	2.4 x 3.2	1.8 x 2.4
4.0	1.7 x 2.2	1.2 x 1.6	0.9 x 1.2
6.0	1.1 x 1.5	0.8 x 1.1	0.6 x 0.8

Each field of view measure becomes 1/2 with time of the rear converter lens (x2) attached.

CCD Camera Element Dimensions



■Application of the Objective Lenses for FA Uses

Combining the objective lens which is generally used for microscope with special C Mount auto extension ring (adapter), it became possible to use it as economical image inspection lens for FA. Most suitable for cost conscious use, such as inspection of product appearance or monitoring processing, which does not require high quality image.

(1) There are wide varieties of uses ranging from low magnification to high magnification or from wide-angled view to enlarged view.
(2) It is extremely inexpensive and excellent in cost vs. performance.
(3) Compatible with any manufacturer's CCD cameras if equipped with C mounting.
(4) The structure of the camera is designed for fine adjustment of magnification by rotating the lens (frontmost section) forward (Registered Utility Model).

■Terminology

Terminology	
Field of View	The size of the object (the area) that can be observed
WD (Shooting Distance)	Working (shooting) distance between the lens and an object (Refer to each product page).
CCD Camera Size	Size of CCD device (2/3 inches, 1/2 inches etc.)
Focal Distance	The distance which initially collimated rays through a lens are brought to a focus. A lens with a shorter focal length reproduces wider field of view, while a lens with a long focal length can magnify distant images. (Refer to each product page.)
Resolution	Distinguishable minimum distance between two points (Refer to each product pages)
Depth of Field	Maximum difference of elevation for the objects / areas that can be observed without being out-of-focus (Refer to each product page).
Monitor distortion	The image distortion when an image is reproduced on a monitor. The value which represents how the length of the image distorted.

Macro Lenses / Objective Lenses / A.E. Rings for Objective Lenses

-Low Magnification Type/ High Magnification Type-

CAD Data

About Selection, Refer to P.1708

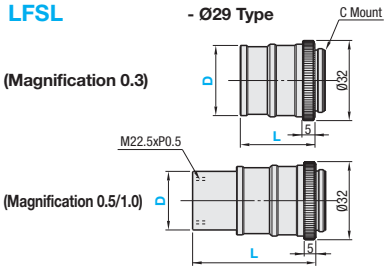
Macro Lens -Low Magnification Type-



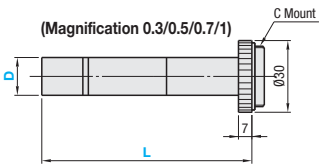
RoHS

LFSL

- Ø29 Type



- Ø16 Type



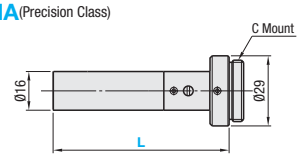
M Material: Aluminum (Body) S Surface Treatment: Black Anodize (Body)

Macro Lens -High Magnification Type-

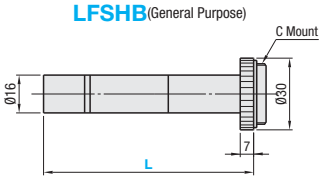


RoHS

LFSHA (Precision Class)



LFSHB (General Purpose)



M Material: Aluminum (Body) S Surface Treatment: Black Anodize (Body)

Low Magnification Type

Part Number Type	Magnification	D	L	WD	Resolution µm	Depth of Field mm	Weight g	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19
LFSL	0.3	16	50	242	14.5	4.38	23		
		29	29.8	90	14	4	39		
	0.5	16	35	105	6.4	1.19	20		
			42	118	7.2	1.35	21.5		
			50	139	8.6	1.55	23		
			60	162	9.8	1.82	25		
		29	50.5	90	8	2.4	55		
	0.7	16	41	84	5.2	0.67	21.5		
			69	129	7.9	1.03	26		
	1	16	50	68	4.2	0.4	23		
			57.5	77	4.7	0.45	25		
			68.5	90	5.5	0.52	26		
			99	128	7.4	1.2	35		
		29	92.6	90	5	0.8	68		

For orders larger than indicated quantity, please request a quotation.

High Magnification Type

Part Number Type	Magnification	L	WD	Resolution µm	Depth of Field mm	Weight g	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19
LFSHA	2	72.8	75	3.3	0.4	35		
	4	103.8			0.2	40		
LFSHB	2	90	56	3.4	0.28	33		
		113	63	3.9	0.32	40		
		125	77	4.7	0.38	43		
	4	158	45	2.8	0.12	53		
		186	52	3.2	0.14	60		
	6	198	37	2.3	0.06	65		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number = Type + Magnification - D - L
LFSL0.5 - 29 - 50.5
LFSHB4 - 158

Days to Ship: 6 Days P. 87

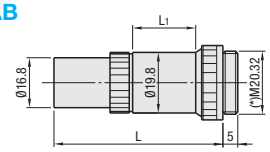
Features: The combination of the objective lens, generally used for microscopes, with a macro ring can be used as an economical FA image inspection lens. About Selection, Refer to P.1708-1710

Objective Lenses

RoHS



LTAB



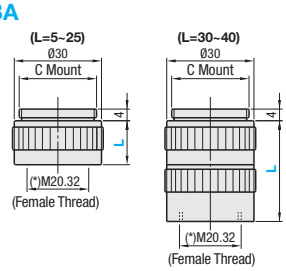
M Material: Aluminum (Body)
S Surface Treatment: Black Anodize (Body)

Auto Extension Ring for Objective Lenses

RoHS



LTABA



M Material: Aluminum (Body)
S Surface Treatment: Black Anodize (Body)

(*) Thread size specific to microscope-related products

The combination of LTAB and LTABA can be used as the C Mount FA lens. (Refer to P.1708-1710)

Objective Lenses

Part Number Type	Magnification	Resolution µm	Depth of Field mm	L	L_1	Weight g	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19
LTAB	3	4.8	0.124	42	7	24		
	4	3.7	0.074	56	21	28		
	6	2.4	0.031	71.5	27	37		
	8	2.2	0.024	79	21	43		

For orders larger than indicated quantity, please request a quotation.

Data in the above table is the values for lens only and it will be changed depending on the combination of auto extension ring. Refer to P.1710

Auto Extension Ring for Objective Lenses

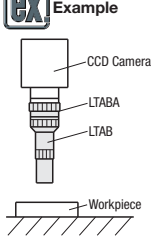
Part Number Type	L	Weight g	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19
LTABA	5	7		
	10	12		
	15	17		
	20	22		
	25	27		
	30	28		
	35	32.5		
	40	37		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number
LTAB3
LTABA10

Days to Ship: 6 Days P. 87

Example



Most suitable for cost sensitive applications not requiring high quality imaging.

Objective Lenses · A.E. Rings Mounting Conversion Chart

The Field of View and Monitor Magnification with Auto Extension Ring Mounted to the Objective Lens

Auto Extension Ring No.	Objective Lenses No.	CCD Camera Size and Field of View (Length x Width mm)			CCD Camera Size and Monitor Magnification (9 inch Monitor)			Shooting Distance WD
		2/3 Inch	1/2 Inch	1/3 Inch	2/3 Inch	1/2 Inch	1/3 Inch	
5	3	32x41	24x31	18x24	4	6	7	330
	4	8.2x10.8	6x8	4.8x6.2	16	21	28	100
	6	3.3x4.5	2.6x3.4	2x2.6	38	50	67	47
	8	2.2x2.9	1.6x2.2	1.3x1.7	59	78	104	33
10	3	20.5x27	15.5x20.5	12x15.5	6	8	11	230
	4	7x9.3	5.3x7	4x5.3	18	24	32	93
	6	3.1x4	2.4x3.2	1.8x2.4	41	54	73	45
	8	2x2.7	1.6x2	1.2x1.6	63	83	110	32
15	3	15.4x20	11x15	9x11.5	9	12	15	181
	4	6.2x8	4.7x6.1	3.5x4.8	21	28	37	86
	6	2.9x3.8	2.2x2.9	1.6x2.2	45	59	77	43
	8	1.9x2.5	1.4x1.9	1.1x1.5	68	89	117	32
20	3	12x16	9x12	7x9	11	14	19	153
	4	5.5x7.1	4.1x5.4	3.1x4.1	24	31	42	81
	6	2.7x3.4	2x2.7	1.5x2	48	65	83	42
	8	1.8x2.4	1.4x1.8	1x1.4	74	96	127	31
25	3	10x13	7.5x10	5.7x7.5	13	17	23	135
	4	5x6.3	3.8x5	2.9x3.8	26	34	46	77
	6	2.5x3.2	1.9x2.5	1.4x1.9	51	69	89	41
	8	1.7x2.2	1.3x1.7	1.0x1.3	77	100	134	31
30	3	8.5x11	6.5x8.5	5x6.5	16	20	27	122
	4	4.5x5.9	3.3x4.4	2.6x3.4	29	38	51	73
	6	2.3x3	1.8x2.3	1.3x1.8	54	73	96	40
	8	1.6x2.1	1.2x1.6	0.9x1.2	81	107	138	30
35	3	7.4x9.8	5.7x7.3	4.2x5.7	18	23	30	112
	4	4x5.3	3x4	2.3x3.1	31	42	55	70
	6	2.2x2.9	1.7x2.2	1.3x1.7	58	77	103	39
	8	1.5x2	1.2x1.5	0.9x1.2	86	113	148	30
40	3	6.6x8.5	5x6.5	3.9x5	20	26	34	105
	4	3.8x5	2.8x3.8	2.2x2.9	35	45	59	68
	6	2.1x2.8	1.6x2.1	1.2x1.6	61	81	109	39
	8	1.5x1.9	1.1x1.5	0.8x1.1	89	118	154	30

Monitor Magnification: Magnification of each lens and expansion of magnification on the monitor with the actual size of CCD camera.
Data in the above table are only for reference, which are obtained through our actual measurements using 9 inches monitor.
Note that when the monitor size is different, the value will be different because the size of monitor and monitor magnification are proportional.

CCD Camera Used: 400,000 Pixels, Resolution: 570 Pairs in TV (Horizontal Resolution)

Mega-pixel CCTV Lenses / CCTV Lens / A.E. Ring / Rear Converter / Setscrews

CAD Data

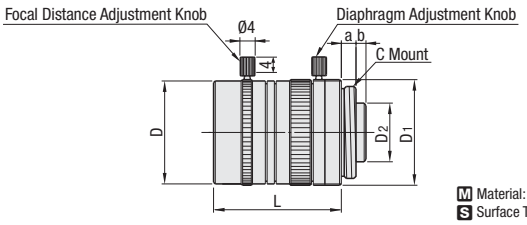
Feature: The Mega-pixel Type is newly added. This type is equipped with resolution equivalent to those of 1 million-pixel cameras. About Selection, Refer to **P.1708**

Mega-pixel CCTV Lenses
CCTV Lenses

RoHS



MLCV
LCV



M Material: Aluminum (Body)
S Surface Treatment: Black Anodize (Body)

Mega-pixel CCTV Lenses

Part Number Type	No.	Focal Distance	Diaphragm (FNO)	Most Optimal CCD	WD (Shooting Distance) (mm)	TV Distortion	Filter Screw Dia. (MxPitch)	L	D	D1	D2	a	b	Weight g	€ Unit Price Qty. 1~4	Vol. Discount Qty. 5~19
MLCV	6	6	1.4~close	1/2 Inch	200~∞	-0.96%	30.5x0.5	37.5	32	28.8	21.9	4	2	68		
	8	8	1.4~close	2/3 Inch	100~∞	-0.10%	30.5x0.5	28.2	33.5	32	18		0.6	70		
	12	12	1.4~close	2/3 Inch	150~∞	-0.10%	30.5x0.5	28.2	33.5	32	18		0.8	65		
	16	16	1.4~close	2/3 Inch	300~∞	-0.10%	30.5x0.5	28.2	33.5	32	18		0.9	65		
	25	25	1.4~close	2/3 Inch	250~∞	-0.30%	25.5x0.5	31.5	29	28.8	21.5		0.5	45		
	35	35	2.0~close	2/3 Inch	250~∞	-0.02%	25.5x0.5	38.5	29	29	-		-	55		
	50	50	2.8~close	2/3 Inch	500~∞	-0.20%	25.5x0.5	38.5	29	29	-		-	55		

For orders larger than indicated quantity, please request a quotation.

CCTV Lenses

Part Number Type	No.	Focal Distance	Diaphragm (FNO)	Most Optimal CCD	WD (Shooting Distance) (mm)	TV Distortion	Filter Screw Dia. (MxPitch)	L	D	D1	D2	a	b	Weight g	€ Unit Price Qty. 1~4	Vol. Discount Qty. 5~19
LCV	6	6	1.4~close	1/2 Inch	200~∞	-1.60%	27x0.5	30.0	30	29.4	19.5	4	2.6	57		
	8	8	1.3~close	2/3 Inch	200~∞	-1.90%	25.5x0.5	34.5	29	29	16		2.7	52		
	12	12	1.4~close	1/2 Inch	300~∞	-0.30%	27x0.5	34.5	30	29.4	-		-	56		
	16	16	1.4~close	2/3 Inch	400~∞	-0.60%	27x0.5	24.5	30	29.4	16		1.4	40		
	25	25	1.4~close	1 Inch	500~∞	-0.60%	27x0.5	24.5	30	29.4	16		1.6	40		
	35	35	1.9~close	2/3 Inch	500~∞	0.08%	27x0.5	29.0	30	29.4	16		0.8	50		
	50	50	1.8~close	2/3 Inch	1000~∞	0.20%	30.5x0.5	37.0	32	29.4	-		-	55		

Able to use CCDs other than the most optimal CCD, but four corners of images may be slightly clipped (Vignetting).

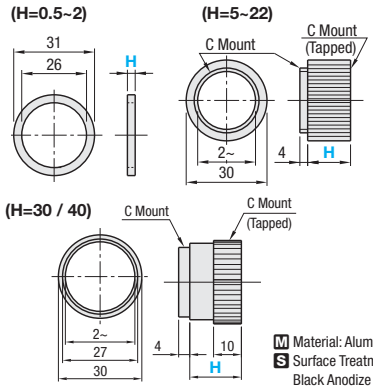
For orders larger than indicated quantity, please request a quotation.

Auto Extension Ring

RoHS



LCVR



M Material: Aluminum
S Surface Treatment: Black Anodize

Part Number Type	H	Weight g	€ Unit Price Qty. 1~4	Vol. Discount Qty. 5~19
LCVR	0.5	0.25		
	1	0.5		
	2	1.0		
	5	4.0		
	7.5	6.0		
	10	7.0		
	15	11.5		
	20	15.5		
	22	17.0		
	30	22.5		
	40	30.5		

For orders larger than indicated quantity, please request a quotation.

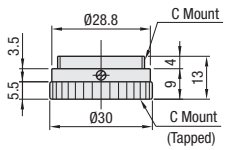
Use by putting it between the CCD camera and C mounting sides of all the lenses or the auto extension ring.
The weight is theoretical value.

Rear Converter

RoHS



LRC (Magnification x 2)



M Material: Aluminum (Body)
S Surface Treatment: Black Anodize (Body)

Part No.	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19
LRC		

For orders larger than indicated quantity, please request a quotation.

Magnification can be increased without changing the shooting distance by attaching this lens between the lens and CCD camera (Magnification x2).
The field of view becomes narrower (Refer to **P.1708** Table 1).
Use by putting it between the CCD camera and C mounting sides of all the lenses or the macro ring.

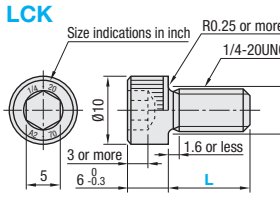
Feature: Fits the inch tapped thread on CCD cameras. Can be used to mount a camera to a fixed object.

Setscrews

RoHS



LCK



M Material: 1.4567/X3CrNiCu18-9-4
S Surface Treatment: Passivation

Part No. Type	L	€ Unit Price 1~3 Packs	Vol. Discount 4~8 Packs	Vol. Discount 9~30 Packs
LCK	8			
	12			

Sold by pack (A pack contains 5 pieces).
For orders larger than indicated quantity, please request a quotation.

Caution: The size of hexagon socket is equivalent to M6. When tightening, use hex wrench for M6.

Order Example

Part Number
MLCV50
LCV12
LCVR10
LRC
LCK8

Days to Ship: **6 Days**

P. 87

CCTV Lens / A.E.Ring Mounting Conversion Chart

■Field of View, Magnification and Shooting Distance when Mounting Auto Extension Ring

- Mega-pixel Lenses (MLCV)

Lens Focal Distance	MLCV6				MLCV8				MLCV12				MLCV16			
Auto Extension Ring (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)
0	171x229	129x171	96x129	201	66x88	49x66	37x49	102	67x89	50x67	38x50	151	94x125	71x94	53x71	299
0.5	43x58	32x43	24x32	41	30x41	23x30	17x23	51	42x56	32x42	24x32	90	59x78	44x59	33x44	180
	58x77	43x58	33x43	59	40x53	30x40	23x30	126	114x152	86x114	64x86	272	155x206	116x155	87x116	496
1	25x33	18x25	14x18	18	17x23	13x17	10x13	31	31x41	23x31	17x23	62	42x56	32x42	24x32	126
	29x38	22x29	16x22	23	20x27	15x20	11x15	57	58x77	43x58	33x43	128	76x102	57x76	43x57	240
1.5	17x23	13x17	10x13	8	19x25	14x19	11x14	21	24x32	18x24	14x18	46	33x44	25x33	19x25	96
	19x26	14x19	11x14	11	27x35	20x27	15x20	34	38x51	29x38	22x29	80	51x68	38x51	29x38	155
2	13x18	10x13	7x10	3	15x20	12x15	9x12	15	20x27	15x20	11x15	35	27x36	21x27	15x21	76
	14.4x19.2	10.8x14.4	8.1x10.8	5	20x27	15x20	11x15	22	29x38	22x29	16x22	56	38x51	29x38	22x29	112
5	-				-				10x13	7.4x10	5.5x7.4	9	13x18	10x13	7.4x10	29
	-				-				12x15	8.6x12	6.5x8.6	13	15x20	12x15	8.6x12	36
10	-				-				-				7x9	5.3x7	4.0x5.3	9
	-				-				-				8x10	5.8x8	4.3x5.8	10

Lens Focal Distance	MLCV25				MLCV35				MLCV50			
Auto Extension Ring(mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)
0	48x63	36x48	27x36	242	32x43	24x32	18x24	237	42x57	32x42	24x32	463
0.5	40x53	30x40	22x30	201	29x39	22x29	17x22	217	39x52	29x39	22x29	427
	240x320	180x240	135x180	1235	343x457	257x343	193x257	2445	480x640	360x480	270x360	5032
1	34x45	26x34	19x26	172	27x36	20x27	15x20	200	36x48	27x36	20x27	396
	120x160	90x120	68x90	614	166x221	124x166	93x124	1221	240x320	180x240	135x180	2542
1.5	30x40	22x30	17x22	150	25x33	19x25	14x19	185	34x45	25x34	19x25	370
	80x107	60x80	45x60	407	112x149	84x112	63x84	813	160x213	120x160	90x120	1712
2	27x35	20x27	15x20	133	23x31	17x23	13x17	172	31x42	24x31	18x24	347
	60x80	45x60	40x45	303	84x112	63x84	47x63	609	120x160	90x120	68x90	1297
5	16x21	12x16	9x12	78	16x22	12x16	9x12	122	23x30	17x23	13x17	256
	24x32	18x24	13x18	117	34x45	25x34	19x25	242	48x64	36x48	27x36	550
10	10x13	7x10	5x7	45	11x15	8x11	6x8	83	15x20	12x15	9x12	180
	12x16	9x12	6.7x9	55	17x22	13x17	9.4x13	120	24x32	18x24	14x18	301
15	7x9	5x7	4x5	31	8x11	6x8	5x6	63	12x15	9x12	7x9	142
	8x10.6	6x8	4.5x6	34	11x15	8.4x11	6.3x8.4	79	16x21	12x16	9x12	218
20	5x7	4x5	3x4	23	7x9	5x7	4x5	51	9x12	7x9	5.3x7.0	118
	6x8	4.5x6	3.4x4.5	24	8.4x11	6.3x8.4	4.7x6.3	59	12x16	9x12	6.7x9	176
25	4.3x5.8	3.3x4.3	2.4x3.3	18	6x7	4x6	3x4	43	8x10	6x8	4.4x5.9	103
	4.8x6.4	3.6x4.8	2.7x3.6	18	6.7x9.0	5.0x6.7	3.8x5.0	46	10x13	7x10	5.4x7.2	151
30	3.7x4.9	2.8x3.7	2.1x2.8	14	4.8x6.4	3.6x4.8	2.7x3.6	37	7x9	5x7	3.8x5.0	91
	4.0x5.3	3.0x4.0	2.2x3.0	13	5.6x7.5	4.2x5.6	3.1x4.2	38	8x11	6x8	4.5x6.0	135
35	3.2x4.3	2.4x3.2	1.8x2.4	12	4.2x5.6	3.1x4.2	2.3x3.1	33	6x8	4x6	3.3x4.4	82
	3.4x4.6	2.6x3.4	1.9x2.6	10	4.8x6.4	3.6x4.8	2.7x3.6	32	7x9	5x7	3.9x5.1	123
40	-				3.7x5.0	2.8x3.7	2.1x2.8	30	5x7	4x5	3x4	76
	-				3.9x5.1	2.9x3.9	2.2x2.9	28	6x8	4x6	3.4x4.5	114
45	-				3.3x4.5	2.5x3.3	1.9x2.5	27	5x6	4x5	3x4	70
	-				3.7x5.0	2.8x3.7	2.1x2.8	25	5x7	4x5	3x4	107
50	-				3.0x4.1	2.3x3.0	1.7x2.3	25	4x6	3x4	2.4x3.2	66
	-				3.2x4.3	2.4x3.2	1.8x2.4	22	5x6	4x5	2.7x3.6	102

- CCTV Lens (LCV)

Lens Focal Distance	LCV6				LCV8				LCV12				LCV16			
Auto Extension Ring (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)
0	165x221	124x165	93x124	200	96x128	72x96	54x72	148	103x137	77x103	54x77	248	109x145	82x109	66x82	358
0.5	44x58	33x44	25x33	43	43x57	32x43	24x32	59	55x73	41x55	31x41	125	64x86	48x64	36x48	206
	60x79	45x60	34x45	63	77x102	57x77	43x57	115	119x159	89x119	67x89	289	156x208	117x156	88x117	515
1	25x34	19x25	14x19	19	27x37	21x27	15x21	34	38x50	28x38	21x28	80	45x61	34x45	25x34	143
	30x40	22x30	17x22	25	38x51	29x38	21x29	52	59x79	45x59	34x45	136	78x104	58x78	45x58	252
1.5	-				20x27	15x20	11x15	22	29x38	21x29	16x21	57	35x47	26x35	19x26	108
					26x34	19x26	14x19	31	40x53	30x40	23x30	85	52x69	39x52	29x39	164
2	-				-				23x31	17x23	13x17	42	29x38	22x29	16x22	86
									30x40	22x30	17x22	59	39x52	29x39	22x29	120
5	-				-				-				14x18	10x14	7x10	35
													16x21	12x16	9x12	42
10	-				-				-				7.3x9.7	5.4x7.3	4.1x5.4	14
													7.8x10	5.8x7.8	4.3x5.8	15

Lens Focal Distance	LCV25				LCV35				LCV50			
Auto Extension Ring(mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)	Field of View (Width x Length) 1/2"	1/3"	1/4"	WD (mm)
0	87x115	65x87	49x65	458	66x87	49x66	37x49	500	90x120	68x90	54x68	943
0.5	64x85	48x64	36x48	338	55x73	41x55	31x41	422	-			
	242x322	181x242	136x181	1270	335x447	251x335	193x251	2459				
1	50x67	38x50	27x38	269	47x63	35x47	26x35	366	-			
	121x161	91x121	68x91	637	168x223	126x168	96x126	1240				
1.5	42x56	31x42	24x31	223	41x55	31x41	23x31	324	57x76	43x57	33x43	610
	81x107	60x81	45x60	425	112x149	84x112	64x84	834	154x205	115x154	87x115	1577
2	36x47	27x36	20x27	191	37x49	28x37	21x28	291	51x67	38x51	29x38	548
	60x81	45x60	34x46	320	84x112	63x84	47x63	631	115x154	86x115	66x86	1193
5	19x25	14x19	11x14	103	22x30	17x22	12x17	185	31x41	23x31	17x23	347
	24x32	18x24	14x18	130	34x45	25x34	19x25	265	46x61	35x46	26x35	503
10	11x14	8.0x11	6.0x8.0	60	13x18	10x13	7.5x10	121	18x25	14x18	10x14	226
	12x16	9.1x12	6.8x9.1	66	17x22	13x17	9.3x13	143	23x31	17x23	13x17	273
15	7.4x9.8	5.5x7.4	4.2x5.5	43	9.5x13	7.2x9.5	5.4x7.2	93	13x18	10x13	7.3x10	174
	8.1x11	6.0x8.1	4.5x6.0	45	11x15	8.4x11	6.3x8.4	103	15x21	12x15	8.7x12	196
20	5.6x7.5	4.2x5.6	3.2x4.2	34	7.4x9.9	5.6x7.4	4.2x5.6	78	10x14	7.7x10	5.7x7.7	145
	6.0x8.1	4.5x6.0	3.4x4.5	35	8.4x11	6.3x8.4	4.7x6.3	82	12x15	8.6x12	6.4x8.6	158
25	-				6.1x8.1	4.6x6.1	3.5x4.6	68	8.4x11	6.3x8.4	4.7x6.3	126
					6.7x8.9	5.0x6.7	3.8x5.0	70	9.2x12	6.9x9.2	5.2x6.9	134
30	-				-				7.1x9.4	5.3x7.1	3.9x5.3	113
									7.7x10	5.8x7.7	4.3x5.8	119
35	-				-				6.1x8.2	4.6x6.1	3.5x4.6	104
									6.6x8.8	4.9x6.6	3.7x4.9	108
40	-				-				5.4x7.2	4.1x5.4	3.1x4.1	97
									5.8x7.7	4.3x5.8	2.2x4.3	100

LED Lamps for Image Processing
-Overview-

■Features of LED Lighting

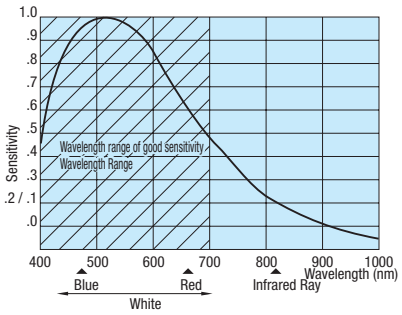
1. Long Life:
Has longer operation life than conventional halogen and fluorescent lights.
It reduces maintenance frequency requirements.

2. Quick Response:
Can be switched on/off quickly compared to halogen lights.
The response speed is about 1/1000 of the halogen lights.

3. Energy-saving:
When lit at the same brightness with the halogen light,
the LED light consumes only about 1/5 of electrical power of the halogen light.

4. Compatibility with the CCD Camera:
Due to the CCD Camera's spectral sensitivity (Fig.1) and well adoption of blue, red, and white LED wave length, it gives better images.

CCD Camera Spectral Sensitivity Characteristics



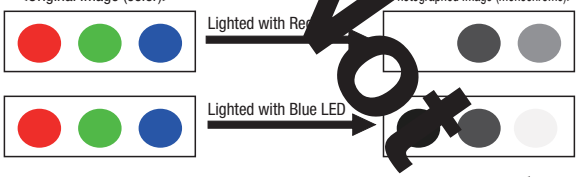
■LED Lamps Selection Tips

1. When Making Work Color Disappear or Exaggerate

<Relations between the Works' Appearance and the Lights Color (Example)>

- When using a light similar to the work color, the work shows white while using a light opposite to the work color (complementary color), work shows dark.

<Original Image (color)>



<Complementary Relationship between the Color of Work and Light>

		Color of Work		
		Blue	Green	Red
LED Color of Lighting	Blue	○	○	●
	Red	●	●	○

○ : make it white
● : make it black

<Actual Example>

-When making the work's background color white and disappear: Use similar color light.



Before Lighting
Illuminated with Red LED (Color image)
Illuminated with Red LED (Monochrome image)
Illuminated with Red LED (Binary image)

2. When Observing the Work Outside or Inside

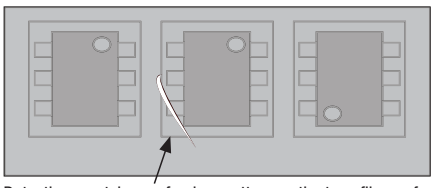
<Relations between the Works Position and the Light Color (Image)>

- Visible part of the work-piece will vary depending on lighting's wavelength..

<Nature of Wavelength>

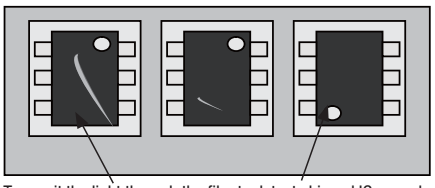
	Blue	Green	Red	Infrared Ray
Wavelength				Long
Transmittance				High
Scattering Rate				Low

(To observe the work's exterior)



Detecting scratches or foreign matters on the tape film surfaces.
→The lights with low transmittance and short wavelength are effective.

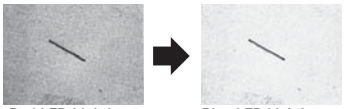
(To observe the work's interior)



Transmit the light through the film to detect chipped ICs or polarity error under the taping.
→The lights with high transmittance and long wavelength are effective.

<Actual Example>

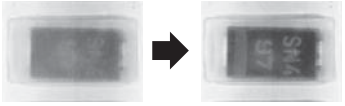
- When making the outside of work clear: Color with high scattering rate (Blue)



Red LED Lighting
Blue LED Lighting

The blue light exposes the whole plate evenly and make the contrast with scratch clear.

- When making the inside of work clear: Use light with high transmission (Red, Infrared ray)



Blue LED Lighting
Red LED Lighting

Under red illumination, clear view of the IC in the embossed tape can be obtained.

For detailed image samples, refer to **P.1716**

Not Available

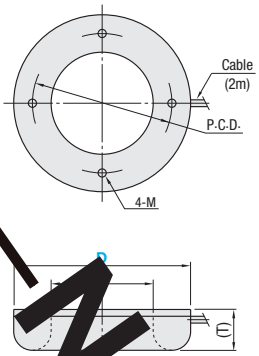
LED Lamps for Image Processing
-Multi Lighting Type-

Feature: This structure offers the suitable contrast for image processing by only switching the distance between the light and the object as it changes the exposure angle. Image Sample **P.1716**

Multi Lighting Type

RoHS





M Material:
Polyacetal, acrylic (Emission side)
Aluminum (Boards)

Surface Treatment:
Black [illegible] (Boards)

End of the cable has a connector for the power controller.

Part Number Type	D	Color	d	P.C.D.	M	(T)	€ Unit Price Qty.1~19
	42	R(Red)	16	30	3	(15)	
		W(White)					
		B(Blue)					
		N(Infrared)					
	55	R(Red)	32	44	M3	(15)	
		W(White)					
		B(Blue)					
		N(Infrared)					
	80	R(Red)	46	63	M3	(18)	
		W(White)					
		B(Blue)					
		N(Infrared)					
	100	R(Red)	60	80	M4	(18)	
		W(White)					
		B(Blue)					
		N(Infrared)					
	120	R(Red)	80	100	M4	(20)	
		W(White)					
		B(Blue)					
		N(Infrared)					
	150	R(Red)	90	120	M4	(23)	
		W(White)					
		B(Blue)					
		N(Infrared)					

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number			Color
Type	D	-	
55		-	R

Days to Ship 10 Days

Color R: Red W: White B: Blue N: Infrared ray
Use LEDCNR1 / LEDCNRF2 for the power controller on **P.1716**
Do not use other controllers.

Features of LED Multi Lighting

1. Wide Illumination Range:
The luminance angle can be changed optionally by changing the WD (Working Distance).

2. Good Uniformity:
It is suitable for highly reflective objects as diffused light is used, and the light disperses uniformly on the objects causing less reflections.

3. Excellent Dust Resistance:
Dust can be easily wiped off since it is covered. It is most suitable for the clean rooms of semiconductor factory or food factory.

Variation of the photograph based on WD (Working Distance)

<WD (Working Distance)>

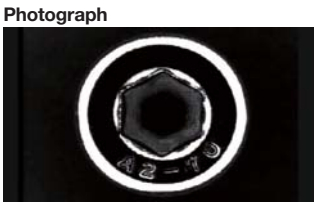
Close ← → Far

Edge Lighting

Image



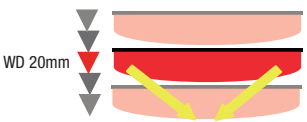
Photograph



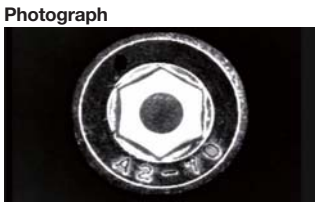
The outline of the screw's O.D. and engraved letters appear white by the edge lighting.

Oblique Lighiting

Image



Photograph



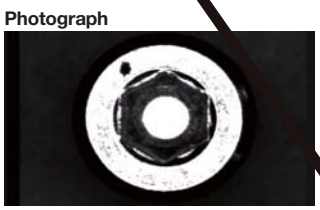
The surface of the inner hexagon of a screw appears white by the oblique lighting.

Direct Lighting

Image



Photograph



The top of the screw appears white by the almost direct irradiation. This method shows the foreign matters sharply.

Not Available

LED Lamps for Image Processing

-Direct Ring Type / Backlight Type-

CAD Data

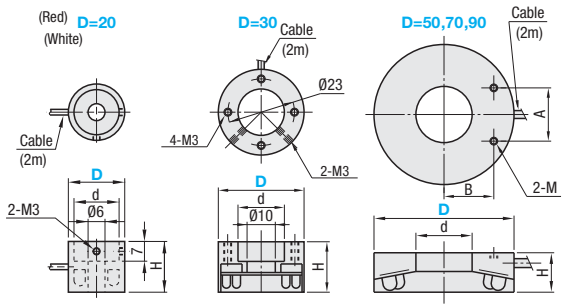
Feature: By illuminating from 360 deg. direction, even lighting without a shadow is obtained.

Image Sample P.1716

Direct Ring Type



RoHS



End of the cable has a connector for the power controller.

M Material: Aluminum (Body)
S Surface Treatment: Black Anodize (Body)

Part Number Type	D	**Exposure Angle (Degree)	Illumination Area	WD	d	H	A	B	M	Weight (g)	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19
LPDRR	20	80	Ø10~30	30~70	16.1	18	-	-	-	70		
	30	90	Ø20~60	50~100	16.1	18	-	-	-	75		
	50	80	Ø40~120	50~100	20	14	20	18	3	60		
		*25		10~20	20							
	70	80	Ø60~180	50~100	34		30	25		80		
		*25		10~20	51					100		
	90	80	Ø80~240	50~100	40	15	40	32	4	140		
		*25		10~20	62	16				120		

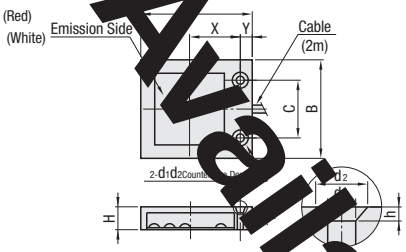
For LPDRR and LPDRW, use with LEDCNR0.5 (**P.1716**) controllers (Other manufacturer's controllers cannot be used.) *No LPDRR 70-25 and 90-25 in the Specification Table are available.
For orders larger than indicated quantity, please request a quotation.
**When selecting an illuminating angle, refer to the "Features and Usage of LED Lighting" below.

Image Sample P.1716

Backlight Type (Embedded light)



RoHS



M Material:
Aluminum (Body)
Polyacetal (Emission side)
S Surface Treatment:
Black Anodize (Body)
A Accessory:
Flat Head Screw for Attachment 2 pcs.

t Part Number Type	No.	Emission side	A	B	C	X	Y	H		d1	d2	h		€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~19
LPDRW	25	25x25	40	35	20	18	4.5	8	25	3.4	6	2	100				
	50	50x50	70	60	40	33	7	10					100				
	75	75x75	95	85	50	46	6.5			4.5	8.5	3	150				

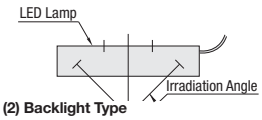
Use with LEDCNR1 / LEDCNRF2 **P.1716** controllers (Other manufacturer's controllers cannot be used.)
For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number - Exposure Angle
- 80

Days to Ship: 6 Days P.7

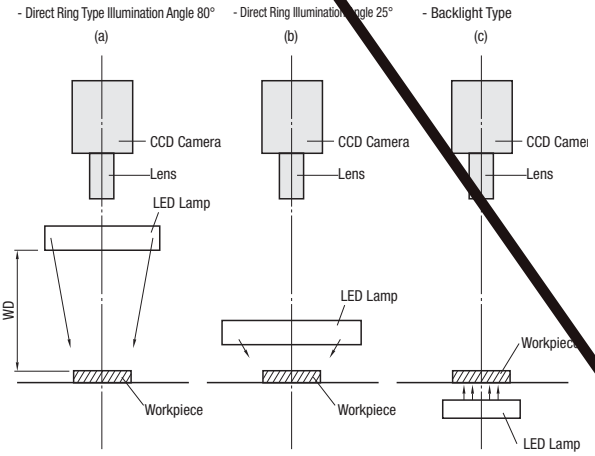
Features and Usage of LED Lighting

(1) Direct Ring Type
- By illuminating from 360° direction, even lighting without a shadow is obtained.
- As to the lighting of a wide illumination angle (80°), large amount of light can be obtained; therefore, it is suited when bright luminance is required. (a)
  However, the reflection of LED Lighting may occur in the case of the product that has gloss. In such cases, reflection can be reduced by using diffuser disc (board).
- As to the lighting of small illumination angle (25°), it is suitable to detect shallow irregularities and flaws without the reflection of LED Lighting even against gloss materials because of the low angled irradiation (b).



(2) Backlight Type
- LED Light faces and lightens directly up above, and the large amount of luminance can be obtained. Also, uniform illumination is achieved using a diffuser board.
- Do not occupy much space as it is designed to be compact (c).

(Fig.2) Examples of Each LED Lamps Applications



Not Available

Power Controller for LED Lamps

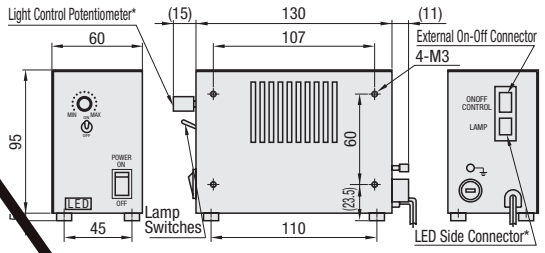
AD Data

Feature: The worldwide voltage specification (F1, F2) can be used with AC100~240V.

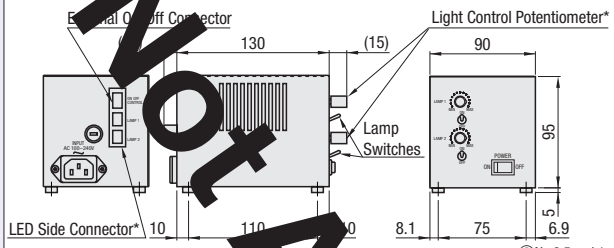
Power Controller for LED Lamps RoHS



Japanese Specification (No.0.5, 1)



Worldwide Specification (No.F1, F2)



*Light control differs according to the model of LED lamp. For details, refer to instruction manual for individual LED lamp.

Specifications

Input Power Supply	No. 0.5 / 1 AC100V±10% 50/60Hz No.F1 / F2 AC100V-240V 50/60Hz
Operating Temp.	0~45°C
Operating Humidity	75%RH or less (No condensation)
ON / OFF Control	External Input ON/OFF Signal
Lighting Method	Constant Voltage Power (Voltage variable)
Light Control	Continuously Variable (Knob on the Panel)

No.0.5 and 1 comes with a 2m electrical cable and an external input connector.
No. F1 and F2 does not come with an electrical cable. Socket Standard: IEC60320/C14

Part Number		Specifications					€ Unit Price	Volume Discount
Type	No.	Number of Circuits	Output Current	Capacity	Input Power Supply	Applicable Lighting (MISUMI Type)	Qty. 1~4	Qty. 5~9
	0.5	1	1.1A or Less	25W	AC100V±10% 50/60Hz	LPDR_20 / LPDR_50-25		
	1				50/60Hz	LPDR_30 / LPDR_70 / LPDR_90 / LPBL_		
	F1	2	1.3A or less	30W	AC100V-240V 50/60Hz	LPDR_20 / LPDR_50-25		
	F2					LPDR_30 / LPDR_70 / LPDR_90 / LPBL_		

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number

Days to Ship — 6 Days P. 87

Operation Method

(1)Confirm that the cable, connectors, etc. are ar[illegible]ned.
(2)Turn ON the power switch.
(3)The ON/OFF of the LED lighting is operated with L[illegible]/OFF.
(4)When LED light is ON, brightness is adjusted with th[illegible]ight.
(5)The turn-off/on of the LED lighting device is facilitated by the external ON/OFF signal inputs.
Input Signal Area : Voltage Applied (VDD) = DC12V (Min.)~DC24V (Max.)
Input Current (IF) = LED lighting is turned off when input 10mA (Max.).
(6)Turn off the power switch.
*Be sure to turn off the power switch before removing or mounting the la[illegible]
[illegible]er remove or mount lamps during operation, or it may result in malfunctioning of the lighting device.

Image Sample

Image Sample						
Work	Wire-Bonded Part on Circuit Board	Package of Tea Bag	IC (Laser Mark)	Lead Frame	Printing on Cardboard	Semiconductor Lead Bending
Lens	LFSHB-6-198	LCV6/LCVR1	LCV25/LCVR5	LCV50/LCVR5	LCV12/LCVR1[illegible]	LTAB5/LTABA5
LED Lamp	LPDRR30-90	LPDRW90–80*	LPDRR90-25		LPDRR90-80	LPDRR70-25
CCD Camera • WD	2/3 inch • 37	2/3 inch • 75	2/3 inch • 130	2/3 inch • 370	2/3 inch • 130	2/3 inch • 65

Image Sample						
Work	Fuse	Engravings on Cutter Edge	Chip Condenser	Tip Parts in the Tape (Presence Check)	Flat Washer (Scratch Detection)	Circuit Board Pattern
Lens	LFSL29-0.5-50.5	LFSHA-2-72.8	LFSHA-4-103.8	LFSL16-0.7-48	LFSL16-1-50	LFSH[illegible]4-158
LED Lamp		LPDRR30-90	LPDRR30-90		LPDRR50-25	LPDRR[illegible]90
CCD Camera • WD	2/3 inch • 95	2/3 inch • 75	2/3 inch • 75	2/3 inch • 95	2/3 inch • 68	2/3 inch • [illegible]

Not Available

Free Guide Arms · Overview; Guide for Measuring and Examination Instruments Mounting Hardware

MISUMI offers many parts suitable for mounting measuring instruments, lenses and lights for experiments and examinations on factory floors. For example, Free Guide Arms which make easy adjustment and fixture of the mounted instruments' position, Magnetic Bases which perform as the base of Free Guide Arms Shaft and adhere to magnetic objects, and Holders for mounting Dial Gauges.

■Feature of Free Guide Arms

	Free Guide Arms			Flexible Arms	Free Angle Arms
	Fixed Arms	Flex-arm	Mechanical Locking Flex-arm		
Shape					
Feature	There are 3 movable sections. Each can be adjusted freely. By fixing only one dial, 3 movable sections can be locked simultaneously. The Fixed Arm bears large allowable load at locked state, therefore, it is suitable for mounting measuring instruments, sensors and lightings.	The arm can be adjusted into shapes freely. Not having a lock function, it is not appropriate for mounting heavy loads. However, for its easy adjustment feature, it is suitable for mounting light loads such as lenses or lights and move them frequently.	The arm can be adjusted into shapes freely. The arm can be retained in desired shapes by tightening the nuts for holding the lock lever up. As it is more flexible than the Fixed Arm and can support larger loads, it is suitable for adjusting and locking at the same time.	Although the arm can be adjusted into shapes freely, it is not suitable for mounting heavy loads as no lock function is provided. It can be mounted on various devices as the item is sold separately. Also, the length and screw diameter are selectable.	Each joint angle can be adjusted in shape as desired. The unit quantities are also selectable, so use it with the necessary length.
Page	P.1718-1719	P.1718		P.1719	P.1720

■Overview; Measuring · Examination Instruments Mounting Hardware

Product Name	Base	Mounting Clamps for Installation			Holder
		Shaft	Measument Instruments		
	Magnetic Bases	Shaft Mounts	Dial Mounts	Indicator Mounts	Dial Holders
Appearance					
Feature	Compact but generates strong attraction force by using Neodymium Iron Boron Magnets. **Small sizes as 30 Squ-ares are added.**	Mounts for adjusting angles and fixing 2 shafts. Highly efficient Spring Built-in Types are also offered.	Mounts for mounting Dial Gauges. Adjust the gauge angle and turn the knurled screw to fix it.	Mounts for mounting Indicators. The angle adjustment for the tip can be done by turning the knurled screw.	As the dial holder is fixed by tightening the spindle of the dial gauge, mounting does not damage the spindle.
Page	P.1721	P.1721		P.1722	

Free Guide Arms Set

-Fixed Arm / Flex-arm / Mechanical Locking Flex-arm-

CAD Data

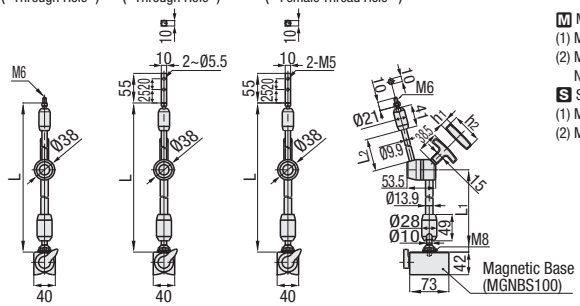
Features: A set of a Free Guide Arm and a Magnetic Base. Suitable for holding measuring instruments, sensors and lights with easy adjustment. For only arms, Refer to P.1719

Fixed Arms



RoHS

Fixed Arms FGPMA (Tip Holder Through Hole) FGPMB (Tip Holder Through Hole) FGPMC (Tip Holder Female Thread Hole)



Magnetic Bases Details P.1721

M Material:
(1) Main Body 1.0715/9SMn28
(2) Magnetic Base 1.0038/S235JR · Neodymium Iron Boron Magnet · ABS
S Surface Treatment:
(1) Main Body Electroless Nickel Plating
(2) Magnetic Bases Coating Finish

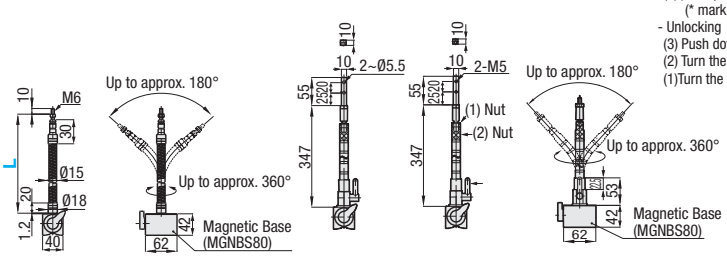
Flex-arm
Mechanical Locking Flex-arms



RoHS

Flex-arm FGLMA (Tip Holder Through Hole)

Mechanical Locking Flex-arm FGFMB (Tip Holder Through Hole) FGFMC / FGFKC (Tip Holder Female Thread Hole)



Magnetic Bases Details P.1721

Mechanical Locking Flex-arm Arm Locking Method
- Locking
(1) Turn the nut counterclockwise.
(2) Turn the nut clockwise.
(3))Lift up the lock lever from Left to Up and lock.
(* mark shows in locked position)
- Unlocking
(3) Push down the lock lever from Up to Left.
(2) Turn the nut counterclockwise.
(1)Turn the nut clockwise and unlock.

M Materials:
(1) Main Body 1.0715/9SMn28
(2) Magnetic Base 1.0038/S235JR · Neodymium Iron Boron Magnet · ABS
S Surface Treatment:
(1) Main Body Electroless Nickel Plating Washer
(2) Magnetic Bases Coating Finish

Fixed Arms

Part Number Type	No.	L	L1	L2	h1	h2	Weight(kg)	Allowable Ref. Load (N)	Attraction Force (N)	FGPMA € Unit Price Qty. 1~4	FGPMA Vol. Discount 5~9	FGPMB € Unit Price Qty. 1~4	FGPMB Vol. Discount 5~9	FGPMC € Unit Price Qty. 1~4	FGPMC Vol. Discount 5~9
Tip Female Thread (M6) FGPMA Tip Holder Through Hole FGPMB Tip Holder Female Thread Hole FGPMC	100	272	145	62	15	56	1.7	24.5	1000						
	200	432	228	142	17	68	1.9	17.6							

For orders larger than indicated quantity, please request a quotation.

Flex-arm

Part Number Type	L	Weight (kg)	Allowable Ref. Load (N)	Min. Bending R	Attraction Force (N)	FGLMA € Unit Price Qty. 1~4	FGLMA Volume Discount 5~9
Tip Female Thread (M6) FGLMA	200	0.8	3.9	80	800		
	300	0.9	2.0				

For orders larger than indicated quantity, please request a quotation.

Mechanical Locking Flex-arm

Part Number Type	Weight (kg)	Allowable Ref. Load (N)	Min. Bending Radius	Attraction Force (N)	FGFMB € Unit Price Qty. 1~4	FGFMB Volume Discount 5~9	FGFMC € Unit Price Qty. 1~4	FGFMC Volume Discount 5~9	FGFKC € Unit Price Qty. 1~4	FGFKC Volume Discount 5~9
Tip Holder Through Hole FGFMB Tip Holder Female Thread Hole FGFMC FGFKC	1.1	4.9	110°	800						

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number FGPMA100 FGLMA300 FGFMB

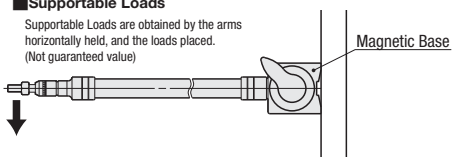
Days to Ship: 10 Days

Express B: 5,00 EUR / 1 piece P. 88

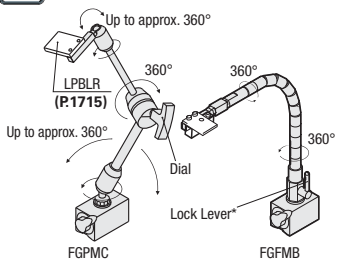
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Supportable Loads

Supportable Loads are obtained by the arms horizontally held, and the loads placed.
(Not guaranteed value)



Example



Feature of Fixed Arms

By turning each of 3 movable sections freely and then fixing the dial, all movable sections can be fixed simultaneously.

Features of Mechanical Locking Flex-arm

While the lock lever is released, the arm can be adjusted into shapes freely.
Engaging the lock lever maintains the desired shape.

Free Guide Arms / Flexible Arms

- Fixed Arms

CAD Data

■By turning 3 movable sections each freely and then fixing the dial, all movable sections can be fixed simultaneously.

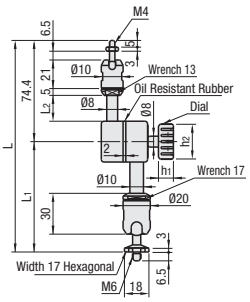
Magnetic Base Set Refer to P.1718

■Free Guide Arms RoHS



FRXGA

(No.50)



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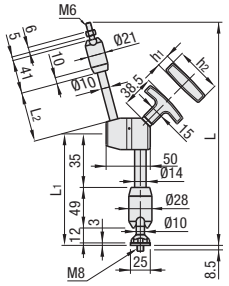

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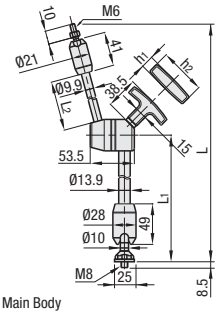


Main Body
M Material: 1.0715/9SMn28
S Surface Treatment: Electroless Nickel Plating

Part Number Type	No.	L	L1	L2	h1	h2	M (Coarse)	Weight (g)	Allowable Ref. Load (N)	€ Unit Price Qty. 1~4	Volume Discount Qty. 5~9
FRXGA	50	155.5	81.1	19	11	26	M6	300	15		
	80	195	99	17.6	17	68	M8	700	30		
	100	272	145	62	15	56		800	24.5		
	200	432	228	142	17	68		950	17.6		

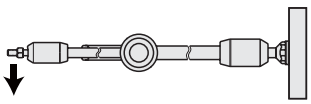
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: FRXGA100

Days to Ship: 6 Days P.87

■Supportable Loads (N)

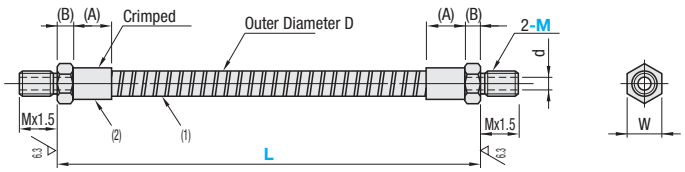
The values are obtained while the arms are held horizontally, and loads placed.
(Values are not guaranteed)



■Flexible Arms RoHS



FXGA



M Material: (1) Flexible Tube: Hard Steel Wire / Soft Steel Wire
(2) Crimped Part / Thread Part :CW614N/CuZn39Pb3 Brass (JIS)
S Surface Treatment: Chrome Plating

Part Number Type	M (Coarse)	L Selection	d	(A)	(B)	D	W	Min. Bending Radius	€ Unit Price L100	L200	L300
FXGA	6	100 200 300	3	10	5	6	10	40			
	8	200 300	4	12		8	13	45			
	10		5	15		10	17	50			

Order Example — Part Number: FXGA6 - L: 100

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Supportable Loads

Supportable Loads are obtained by the Flexible Arm horizontally held, and the loads placed. (Not guaranteed values)

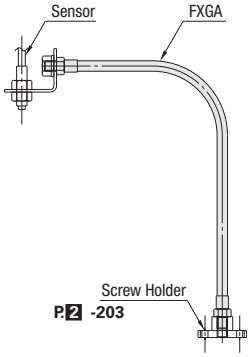


■Ref. Load

Unit (g)

M \ L	100	200	300
6	200	120	50
8	-	150	80
10	-	250	130

Example



Free Angle Arms

-Screw Tightened · Wing Nut Tightened, Holders, Bases-

■Screw Tightened

RoHS



■Wing Screw Tightened

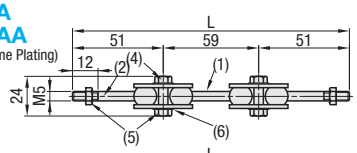


Part Number						Material	Surface Treatment
Screw Tightened			Wing Screw Tightened				
Both Ends Male Thread	Both Ends Holders	One End Male Thread One End Holder	Both Ends Male Thread	Both Ends Holders	One End Male Thread One End Holder		
FXMAA	FXMBB	FXMAB	FXCAA	FXCBB	FXCAB	1.4301/ X5CrNi18-10	-
FXMBAA	-	FXMBAB	FXCBAA	-	FXCBAB		Black Chrome Plating

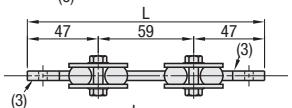
Part No.	Material	Note	
		Screw Tightened	Wing Screw Tightened
(1)	1.4301/ X5CrNi18-10	Sphere Dia. Ø12	Sphere Dia. Ø12
(2)			
(3)			
(4)		M5x20	M6x20
(5)		SLBNR5	SLBNR5
(6)		Spring Washer	Spring Washer
(7)		Pressed Product	Pressed Product

■Screw Tightened

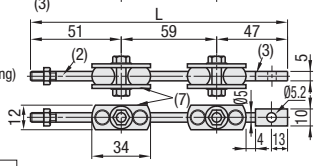
FXMAA
FXMBAA
(Black Chrome Plating)



FXMBB



FXMAB
FXMBAB
(Black Chrome Plating)

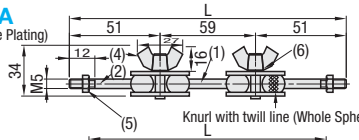


Each figure represents 1 unit.

*As 1 unit increases, (1) (4) (6) (7) also increases by one.

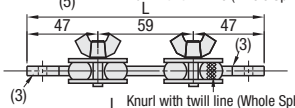
■Wing Screw Tightened

FXCAA
FXCBAA
(Black Chrome Plating)



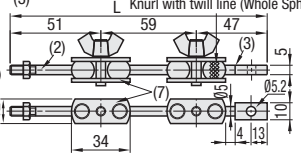
Knurl with twill line (Whole Sphere)

FXCBB



L Knurl with twill line (Whole Sphere)

FXCAB
FXCBAB
(Black Chrome Plating)



Each figure represents 1 unit.

*As 1 unit increases, (1) (4) (6) (7) also increases by one.

(?)When the knurled screw is moved, it may generate particles.

■Screw Tightened

Part Number	No. of Units	1	2	3	4	5	6	7	8	9
FXMAA	L Dimension									
	€ Unit Price									
FXMBB	L Dimension									
	€ Unit Price									
FXMAB	L Dimension									
	€ Unit Price									

*Multiply the listed unit price by 1.3 for Black Chrome Plating Product. (Round down to the nearest 10 Cent)

■Wing Screw Tightened

Part Number	No. of Units	1	2	3	4	5	6	7	8	9
FXCAA	L Dimension									
	€ Unit Price									
FXCBB	L Dimension									
	€ Unit Price									
FXCAB	L Dimension									
	€ Unit Price									

*Multiply the listed unit price by 1.3 for Black Chrome Plating Product. (Round down to the nearest 10 Cent)

Order Example

Part Number	-	No. of Units
FXMAA	-	5

Days to Ship 8 Days — Express A 5,00 EUR/ piece — P.88

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

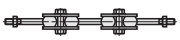
■Volume Discount ((?)Round down to one Cent) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

■No. of Units Example

1 Unit



2 Units



3 Units

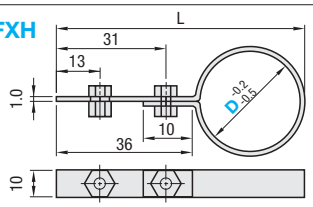


■Holders for Free Angle Arms



RoHS

FXH



Material: 1.4301/X5CrNi18-10

Part Number Type	D	L	Hardness	€ Unit Price
FXH	12	50	Bolt	
	16	54		
	25	63	Black Oxide	
	32	70		
	40	78		

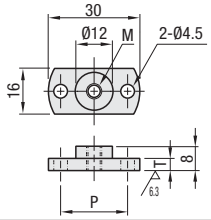
*This holder can be mounted on the plate (3) of the Free Angle Arm's part without rotating.

■Bases for Free Angle Arms

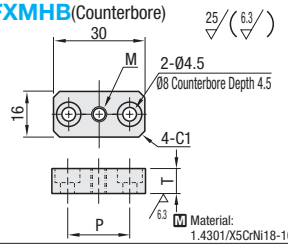


RoHS

FXMHA(Through Hole)



FXMHB(Counterbore)



Material: 1.4301/X5CrNi18-10

Part Number	M	T	P	Mass (g)	€ Unit Price
FXMHA	5	4	22	200	
FXMHB		8	20	280	

Order Example

Part Number
FXH25
FXMHA

Days to Ship 8 Days — Express A 5,00 EUR/ piece — P.88

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.

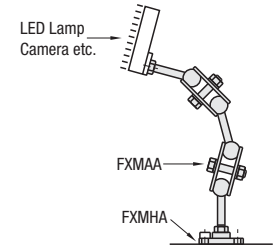
Price

■Volume Discount ((?)Round down to one Cent) P.87

Quantity	1~9	10~14	15~19	20~29
Discount Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

Example



Add. Spec. Magnetic Bases / Shaft Mounts / Dial Mounts

Price Reduction 8% in average

CAD Data

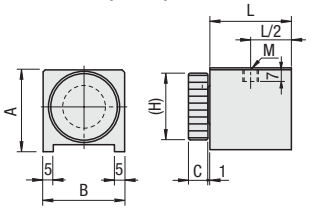
Feature: Compact but achieves strong attraction forces by using the Neodymium Iron Boron Magnet. Arm Set Refer to P.1720

Magnetic Bases RoHS

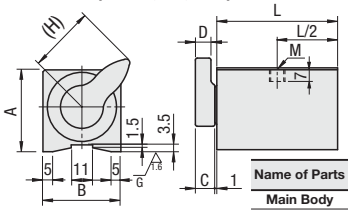


MGNBS

(No.20)



(No.40, 80, 100)



Name of Parts	M Material	S Surface Treatment
Main Body	1.0038/S235JR	Coating Finish
Magnet	Neodymium Iron Boron Magnets	-
Knob	ABS	-

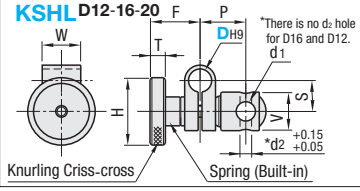
Part Number Type	No.	Attraction Force N	A	B	L	(H)	C	D	M (Coarse)	Weight (g)	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~19
MGNBS	20	200	30	30	30	25	9	-	M6	200		
	40	400	40	40	42	34	10	8		400		
	80	800	42	40	62				M8	700		
	100	1000	42	40	73					800		

For orders larger than indicated quantity, please request a quotation.

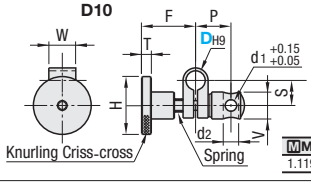
Shaft Mounts -Built-in Spring- RoHS



KSHL D12-16-20



D10



M Material	S Surface Treatment
1.1191/C45E	Black Oxide

Part Number Type	DH9	Ø	d1 Tolerance	d2	P	F	H	S	V	T	W	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~19
KSHL	10 +0.036 0	8	+0.15 +0.05	6	18.4	28	30	13	14	5	14		
	12 +0.043 0	10	H9 +0.036 0		24	26	35	16	20	8	20		
	16 +0.043 0	12	H9 +0.043 0	-	27.5	32	40	22	22		28		
	20 +0.052 0				38.5	40	50	28	28	10	30		

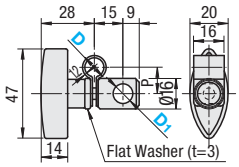
For orders larger than indicated quantity, please request a quotation.

Shaft Mounts RoHS

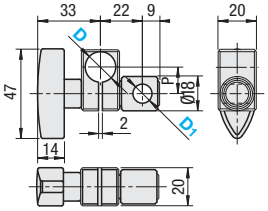


MGNBSH

■D=10, 12



■D=16



Name of Parts	M Material	S Surface Treatment
D (D=10, 12)	W1-8 Tool Steel	Black Oxide
D (D=16), D1	1.0715/9SMn28	Black Oxide
Knob	ABS	-

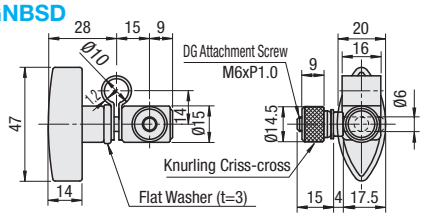
Part Number Type	D	D1	P	Weight (g)	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~19
MGNBSH	10	8	14	50		
		10				
	12	8	16.5	50		
		10				
	16	10	14	100		
		12				

For orders larger than indicated quantity, please request a quotation.

Dial Mounts RoHS



MGNBSD

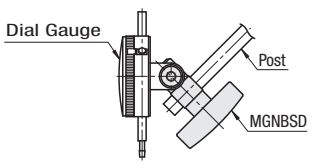


Name of Parts	M Material	S Surface Treatment
Ø10	W1-8 Tool Steel	Black Oxide
Main Body and Mounting Screw	1.0715/9SMn28	Black Oxide
Knob	ABS	-

Part Number	Weight (g)	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~19
MGNBSD	70		

For orders larger than indicated quantity, please request a quotation.

Dial Mounts Example of Use



Order Example

Part Number	-	D1
MGNBS80 KSHL12 MGNBSH12 MGNBSD	-	8

Days to Ship: 6 Days P. 87

Indicator Fittings / Dial Holders

CAD Data

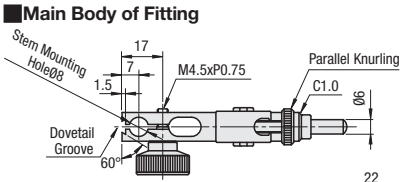
■Indicator Mounts RoHS

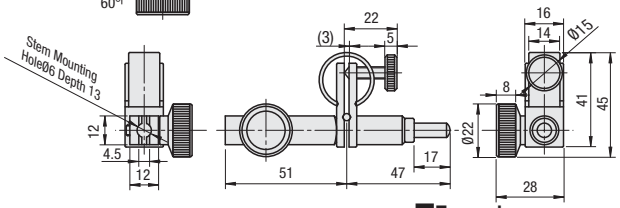


MGNBSK

■Main Body of Fitting

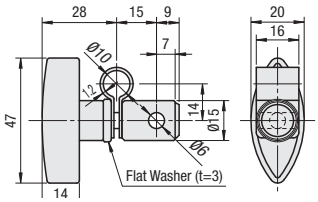
Name of Parts		Material	Surface Treatment	Accessory
Main Body of Fitting		1.0715/9SMn28	Washer	Reducer 1Pc. (For conversion from Ø8 to Ø6)
Holder	Ø10	W1-8 Tool Steel	Washer	
	Ø6	1.0715/9SMn28	Washer	
	Knob	ABS	-	

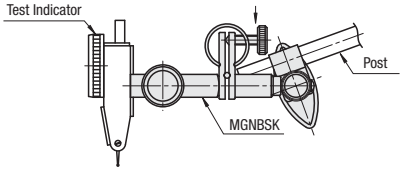




■Example

The angle of the tip can be adjusted by turning the knurled screw.





Part Number	Weight (g)	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~19
MGNBSK	170		

For orders larger than indicated quantity, please request a quotation.

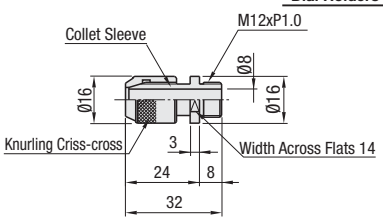
■Feature: As the dial holder is attached by clamping the spindle of the dial gauge with a collet-shaped sleeve, mounting does not damage the spindle.

■Dial Holders RoHS

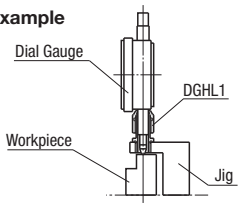


DGHL1

Name of Parts	Material	Surface Treatment Knob	Surface Treatment Collet
Dial Holders	JIS SUP6 (Spring Steel)	Post	Sandblasted Finish



■Example



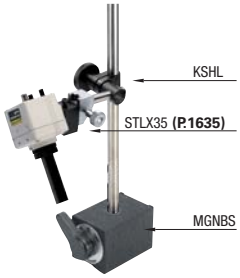
Part Number	€ Unit Price Qty. 1~9	Volume Discount Qty. 10~19
DGHL1		

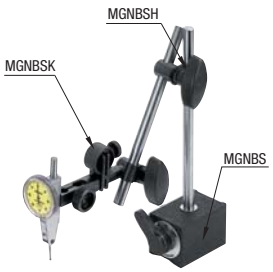
For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: MGNBSK, DGHL1

Days to Ship: 6 Days P. 87

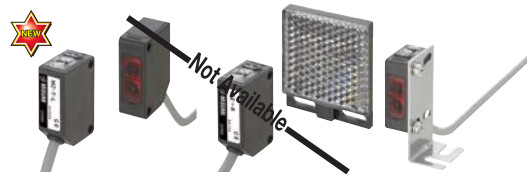
Example

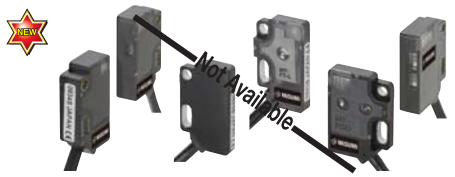




Sensors · Switches

Sensors · Switches





Product Name	Photoelectric Sensors with built -in Amplifier -Standard Type-	-Miniature Type-
Page	1727	1729







-Laser Type-	Brackets for Sensor with Stands -Stand Resin Type-	-Stand Sheet Metal Type-
1731	1733	1733







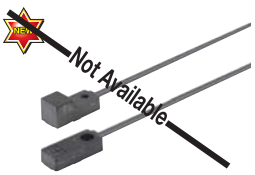
Bracket Components for Sensor with Stands	Clamps for Photoelectric Sensor Mounting	Bases for Sensor Mounting
1734	1735	1736











Proximity Sensors with built-in Amplifier, Screw Type	-All Metal (IP68) Type-	-Heat-Resistant (IP67)-	-Mini (IP67)-	Proximity Sensors with built-in Amplifier Square Typ
1737	1739	1739	1739	1741



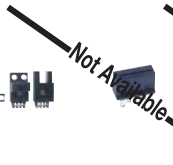


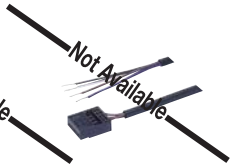




Holders for Proximity Sensors	Sensor Flags	Shaft Flag Brackets	Proximity Sensor Flags
1743	1743	1743	1744









Photomicrosensors	Soldered Connectors	Connectors with Cable	Cams for Photo Sensor -Solid · Slit Type · Configurable Slit-
1746~1748	1748	1748	1749











Cams for Photo Sensor -Resin Type-	-Clamping Type-	-Half Circle Type-	–Angle Adjustable Type–	Rails for Switch and Sensor -L Dim. Fixed no Hole · With Slotted Holes · L Dim. Configurable no Hole-
1750	1750	1750	1750	1751 · 1752



Price Reduced
Up to 8%

Rails for Switch and Sensor -L Dim. Configurable · Hole Position Fixed-
1753



Price Reduced
10% on average

-L Dim. Configurable · Hole Position Configurable-
1754~1756



Rails for Switch and Sensor -L Dim. Configurable, Calibrated-
1757



Rails for Photomicrosensors
1757

NEW



Bar Nuts
1757



Rails for Switch and Sensor -Steel-
1758

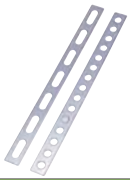


Price Reduced
Up to 76%

-DIN Rails L Dimension Fixed Type-
1759



C-Shaped Sensor Rails
1760



Simple Brackets
1760



Grounding Blocks
1760

NEW
Modified



Price Reduced
15% on average

Sheet Metal Mounting Plate · Brackets -Angle Type-
1761

NEW
Modified



Price Reduced
8% on average

-Crank Bend Type-
1763

NEW
Modified



Price Reduced
6% on average

-Convex-Shaped Bend Type-
1765



Limit Switch Flags
1767-1768

NEW



Contact Switches -Compact Type-
1771

NEW



-NO (Normally Open) Type-
1771



High Precision Touch Switches
1772



Contact Switches -Cylinder, L-Shaped Cylinder-
1773



-Bolt Type-
1774



Contact Switches -Water-Proof (IP67)-
1775



-With Plastic Tip (IP65)-
1775



-Tip Shape Selectable · Wide Contact Angle Type-
1776



Switches with Stoppers -Mini, Drip-Proof-
1777



-Mini, Water-Proof-
1778



Switches with Stoppers -Bolts, Hexagon Head, Spherical Contacts, 1-Signal-
1779-1780

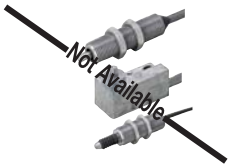




Heat-Resistant Switches
1781



Plunger Switches
1782



Contact Switches -Non Contact Point Type-
1784

Overview of Photoelectric Sensors with Built-in Amplifier

Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

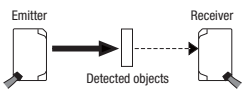
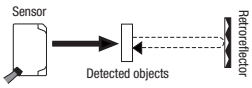
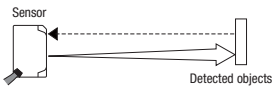
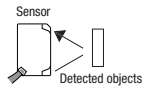
■Features of MISUMI Photoelectric Sensors with Built-in Amplifier

High Performance, reasonably priced, and short lead time are offered in collaboration with a sensor manufacturer.
Provided one of the fastest response time (0.5ms for Through Beam Type) and detection distance (25m for Through Beam Type) in the industry. Furthermore, contributing to reduced power consumption, speeding-up, environmental friendliness and price economy.

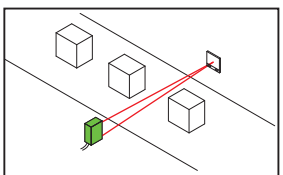
■Types of MISUMI Photoelectric Sensors with Built-in Amplifier

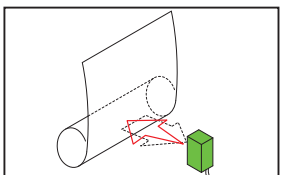
Type		General purpose		Laser (MZL)
		Standard (MZ)	Miniature (MT)	
Appearance				
Feature		General purpose Photoelectric Sensors with Built-in Amplifier for presence check or positioning of work piece. Various detection methods are available depending on the subject work piece or the purpose.	Less than half in thickness and 30~40% smaller outer dia. compared to the standard type. Suitable for space-savings. Also spot dia. is relatively small. Suitable for small work piece detection.	Provided with small spot dia. and high-visual laser source. Suitable for detection or positioning of small work piece. Optical axis adjustment is relatively easy.
Detection Method	Through Beam Type		○	○
	Mirror Retroreflective Type		×	○
	Diffusion Reflective Type	○	○	○
	Limited Reflective Type	○	○	×
	Wide Angle Reflective Type	○	×	×

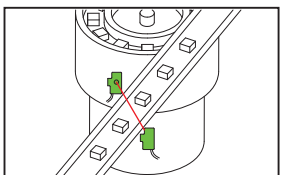
■Detection Method Types and Features

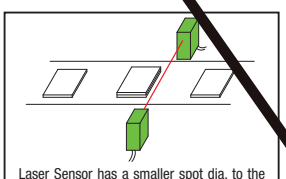
Type		Feature
Detection Method	Shape	
Through Beam Type		Use a combination of Emitter and Receiver. ON/OFF action is controlled by blocking the beam between Emitter and Receiver. - Long range detection - Large amount of light helps avoiding effects from dust. - Accurate detection of positions - Opaque objects can be detected regardless its shape, color or material.
Mirror Retroreflective Type		Use a combination of Sensor and Retroreflector. ON/OFF action is controlled by blocking beam between the Sensor and Retroreflector. - Reduced wiring procedure and steps to install compared with Through Beam Type. - Suitable for space-saving since Retroreflector is used on other side. - Optical Axis adjustment is easy. - Opaque objects can be detected regardless its shape, color or material.
Diffusion Reflective Type		ON/OFF action is operated when the light from the emitting section bounce back from the detected object to the receiving section. Space-saving design integrated Emitter and Receiver. - Installation is needed for only Sensor itself. Space saving. - No need for Optical Axis adjustment. - Transparent objects can be detected as long as the object is reflective.
Limited Reflective Type		Angled structure built into the emitting and receiving arrangement makes the detection area limited to where the two Optical Axes cross. - Affected little by the background. - Hysteresis range is short. - Small concave and convex surfaces can be detected.
Wide Angle Reflective Type		Wide opening angle allows ON/OFF action with a minimal light. Detection area is 10 times larger than Diffusion Reflective Type. - Most suitable for detection of transparent objects or work piece with clearances.

■Example of Use


Use for presence check on work piece conveyance (MZ-R).


Wide Angle Reflective Type is provided with wide detection area. It allows film-end detections without being affected from film wrinkles or flapping (MZ-WD).


Miniature Type has a small and thin outer dia. Suitable for space-saving (MT series).


Laser Sensor has a smaller spot dia. to the standard type in order to detect thin work pieces (MZL series).

Not Available

Outline of Proximity Sensors

Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

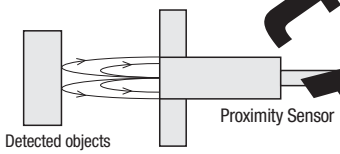
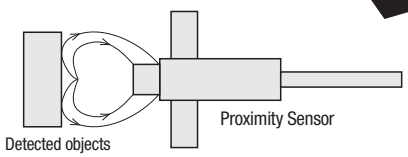
■Features of Proximity Sensors

Proximity Sensors are to detect approaching objects without contacting. Non-contact detection, unlike limit switches, allows high repeatability and fast response detection without damaging the objects or sensors.

■Screw Type

Power Supply	DC, 2-Wire				DC, 3- Wire					
Size	M8	M12	M18	M30	M3	M4	M8	M12	M18	M30
Detected Forms	NPN N.O.				NPN N.O.					
Detecting Head Structure	Shield	Shield / Non Shield			Shield					
Standard	P.1737	P.1737	P.1737	P.1737	P.1739	P.1739	-	P.1737	P.1737	-
All Metal (IP68)	-	-	-	-	-	-	P.1739	P.1739	P.1739	P.1739
Heat Resistant	-	-	-	-	-	-	P.1739	P.1739	P.1739	-

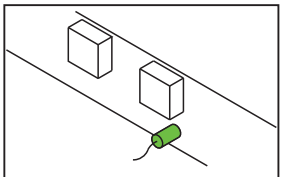
Shielded · Non Shielded

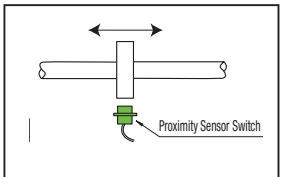
Type	Product Configuration	Feature
Shield		-The side of detection coil with metal case is shielded, magnetic flux converges in front. -Sensors can be embedded into metals for installation.
Non Shield		The magnetic flux extends forward widely since the sides of the detection coil are not shielded by any metals. Surrounding metals (magnetic objects) may be attracted to the tip of detection coil instead of detected objects. Installation location must be selected carefully. Capable of Long Distance Detection than same-sized Shielded Type.

■Square Type

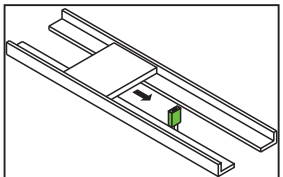
Power Supply	DC, 2-Wire		DC, 3-Wire					
Detecting Surface	Front Surface	Upper Surface	Front Surface	Upper Surface	Front Surface	Upper Surface	Front Surface	Upper Surface
Detected Forms	NPN N.O.		NPN N.O.		NPN N.O.		NPN N.C.	
Detection Distance	4mm		2.5mm		4mm		4mm	
Standard Detected Subject	Steel 20x20x1t		Steel 15x15x1t		Steel 20x20x1t		Steel 20x20x1t	
Page	P.1741		P.1741		P.1741		P.1741	

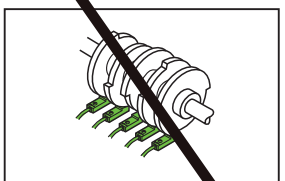
■Example of Use


Detects metals contained in work piece films.



Detects Flags.


Detects work piece from under the rail.


Detects Cams.

Not Available

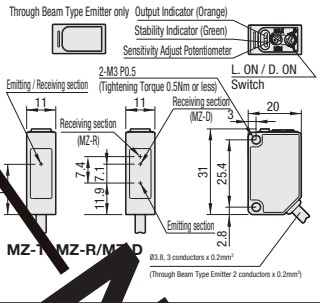
Photoelectric Sensors with Built-in Amplifier
-Standard Type-

■Improved Photoelectric Sensors!! Offering general-purpose Photoelectric Sensors with Built-in Amplifier with reasonable prices and short lead times.

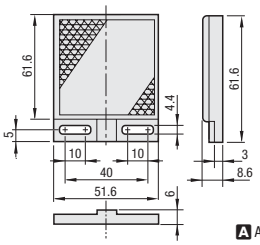
For mounting stands, refer to☞P.1733



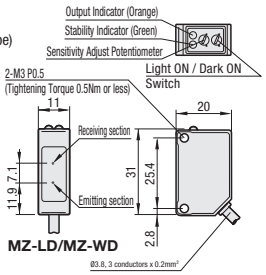
(Through Beam Type)
(Mirror Retroreflective Type)
(Diffusion Reflective Type)



Retroreflector (Only Mirror Retroreflective Type)



(Limited Reflective Type)
(Wide Angle Reflective Type)



Ⓐ Accessories: Retroreflector (Only Mirror Retroreflective Type)

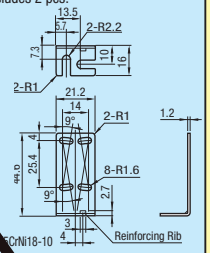
Part Number	Detection Method	Sh	Detection Distance	Outputs	Light Emitting Elements	Connection Method	€ Unit Price 1~5 pcs.	Volume Discount 6~10 pcs.
	Through beam type		25m	NPN Output	Red LED	Cable 2m		
	Mirror Retroreflective Type		100mm~4.4m					
	Diffusion Reflective Type		0~1m					
	Limited Reflective Type		10~90mm					
	Wide Angle Reflective Type		1~200mm					

☞For features for each detection method, refer to P.1725 ☞For Through Beam Type, Emitter is labeled as "MZ-T-[illegible]eiver is labeled as "MZ-T-D". ☞For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number

Days to Ship — 6 Days ☞P. 87

Alterations — Part Number - (NB) / - NB

Alteration	Code	Spec.	Price Adder
For Sensor Bracket	M	Sensor installing fittings are included. ☞Only MZ-T includes 2 pcs.  Ⓜ Material: 1.4301 SUS304 / SCrNi18-10 Ⓐ Accessories: Washer Assembled Pan Head Screws (M3x10) 2 pcs.	

■Sensitivity Adjustment Method (Retroreflective Type, when the background of work piece may be detected)

	Steps	Fig.	Potentiometer	Output Indicator Light	Adjustment Method
Retroreflective Type	(1)		A MIN MAX	ON (Orange)	Locate the detection object and adjust Sensitivity Potentiometer from MIN until Output Indicator Light turns on. The position is regarded as A.
	(2)		A B MIN MAX	OFF	Remove the detection object and adjust Sensitivity Potentiometer from MAX until Output Indicator Light turns off. The position is regarded as B.
	(3)		A C B MIN MAX	ON (Orange)	C, middle of A and B, is the best sensitivity area. A and B may reverse depending on the model or the detection condition. Locate the work piece and check the operation.

■Specifications

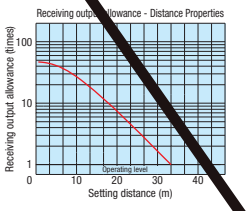
Type		Through beam type	Mirror Retroreflective Type	Diffusion Reflective Type	Limited Reflective Type	Wide Angle Reflective Type
Part Number						
Detection Distance		25m	100mm~4.4m*1	0~1m*2	10~90mm*2	1~200mm*2
Light Source		Red LED				
Spot Dia.*3		Approx. Ø1000mm (at distance 25m)	Approx. Ø220mm (at distance 4.4m)	Approx. Ø140mm (at distance 1m)	Approx. Ø12mm (at distance 90mm)	Approx. Ø30mm (at distance 50mm)
Response Time		500μs or less				
Hysteresis Range		–		20%	10%	20%
Sensitivity Adjustment		1-turn potentiometer				
Indicator Light		Output Indicator: Orange LED, Stability Indicator: Green LED (Through Beam Type Emitter has no Indicator Light)				
Control Output		NPN Open Collector Max.100mA/DC30V				
Output Mode		Light ON / Dark ON Switch				
Connecting Type		Cable Type: Length 2m Ø3.8mm				
Ratings	Power supply voltage	DC10~30V Ripple (p-p)10% included				
	Current consumption	Emitter: 8mA or less Receiver: 11mA or less	13mA or less	15mA or less	20mA or less	15mA or less
Noise Resistant	IEC Standard	CE Compliance				
Environmental Protection	Service Ambient Temperature / Humidity	-20~+50°C (No freezing) / 35~85%RH (No condensation)			-25~+55°C (No freezing) / 35~85%RH (No condensation)	
	Service environment luminosity	Sun light: 10,000ℓx Incandescent lamp: 3,000ℓx				
	Vibration resistance	10~55Hz, Stroke 1.5mm in Respective X, Y, Z Direction 2hours				
	Shock resistance	Approx 100G (1000m/s²) in Respective X, Y, Z Direction 3times				
	Protection structure	IP67				
Type		Case: ABS (Glass Fiber included), Front cover: PMMA				
Mass (Cable included)		Emitter: Approx. 45g, Receiver: Approx. 55g	Approx. 55g			

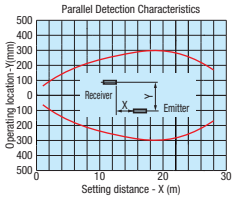
*1. with Included mirror *2. with 100x100 blank sheet *3. For Spot Dia. change by distance, refer to the right page "Spot Dia. / Distance Properties".

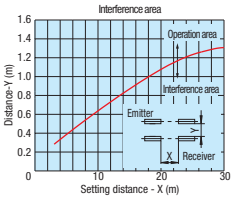
Not Available

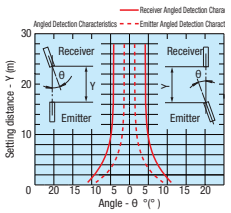
Characteristic Data (Representative Values)

(Through Beam Type)









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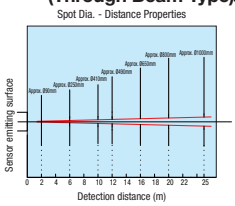
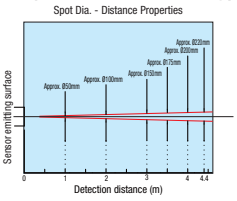
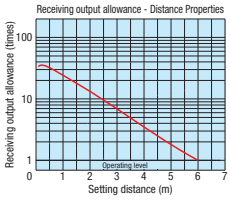
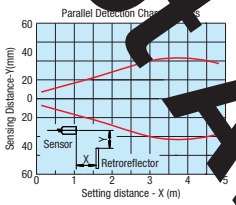


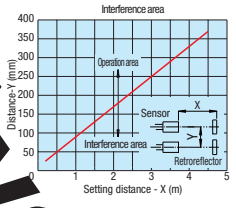
(Mirror Retroreflective Type)

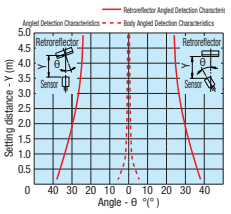


(Mirror Retroreflective Type)

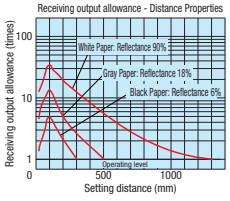


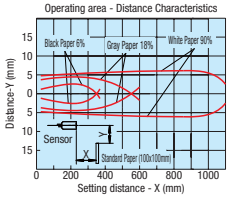


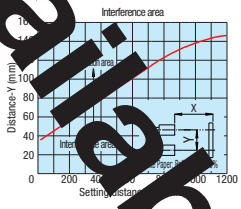


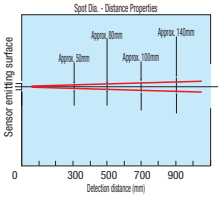


(Diffused Reflective Type)

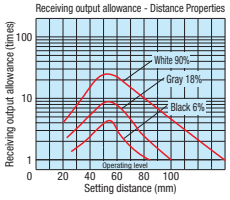


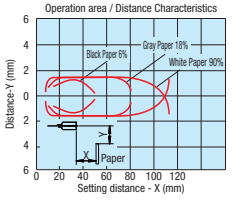


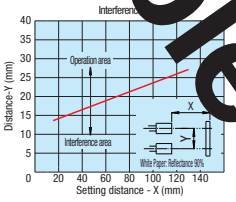


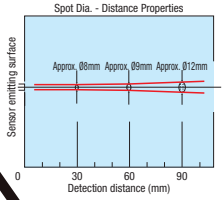


(Limited Reflective Type)

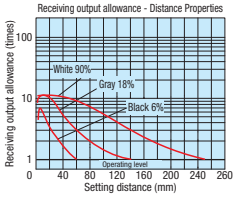


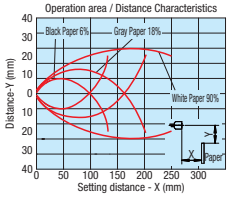


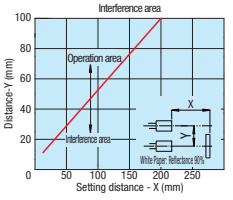


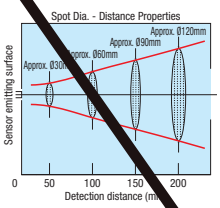


(Wide Angle Reflective Type)



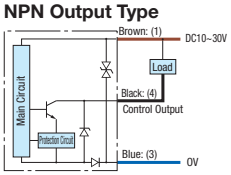




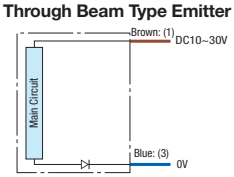


Output Circuit

NPN Output Type



Through Beam Type Emitter



Precautions for Use

- **Mutual Interference**
  When sensors are installed side by side, operation may become inconsistent by being affected from the light of other sensors. To prevent this, refer to the following methods.
  -Keep one sensor away from another to avoid interfering with each other, referring to the Interference Range Characteristics, .
  - Through Beam Type or Mirror Retroreflective Type should be installed alternately.
- **Influences from environment luminosity and disturbance**
  Direct high-frequency fluorescent or sunlight may cause receivers to malfunction. In this case, adjust the sensor angle or install a light shield to prevent disturbing lights.
- **Other Cautions**
  - Connect Frame Ground Terminal to the ground when using Switching Regulator for power.
  - Avoid using during the power-on transitional state (approx. 100ms).
  - Avoid using with high voltage circuits or power lines in parallel or in a bundle. May cause inductive malfunction.

Not Available

Photoelectric Sensors with Built-in Amplifier
-Miniature Type-

■Provided depth half or less compared to Standard Photoelectric Sensor. Suitable for space-saving.

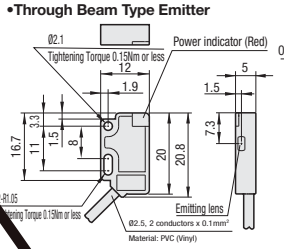
For mounting stands, refer to P.1733



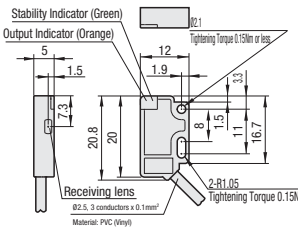
RoHS

(Side View Type)

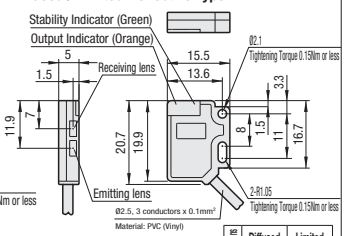
•Through Beam Type Emitter



Receiver

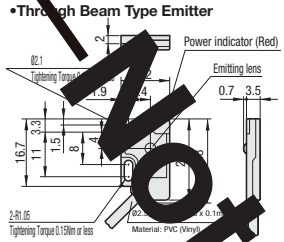


•Diffused / Limited Reflective Type

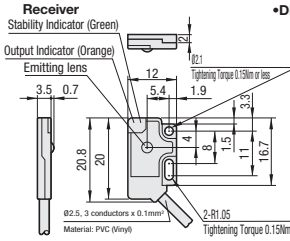


(Flat View Type)

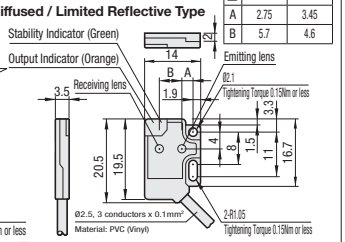
•Through Beam Type Emitter



Receiver



•Diffused / Limited Reflective Type



Dimensions	Diffused Reflective	Limited Reflective
A	2.75	3.45
B	5.7	4.6

A Accessories: M2 Screws 2pcs, Nuts 2pcs.

Part Number	Detection Method	Shape		Detection Distance	Operation	Outputs	Light Emitting Elements	Connection Method	€ Unit Price 1~5 pcs.	Volume Discount 6~10 pcs.
	Through Beam Type		Side View	500mm	Dark ON / Light ON	NPN Output	Red LED	Cable 2m		
			Flat View		Dark ON / Light ON					
	Diffusion Reflective Type		Side View	10	Dark ON / Light ON					
			Flat View	3 mm	Dark ON / Light ON					
	Limited Reflective Type		Side View	2~15mm	Dark ON / Light ON					
			Flat View		Dark ON / Light ON					

For features for each detection method, refer to P.P.175 For Through Beam Type, Emitter is labeled as "MT-ST-L / MT-FT-L", Receiver is labeled as "MT-STL (D) / MT-FT-L". For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number

Days to Ship — 6 Days P.87

■Features of Miniature Type

•Ultra Low Profile
Thickness of Flat View Type is 5mm. Side View Type is 5mm. Low profile.
Available in sizes for space-saving in width, Side View for space-saving in width, Flat View for space-saving in depth.

•Flexible mounting
Slotted holes provided on one side and 8~11mm of mounting pitch for flexible mounting.

■Specifications

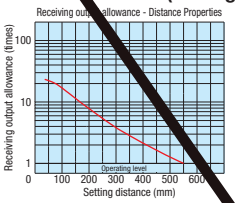
Type		Through Beam Type		Diffusion Reflective Type		Limited Reflective Type	
		Side View	Flat View	Side View	Flat View	Side View	Flat View
Part Number	Dark ON						
	Light ON						
Detection Distance		500mm		100mm*1	30mm*1	2~15mm*1	
Light Source		Red LED					
Spot Dia.*2		Approx. Ø60mm (at distance 500mm)	Approx. Ø140mm (at distance 500mm)	Approx. Ø3mm (at distance 30mm)	Approx. Ø60mm (at distance 100mm)	Approx. Ø2mm (at distance 15mm)	Approx. Ø10mm (at distance 15mm)
Smallest Detected Subject		Ø0.8mm	Ø1.2mm	-	-	-	-
Response Time		0.25ms or less	0.5ms or less	0.5ms or less		0.5ms or less	
Hysteresis Range		-		10%	15%	10%	
Indicator Light		Output Indicator: Orange LED, Stability Indicator: Green LED, Power indicator: Red LED (Only Through Beam Type Emitter)					
Control Output		NPN Open Collector Max.50mA/DC24V					
Connecting Type		Cable: Cable length 2m Ø2.5mm					
Ratings	Power supply voltage	DC12~24V Ripple (p-p)10% included					
	Current consumption	Emitter: 14mA or less Receiver: 16mA or less		20mA or less		20mA or less	20mA or less
Noise Resistant	IEC Standard	CE Compliance					
Environmental Protection	Service Ambient Temperature / Humidity	-25~+55°C (No freezing) / 35~85%RH (No condensation)					
	Service environment luminosity	Sun light: 10,000ℓx Incandescent lamp: 3,000ℓx					
	Vibration resistance	10~55Hz, Stroke 1.5mm in Respective X, Y, Z Direction 2hours					
	Shock resistance	Approx. 50G (500m/s²) in Respective X, Y, Z Direction 3times					
	Protection structure	IP67					
Type		PC (Polycarbonate)					
Mass (Cable included)		Emitter / Receiver: Approx. 25g		Approx. 25g			

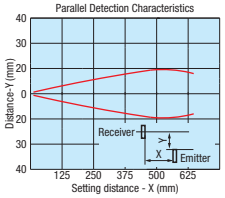
*1. with 100x100 blank sheet *2. For Spot Dia. change by distance, refer to the right page "Spot Dia. / Distance Properties".

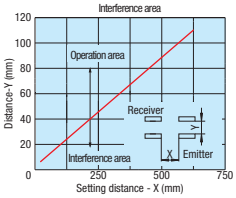
Not Available

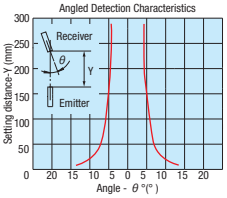
Characteristic Data (Representative Values)

(Through Beam · Side View)

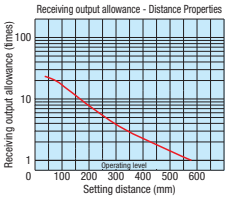


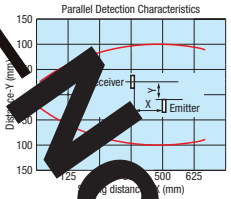


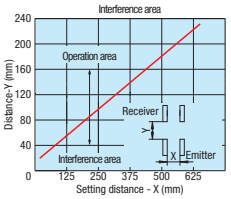


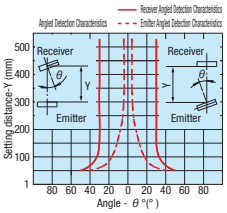


(Through Beam · Flat View)

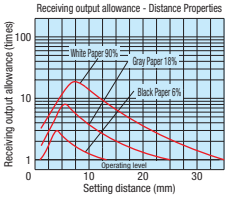


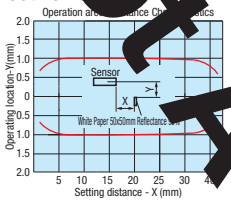


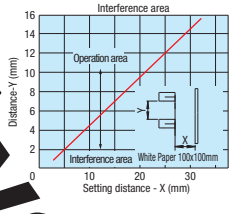


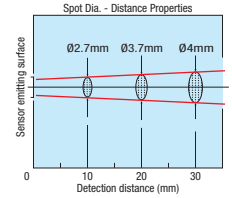


(Diffused Reflective · Side View)

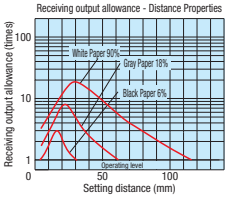


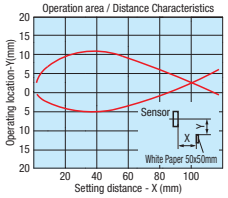


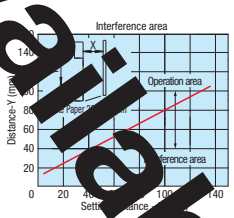




(Diffused Reflective · Flat View)

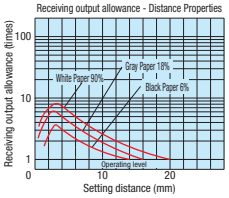


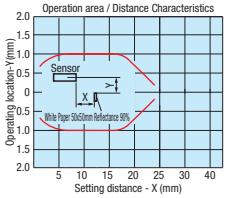


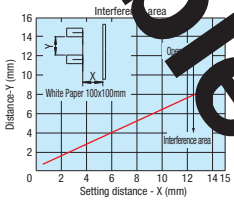


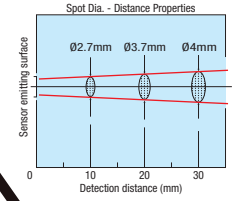


(Limited Reflective · Side View)

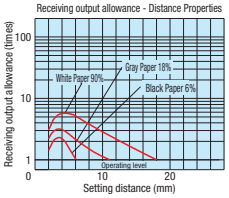


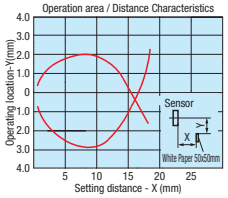


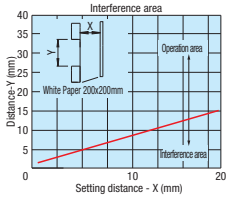


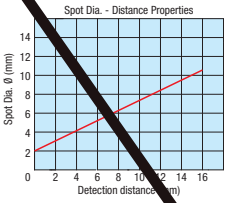


(Limited Reflective · Flat View)



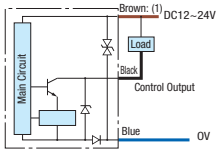




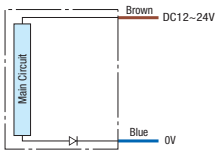


Output Circuit

NPN Output Type



Through Beam Type Emitter



Precautions for Use

- **Mutual Interference**
  When sensors are installed side by side, operation may become inconsistent by being affected from the light of other sensors. To prevent this, refer to the following methods.
  -Keep one sensor away from another to avoid interfering with each other, referring to the Interference Range Characteristics, .
  - Through Beam Type should be installed alternately.
- **Influences from environment luminosity and disturbance**
  Direct high-frequency fluorescent or sunlight may cause receivers to malfunction. In this case, adjust the sensor angle or install a light shield to prevent disturbing lights.
- **Other Cautions**
  - Connect Frame Ground Terminal to the ground when using Switching Regulator for power.
  - Avoid using during the power-on transitional state (approx. 100ms).
  - Avoid using with high voltage circuits or power lines in parallel or in a bundle. May cause inductive malfunction.

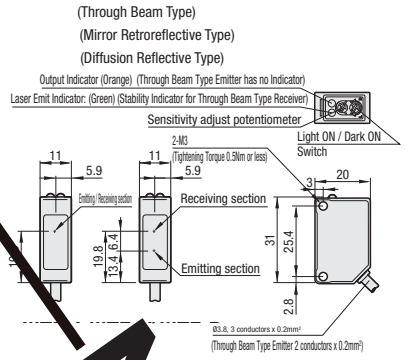
Not Available

Photoelectric Sensors with Built-in Amplifier
-Laser Type-

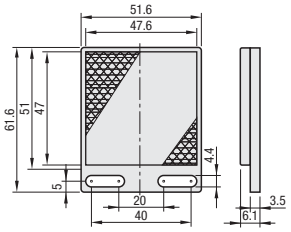
■Suitable for small work piece detection since the spot dia. is smaller than standard Photoelectric Sensors.

For mounting stands, refer to P.1733





Retroreflector (Only Mirror Retroreflective Type)



A Accessories: Mounting Brackets, Retroreflector (Only Mirror Retroreflective)

Part Number	Detection Method	Shape	Detection Distance	Outputs	Light Source	Light Emitting Elements	Connection Method	€ Unit Price 1~5 pcs.	Volume Discount 6~10 pcs.
	Through Beam Type		30m	NPN Output	Class 1 Laser	Laser Diode (Red)	Cable 2m		
	Mirror Retroreflective Type		200mm~ 10m		Class 2 Laser				
	Diffusion Reflective Type		30mm~ 400mm		Class 2 Laser				

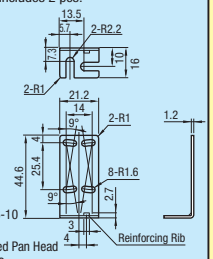
For features for each detection method, refer to P.1725 For Through Beam Type, the Emitter is labeled "MZL-T-L", the Receiver is labeled as "MZL-T-D". For orders larger than indicated quantity, please request a quotation.

Order Example Part Number

Alterations Part Number - (NB)

Days to Ship 6 Days P.87

Alteration	Code	Spec.	Price Adder
For Sensor Bracket	B	Sensor installing fittings are included. Only includes 2 pcs. Material: 1.4301 SUS304 or CrNi18-10 Accessories: Washer Assembled Pan Head Screw (M3×10) 2 pcs.	



■Sensitivity Adjustment Method (Retroreflective Type, when background of work piece may be detected)

	Steps	Fig.	Potentiometer	Output Indicator Light	Adjustment Method
Retroreflective Type	(1)		A MIN MAX	ON (Orange)	Locate the detection object and adjust Sensitivity Potentiometer from MIN until Output Indicator Light turns on. The position is regarded as A.
	(2)		A B MIN MAX	OFF	Remove the detection object and adjust Sensitivity Potentiometer from MAX until Output Indicator Light turns off. The position is regarded as B.
	(3)		A C B MIN MAX	ON (Orange)	C, middle of A and B, is the best sensitivity area. A and B may reverse depending on the model or the detection condition. Locate the work piece and check the operation.

■Features of Laser Sensors

- **Small spots**
  Most suitable for microscopic object detection or applications that require high repeatability.
- **Applicable to high speed line.**
  Response time 250μS achieved, the fastest level in Laser Sensors.
- **Mounting pitch is 25.4mm.**
  Industry standard pitch 25.4mm Photoelectric Sensors with built-in Amplifier.

■Specifications

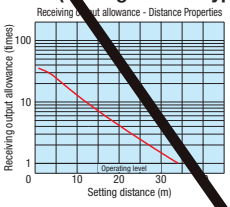
Type		Through Beam Type	Mirror Retroreflective Type	Diffusion Reflective Type
Part Number				
Detection Distance		30m	0.2~10m *1	30mm~400mm *2
Light Source		Red Semiconductor Laser Class1 *3 Wavelength: 650mm Max. Output: 390μW	Red Semiconductor Laser Class2 *3 Wavelength: 650mm Max. Output: 3mW	
Spot Dia.*4		Approx Ø2mm Distance 2m (at ambient temperature)	Approx. Ø2.5mm Distance 2m (at ambient temperature)	Approx Ø2mm Distance 400m (at ambient temperature)
Response Time		250μs or less		
Hysteresis Range		-		20
Sensitivity Adjustment		1-turn potentiometer		
Indicator Light		Output Indicator: Orange LED - Laser ON, (Green LED: stable indication for Through Beam Type Receiver)		
Control Output		NPN Open Collector Max.100mA/DC30V		
Output Mode		Light ON / Dark ON Switch		
Connecting Type		Cable Type: Length 2m Ø3.8mm		
Ratings	Power supply voltage	DC10~30V Ripple (p-p)10% included		
	Current consumption	Emitter: 15mA or less Receiver: 15mA or less	20mA or less	
Noise Resistant	IEC Standard	CE Compliance		
Environmental Protection	Service Ambient Temperature / Humidity	-10~+50°C (No freezing) / 35~85%RH (No condensation)		
	Service environment luminosity	Sun light: 10,000ℓx Incandescent lamp: 3,000ℓx		
	Vibration resistance	10~55Hz, Stroke 1.5mm in Respective X, Y, Z Direction 2hours		
	Shock resistance	Approx 100G (1000m/s²) in Respective X, Y, Z Direction 3times		
	Protection structure	IP67		
Type		Case: ABS (Glass Fiber included), Front cover: PMMA		
Mass (Cable included)		Emitter 45g Receiver 55g	Approx. 55g	

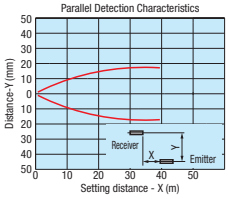
*1 with Included Retroreflector *2 with 100x100 blank sheet *3 Classified as Class II according to FDA standard. *4 For Spot Dia. change by distance, refer to the right page "Spot Dia. / Distance Properties".

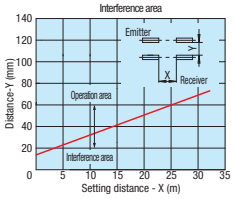
Not Available

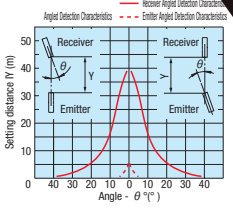
Characteristic Data (Representative Values)

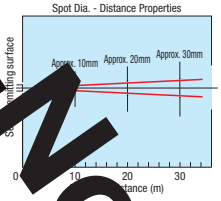
(Through Beam Type)



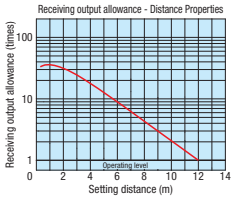


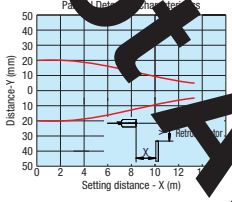


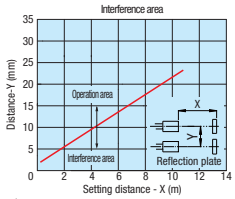


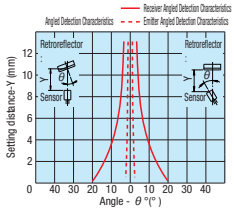


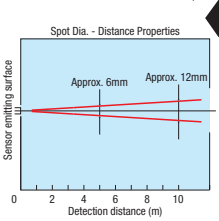
(Mirror Retroreflective Type)



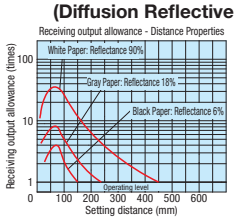


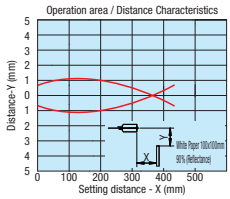


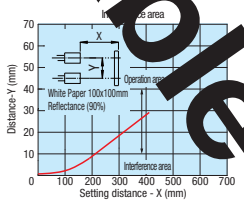


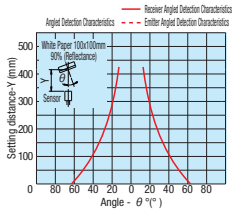


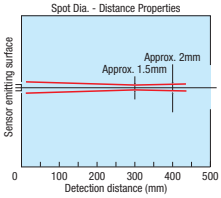
(Diffusion Reflective Type)





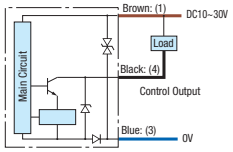




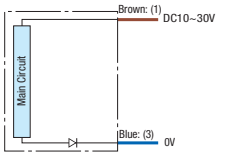


Output Circuit

NPN Output Type



Through Beam Type Emitter



Precautions for Use

•Mutual Interference

When sensors are installed side by side, operation may become inconsistent by being affected from the light of other sensors. To prevent this, refer to the following methods.

-Keep one sensor away from another to avoid interfering with each other, referring to the Interference Range Characteristics, .

- Through Beam Type or Mirror Retroreflective Type should be installed alternately.

•Influences from environment luminosity and disturbance

Direct high-frequency fluorescent or sunlight may cause receivers to malfunction. In this case, adjust the sensor angle or install a light shield to prevent disturbing lights.

•Other Cautions

- Connect Frame Ground Terminal to the ground when using Switching Regulator for power.
- Avoid using during the power-on transitional state (approx. 100ms).
- Avoid using with high voltage circuits or power lines in parallel or in a bundle. May cause inductive malfunction.

WARNING DO NOT LOOK INTO LASER DIRECTLY OR POINT THE BEAM AT EYES. MAY BE HARMFUL TO EYES AND HEALTH.



CLASS 1
LASER PRODUCT

LASER LABEL

THIS PRODUCT EMITS VISIBLE LASER BEAM, AND IN COMPLIANCE WITH JIS/IEC LASER SAFETY STANDARD CLASS 1/CLASS 2. WARNING AND EXPLANATIONS ARE LABELED ON THE SIDE OF SENSOR.

⊗THIS PRODUCT IS NOT APPLIED TO FDA. EXPORT TO U.S. IS NOT ALLOWED.

Not Available

NEW

Brackets for Sensor with Stands

-Stand Resin Type / Stand Sheet Metal Type-

Price Reduction
Up to 20%

CAD Data

Features: Sensors can be installed right after the purchase since Stands, Hollows and Brackets are already included in a set.

Stands Resin Type

1-Shaft Hollow

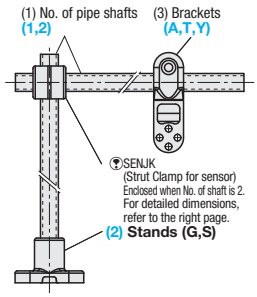


2-Shaft Hollow



RoHS

SENJ
GSENJ(Calibrated pipe)



Material: Stand - Polyamide, Hollow - 1.4301/X5CrNi18-10

When 2-shaft configuration is selected, SENJK (Strut Clamp for sensor on the right page) is included.
For detailed dimensions of each product, refer to the drawing on the right page.

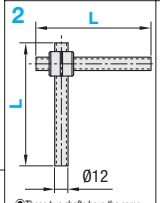
(1) No. of pipe shafts

1



For detailed dimensions, refer to the right page **SENP / GSENP**.

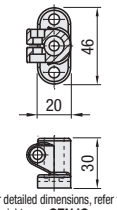
2



These two shafts have the same L dimension.
For detailed dimensions, refer to the right page **SENP**·**GSENP**.

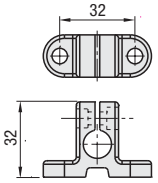
(2) Stands

G (Flat Mount)



For detailed dimensions, refer to the right page **SENJG**.

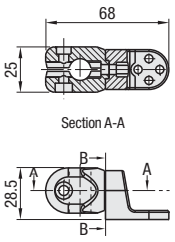
S (Side Mount)



For detailed dimensions, refer to the right page **SENJS**.

(3) Brackets

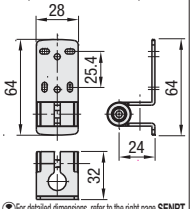
A (Perpendicular Shaft Mount / Tip Rotation)



Can be fixed at desired location per 11.25° increment.

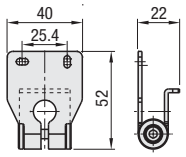
For detailed dimensions, refer to the right page **SENJA**.

T (Parallel Shaft Mount)



For detailed dimensions, refer to the right page **SENRT**.

Y (Perpendicular Shaft Mount)



For detailed dimensions, refer to the right page **SENRY**.

Stands Resin Type

Dedicated nuts, washers and M5 Hexagon Socket Head Cap Screws are enclosed with Stands and Bracket set.

Part Number		L Selection	Stand	Bracket	€ Unit Price									
					Stand G (Flat Mount)					Stand S (Side Mount)				
Type	No. of Pipe Shafts				L100	L150	L200	L250	L300	L100	L150	L200	L250	L300
SENJ GSENJ	1 2	100 150 200 250 300	G(Flat Mount) S(Side Mount)	T(Parallel Shaft Mount) Y(Perpendicular Shaft Mount) A(Perpendicular Shaft Mount / Tip Rotation)										

For GSENJ (Calibrated), the unit price above + 2,50 EUR

Stand Sheet Metal Type

1-Shaft Hollow

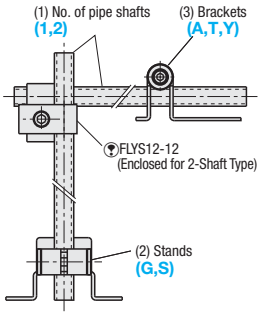


2-Shaft Hollow



RoHS

SENR
GSENR(Calibrated pipe)



Material: Stand, Hollow - 1.4301/X5CrNi18-10

When 2-shaft configuration is selected, FLYS12-12 (**P.1856**) is included.
For detailed dimensions of each product, refer to the drawing on the right page.

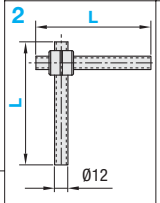
(1) No. of pipe shafts

1



For detailed dimensions, refer to the right page **SENP**·**GSENP**.

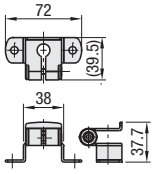
2



These two shafts have the same L dimension.
For detailed dimensions, refer to the right page **SENP**·**GSENP**.

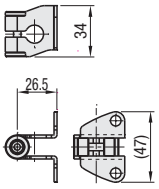
(2) Stands

G (Flat Mount)



For detailed dimensions, refer to the right page **SENRG**.

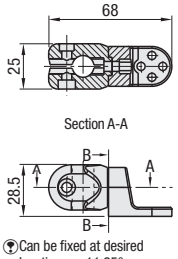
S (Side Mount)



For detailed dimensions, refer to the right page **SENRS**.

(3) Brackets

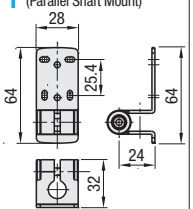
A (Perpendicular Shaft Mount / Tip Rotation)



Can be fixed at desired location per 11.25° increment.

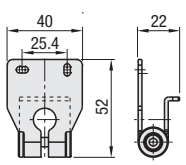
For detailed dimensions, refer to the right page **SENJA**.

T (Parallel Shaft Mount)



For detailed dimensions, refer to the right page **SENRT**.

Y (Perpendicular Shaft Mount)



For detailed dimensions, refer to the right page **SENRY**.

Stand Sheet Metal Type

A dedicated nut, washer and an M5 hexagon socket head cap screw are enclosed with Stand and Bracket set.

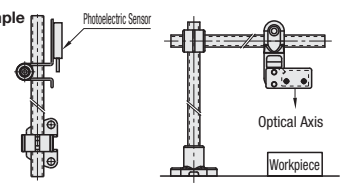
Part Number		L Selection	Stand	Bracket	€ Unit Price									
					Stand G (Flat Mount)					Stand S (Side Mount)				
Type	No. of Pipe Shafts				L100	L150	L200	L250	L300	L100	L150	L200	L250	L300
SENR GSENR	1 2	100 150 200 250 300	G(Flat Mount) S(Side Mount)	T(Parallel Shaft Mount) Y(Perpendicular Shaft Mount) A(Perpendicular Shaft Mount / Tip Rotation)										

For GSENR (Calibrated), the unit price above + 2,50 EUR

Order Example

Part Number								
Type	No. of shafts	-	L	-	Stand	-	Bracket
GSENJ	2	-	100	-	S	-	A
SENR	1	-	150	-	G	-	Y

Example



Days to Ship

6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bracket Components for Sensor with Stands

-Hollows / Stands / Brackets / Resin Strut Clamps-

NEW

Price Reduction Up to 25%

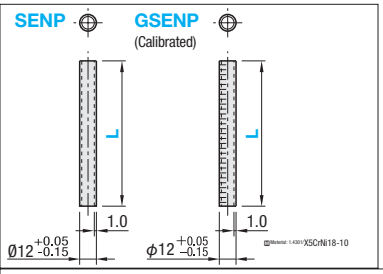
CAD Data

■Hollows for Sensor Mounting
Calibrated Hollows for Sensor Mounting



RoHS

SENP **GSENP** (Calibrated)



Part Number	L Selection	€ Unit Price				
		L100	L150	L200	L250	L300
SENP	100 150 200 250 300					
GSENP						

Order Example: Part Number SENP - L 300

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19	20~29	30~49
Rate	€ Unit Price	5%	10%	18%

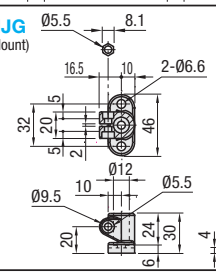
For orders larger than indicated quantity, please request a quotation.

■Resin Stands
Flat Mount / Side Mount

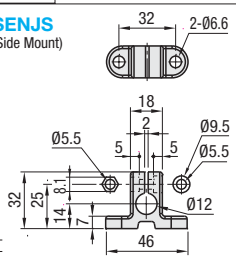


RoHS

SENJG (Flat Mount)



SENJS (Side Mount)



M Material: Polyamide
A Accessories:
M5 Nut 1pc.
Screws (Trivalent Chromate)
SENJG: M5-15 1pc.
SENJS: M5-12 1pc.

Part Number	€ Unit Price	Volume Discount	
	1~4 pcs.	5~9 pcs.	10~49 pcs.
SENJG			
SENJS			

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number SENJG

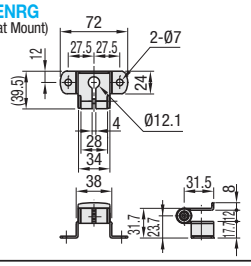
Days to Ship: 6 Days P.87

■Sheet Metal Stands
Flat Mount / Side Mount

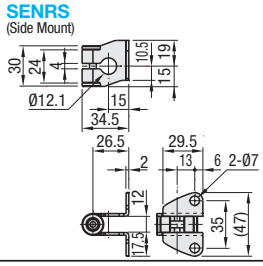


RoHS

SENRG (Flat Mount)



SENRS (Side Mount)



M Material: 1.4301/X5CrNi18-10
A Accessories:
Dedicated washer 1pc.
Dedicated nut 1pc.
Screws (Trivalent Chromate)
SENRG:M5-30 1pc.
SENRS:M5-25 1pc.

Part Number	€ Unit Price	Volume Discount	
	1~4 pcs.	5~9 pcs.	10~49 pcs.
SENRG			
SENRS			

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number SENRG

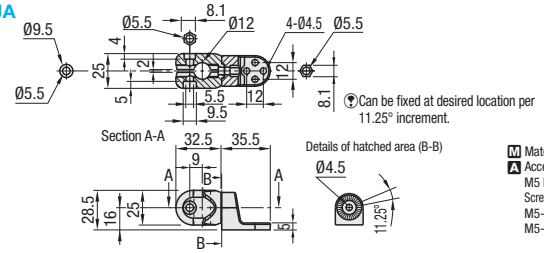
Days to Ship: 6 Days P.87

■Resin Brackets
Perpendicular Shaft Mount / Tip Rotation



RoHS

SENJA



M Material: Polyamide
A Accessories:
M5 Nuts 2 pcs.
Screws (Trivalent Chromate)
M5-20 1pc.
M5-15 1pc.

Part Number	€ Unit Price	Volume Discount	
	1~4 pcs.	5~9 pcs.	10~49 pcs.
SENJA			

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number SENJA

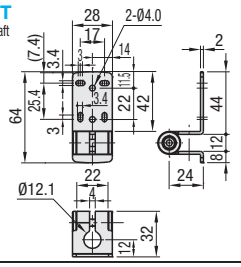
Days to Ship: 6 Days P.87

■Sheet Metal Brackets
Parallel Shaft Mount / Perpendicular Shaft Mount

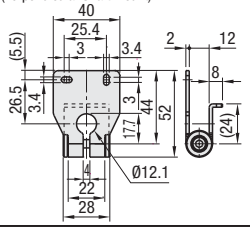


RoHS

SENRT (Parallel Shaft Mount)



SENRY (Perpendicular Shaft Mount)



M Material: 1.4301/X5CrNi18-10
A Accessories:
Dedicated nut 1pc.
Screws (Trivalent Chromate)
M5-23 1pc.
Dedicated washer 1pc.

Part Number	€ Unit Price	Volume Discount	
	1~4 pcs.	5~9 pcs.	10~49 pcs.
SENRT			
SENRY			

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number SENRT

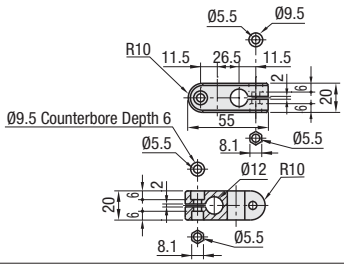
Days to Ship: 6 Days P.87

■Resin Strut Clamps



RoHS

SENJK



M Material: Polyamide
A Accessories:
M5 Nuts 2 pcs.
Screws (Trivalent Chromate)
M5-12 2pcs.

Part Number	€ Unit Price	Volume Discount
	Qty. 1~9	10~49 pcs.
SENJK		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number SENJK

Days to Ship: 6 Days P.87

Add. Spec. Clamps for Photoelectric Sensor Mounting

Price Reduction Up to 25%

CAD Data

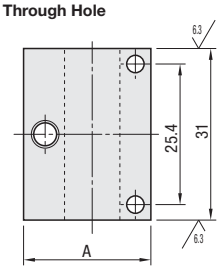
Features: Can be mounted right after the purchase since the mounting pitch is applicable to common Photoelectric Sensors.

RoHS

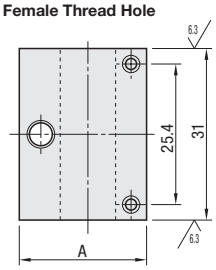


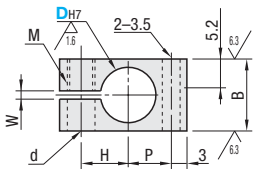
Type		M Material	S Surface Treatment	A Accessories
Through Hole	Female Thread Hole			
KSTK	KSYK	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screw (M4 or M5 x 1pc.) Female Thread Hole: M2.6 x 2pc. Through Hole: M3 x 2pc.
KSTM	KSYM		Electroless Nickel Plating	
KSTW	KSYW	EN AW-6063/AlMg0,7Si	Clear Anodize	
KSTB	KSYB		Black Anodize	
KSTS	KSYS	1.4301/X5CrNi18-10	-	

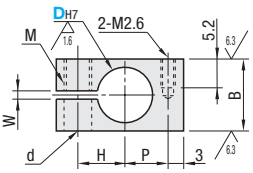
Through Hole



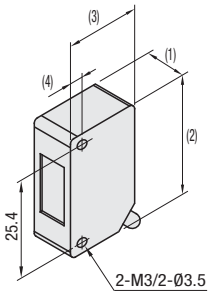
Female Thread Hole







[Example of Photoelectric Sensor Dimensions]
(Representative sensor shapes for each company)



Manufacturer	Representative Shape	(1)	(2)	(3)	(4)
MISUMI	MZ-T	11	31	20	3
Omron	E3Z-T61	10.8	31	20	3
Keyence	PZ-M51	10.8	34.8	18.6	2.6
Sunx	CX-411	11.2	31	20	3

Through Hole

Part Number Type	DH7		A	B	H	P	W	M	d	€ Unit Price KSTK	KSTM	KSTW	KSTB	KSTS
KSTK KSTM KSTW KSTB KSTS	10	+0.015 0	22	13	8	7.8	1.5	M4	4.5					
	12	+0.018 0	25	16	9.5	8.8		M5	5.5					
	15	+0.018 0	28	19	11	10.3								

Tolerance DH7 is the tolerance before slitting.
Recommended tolerances of mating shafts are g6, f8. For tightening, a long wrench is recommended.

Female Thread Hole

Part Number Type	DH7		A	B	H	P	W	M	d	€ Unit Price KSYK	KSYM	KSYW	KSYB	KSYS
KSYK KSYM KSYW KSYB KSYS	10	+0.015 0	22	13	8	7.8	1.5	M4	4.5					
	12	+0.018 0	25	16	9.5	8.8		M5	5.5					
	15	+0.018 0	28	19	11	10.3								

Tolerance DH7 is the tolerance before slitting.
Recommended tolerances of mating shafts are g6, f8. For tightening, a long wrench is recommended.

Order Example

Part Number KSYM10

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

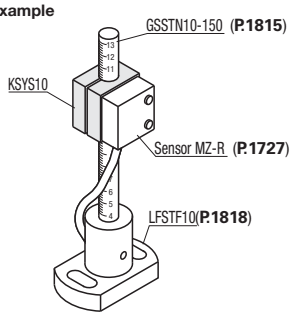
For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces .

Example



List of Mountable Sensors

Manufacturer	Detection Method	Part Number
MISUMI	Through Beam Type	MZ-T/MZL-T
	Reflective Type (Retroreflective · Diffused / Wide Angle)	MZ-R/MZ-D/MZ-__/MZL-R/MZL-D
Omron	Through Beam Type	E3Z-T6_(K/A)/T8_(K)
	Reflective Type (Retroreflective · Diffused)	E3Z-R6_/R8_/D6_/D8_
Keyence	Through Beam Type	PZ-M5_(P)
	Reflective Type (Retroreflective · Multi)	PZ-M6_(P)/M1_(P)/M3_(P)/V1_(P)/V3_(P)
Sunx	Through Beam Type	CX-41_(P)
	Reflective Type (Mirror · Diffused)	CX-48_(P)/49_(P)/42_(P)

*Some external dimensions may differ from the above photoelectric sensor, however the mounting pitch is the same.
Photoelectric Sensors P.1727~1732

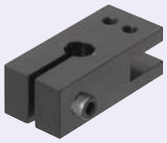
Bases for Sensor Mounting
-U-shaped-

CAD Data

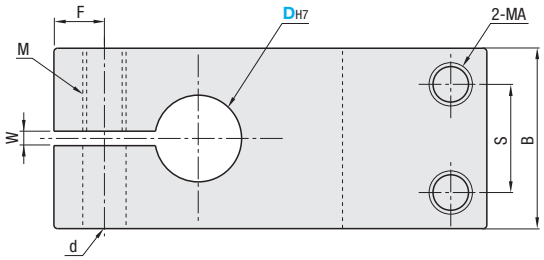
■Features: Posts for devices can be mounted on the plate after mounted sensors or other objects.

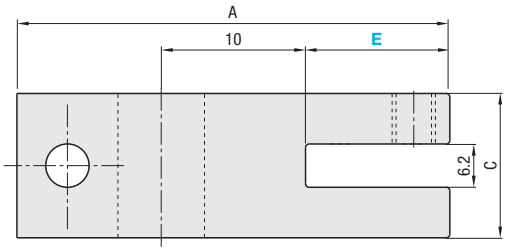
RoHS





Type	M Material	S Surface Treatment	A Accessories
KBSW	Aluminum	Clear Anodize	Hexagon Socket Head Cap Screw 1pc.
KBSB		Black Anodize	





Part Number Type	DH7	E	A	B	C	F	S	W	M (Coarse)	d	MA (Coarse)	€ Unit Price
KBSW KBSB	8 +0.015 0	15	45	20	15	8	7	2	M6	6.5	M4	
		20	50									
	10	15	45		20	7						
		20	50									
	12 +0.018 0	15	45	25	22	7	10		M8	8.5	M6	
		20	50									
	15	15	45		25	6						
		20	50									

Order Example

Part Number	-	E
KBSW12	-	20

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

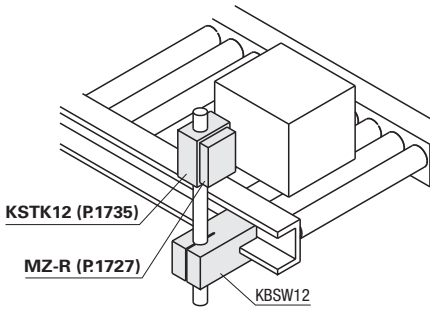
Days to Ship

8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Example



Proximity Sensors with Built-in Amplifier Screw Type

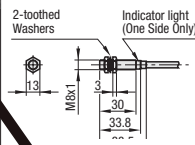
-2-Wire · 3-wire / Shield · Non Shielded-

■Features: Offering General-purpose Photoelectric Sensors with built-in Amplifier at reasonable prices and short lead times. For Heat-resistant and Mini type, refer to P.1739

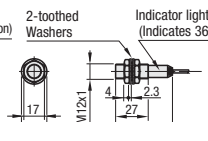


■Shield

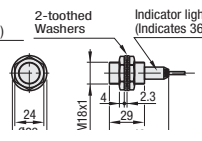
Screw Type M8 (2-Wire Type)



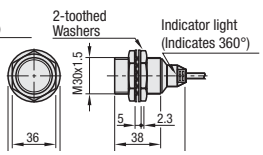
Screw Type M12 (2-Wire Type) (3-wire Type)



Screw Type M18 (2-Wire Type) (3-wire Type)

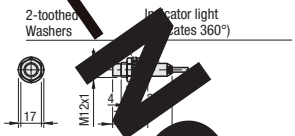


Screw Type M30 (2-Wire Type)

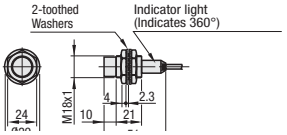


■Non Shield

Screw Type M12 (2-Wire Type)



Screw Type M18 (2-Wire Type)



For Material Specifications, refer to the below.

A Accessories: Toothed Washers (2pcs.) / Hexagon Nuts (2pcs.)

■2-wire Type / Shielded

Part Number	Shape	Detection Distance	Outputs	Connection Method	€ Unit Price 1~4 pcs.	Volume Discount 5~9 pcs.
	Screw Type M8	2mm	NPN N.O.	Integrated Cable Type 2m (Oil Resistant Cable)		
	Screw Type M12	3mm				
	Screw Type M18	7mm				
	Screw Type M30	10mm				

For orders larger than indicated quantity, please request a quotation.

■2-wire Type / Non Shielded

Part Number	Shape	Detection Distance	Outputs	Connection Method	€ Unit Price 1~4 pcs.	Volume Discount 5~9 pcs.
	Screw Type M12	8mm	NPN	Integrated Cable Type 2m (Oil Resistant Cable)		
	Screw Type M18	14mm				

For orders larger than indicated quantity, please request a quotation.

■3-wire Type / Shielded

Part Number	Shape	Detection Distance	Outputs	Connection Method	€ Unit Price 1~4 pcs.	Volume Discount 5~9 pcs.
	Screw Type M12	3mm	NPN N.O.	Integrated Cable Type 2m (Oil Resistant Cable)		
	Screw Type M18	7mm				

For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number | Days to Ship | 6 Days | P. 87

■Specifications

Type		DC, 2-Wire						DC, 3- Wire	
		Shield				Non Shield		Shield	
		M8	M12	M18	M30	M12	M18	M12	M18
Part Number									
Rated Operating Voltage		DC12/24V (DC10~30V) Allowable Voltage Ripple 10%p-p or less				DC12/24V (DC10~30V) Allowable Voltage Ripple 10%p-p or less		DC12/24V (DC10~30V) Allowable Voltage Ripple 10%p-p or less	
Standard Detected Subject (mm)		Steel 8x8x1t	Steel 12x12x1t	Steel 18x18x1t	Steel 30x30x1t	Steel 30x30x1t	Steel 30x30x1t	Steel 12x12x1t	Steel 18x18x1t
Effective Operation Distance		2mm±10%	3mm±10%	7mm±10%	10mm±10%	8mm±10%	14mm±10%	3mm±10%	7mm±10%
Guaranteed Operation Distance		0~1.4mm	0~2.2mm	0~5.6mm	0~8.1mm	0~6.4mm	0~11.3mm	0~2.2mm	0~5.6mm
Reactive Material		Steels / Nonferrous metals (Operation distance vary depending on the material)				Steels / Nonferrous metals (Operation distance vary depending on the material)		Steels / Nonferrous metals (Operation distance vary depending on the material)	
Hysteresis		15% or less	20% or less			20% or less		20% or less	
Operation Cycle Frequency		2kHz	300kHz	100Hz		100Hz		300Hz	100Hz
Rated Operating Current		3~100mA				5~100mA		Up to 200mA	
Voltage Drop		3V or less				3V or less		1.5V or less	
Off-state Current		0.55mA or less	1mA or less			1mA or less		0.5mA or less	
Circuit Protection		Load Short Circuit Protection	Load Short Circuit Protection, Serge Absorbing Circuit			Load Short Circuit Protection, Serge Absorbing Circuit		Load Short Circuit Protection, Serge Absorbing Circuit, Reverse Polarity Protection Circuit	
Indicator Light		Operation Indicator				Operation Indicator		Operation Indicator	
Service Ambient Temperature		-25~+70°C				-25~+70°C		-25~+70°C	
Temperature Properties		Within ±10% (operation temp. +25°C)	Within ±15% (operation temp. +23°C)	Within ±10% (operation temp. +23°C)		Within ±10% (operation temp. +23°C)		Within ±15% (operation temp. +23°C)	Within ±10% (operation temp. +23°C)
Withstand Voltage		AC1000V 50/60Hz (1 min.)	AC500V 50/60Hz (1 min.)			AC600V 50/60Hz (1 min.)		AC500V 50/60Hz (1 min.)	
Dielectric Strength		50MΩ or more (DC500V)				50MΩ or more (DC500V)		50MΩ or more (DC500V)	
Vibration Resistance		Full wave amplitude 1.5mm 10~55Hz (in Respective X, Y, Z Direction 2h)				Full wave amplitude 1.5mm 10~55Hz (in Respective X, Y, Z Direction 2h)		Full wave amplitude 1.5mm 10~55Hz (in Respective X, Y, Z Direction 2h)	
Shock Resistance		Within 980m/S² 11ms (in Respective X, Y, Z Direction each 10 times)	490m/s² Within 11ms (in Respective X, Y, Z Direction each 10 times)			490m/s² Within 11ms (in Respective X, Y, Z Direction each 10 times)		490m/s² Within 11ms (in Respective X, Y, Z Direction each 10 times)	
IP		IP67				IP67		IP67	
Case Material	Case	Stainless Steel	Metal: Brass Nickel Plating			Metal: Brass Nickel Plating		Metal: Brass Nickel Plating	
	Detecting Surface	PBT Resin				PBT Resin		PBT Resin	
Lead Wire		Oil Resistant Cable 2m O.D. (approx. Ø4.1) 0.3mm², 2 Conductors	Oil Resistant Cable 2m O.D. (approx. Ø3.8) 0.3mm², 2 Conductors		Oil Resistant Cable 2m O.D. (approx. Ø6) 0.5mm², 2 Conductors	Oil Resistant Cable 2m O.D. (approx. Ø3.8) 0.3mm², 2 Conductors		Oil Resistant Cable 2m O.D. (approx. Ø3.8) 0.3mm², 3 Conductors	
Tightening Torque		10mm from the detecting surface: 9Nm or less Other than the above: 12Nm or less	5Nm or less	10Nm or less	20Nm or less	5Nm or less	10Nm or less	5Nm or less	10Nm or less
Mass		Approx.50g	Approx.90g	Approx.150g	Approx. 250g	Approx.90g	Approx.150g	Approx. 80g	Approx.150g

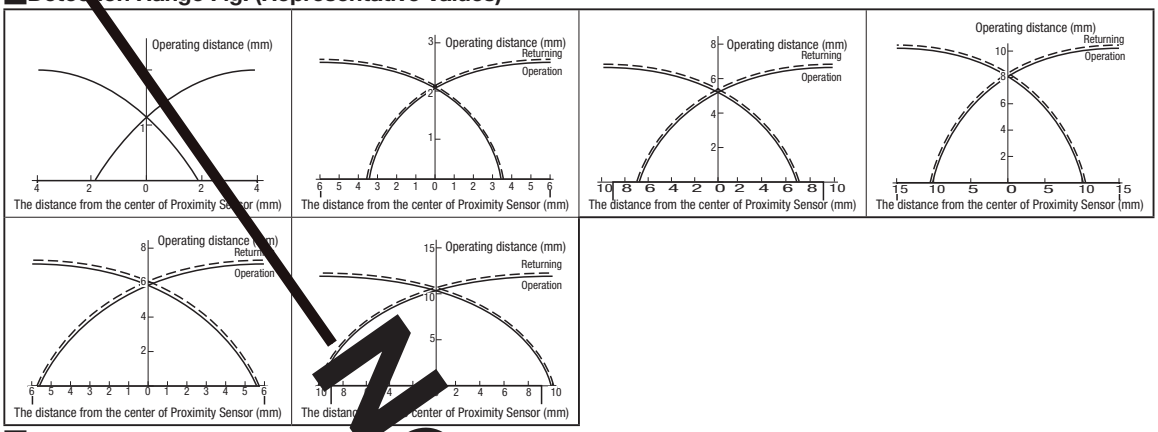
Not Available

Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

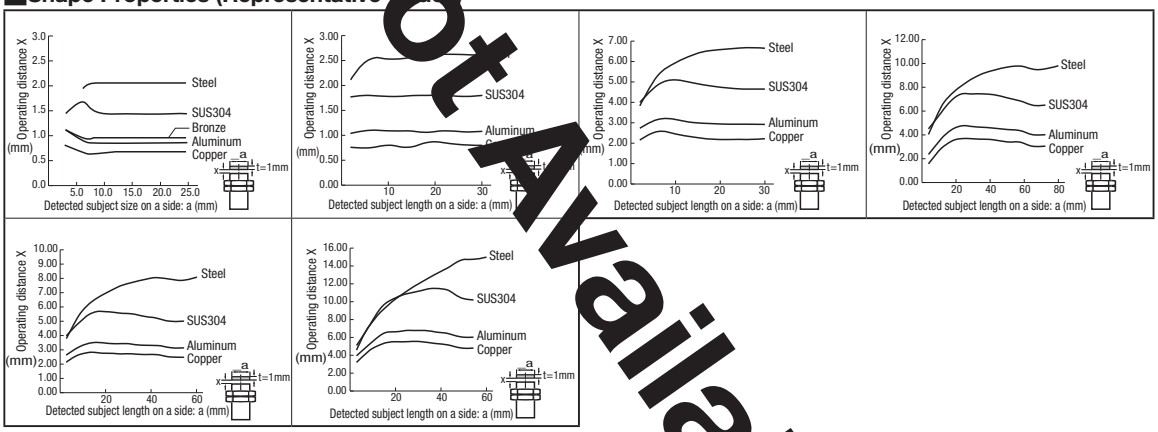
CE Certified

CAD Data

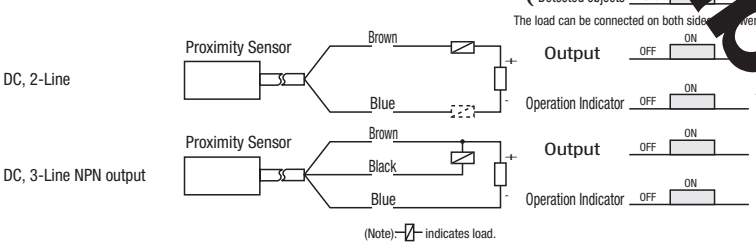
Detection Range Fig. (Representative Values)



Shape Properties (Representative Values)

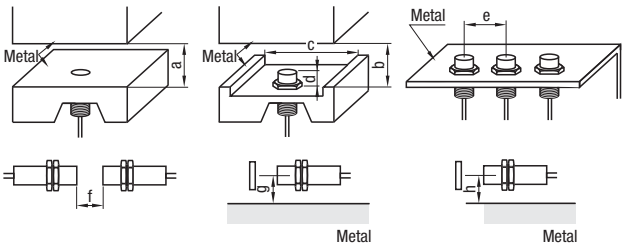


Connection / Operation



Effects from surrounding metals

In order to avoid effects from surrounding metals, mount each device farther enough than the distance shown on the right table.



(mm)

Part Number	a	b	c	d		f	g	H
	8	—	—	—	16	20	8	4
	8	—	—	—	24	30	9	6
	20	—	—	—	36	45	13.5	9
	40	—	—	—	60	100	20	15
	—	20	40	15	100	120	40	20
	—	40	70	22	110	200	70	35

Precautions for Use

- Connect lead wires correctly and securely. Improper or unstable connection may damage sensor peripherals.
- Bending radius for lead wires is to be 30mm or more. Avoid bending within 30mm from exit points.
- When shutting down the power, output may turn ON or OFF for a moment. Turning off the load before shutting down the power is recommended.
- When there are big surge sources around such as motors or the sensor's own loads, insert surge absorbers such as varistors.

Not Available

Proximity Sensors with Built-in Amplifier Screw Type

-All Metal Type / Heat Resistant Type / Mini Type-

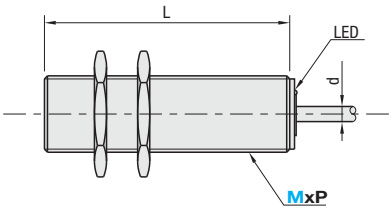
■ Case and detection surface with strong stainless steel one piece housing. High shock resistance allows stable detection even when coming to contact with work piece.

■ All Metal Type
(Degree of Protection IP68)



RoHS

PSAM



A Accessory: Hexagon Nuts 2 pcs.
M 8 Thickness 4 Wrench Size 13
M12 Thickness 4 Wrench Size 17
M18 Thickness 4 Wrench Size 24
M30 Thickness 5 Wrench Size 36

Part Number Type	M	Detection Distance (mm)	MxP (Fine)	L	d	Outputs	€ Unit Price 1~5 pcs.	Volume Discount 6~19
PSAM	8	3	8x1.0	45	3.5	NPN N.O.		
	12	6	12x1.0	50	5			
	18	10	18x1.0					
	30	20	30x1.5					

For orders larger than indicated quantity, please request a quotation.

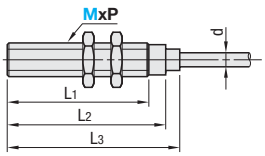
■ **Feature:** Useable in temperatures 100°C or more.

■ Heat Resistant
(Degree of Protection IP67)

RoHS



PSHM



Part Number	Operating Ambient Temperature Range
PSHM8	-25°C~+130°C
PSHM12	-25°C~+140°C
PSHM18	-25°C~+160°C

A Accessory: Hexagon Nuts 2 pcs.
M 8 Thickness 4 Wrench Size 13
M12 Thickness 4 Wrench Size 17
M18 Thickness 4 Wrench Size 24

Part Number Type	M	Detection Distance (mm)	MxP (Fine)	L1	L2	L3	d	Outputs	€ Unit Price 1~5 pcs.	Volume Discount 6~10
PSHM	8	2	8x1.0	55	60	-	5	NPN N.O.		
	12	3	12x1.0	49	56	59	5			
	18	5	18x1.0	60	70	76	3			

For orders larger than indicated quantity, please request a quotation.

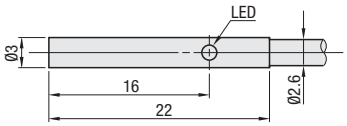
■ **Feature:** Diameter is small as Ø3 and M4, can fit in space-savings.

■ Mini Type
(Degree of Protection IP67)

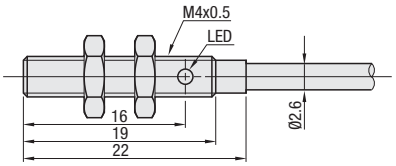


RoHS

PSMMD3



PSMM4



A Accessory:
Hexagon Nuts 2 pcs. (PSMM4 Only)
M4 Thickness 2 Wrench Size 6

Part Number	Detection Distance (mm)	Outputs	€ Unit Price 1~5 pcs.	Volume Discount 6~19
PSMMD3	1	NPN N.O.		
PSMM4				

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
PSAM8
PSHM12
PSMM4

Days to Ship

•PSAM

8 Days

Express A 3,00 EUR / piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

•PSHM · PSMMD3 · PSMM4

8 Days

Reduced Delivery Time

Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

CE Certified

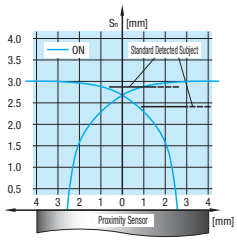
CAD Data

Specifications

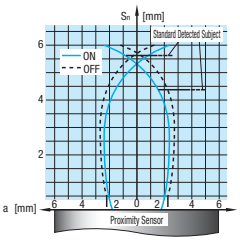
Type	All Metal Type				Heat Resistant			Mini Type	
Part Number	PSAM8	PSAM12	PSAM18	PSAM30	PSHM8	PSHM12	PSHM18	PSMMD3	PSMM4
Size	M8	M12	M18	M30	M8	M12	M18	Ø3	M4
Detection Distance	3mm	6mm	10mm	20mm	2mm	3mm	5mm	1mm	
Output Format / Operation Mode	NPN / N.O.(Normally Open)				NPN / N.O.(Normally Open)			NPN / N.O.(Normally Open)	
Power Supply	DC (3-wire Type)				DC (3-wire Type)			DC (3-wire Type)	
Cable	Ø3.5 Polyurethane 2m	Ø5 Polyurethane 2m			Ø5 Silicon 2m		Ø3 Teflon 2m	Ø2.6 Polyurethane 2m	
Structure of Detecting Head (How to Use)	Shielded Type (Embedded use allowable)				Shielded Type (Embedded use allowable)			Shielded Type (Embedded use allowable)	
Detected objects	All Metal (Compensation factor when iron (FE360) as 1. (Ref. value) Aluminum: 1 Copper: 0.8 (0.9 for M8) Brass: 1.3 Stainless Steel 1mm Thick: 0.5 (0.3 for M8) Stainless Steel 2mm Thick: 0.9 (0.6 for M8))				Magnetically permeable metals			Magnetically permeable metals	
Hysteresis	15% of effective detection distance Sr or less				3~15% of effective detection distance Sr		2~20% of effective detection distance Sr	10% of effective detection distance Sr or less	
Supply Voltage Range	10~30V DC				10~30V DC			10~30V DC	
Output Current	200mA Max.				120mA (≤100°C) 80mA (>100°C)	120mA (≤100°C) 70mA (>100°C)	150mA	100mA Max.	
Supply Current at No Load	10mA Max.				10mA Max.			10mA Max.	
Max. Frequency Response	800Hz	600Hz	200Hz	120Hz	600Hz	500Hz	400Hz	3000Hz	
Operating Ambient Temperature Range	-25~+70°C				-25~+130°C	-25~+140°C	-25~+160°C	-25~+70°C	
LED Operation Indicator Lamp	Detecting in Stable Range: ON Detecting in Unstable Range: Blink				-			ON	
Protection structure	IP68				IP67			IP67	
Built-In Protection Circuit	Short Circuit Protection · Over Current Protection Reverse Polarity Protection · Induction Protection EMC Protection · Power-ON Reset				Short Circuit Protection · Over Current Protection Reverse Polarity Protection · Induction Protection EMC Protection · Power-ON Reset			Short Circuit Protection · Over Current Protection Reverse Polarity Protection · Induction Protection EMC Protection· Power-ON Reset	
Case Material	1.4305/X10CrNiS18-9				1.4305/X10CrNiS18-9			1.4305/X10CrNiS18-9	
Tightening Torque (Nm)	4	10	50	150	4	10	20	-	0.8
Feature	1. Long range detection. 2. Nonferrous metals (Aluminum, Brass etc.) detection distance equivalent of iron. 3. The case and detection surface made of strong stainless steel one piece housing, resistant to shocks and stable detection possible even when coming to contact with objects. 4. Dusts on detecting surface can be cleaned with a metallic brush. 5. It can be used as the proximity sensor for welding spatter measures. 6. Highly water and drip resistant (IP68), and is suitable in cleaning solution splashes. Applicable for use in water.				1. Built-in amplifier for easy installation. 2. Highly water and drip resistant (IP67), and is suitable in high temperature environments and coolant splashes. 3. Robust stainless steel case.			1. Although this is extremely small, its detection distance is 1mm. 2. This compact design allows installation in space-savings. 3. Robust stainless steel case.	

Detection Range Characteristics

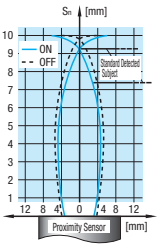
PSAM8



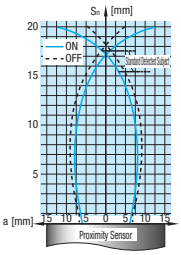
PSAM12



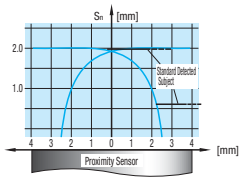
PSAM18



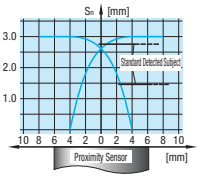
PSAM30



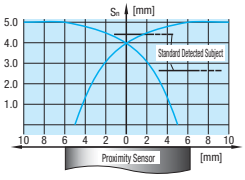
PSHM8



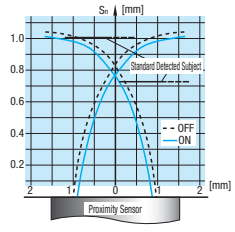
PSHM12



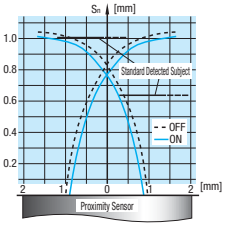
PSHM18



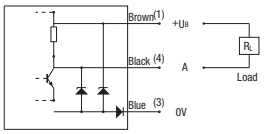
PSMMD3



PSMM4

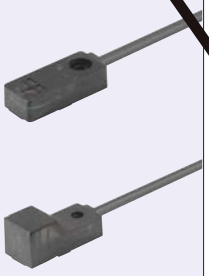


Circuit Diagram (Common)

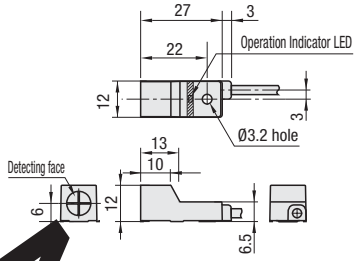


Proximity Sensors with Built-in Amplifier
Square Type -2-Wire, 3-wire / Non Shielded-

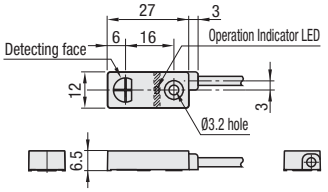
■General-purpose Square Proximity Sensors at reasonable prices and short lead times.



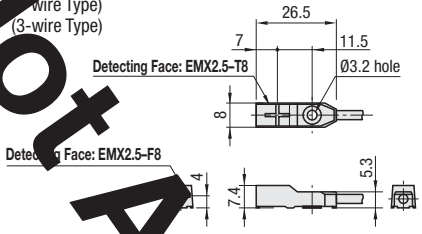
■**Front Surface Detection** (Detection distance 4mm)
(2-Wire Type)
(3-wire Type)
(3-wire Type)



■**Upper Surface Detection** (Detection distance 4mm)
(2-Wire Type)
(3-wire Type)
(3-wire Type)



■**Front / Upper Surface Detection** (Detection distance 2.5mm)
(3-wire Type)
(3-wire Type)



M Material: Polycarbonate (Case)
A Accessory: Mounting Brackets (Detection distance 4mm only)

Not Available

■2-wire Type

Part Number	Detecting Surface	Detection Distance	Outputs	€ Unit Price 1~4 pcs.	Volume Discount 5~9 pcs.
	Front Surface	4mm	N.O.		
	Upper Surface				

For orders larger than indicated quantity, please request a quotation.

■3-wire Type

Part Number	Detecting Surface	Detection Distance	Outputs	€ Unit Price 1~4 pcs.	Volume Discount 5~9 pcs.
	Front Surface	2.5mm	N.O.		
	Upper Surface				
	Front Surface	4mm	N.O.		
	Upper Surface				
	Front Surface	4mm	N.C.		
	Upper Surface				

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number

Days to Ship — 6 Days P. 87

■Specifications

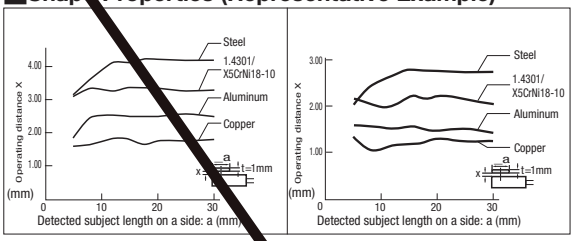
Type	DC, 2-Wire		DC, 3- Wire			
	Front Surface Detection	Upper Surface Detection	Front Surface Detection	Upper Surface Detection	Front Surface Detection	Upper Surface Detection
	N.O.(Normally Open)		N.O.(Normally Open)		N.C. (Normally Closed)	
Part Number						
Rated Operating Voltage	DC12/24V (DC10~30V) Allowable Ripple 3%p-p or less		DC12/24V (DC10~30V) Allowable Ripple 3%p-p or less		DC12/24V (DC10~30V) Allowable Ripple 3%p-p or less	
Standard Detected Subject (mm)	Steel 20x20x1t		Steel 15x15x1t		Steel 20x20x1t	
Effective Operation Distance	4mm±10%		2.5mm±15%		4mm±10%	
Guaranteed Operation Distance	0~2.8mm		0~1.7mm		0~2.8mm	
Reactive Material	Steels / Nonferrous metals (Operation distance vary depending on the material)					
Hysteresis	Approx.20% or less		Approx.20% or less		Approx.20% or less	
Operation Cycle Frequency	Up to 200Hz		Up to 500Hz		Up to 200Hz	
Rated Operating Current	5~50mA		Up to 50mA		Up to 50mA	
Voltage Drop	3V or less		1V or less		1V or less	
Off-state Current	1.0mA or Less		0.1mA or less		0.1mA or less	
Indicator Light	Operation Indicator		Operation Indicator		Operation Indicator	
Service Ambient Temperature	-10~+50°C		-10~+50°C		-10~+50°C	
Temperature Properties	Within ±20% (operation distance +23°C)		Within ±20% (operation distance +23°C)		Within ±20% (operation distance +23°C)	
Withstand Voltage	AC500V 50/60Hz (1 min.)		AC500V 50/60Hz (1 min.)		AC500V 50/60Hz (1 min.)	
Dielectric Strength	50MΩ or more (DC500V)		50MΩ or more (DC500V)		50MΩ or more (DC500V)	
Vibration Resistance	Full wave amplitude 1.5mm 10~55Hz (in Respective X, Y, Z Direction 2h)		Full wave amplitude 1.5mm 10~55Hz (in Respective X, Y, Z Direction 2h)		Full wave amplitude 1.5mm 10~55Hz (in Respective X, Y, Z Direction 2h)	
Shock Resistance	294m/s² Within 11ms (in Respective X, Y, Z Direction each 10 times)		294m/s² Within 11ms (in Respective X, Y, Z Direction each 10 times)		294m/s² Within 11ms (in Respective X, Y, Z Direction each 10 times)	
IP	IP67		IP67		IP67	
Case Material	Polycarbonate		Polycarbonate		Polycarbonate	
Lead Wire	Oil Resistant Cable 1.0m O.D. (approx. Ø3) 0.18mm² 2-Conductors		Oil Resistant Cable 1.0m O.D. (approx. Ø3) 0.18mm² 3-Conductors		Oil Resistant Cable 1.0m O.D. (approx. Ø3) 0.18mm² 3-Conductors	
Tightening Torque	0.4Nm or less		0.4Nm or less		0.4Nm or less	
Mass	Approx. 20g		Approx. 19g		Approx. 20g	

Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

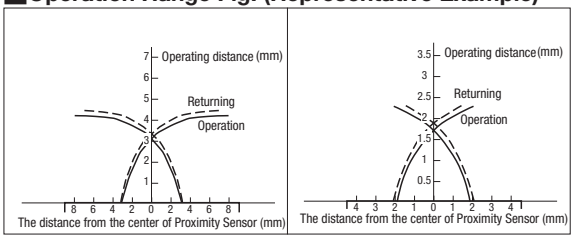
CE Certified

CAD Data

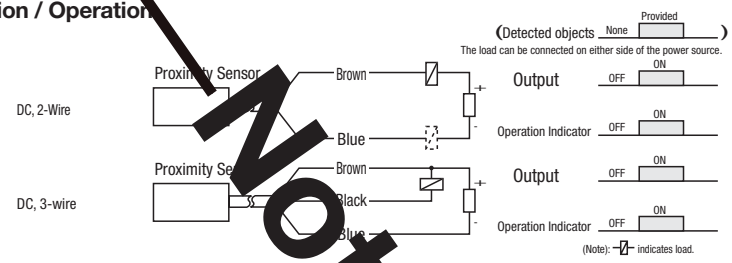
Sharp Properties (Representative Example)



Operation Range Fig. (Representative Example)



Connection / Operation



Reciprocal Interference and Same Frequency Classification

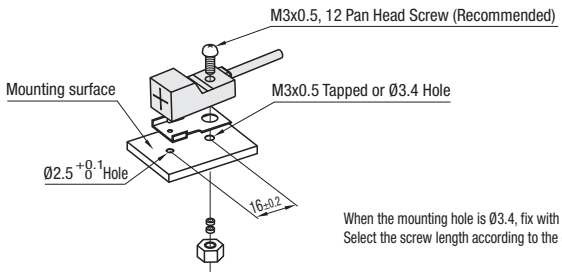
When installing 2 or more Proximity Sensors closely, the distance should be 10 times or more as far as operation distance (from center to center).
Mutual Interference may occur if the interval is inadequate.

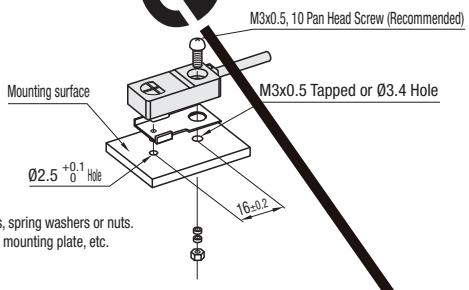
(mm)

Installation / Part Number	Infinitely Metal Surface Parallel Placement	Detection Surf. Against Metal Surf. Metal Parallel Placement	Opening Of...	Metal On Other Side	Parallel Placement	Opposed Placement Front Surface Detection Type	Opposed Placement Upper Surface Detection Type
	3.7	3.7	14	8	18	-	20
	10	7	14		18	20	-
	3.25	3.25	30		32	-	20
	20	15	30	10		20	-

* Detected subject position for Upper Surface Detection Type
·Metals around Proximity Sensors change the operation distance and make the operation unstable. Keep surrounding metals away from the sensor.
·D dimension (mm) indicates least distance from the detecting surface of Proximity Sensor to surrounding metals. Values should be beyond the value in the table above.
·When B dimension of EMX2.5-F8 = 3.7mm (Solid Installation), the detecting surface of Proximity Sensor should be located from surrounding metals more than 3mm.

Mounting (Detection distance 4mm)





When the mounting hole is Ø3.4, fix with flat washers, spring washers or nuts.
Select the screw length according to the depth of the mounting plate, etc.

Before using the products

-Note that this product may output a detection signal when the power turns on. For about 25ms when there is no object, for about 100ms when there are some objects around.

Cautions for Mounting

- When tightening by screws, ensure that the sensor is not be subjected to stressess.
  * Sensors may be damaged by tightening with over Tightening Torque 0.4Nm.

UL Recognition

When using this sensor as a UL recognized component, use the power Class2. UL recognized components are approved by UL recognition and required to use power Class2.

Not Available

Holders for Proximity Sensors / Sensor Flags / Flag Brackets

Price Reduction 16%

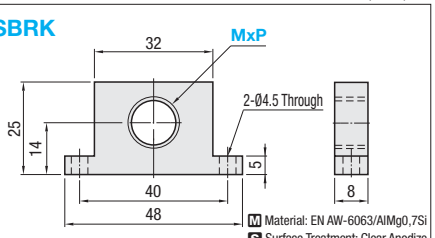
CAD Data

Features: Can be used in combination with Rails for Switch and Sensor -Aluminum (No.4). Refer to P.1751~P.1757

Holders for Proximity Sensors RoHS



SBRK



M Material: EN AW-6063/AlMg0,7Si
S Surface Treatment: Clear Anodize

Part Number Type	No.	M	MxP (Fine)	€ Unit Price Qty. 1~9	Volume Discount 10~49
SBRK	4	8	8x1.0		
		12	12x1.0		

For orders larger than indicated quantity, please request a quotation.

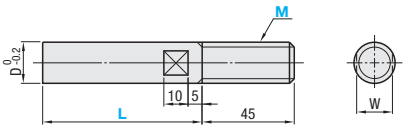
Order Example: Part Number SBRK4 - M 8

Days to Ship: 6 Days P.87

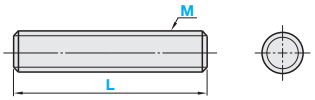
Sensor Flags RoHS



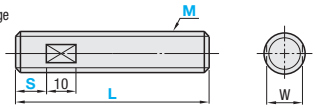
Round Pole
DGSF KDGSF



Fully Male Thread Type
DGM KDGM



Fully Male Thread Compact Flange
DGMS KDGMS



Type		M Material	S Surface Treatment
Round Pole	DGSF	1.1191/C45E	-
	KDGSF		Black Oxide
Fully Male Thread Type	DGM		-
	KDGM		Black Oxide
Full Thread Compact Flange	DGMS		-
	KDGMS		Black Oxide

Part Number Type	M (Coarse)	L 5mm Increment	D	W	DGSF € Unit Price L50~100	L105~200	L205~400	L405~600	KDGSF € Unit Price L50~100	L105~200	L205~400	L405~600
Round Pole DGSF KDGSF	10	50~500	10	8								
	12		12	10								
	16	50~600	16	12								

Part Number Type	M (Coarse)	L 5mm Increment	DGM € Unit Price L50~100	L105~200	L205~400	KDGM € Unit Price L50~100	L105~200	L205~400
Fully Male Thread Type DGM KDGM	10	50~400						
	12							
	16							

Part Number Type	M (Coarse)	L 5mm Increment	S 1mm Increment	W	DGMS € Unit Price L50~100	L105~200	L205~400	KDGMS € Unit Price L50~100	L105~200	L205~400
Fully Male Thread Compact Flange DGMS KDGMS	10	50~400	0≤S≤L−10	8						
	12			10						
	16			14						

Order Example: Part Number - L - S
DGSF10 - 150
DGMS16 - 300 - 100

8 Days

Express A 2,00 EUR/ piece P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Volume Discount (Round down to one Cent.) P.87

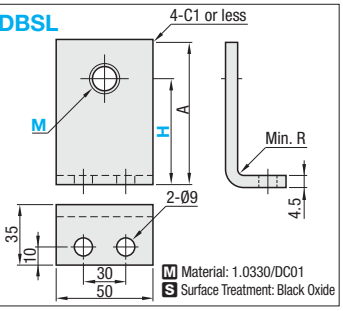
Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Shaft Flag Brackets RoHS



DBSL



M Material: 1.0330/DC01
S Surface Treatment: Black Oxide

Part Number Type	H	Selection M (Coarse)	A	€ Unit Price
DBSL	40	10 12 16	55	
	50		65	
	60		75	
	70		85	

⊗60-16 is not available.

Order Example: Part Number DBSL40 - M 10

Days to Ship: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

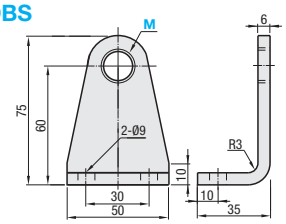
Quantity	1~19	20~24	25~29	30~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Shaft Flag Brackets RoHS



DBS



M Material: 1.0038/S235JR
S Surface Treatment: Black Oxide

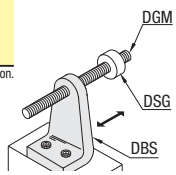
Part Number Type	M (Coarse)	€ Unit Price Qty. 1~9	Volume Discount 10~49
DBS	10		
	12		
	16		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number DBS12

Days to Ship: 6 Days P.87

Example



Proximity Sensor Flags
-Set Screw Type · Slit Type-

CAD Data

Set Piece included type newly added.

Limit Switch Flags P.1768

Set Screw Type



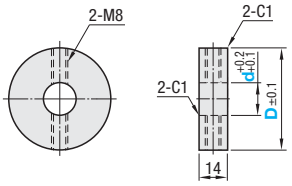
RoHS

Part number ☐ is not applicable.

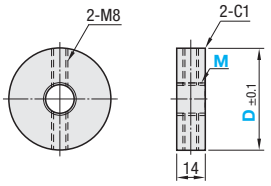
Shaft Bore	Type	M Material	S Surface Treatment	A Accessories
Disc Type with a Through Hole	DSS	1.1191/ C45E	Black Oxide	Set Screw 2 Pcs.
Disc Type with a Female Thread Hole	DMG · DMGFS			Set Screw 2 pcs. · Brass Ball 2 pcs.

6.3

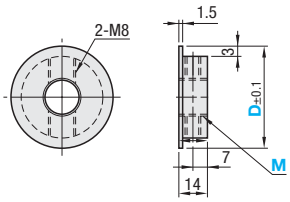
Disc Type with Through Hole and Set Screws
DSS



Disc Type with Female Thread Hole and Set Screw
DMG (With Brass Ball)



Stepped Type with Female Thread Hole and Set Screw
DMGFS (With Brass Ball)



Flat Type with Through Hole and Set Screw

Part Number Type	D	d	€ Unit Price Qty. 1~9	Volume Discount 10~50 pcs.
DSS	25	8		
	30	10		
	40	12 16		
	50			

For orders larger than indicated quantity, please request a quotation.

Flat Type with Female Thread Hole and Set Screw

Part Number Type	D	M (Coarse)	€ Unit Price Qty. 1~9	Volume Discount 10~50 pcs.
DMG	25	8		
	30	8 10		
	40	12 16		
	50			
DMGFS	40	12		
	50	12 16		

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number Type	D	-	d · M
DSS	25	-	8

Days to Ship

6 Days P.87

Limit Switch Flags P.1768

Slit Type

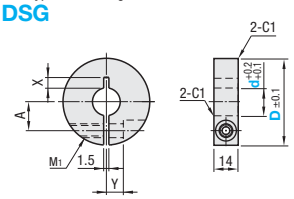


RoHS

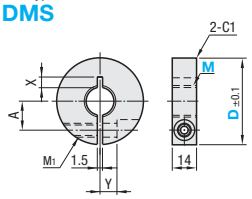
Type	M Material	S Surface Treatment	A Accessories
DSG · DMS · DMSL	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc.

6.3

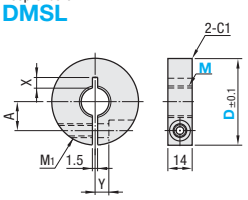
Disc Type with Through Hole and Slit
DSG



Disc Type with Female Thread Hole and Slit
DMS



Disc Type with Female Thread Hole and Slit, Deep C-bore
DMSL



Disc Type with Through Hole and Slit

Part Number Type	D	d	M1 (Coarse)	A	X	Y	€ Unit Price Qty. 1~9	Volume Discount 10~50
DSG	30	10	M5	9.0	6	6		
	40	12 16		14.0	7	8		
	50		M6	16.5	10	10		

Disc Type with a Female Thread Hole and Slit

For orders larger than indicated quantity, please request a quotation.

Part Number Type	D	M (Coarse)	M1 (Coarse)	A	X	Y	€ Unit Price Qty. 1~9	Volume Discount 10~50
DMS	30	10	M5	9.0	6	6		
	40	12 16		14.0	7	8		
	50		M6	16.5	10	10		
DMSL	50	12 16	M6	15.5	10	6		

For orders larger than indicated quantity, please request a quotation.

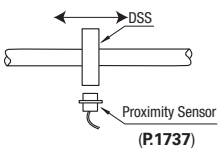
Order Example

Part Number Type	D	-	d · M
DSG	40	-	16
DMS	30	-	10

Days to Ship

6 Days P.87

Example

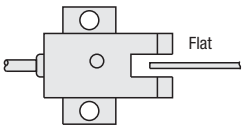


Photomicrosensors
-Overview-

Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

Type	Mini Type	Compact Type -Cable-	Compact Type -Connector-
Part Number			
Detection Distance	5mm (Fixed)		
Smallest Detected Subject	0.8X1.8mm Opaque objects		
Hysteresis	0.05mm or Less		
Repeatability	0.03mm or Less		
Power Supply Voltage	5~24V, DC±10%, Ripple 10% or less PTP		
Current Consumption	15mA or less		
25mA or less	NPN transistor – Open collector - Max. allowable current: 50mA - Applied voltage: 30V DC or less (Between output and 0V) - Residual voltage:0.7V or less (@50mA applied) 0.4V or less (@16mA applied)		
Output Operation	Light seen-ON / Light shielded-ON Equipped 2 Outputs		
Response Time	Light seen: 20µs or less / Light shielded 100µs or less (Frequency Response 1kHz or more) (Note 1)		
Operation Status Indicator	RED LED (ON while light seen)		
Environmental protection: Service Ambient Temperature (Note 2)	-25~+55°C (No condensations or freezing), In storage: -30~+80°C		
Environmental protection: Service Environment Humidity	35~85RH, 35~85RH in storage		
Environmental protection: Service Environment Luminosity	Fluorescent Light: 1,000ℓx or less @ lit surface		
Environmental protection: Withstand Voltage	1,000VAC, 1 min., between circuit and case		
Environmental protection: Dielectric Strength	50MΩ or higher @ 250VDC, between circuit and case		
Environmental protection: Vibration Resistance	Endurance 10~2000Hz, Full wave amplitude 1.5mm XYZ directions for 2hrs		
Environmental protection: Shock Resistance	Endurance 15,000m/s² (Approx. 1500G) XYZ directions for 3 times		
Light Emitting Elements	Infrared LED (unmodulated)		
Type	Case: PBT, Slit cover: Polycarbonate, Terminal [FPM_54 only]: Solder Plating		
Cable	0.2mm² - 4 conductor cabtyre cable 1m long		-
Cable Extension	Extendable up to 100m when 0.3mm² or larger cable used.		
Mass	Approx.3g	Approx.15g	Approx. 3g
Page	P.1745	P.1747	P.1748

(Note 1): Frequency Response is the value from rotating disc on the right.
(Note 2): Ensure to mount Mini Type to metals when using under the temperature +50°C or more.



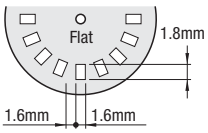
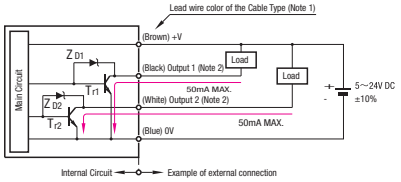


Plate Thickness = 0.2mm

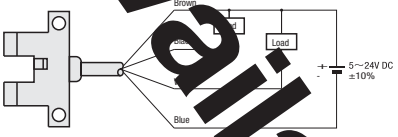
■Input · Output Schematics



(Note 1): Lead wire colors of connector type are the same.
(Note 2) Ensure to insulate unused output wires.

Codes... Z_{D1}, Z_{D2}: Zener diodes for surge protection
Tr_1, Tr_2: NPN output transistors

■Connections



Output operation

	Lead wire color	Output operation
Output 1	Black	Light seen - ON
Output 2	White	Light blocked - ON

■Cautions

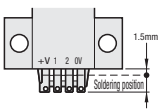
- Wiring

- Proper wiring is needed since power supply reverse polarity circuit protection or output short circuit protection are not equipped. Also ensure to insulate unused output wires.

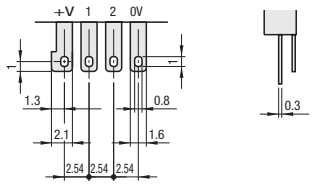
- Soldering

- When soldering to terminals directly, ensure to meet the following conditions.

Soldering temperature	260°C or less
Soldering time	3 sec. or less
Soldering position	Refer to the right fig.

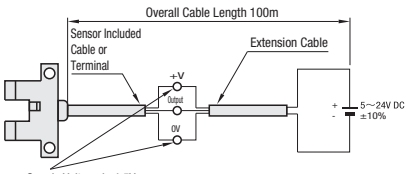


*** Terminals**



- Cable extension

- Although cables 0.3mm2 or more can be extended up to 100m long, extended cables will cause voltage drop. Ensure to maintain a proper rated voltage at the wire terminations or terminal blocks.



However, when the overall cable length including accessory cables is as described below, voltage checking would be unnecessary.

Conductor Sectional Area	Overall Cable Length
0.08~0.1mm²	Up to 5m
0.2mm²	Up to 10m
0.3mm²	Up to 20m

- Tightening Torque

	Tightening Torque
	0.15Nm
	0.5Nm

- Others

- Since this is a product for embedding, light resistant feature is not provided. Do not expose the receiving section to direct lights.



- Avoid usage during power-on transient state (50ms).

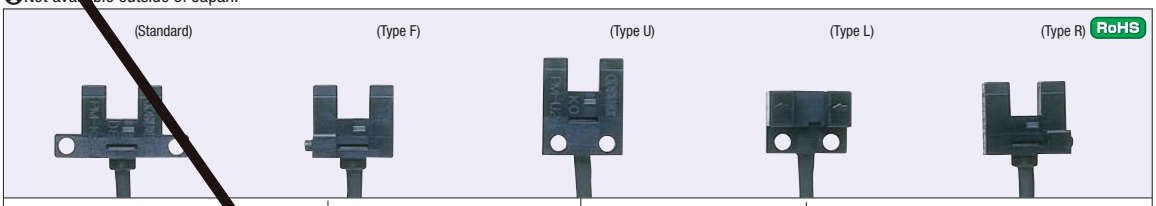
Not Available

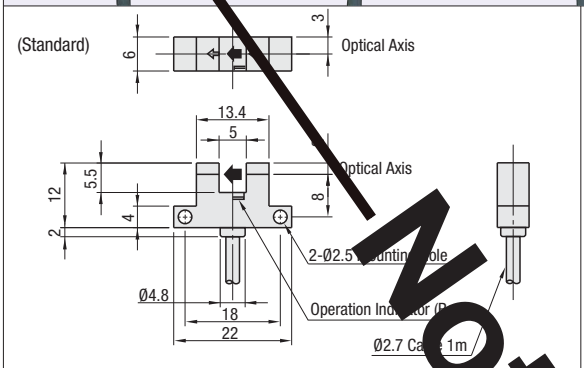
Photomicrosensors
-Mini Type-

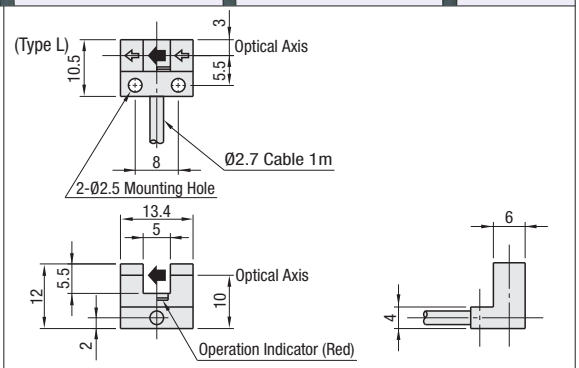
CE Certified

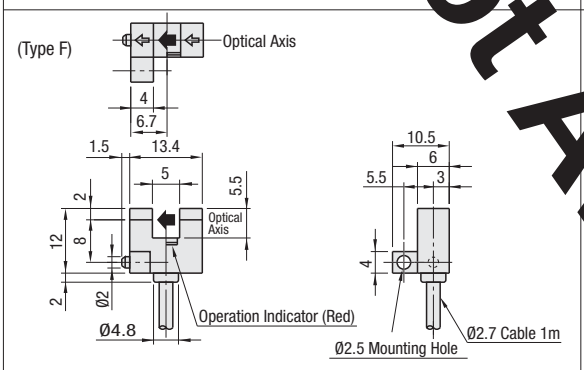
CAD Data

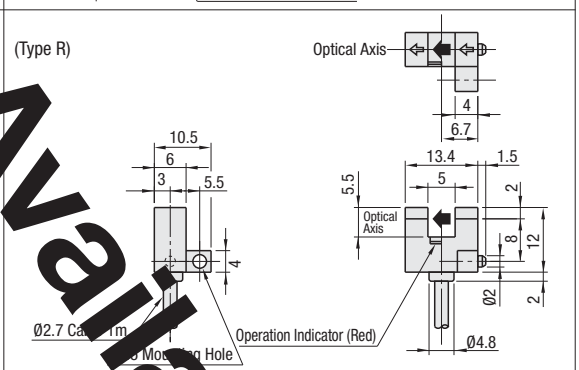
⊗Not available outside of Japan.

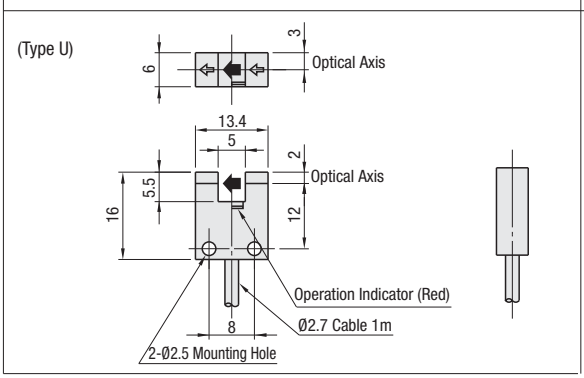












Shape	Part Number	Detection Distance	Outputs	Operation Mode	€ Unit Price
Standard		5mm (Fixed)	NPN transistor collector	Light seen - ON Light blocked - ON Equipped 2 outputs	
Type L					
Type F					
Type R					
Type U					

Order Example: Part Number

Days to Ship: 8 Days

Express A: 3,00 EUR / piece — P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Price

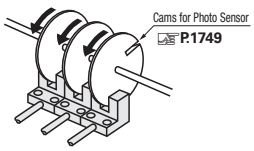
Volume Discount (Round down to 0.1 Cent.) P87.

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

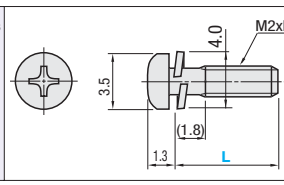
Example

The slot on a rotating disc detect the home position.



■Screws for Photo Sensors (M2)





Screw	Material: JIS STKM for Mechanical Structure Screw JIS B1188
Washer	Spring Washer JIS B1251
S Surface Treatment	Chromate (Yellow)

Part Number Type	M-L	€ Unit Price 1~5 pcs.	Volume Discount 6~
	2-6		
	2-8		
	2-10		
	2-12		

Order Example: Part Number

Days to Ship: 6 Days — P.87

Not Available

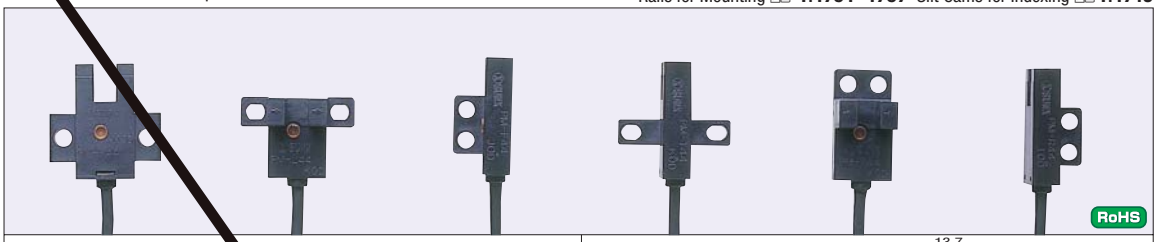
Photomicrosensors
-Compact Type with Cable-

CE Certified

CAD Data

⊗Not available outside of Japan.

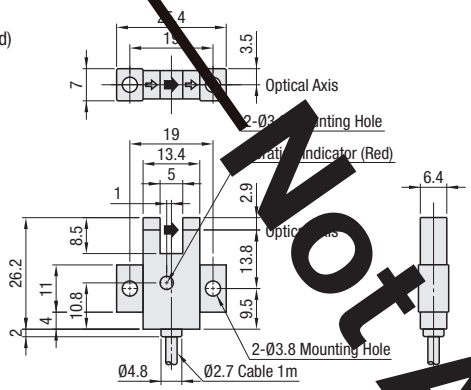
Rails for Mounting P.1751~1757 Slit Cams for Indexing P.1749



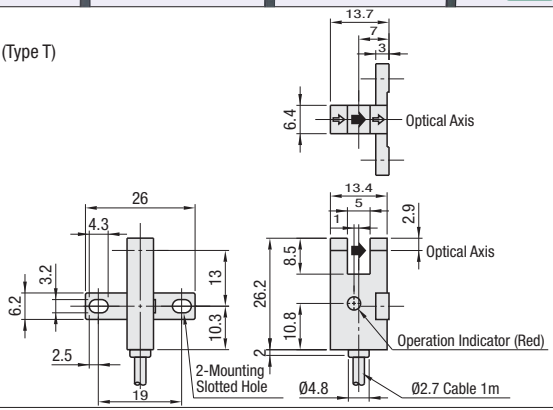
RoHS

Not Available

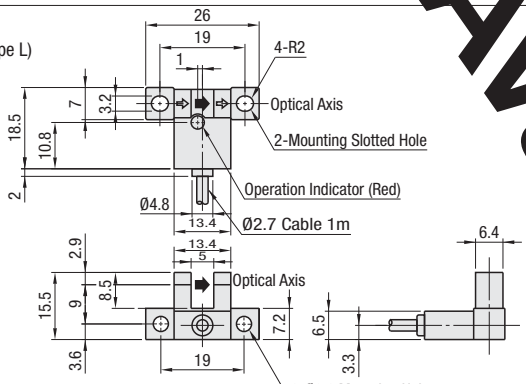
(Standard)



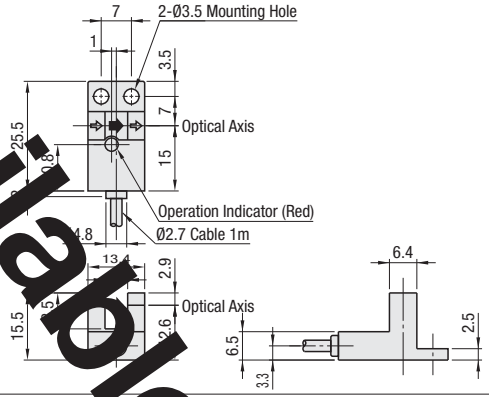
(Type T)



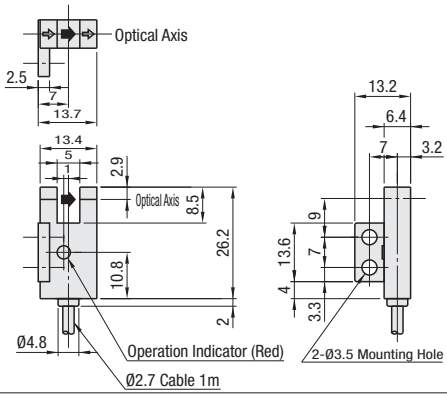
(Type L)



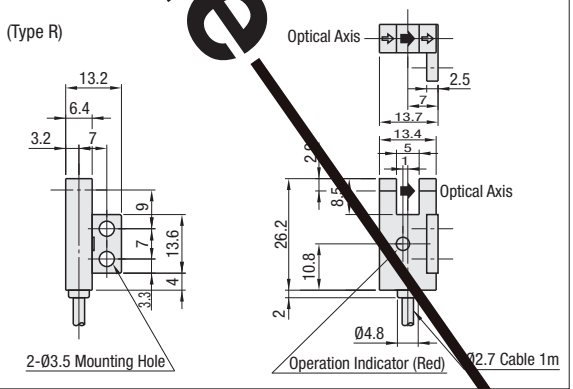
(Type Y)



(Type F)



(Type R)



Part Number	Detection Distance	Outputs	Operation Mode	€ Unit Price
	5mm (Fixed)	NPN transistor Open connector	Light seen - ON Light blocked - ON Equipped 2 outputs	

Order Example Part Number

Price

Days to Ship 8 Days

Express A 3,00 EUR / piece P.87

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Volume Discount (Round down to the Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

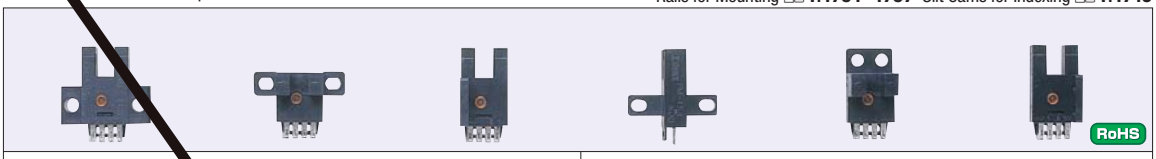
Photomicrosensors
-Compact Type with Connector-

CE Certified

CAD Data

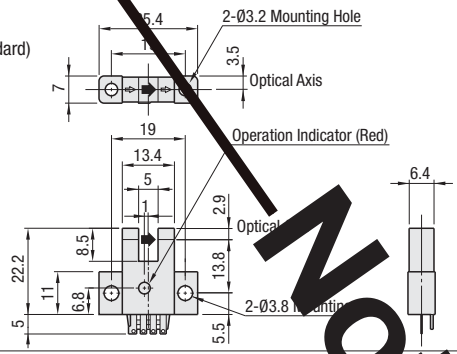
⊗Not available outside of Japan.

Rails for Mounting P.1751~1757 Slit Cams for Indexing P.1749

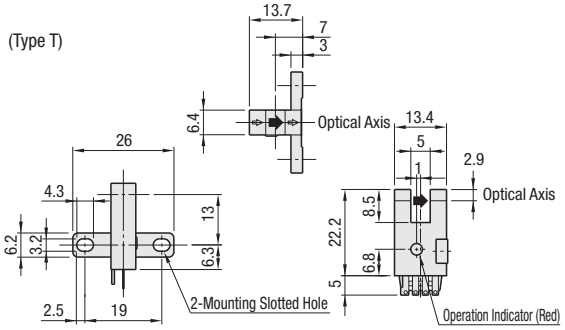


RoHS

(Standard)



(Type T)



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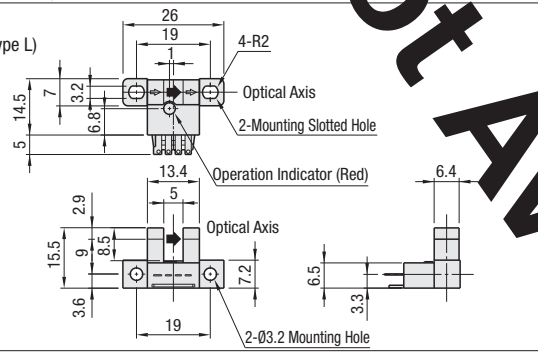
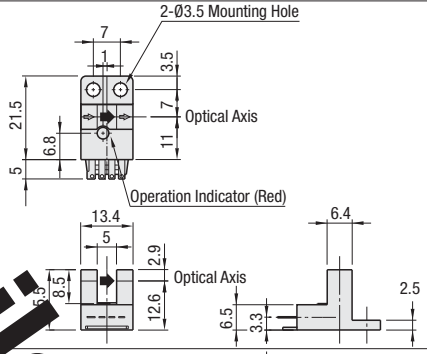
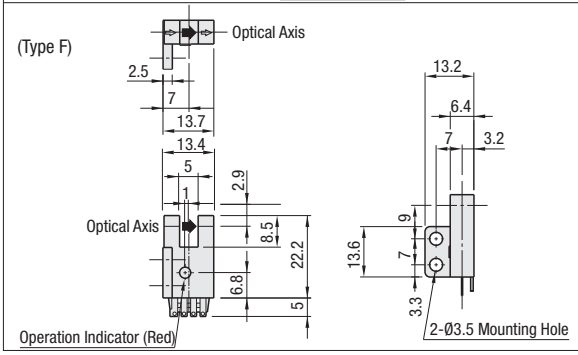


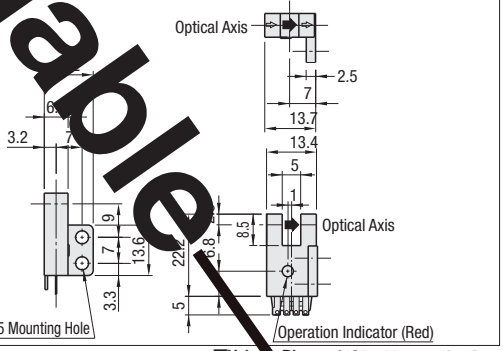
(Type Y)



(Type F)



(Type R)



Part Number	Detection Distance	Outputs	Operation Mode	€ Unit Price
	5mm (Fixed)	NPN transistor Open connector	Light seen - ON Light blocked - ON Equipped 2 outputs	

Order Example: Part Number

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days

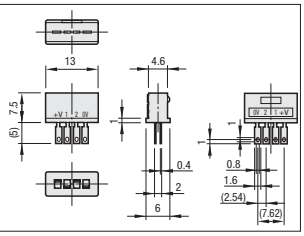
Express A: 3,00 EUR / piece P.88

A Express Charge of 8,10 EUR for 3 or more identical pieces.

Soldered Connectors

RoHS





Part Number	€ Unit Price 1~5 pcs.	Vol. Discount 6~99

For orders larger than indicated quantity, please request a quotation.

Part Number

8 Days

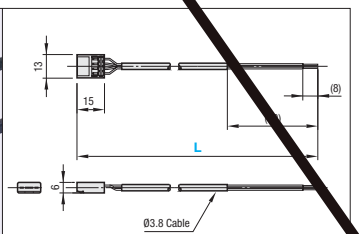
A Express Charge of 5,40 EUR for 3 or more identical pieces.

Express A: 2,00 EUR/ piece P.88

Connectors with Cable



RoHS



Part Number	Cable Length (m) L	€ Unit Price 1~5 pcs.	Vol. Discount 6~99
	1		
	3		

For orders larger than indicated quantity, please request a quotation.

Part Number - L

- 1

8 Days

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Express A: 2,00 EUR/ piece P.88

Not Available

Cams for Photo Sensor

-Slit (Solid, Slit Type, Configurable Slit) Type-

Reduced Delivery Time

CAD Data

■Combination use with Photo Sensor allows rotational speed detection.

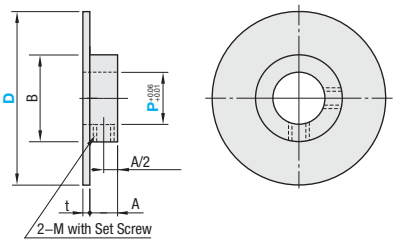
■Slit Type RoHS

(Solid, Slit Type, Configurable Slit)

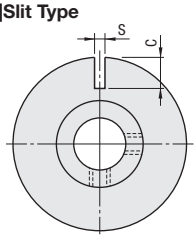


Type			M Material	S Surface Treatment	A Accessories
Solid	Slit Type	Configurable Slit			
HPSCN	HPSC	HPSCZ	EN AW-6063/ AlMg0,7Si	Black Anodize	Set Screws 2 pcs.
HPSCWN	HPSCW	HPSCWZ		Clear Anodize	

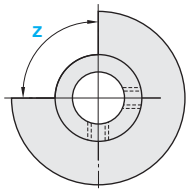
■Solid



■Slit Type



■Configurable Slit



Relative positions of set screws and slit are not fixed.

Part Number Type	D	P Selection	Z 1° Increment	M	A	B	C	S	t	HPSCN · HPSCWN € Unit Price Qty. 1~9	HPSCN · HPSCWN Volume Discount 10~49	HPSC · HPSCW € Unit Price Qty. 1~9	HPSC · HPSCW Volume Discount 10~49	HPSCZ · HPSCWZ € Unit Price Qty. 1~9	HPSCZ · HPSCWZ Volume Discount 10~49
(Solid) HPSCN HPSCWN	28	5 6 8	10~350 (Available for Configurable Slit only)	M3	5.5	14	6.5	1.5	1.5						
	32	3 4 5 6 6.35 8													
	40	3 4 5 6 6.35 8				20		2							
		9.5 10 12		M4											
(Slit Type) HPSC HPSCW	45	5 6 8		M3	7.5	25	8.5	2.5							
		10 12 15		M4											
(Configurable Slit) HPSCZ HPSCWZ	50	4 5 6 6.35 8		M3											
		9.5 10 12 15		M4		30									
	60	6 6.35 8													
		9.5 10 12 15													

Order Example

Part Number	-	P	-	Z
HPSCZ50	-	9.5	-	180

Days to Ship

• Slit Type (For HPSCW, 8th day shipping Express A is now available.)

8 Days

Express A 8,00 EUR/ piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• Solid · Configurable Slit Angle

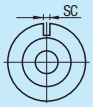
10 Days

Alterations

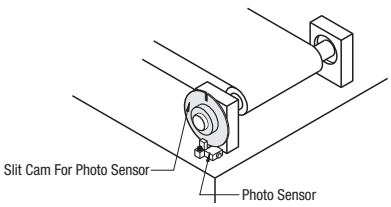
Part Number	-	P(PC)	-	SC · PC · NC
HPSC40	-	PC11	-	SC1.8

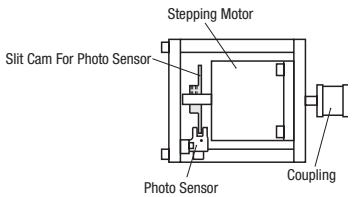
For orders larger than indicated quantity, please request a quotation.

10 Days

Alterations	Slit Width	Shaft Bore Dia.	No. of Slits (Equal Pitch)
			
Code	SC	PC	NC
Spec.	SC=0.1 mm Increment 1.0≤SC≤3.0 Applicable to HPSC and HPSCW only.	D / PC Selection: 32: 7; 40: 7 9 11; 50: 7 9 11 13 14. Applicable to EHPSCN, HPSCWN, HPSC and HPSCW only.	Specify the number of slits following NC symbol. ex.) When the number of slits is 3 → NC3 2≤NC≤10 The number of slits 7 is not selectable. Applicable to HPSC and HPSCW only. Not applicable to D28.
Price Adder	3,00	3,00	5,00

Example





Cams for Photo Sensor

-Resin, Clamping, Half Circle, Angle Adjustment Type-

Reduced Delivery Time

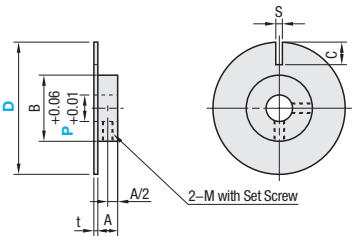
CAD Data

■Plastic Type

RoHS



Type	M Material	S Surface Treatment	A Accessories
HPJC	Polyacetal (Black)	-	Set Screws 2 pcs.



Part Number Type	D	P Selection	M	A	B	C	S	t	€ Unit Price Qty. 1~9	Volume Discount 10~49
HPJC	32	5 6 8	M3	5.5	14	8.5	1.5	1.5		
	40	5 6 8	M3		20		2			
		10 12	M4							
	50	6 8	M3	7.5	25		2.5			
		10 12 15	M4							

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number HPJC40 - P 6

Days to Ship: 8 Days — Express A 8,00 EUR/ piece — P.88

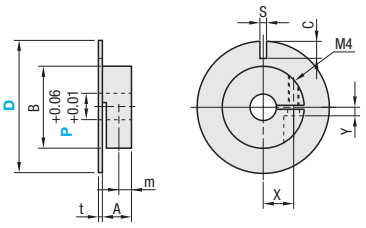
A Express Charge of 21,60 EUR for 3 or more identical pieces.

■Clamping Type

RoHS



Type	M Material	S Surface Treatment	A Accessories
HPSCC	EN AW-6063/ AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screw



Part Number Type	D	P Selection	A	m	B	C	S	X	Y	t	€ Unit Price Qty. 1~9	Volume Discount 10~49
HPSCC	50	8 10 12 15	11	4.75	31	6.5	2.5	11.5	4.8	1.5		

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number HPSCC50 - P 15

Days to Ship: 8 Days — Express A 8,00 EUR/ piece — P.88

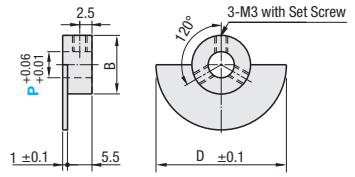
A Express Charge of 21,60 EUR for 3 or more identical pieces.

■Half–Circle

RoHS



Type	M Material	S Surface Treatment	A Accessories
PSC	Nylon 6 (Glass Fiber 30%)	-	Set Screws 3 Pcs.
PSCH	EN AW-6063/ AlMg0,7Si	Black Anodize	



Part Number Type	P	B	D	PSC € Unit Price Qty. 1~9	PSC Volume Discount 10~	PSCH € Unit Price Qty. 1~9	PSCH Volume Discount 10~
PSC PSCH	6	13	28				
	8	15	30				
	10	17	32				
	12	19	34				

Order Example: Part Number PSC10

Days to Ship: 6 Days — P.87

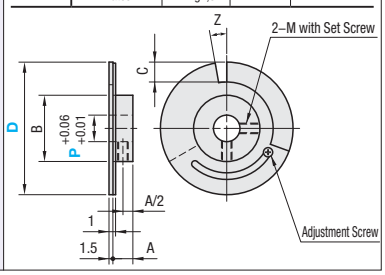
■ Feature:Slit angle can be adjusted after installation.

■Angle Adjustment Type

RoHS



Type	Parts	M Material	S Surface Treatment	A Accessories
HPSCA	Main Body	EN AW-6063/ AlMg0,7Si	Black Anodize	Set Screws 2 pcs.
	Angle Adjustment Plates	EN AW-5052/ AlMg2,5		



Part Number Type	D	P Selection	Z Adjustment Range	M	A	B	C	Effective Slit Depth*	€ Unit Price Qty. 1~9	Volume Discount 10~49
HPSCA	40	5 6 8	10~120	M3	5.5	20	6	5.5mm		
		10 12		M4						
	50	6 8		M3	7.5	25	8.5	6.8mm		
		10 12 15		M4						

*Effective slit depth is shallower than C because of the adjustment screw (and slot).

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number HPSCA40 - P 12

Days to Ship: 10 Days

Rails for Switch and Sensor

-L Dimension Fixed: No Hole (Shape A · B and C) · With Slotted Holes (Shape C)-

Price Reduction
10% on average

CAD Data

Features: Aluminum rail blank. Hole machining is required for mounting. For hole machined products, refer to P.1754

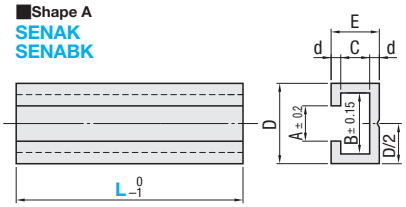
Bar Nuts P.1757

L Dimension Selectable RoHS

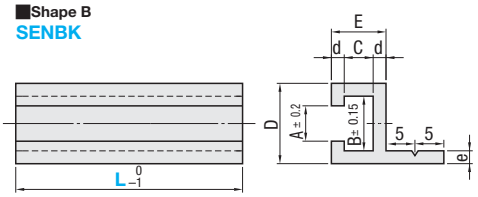


Type	Material	Surface Treatment	Part Number L Dimension Selectable (Standard) Shape A	Shape B	Shape C
No Hole	EN AW-6063/ AlMg0,7Si-T5	Clear Anodize	SENAK	SENBK	SENCK
		Black Anodize	SENABK	-	SENCBK
With Slotted Holes		Clear Anodize	-		SENCHK

Shape A
SENAK
SENABK

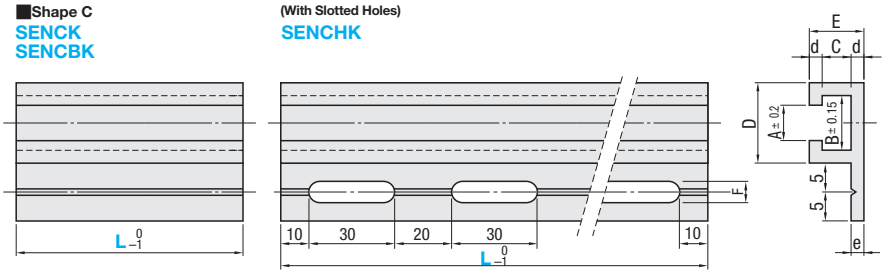


Shape B
SENBK



Shape C
SENCK
SENCBK

(With Slotted Holes)
SENCHK



No. of Slotted Holes	L100	L200	L300
	2	4	6

No Anodizing on the tip and inner surface.

L Dimension Fixed: No Hole · With Slotted Holes No. indicates the applicable nut size.

Bar Nuts P.1757

Part Number Type			No.	L Selection	A	B	C	D	E	d	e	F
	(Clear Anodize)	(Black Anodize)	3	100 150 200 300 500	3.4	5.7	3.0	9	6.0	1.5	2	3.5
(Shape A)	SENAK	SENABK										
(Shape B)	SENBK		4		4.5	7.2	4.0	11	8.0	2.0		4.5
(Shape C)	SENCK SENCHK (With Slotted Holes)	SENCBK	5		5.5	8.2	5.5	12	9.5		3	5.5

L150 and L500 are not available for SENCHK (With Slotted Hole). Only L300 and L500 are available for No.4 of SENABK.

Order Example

Part Number	-	L
SENAK5	-	300

Days to Ship 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

No.	€ Unit Price (Clear Anodize) SENAK L100	L150	L200	L300	L500	SENBK · SENCK L100	L150	L200	L300	L500	SENCHK L100	L200	L300
3													
4													
5													

Price for black anodized product: € Unit Price in Table x1.3 (Round down to ten Cent.)
(Ex.) For SENABK3-500, SENAK unit price 7,00 EURx1.3=9,10 EUR

Rails for Switch and Sensor

-L Dimension Fixed: No Hole (Shape A · B and C)-

CAD Data

Features: Aluminum rail blank. Hole machining is required for mounting. For hole machined products, refer to **P.1754**

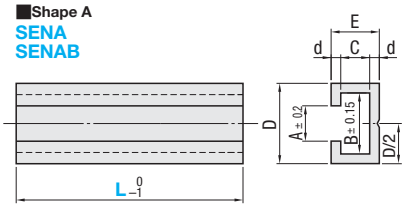
Bar Nuts P.1757

L Dimension Configurable RoHS

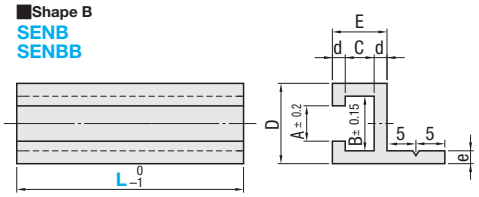
Type	M Material	S Surface Treatment	Part Number L Dimension Configurable (Length Specifiable) Shape A	Shape B	Shape C
No Hole	EN AW-6063/ AlMg0,7Si-T5	Clear Anodize	SENA	SENB	SENC
		Black Anodize	SENAB	SENBB	SENCB



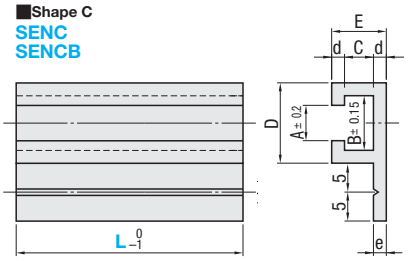
Shape A
SENA
SENAB



Shape B
SENB
SENBB



Shape C
SENC
SENCB



No Anodizing on the tip and inner surface.

L Dimension Configurable: No Hole Type No. indicates the applicable nut size.

Bar Nuts P.1757

Part Number Type (Clear Anodize)	(Black Anodize)	No.	L 1mm Increment	A	B	C	D	E	d	e
		2*	50~600	2.4	4.2	2.5	7.5	5.5	1.5	2
(Shape A) SENA	SENAB	3	50~1200	3.4	5.7	3.0	9	6.0		
(Shape B) SENB	SENBB	4		4.5	7.2	4.0	11	8.0	2.0	
(Shape C) SENC	SENCB	5		5.5	8.2	5.5	12	9.5		3

*No.2 is available for SENC (Shape C, Clear Anodize) only.

Order Example: Part Number SENB3 - L 400

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

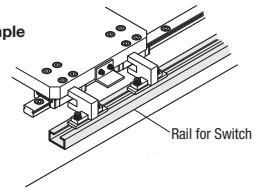
Volume Discount (Round down to one Cent.) P. 87

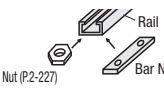
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

No.	€ Unit Price (Clear Anodize) SENA L50 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200	SENB · SENC L50 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
2														
3														
4														
5														

Example





(**P.1757**)

Price for black anodized product: € Unit Price in Table x1.3 (Round down to ten Cent.)
(Ex.) For SENAB3-800, SENA unit price 8,60 EURx1.3=11,18 EUR →11,10 EUR

NEW

Rails for Switch and Sensor

-L Dimension Configurable-Hole Position Fixed Type (Shape A · Shape B · Shape C)-

Price Reduction
Up to 10%

CAD Data

Features: Rails for sensor with L Dimension Configurable and Hole Position Fixed. More economical than Hole Position Configurable Type. Bar Nuts P.1757

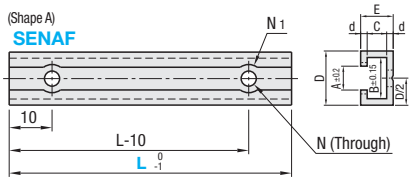
RoHS



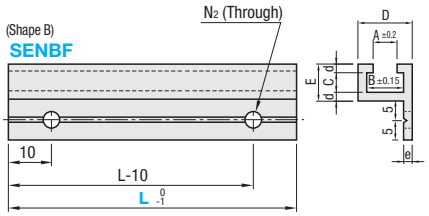
Material	Surface Treatment	Part Number		
		Shape A	Shape B	Shape C
EN AW-6063-T5	Clear Anodize	SENAF	SENBF	SENCF

- No Anodizing on the tip and inner surface.
- Burrs remain inside of the mounting holes.
- No hole machining specification is required for this product.

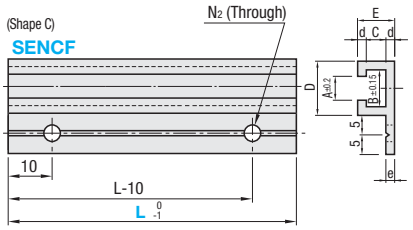
(Shape A) SENAF



(Shape B) SENBF



(Shape C) SENCF



L Dimension Configurable: Hole Position Fixed Type

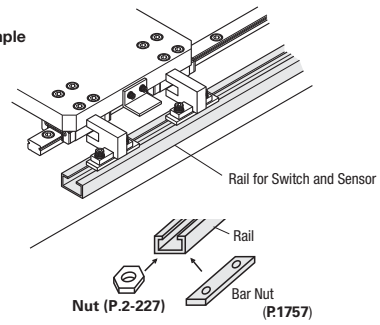
No. indicates the applicable nut size. Bar Nuts P.1757

Part Number		L 1mm Increment	N	N1	N2	A	B	C	D	E	d	e	€ Unit Price			
													SENAF		SENBF · SENCF	
Type	No.												L50~100	L101~200	L50~100	L101~200
(Shape A) SENAF	3	50~200	3.5	6.5	3.5	3.4	5.7	3.0	9	6.0	1.5	2				
(Shape B) SENBF	4				4.5	4.5	7.2	4.0	11	8.0	2.0					
(Shape C) SENCF	5				5.5	5.5	8.2	5.5	12	9.5		3				

Order Example

Part Number	-	L
SENAF3	-	100
SENCF5	-	150

Example



Days to Ship 8 Days — Express A 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Rails for Switch and Sensor

-L Dimension Configurable-Hole Position ConfigurableType (Shape B · Shape C)-

Price Reduction
10% on average

CAD Data

Bar Nuts P.1757

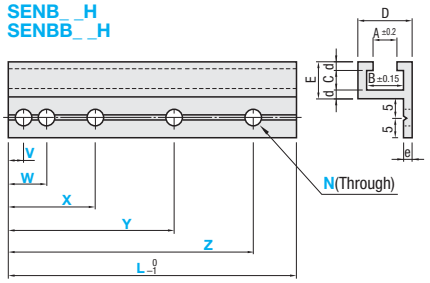
RoHS

M Material	S Surface Treatment	Part Number Shape B	Part Number Shape C
EN AW-6063-T5	Clear Anodize	SENB_ _H	SENC_ _H
	Black Anodize	SENBB_ _H	SENCB_ _H

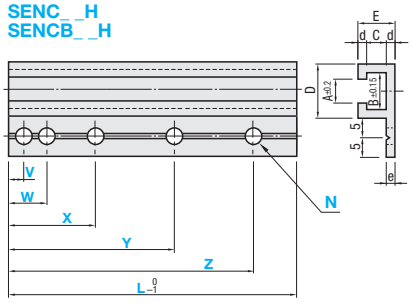
No Anodizing on the tip and inner surface.



(Shape B)
SENB_ _H
SENBB_ _H



(Shape C)
SENC_ _H
SENCB_ _H



■L Dimension Configurable: Hole Position Configurable

Bar Nuts P.1757

Please specify the mounting hole pitch as N+1.5 or more. No. indicates the applicable nut size.

Part Number Type	No.	H (No. of Holes)	L 1mm Increment	VWXYZ 1mm Increment	N 0.5mm Increment	A	B	C	D	E	d	e	€ Unit Price (Clear Anodize) L50~100	L101~200	L201~400	L401~600	L601~800	L801~1000	L1001~1200
(Shape B) SENB SENBB	2*	2H 3H 4H 5H	50~600	5~595	3.5~5.5	2.4	4.2	2.5	7.5	5.5	1.5	2							
	3					3.4	5.7	3.0	9	6.0									
(Shape C) SENC SENCB	4		50~1200	5~1195		4.5	7.2	4.0	11	8.0	2.0								
	5					5.5	8.2	5.5	12	9.5		3							

*No.2 is available for SENC (Shape C, Clear Anodize) only. When N is not specified, N=3.5 for No.2 or 3, N=4.5 for No.4 and N=5.5 for No.5.

■Hole Machining Charge

H (No. of Holes)	SENB, SENBB SENC, SENCB € Through Holes
2H	2,00
3H	3,00
4H	4,00
5H	5,00

(Ex.) Part Number - L - V - W - N When
SENCB32H - 200 - V10 - W70 - N4.5

(€ Unit Price in Table x 1.3) + (Hole Machining Charge) = € Unit Price for Drill Hole Type
(6,60 EUR x 1.3) + 2,00 EUR = 10,58 EUR → 10,50 EUR

Unit price for Clear Anodized products = Body price in the table + Hole Machining Charge
Unit price for Black Anodized products = Body price in the table x 1.3 (Round down to the ten cent) + Hole Machining Charge

Order Example

Part Number - L - V - W - X - Y - Z - N
(Type, No., H (No. of Holes))

SENC 3 3H - 100 - V10 - W70 - X82 - N4.0
SENC 3 4H - 658 - V10 - W300 - X350 - Y648 - N4.5
SENC 3 5H - 1100 - V10 - W300 - X540 - Y648 - Z1090 - N5.0

Days to Ship

8 Days | Express A | 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Rails for Switch and Sensor

-L Dimension · Hole Position Configurable: Through Hole · Notched Hole Type (Shape A)-

Price Reduction 10% on average

CAD Data

Bar Nuts P.1757

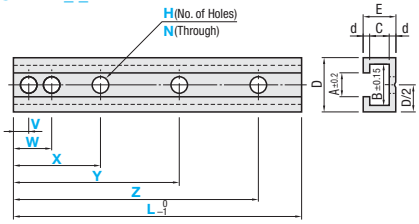
■L Dimension ConfigurableHole Position Configurable Type Shape A RoHS



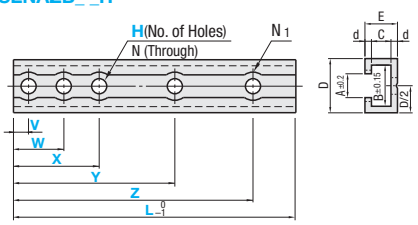
Part Number		M Material	S Surface Treatment
Through Hole Type	Notched Hole Type		
SENA__H	SENAZ__H	EN AW-6063/ AlMg0,7Si-T5	Clear Anodize
SENAB__H	SENAZB__H		Black Anodize

(?) No Anodizing on the tip and inner surface.
(?) Burrs will remain inside of the mounting hole for Through Hole / Notched Hole Type.

■Through Hole Type
SENA__H
SENAB__H



■Notched Hole Type
SENAZ__H
SENAZB__H



■Through Hole Type (?)No. indicates the applicable nut size. Bar Nuts P.1757

Part Number			L 1mm Increment	V W X Y Z 1mm Increment	N 0.5mm Increment	A	B	C	D	E	d	€ Unit Price (Clear Anodize)						
Type	No.	H (No. of Holes)										L50 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
(Through Hole Type) SENA SENAB	3	2H 3H 4H 5H	50~1200	5~1195	3.5	3.4	5.7	3.0	9	6.0	1.5							
	4				3.5~4.5	4.5	7.2	4.0	11	8.0	2.0							
	5				3.5~5.5	5.5	8.2	5.5	12	9.5								

(?)Please specify the mounting hole pitch as N+1.5 or more.

■Notched Hole Type (?)No. indicates the applicable nut size. (?)For No. 3, the inside of groove is slightly milled. For Bar Nuts, refer to P.1757

Part Number			L 1mm Increment	V W X Y Z 1mm Increment	N	N1	A	B	C	D	E	d	€ Unit Price (Clear Anodize)						
Type	No.	H (No. of Holes)											L50 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
(Notched Hole Type) SENAZ SENAZB	3	2H 3H 4H 5H	50~1200	10~1190	3.5	6.5	3.4	5.7	3.0	9	6.0	1.5							
	4						4.5	7.2	4.0	11	8.0	2.0							
	5						5.5	8.2	5.5	12	9.5								

(?)Please specify the mounting hole pitch by 8mm or more.

■Hole Machining Charge

H (No. of Holes)	SENA SENAB	SENAZ SENAZB
	Through Hole	Notched Hole
2H		
3H		
4H		
5H		

(?)Unit price for Clear Anodized products = Body price in the table + Hole Machining Charge
(?)Unit prices of black anodized type are the prices shown in the table multiplied by 1.3 (round down to the nearest ten cent) plus hole machining charges.

(Ex.) Part Number - L - V - W - N
SENAB32H - 200 - V10 - W70 - N3.5
(€ Unit Price in Table x 1.3) + (Hole Machining Charge) = € Unit Price for Drill Hole Type
(4,60 EURx1.3) + 2,00 EUR = 7,98 EUR → 7,90 EUR

(Ex.) Part Number - L - V - W
SENAZ42H - 200 - V10 - W70
(€ Unit Price in Table) + (Hole Machining Charge) = € Unit Price for Cut-Out Hole Type
5,40 EUR + 4,00 EUR = 9,40 EUR

Order Example

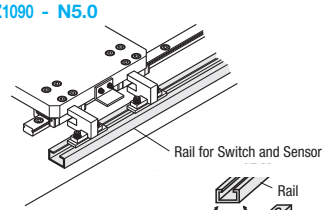
Part Number			- L - V - W - X - Y - Z - N
Type	No.	H (No. of Holes)	
SENA	3	3H	- 100 - V10 - W70 - X82 - N3.5
SENA	3	4H	- 658 - V10 - W300 - X350 - Y648 - N4.5
SENA	3	5H	- 1100 - V10 - W300 - X540 - Y648 - Z1090 - N5.0
SENAZ	4	2H	- 200 - V10 - W70

Example

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.



Price

■Volume Discount (?)Round down to one Cent. P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

Rails for Switch and Sensor

-L Dimension · Hole Position Configurable: Countersunk Hole · Counterbored Hole Type (Shape A)-

Price Reduction
10% on average

CAD Data

Bar Nuts P.1757

L Dimension Configurable Hole Position Configurable Type Shape A

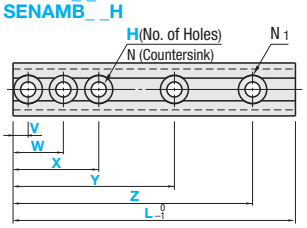
RoHS



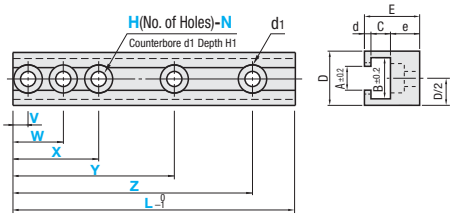
Part Number		Material	Surface Treatment
Countersink Type	Counterbored Type		
SENAM__H	SENAT__H	EN AW-6063/ AlMg0,7Si-T5	Clear Anodize
SENAMB__H	-		Black Anodize

- No Anodizing on the tip and inner surface.
- Burrs will remain inside of the mounting hole for Counterbored Type.
- When d1>B of counterbored type, the inside of groove is slightly milled.

Countersink Type
SENAM__H
SENAMB__H



Counterbored Type
SENAT__H



Counterbore Shapes

N	Screws	d1	H1
3.5	M3	6	3
4.0			
4.5	M4	8	3.5
5.0			
5.5	M5	9	4

*Recommended screw is Low Head Screw CBS (P. 2-189).

Countersink Type

No. indicates the applicable nut size.

For No. 3, the inside of groove is slightly milled. For Bar Nuts, refer to P.1757

Part Number			L 1mm Increment	V W X Y Z 1mm Increment	N	N1	A	B	C	D	E	d	€ Unit Price (Clear Anodize)						
Type	No.	H (No. of Holes)											L50 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
(Countersunk Type) SENAM SENAMB	3	2H 3H 4H 5H	50~1200	10~1190	3.5	6.0	3.4	5.7	3.0	9	6.0	1.5							
	4						4.5	7.2	4.0	11	8.0	2.0							
	5						5.5	8.2	5.5	12	9.5								

Please specify the mounting hole pitch by 8mm or more.

Counterbored Type

No. indicates the applicable nut size.

For No. 3, the inside of groove is slightly milled. For Bar Nuts, refer to P.1757

Part Number			L 1mm Increment	V W X Y Z 1mm Increment	N 0.5mm Increment	A	B	C	D	E	d	e	€ Unit Price (Clear Anodize)						
Type	No.	H (No. of Holes)											L50 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
(Counterbored Type) SENAT	3	2H 3H 4H 5H	50~1200	10~1190	3.5	3.4	5.8	3.0	9	9.5	1.5	5							
	4				3.5~4.5	4.5	7.3	4.0	11	11.0	2.0								
	5				3.5~5.5	5.5	8.3	5.5	12	12.5									

Please specify the mounting hole pitch as N+1.5 or more.

Hole Machining Charge

H (No. of Holes)	SENAM SENAMB	SENAT
	Countersunk	Counterbored Hole
2H		
3H		
4H		
5H		

- Unit price for Clear Anodized products = Body price in the table + Hole Machining Charge
- Unit prices of black anodized type are the prices shown in the table multiplied by 1.3 (round down to the nearest ten cent) plus hole machining charges.

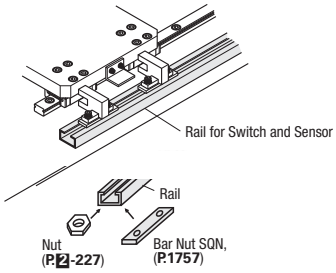
(Ex.) Part Number - L - V - W
SENAMB32H - 200 - V10 - W70
(€ Unit Price in Table x 1.3) + (Hole Machining Charge) = € Unit Price for Countersunk Hole Type
(4,60 EURx1.3) + 4,00 EUR = 9,98EUR → 9,90 EUR

(Ex.) Part Number - L - V - W - N
SENAT42H - 200 - V10 - W70 - N3.5
(€ Unit Price in Table) + (Hole Machining Charge) = € Unit Price for Counterbored Hole Type
8,20 EUR + 4,00 EUR = 12,20 EUR

Order Example

Part Number			- L	- V	- W	- X	- Y	- Z	- N
Type	No.	H (No. of Holes)							
SENAM	5	3H	- 1000	- V10	- W30	- X500			
SENAMB	3	2H	- 500	- V10	- W70				
SENAT	4	2H	- 200	- V10	- W70				- N3.5

Example



Days to Ship

8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Rails for Switch and Sensor · Bar Nuts

-L Dimension Configurable / Calibrated (Shape A · B and C) / Rails for Photomicrosensors- / -Standard / w/Nut Retainer

CAD Data

Features: Calibrated rails facilitate setup of sensors.

L Dimension Configurable Calibrated Type

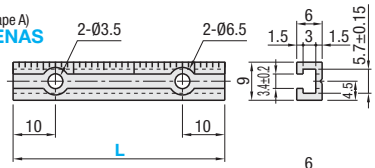
RoHS



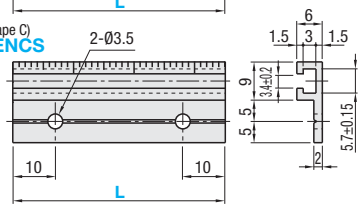
Part Number			M Material	S Surface Treatment
Shape A	Shape B	Shape C		
SENAS	SENBS	SENCS	EN AW-6063/AlMg0,7Si-T5	Clear Anodize

- No Anodizing on the tip and inner surface.
- Burrs remain inside of the mounting holes.
- Rail will be cut at an arbitrarily chosen place and an actual scale will not be the same as shown above. The scale does not have numbers.

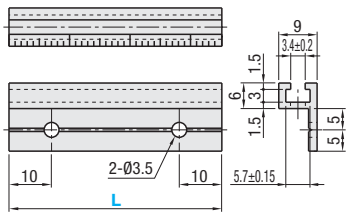
(Shape A) **SENAS**



(Shape C) **SENCS**



(Shape B) **SENBS**



L Dimension Configurable Calibrated Type (No. indicates the applicable nut size. For Shape A (SENAS), the inside of groove is slightly milled.)

Part Number		L 1mm Increment	€ Unit Price			
			SENAS		SENBS · SENCS	
Type	No.		L50~100	L101~200	L50~100	L101~200
(Shape A) SENAS (Shape B) SENBS (Shape C) SENCS	3	50~200				

Order Example: Part Number SENAS3 - L 100 / SENCS3 - L 150

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

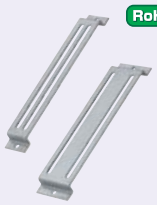
Days to Ship: 8 Days

Express A: 5,00 EUR/piece — P. 88

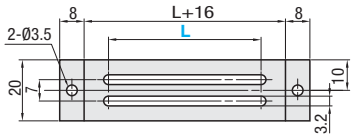
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Rails for Photomicrosensors

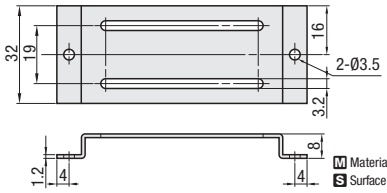
RoHS



MPSEN7



MPSEN19

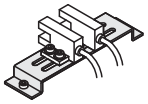


M Material: 1.0330/DC01

S Surface Treatment: Trivalent Chromate

Part Number		L Selection	€ Unit Price					
Type	Pitch		L50	L60	L70	L80	L90	L100
MPSEN	7	50 60 70 80 90 100						
	19							

Example



Order Example: Part Number MPSEN7 - L 70

Days to Ship: 6 Days — P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~15	16~18	19~20	21~25
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Type w/Nut Retainer to prevent nuts from falling when using sensor rails in vertical mount positions.

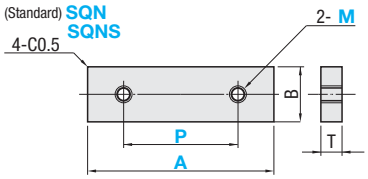
Bar Nuts



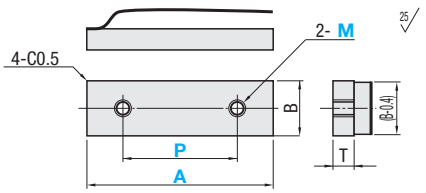
RoHS

Type		M Material	S Surface Treatment
Standard	w/Nut Retainer		
SQN	SQNH	1.0330/DC01	Trivalent Chromate Plating
SQNS	-	1.4301/X5CrNi18-10	-

(Standard) **SQN** **SQNS**



(w/Nut Retainer) **SQNH**



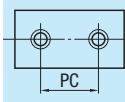
Female Thread holes may be somewhat deformed by manufacturing process. (It does NOT affect fitting.)

Order Example: Part Number SQN4 - A 36 - P 25.4

Days to Ship: 6 Days — P. 87

Alterations: Part Number SQN4 - A 28 - (PC) PC13 — 10 Days

Part Number		A	P Selection	B	T		SQN				SQNS				SQNH			
					SQN SQNH	SQNS	€ U. Price	Volume Discount			€ U. Price	Volume Discount			€ U. Price	Volume Discount		
Type	M						Qty.1-99	100-249	250-499	500-	Qty. 1-19	20-34	35-49	50-	Qty. 1-19	20-34	35-49	50-
SQN SQNS SQNH	2	15	8	4.0	1.6	1.5												
		25	18															
	3	15	6 (6.5) 7*	5.4	2.3	2.0												
		20	8 9 10* 12*															
		25	14 16 18 19* 20*															
		32	22 24 24.5															
	4	28	16* (16.5) (18)	6.8	3.2	2.0												
		32	20* (22) (23)															
		36	25 (25.4)															
		52	(33) (40) (42)			-												
	5	40	25 28	7.8	3.2	-												
		42	30 30.2															
		52	32 40 42															
		72	50 54 60															

Alteration	Code	Spec.	Price Adder
Pitch Dimension 	PC	Changes the hole pitch. PC = 1mm Increment (P Specification is not required) Ordering Code PC13 ⊗SQNH is not applicable. M: PC Range 2: 4≤PC≤A–5 3: 5≤PC≤A–6 4: 7≤PC≤A–8 5: 10≤PC≤A–10	

Dimensions in ( ) are not applicable to SQNS. For SQNH, only applicable to P dimensions denoted with *. SQN2-25-18 and SQNS3-15-6.5 are not available.

Rails for Switch and Sensor

-Steel, L Dimension Fixed / L Dimension Configurable, Hole Position Configurable-

CAD Data

Features: Made of steel. Rails for large switches and sensors. Suitable when rigidity is required.

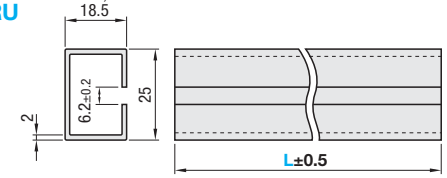
Steel Rails



RoHS

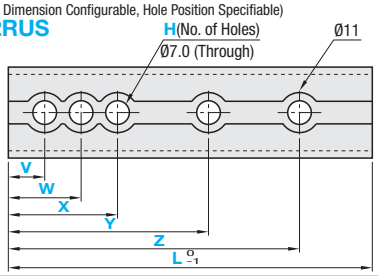
(L Dimension Selectable)

2RU



(L Dimension Configurable, Hole Position Specifiable)

2RUS



M Material: 1.0330/DC01 S Surface Treatment: Trivalent Chromate

Part Number	L Selection	€ Unit Price Qty. 1~9	Volume Discount 10~50
2RU	100		
	200		
	300		
	400		
	500		
	600		
	1000		
	1500		

Part Number		1mm Increment		Hole Machining Charge	€ Unit Price						
Type	No. of Holes	L	V W X Y Z		L50 ~ 100	L101 ~ 200	L201 ~ 400	L401 ~ 600	L601 ~ 800	L801 ~ 1000	L1001 ~ 1200
2RUS	0H(No Hole)	50~1200	10~1190	Free of Charge							
	2H										
	3H										
	4H										
	5H										

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number - L - V - W - X - Y - Z

2RU - 400

2RUS5H - 660 - V30 - W180 - X330 - Y480 - Z630

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces

Unit prices of Length specified hole type are the body prices shown in the table plus hole machining charges.

Example

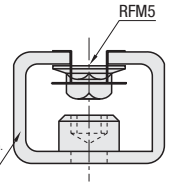
(Ex.) Part Number: 2RUS2H - L: 300 - V: V100 - W: W200 When

(€ Unit Price in Table)+(Hole Machining Charge)= € Unit Price for Cut-Out Hole Type

6,90 EUR + 3,00 EUR = 9,90 EUR

2RU can be mounted in two ways. It can be screwed on by inserting rail mount fittings (2P) into both ends, or weld the rails directly onto a machine.

For attachment of 2RUS, please use M6 hexagon socket head cap screws. Applicable nut is RFM5. The RFM5 and the screws will not interfere as shown in the example of use.



Price

- 2RUS

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~50
Rate	€ Unit Price	5%

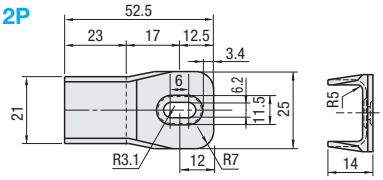
For orders larger than indicated quantity, please request a quotation.

Rail Mount Fittings



RoHS

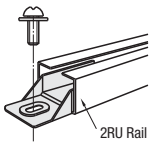
2P



M Material: 1.0320/St.22

S Surface Treatment: Trivalent Chromate

How to Attach 2P



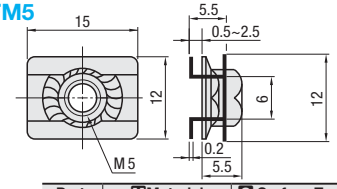
- Insert the nuts from either end of the rail. (Tap in lightly with a hammer.)
- An RFM nut can be inserted with the 2P fitting attached.

Nuts for Rail



RoHS

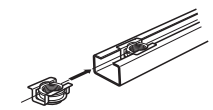
RFM5

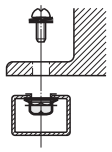


Parts	M Material	S Surface Treatment
Frame	1.4301/X5CrNi18-10-H	-
Nut	JIS SWRM10	Trivalent Chromate Plating

How to Attach RFM Nuts

- RFM and RXM nuts utilize stainless steel spring tension to prevent from falling even when installed on vertical rails.





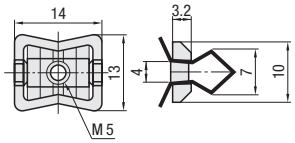
Mounting of Parts

Nuts for Rail



RoHS

RXM5



Parts	M Material	S Surface Treatment
Frame	1.4301/X5CrNi18-CSP	-
Nut	1.0038/S235JR	Trivalent Chromate Plating

How to Attach RXM Nuts

- The RXM nuts can easily be attached in the middle of a rail to facilitate convenient component additions even after the machine building has been completed.

① 

Place the RXM nut's spring tip on the rail groove and press it with fingers.

② 

Push the center and either side of the RXM nut diagonally with a fingernail.

③ 

Slightly lift the other side of the RXM nut together with its spring, and push it into the rail groove.

④ 

The RXM nut insertion completed.

Part Number	€ Unit Price Qty.1~99	Volume Discount 100~149	150~199	200~299
2P				
RFM5				
RXM5				

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number: 2P, RFM5

Days to Ship: 8 Days — Express A 2,00 EUR/piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces

DIN Rails

Price Reduction
Up to 76%

CAD Data

Feature: DIN Rails for mounting amplifiers for fiber sensor or control panels. Offered at a substantially discounted price.

RoHS



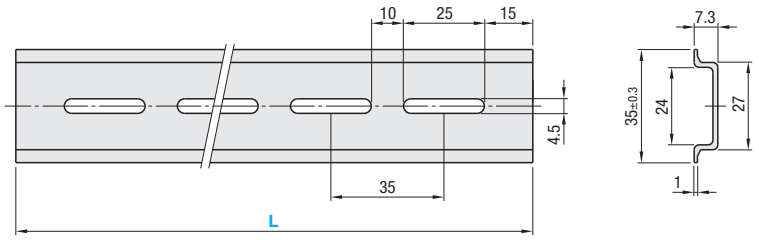




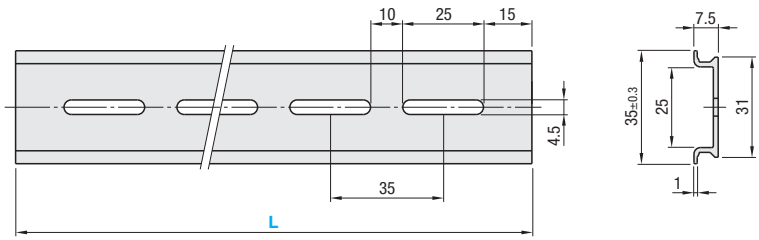
Material	Surface Treatment	Part Number		
		Installation Surface 27mm	Installation Surface 31mm	
		For M4		For M5
EN AW-6063/AlMg0,7Si-T5	Clear Anodize	DNR274	DNR314	DNR315

No Anodizing on the tip and inner surface.
Burrs remain inside of the mounting holes.

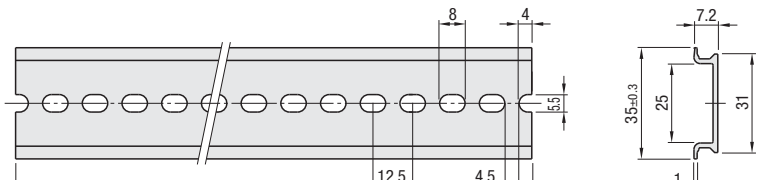
DNR274



DNR314



DNR315



Rails with L = 100, 150 and 200 will be cut at random positions.

Part Number	L Selection	DNR274 · 314			DNR315	
		€ Unit Price	Volume Discount		€ Unit Price	Volume Discount
		Qty. 1~9	10~29 pcs.	30~49 pcs.	Qty. 1~9	10~49 pcs.
DNR274 DNR314 DNR315	100					
	150					
	200					
	1000					

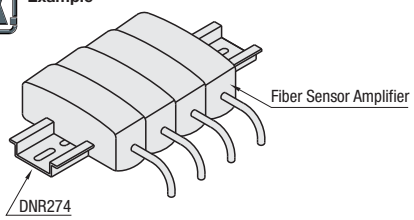
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	L
DNR274	-	150
DNR315	-	1000

Days to Ship: 6 Days P. 87

Example



Suitable to mount an amplifier for optical fiber sensor.

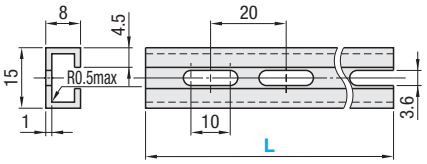
C-shaped Sensor Rails · Simple Stays · Grounding Blocks

CAD Data

■C-shaped Sensor Rails



SERCC



M Material: EN AW-6063/AlMg0,7Si
S Surface Treatment: Clear Anodize (Except Tip Section)

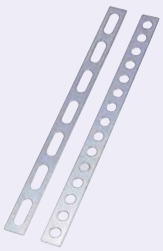
RoHS

Part Number	L	€ Unit Price Qty. 1~9	Volume Discount 10~
SERCC	200		
	300		
	500		

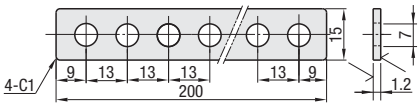
Order Example: Part Number - L → SERCC - 200

Days to Ship: 6 Days P.87

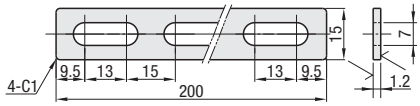
■Simple Brackets



EYST



EYSTE

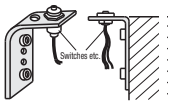


M Material:1.0330/DC01
S Surface Treatment: Trivalent Chromate Plating

RoHS

Part Number	No. of Mounting Holes	€ Unit Price
EYST	15	
EYSTE	7	

Example



Bendable at desired positions.

Order Example: Part Number → EYST

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

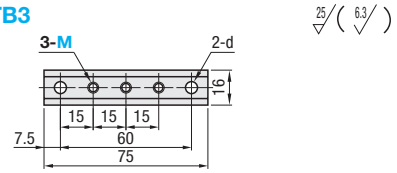
Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

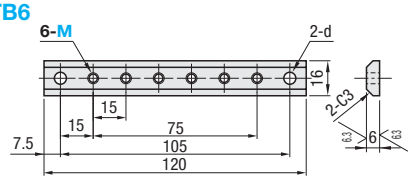
■Grounding Blocks



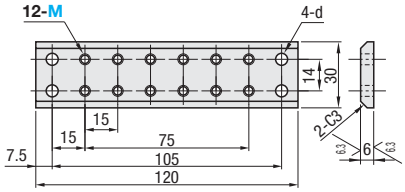
ETB3



ETB6



ETB12



M Material: CW505L/CuZn30
S Surface Treatment: Electroless Nickel Plating

RoHS

Part Number	M	d	€ Unit Price ETB3	ETB6	ETB12
ETB3	4	4.5			
ETB6	5	5.5			
ETB12	6	6.6			

Order Example: Part Number - M → ETB3 - 4

Days to Ship: 6 Days P.87

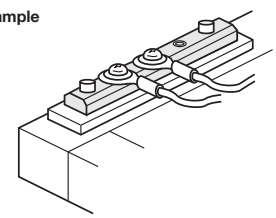
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~34	35~49	50~99
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Sheet Metal Mounting Plate · Brackets (For Sensors)
-Angle Type-

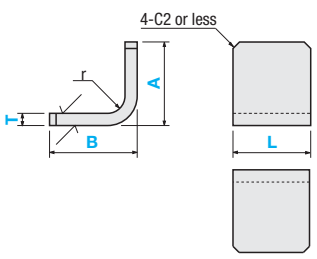
Type: KBA_ series are now available on our website.



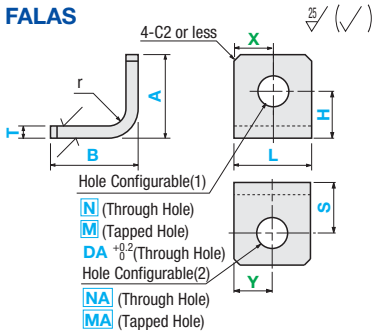
Part Number Type	Material Code	M Material	S Surface Treatment
FALZS FAPAS	SP	1.0330	-
FALAS FAMBS	SPB		Black Oxide
FALBS FATBS	SPU		JIS STKM Bright Chromate Plating
FAMAS	AM	EN AW-5052	-
FALCS	AMW		Clear Anodize
FASBS	AMB		Black Anodize
FAMCS	SUD	1.4301	-

Material for plate thickness 4.5 and 6.0 is 1.0320/St.22.

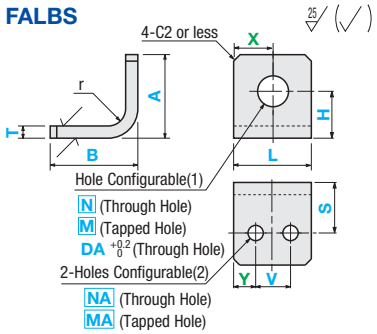
FALZS (No Hole)



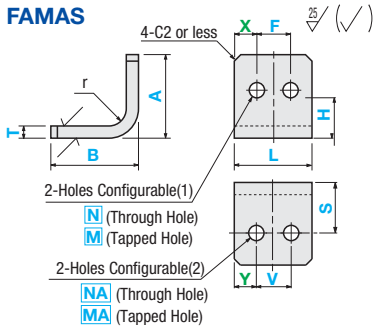
FALAS



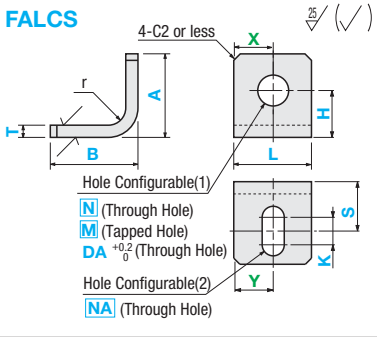
FALBS



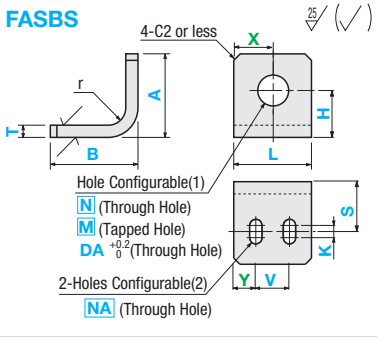
FAMAS



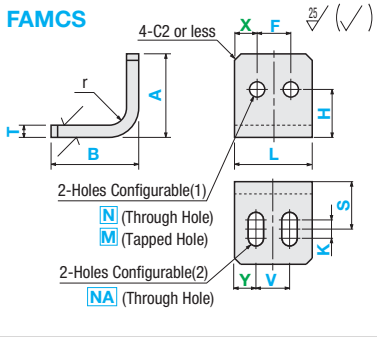
FALCS



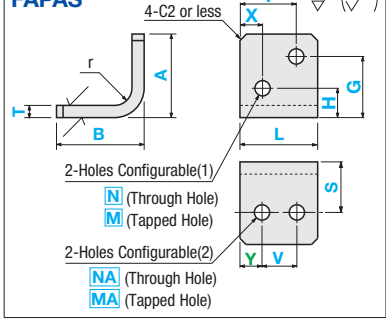
FASBS



FAMCS



FAPAS



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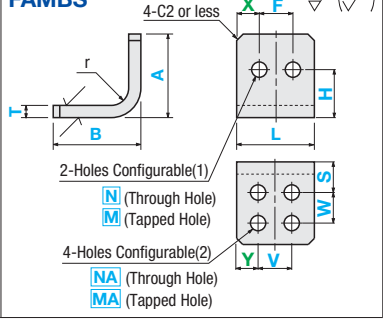
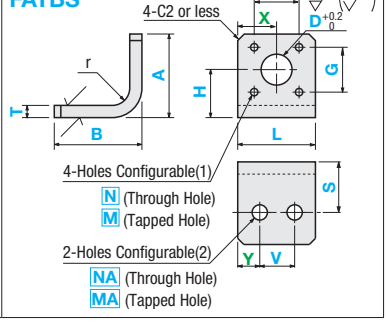
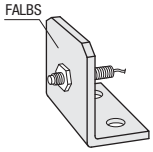
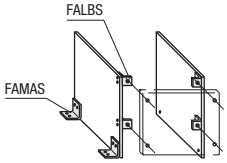


FATBS



Example





Part Number Change
Printed in Purple

Reduced Delivery Time

Price Reduction
7% on average

Part Number		Selection	1mm Incr.			Specify in 0.1mm Incr.				Hole Configurable (1)				0.5mm Incr.	Specify in 0.1mm Incr.				Hole Config. (2)		0.1mm Incr.
Type	Material Code	T	A	B	L	X	F	H	G	Code	Nominal Dia.	Code	Specify in 0.5mm Increment.	D	Y	V	S	W	Code	Nominal Dia.	K
FALZS	SP SPB SPU AM AMW AMB SUD	Material Code: SP SPB SPU / Plate Thickness (T): 1.6 2.3 3.2 4.5 6.0 Material Code: AM AMW AMB / Plate Thickness (T): 1.5 2.0 3.0 Material Code: SUD / Plate Thickness (T): 1.5 2.0 3.0 4.0	20 ≀ 300 (7)	15 ≀ 100 (7)	15 ≀ 100 (7)	-	-	-	-	–	–	–	–	–	-	-	-	-	–		–
FALAS						X	-	H	-	N M	0 (No Hole) 3 4 5 6 8 10	DA	3~30	–	Y	-	S	-	NA MA	0 (No Hole) 3 4 5 6 8 10	–
FALBS						X	-	H	-	N M		DA		–	Y	V	S	-	NA MA		–
FAMAS						X	F	H	-	N M		–		–	Y	V	S	-	NA MA		–
FALCS						X	-	H	-	N M		DA		–	Y	-	S	-	NA		K
FASBS						X	-	H	-	N M		DA		–	Y	V	S	-	NA		K
FAMCS						X	F	H	-	N M		–		–	Y	V	S	-	NA		K
FAPAS						X	F	H	G	N M		–		–	Y	V	S	-	NA MA		–
FAMBS						X	F	H	-	N M		–		–	Y	V	S	W	NA MA		–
FATBS						X	F	H	G	N M		–		3~30	Y	V	S	-	NA MA		–

(7) Material for plate thickness 4.5 and 6.0 is 1.0320/St.22. (7) A>100 can be specified when T=6.0. (7) DA can be selected only for FALAS, FALBS, FALCS and FASBS. (7) K≤NAx5 (7) When T=6.0, B or L≥20.

(7) C0.2 to C0.5, unless otherwise specified.
(7) Slotted Holes may be shaped like the right figure depending on its dimension.
(The function as a mounting hole is not affected.)



(7) No Hole Configurable (except D and DA). Specify 0 for all parameters about hole configuration.
(7) Parameters in green is optional. When the parameters in green is not specified, the hole alignment will be even against the center.
(7) Although hole deformation may occur when a hole is too close to the end face or the bent section, machining will follow the specification.

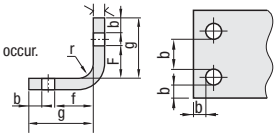
Order Example

Part Number																								
Type	-	Material Code	-	T	-	A	-	B	-	L	-	X	-	F	-	H	-	G	-	Hole Configurable (1) Code · Nominal Dia.	-	D	-	Y	-	V	-	S	-	W	-	Hole Configurable (2) Code · Nominal Dia.	-	K
FALCS	-	SUD	-	T1.5	-	A50	-	B50	-	L50	-	X15			-	H15			-	N3			-	Y15			-	S15			-	NA3	-	K5

Specifications · Machining Limits

(7) 1. For tolerance, refer to P2-1735
(7) 2. Burr height 0.1 or less
(7) 3. Bend angle tolerance ±1°
(7) 4. Scratches caused by the press brake may occur.
Refer to P2-1735
(7) 5. Swelling due to bending

(7) 6. Machining limits (min. value)



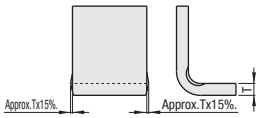
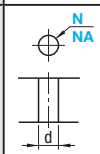
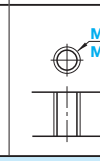
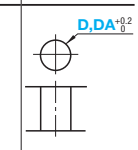


Plate Thickness (T)			r	f (Distance betw. holes and bends)			B (Distance between holes and ends)	g
1.0330/ DC01 1.0320/St.22	EN AW-5052/ AlMg2,5	1.4301/ X5CrNi18-10 (2B)		N · NA	M · MA	D DA		
1.6	1.5	1.5	1.5	3.5	6	4	1	6
2.3	2.0	2.0	2	4.5	7	5	1.5	7
3.2	3.0	3.0	3	6.5	9	7	1.5	9
4.5	-	4.0	4	7.5	11	8	2	11
6.0	-	-	6	14	16	15	2.5	18

Hole Selections

Holes	Through Hole	Female Thread Hole (Coarse)	Through Hole
Code	N · NA	M · MA	D · DA
Diagram			
Machining Specifications	Dim. / Screw Nominal Dia. 3 4 5 6 8 10 / d 3.5 4.5 5.5 6.5 9 11		3~30

Days to Ship

•Materials Code SP · AM · SUD: 8 Days

•Materials Code SPB · SPU · AMW · AMB: 13 Days

Express C: 5,00 EUR/ piece P.88

(7) A Express Charge of 13,50 EUR for 3 or more identical pieces.
(7) Available only for material code AMW and AMB.

Price

Volume Discount ((7) Round down to one Cent.)

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

(7) Body price indicates the price without surface treatment.
When specifying a surface treatment, add the surface treatment price to the body price.

(7) Please request a quotation for orders of 40 or more identical pieces.

T		A	€ Body Price														Surface Treatment Price € (Body Price +)		
			FALZS			FALAS			FALBS			FAMAS			FALCS			Black Oxide JIS STKM Bright Chromate Plating	Clear Anodize	Black Anodize
1.0330/DC01 1.0320/St.22	1.4301/X5CrNi18-10 EN AW-5052/AlMg2		SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SPB SPU	AMW	AMB
1.6	1.5	20~100																	
2.3	2.0																		
3.2	3.0																		
4.5	4.0																		
6.0	-																		
6.0	-	101~200																	
6.0	-	201~300																	

T		A	€ Body Price														Surface Treatment Price € (Body Price +)		
			FASBS			FAMCS			FAPAS			FAMBS			FATBS			Black Oxide JIS STKM Bright Chromate Plating	Clear Anodize	Black Anodize
1.0330/DC01 1.0320/St.22	1.4301/X5CrNi18-10 EN AW-5052/AlMg2		SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SPB SPU	AMW	AMB
1.6	1.5	20~100																	
2.3	2.0																		
3.2	3.0																		
4.5	4.0																		
6.0	-																		
6.0	-	101~200																	
6.0	-	201~300																	

Sheet Metal Mounting Plate · Brackets (For Sensors)

-Crank Bend Type-

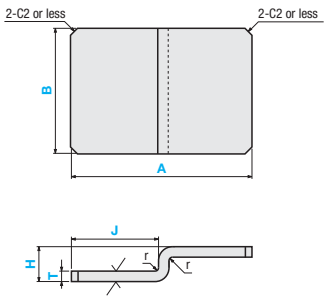
Type: KBU_ series are now available on our website.



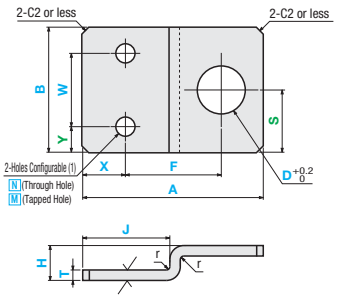
Part Number		M Material	S Surface Treatment
Type	Material Code		
SWBZS	SP	1.0330/DC01	-
SWCAS	SPB		Black Oxide
SWBAS	SPU		JIS STKM Bright Chromate Plating
SWBCS	AM	EN AW-5052	-
SWBCS	AMW		Clear Anodize
SWBBS	AMB		Black Anodize
SWBDS	SUD	1.4301 (2B)	-

Material for plate thickness 4.5 and 6.0 is 1.0320/St.22.

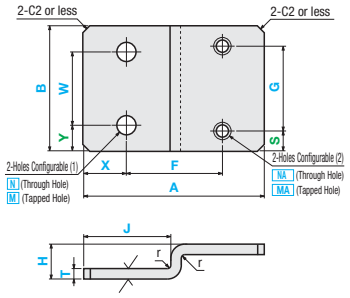
SWBZS (No Hole)



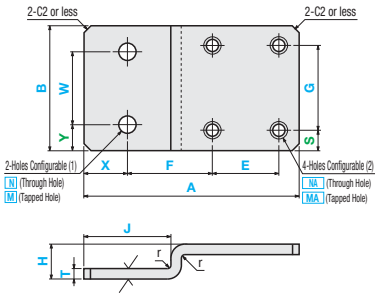
SWCAS



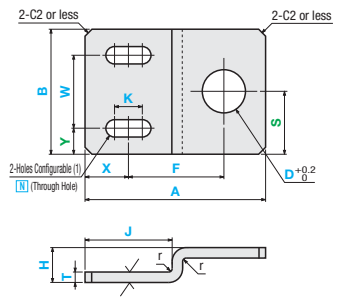
SWBAS



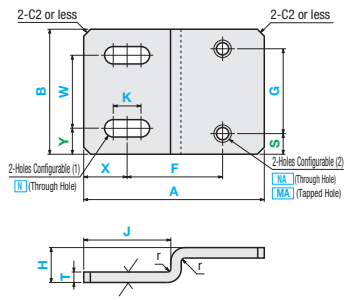
SWBCS



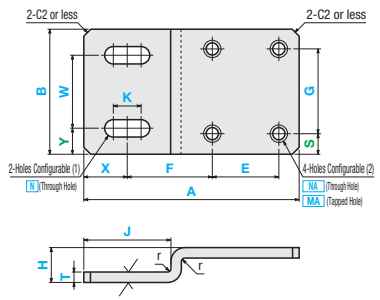
SWCBS



SWBBS



SWBDS



Part Number		1mm Increment		Selection	1mm Increment	Specify in 0.1mm Increment				Hole Configurable (1)		Specify in 0.1mm Increment					Hole Configurable (2)		Specify in 0.5mm Increment.
Type	Material Code	A	B	T	H	J	X	Y	W	Code	Nominal Dia.	K	F	E	S	G	Code	Nominal Dia.	D
SWBZS	SP SPB SPU AM AMW AMB SUD	20 to 200	10 to 200	Material Code: SP, SPB, SPU: Plate Thickness (T) 1.6 2.3 3.2 4.5 6.0; AM, AMW, AMB: 1.5 2.0 3.0; SUD: 1.5 2.0 3.0 4.0	10 to 100	J	–	–	–	–	–	–	–	–	–	–	–	–	–
SWCAS							X	Y	W	N M	0 (No Hole) 3 4 5 6 8 10	–	F	–	S	–	–	–	3~30
SWBAS							X	Y	W	N M		–	F	–	S	G	NA MA	0 (No Hole) 3 4 5 6 8 10	–
SWBCS							X	Y	W	N M		–	F	E	S	G	NA MA		–
SWCBS							X	Y	W	N		K	F	–	S	–	–	–	3~30
SWBBS							X	Y	W	N		K	F	–	S	G	NA MA	0 (No Hole) 3 4 5 6 8 10	–
SWBDS							X	Y	W	N		K	F	E	S	G	NA MA		–

When T≥3.0, A≥30. Material for plate thickness 4.5 and 6.0 is 1.0320/St.22. K≤Nx5

C0.2 to C0.5, unless otherwise specified.

Slotted Holes may be shaped as the right figure depending on dimensions.(The function as a mounting hole is not affected.)



No Hole configuration can be specified (except D hole). Specify 0 for all parameters about hole configuration.

Parameters in green is optional. When the parameters in green is not specified, the hole alignment will be even against the center.

Although hole deformation may occur when a hole is too close to the end face or the bent section, machining will follow the specification.

Order Example

Part Number																								
Type	-	Material Code	-	A	-	B	-	T	-	H	-	J	-	X	-	Y	-	W	-	Hole Configurable (1) Code · Nominal Dia.	-	K	-	F	-	E	-	S	-	G	-	Hole Configurable (2) Code · Nominal Dia.	-	D
SWBAS	-	SP	-	A80	-	B40	-	3.2	-	H30	-	J40	-	X20	-	Y10	-	W20	-	N4	-		-	F40	-		-	S6	-	G28	-	MA3	-	

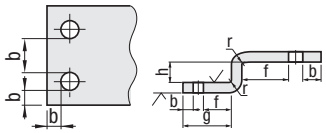
Part Number Change
Printed in Purple

Reduced Delivery Time

Price Reduction
8% on average

■Specifications · Machining Limits

(?)1. For tolerance, refer to P.2-1735
(?)2. Burr height 0.1 or less
(?)3. Bend Angle Tolerance ±1°
(?)4. Scratches caused by the press brake may occur. P.2-1735
(?)5. Swelling due to bending
(?)6. Machining limits (min. value)



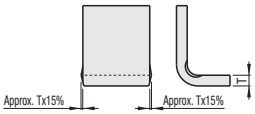
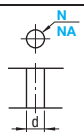
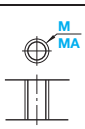
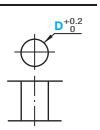


Plate Thickness (T)			r	f (Distance between holes and bends)			B (Distance between holes and ends)	h	g
1.0330 1.0320	EN AW-5052	1.4301 (2B)		N · NA	M · MA	D			
1.6	1.5	1.5	1.5	3.5	6	4	1	6	6
2.3	2.0	2.0	2	4.5	7	5	1.5	7	7
3.2	3.0	3.0	3	6.5	9	7	1.5	9	9
4.5	-	4.0	4	7.5	11	8	2	11	11
6.0	-	-	6	14	16	15	2.5	16	18

■Hole Selections

Holes	Through Hole	Female Thread Hole (Coarse)	Through Hole
Code	N · NA	M · MA	D
Diagram			
Machining Specifications	Dimensions: 3 / 4 / 5 / 6 / 8 / 10 (Screw Nominal Dia.); d: 3.5 / 4.5 / 5.5 / 6.5 / 9 / 11		3~30

Days to Ship

•Materials Code SP · AM · SUD: 8 Days

•Materials Code SPB · SPU · AMW · AMB: 13 Days

Express C: 5,00 EUR/ piece

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.
(?)Available only for material code AMW and AMB.

Price

■Volume Discount (?)Round down to one Cent.)

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

(?)Please request a quotation for orders of 40 or more identical pieces.

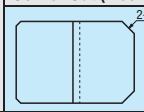
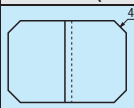
P.88
(?)Body price indicates the price without surface treatment. When specifying a surface treatment, add the surface treatment price to the body price.

A	B	T		Body Price										Surface Treatment Price (+ Body Price)		
		1.0330 1.0320	1.4301 EN AW-5052	SWBZS			SWCAS			SWBAS			SWBCS			Black Oxide JIS STKM Bright Chromate Plating	Clear Anodize	Black Anodize
				SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SPB SPU	AMW	AMB
20~100	10~100	1.6	1.5															
		2.3	2.0															
		3.2	3.0															
		4.5	4.0															
		6.0	-															
	101~200	1.6	1.5															
		2.3	2.0															
		3.2	3.0															
		4.5	4.0															
		6.0	-															
101~200	10~100	1.6	1.5															
		2.3	2.0															
		3.2	3.0															
		4.5	4.0															
		6.0	-															
	101~200	1.6	1.5															
		2.3	2.0															
		3.2	3.0															
		4.5	4.0															
		6.0	-															

A	B	T		Body Price									Surface Treatment Price (+ Body Price)		
		1.0330 1.0320	1.4301 EN AW-5052	SWCBS			SWBBS			SWBDS			Black Oxide JIS STKM Bright Chromate Plating	Clear Anodize	Black Anodize
				SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SPB SPU	AMW	AMB
20~100	10~100	1.6	1.5												
		2.3	2.0												
		3.2	3.0												
		4.5	4.0												
		6.0	-												
	101~200	1.6	1.5												
		2.3	2.0												
		3.2	3.0												
		4.5	4.0												
		6.0	-												
101~200	10~100	1.6	1.5												
		2.3	2.0												
		3.2	3.0												
		4.5	4.0												
		6.0	-												
	101~200	1.6	1.5												
		2.3	2.0												
		3.2	3.0												
		4.5	4.0												
		6.0	-												

Alterations

Part Number									
Type	-	Material Code	- A -	B -	T -	H -	J -	(CC · WCC)
SWBZS	-	SUD	- A100 -	B50 -	T2.0 -	H20 -	J50 -	CC5

Alterations	Corner Cut (2 corners)	Corner Cut (4 corners)
		
Code	CC	WCC
Spec.	CC = Specify in 1mm Increment (?)1≤CC≤10 Ordering Code Adds CC to the end of the part number. (Ex.) ~-CC10	WCC = Specify in 1mm Increment (?)1≤WCC≤10 Ordering Code Adds WCC to the end of the part number. (Ex.) ~-WCC10
Price Adder	2,00	4,00

Sheet Metal Mounting Plate · Brackets (For Sensors)

-Convex-shaped Bend Type-

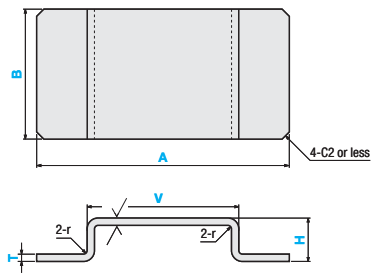
Type: KBU_ series are now available on our website.



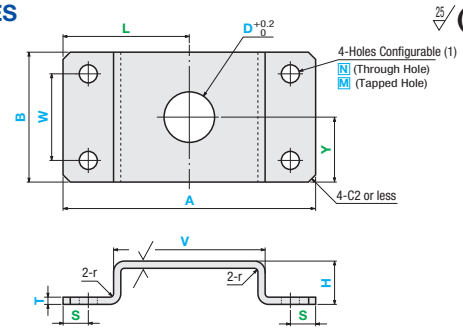
Part Number		Material	Surface Treatment
Type	Material Code		
BLUZS BLUES BLUFS BLUJS	SP	1.0330/DC01	-
	SPB		Black Oxide
	SPU		STKM Bright Chromate Plating
	AM	EN AW-5052/ AlMg2,5	-
	AMW		Clear Anodize
	AMB		Black Anodize
	SUD	1.4301/ X5CrNi18-10 (2B)	-

Material for plate thickness 4.5 and 6.0 is 1.0320/St.22.

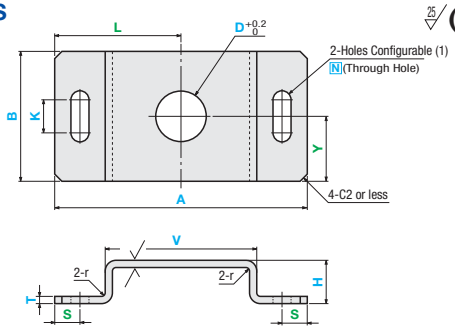
BLUZS (No Hole)



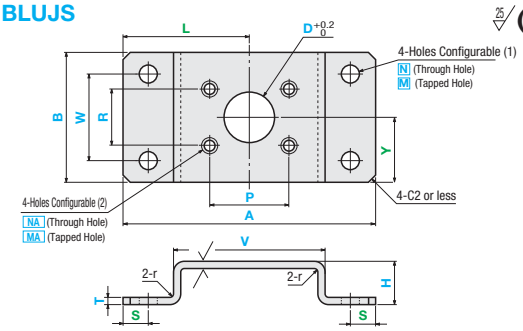
BLUES



BLUFS



BLUJS



Part Number		1mm Increm.		Selection	1mm Increment		0.1mm Increment		Hole Configurable (1)		0.1mm Increment			0.5mm Increment	0.1mm Increment		Hole Configurable (2)	
Type	Material Code	A	B	T	H	V	S	W	Code	Nominal Dia.	K	L	Y	D	P	R	Code	Nominal Dia.
BLUZS	SP SPB SPU AM AMW AMB SUD	30 ~ 200	20 ~ 200	Material Code: SP SPB SPU: Plate Thickness (T) 1.6 2.3 3.2 4.5 6.0; AM AMW AMB: 1.5 2.0 3.0; SUD: 1.5 2.0 3.0 4.0	10 ~ 100	min 15 ~	–	–	–	–	–	–	–	–	–	–	–	–
BLUES							S	W	N M	0 (No Hole) 3 4 5 6 8 10	–	L	Y	3~30	–	–	–	–
BLUFS							S	–	N		K	L	Y	3~30	–	–	–	–
BLUJS							S	W	N M		–	L	Y	3~30	P	R	NA MA	0 (No Hole), 3, 4, 5, 6, 8, 10

Material for plate thickness 4.5 and 6.0 is 1.0320/St.22. V≥H K≤Nx5

C0.2 to C0.5, unless otherwise specified.

Slotted Holes may be shaped as the right figure depending on dimensions. (The function as a mounting hole is not affected.)



No Hole configuration can be specified (except D hole). Specify 0 for all parameters about hole configuration.

Parameters in green is optional. When the parameters in green is not specified, the hole alignment will be even against the center.

Although hole deformation may occur when a hole is too close to the end face or the bent section, machining will follow the specification.

Order Example

Part Number																						
Type	-	Material Code	-	A	-	B	-	T	-	H	-	V	-	S	-	W	-	Hole Configurable (1) Code · Nominal Dia.	-	K	-	L	-	Y	-	D	-	P	-	R	-	Hole Configurable (2) Code · Nominal Dia.
BLUJS	-	SUD	-	A80	-	B40	-	T3.0	-	H40	-	V50	-	S7	-	W20	-	N3				-	L40	-	Y20	-	D20	-	P30	-	R30	-	NA3

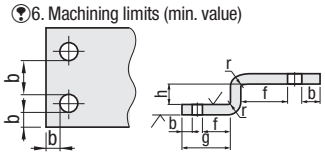
Part Number Change
Printed in Purple

Reduced Delivery Time

Price Reduction
6% on average

Specifications · Machining Limits

1. For tol., refer to P2-1735
2. Burr height 0.1 or less
3. Bend Angle Tolerance ±1°
4. Scratches caused by the press brake may occur. P2-1735
5. Swelling due to bending
6. Machining limits (min. value)



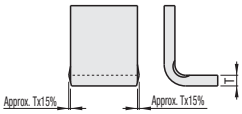
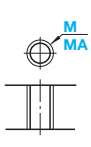
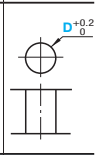


Plate Thickness (T)			r	f (Distance between holes and bends)			B	h	g
1.0330 1.0320	EN AW-5052	1.4301 (2B)		Through Hole	Female Thread Hole	D hole Slotted Hole parallel to the bending	(Distance between holes and ends)		
1.6	1.5	1.5	1.5	3.5	6	4	1	6	6
2.3	2.0	2.0	2	4.5	7	5	1.5	7	7
3.2	3.0	3.0	3	6.5	9	7	1.5	9	9
4.5	-	4.0	4	7.5	11	8 (9)	2	11	11
6.0	-	-	6	14	16	15	2.5	16	18

f of slotted hole parallel to the bending of T4.0 and 4.5 is (9).

Hole Selections

Holes	Through Hole	Female Thread Hole (Coarse)	Through Hole
Code	N · NA	M · MA	D
Diagram			
Machining Specifications	Dimensions: d	Screw Nominal Dia.: 3 / 4 / 5 / 6 / 8 / 10	3~30
	d	3.5 / 4.5 / 5.5 / 6.5 / 9 / 11	

Days to Ship

• Materials Code SP · AM · SUD: **8 Days**

• Materials Code SPB · SPU · AMW · AMB: **13 Days**

Express C: 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.
Available only for material code AMW and AMB.

Price

Volume Discount (Round down to one Cent.)

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

Please request a quotation for orders of 40 or more identical pieces.

Body price indicates the price without surface treatment. When specifying a surface treatment, add the surface treatment price to the body price.

A	B	T		€ Body Price												Surface Treatment Price (€+ Body Price)			
		1.0330 1.0320	1.4301 EN AW-5052	BLUZS			BLUES			BLUFS			BLUJS			Black Oxide	JIS STKM Bright Chromate Plating	Clear Anodize	Black Anodize
				SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SP	AM	SUD	SPB	SPU	AMW	AMB
30~120	20~100	1.6	1.5																
		2.3	2.0																
		3.2	3.0																
		4.5	4.0																
		6.0	-																
	101~140	1.6	1.5																
		2.3	2.0																
		3.2	3.0																
		4.5	4.0																
		6.0	-																
	141~200	1.6	1.5																
		2.3	2.0																
		3.2	3.0																
		4.5	4.0																
		6.0	-																
121~200	20~100	1.6	1.5																
		2.3	2.0																
		3.2	3.0																
		4.5	4.0																
		6.0	-																
	101~140	1.6	1.5																
		2.3	2.0																
		3.2	3.0																
		4.5	4.0																
		6.0	-																
	141~200	1.6	1.5																
		2.3	2.0																
		3.2	3.0																
		4.5	4.0																
		6.0	-																

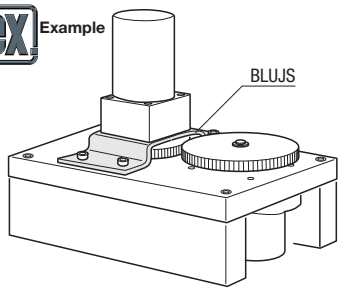
Alterations

Part Number: Type - Material Code - A - B - T - H - V - (CC)

BLUZS - SP - A100 - B50 - T2.3 - H20 - V70 - CC10

Alteration	Corner Cut (4 corners)
	4-CC 
Code	CC
Spec.	CC = Specify in 1mm Increment 1≤CC≤20 Ordering Code Adds CC to the end of the part number. (Ex.) ~-CC10
Price Adder	4,00

Example



Limit Switch Flags
-Set Screw Type-

CAD Data

For Proximity Sensor Flags, refer to P.1744

Set Screw Type



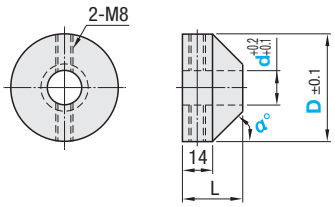
RoHS

Part number
is not applicable.

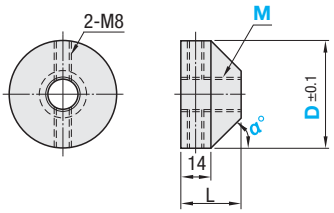
Shape	Shaft Bore	Type	Material	Surface Treatment	Accessories
One End Cone Type	Through Hole	DGSM	1.1191/C45E	Black Oxide	Set Screws 2pcs.
Both Ends Cone Type		DGWM			
One End Cone Type	Female Thread Hole	DMSM	1.1191/C45E	Black Oxide	Set Screws 2 pcs. / Brass Ball 2 pcs.
Both Ends Cone Type		DMWM			

6.3

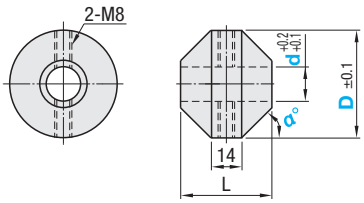
DGSM (One End Cone Type with Through Hole and Set Screw)



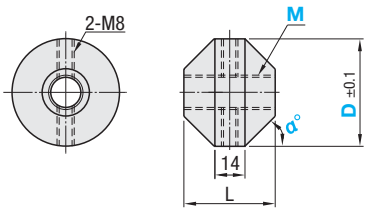
DMSM (One End Cone Type with Female Thread Hole and Set Screw)



DGWM (Both Ends Cone Type with Through Hole and Set Screw)



DMWM (Both Ends Cone Type with Female Thread Hole and Set Screw)



One End Cone · Both Ends Cone Type with Through Hole and Set Screw

Part Number		d		α°		L	€ Unit Price	Volume Discount
Type	D						Qty. 1~9	10~50
DGSM	30	10		45		22		
	40	12	16	30	45	24		
	50					28		
DGWM	30	10		45		30		
	40	12	16	30	45	34		
	50					42		

For orders larger than indicated quantity, please request a quotation.

One End Cone · Both Ends Cone Type with Female Thread Hole and Set Screw

Part Number		M (Coarse)		α°		L	€ Unit Price	Volume Discount
Type	D						Qty. 1~9	10~50
DMSM	30	10		45		22		
	40	12	16	30	45	24		
	50					28		
DMWM	30	10		45		30		
	40	12	16	30	45	34		
	50					42		

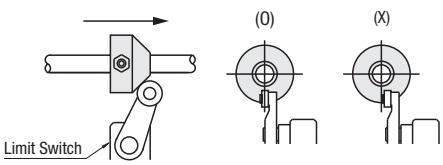
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number					
Type	D	-	d, M	-	α°
DGSM	30	-	10	-	45

Days to Ship 6 Days P.87

Example



Limit Switch Flags
-Slit Type-

CAD Data

For Proximity Sensor Flags, refer to P.1744

Slit Type



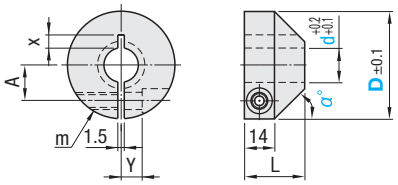



RoHS

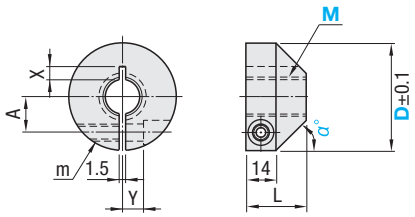
Shape	Shaft Bore	Type	Material	Surface Treatment	Accessories
One End Cone Type	Through Holes	DGSA	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screw 1pc.
Both Ends Cone Type		DGW			
One End Cone Type	Female Thread Hole	DMSA	1.1191/ C45E	Black Oxide	
Both Ends Cone Type		DMW			

6.3

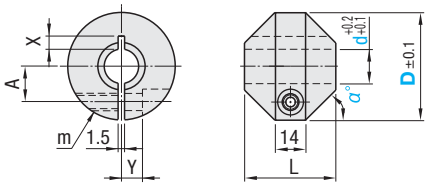
DGSA (One End Cone Type with Through Hole and Slit)



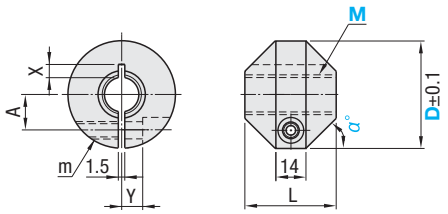
DMSA (One End Cone Type with Female Thread Hole and Slit)



DGW (Both Ends Cone Type with Through Hole and Slit)



DMW (Both Ends Cone Type with Female Thread Hole and Slit)



One End Cone · Both Ends Cone Type with Through Hole and Slit

Part Number Type	D	d	(α°)	L	m (Coarse)	A	X	Y	€ Unit Price Qty. 1~9	Volume Discount 10~50
DGSA	30	10	45	22	M5	9.0	6	6		
	40	12 16	30 45	24	M6	14.0	7	8		
	50			28	M8	16.5	10	10		
DGW	30	10	45	30	M5	9.0	6	6		
	40	12 16	30 45	34	M6	14.0	7	8		
	50			42	M8	16.5	10	10		

For orders larger than indicated quantity, please request a quotation.

One End Cone · Both Ends Cone Type with Female Thread Hole and Slit

Part Number Type	D	M (Coarse)	(α°)	L	m (Coarse)	A	X	Y	€ Unit Price Qty. 1~9	Volume Discount 10~50
DMSA	30	10	45	22	M5	9.0	6	6		
	40	12 16	30 45	24	M6	14.0	7	8		
	50			28	M8	16.5	10	10		
DMW	30	10	45	30	M5	9.0	6	6		
	40	12 16	30 45	34	M6	14.0	7	8		
	50			42	M8	16.5	10	10		

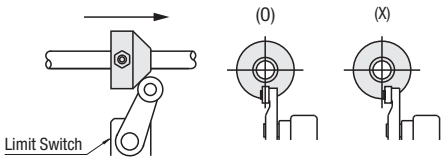
For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number Type	D	-	d, M	-	α°
DGSA	40	-	12	-	45

Days to Ship: 6 Days P.87

Example



Positioning Switch -Contact Type-

-Overview-

Switch Type		Signal Point Repeata-bility*1	Contact Point Accuracy Life*2	Operating Temp. Range	Page
Small Contact Switch		0.003mm	3,000,000 times	*3 0~80°C	P.1771
High Precision Touch Switch		0.0005mm			P.1772
Contact Switch		0.005mm	10,000,000 times		P.1773 ~ P.1776
with Stopper Switch		0.01mm (Except Flat Type)	10,000,000 times		P.1777 ~ P.1780
Plunger Switch					P.1782
Heat-Resisting Switch		At Ambient Temperature 0.01mm	500,000 times	0~200	P.1781

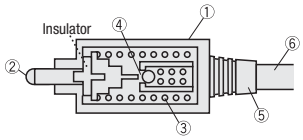
■Feature

Contacting switch that can detect position highly accurately without being affected by materials, shapes, magnetism, luminosity of the detected objects.

■Basic Structure

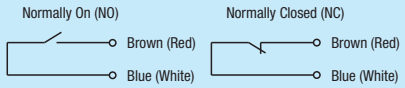
Designed to open · close with high repeatability in sync. with the contact point.

(1) Switch Enclosure
(2) Contact Point
(3) Spring
(4) Switch Contact
(5) Cable Strain Relief
(6) Cable

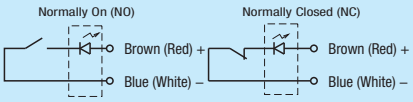


■Schematics

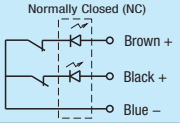
All Types



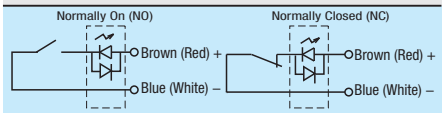
Common to all LED types



2 Signal Type w/ LEDs



High Precision Touch Switch Type



*1 Operating Speed 50~200mm/min
*2 When used at rated voltage and rated current without failure of switch caused by vibration.
*3 The encapsulated structure of the IP67 Type may cause the of returning delay in low temperatures (5°C or less).

■Mechanical Specifications

Vibrations	10~55Hz, Stroke 1.5mm in Respective X, Y, Z Direction
Impact	300m/s² in Respective X, Y, Z Direction
Allowable Operating Speed	10mm~5m/min
Cable Tensile Strength	30N or less
Cable Min. Bending Radius	R7mm

■Electrical Specifications

Contact Rating	DC5~24V 20mA (MAX) Resistive Load (10mA with LED)
Dielectric Strength	100MΩ or More DC250V Megohm-meter
Withstand Voltage	AC500V 50/60Hz, 1 min. between Each Terminal and Case

■Others

These switches are designed for low voltage and low current, and are not applicable to Export Trade Control Ordinance, CE Marking and China Compulsory Certification.

■Hazards and Warnings

1. Accident may occur with circuit damages due to abnormal generation of heat, smoke and fire in the following conditions.
   a. When switch ratings, cycle life, environment conditions and others exceed the operating range.
   b. When electric wire and connectors are used over the allowable operating current capacity.
   c. When cables are exposed near to the heat generating objects.
2. Safety measures such as redundant circuits are necessary to avoid a serious accidents resulting in injury or death or further damage caused by the failures in operation.
3. When signal output failure may cause the damage of equipment or machine, install an emergency stop.

■Design Precautions

• Degree of Protection
· Note that sealing ability may be affected by operational conditions or environment, such as cutting oil, chemicals, or existence of dust. Select machine types referring to the IP codes.
· Do not use the switches with exposed rubber boots under the environment where metal chips may fall on products, as rubber boots will be damaged.

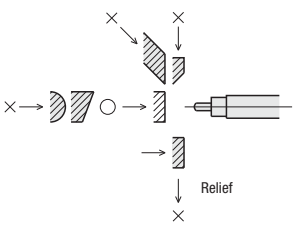
• Contact Angle
· Contacting angle of the switch to objects should be within ±3° (±1° for Deceleration Signal Type). (Excluding: Wide Contact Angle Type, Ball Contact Type, Ball Plunger Type) (Fig.1).

• Stroke
· Detected subjects should not collide with the switch housing (except switches with stoppers). Install a stopper if the risk of collision exists.(Fig.2)
(Please confirm the impact resistance of switches with stopper, referring to the relative catalog pages.)

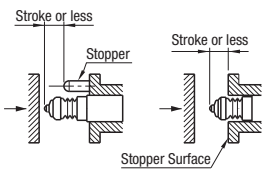
• Contact Speed
· Do not use at low speed contact (10mm/min or less). That will cause prolonged operational instability and resultant deterioration of the switch contacts.

• Effects of micro-vibration
· Do not use the switch in an environment where chattering arises from micro-vibrations.

(Fig.1)



(Fig.2)



Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

■Installation Precautions

• Cable Damages

· Excessive force on cable inlet and sensor body may cause wire breakage.
Do not twist or tug outer insulation of cables and conductors at 30N (3kgf) or more.
· Bending radius is to be R7 or more.
· When clamping the cable to stop from moving around, ensure to avoid excessive force on cable inlet and sensor body.
When clamping cables in a bundle, take special care not to apply excessive force on switches.

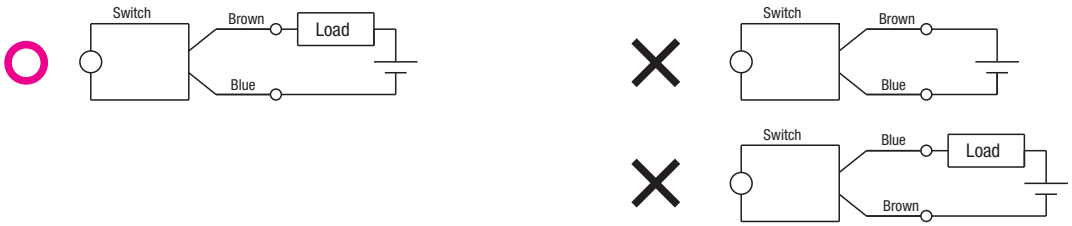
• Clamping of Knurled Head

· Clamping with tools, such as long nose pliers, may cause damages.
Tighten firmly with fingers.

■Precautions on Electrical Wiring

• Connecting to power

· Direct connection to the power will damage the switch and the internal element.
· Install correctly noting the polarity.

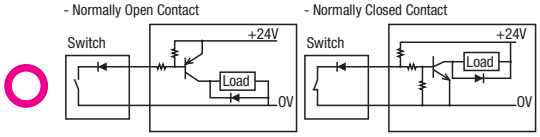


• Connection with Inductive Load

· Direct connection to an inductive load will damage the switch.
· If the switch is to be connected to an inductive load, include a drive circuit for the load.

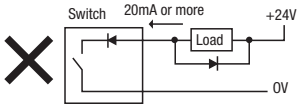
Good Example

- Normally Open Contact - Normally Closed Contact



Bad Example

Connecting as shown will damage the switch.



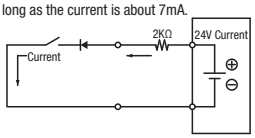
• Grounding

· When grounded the machine's DC power 0V, ensure to connect the switch on the GND side.
(If the switch is connected on + side, the switch may be damaged at the moment the – side of switch touches the body.)



• About Wiring of Switch with LED

· To prevent damage to the LED due to unexpected over current, insert a current limiting resistor.
· For load within the switch rating or installing to a PLC, current limiting resistors are not necessary as long as the current is about 7mA.



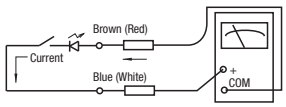
-The type with LED has polarity. The brown cable is positive (+), while the blue one is negative (–). Install correctly.

• Wiring

1. Use within the contact ratings.
2. Do not pull or twist the cable and conductor wire with excessive force. Bending radius is to be R7 or more.
3. When the machine is grounded, connect the switch to the grounded side.
4. Noises and surges may induce the over rated current and damage the switch contact. Switch wiring should be located away from power sources or noise sources.
5. When the cord is extended, use cabtyre cable with sectional areas of 0.3mm² or more.
6. When the switch drives the relay etc., use the coil current of around 10mA.

■Confirmation of Switch Action

· Correct Circuit Check Method Using Analog Multimeter



LED lights when the contact is closed.

Analog Multimeter: Confirm in Ohms Range x10

⚠Measurement of Contact Resistance Using Digital Multimeter.

Switches with LEDs cannot be measured correctly in ohms range.

Only when there is a voltage output terminal, LED ON state can be confirmed.

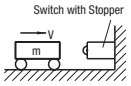


■Calculation of Impact Energy

Please confirm the impact resistance of switches with stoppers, referring to the relative catalog pages.

Pure Horizontal Impact	Vertical Free Fall
$E=1/2mv^2$	$E=mgh$
E: Energy J	E: Energy J
m: Mass kg	g: Gravitational Acceleration 9.8m/s²
v: Speed m/s	h: Drop Height m

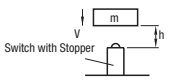
Pure Horizontal Impact



Calculation Example

m	V	1/2mv² [J]
4	0.3	0.18
5	0.4	0.4
20	0.2	0.4

Vertical Free Fall



m	H	v= $\sqrt{2gh}$	mgh [J]
0.4	0.05	1	0.2
0.4	0.1	1.4	0.4

■Changes about Cable Protector

Cable Protectors are omitted from some products for more compactness.
Please refer to product pages for details.

<Before Change> <After Change>



Compact Contact Switches
-Compact Type / NO (Normally Open) Type-

CAD Data

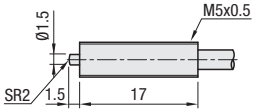
Features: O.D. is M5 or Ø5, overall length is 17mm, (Regular) Compact Contact Switches.

Compact Type RoHS

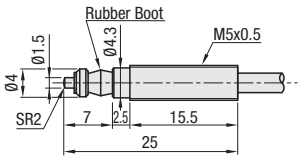


Bolt

Regular (IP40)
CMST
N-CMST
(With LED)

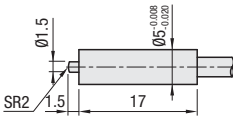


Water-Proof (IP67)
CMSTW
N-CMSTW
(With LED)

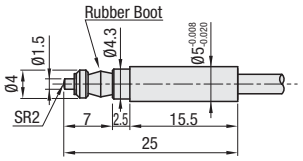


Standard

Regular (IP40)
CMSC
N-CMSC
(With LED)



Water-Proof (IP67)
CMSCW
N-CMSCW
(With LED)



Contact Part		Main Body	Cable	Accessories
Material	Hardness	Material		
1.4028/ X30Cr13	45HRC	1.4305/ X10CrNiS18-9	Ø3 Oil-resistant Cables 2m Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 2.4, Wrench Size 7)

Bolt

Part Number / Type	Stroke	Operating Point	Contact Force N	Contact Mechanism	€ Unit Price Qty. 1~9	
					CMST / CMSTW	N-CMST / N-CMSTW
Regular (IP40) **CMST** **N-CMST**	1.5	No Pre-Travel (Repeatability 0.003)	0.5N	NC (Normally Closed)		
Water-Proof (IP67) **CMSTW** **N-CMSTW**			0.8N			

For orders larger than indicated quantity, please request a quotation.

Standard

Part Number / Type	Stroke	Operating Point	Contact Force N	Contact Mechanism	€ Unit Price Qty. 1~9	
					CMSC / CMSCW	N-CMSC / N-CMSCW
Regular (IP40) **CMSC** **N-CMSC**	1.5	No Pre-Travel (Repeatability 0.003)	0.5N	NC (Normally Closed)		
Water-Proof (IP67) **CMSCW** **N-CMSCW**			0.8N			

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: **CMST**

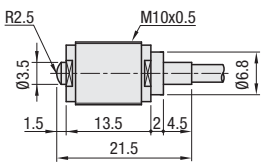
Days to Ship: **6 Days** P. 87

For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

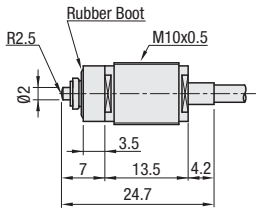
NO (Normally Open)Type RoHS



Regular (IP65)
CMSM
N-CMSM



Water-Proof (IP67)
CMSMW
N-CMSMW



Contact Part		Main Body	Cable	Accessories
Material	Hardness	Material		
JIS SUS	50HRC	1.4305/ X10CrNiS18-9	Ø3 Oil-resistant Cables 2m Min. Bending Radius R7	Wrench - Hexagon Nut (Thickness 3, Wrench Size 13)

NO (Normally Open) Type

Part Number / Type	Stroke	Operating Point	Contact Force N	Contact Mechanism	€ Unit Price Qty. 1~9	
					CMSM / CMSMW	N-CMSM / N-CMSMW
Regular (IP65) **CMSM** **N-CMSM**	1.5	0.3 from Tip (Repeatability 0.003)	1N	NO (Normally Open)		
Water-Proof (IP67) **CMSMW** **N-CMSMW**						

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: **N-CMSMW**

Days to Ship: **6 Days** P. 87

High Precision Touch Switches

-Bolt / Tip Shape Selectable / Flat-

CAD Data

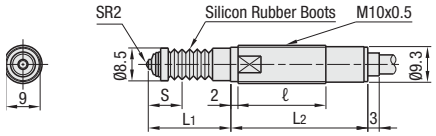
⚠ Do not use in environments where coolant or dust from machining may fall on the product.
The silicon (rubber) boots may be damaged.

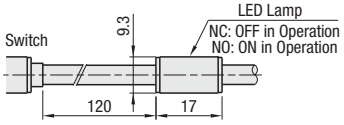
■Bolt (Degree of Protection IP67)



RoHS

3mm Stroke **MSTK** **N-MSTK-D** (With LED)
6mm Stroke **N-MSTKM-D** (With LED)
10mm Stroke **MSTKL** **N-MSTKL-D** (With LED)





- Use within the contact ratings.
- Do not pull or twist the cable with 30N or more.

Contact Part		Main Body	Cable	Accessories
M Material	H Hardness	M Material		
Carbide	1300~1600HV	1.4305/ X10CrNiS18-9	Cable 3m, 2-Conductors Ø5, Oil Resistant, Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 3 Wrench Size 13)

Part Number	Contact Mechanism	Stroke S	Operating Point	Operating Point Repeatability	Contact Force N	L1	L2	ℓ	MSTK / MSTKL € Unit Price Qty. 1~9	MSTK / MSTKL Volume Discount 10~19	N-MSTK (M / L)-D € Unit Price Qty. 1~9	N-MSTK (M / L)-D Volume Discount 10~19
MSTK N-MSTK-D	NC	3	No Pre-Travel	0.0005	1	15	23.2	18.2				
	NO		0.2				31	26				
N-MSTKM-D	NC	6	No Pre-Travel			22	36	23				
MSTKL N-MSTKL-D		10				26	40					

For orders larger than indicated quantity, please request a quotation.

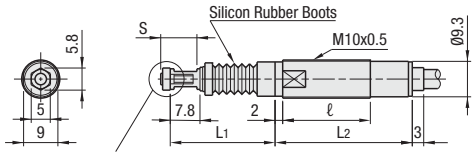
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

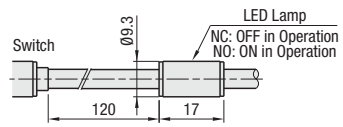
■Shape Selectable (Degree of Protection IP67)



RoHS

3mm Stroke **MSTA** **N-MSTA-D** (With LED)
6mm Stroke **MSTAM** **N-MSTAM-D** (With LED)
10mm Stroke **MSTAL** **N-MSTAL-D** (With LED)

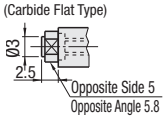




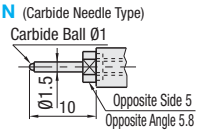
Tip Shape Selection

- Tip Shapes

F (Carbide Flat Type)



N (Carbide Needle Type)



- Use within the contact ratings.
- Do not pull or twist the cable with 30N or more.

Contact Part		Main Body	Cable	Accessories
M Material	H Hardness	M Material		
Carbide	1300~1600HV	1.4305/ X10CrNiS18-9	Cable 3m, 2-Conductors Ø5, Oil Resistant, Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 3 Wrench Size 13)

Part Number Type	Part Number Tip Shapes	Contact Mechanism	Stroke S	Operating Point	Operating Point Repeatability	Contact Force N	L1	L2	ℓ	MSTA (M / L) € Unit Price Qty. 1~9	MSTA (M / L) Volume Discount 10~19	N-MSTA (M / L)-D € Unit Price Qty. 1~9	N-MSTA (M / L)-D Volume Discount 10~19
MSTA N-MSTA-D	F N	NC	3	No Pre-Travel	0.0005	1	20.5	23.2	18.2				
		NO		0.2				31	26				
MSTAM N-MSTAM-D		NC	6	No Pre-Travel			27.5	36	23				
MSTAL N-MSTAL-D			10				31.5	40					

For orders larger than indicated quantity, please request a quotation.

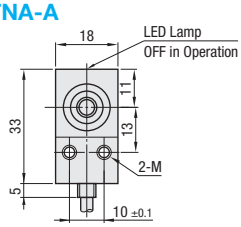
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

■Flat (Degree of Protection IP67)

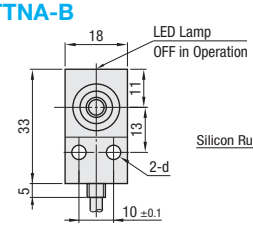


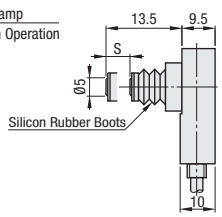
RoHS

MSTTNA-A



MSTTNA-B





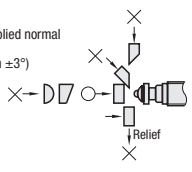
- Use within the contact ratings.
- Do not pull or twist the cable with 30N or more.

Contact Part		Main Body		Cable
M Material	H Hardness	M Material	S Surface Treatment	
Carbide	1300~1600HV	Aluminum	Clear Anodize	Cable 3m, 2-Conductors Ø5, Oil Resistant Min. Bending Radius R7

Part Number	Contact Mechanism	Stroke S	Operating Point	Contact Force N	d	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSTTNA-A	NC	3	No Pre-Travel (Repeatability 0.0005)	1.5	M4		
MSTTNA-B					Ø4.6		

For orders larger than indicated quantity, please request a quotation.

(All Types)
⚠ Force must be applied normal to the switch.
(Declination within ±3°)



Order Example

Part Number	-	Contact Mechanism
MSTK	-	NC
N-MSTA-DF	-	NC
MSTTNA-A	-	NC

Days to Ship **6 Days** P. 87

Contact Switches
-Standard / L-shaped-

CAD Data

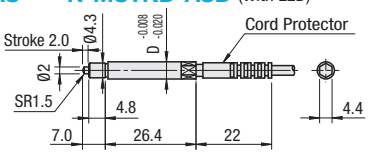
Removed Cable Protectors from MSTKD-C, N-MSTKD-CD, MSTKD-H, N-MSTKD-HD to allow the product being more compact.

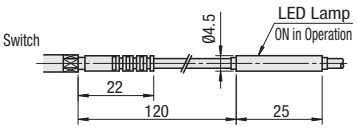
■Standard (Degree of Protection IP65) RoHS



MSTKD-AS N-MSTKD-ASD (With LED)

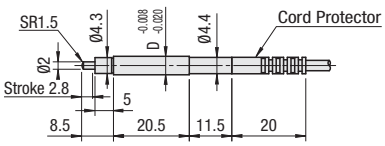
(D=Ø5)

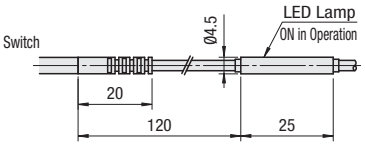




MSTKD-A N-MSTKD-AD (With LED)

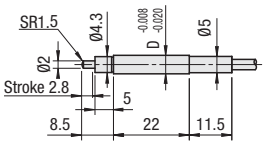
(D=Ø5)

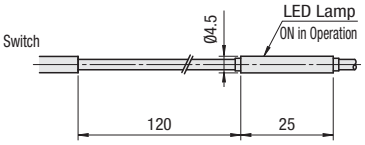




MSTKD-C N-MSTKD-CD (With LED)

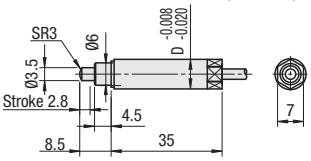
(D=Ø6)

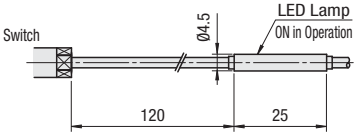




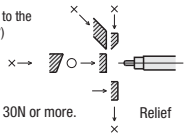
MSTKD-H N-MSTKD-HD (With LED)

(D=Ø8)





⚠ Force must be applied normal to the switch.(Declination within ±3°)



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

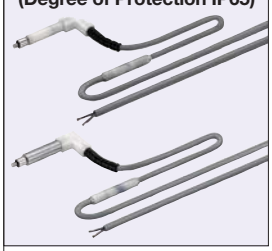
Type		Contact Part		Main Body	Cable
		Material	Hardness	Material	
MSTKD-A	N-MSTKD-AD	1.4028/ X30Cr13	45~50HRC	ABS Plastic	Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7
MSTKD-AS	N-MSTKD-ASD			1.4305/ X10CrNiS18-9	
MSTKD-C	N-MSTKD-CD				
MSTKD-H	N-MSTKD-HD				

Part Number		D	Stroke	Operating Point	Contact Force N	Contact Mechanism	MSTKD-AS / A / C / H		N-MSTKD-ASD / AD / CD / HD	
							€ Unit Price	Vol. Discount	€ Unit Price	Vol. Discount
							Qty. 1~9	10~19	Qty. 1~9	10~19
MSTKD-AS	N-MSTKD-ASD	5	2.0	0.3 from Tip (Repeatability 0.005)	1	NO (Normally Open)				
MSTKD-A	N-MSTKD-AD		2.8							
MSTKD-C	N-MSTKD-CD	6								
MSTKD-H	N-MSTKD-HD	8								

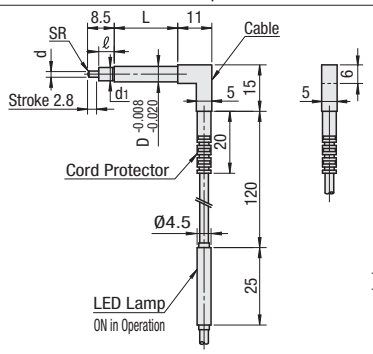
For orders larger than indicated quantity, please request a quotation.

For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

■L-Shaped (Degree of Protection IP65) RoHS

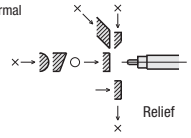


N-MSTKG-A (With LED)
N-MSTKG-C (With LED)



- Use within the contact ratings.
- Do not pull or twist the cable with 30N or more.- Note that cable inlets should avoid the bending or twisting force.

⚠ Force must be applied normal to the switch. (Declination within ±3°)



Type	Contact Part		Main Body	Cable
	Material	Hardness	Material	
N-MSTKG-A	1.4028/ X30Cr13	45~50HRC	ABS Plastic	Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7
N-MSTKG-C			1.4305	

Part Number	D	Stroke	Operating Point	Contact Force N	Contact Mechanism	L	ℓ	d	d1	SR	€ Unit Price	Vol. Discount
											Qty. 1~9	10~19
N-MSTKG-A	5	2.8	0.3 from Tip (Repeatability 0.005)	1	NO (Normally Open)	20.5	5	2	4.3	1.5		
N-MSTKG-C	6					20.5	5	2	4.3	1.5		

For orders larger than indicated quantity, please request a quotation.

Order Example

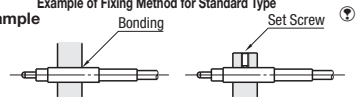
Part Number
MSTKD-A
N-MSTKG-A

Days to Ship

6 Days P.87

ex. Example

Example of Fixing Method for Standard Type



For ABS body switches (MSTKD–A, N–MSTKD–AD, N–MSTKG–A), use adhesive that contains no organic solvents. When fixing with a set screw, set it at about 15 mm from the switch tip. Tighten only by 1/2 turn more after the screw tip makes contact.

Contact Switches
-Bolt Type / Bolt Type Long Stroke / L-Shaped Bolt-/

CAD Data

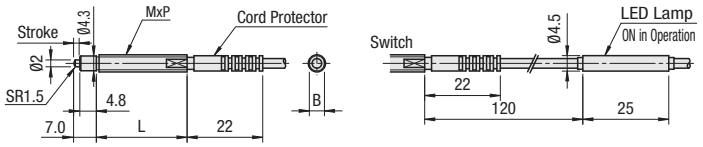
Removed Cable Protectors from to allow the product being more compact.

■Bolt (Degree of Protection IP65) RoHS



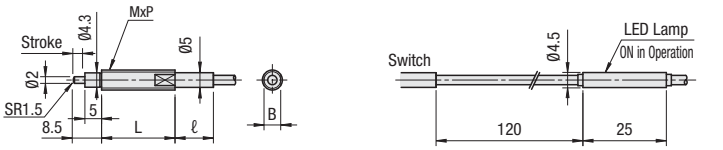
MSTKD-J **N-MSTKD-JD** (With LED)

(M5)

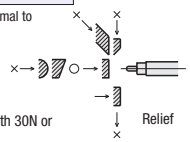


MSTKD-B **N-MSTKD-BD** (With LED) **MSTKD-BF** **N-MSTKD-BFD** (With LED) **MSTKD-BB** **N-MSTKD-BBD** (With LED) **N-MSTKD-ED** (With LED)

(M6, 8)



Force must be applied normal to the switch.
(Declination within ±3°)



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Contact Part		Main Body		Cable	Accessories
M Material	H Hardness	M Material			
1.4028/ X30Cr13	45~50HRC	1.4305/ X10CrNiS18-9		Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. M5: Thickness 2.4, Wrench Size 7 M6: Thickness 3.2, Wrench Size 8 M8: Thickness 3.2, Wrench Size 10

Part Number	MxP (Fine)	Stroke	Operating Point	Contact Force N	Contact Mecha-nism	L	ℓ	B	MSTKD-J / B / BF / BB € Unit Price Qty. 1~9	MSTKD-J / B / BF / BB Vol. Discount 10~19	N-MSTKD-JD / BD / BFD / BBD / ED € Unit Price Qty. 1~9	N-MSTKD-JD / BD / BFD / BBD / ED Vol. Discount 10~19
MSTKD-J N-MSTKD-JD	M5x0.5	2.0	0.3 from Tip (Repeatability 0.005)	1	NO (Normally Open)	26.4	-	4.4				
MSTKD-B N-MSTKD-BD	M6x0.75	2.8		0.5		22	11.5	5				
MSTKD-BF N-MSTKD-BFD												
MSTKD-BB N-MSTKD-BBD				1	NC (Normally Closed)	22	11.5					
N-MSTKD-ED	M8x0.75				NO (Normally Open)	22	11.5	7				

For orders larger than indicated values, please request for quotation.

For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

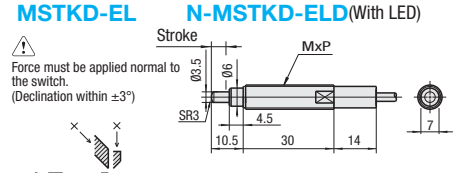
Cable Protectors are omitted for more compactness.

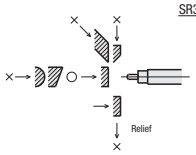
■Long Stroke (Degree of Protection IP65) RoHS



MSTKD-EL **N-MSTKD-ELD**(With LED)

Force must be applied normal to the switch.
(Declination within ±3°)





· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

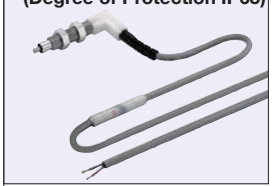
Contact Part		Thread		Cable	Accessories
M Material	H Hardness	M Material			
1.4028/ X30Cr13	45~50HRC	1.4305/ X10CrNiS18-9		Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 3.2 Wrench Size 10)

Part Number	MxP (Fine)	Stroke	Operating Point	Contact Force N	Contact Mechanism	MSTKD-EL € Unit Price Qty. 1~9	MSTKD-EL Vol. Discount 10~19	N-MSTKD-ELD € Unit Price Qty. 1~9	N-MSTKD-ELD Vol. Discount 10~19
MSTKD-EL N-MSTKD-ELD	8x0.75	5	0.3 from Tip (Repeatability 0.005)	1	NO (Normally Open)				

For orders larger than indicated quantity, please request a quotation.

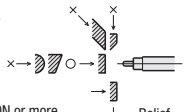
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

■L-Shaped Bolt (Degree of Protection IP65) RoHS

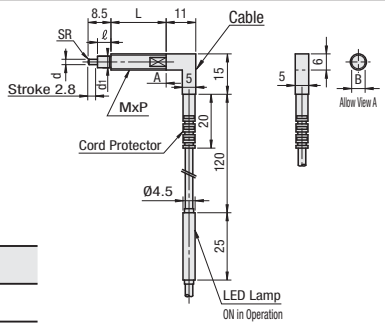


N-MSTKG-B (With LED)
MSTKG-F (With LED)

Force must be applied normal to the switch.
(Declination within ±3°)



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.
· Note that cable inlets should avoid the bending or twisting force.



Contact Part		Main Body	Cable	Accessories
M Material	H Hardness	M Material		
1.4028/ X30Cr13	45~50HRC	1.4305/ X10CrNiS18-9	Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (M6 Thickness 3.2 Wrench Size 8, M8 Thickness 3.2 Wrench Size 10)

Part Number	MxP (Fine)	Stroke	Operating Point	Contact Force N	Contact Mecha-nism	L	ℓ	d	d1	SR	B	€ Unit Price Qty. 1~9	Vol. Discount 10~19
N-MSTKG-B	M6x0.75	2.8	0.3 from Tip (Repeatability 0.005)	1	NO (Normally Open)	20.5	5	2	4.3	1.5	5		
MSTKG-F	M8x0.75					30	4.5	3.5	6	3	7		

For orders larger than indicated quantity, please request a quotation.

Order Example | Part Number | Days to Ship | 6 Days | P.87

Contact Switches
-Water-Proof / With Plastic Tip-

CAD Data

Removed Cable Protectors from MSTKD-ND to allow the product being more compact.

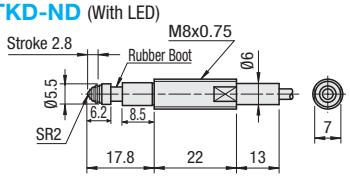
■Water-Proof (Degree of Protection IP67)

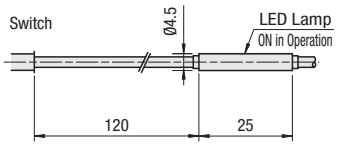




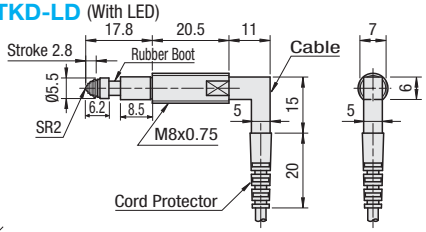
RoHS

MSTKD-ND (With LED)

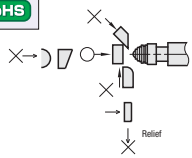




MSTKD-LD (With LED)



⚠ Force must be applied normal to the switch. (Declination within ±3°)



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.
· Note that cable inlets should avoid the bending or twisting force.

Contact Part		Thread		Cable	Accessories
M Material	H Hardness	M Material			
1.4125/ X105CrMo17	50~55HRC	1.4305/ X10CrNiS18-9		Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 3.2 Wrench Size 10)

Part Number	Stroke	Operating Point	Contact Force N	Contact Mechanism	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSTKD-ND	2.8	0.3 from Tip (Repeatability 0.005)	1	NO (Normally Open)		
MSTKD-LD						

For orders larger than indicated quantity, please request a quotation.

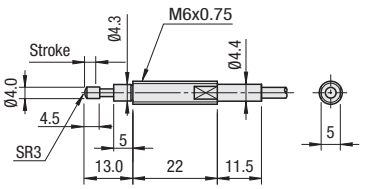
■Feature: The plastic tip is suitable for detection without causing damages to target objects. Cable Protectors are omitted for more compactness.

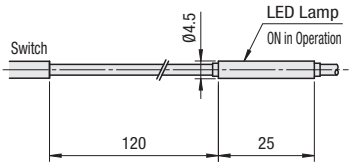
■With Plastic Tip (Degree of Protection IP65)



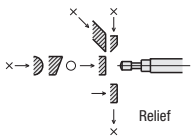
RoHS

MSTKD-BR N-MSTKD-BRD (With LED)





⚠ Force must be applied normal to the switch. (Declination within ±3°)



Stroke will be reduced as the plastic tips wear.

· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Contact Part	Main Body	Cable	Accessories
M Material	M Material		
Polyacetal	1.4305/ X10CrNiS18-9	Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 3.2 Wrench Size 8)

For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

Part Number	Stroke	Operating Point	Contact Force N	Contact Mechanism	MSTKD-BR € Unit Price Qty. 1~9	MSTKD-BR Vol. Discount 10~19	N-MSTKD-BRD € Unit Price Qty. 1~9	N-MSTKD-BRD Vol. Discount 10~19
MSTKD-BR N-MSTKD-BRD	2.8	0.3 from Tip	1	NO (Normally Open)				

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
MSTKD-ND N-MSTKD-BRD

Days to Ship: 6 Days P.87

Contact Switches
-Shape Selectable / Wide Contact Angle Type-

CAD Data

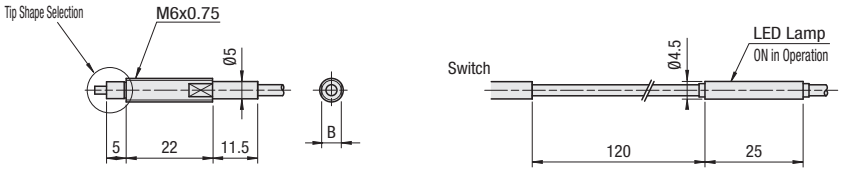
Removed Cable Protectors from MSTKD-F, N-MSTKD-FD to allow the product being more compact.

■Shape Selectable (Degree of Protection IP65)

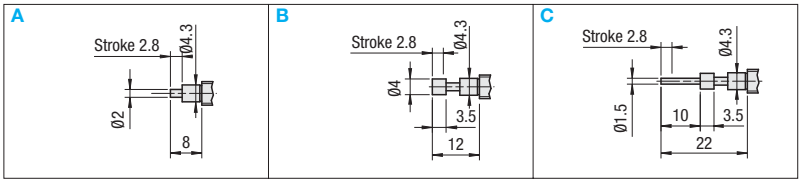


RoHS

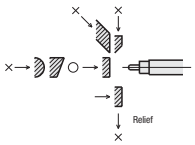
MSTKD-F N-MSTKD-FD (With LED)



- Tip Shapes



⚠ Force must be applied normal to the switch. (Declination within ±3°)



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

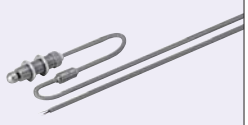
Contact Part		Thread	Cable	Accessories
Material	Hardness	Material		
1.4028/ X30Cr13	45~50HRC	1.4305/ X10CrNiS18-9	Cord 3m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs.-M6: Thickness 3.2, Wrench Size 8- M8: Thickness 3.2, Wrench Size 10

Part Number		Stroke	Operating Point	Contact Force N	Contact Mechanism	B	MSTKD-F		N-MSTKD-FD	
Type	Tip Shapes						€ Unit Price Qty. 1~9	Vol. Discount 10~19	€ Unit Price Qty. 1~9	Vol. Discount 10~19
MSTKD-F N-MSTKD-FD	A B C	2.8	from Tip 0.3	1	NO (Normally Open)	5				

For orders larger than indicated quantity, please request a quotation.

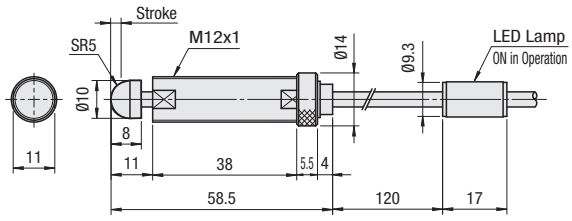
■Feature: Force can be applied from any angle with the ball bearing in the tip. For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

■Wide Contact Angle Type (Degree of Protection IP65)

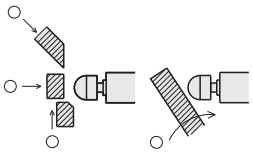


RoHS

N-MSTKE (With LED)



Suitable for detecting sliding objects, rotating objects, offset or pivoting objects.



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Contact Part		Thread	Cable	Accessories
Material	Hardness	Material		
1.4125/ X105CrMo17	50~55HRC	1.4305/ X10CrNiS18-9	Cable 2m, 2-Conductors Ø4, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. - M12: Thickness 3, Wrench Size 17

Part Number	Stroke	Operating Point	Contact Force N	Contact Mechanism	€ Unit Price Qty. 1~9	Volume Discount 10~19
N-MSTKE	2.8	0.3 from Tip (Repeatability 0.005)	1.5	NO (Normally Open)		

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
MSTKD-FB
N-MSTKD-FDB

Days to Ship 6 Days P.87

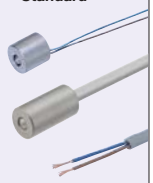
Switches with Stoppers

-Mini · Drip-Proof Type (IP44) / Mini · Water-Proof Type (IP67)-

For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

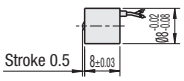
⚠ Although this is a Drip-Proof Type, it is not suited for use in environment in which coolant or cutting chips may fall on the product.

■Drip-proof Type (IP44) Standard

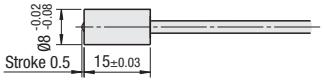


RoHS

MSTW-S Cord: Loose Wire
MSTW-SD (With LED) 2-Core Ø0.6, 0.5m Oil Resistance



MSTW-L Cord: Cab Tire
2-Core Ø3.2m Oil Resistance
Min. Bending Radius 7R



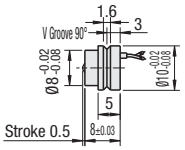
M Material: Main Body :1.4005/X12CrS13-F (45HRC)
Contact Part: 1.4028/X30Cr13 (50HRC)

■Drip-proof Type (IP44) Flanged Standard

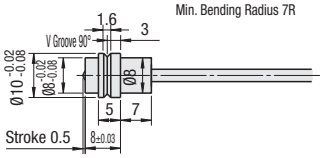


RoHS

MSTF-S Cord: Loose Wire
MSTF-SD (With LED) 2-Core Ø0.6, 0.5m Oil Resistance



MSTF-L Cord: Cab Tire
MSTF-LD (With LED) 2-Core Ø3.2m Oil Resistance
Min. Bending Radius 7R



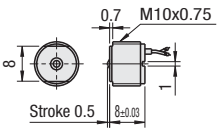
M Material: Main Body :1.4005/X12CrS13-F (45HRC)
Contact Part: 1.4028/X30Cr13 (50HRC)

■Drip-proof Type (IP44) Screw Type

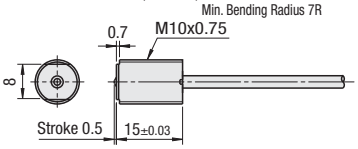


RoHS

MSN-S Cord: Loose Wire
MSN-SD (With LED) 2-Core Ø0.6, 0.5m Oil Resistance



MSN-L Cord: Cab Tire
MSN-LD (With LED) 2-Core Ø3.2m Oil Resistance
Min. Bending Radius 7R



A Accessories: (MSN-L · LD Only) Hexagon Nuts 2 pcs. (Thickness 3 Wrench Size 13) Toothed Washer 1 pc.

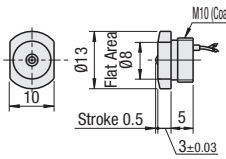
M Material: Main Body :1.4005/X12CrS13-F (45HRC)
Contact Part: 1.4028/X30Cr13 (50HRC)

■Drip-proof Type (IP44) Flanged Screw Type

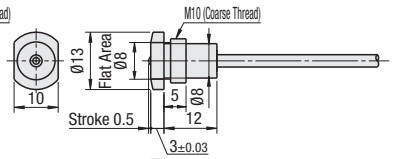


RoHS

MSNF-S Cord: Loose Wire
MSNF-SD (With LED) 2-Core Ø0.6, 0.5m Oil Resistance



MSNF-L Cord: Cab Tire
MSNF-LD (With LED) 2-Core Ø3.2m Oil Resistance
Min. Bending Radius 7R



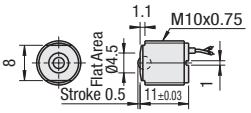
M Material: Main Body :1.4005/X12CrS13-F (45HRC)
Contact Part: 1.4028/X30Cr13 (50HRC)

■Drip-proof Type (IP44) Ball Contact Screw Type

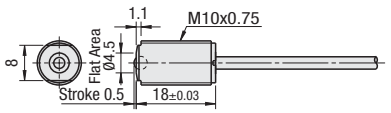


RoHS

MSPM-S Cord: Loose Wire
MSPM-SD (With LED) 2-Core Ø0.6, 0.5m Oil Resistance



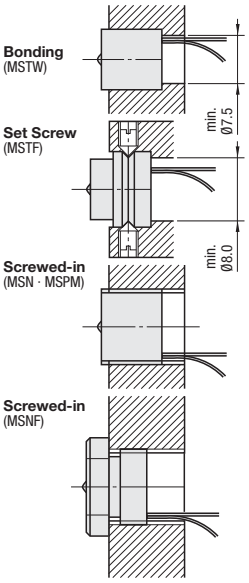
MSPM-L Cord: Cab Tire
MSPM-LD (With LED) 2-Core Ø3.2m Oil Resistance
Min. Bending Radius 7R



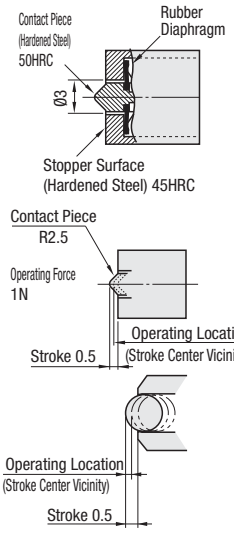
A Accessories: (MSPM-L · LD Only) Hexagon Nuts 2 pcs. (Thickness 3 Wrench Size 13) Toothed Washer 1 pc.

M Material: Main Body :1.4125/X105CrMo17 (45HRC)
Ball: 1.4125/X105CrMo17 (50HRC)

Example



■ Structure of Drip-proof Type (IP44)



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Part Number / Type	Stroke	Operating Point	Contact Force	Allowable Resistance Load	Shock Resistance Energy	Contact Mechanism	-S		-SD		-L		-LD	
							€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
							Qty. 1~9	10~19	Qty. 1~9	10~19	Qty. 1~9	10~19	Qty. 1~9	10~19
MSTW	0.5	Stroke Center Vicinity (Repeatability 0.01)	0.8N	3000N	0.2J	NO (Normally Open)								
MSTF														
MSN														
MSNF														
MSPM														

For orders larger than indicated quantity, please request a quotation.

Price Revision

: New Price

CAD Data

⚠ Although this is a water-resisting type, it is not suited for use in environment in which coolant or dust from cutting may fall on the product.

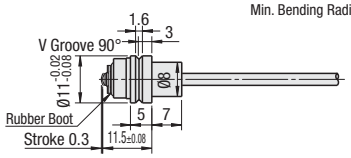
■Water-Proof Type (IP67) -Cylinder Type with Flange-



RoHS

MSWF-LD (With LED)

Cord: Cab Tire
2-Core Ø3.2m Oil Resistan
Min. Bending Radius 7



M Material: Main Body :1.4005/X12CrS13-F (45HRC)
Contact Part: 1.4028/X30Cr13 (50HRC)

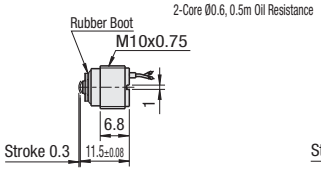
■Water-Proof Type (IP67) Screw Type



RoHS

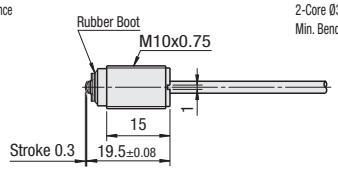
MSNW-SD (With LED)

Cord: Loose Wire
2-Core Ø0.6, 0.5m Oil Resistance



MSNW-L
MSNW-LD (With LED)

Cord: Cab Tire
2-Core Ø3.2m Oil Resistance
Min. Bending Radius 7R



A Accessories: (MSNW-L · LD Only) Hexagon Nuts 2 pcs. (Thickness 3 Wrench Size 13) Toothed Washer 1 pc.

M Material: Main Body :1.4005/X12CrS13-F (45HRC)
Contact Part: 1.4028/X30Cr13 (50HRC)

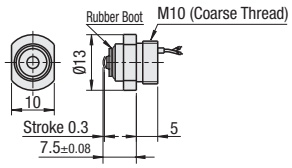
■Water-Proof Type (IP67) Flanged Screw Type



RoHS

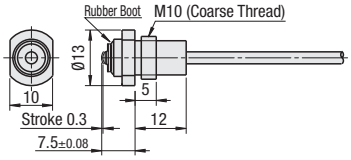
MSNWF-S
MSNWF-SD (With LED)

Cord: Loose Wire
2-Core Ø0.6, 0.5m Oil Resistance



MSNWF-L
MSNWF-LD (With LED)

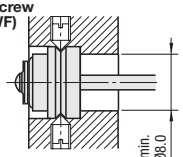
Cord: Cab Tire
2-Core Ø3.2m Oil Resistance
Min. Bending Radius 7R



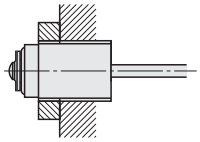
M Material: Main Body :1.4005/X12CrS13-F (45HRC)
Contact Part: 1.4028/X30Cr13 (50HRC)

Example

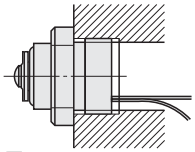
Set Screw (MSWF)



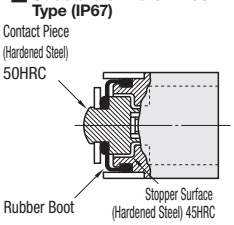
Double Nut Tightened (MSNW)

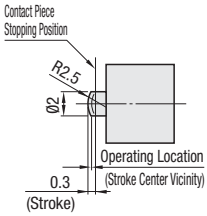


Screwed-in (MSNWF)



■ Structure of Water-Proof Type (IP67)





Part Number / Type	Stroke	Operating Point	Contact Force	Allowable Static Load	Shock Resistance Energy	Contact Mechanism	-S		-SD		-L		-LD	
							€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
							Qty. 1~9	10~19	Qty. 1~9	10~19	Qty. 1~9	10~19	Qty. 1~9	10~19
MSWF	0.3	Stroke Center Vicinity (Repeatability 0.01)	1N	3000N	0.2J	NO (Normally Open)								
MSNW														
MSNWF														

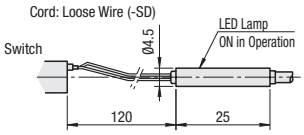
For orders larger than indicated quantity, please request a quotation.

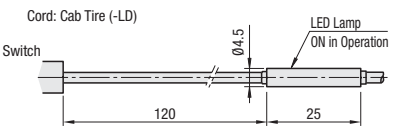
Order Example

Part Number
MSTW-SD
MSTF-L
MSN-S
MSNF-L
MSPM-LD
MSNW-L
MSNWF-S

Days to Ship: 6 Days P.87

(Common for "with LED")

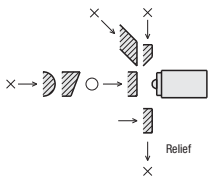




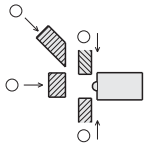
· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

⚠ Contact Method of Detected Subject (Common)

· Except Ball Contact Type (Angular misalignment within ±3°)



· Ball Contact Type (All Directions)



Switches with Stoppers

-Bolt Type / Hexagon Head Type-

Price Revision

: New Price

CAD Data

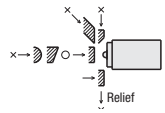
■Bolt (Degree of Protection IP40)



RoHS

The cartridge (back side) can be removed.

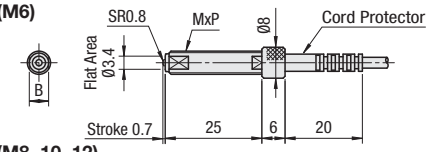
Force must be applied normal to the switch. (Declination within ±3°)

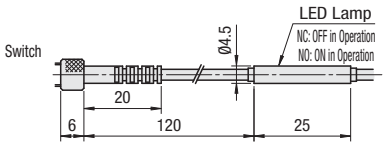


· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

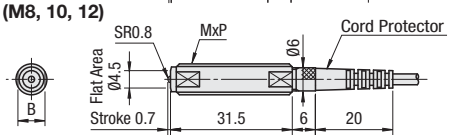
MSTB-B **N-MSTB-BD** (With LED)
MSTB **N-MSTB-D** (With LED)

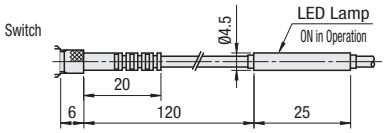
(M6)





(M8, 10, 12)





Tip of Contact		Stopper		Main Body	Cable	Accessories
M Material	H Hardness	M Material	H Hardness	M Material		
1.4028/ X30Cr13	45~50HRC	1.4028/ X30Cr13	45~50HRC	1.4005/ X12CrS13	Cable 2m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. Toothed Washer 1 pc.

*Coarse Thread JIS3 Class, Fine Thread M6 Thickness 3.2 Wrench Size 8, Fine Thread M8 Thickness 3.2 (8x1.0, Thickness 3) Wrench Size 10, Fine Thread M12 Thickness 4.5 Wrench Size 17

Part Number Type	No.	MxP	Stroke	Operating Point	Contact Force	Static Load Capable Structure	Shock Resistance Energy	Contact Point	B	MSTB-B / MSTB € U. Price Qty. 1~9	MSTB-B / MSTB Vol. Discount 10~19	N-MSTB-BD / N-MSTB-D € Unit Price Qty. 1~9	N-MSTB-BD / N-MSTB-D Vol. Discount 10~19
MSTB-B N-MSTB-BD	6	6x1.0 (Coarse Thread)	0.7±0.2	Stroke Center Vicinity (Repeatability 0.01)	1N	5000N	0.4J	NC (Normally Closed)	5				
	6S	6x0.75 (Fine Thread)											
MSTB N-MSTB-D	6	6x1.0 (Coarse Thread)						NO (Normally Open)	7				
	6S	6x0.75 (Fine Thread)											
	8	8x1.25 (Coarse Thread)											
	8S	8x0.75 (Fine Thread)											
	8K	8x1.0 (Fine Thread)											
	10	10x1.5 (Coarse Thread)							8				
	12K	12x1.0 (Fine Thread)											

For orders larger than indicated quantity, please request a quotation.

For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

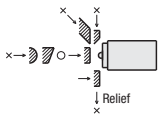
■Hexagon Head (Degree of Protection IP40)



RoHS

The cartridge (back side) can be removed.

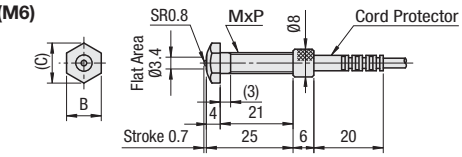
Force must be applied normal to the switch. (Declination within ±3°)

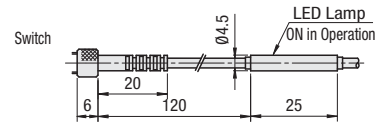


· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

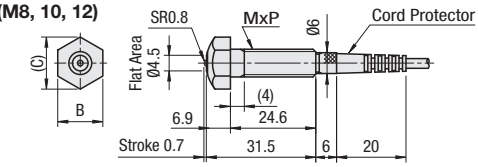
MSTBB **N-MSTBB-D** (With LED)

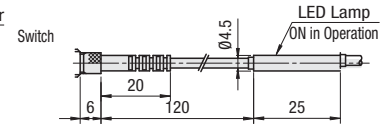
(M6)





(M8, 10, 12)





Tip of Contact		Stopper		Main Body	Cable	Accessories
M Material	H Hardness	M Material	H Hardness	M Material		
1.4028/ X30Cr13	45~50HRC	1.4028/ X30Cr13	45~50HRC	1.4305/ X10CrNiS18-9	Cable 2m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. Toothed Washer 1 pc.

*Coarse Thread JIS3 Class, Fine Thread M8 Thickness 3.2 Opposite Side 10, Fine Thread M12 Thickness 4.5 Wrench Size 17

Part Number Type	No.	MxP	Stroke	Operating Point	Contact Force	Static Load Capable Structure	Shock Resistance Energy	Contact Point	B	(C)	MSTBB € Unit Price Qty. 1~9	MSTBB Vol. Discount 10~19	N-MSTBB-D € Unit Price Qty. 1~9	N-MSTBB-D Vol. Discount 10~19
MSTBB N-MSTBB-D	6	6x1.0 (Coarse Thread)	0.7±0.2	Stroke Center Vicinity (Repeatability 0.01)	1N	5000N	0.4J	NO (Normally Open)	10	11.5				
	8	8x1.25 (Coarse Thread)							13	15				
	8K	8x1.0 (Fine Thread)												
	10	10x1.5 (Coarse Thread)							17	19.6				
	12K	12x1.0 (Fine Thread)												

For orders larger than indicated quantity, please request a quotation.

Order Example — Part Number: MSTB-B6, MSTBB12K

Days to Ship: 6 Days P.87

Switches with Stoppers

-Spherical Contacts / One-Signal (Deceleration)-

Price Revision

: New Price

CAD Data

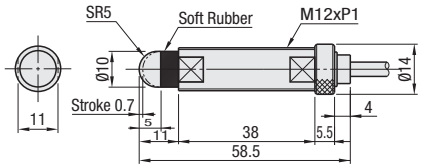
■Sphere (Degree of Protection IP65)

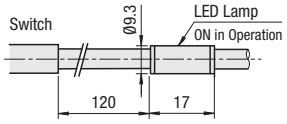


RoHS

The cartridge (back side) can be removed.

N-MSTBE-D (With LED)





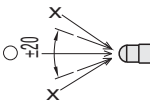
Tip of Contact		Stopper		Main Body	Cable	Accessories
M Material	H Hardness	M Material	H Hardness	M Material		
1.4125/ X105CrMo17	45~50HRC	1.4028/ X30Cr13	45~50HRC	1.4305/ X10CrNiS18-9	Cable 2m, 2-Conductors Ø4, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 4.5 Wrench Size 17) Toothed Washer 1 pc.

· Use within the contact ratings. · Do not pull or twist the cable with 30N or more.

Part Number Type	No.	Stroke	Operating Point	Contact Force	Contact Point	Static Load Capable Structure	Shock Resistance Energy	€ U. Price Qty. 1~9	Volume Discount 10~19
N-MSTBE-D	12	0.7±0.2	Near Stroke Center (Repeatability 0.01)	1.5N	NO (Normally Open)	5000N	0.4J		

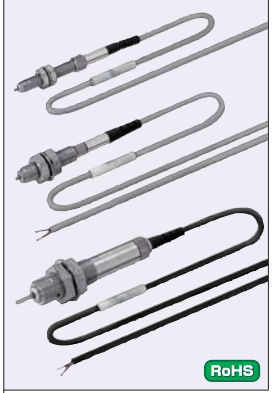
For orders larger than indicated quantity, please request a quotation.

Usable for angular contact misalignment within ±20°.



For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

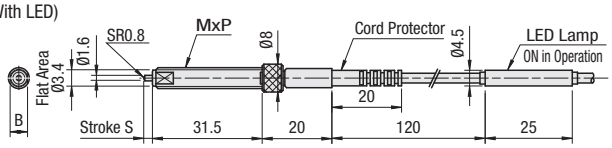
■One-Signal (Deceleration) (Degree of Protection IP40)



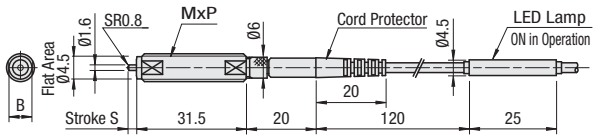
RoHS

N-MSTBG (With LED)

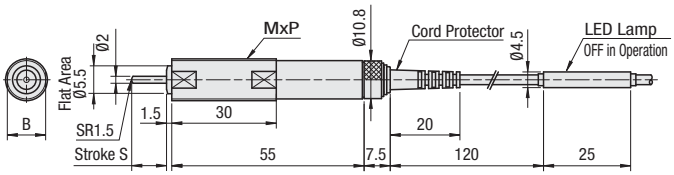
(M6)



(M8, 10)



(M12)



Force must be applied normal to the switch. (Declination within ±1°)

- Use within the contact ratings.
- Do not pull or twist the cable with 30N or more.

Tip of Contact		Stopper		Main Body	Cable	Accessories
M Material	H Hardness	M Material	H Hardness	M Material		
1.4028/ X30Cr13	45~50HRC	1.4028/ X30Cr13	45~50HRC	1.4005/ X12CrS13	Cable 2m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. Toothed Washer 1 pc.

*Coarse Thread JIS3 Class, Fine Thread M12 Thickness 4.5 Wrench Size 17

Part Number Type	No.	MxP	Stroke S	Operating Point	Operating Point Repeatability	Contact Force	Static Load Capable Structure	Shock Resistance Energy	Contact Point	B	€ Unit Price Qty. 1~9	Volume Discount 10~19
N-MSTBG	6	6x1 (Coarse Thread)	2.5	0.3~0.4 from Tip	0.01	1N	5000N	0.4J	NO	5		
	8	8x1.25 (Coarse Thread)								7		
	10	10x1.5 (Coarse Thread)								8		
	12	12x1 (Fine Thread)	10	No Pre-Travel					NC	11		

For orders larger than indicated quantity, please request a quotation.

Order Example

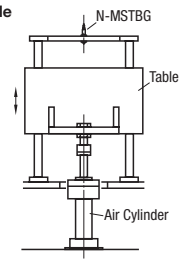
Part Number
N-MSTBE-D12
N-MSTBG12

Days to Ship

6 Days

P.87

ex Example



Heat-Resistant Switches

-Contact Switches / Ball Plunger Switches / Switches with Stoppers-

Price Revision

: New Price

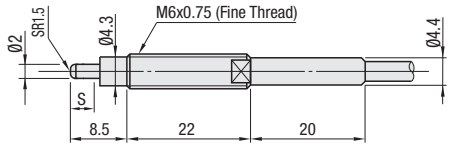
CAD Data

■Heat-Resistant Contact Switches (Degree of Protection IP65)



RoHS

MSTKD-HR



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Operation Temperature: ~200°C
The export application to the Ministry of Economy, Trade and Industry is necessary for exporting this product.

Contact Part		Main Body	Cable	Accessories
M Material	H Hardness	M Material		A Accessories
1.4028/ X30Cr13	45~50HRC	1.4305/ X10CrNiS18-9	Cable 2m, 2-Conductors Ø3, Heat Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 3.2 Wrench Size 8)

Part Number	Stroke S	Operating Point	Contact Force	Contact Mechanism	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSTKD-HR	2.8	0.3 from Tip (Repeatability 0.01 (Ambient Temperature))	1N	NO (Normally Open)		

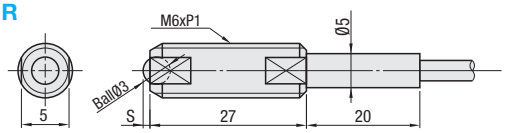
For orders larger than indicated quantity, please request a quotation.
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

■Heat-Resistant Ball Plunger Switches (Degree of Protection IP40)



RoHS

MSPB-HR



Care must be taken for the object not to hit the switch body before hitting the operating point.



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Operation Temperature: ~200°C
The export application to the Ministry of Economy, Trade and Industry is necessary for exporting this product.

Contact Part		Main Body	Cable	Accessories
M Material	H Hardness	M Material		A Accessories
1.4125/ X105CrMo17	50~55HRC	1.4305/ 10CrNiS18-9	Cable 2m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Coarse Thread JIS Class 3) Toothed Washer 1 pc.

Part Number	Stroke S	Operating Point	Contact Force min.	Contact Force max.	Contact Mechanism	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSPB-HR	0.8	0.2~0.4 (Repeatability 0.01 (Ambient Temperature))	6N	13N	NO (Normally Open)		

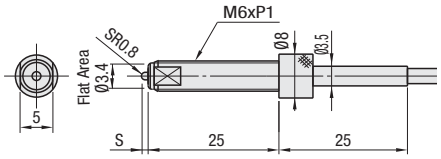
For orders larger than indicated quantity, please request a quotation.
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

■Heat-Resistant Switches with Stoppers (Degree of Protection IP40)



RoHS

MSTB-HR



· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Operation Temperature: ~200°C
The export application to the Ministry of Economy, Trade and Industry is necessary for exporting this product.

Tip of Contact		Stopper		Main Body	Cable	Accessories
M Material	H Hardness	M	H	M		A Accessories
1.4028/ X30Cr13	45~50HRC	1.4028/ X30Cr13	50HRC	1.4005/ X12CrS13	Cable 2m, 2-Conductors Ø3, Heat Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Coarse Thread JIS Class 3) Toothed Washer 1 pc.

Part Number	Stroke S	Operating Point	Contact Force	Allowable Static Load	Shock Resistance Energy	Contact Mechanism	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSTB-HR	0.7	Near Stroke Center (Repeatability 0.01 (Ambient Temperature))	1N	5000N	0.4J	NO (Normally Open)		

For orders larger than indicated quantity, please request a quotation.
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

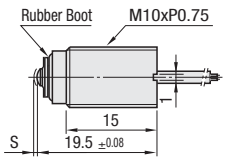
■Heat-Resistant Switches with Stoppers (Mini Type) (Degree of Protection IP67)



RoHS

MSNWL-HR

Cord: Cab Tire
2-Core Ø3.2m Heat Resistance
Min. Bending Radius 7R



M Material
Body: 1.4005/X12Cr13-F (45HRC)
Contact Part: 1.4029/X38Cr13 (50HRC)

A Accessories
Hexagon Nuts 2 pcs. (Thickness 3 Wrench Size 13)
Toothed Washer 1 pc.

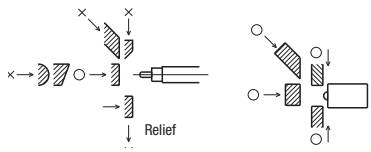
· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Operation Temperature: ~200°C
The export application to the Ministry of Economy, Trade and Industry is necessary for exporting this product.

Part Number / Type	Stroke S	Operating Point	Contact Force	Static Load Capable Structure	Shock Resistance Energy	Contact Point	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSNWL-HR	0.3	Near Stroke Center (Repeatability 0.01 (Ambient Temperature))	1N	3000N	0.2J	NO (Normally Open)		

For orders larger than indicated quantity, please request a quotation.

Contact Method of Detected Subject
· Except Ball Plunger Switch (Declination within ±3°)
· Ball Plunger Switch (All Directions)



Order Example

Part Number
STKD-HR
MSPB-HR
MSTB-HR
MSNWL-HR

Days to Ship 6 Days P. 87

Plunger Switches

-Spring Plunger / Ball Plunger / Water-Proof Ball Plunger-

Price Revision

: New Price

CAD Data

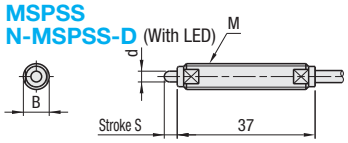
Cable Protectors are omitted for more compactness.

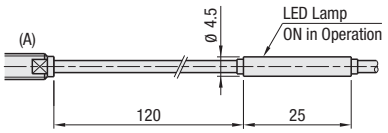
■Spring Plunger (Degree of Protection IP40)

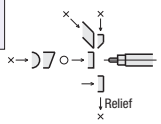


RoHS

MSPSS
N-MSPSS-D (With LED)







Force must be applied normal to the switch. (Declination within ±3°)

· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more. Material for pin has been changed.

Pin		Main Body	Cable	Accessories
M Material	H Hardness	M Material		
1.4125/ X105CrMo17	50~55HRC	1.4305/ X10CrNiS18-9	Cable 2m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nut 2 pcs. (Coarse Thread JIS3 Class) Toothed Washer 1 pc.

Part Number		M (Coarse)	d	Stroke S	Operating Point	Contact Force N		Contact Mechanism	B	MSPSS		N-MSPSS-D	
Type	No.					min.	max.			€ Unit Price Qty. 1~9	Volume Discount 10~19	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSPSS N-MSPSS-D	6	6	2.5	3	from Body End 0.8 (Repeatability 0.01)	6	11	NO (Normally Open)	5				
	8	8				6	11		7				

For orders larger than indicated quantity, please request a quotation.
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

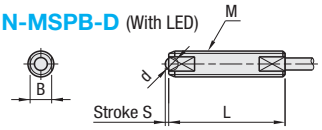
Cable Protectors are omitted for more compactness.

■Ball Plunger (Degree of Protection IP40)

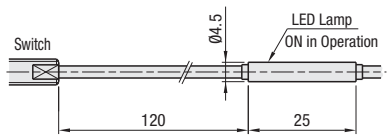


RoHS

N-MSPB-D (With LED)



Care must be taken for the object not to hit the switch body before hitting the operating point



Possible to contact objects in all directions.





· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Ball		Main Body	Cable	Accessories
M Material	H Hardness	M Material		
1.4125/ X105CrMo17	50~55HRC	1.4305/ X10CrNiS18-9	Cable 2m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nut 2 pcs. (Coarse Thread JIS3 Class) Toothed Washer 1 pc.

Part Number		M (Coarse)	Stroke S	Operating Point	Operating Point Repeatability	Contact Force N		Contact Mechanism	L	d	B	N-MSPB-D	
Type	No.					min.	max.					€ Unit Price Qty. 1~9	Volume Discount 10~19
N-MSPB-D	6	6	0.8	0.3	0.01	6	13	NO (Normally Open)	32	3	5		
	6F					1							
	8	8	1.0	0.5		8	16		36	4	7		
	8F					1							
	10	10	1.2	0.7		10	20		38	5	8		
	10F					1							

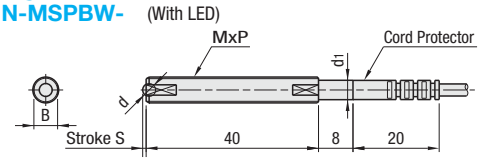
For orders larger than indicated quantity, please request a quotation.
For Mechanical · Electrical Specifications and Precautions for Use, refer to P.1769

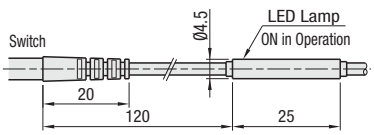
■Water-Proof Ball Plunger (Degree of Protection IP47)



RoHS

MSPBW
N-MSPBW- (With LED)





Possible to contact objects in all directions.



Care must be taken for the object not to hit the switch body before hitting the operating point

· Use within the contact ratings.
· Do not pull or twist the cable with 30N or more.

Ball		Main Body	Cable	Accessories
M Material	H Hardness	M Material		
Carbide	1300~1600HV	1.4305/ X10CrNiS18-9	Cable 2m, 2-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Fine Thread M6 Thickness 3.2 Wrench Size 8 Coarse Thread JIS3 Class) Toothed Washer 1 pc.

Part Number		MxP	Stroke S	Operating Point	Operating Point Repeatability	Contact Force N		Contact Mechanism	d	B	d1	MSPBW		N-MSPBW-D	
Type	No.					min.	max.					€ Unit Price Qty. 1~9	Volume Discount 10~19	€ Unit Price Qty. 1~9	Volume Discount 10~19
MSPBW	6S	6x0.5 (Fine)	0.8	0.3	0.01	6	13	NO (Normally Open)	3	5.5	4.5				
	6SF					1									
MSPBW N-MSPBW-D	8	8x1.25 (Coarse)	1.0	0.5		8	16		4	7	5				
	8F					1									
	10	10x1.5 (Coarse)	1.2	0.7		10	20		5	8	6				
	10F					1									

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number
MSPSS6 MSPB8 N-MSPB-D8F

Days to Ship: 6 Days P. 87

Positioning Switches -Non Contact- -Overview-

Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI, and IEC)

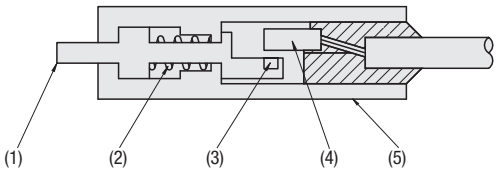
Feature

- The contact type switch can detect objects in given positions regardless of material and color.
- Non contact structure utilizing the magnet detection IC (Hall effect element).
- Able to detect with low contact force.

Basic Structure

When the contact shaft strokes, the magnet moves and the hall effect element outputs a signal.

(1) Contact Part
(2) Spring
(3) Magnet
(4) Hall Effect Element IC
(5) Housing



Specifications

Stroke	1.5/3/6
Repeatability	0.02 or less
Contact Mechanism	NO (Normally Open)
Hysteresis	0.1 or Less
Service Life*	10 Million Times or More
Frequency Response	1msec. or less
25mA or less	NPN Open Collector Without LED: MAX15mA With LED: MAX12mA

* Subject to the following conditions

Endurance Test Conditions

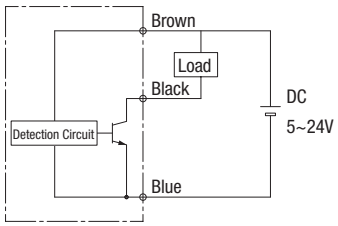
Operating Temp.	25°C
Vibrations	Not provided
Contact Angle	Vertical (Without declination)
Operation Frequency	1 time/sec.

Ratings and Environmental Resistance

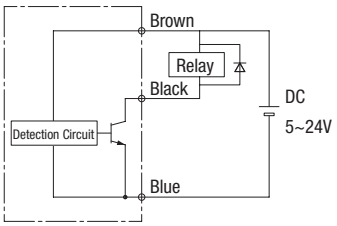
Power supply voltage	DC5~24V
Current consumption	10mA or less
Operating Temp.	0~60
Dielectric strength	10MΩ (DC250V Based on Megohm-meter)
Withstand voltage	AC500V 50/60Hz, 1 min. between each terminal and case
Vibration resistance	10~55Hz, Stroke of 1.5mm in Respective X · Y · Z Direction

Schematics

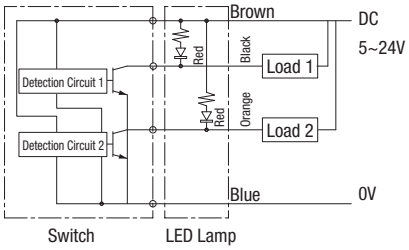
(Connected with sequencer, etc.)



(Connected with relay, etc.)



(2-Signal Type)



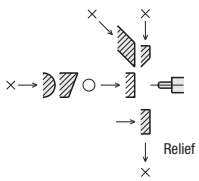
Precautions for Use

Although the switches are intended to be trouble-free, incorporate a redundant safety measure such as a duplex circuit to avoid a serious accident or spread of damage caused by a malfunction or failure of the switch.

Design Precautions

- Contact Angle
- The object contact angle to the switch should be within ±2°.

- Stroke
- Do not force the contacts beyond the end of the stroke. Provide a stopper if necessary.
- Do not apply any force that will cause rotation of the contact.



- Effects of magnetic field
- Do not use the switch in a strong magnetic field. A magnetic field over 1000 gauss will cause the switch to malfunction.

Cautions on Installation

- Cable failure at inlet
- Do not apply excessive stress to the cable inlet of the switch case, the solders of cable could be damaged resulting in signal output failures.
- If the cable is not fixed, fasten at appropriate midway points to avoid strains on cable inlet.

- Nut tightening torque
- Tighten M6 under 1Nm. Tighten M8 and M14 under 2.7N · m.

Wiring Precautions

- Reverse polarity connection prohibited
- Connect the wires correctly in accordance with the circuit diagram. Never connect the power supply in reversed polarity.

- Driving relays
- When a relay (under 12 mA) is driven, connect a reversed diode in parallel.

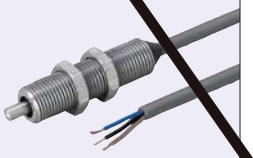
Contact Switches -Non Contact Point Type-

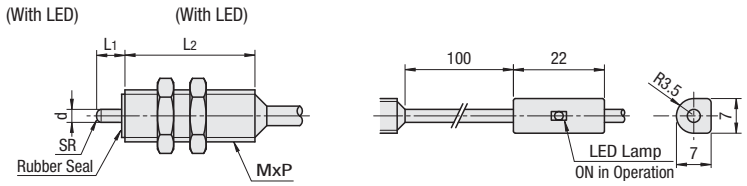
-Bolt / Flat / 2-Signal-

CAD Data

■Bolt (Degree of Protection IP67)

RoHS





Material		Cable	Accessories
Contact Part	Thread		
1.4305/ X10CrNiS18-9	1.4305/ X10CrNiS18-9	Cable 1m, 3-Conductors Ø2.8, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (M6 Thickness 2, Wrench Size 7M8 Thickness 2.5, Wrench Size 10)

■Bolt

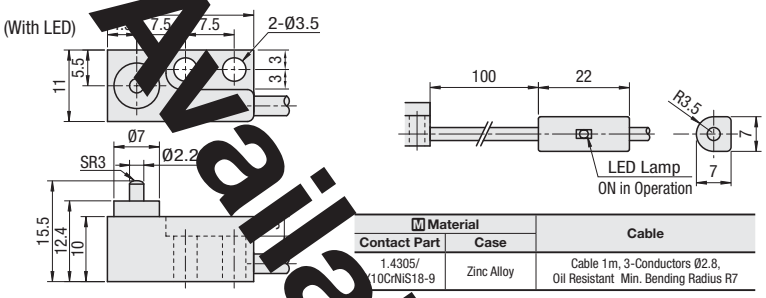
Part Number		MxP (Fine)	Operating Point	Contact Force N	L1	L2	d	SR	Mass (g)	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
Type	Stroke									Qty. 1~9	10~19	Qty. 1~9	10~19
	1.2	M6x0.5	0.5 from Tip (Repeatability 0.02)	0.3	2.4	18.5	1.4	1	14				
	1.5	M8x0.75		0	4	20	2	2.5	15				
	3			0.7	5	30	2.6	3	22				

For orders larger than indicated quantity, please request a quotation.

■Flat (Degree of Protection IP65)

RoHS





Material		Cable
Contact Part	Case	
1.4305/ X10CrNiS18-9	Zinc Alloy	Cable 1m, 3-Conductors Ø2.8, Oil Resistant Min. Bending Radius R7

■Flat

Part Number		Operating Point	Contact Force N	Mass (g)	€ Unit Price	Volume Discount	€ Unit Price	Volume Discount
Type	Stroke				Qty. 1~9	10~19	Qty. 1~9	10~19
	3	0.5 from Tip (Repeatability 0.02)	0.5	17				

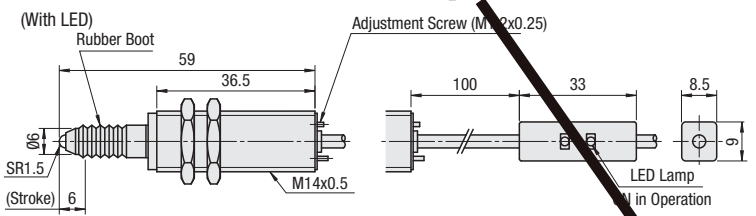
For orders larger than indicated quantity, please request a quotation.

■ Feature: Operating point can be freely selected within setting range by turning adjusting screw with precision slotted screwdriver (1.6mm in edge width).

■2-Signal (Degree of Protection IP65)

RoHS





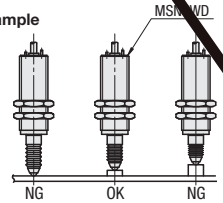
Material		Cable	Accessories
Contact Part	Thread		
1.4305/ X10CrNiS18-9	1.4305/ X10CrNiS18-9	Cable 1m, 4-Conductors Ø3, Oil Resistant Min. Bending Radius R7	Hexagon Nuts 2 pcs. (Thickness 3 Wrench Size 17)

■2-Signal

Part Number		Stroke	Contact Force N		Operating Point Setting Range	Mass (g)	€ Unit Price	Volume Discount
Type	No. of Signals		min.	max.			Qty. 1~9	10~19
	2	6	0.5	1.5	0.5~4 (Repeatability 0.02)	60		

For orders larger than indicated quantity, please request a quotation.

Example



Order Example | Part Number | Days to Ship | 6 Days | P.87

Not Available

Posts / Strut Clamps / Stands

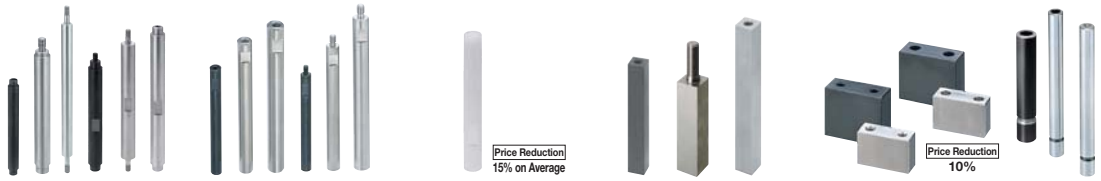
Posts / Strut Clamps/ Stands



Product Name	Small Hexagonal Posts	Hexagonal Posts – Both Ends Female Thread–	–One End Male Thread One End Female Thread–	One End Male Thread One End Female Thread / Both Ends Male Thread	- Thread Length and Ø Configurable Pilot Selectable / Configurable
Page	1788	1789	1791	1793	1795



Hexagonal Posts –One End Female Thread–	–One End Male Thread–	Attachment Blocks for Hexagonal Posts	Circular Posts –Both Ends Female Thread with Wrench Flats–	- One End Male Thread One End Female Thread with Wrench Flats-	-One End Male Thread One End Female Thread / Both Ends Male Thread - Thread Length Ø Configurable with Wrench Flats-
1797	1797	1798	1799	1801	1803



Circular Posts - Pilot Selectable / Pilot & Wrench Flats Configurable-	-One End Male Thread / One End Female Thread-	Plastic Circular Posts – One End Female Thread / Both Ends Female Thread-	Square Posts – Both Ends Female Thread / One End Male Thread One End Female Thread-	Spacer Blocks	Posts for Stands
1805	1807	1808	1809	1811	1814



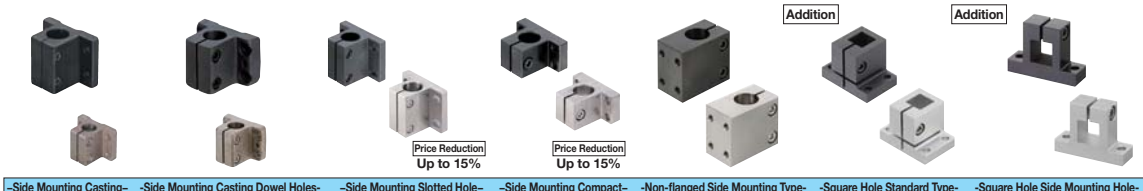
Caps for Hollow Posts	Posts for Stands –With Scales–	-Length Configurable with Scale-	Posts for Stands - Square / Hollows-	-Length Configurable with Scale-	Device Stands –Compact–	–Compact Slotted Hole–
1814	1815	1815	1816	1816	1817	1818



–Round Flange–	–Square Flange–	–Square Flange Slotted Hole–	–Side Mounting Compact–	–Side Mounting–	Brackets for Stands -Economy Type-	-Standard Type-
1819	1821	1822	1823	1824	1825	1825



Brackets for Stands –Cylindrical–	-Reversed Fastening-	–Square Compact–	–Square Standard–	–Square Reversed–	–Side Mounting–	-Side Mounting Dowel Holes-
1826	1826	1827	1828	1828	1829	1829



–Side Mounting Casting–	-Side Mounting Casting Dowel Holes-	–Side Mounting Slotted Hole–	–Side Mounting Compact–	-Non-flanged Side Mounting Type-	-Square Hole Standard Type-	-Square Hole Side Mounting Hole-
1830	1830	1830	1831	1831	1832	1832

- Hexagonal Posts P.1788~
- Circular Posts P.1799~
- Device Stands P.1817~
- Brackets for Stands P.1825~
- Strut Clamps P.1834~

* For sensor-mounting Brackets for Stands, refer to P.1733


Super Compact Strut Clamps - Equal Ø / Unequal Ø Perpendicular Configurations with Wing Knob- 1834

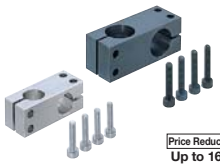

Strut Clamps - Equal Ø Perpendicular Configuration with Clamp Levers- 1834


Price Reduction 5% on Average
Super Compact Strut Clamps - Equal Ø / Unequal Ø Perpendicular Configurations- 1835


Price Reduction Up to 20%
-Resin / Equal Ø Perpendicular Configuration- 1835


-Compact Strut Clamps - Equal Ø Perpendicular Configuration- 1836


–Unequal Ø Perpendicular Configuration- 1836


Price Reduction Up to 16%
-Strut Clamps – Equal Ø Perpendicular Configuration / Reversed– 1837


–Unequal Ø Perpendicular Configuration / Reversed– 1838


-Perpendicular Hole Pitch Selection- 1839

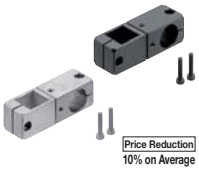

Price Reduction 12% on Average
Separate (Equal / Unequal Ø Perpendicular Configurations)– 1840


–Equal Ø T–Shaped Perpendicular Separate Configuration– 1841


-Parallel Hole Pitch Selection- 1842


Price Reduction 10% on Average
-Equal Ø Rotation Type- 1843


Price Reduction 10% on Average
–Unequal Ø Rotation Type– 1843


Price Reduction 10% on Average
-Square Hole Rotation / Round Hole Rotation- 1844


-Super Compact Strut Clamps - With Wing Knob (Vertical / Parallel Female Thread)- 1845


-(Vertical / Parallel Female Thread)- 1845


-With Clamp Lever (Vertical / Parallel Female Thread)– 1846

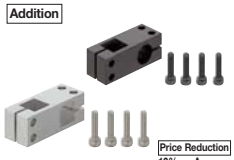

–Vertical Female Thread– 1847


–Parallel Female Thread– 1848


-Separate (Vertical / Parallel Female Thread)- 1849


-Strut Clamps – Anti-Rotation Parallel Female Thread– 1850

Addition


Price Reduction 10% on Average
- Square-Round Perp endicular / Square-Square Perpendicular- 1851

Addition


-Square Hole, Tap Type- 1852


–Slotted Hole– 1853


–L-Shaped– 1853


–Arm– 1854


- Bar Clamps – Straight / Male Thread– 1854


Flexible Clamps 1855


Holder Hollows 1855


Flexible Clamps – Compact– 1856


Hollow Stands - Set Screws- 1857


–Welded– 1858


Hollow Stands – Male Thread Hollows– 1859


-Male Thread Hollows Welded- 1859


Price Reduction Up to 7%
Rotary Connectors - Round Flange / Compact Flange- 1861

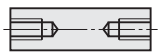
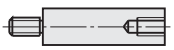
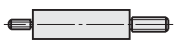
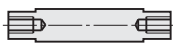
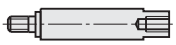
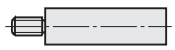
NEW

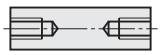

-Allowable Moment Adaptive - Singled Flanged / Double Flanged- 1862

Post (Hexagon · Square · Circular)

-Overview-

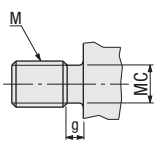
■Shapes and Materials Selection List

Shape Name Type		Shapes	Hexagonal Posts: Steel (1.0038/S235JR) -	Black Oxide	Electroless Nickel Plating	Trivalent Chromate	Stainless Steel (1.4305 / 1.4301) -	Aluminum (EN AW-2011/ AlCu6BiPb) Clear Anodize	Page	Circular Posts: Steel (1.0038/S235JR) -	Black Oxide	Electroless Nickel Plating	Trivalent Chromate	Stainless Steel (1.4301/ X5CrNi18-10) -	Aluminum (EN AW-2017/ AlCu4NgSi) Clear Anodize	Plastic (Polyacetal)	Page
Both Ends Female Thread	Small Diameter		-	●	●	-	●	-	P.1788	-	-	-	-	-	-	-	-
	Standard		●	●	●	●	●	●	P.1789	●	●	●	●	●	●	●	P.1799 P.1808
One End Male Thread One End Female Thread	Small Diameter		-	●	●	-	●	-	P.1788	-	-	-	-	-	-	-	-
	Standard		●	●	●	●	●	-	P.1791 P.1793	●	●	●	●	●	-	-	P.1801 P.1803
Both Ends Male Thread	Standard		●	●	●	-	●	-	P.1793	●	●	●	-	●	-	-	P.1803
Pilot	Both Ends Female Thread		●	●	●	-	●	-	P.1795	●	●	●	-	●	-	-	P.1805
	One End Male Thread One End Female Thread		●	●	●	-	●	-	P.1795	●	●	●	-	●	-	-	P.1805
	Both Ends Male Thread		●	●	●	-	●	-	P.1795	●	●	●	-	●	-	-	P.1805
One End Female Thread	Standard		●	●	●	-	●	-	P.1797	●	●	●	-	●	-	●	P.1807 P.1808
One End Male Thread	Standard		●	●	●	-	●	-	P.1797	●	●	●	-	●	-	-	P.1807

Shape Name Type		Shapes	Square Posts: Steel (1.0038/S235JR) -	Black Oxide	Electroless Nickel Plating	Trivalent Chromate	Stainless Steel (1.4301/ X5CrNi18-10) -	Aluminum (EN AW-2011/ AlCu6BiPb / 2017) Clear Anodize	Page
Square Posts	Both Ends Female Thread		●	●	●	-	●	-	P.1809
	One End Male Thread One End Female Thread		●	●	●	-	●	-	P.1809

*For posts with an outer diameter g6 tolerance combined with post stands and post clamps, refer to **P.1814**

■Relief Dimension of Male Thread Post (Reference)



M	MC	g
2	1.4	0.8
2.6	2.1	0.8
3	2.3	1.0
4	3	1.2
5	3.9	1.5
6	4.3	2.0
8	6.2	2.5
10	8	3.0
12	9.8	
16	13.6	
20	17	4.0
24	20	5.0
27	23	
30	26	

Small Hexagonal Posts

–Both Ends Female Thread · One End Male Thread, One End Female Thread–

CAD Data

■Features: Applicable when space is limited.

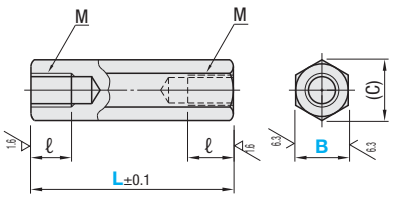
■Small Hexagonal Posts RoHS



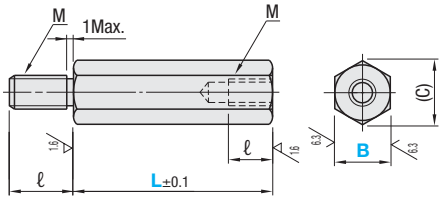
Type		M Material	S Surface Treatment
Both Ends Female Thread	One End Male Thread, One End Female Thread		
BSLCB	BSLCG	1018 JIS STKM	Black Oxide
PSLCB	PSLCG		Electroless Nickel Plating
SLCB	SLCG	1.4305/X10CrNiS18-9	-

25 (6.3 1.6)

·Both Ends Female Thread



·One End Male Thread, One End Female Thread



Part Number Type		B	L Dimension Selection	M	ℓ	(C)
Both Ends Female Thread	One End Male Thread, One End Female Thread					
BSLCB PSLCB SLCB	BSLCG PSLCG SLCG	*4	5 6 7 8 9 10 15 20	M2	5	4.6
		*5	5 6 8 9 10 15 20	M2.6	5	5.8
		5.5	5 6 7 8 9 10 11 12 13 14 15 16 17 18 20	M3	6	6.3

(?)B Dimensions 4 and 5 are only applicable to SLCB and SLCG. (?)Antirust Oil is included with Black Oxide and Electroless Nickel Plating products.
(?)When L≤Mx6, the Pilot Hole for Both Ends Female Thread Type may go through.
(?)For One End Male Thread and One End Female Thread, L dimensions 5 and 6 match ℓ dimensions 3 and 4 for one end tapped, respectively.

Order Example

Part Number	-	L
BSLCB 5.5	-	12
SLCG 5	-	20

Days to Ship: 6 Days P.87

Price

■Both Ends Female Thread

Part Number Type	B	L	Quantity € Unit Price 1~29	Volume Discount 30~49	50~99
1.0038/S235JR Black Oxide BSLCB	5.5	5~12			
		13~20			
1.0038/S235JR Electroless Nickel Plating PSLCB	5.5	5~12			
		13~20			
1.4305/X10CrNiS18-9 SLCB	4	5~10			
		15 · 20			
	5	5~10			
		15 · 20			
	5.5	5~12			
		13~20			

(?)For orders larger than indicated quantity, please request a quotation.

■One End Male Thread, One End Female Thread

Part Number Type	B	L	Quantity € Unit Price 1~29	Volume Discount 30~49	50~99
1.0038/S235JR Black Oxide BSLCG	5.5	5~12			
		13~20			
1.0038/S235JR Electroless Nickel Plating PSLCG	5.5	5~12			
		13~20			
1.4305/X10CrNiS18-9 SLCG	4	5~10			
		15 · 20			
	5	5~10			
		15 · 20			
	5.5	5~12			
		13~20			

(?)For orders larger than indicated quantity, please request a quotation.

Hexagonal Posts
-Both Ends Female Thread-

■Both Ends Female Thread



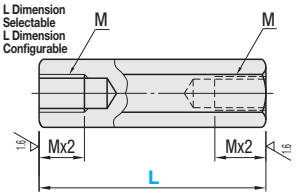
RoHS

Part Number
not RoHS compliant

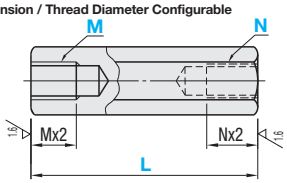
Type			M Material	S Surface Treatment
L Dimension Selectable	L Dimension Configurable	L Dimension - Thread Diameter Configurable		
-	NLSFB	NLSBF	1.0038/S235JR	-
LSBRK	LSFB	LSBF		Black Oxide
PLSBRK	PLSFB	PLSBF		Electroless Nickel Plating (Trivalent Chromate Black)
-	BLSFB	BLSBF		
SLSBRK	SLSBFA	SLSBF	1.4301/X5CrNi18-10	-
-	ALSFB	ALSBF	EN AW-2011/AlCu6BiPb	Clear Anodize

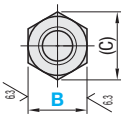
25 / (6.3 / 1.6 /)

- L Dimension Selectable
- L Dimension Configurable



- L Dimension / Thread Diameter Configurable





Anti-rust Oil is applied on 1.0038/S235JR products.

■L Dimension Selectable

Part Number Type	B	L (Dimension Selection)	M (Coarse)	(C)
1.0038/S235JR LSBRK PLSBRK 1.4301/X5CrNi18-10 SLSBRK	6	15 20 25 30 35 40 45 50	3	6.9
	7	20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150	4	8.1
	8	20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	5	9.2
	10	25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	6	11.5
	12	25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	6	13.9
	13	35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	8	15.0
	14	35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	8	16.2
	17	40 45 50 60 70 80 90 100 110 120 130 140 150 200	10	19.6
	19	50 60 70 80 90 100 110 120 130 140 150 200	12	21.9

■L Dimension Configurable

Part Number Type	B	L 0.5mm Increment	M (Coarse)	(C)
1.0038/S235JR NLSFB LSFB PLSFB BLSFB 1.4301/X5CrNi18-10 SLSBFA EN AW-2011/AlCu6BiPb ALSFB	*5	8~50	2.6	5.8
	6	8~50	3	6.9
	7	10~150	4	8.1
	8	15~250	5	9.2
	10	25~350	6	11.5
	12	25~400	6	13.9
	13	30~400	8	15.0
	14	25~500	8	16.2
	17	40~500	10	19.6
	19	50~500	12	21.9
	24	50~600	16	27.7
	27	60~700	20	31.2
	30	60~800	20	34.6
	32	75~800	24	36.9

When L≤Mx4, tapped hole goes through.
When L≤Mx6, the pilot hole may go through.
⊗B=5 is not available for EN AW-2011/AlCu6BiPb.

■L Dimension - Thread Diameter Configurable

Part Number Type	B	L 0.5mm Increment	M (Coarse Thread) / N (Coarse Thread) Selection	(C)
1.0038/S235JR NLSBF LSBF PLSBF BLSBF 1.4301/X5CrNi18-10 SLSBF EN AW-2011/AlCu6BiPb ALSBF	*5	8~50	2 2.6	5.8
	6	15~50	3 4	6.9
	7	15~150	3 4 5	8.1
	8	20~250	3 4 5 6	9.2
	10	25~350	4 5 6 8	11.5
	12	25~400	4 5 6 8	13.9
	13	30~400	4 5 6 8 10	15.0
	14	30~500	4 5 6 8 10	16.2
	17	40~500	5 6 8 10 12	19.6
	19	50~500	5 6 8 10 12 16	21.9
	24	60~600	6 8 10 12 16 20	27.7
	27	60~700	6 8 10 12 16 20	31.2
	30	75~800	6 8 10 12 16 20 24	34.6
	32	75~800	6 8 10 12 16 20 24	36.9

L≥Mx2+Nx2
⊗B=5 is not available for EN AW-2011/AlCu6BiPb.

L Dimension Tolerances generally are
L 8 ~ 300 ±0.2
L300.5 ~ 600 ±0.3
L600.5 ~ 800 ±0.4

For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.
Except L Dimension Selectable

Order Example

Part Number - L - M - N

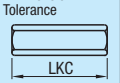
(L Dimension Selectable)**LBRK13** - 100
(L Dimension Configurable)**LSFB6** - 48
(L Dimension / Thread Diameter Configurable)**LSBF10** - 200 - M4 - N6

Alterations

Part Number - L - M - N - (LKC)

LSFB6 - 42 - LKC
LSBF10 - 200 - M4 - N6 - LKC

Applicable to L Dimension Configurable Type and L Dimension, Thread Diameter Configurable Type.

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows. Ordering Code LKC L: 8~300 → ±0.05; 300.5~600 → ±0.10; 600.5~800 → ±0.15	4,00

Days to Ship

• L Dimension Selectable

8 Days — Express A — 3,00 EUR/piece — P.88
5 Days
A Express Charge of 8,10 EUR for 3 or more identical pieces.

• L Dimension Configurable · L Dimension - Thread Diameter Configurable (except below)

8 Days — Express A — 8,00 EUR/piece — P.88
5 Days
A Express Charge of 21,60 EUR for 3 or more identical pieces.

• ALSFB · ALSBF

10 Days — Express B — 5,00 EUR/piece — P.88
A Express Charge of 13,50 EUR for 3 or more identical pieces.

• BLSFB · BLSBF

10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

L Dimension Selectable

Part Number Type	B	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.0038/ S235JR Black Oxide LSBRK	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				

Part Number Type	B	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.0038/ S235JR Electroless Nickel Plating PLSBRK	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				

Part Number Type	B	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.4301/ X5CrNi18-10 SLSBRK	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				

L Dimension Configurable

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR NLSFB	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSFB	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR Electroless Nickel Plating PLSFB	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Trivalent Chromate Plating BLSFB	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.4301/ X5CrNi18-10 SLSBFA	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
EN AW-2011/ AlCu6BiPb Clear Anodize ALSFB	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

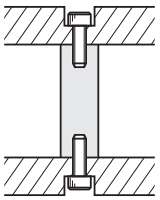
L Dimension · Thread Diameter Configurable

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR NLSBF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSBF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR Electroless Nickel Plating PLSBF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Trivalent Chromate Plating BLSBF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.4301/ X5CrNi18-10 SLSBF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
EN AW-2011/ AlCu6BiPb Clear Anodize ALSBF	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Example



Hexagonal Posts

–One End Male Thread One End Female Thread–

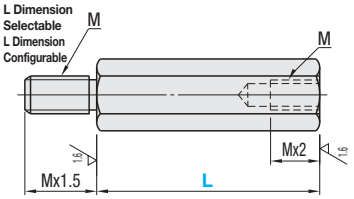
■One End Male Thread, One End Female Thread



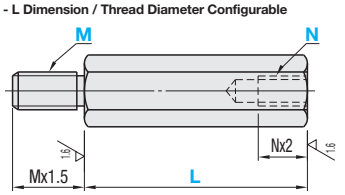
RoHS

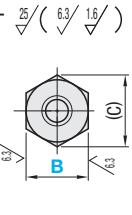
Type			M Material	S Surface Treatment
L Dimension Selectable	L Dimension Configurable	L Dimension - Thread Diameter Configurable		
-	NLSBWF	NLSBG	1.0038/S235JR	-
LSBWRK	LSBWF	LSBG		Black Oxide
PLSBWRK	PLSBWF	PLSBG		Electroless Nickel Plating
-	BLSBWF	BLSBG		(Trivalent Chromate Black)
SLSBWRK	SLSBWF	SLSBG	1.4301/X5CrNi18-10	-

- L Dimension Selectable
- L Dimension Configurable



- L Dimension / Thread Diameter Configurable





Anti-rust Oil is applied on 1.0038/S235JR products.

■L Dimension Selectable

Part Number Type	B	L (Dimension Selection)	M (Coarse)	(C)
1.0038/S235JR LSBWRK PLSBWRK 1.4301/X5CrNi18-10 SLSBWRK	6	15 20 25 30 35 40 45 50	3	6.9
	7	20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150	4	8.1
	8	20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	5	9.2
	10	25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	6	11.5
	12	25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	6	13.9
	13	30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	8	15.0
	14	35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	8	16.2
	17	40 45 50 60 70 80 90 100 110 120 130 140 150 200	10	19.6
	19	50 60 70 80 90 100 110 120 130 140 150 200	12	21.9

■L Dimension Configurable

Part Number Type	B	L 0.5mm Increment	M (Coarse)	(C)
1.0038/S235JR NLSBWF LSBWF PLSBWF BLSBWF 1.4301/X5CrNi18-10 SLSBWF	5	8~50	2.6	5.8
	6	15~50	3	6.9
	7	20~150	4	8.1
	8	20~250	5	9.2
	10	25~350	6	11.5
	12	25~400	6	13.9
	13	30~400	8	15.0
	14	30~500	8	16.2
	17	35~500	10	19.6
	19	45~500	12	21.9
	24	55~600	16	27.7
	27	65~700	20	31.2
	30	65~800	20	34.6
	32	80~800	24	36.9

■L Dimension - Thread Diameter Configurable

Part Number Type	B	L 0.5mm Increment	M (Coarse Thread) / N (Coarse Thread) Selection	(C)
1.0038/S235JR NLSBG LSBG PLSBG BLSBG 1.4301/X5CrNi18-10 SLSBG	5	8~50	2 2.6	5.8
	6	15~50	3 4	6.9
	7	20~150	3 4	8.1
	8	20~250	3 4 5	9.2
	10	25~350	4 5 6	11.5
	12	25~400	4 5 6 8	13.9
	13	30~400	4 5 6 8	15.0
	14	35~500	4 5 6 8 10	16.2
	17	35~500	5 6 8 10	19.6
	19	45~500	5 6 8 10 12	21.9
	24	55~600	6 8 10 12 16	27.7
	27	65~700	6 8 10 12 16 20	31.2
	30	80~800	6 8 10 12 16 20 24	34.6
	32	80~800	6 8 10 12 16 20 24	36.9

L≥Nx3+2

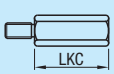
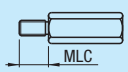
Order Example

Part Number	-	L	-	M	-	N
(L Dimension Selectable) LSBWRK10	-	40				
(L Dimension Configurable) LSB WF12	-	300				
(L Dimension / Thread Diameter Configurable) LSBG30	-	700	-	M20	-	N24

Alterations

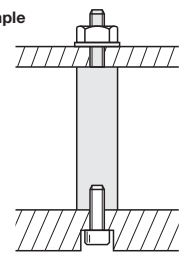
Part Number	-	L	-	M	-	N	-	(LKC / MLC)
LSBWF6	-	30					-	LKC
LSBG30	-	700	-	M20	-	N24	-	LKC-MLC20

Applicable to L Dimension Configurable Type and L Dimension, Thread Diameter Configurable Type.

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows. Ordering Code LKC L: 8~300 ±0.05; 300.5~600 ±0.10; 600.5~800 ±0.15	4,00
Thread Length 	MLC	Changes the thread length. ⊗Not applicable to B=5. MLC=0.1 mm Increment Mx1≤MLC<Mx1.5 Ordering Code MLC10	2,00

L Dimension Tolerances generally are
L8~300 ±0.2
L300.5~600 ±0.3
L600.5~800 ±0.4
For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.
Except L Dimension Selectable

Example



Days to Ship

- L Dimension Selectable
  - 8 Days — Express A 3,00 EUR/piece P. 88
  - 5 Days — A Express Charge of 8,10 EUR for 3 or more identical pieces.
- L Dimension Thread Diameter Configurable (except below)-
  - 8 Days — Express A 8,00 EUR/piece P. 88
  - 5 Days — A Express Charge of 21,60 EUR for 3 or more identical pieces.
- BLSBWF / BLSBG
  - 10 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

L Dimension Selectable

Part Number Type	B	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.0038/ S235JR Black Oxide LSBWRK	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				

Part Number Type	B	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.0038/ S235JR Electroless Nickel Plating PLSBWRK	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				

Part Number Type	B	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.4301/ X5CrNi18-10 SLSBWRK	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				

L Dimension Configurable

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR NLSBWF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSBWF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR Electroless Nickel Plating PLSBWF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Trivalent Chromate Plating BLSBWF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.4301/ X5CrNi18-10 SLSBWF	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

L Dimension - Thread Diameter Configurable

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR NLSBG	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSBG	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR Electroless Nickel Plating PLSBG	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Trivalent Chromate Plating BLSBG	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.4301/ X5CrNi18-10 SLSBG	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Hexagonal Posts

-One End Male Thread One End Female Thread / Both Ends Male Thread Thread Length and Diameter Configurable-

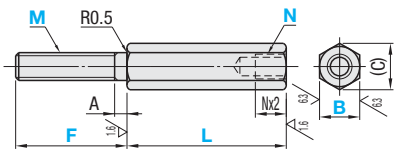
- One End Male Thread, One End Female Thread
- Both Ends Male Thread Thread Length and Diameter Configurable



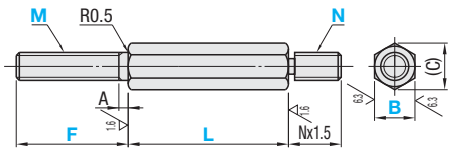
RoHS

Type			Material	Surface Treatment
One End Male Thread, One End Female Thread	Both Ends Male Thread	Both Ends Male Thread Thread Length and Diameter Configurable		
NLSBH	NLSBL	NLSBP	1.0038/S235JR	-
LSBH	LSBL	LSBP		Black Oxide
PLSBH	PLSBL	PLSBP		Electroless Nickel Plating
SLSBH	SLSBL	SLSBP	1.4301/X5CrNi18-10	-

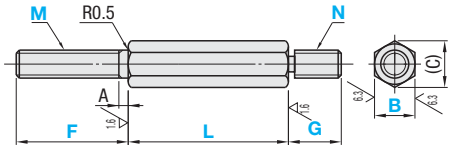
- One End Male Thread, One End Female Thread



- Both Ends Male Thread



- Both Ends Male Thread Thread Length and Diameter Configurable



- L Tolerance

L8~300 ±0.2
L300.5~600±0.3
L600.5~800±0.4

Anti-rust Oil is applied on 1.0038/S235JR products.

Part Number Type	B	0.5mm Increment L	F	G	M · N Selection	(C)	A
	5	8~50	5~20	5~20	2 2.6	5.8	1.0
	6	15~50	5~30	5~30	3 4	6.9	1.5
	7	20~150	5~30	5~30	3 4	8.1	1.5
	8	20~250	8~40	8~40	4 5	9.2	1.6
	10	25~350	8~42	8~42	4 5 6	11.5	2.0
	12	25~400	10~55	10~55	5 6 8	13.9	2.5
	13	30~400	10~55	10~55	5 6 8	15.0	2.5
	14	35~500	12~60	12~60	6 8 10	16.2	3.0
	17	35~500	12~60	12~60	6 8 10	19.6	3.0
	19	45~500	15~75	15~75	8 10 12	21.9	3.5
	24	55~600	20~80	20~80	10 12 16	27.7	4.0
	27	65~700	25~90	25~90	12 16 20	31.2	5.0
	30	80~800	30~100	30~100	16 20 24	34.6	6.0
	32	80~800	30~100	30~100	16 20 24	36.9	6.0

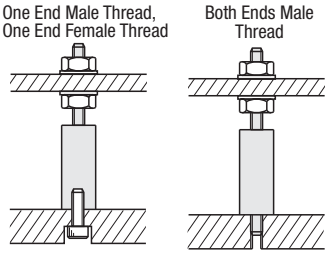
One End Male Thread, One End Female Thread 1.0038/S235JR	Both Ends Male Thread 1018 Carbon Stee	Both Ends Male Thread Thread Length and Diameter Configurable 1.0038/S235JR
NLSBH	NLSBL	NLSBP
LSBH	LSBL	LSBP
PLSBH	PLSBL	PLSBP
1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10
SLSBH	SLSBL	SLSBP

L≥Nx3+2 only for One End Male Thread One End Female Thread

Order Example

Part Number	L	F	G	M	N
LSBH10	200	F40		M5	N4
PLSBP10	200	F40	G35	M5	N4
SLSBP30	750	F35	G40	M20	N24

Example



Days to Ship

8 Days

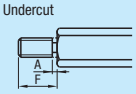
Express A 8,00 EUR/ piece P88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

5 Days

Alterations

Part Number	L	F	G	M	N	(FC)
LSBH10	200	F40		M5	N4	FC
SLSBP30	750	F35	G40	M20	N24	FC

Alterations	Code	Spec.	Price Adder
Undercut 	FC	Adds a relief to Dimension A. Ordering Code FC	2,00

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

One End Male Thread, One End Female Thread

Part Number		€ Unit Price			
Type	B	Min. L~200	L200.5 ~400	L400.5 ~600	L600.5 ~800
1.0038/ S235JR NLSBH	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSBH	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Electroless Nickel Plating PLSBH	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.4301/ X5CrNi18-10 SLSBH	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Both Ends Male Thread

Part Number		€ Unit Price			
Type	B	Min. L~200	L200.5 ~400	L400.5 ~600	L600.5 ~800
1.0038/ S235JR NLSBL	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSBL	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Electroless Nickel Plating PLSBL	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.4301/ X5CrNi18-10 SLSBL	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Both Ends Male Thread Thread Length and Diameter Configurable

Part Number		€ Unit Price			
Type	B	Min. L~200	L200.5 ~400	L400.5 ~600	L600.5 ~800
1.0038/ S235JR NLSBP	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSBP	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Electroless Nickel Plating PLSBP	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.4301/ X5CrNi18-10 SLSBP	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Hexagonal Posts with Pilot
-Pilot Selectable · Pilot Configurable-

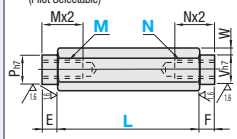
■Base Surface (W) Wide Type has been added to B Dimensions 27, 30 and 32, respectively (e.g. B Dimension 27: W1.5; B Dimension 27W: W3.5). This Type has a wider contact area that allows plates and other objects to be stably fixed.

RoHS

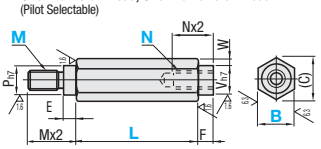


Type						M Material	S Surface Treatment
Both Ends Female Thread		One End Male Thread, One End Female Thread		Both Ends Male Thread			
Pilot Selectable	Pilot Configurable	Pilot Selectable	Pilot Configurable	Pilot Selectable	Pilot Configurable		
NLSBJ	NLSBJF	NLSBK	NLSBKF	NLSBM	NLSBMF	1.0038/S235JR	-
LSBJ	LSBJF	LSBK	LSBKF	LSBM	LSBMF		Black Oxide
PLSBJ	PLSBJF	PLSBK	PLSBKF	PLSBM	PLSBMF		Electroless Nickel Plating
SLSBJ	SLSBJF	SLSBK	SLSBKF	SLSBM	SLSBMF	1.4301/X5CrNi18-10	-

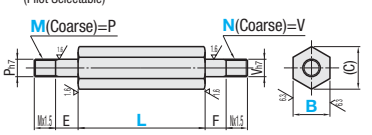
- Both Ends Female Thread (Pilot Selectable)



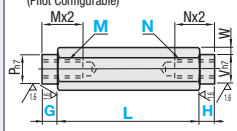
- One End Male Thread, One End Female Thread (Pilot Selectable)



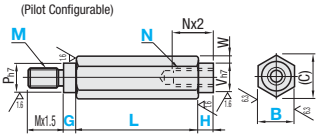
- Both Ends Male Thread (Pilot Selectable)



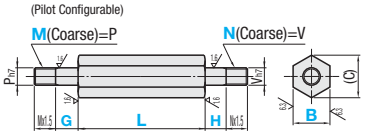
(Pilot Configurable)



(Pilot Configurable)



(Pilot Configurable)



25 / (6.3 / 1.6 /)

※L≥Mx2+Nx2

※Anti-rust Oil is applied on 1.0038/S235JR products.

■Both Ends Female Thread

Part Number Type	B	L 0.5mm Increment	M (Coarse Thread) / N (Coarse Thread) Selection	G 1mm Increment	H 1mm Increment	E	F	P	V	W	(C)
	8	15~250	3 4	2~ 4	2~ 4	4	4	6	6	1	9.2
	10	15~350	4 5	2~ 5	2~ 5	5	5	8	8	1	11.5
	12	20~400	5 6	2~ 6	2~ 6	6	6	10	10	1	13.9
Pilot Selectable / Pilot Configurable	13	20~400	5 6	2~ 6	2~ 6	6	6	10	10	1.5	15
1.0038/S235JR / 1.0038/S235JR	14	25~500	6 8	2~ 8	2~ 8	8	8	12	12	1	16.2
NLSBJ / NLSBJF	17	25~500	6 8	2~ 8	2~ 8	8	8	12	12	2	19.6
LSBJ / LSBJF	19	40~500	6 8 10 12	2~10	2~10	10	10	16	16	1.5	21.9
PLSBJ / PLSBJF	24	50~600	6 8 10 12 16	2~12	2~12	12	12	20	20	2	27.7
	27	50~700	6 8 10 12 16	2~16	2~16	16	16	24	24	1.5	31.2
1.4301/X5CrNi18-10 / 1.4301/X5CrNi18-10	27W							20	20	3.5	
SLSBJ / SLSBJF	30	60~800	6 8 10 12 16 20	2~16	2~16	16	16	28	28	1	34.6
	30W							24	24	3	
	32	60~800	6 8 10 12 16 20	2~20	2~20	20	20	30	30	1	36.9
	32W							24	24	4	

■One End Male Thread, One End Female Thread

Part Number Type	B	L 0.5mm Increment	M (Coarse Thread) / N (Coarse Thread) Selection	G 1mm Increment	H 1mm Increment	E	F	P	V	W	(C)
	8	20~250	3 4	2~ 4	2~ 4	2	4	6	6	1	9.2
	10	20~350	4 5	2~ 5	2~ 5	2	5	8	8	1	11.5
	12	25~400	5 6	2~ 6	2~ 6	3	6	10	10	1	13.9
Pilot Selectable / Pilot Configurable	13	25~400	5 6	2~ 6	2~ 6	3	6	10	10	1.5	15
1.0038/S235JR / 1.0038/S235JR	14	30~500	6 8	2~ 8	2~ 8	4	8	12	12	1	16.2
NLSBK / NLSBKF	17	30~500	6 8	2~ 8	2~ 8	4	8	12	12	2	19.6
LSBK / LSBKF	19	45~500	6 8 10 12	2~10	2~10	5	10	16	16	1.5	21.9
PLSBK / PLSBKF	24	55~600	6 8 10 12 16	2~12	2~12	6	12	20	20	2	27.7
	27	55~700	6 8 10 12 16	2~16	2~16	7	16	24	24	1.5	31.2
1.4301/X5CrNi18-10 / 1.4301/X5CrNi18-10	27W							20	20	3.5	
SLSBK / SLSBKF	30	65~800	6 8 10 12 16 20	2~16	2~16	8	16	28	28	1	34.6
	30W							24	24	3	
	32	65~800	6 8 10 12 16 20	2~20	2~20	8	20	30	30	1	36.9
	32W							24	24	4	

■Both Ends Male Thread

Part Number Type	B	L 0.5mm Increment	M (Coarse Thread) / N (Coarse Thread) Selection	G 1mm Increment	H 1mm Increment	E	F	(C)
	8	20~250	3 4 5	2~4	2~4	4	4	9.2
	10	20~350	4 5 6	2~5	2~5	5	5	11.5
	12	25~400	5 6 8	2~6	2~6	6	6	13.9
Pilot Selectable / Pilot Configurable	13	25~400	5 6 8	2~6	2~6	6	6	15
1.0038/S235JR / 1.0038/S235JR	14	30~500	6 8 10	2~8	2~8	8	8	16.2
NLSBM / NLSBMF	17	30~500	6 8 10	2~8	2~8	8	8	19.6
LSBM / LSBMF	19	45~500	6 8 10 12	2~10	2~10	10	10	21.9
PLSBM / PLSBMF	24	55~600	6 8 10 12 16	2~12	2~12	12	12	27.7
1.4301/X5CrNi18-10 / 1.4301/X5CrNi18-10	27	55~700	6 8 10 12 16 20	2~16	2~16	16	16	31.2
SLSBM / SLSBMF	30	65~800	6 8 10 12 16 20 24	2~16	2~16	16	16	34.6
	32	65~800	6 8 10 12 16 20 24	2~20	2~20	20	20	36.9

Order Example

Part Number	-	L	-	M	-	N	-	G	-	H
LSBJ10	-	350	-	M5	-	N4				
PLSBJ27W	-	600	-	M8	-	N8				
LSBMF10	-	300	-	M5	-	N5	-	G3	-	H2

L Dimension Tolerances generally are
L 15~300±0.2
L300.5~600±0.3
L600.5~800±0.4

For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.

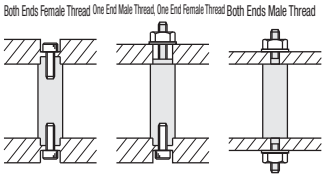
Days to Ship: 8 Days / 5 Days

Express A 8,00 EUR/ piece P.88

※A Express Charge of 21,60 EUR for 3 or more identical pieces.

ex Example

Both Ends Female Thread / One End Male Thread, One End Female Thread / Both Ends Male Thread



Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

*Additional 4,00 EUR required for the price listed below for Pilot Configurable Type.

Both Ends Female Thread

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR NLSBJ NLSBJF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				
1.0038/ S235JR Black Oxide LSBJ LSBJF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				
1.0038/ S235JR Electroless Nickel Plating PLSBJ PLSBJF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				
1.4301/ X5CrNi18-10 SLSBJ SLSBJF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				

One End Male Thread, One End Female Thread

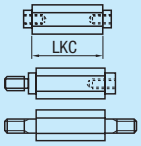
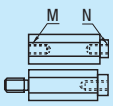
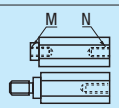
Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR NLSBK NLSBKF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				
1.0038/ S235JR Black Oxide LSBK LSBKF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				
1.0038/ S235JR Electroless Nickel Plating PLSBK PLSBKF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				
1.4301/ X5CrNi18-10 SLSBK SLSBKF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	27W				
	30				
	30W				
	32				
	32W				

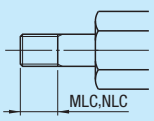
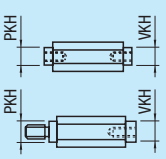
Both Ends Male Thread

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/ S235JR NLSBM NLSBMF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Black Oxide LSBM LSBMF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/ S235JR Electroless Nickel Plating PLSBM PLSBMF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.4301/ X5CrNi18-10 SLSBM SLSBMF *	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Alterations

Part Number	-	L	-	M	-	N	-	G	-	H	-	(LKC, NPC, NVC, etc.)
LSBMF10	-	300	-	M5	-	N5	-	G2	-	H3	-	MLC5 - NLC5
SLSBJF10	-	117.5	-	M5	-	N5	-	G2	-	H4	-	NPC

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows: Ordering Code LKC L: 15~300 ±0.05; 300.5~600 ±0.10; 600.5~800 ±0.15	4,00
	NPC	No machining for P pilot at M thread end. Ordering Code NPC ⊗Not applicable to Both Male Thread. Specify G2 for Pilot Configurable Dimension. Note that the actual G dimension becomes 0, and the specified dimension is applied to L Dimension.	-3,00
	NVC	No machining for V pilot at N thread end. Ordering Code NVC ⊗Not applicable to Both Male Thread. Indicate the Pilot Configurable Type with H2.	-3,00

Alterations	Code	Spec.	Price Adder
Thread Length 	MLC NLC	Changes the thread length of M and N threads. 0.1 mm Increment for MLC / NLC Ordering Code MLC10 Mx1≤MLC<Mx1.5 Nx1≤NLC<Nx1.5 Applicable to Both Ends Male Thread Type.	2,00
	PKH VKH	Pilot diameter can be specified. 1mm Increment Ordering Code PKH8 VKH10 B: 10, 12, 13, 14, 17 / PKH / VKH: 7, 8 · 9, 8 · 9, 11, 11 B: 19, 24, 27 · 27W, 30 · 30W, 32 · 32W / PKH / VKH: 15, 19, 19~23, 24~27, 24~29 ⊗Not applicable to B=8 Applicable to Both Ends Female Thread · One End Male Thread, One End Female Thread.	2,00

Hexagonal Posts / Attachment Blocks for Hexagonal Posts

-One End Female Thread / One End Male Thread-

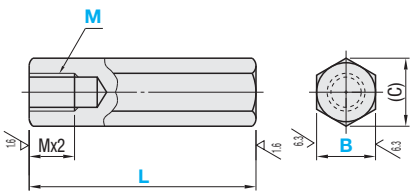
■ One End Female Thread ■ One End Male Thread



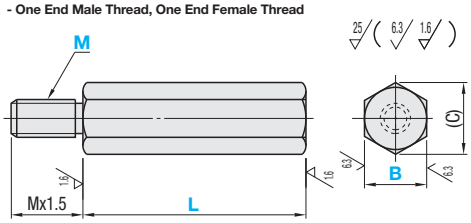
RoHS

Type		M Material	S Surface Treatment
One End Female Thread	One End Male Thread		
NLMN	NLON	1.0038/S235JR	-
LSMN	LSON		Black Oxide
PLMN	PLON		Electroless Nickel Plating
SLMN	SLON	1.4301/X5CrNi18-10	-

- One End Female Thread



- One End Male Thread, One End Female Thread



Anti-rust Oil is applied on 1.0038/S235JR products.

Part Number Type	B	L 0.5mm Increment	M (Coarse) d	(C)
One End Female Thread 1.0038/S235JR NLMN LSMN PLMN 1.4301/X5CrNi18-10 SLMN — One End Male Thread 1.0038/S235JR NLON LSON PLON 1.4301/X5CrNi18-10 SLON	5	8~50	2 2.6	5.8
	6	15~50	3 4	6.9
	7	15~150	3 4	8.1
	8	20~250	3 4 5	9.2
	10	20~350	4 5 6	11.5
	12	25~400	4 5 6 8	13.9
	13	30~400	4 5 6 8	15.0
	14	35~500	4 5 6 8 10	16.2
	17	35~500	5 6 8 10	19.6
	19	45~500	5 6 8 10 12	21.9
	24	65~600	6 8 10 12 16 20	27.7
	27	65~700	6 8 10 12 16 20	31.2
	30	80~800	6 8 10 12 16 20 24	34.6
	32	80~800	6 8 10 12 16 20 24	36.9

Order Example

Part Number	-	L	-	M
NLMN6	-	50	-	M3
SLON10	-	300	-	M5

Days to Ship

8 Days

5 Days

Express A 8,00 EUR/ piece P.88

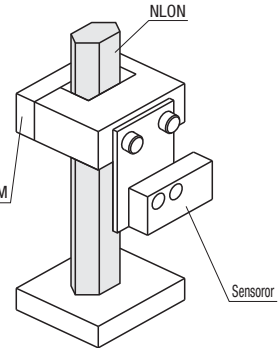
A Express Charge of 21,60 EUR for 3 or more identical pieces.

L Dimension Tolerances generally are

L 8~300	±0.2
L300.5~600	±0.3
L600.5~800	±0.4

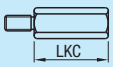
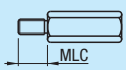
For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.

Example



Alterations

Part Number	-	L	-	M	-	(LKC / MLC)
NLMN6	-	50	-	M3	-	LKC
SLON10	-	300	-	M5	-	MLC5.5

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows. Ordering Code LKC L: 8~300 ±0.05; 300.5~600 ±0.10; 600.5~800 ±0.15	4,00
Thread Length 	MLC	Changes the thread length. ⊗Not applicable to B=5. MLC=0.1 mm Increment. Mx1≤MLC<Mx1.5. Ordering Code MLC10. Applicable to One End Male Thread only.	2,00

Price Reduction
Up to 20%

CAD Data

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Hexagonal Posts One End Female Thread

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/S235JR NLMN	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/S235JR Black Oxide LSMN	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/S235JR Electroless Nickel Plating PLMN	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.4301/ X5CrNi18-10 SLMN	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

Hexagonal Posts One End Male Thread

Part Number Type	B	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800
1.0038/S235JR NLON	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/S235JR Black Oxide LSON	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.0038/S235JR Electroless Nickel Plating PLON	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				
1.4301/ X5CrNi18-10 SLON	5				
	6				
	7				
	8				
	10				
	12				
	13				
	14				
	17				
	19				
	24				
	27				
	30				
	32				

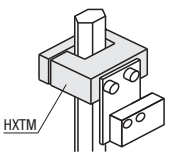
Attachment Blocks for Hexagonal Posts

RoHS



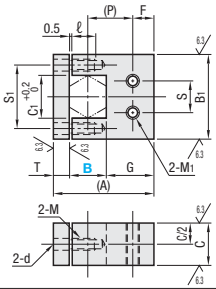
Type: Top Side Female Thread	Type: Side Female Thread	M Material	S Surface Treatment	A Accessory
HXSM	HXTM	1.0038/ S235JR	Electroless Nickel Plating	Hexagon Socket Head Cap Screws

EX

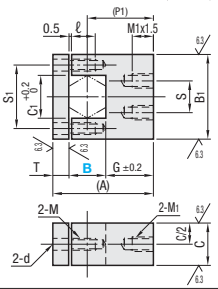


B Dimension corresponds with B dim. of Hexagonal Posts.

Top Side Female Thread



Side Female Thread



Part Number Type	B	(P)	(P1)	B1	C	F	G	C1	T	S1	d	M (Coarse)	ℓ	S	M1 (Coarse)	(A)	€ Unit Price HXSM	€ Unit Price HXTM	Included Screws
Top Side Female Thread HXSM	10	11	16	25	12	5	11	11.5	6	18	3.5	M3	6	12	M4	27			SCB3–12 2 pcs
	12	13	18	32	16		12	13.9		22	4.5	M4	9			30			SCB4–15 2 pcs
	13						11.5	15.0		23					M5	30.5			
Side Female Thread HXTM	14	17	25			8	18	16.2		24						38			
	17	20	28	38	22		19.5	19.6	9	28	5.5	M5	11	16	M6	45.5			SCB5–20 2 pcs
	19						18.5	21.9		29						46.5			

Order Example — Part Number: HXSM14

Days to Ship: 8 Days — Express A 5,00 EUR/ piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Price List	€ Unit Price	5%	10%	18%

Circular Posts

-Both Ends Female Thread with Wrench Flats-

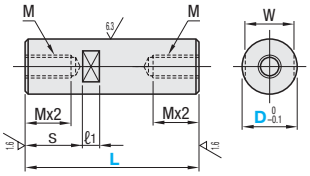
■Both Ends Female Thread RoHS



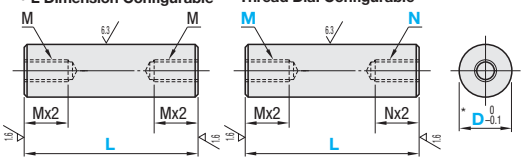
L Dimension Selectable	Type: L Dimension Configurable: Standard	Wrench Flats	Thread Dia. Configurable	Thread Dia. Configurable, Wrench Flats	M Material	S Surface Treatment
-	NETRF	NETRS	NETF	NETS	1.0038/S235JR	-
ETKR	ETKRF	ETKRS	ETKF	ETKS		Black Oxide
PETR	PETRF	PETRS	PETF	PETS		Electroless Nickel Plating
-	BETRF	BETRS	-	BETS		(Trivalent Chromate Black)
SETR	SETRF	SETRS	SETF	SETS	1.4301/X5CrNi18-10	-
-	AETRF	AETRS	AETTF	AETTS	EN AW-2017/AlXu4MgSi	Clear Anodize

25 (6.3 1.6)

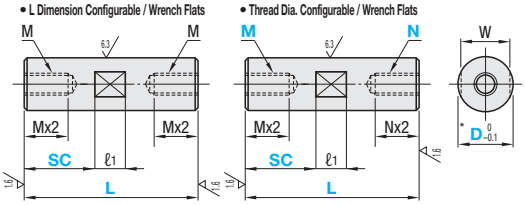
• L Dimension Selectable



• L Dimension Configurable • Thread Dia. Configurable



• L Dimension Configurable / Wrench Flats • Thread Dia. Configurable / Wrench Flats



*D tolerance of trivalent chromate (black) is ±0.05.

Ⓨ L≥Mx2+Nx2

Ⓨ Tapping may cause slight swelling of D dimension.

Ⓨ Anti-rust Oil is applied on 1.0038/S235JR products.

Ⓨ SC≤L−ℓ1

■L Dimension Selectable

Part Number Type	D	L (L Dimension Selectable Selection)	M (Coarse)	S	W	ℓ1
1.0038/S235JR ETKR PETR	6	15 20 25 30 35 40 45 50	3	3.5	5	8
	8	20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150	4	6	7	
	10	20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	5	6	8	
1.4301/X5CrNi18-10 SETR	12	25 30 35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	6	7.5	10	10
	15	35 40 45 50 60 70 80 90 100 110 120 130 140 150 200	8	10	13	
	20	40 45 50 60 70 80 90 100 110 120 130 140 150 200	10	15	17	

■L Dimension Configurable · L Dimension Configurable with Wrench Flats

Part Number Type: L Dimension Configurable	L Dimension Configurable · Wrench Flats	D	L 0.5mm Increment	SC 1mm Increment Wrench Flats Only	M (Coarse)	W	ℓ1
1.0038/S235JR NETRF ETKRF PETRF BETRF	1.0038/S235JR NETRS ETKRS PETRS BETRS	*5	8~50	0~42	2.6	4	8
		6	8~50	0~42	3	5	
		8	10~150	0~142	4	7	
		10	15~350	0~342	5	8	
		12	25~400	0~390	6	10	10
		15	25~500	0~490	8	13	
		20	30~500	0~490	10	17	
1.4301/X5CrNi18-10 SETRF	1.4301/X5CrNi18-10 SETRS	25	40~600	0~590	12	22	
		30	50~700	0~685	16	27	15
A2017 AETRF	A2017 AETRS	*35	50~800	0~785	16	30	
		*40	60~900	0~880	20	36	20
		*50	75~1000	0~980	24	41	

Ⓨ *D=5 is not available for A2017. Ⓨ When L≤Mx4, tapped hole goes through. Ⓨ When L≤Mx6, the pilot hole may go through.
Ⓨ *For D≥35, only **N_ _ _ _, E_ _ _ _ and P_ _ _ _** are applied.

■Thread Diameter Configurable · Thread Diameter Configurable, Wrench Flats

Part Number Type: Thread Dia. Configurable	Thread Dia. Configurable · Wrench Flats	D	L 0.5mm Increment	SC 1mm Increment Wrench Flats Only	(M · N) (Coarse Thread) Selection	W	ℓ1
1.0038/S235JR NETF ETKF PETF	1.0038/S235JR NETS ETKS PETS BETS	*5	15~50	0~42	2.6 3	4	8
		6	15~50	0~42	3 4	5	
		8	15~150	0~142	3 4 5	7	
		10	20~350	0~342	4 5 6	8	
		12	25~400	0~390	5 6 8	10	10
		15	30~500	0~490	6 8 10	13	
		20	40~500	0~490	6 8 10 12	17	
1.4301/X5CrNi18-10 SETF	1.4301/X5CrNi18-10 SETS	25	50~600	0~590	6 8 10 12 16	22	
		30	60~700	0~685	6 8 10 12 16 20	27	15
A2017 AETTF	A2017 AETTS	*35	75~800	0~785	8 10 12 16 20 24	30	15
		*40	75~900	0~880	10 12 16 20 24	36	20
		*50	75~1000	0~980	12 16 20 24	41	20

Ⓨ *D=5 is not available for A2017. Ⓨ L>Mx2+Nx2 Ⓨ When SC≤Mx3, W−M≥2 is required. When L−SC≤Nx3, W−N≥2 is required.
Ⓨ *For D≥35, **N _ _ _, E_ _ _ _ and P_ _ _ _** are applied.

L Dimension Tolerances generally are
L 8~300 ±0.2
L300.5~600 ±0.3
L600.5~1000 ±0.4

For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.
Ⓨ Except L Dimension Selectable

Order Example

Part Number	-	L	-		-	M	-	N
ETKR10	-	150						
ETKRF10	-	150						
ETKF20	-	400			-	M8	-	N10
SETS25	-	500	-	SC100	-	M10	-	N12

Days to Ship

• L Dimension Selectable
8 Days | Express A 3,00 EUR/piece | 5 Days P.88
Ⓨ A Express Charge of 8,10 EUR for 3 or more identical pieces.

• L Dimension Configurable (Except below)
8 Days | Express A 8,00 EUR/piece | 5 Days P.88
Ⓨ A Express Charge of 21,60 EUR for 3 or more identical pieces.

• AETRF · AETRS · AETTF · AETTS
10 Days | Express B 5,00 EUR/piece P.88
Ⓨ A Express Charge of 13,50 EUR for 3 or more identical pieces.

• BETRF · BETRS · BETS
10 Days

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

*Additional 4,00 EUR is required for the price listed below for Wrench Flats Type.

L Dimension Selectable

Part Number Type	D	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.0038/ S235JR Black Oxide ETKR	6				
	8				
	10				
	12				
	15				
	20				
1.0038/ S235JR Electroless Nickel Plating PETR	6				
	8				
	10				
	12				
	15				
	20				
1.4301/ X5CrNi18-10 SETR	6				
	8				
	10				
	12				
	15				
	20				

L Dimension Configurable · L Dimension Configurable with Wrench Flats

Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.0038/ S235JR NETRF NETRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Black Oxide ETKRF ETKRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Electroless Nickel Plating PETRF PETRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Trivalent Chromate Plating BETRF BETRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
1.4301/ X5CrNi18-10 SETRF SETRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
EN AW-2017/ AlCu4MgSi Clear Anodize AETRF AETRS *	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

Thread Diameter Configurable · Thread Diameter Configurable, Wrench Flats

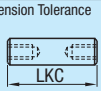
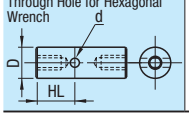
Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.0038/ S235JR NETF NETS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Black Oxide ETKF ETKS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Electroless Nickel Plating PETF PETS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Trivalent Chromate Plating BETS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
1.4301/ X5CrNi18-10 SETF SETS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
EN AW-2017/ AlCu4MgSi Clear Anodize AETTF AETTS *	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

Alterations

Part Number - L - [ ] - M - N - (LKC · HL)

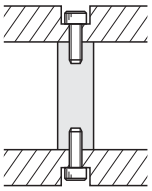
ETKRF10 - 150 - LKC
ETKF20 - 400 - M8 - N10 - LKC
SETS25 - 500 - SC100 - M10 - N12 - HL300

Applicable to L Dimension Configurable only.

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows. Ordering Code LKC L: 8~300 ±0.05; 300.5~600 ±0.10; 600.5~1000 ±0.15	4,00
Through Hole for Hexagonal Wrench 	HL	HL= 1mm Increment d/2+5≤HL≤L−(2/d+5) Applicable to 8≤D≤30 only Ordering Code HL10	4,00

D	d	Hex Wrench Width
8	2.5	2
10	3	2.5
12	3.5	3
15	4.6	4
20	5.8	5
25	6.9	6
30	9.2	8

Example



Circular Posts

-One End Male Thread - One End Female Thread -With Wrench Flats-

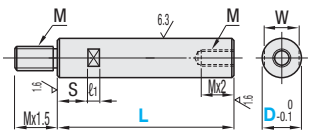
■One End Male Thread, One End Female Thread

RoHS

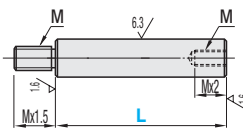


L Dimension Selectable	L Dimension Configurable				M Material	S Surface Treatment
	Standard	Wrench Flats	Thread Dia. Configurable	Thread Dia. Configurable · Wrench Flats		
-	NETGRF	NETGRS	NETG	NETGS	1.0038/S235JR	-
ETKGR	ETKGRF	ETKGRS	ETKG	ETKGS		Black Oxide
PETGR	PETGRF	PETGRS	PETG	PETGS		Electroless Nickel Plating
-	BETGRF	BETGRS	BETG	BETGS		(Trivalent Chromate Black)
SETGR	SETGRF	SETGRS	SETG	SETGS	1.4301/X5CrNi18-10	-

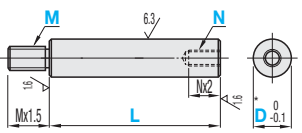
• L Dimension Selectable



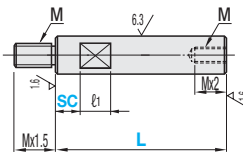
• L Dimension Configurable



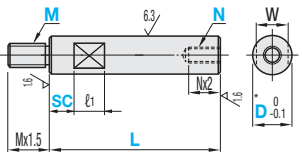
• Thread Dia. Configurable



• L Dimension Configurable · Wrench Flats-



• Thread Dia. Configurable · Wrench Flats-



* D tolerance of trivalent chromate (black) is ±0.05.

Ⓣ SC≤L−ℓ1

Ⓣ Tapping may cause slight swelling of D dimension.

Ⓣ Anti-rust Oil is applied on 1.0038/S235JR products.

■L Dimension Selectable

Part Number Type	D	L																		M (Coarse)	S	W	ℓ1
1.0038/S235JR	6	15	20	25	30	35	40	45	50											3	3.5	5	8
ETKGR	8		20	25	30	35	40	45	50	60	70	80	90	100	110	120	130	140	150	4	6	7	
PETGR	10		20	25	30	35	40	45	50	60	70	80	90	100	110	120	130	140	150	200	5	6	8	
1.4301/X5CrNi18-10	12			25	30	35	40	45	50	60	70	80	90	100	110	120	130	140	150	200	6	7.5	10	10
SETGR	15				30	35	40	45	50	60	70	80	90	100	110	120	130	140	150	200	8	10	13	
	20						40	45	50	60	70	80	90	100	110	120	130	140	150	200	10	15	17	

■L Dimension Configurable · L Dimension Configurable with Wrench Flats

Part Number Type	D	L 0.5mm Increment	1mm Increment Wrench Flats Only	M (Coarse)	W	ℓ1
	5	15~50	0~42	2.6	4	8
L Dimension Configurable	6	15~50	0~42	3	5	
L Dimension Configurable · Wrench Flats	8	20~150	0~142	4	7	
1.0038/S235JR	10	20~350	0~342	5	8	
NETGRF	12	25~400	0~390	6	10	10
ETKGRF	15	30~500	0~490	8	13	
PETGRF	20	35~500	0~490	10	17	
BETGRF	25	45~600	0~590	12	22	
1.4301/X5CrNi18-10	30	55~700	0~685	16	27	15
SETGRF	*35	55~800	0~785	16	30	15
	*40	65~900	0~880	20	36	20
	*50	80~1000	0~980	24	41	20

Ⓣ For D≥35, **N_ _ _ _, E_ _ _ _ and P_ _ _ _** are applied.

■Thread Diameter Configurable · Thread Diameter Configurable, Wrench Flats

Part Number Type	D	L 0.5mm Increment	1mm Increment Wrench Flats Only	(M · N) (Coarse Thread) Selection	W	ℓ1
	5	15~50	0~42	2.6 3	4	8
Thread Dia. Configurable	6	15~50	0~42	3 4	5	
Thread Dia. Configurable · Wrench Flats	8	20~150	0~142	3 4 5	7	
1.0038/S235JR	10	20~350	0~342	4 5 6	8	
NETG	12	25~400	0~390	5 6 8	10	10
ETKG	15	30~500	0~490	6 8 10	13	
PETG	20	40~500	0~490	6 8 10 12	17	
BETG	25	55~600	0~590	6 8 10 12 16	22	
1.4301/X5CrNi18-10	30	65~700	0~685	6 8 10 12 16 20	27	15
SETG	*35	80~800	0~785	8 10 12 16 20 24	30	15
	*40	80~900	0~880	10 12 16 20 24	36	20
	*50	80~1000	0~980	12 16 20 24	41	20

Ⓣ *For D≥35, **Only N_ _ _ _, E_ _ _ _ and P_ _ _ _** are applied. Ⓣ When L−SC≤Nx3, W−N≥2 is required. Ⓣ L≥Nx3+2

L Dimension Tolerances generally are

L 15~ 300	±0.2
L300.5~ 600	±0.3
L600.5~1000	±0.4

For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.
Ⓣ Except L Dimension Selectabl

Days to Ship

• L Dimension Selectable

8 Days — Express A 3,00 EUR/piece — P.88

5 Days

Ⓣ A Express Charge of 8,10 EUR for 3 or more identical pieces.

• L Dimension Configurable (Except below)

8 Days — Express A 8,00 EUR/piece — P.88

5 Days

Ⓣ A Express Charge of 21,60 EUR for 3 or more identical pieces.

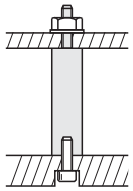
• BETGRF · BETGRS · BETG · BETGS

10 Days

Order Example

Part Number	-	L	-		-	M	-	N
ETKGR10	-	150						
ETKGRF6	-	32						
ETKG12	-	250			-	M6	-	N8
ETKGS20	-	400	-	SC100	-	M8	-	N10

Example



Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

*Additional 4,00 EUR is required for the price listed below for Wrench Flats Type.

L Dimension Selectable

Part Number Type	D	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.0038/ S235JR Black Oxide ETKGR	6				
	8				
	10				
	12				
	15				
	20				

Part Number Type	D	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.0038/ S235JR Electroless Nickel Plating PETGR	6				
	8				
	10				
	12				
	15				
	20				

Part Number Type	D	€ Unit Price Min. L~50	L60~100	L110~150	L200
1.4301/ X5CrNi18-10 SETGR	6				
	8				
	10				
	12				
	15				
	20				

L Dimension Configurable / L Dimension Configurable with Wrench Flats

Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.0038/ S235JR NETGRF NETGRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Black Oxide ETKGRF ETKGRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					

Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.0038/ S235JR Electroless Nickel Plating PETGRF PETGRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Trivalent Chromate Plating BETGRF BETGRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.4301/ X5CrNi18-10 SETGRF SETGRS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

Thread Diameter Configurable · Thread Diameter Configurable, Wrench Flats

Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.0038/ S235JR NETG NETGS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Black Oxide ETKG ETKGS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					

Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.0038/ S235JR Electroless Nickel Plating PETG PETGS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Trivalent Chromate Plating BETG BETGS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

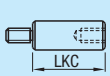
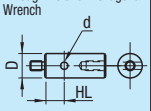
Part Number Type	D	€ Unit Price Min. L~200	L200.5~400	L400.5~600	L600.5~800	L800.5~1000
1.4301/ X5CrNi18-10 SETG SETGS *	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

Alterations

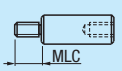
Part Number - [L] - [SC] - [M] - [N] - (LKC / MLC / HL)

ETKGRF10 - 150 - MLC7.0
ETKG12 - 250 - M6 - N8 - LKC
ETKGS20 - 400 - SC100 - M8 - N10 - LKC-HL10

Applicable to L Dimension Configurable only.

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows. Ordering Code LKC L: 15~300 ±0.05; 300.5~600 ±0.10; 600.5~1000 ±0.15	4,00
Through Hole for Hexagonal Wrench 	HL	HL= 1mm Increment d/2+5≤HL ≤L−(d/2+5) Applicable to 8≤D≤30 only Ordering Code HL10	4,00

D	d	Hex Wrench Width
8	2.5	2
10	3	2.5
12	3.5	3
15	4.6	4
20	5.8	5
25	6.9	6
30	9.2	8

Alterations	Code	Spec.	Price Adder
Male Thread Length 	MLC	Changes the Male Thread length. Not applicable to D=5. MLC=0.1 mm Increment Mx1≤MLC<Mx1.5 Ordering Code MLC10	2,00

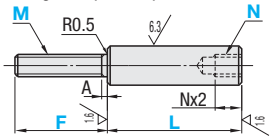
Circular Posts

–One End Male Thread One End Female Thread / Both Ends Male Thread - Thread Length Ø Configurable with Wrench Flats–

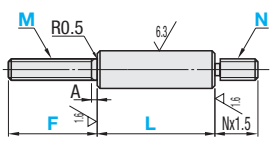


Type						M Material	S Surface Treatment
One End Male Thread - One End Female Thread Thread Length and Dia. Configurable		Both Ends Male Thread		Both Ends Male Thread Thread Length and Dia. Configurable			
Standard	Wrench Flats	Standard	Wrench Flats	Standard	Wrench Flats		
NETH	NETHS	NETL	NETLS	-	NETPS	1.0038/S235JR	-
ETKH	ETKHS	ETKL	ETKLS	-	ETKPS		Black Oxide
PETH	PETHS	PETL	PETLS	PETP	PETPS		Electroless Nickel Plating
SETH	SETHS	SETL	SETLS	SETP	SETPS	1.4301/X5CrNi18-10	-

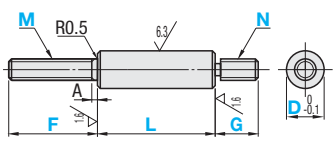
- One End Male Thread - One End Female Thread Thread Length and Dia. Configurable (Standard)



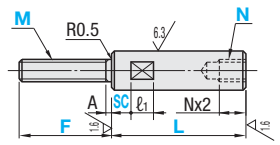
- Both Ends Male Thread (Standard)



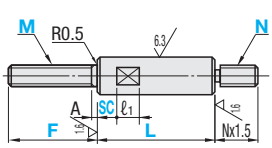
- Both Ends Male Thread Thread Length and Diameter Configurable (Standard)



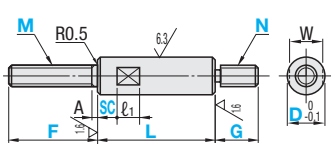
(Wrench Flats)



(Wrench Flats)



(Wrench Flats)



Tapping may cause slight swelling of D dimension. Anti-rust Oil is applied on 1.0038/S235JR products. SC≤L–ℓ1

One End Male Thread - One End Female Thread Thread Length and Diameter Configurable / Both Ends Male Thread

Part Number Type	D	0.5mm Increment L	F	Wrench Flats Only	M Selection	N Selection	W	ℓ1	A
One End Male Thread, One End Female Thread Thread Length and Diameter Configurable (Standard) 1.0038/S235JR NETH ETKH PETH 1.4301/X5CrNi18-10 SETH	5	15~50	5~25	0~42	2.6 3	2.6 3	4	8	1.0
(Wrench Flats) 1.0038/S235JR NETHS ETKHS PETHS 1.4301/X5CrNi18-10 SETHS	6	15~50	5~30	0~42	3 4	3 4	5		1.0
Both Ends Male Thread (Standard) 1.0038/S235JR NETL ETKL PETL 1.4301/X5CrNi18-10 SETL	8	20~150	8~40	0~142	4 5	4 5	7		1.6
(Wrench Flats) 1.0038/S235JR NETLS ETKLS PETLS 1.4301/X5CrNi18-10 SETLS	10	20~350	8~45	0~342	4 5 6	4 5 6	8		2.0
	12	25~400	10~55	0~390	5 6 8	5 6 8	10	10	2.5
	15	30~500	12~60	0~490	6 8 10	6 8 10	13		3.0
	20	40~500	15~75	0~490	6 8 10 12	6 8 10 12	17		3.5
	25	55~600	20~80	0~590	6 8 10 12 16	6 8 10 12 16	22		4.0
	30	65~700	25~90	0~685	6 8 10 12 16 20	6 8 10 12 16 20	27	15	5.0
	*35	80~800	30~100	0~785	8 10 12 16 20 24	8 10 12 16 20 24	30	15	6.0
	*40	80~900	35~110	0~880	10 12 16 20 24	10 12 16 20 24	36	20	6.0
	*50	80~1000	40~120	0~980	12 16 20 24	12 16 20 24	41	20	6.0

For D≥35, **Only N_ _ _, E_ _ _ and P_ _ _** are applied. When L–SC≤Nx3, W–N≥2 is required. L≥Nx3+2

Both Ends Male Thread Thread Length and Diameter Configurable

Part Number Type	D	0.5mm Increment L	F	G	Wrench Flats Only	M Selection	N Selection	W	ℓ1	A
(Standard) 1.0038/S235JR PETP 1.4301/X5CrNi18-10 SETP	5	15~50	5~25	5~25	0~42	2.6 3	2.6 3	4	8	1.0
(Wrench Flats) 1.0038/S235JR NETPS ETKPS PETPS 1.4301/X5CrNi18-10 SETPS	6	15~50	5~30	5~30	0~42	3 4	3 4	5		1.0
	8	20~150	8~40	8~40	0~142	4 5	4 5	7		1.6
	10	20~350	8~45	8~45	0~342	4 5 6	4 5 6	8		2.0
	12	25~400	10~55	10~55	0~390	5 6 8	5 6 8	10	10	2.5
	15	30~500	12~60	12~60	0~490	6 8 10	6 8 10	13		3.0
	20	40~500	15~75	15~75	0~490	6 8 10 12	6 8 10 12	17		3.5
	25	55~600	20~80	20~80	0~590	6 8 10 12 16	6 8 10 12 16	22		4.0
	30	65~700	25~90	25~90	0~685	6 8 10 12 16 20	6 8 10 12 16 20	27	15	5.0
	*35	80~800	30~100	30~100	0~785	8 10 12 16 20 24	8 10 12 16 20 24	30	15	6.0
	*40	80~900	35~110	35~110	0~880	10 12 16 20 24	10 12 16 20 24	36	20	6.0
	*50	80~1000	40~120	40~120	0~980	12 16 20 24	12 16 20 24	41	20	6.0

For D≥35, **N_ _ _, E_ _ _ and P_ _ _** are applied.

Order Example

Part Number	-	L	-	F	-	G	-	SC	-	M	-	N
ETKH15	-	210.5	-	F40					-	M6	-	N8
ETKLS12	-	300	-	F40			-	SC150	-	M5	-	N8
NETPS12	-	300	-	F40	-	G20	-	SC150	-	M8	-	N8

L Dimension tolerances are as follows:

L 15 ~300	±0.2
L300.5~600	±0.3
L600.5~1000	±0.4

Days to Ship

8 Days

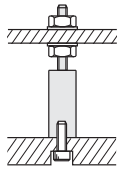
5 Days

Express A 8,00 EUR/ piece P.88

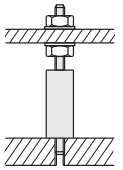
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Example

One End Male Thread, One End Female Thread



Both Ends Male Thread



Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

*Additional 4,00 EUR is required for the price listed below for Wrench Flats Type.

One End Male Thread - One End Female Thread Thread Length and Diameter Configurable

Part Number		€ Unit Price				
Type	D	Min. L ~200	L200.5 ~400	L400.5 ~600	L600.5 ~800	L800.5 ~1000
1.0038/ S235JR NETH	5					
	6					
	8					
	10					
	12					
NETHS * For Wrench Flats Type, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Black Oxide ETKH	5					
	6					
	8					
	10					
	12					
ETKHS * For Wrench Flats Type, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Electroless Nickel Plating PETH	5					
	6					
	8					
	10					
	12					
PETHS * For Wrench Flats Type, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.4301/ X5CrNi18-10 SETH	5					
	6					
	8					
	10					
	12					
SETHS * For Wrench Flats Type, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					

Both Ends Male Thread

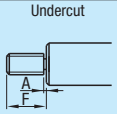
Part Number		€ Unit Price				
Type	D	Min. L ~200	L200.5 ~400	L400.5 ~600	L600.5 ~800	L800.5 ~1000
1.0038/ S235JR NETL	5					
	6					
	8					
	10					
	12					
NETLS * For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Black Oxide ETKL	5					
	6					
	8					
	10					
	12					
ETKLS * For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Electroless Nickel Plating PETL	5					
	6					
	8					
	10					
	12					
PETLS * For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.4301/ X5CrNi18-10 SETL	5					
	6					
	8					
	10					
	12					
SETLS * For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					

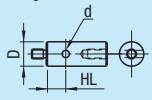
Both Ends Male Thread Thread Length and Diameter Configurable

Part Number		€ Unit Price				
Type	D	Min. L ~200	L200.5 ~400	L400.5 ~600	L600.5 ~800	L800.5 ~1000
1.0038/ S235JR NETPS	5					
	6					
	8					
	10					
	12					
* For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Black Oxide ETKPS	5					
	6					
	8					
	10					
	12					
* For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/ S235JR Electroless Nickel Plating PETP	5					
	6					
	8					
	10					
	12					
* For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.4301/ X5CrNi18-10 SETP	5					
	6					
	8					
	10					
	12					
* For Wrench Flats, add 4,00 EUR to the price list on right.	15					
	20					
	25					
	30					

Alterations

Part Number	-	L	-	F	-	G	-	SC	-	M	-	N	-	(FC · HL)
ETKH15	-	210.5	-	F40					-	M6	-	N8	-	FC
ETKLS12	-	300	-	F40			-	SC150	-	M5	-	N8	-	FC
NETPS12	-	300	-	F40	-	G20	-	SC150	-	M8	-	N8	-	HL100

Alterations	Code	Spec.	Price Adder
Undercut 	FC	Adds a relief to Dimension A. Ordering Code FC	2,00

Alterations	Code	Spec.								Price Adder
Through Hole for Hexagonal Wrench 	HL	HL= 1mm Increment Ed/2+5≤HL ≤L−(d/2+5) EApplicable to 8≤D≤30 only Ordering Code HL10	D	d	Hex Wrench Width	D	d	Hex Wrench Width		4,00
			8	2.5	2	20	5.8	5		
			10	3	2.5	25	6.9	6		
			12	3.5	3	30	9.2	8		
			15	4.6	4					

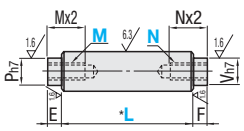
Circular Posts with Pilot

-Pilot Selectable · Pilot & Wrench Flats Configurable-

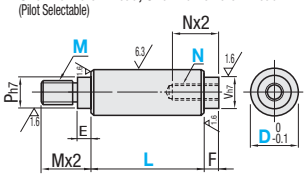


Type						Ⓜ Material	Ⓢ Surface Treatment
Both Ends Female Thread		One End Male Thread, One End Female Thread		Both Ends Male Thread			
Pilot Selectable	Pilot & Wrench Flats Configurable	Pilot Selectable	Pilot & Wrench Flats Configurable	Pilot Selectable	Pilot & Wrench Flats Configurable		
NETJ	NETJF	NETK	NETKF	NETM	NETMF	1.0038/S235JR	-
ETKJ	ETKJF	ETKK	ETKKF	ETKM	ETKMF		Black Oxide
PETJ	PETJF	PETK	PETKF	PETM	PETMF		Electroless Nickel Plating
SETJ	SETJF	SETK	SETKF	SETM	SETMF	1.4301/X5CrNi18-10	-

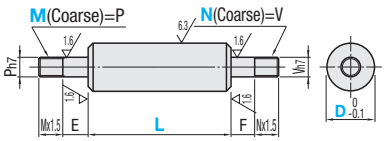
- Both Ends Female Thread (Pilot Selectable)



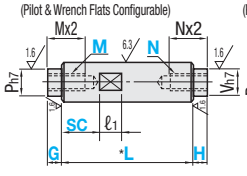
- One End Male Thread, One End Female Thread (Pilot Selectable)



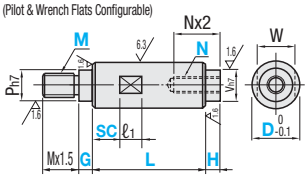
- Both Ends Male Thread (Pilot Selectable)



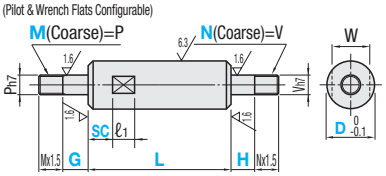
(Pilot & Wrench Flats Configurable)



(Pilot & Wrench Flats Configurable)



(Pilot & Wrench Flats Configurable)



* L≥Mx2+Nx2 ⓟ Anti-rust Oil is applied on 1.0038/S235JR products.

■Both Ends Female Thread

Part Number Type		D	L 1mm Increment	1mm Increment Wrench Flats Only	M (Coarse Thread)· N (Coarse Thread) Selection	G 1mm Increment	H 1mm Increment	E	F	P	V	W	ℓ1
Pilot Selectable 1.0038/S235JR	Pilot & Wrench Flats Configurable 1.0038/S235JR	8	15~150	0~142	3 4	2~4	2~4	4	4	6	6	7	8
NETJ	NETJF	10	15~350	0~342	4 5	2~5	2~5	5	5	8	8	8	
ETKJ	ETKJF	12	20~400	0~390	5 6	2~6	2~6	6	6	10	10	10	10
PETJ	PETJF	15	25~500	0~490	6 8	2~8	2~8	8	8	12	12	13	
1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	20	40~500	0~490	6 8 10 12	2~10	2~10	10	10	16	16	17	
SETJ	SETJF	25	55~600	0~590	6 8 10 12 16	2~12	2~12	12	12	20	20	22	
		30	55~700	0~685	6 8 10 12 16	2~16	2~16	16	16	24	24	27	15

■One End Male Thread, One End Female Thread

Part Number Type		D	L 1mm Increment	1mm Increment Wrench Flats Only	M (Coarse Thread)· N (Coarse Thread) Selection	G 1mm Increment	H 1mm Increment	E	F	P	V	W	ℓ1
Pilot Selectable 1.0038/S235JR	Pilot & Wrench Flats Configurable 1.0038/S235JR	8	20~150	0~142	3 4	2~4	2~4	2	4	6	6	7	8
NETK	NETKF	10	20~350	0~342	4 5	2~5	2~5	2	5	8	8	8	
ETKK	ETKKF	12	25~400	0~390	5 6	2~6	2~6	3	6	10	10	10	10
PETK	PETKF	15	30~500	0~490	6 8	2~8	2~8	4	8	12	12	13	
1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	20	40~500	0~490	6 8 10 12	2~10	2~10	5	10	16	16	17	
SETK	SETKF	25	60~600	0~590	6 8 10 12 16	2~12	2~12	6	12	20	20	22	
		30	60~700	0~685	6 8 10 12 16	2~16	2~16	7	16	24	24	27	15

■Both Ends Male Thread

Part Number Type		D	L 1mm Increment	1mm Increment Wrench Flats Only	M (Coarse Thread) · N (Coarse Thread) Selection	G 1mm Increment	H 1mm Increment	E	F	W	ℓ1
Pilot Selectable 1.0038/S235JR	Pilot & Wrench Flats Configurable 1.0038/S235JR	8	20~150	0~142	3 4 5	2~4	2~4	4	4	7	8
NETM	NETMF	10	20~350	0~342	4 5 6	2~5	2~5	5	5	8	
ETKM	ETKMF	12	25~400	0~390	5 6 8	2~6	2~6	6	6	10	10
PETM	PETMF	15	30~500	0~490	6 8 10	2~8	2~8	8	8	13	
1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	20	40~500	0~490	6 8 10 12	2~10	2~10	10	10	17	
SETM	SETMF	25	60~600	0~590	6 8 10 12 16	2~12	2~12	12	12	22	
		30	60~700	0~685	6 8 10 12 16 20	2~16	2~16	16	16	27	15

Order Example

Part Number	-	L	-	SC	-	M	-	N	-	G	-	H
(Pilot Selectable) ETKJ10	-	200			-	M5	-	N5				
(Pilot & Wrench Flats Configurable) ETKJF10	-	200	-	SC150	-	M5	-	N5	-	G2	-	H2

L Dimension Tolerances generally are
L 15~300 ±0.2
L301~600 ±0.3
L601~700 ±0.4
For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.

Days to Ship

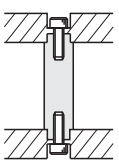
8 Days	5 Days
Express A	8,00 EUR/ piece

P. 88

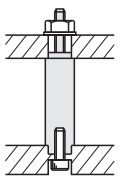
ⓟA Express Charge of 21,60 EUR for 3 or more identical pieces.

Example

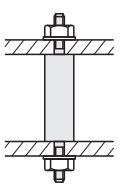
Both Ends Female Thread



One End Male Thread, One End Female Thread



Both Ends Male Thread



Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

***For Pilot & Wrench Flats Configurable, Add 4,00 EUR to the price lists below.**

Both Ends Female Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~700
1.0038/ S235JR NETJ NETJF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/ S235JR Black Oxide ETKJ ETKJF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/S235JR Electroless Nickel Plating PETJ PETJF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.4301/ X5CrNi18-10 SETJ SETJF *	8				
	10				
	12				
	15				
	20				
	25				
	30				

One End Male Thread, One End Female Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~700
1.0038/ S235JR NETK NETKF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/ S235JR Black Oxide ETKKF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/ S235JR Electroless Nickel Plating PETK PETKF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.4301/ X5CrNi18-10 SETK SETKF *	8				
	10				
	12				
	15				
	20				
	25				
	30				

Both Ends Male Thread

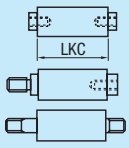
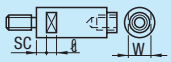
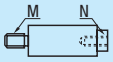
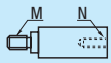
Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~700
1.0038/ S235JR NETM NETMF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/ S235JR Black Oxide ETKM ETKMF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/ S235JR Electroless Nickel Plating PETM PETMF *	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.4301/ X5CrNi18-10 SETM SETMF *	8				
	10				
	12				
	15				
	20				
	25				
	30				

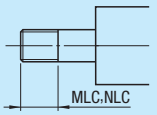
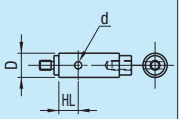
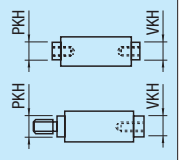
Alterations

Part Number - L - SC - M - N - G - H - (LKC· SC· NPC· NVC· etc.)

ETKM10 - 300 - M5 - N5 - MLC5 - NLC5 - SC150

ETKMF10 - 300 - SC250 - M5 - N5 - G2 - H3 - LKC

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows. Ordering Code LKC L: 15~300 → L Tolerance ±0.05; 301~600 → ±0.10; 601~700 → ±0.15	4,00
Wrench Flats 	SC	SC=1 mm Increment SC≥0 Ordering Code SC10 Applicable to Pilot Selectable only. D: 8 → W 7, ℓ1 8; 10 → 8, 8; 12 → 10, 8; 15 → 13, 10; 20 → 17, 10; 25 → 22, 10; 30 → 27, 15	4,00
	NPC	No machining for P pilot at M thread end. Ordering Code NPC For Pilot & Wrench Flats Configurable, Specify G2. Not applicable to Both Male Thread.	-3,00
	NVC	No machining for V pilot at N thread end. Ordering Code NVC For Pilot & Wrench Flats Configurable, specify H2. Not applicable to Both Male Thread.	-3,00

Alterations	Code	Spec.	Price Adder
Thread Length 	MLC NLC	Changes the thread length of M and N threads. 0.1 mm Increment for MLC · NLC Ordering Code MLC10 Mx1≤MLC<Mx1.5 Nx1≤NLC<Nx1.5 Applicable to Both Ends Male Thread Type.	2,00
Through Hole for Hexagonal Wrench 	HL	HL= 1mm Increment d·2+5≤HL ≤L−(d/2+5) Ordering Code HL10 D: 8 → d 2.5, Hex Wrench Width 2; 10 → 3, 2.5; 12 → 3.5, 3; 15 → 4.6, 4; 20 → 5.8, 5; 25 → 6.9, 6; 30 → 9.2, 8	4,00
	PKH VKH	Pilot diameter can be specified. 1mm Increment Ordering Code PKH8 VKH10 D: 10 → PKH · VKH 7; 12 → 8 · 9; 15 → 10 · 11; 20 → 14 · 15; 25 → 18 · 19; 30 → 18~23 Not applicable to D8. Applicable to Both Ends Female Thread · One End Male Thread, One End Female Thread.	2,00

Circular Posts

-One End Female Thread / One End Male Thread-

CAD Data

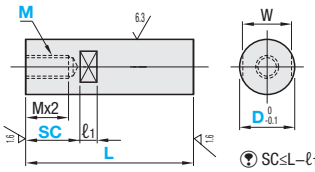


Type		M Material	S Surface Treatment
One End Female Thread	One End Male Thread		
NETMN	NETN	1.0038/S235JR	-
ETKMN	ETKN		Black Oxide
PETMN	PETN		Electroless Nickel Plating
SETMN	SETN	1.4301/X5CrNi18-10	-

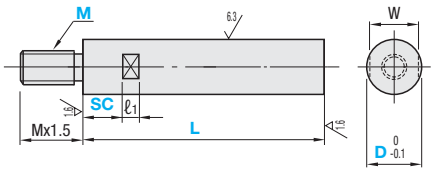
L Dimension Tolerances generally are
L 15~300 ±0.2
L301~600 ±0.3
L601~1000 ±0.4

For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.

• One End Female Thread



• One End Male Thread, One End Female Thread



Part Number Type	D	L 1mm Increment	SC 1mm Increment	M (Coarse) d	W	ℓ1
One End Female Thread	5	15~50	0~42	2.6 3	4	8
1.0038/S235JR NETMN ETKMN PETMN	6	15~50	0~42	3 4	5	
	8	20~150	0~142	3 4 5	7	
	10	20~350	0~342	4 5 6	8	
1.4301/X5CrNi18-10 SETMN	12	25~400	0~390	5 6 8	10	10
	15	35~500	0~490	6 8 10	13	
One End Male Thread	20	40~500	0~490	6 8 10 12	17	
1.0038/S235JR NETN ETKN PETN	25	55~600	0~590	6 8 10 12 16	22	
	30	65~700	0~685	6 8 10 12 16 20	27	15
	*35	80~800	0~785	8 10 12 16 20	30	15
1.4301/X5CrNi18-10 SETN	*40	80~900	0~880	10 12 16 20 24	36	20
	*50	80~1000	0~980	12 16 20 24	41	20

When SC≤Mx3 for One End Female Thread Type, W–M≥2 is required.
For D≥35, only N_ _ _ _, E_ _ _ _ and P_ _ _ _ are applied.

Order Example

Part Number	-	L	-	SC	-	M
NETMN10	-	300	-	SC250	-	M5
SETN20	-	350	-	SC100	-	M10

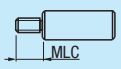
Days to Ship

8 Days — Express A 8,00 EUR/piece P.88
2 Days

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations

Part Number	-	L	-	SC	-	M	-	(LKC · MLC)
NETN10	-	300	-	SC250	-	M5	-	MLC6

Alterations	Code	Spec.	Price Adder
Male Thread Length 	MLC	Changes the Male Thread length. ⊗ Not applicable to D=5. MLC=0.1 mm Increment. Mx1≤MLC<Mx1.5. Ordering Code MLC10. Applicable to one end Male Thread only.	2,00

For LKC, P.1802

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Price List	€ Unit Price	5%	10%	18%

One End Female Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
1.0038/S235JR NETMN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/S235JR Black Oxide ETKMN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/S235JR Electroless Nickel Plating PETMN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.4301/X5CrNi18-10 SETMN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

One End Male Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~800	L801~1000
1.0038/S235JR NETN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/S235JR Black Oxide ETKN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.0038/S235JR Electroless Nickel Plating PETN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					
	35					
	40					
	50					
1.4301/X5CrNi18-10 SETN	5					
	6					
	8					
	10					
	12					
	15					
	20					
	25					
	30					

Plastic Circular Posts

-One End Female Thread / Both Ends Female Thread-

Price Reduction
15% on Average

CAD Data

Ⓟ Thread inserts added to the body (resin) to strengthen the tapped holes.

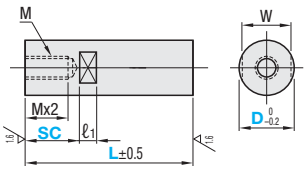
■Plastic Circular Posts



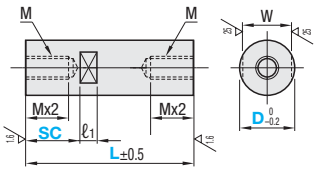
RoHS

Type				Ⓜ Material	Color	Male Thread ⓂMaterial
One End Female Thread	Both Ends Female Thread	One End Male Thread	Both Ends Male Thread			
PHRF	PLRF	PHNRF	PLNRF	Polyacetal	White	1.4301/X5CrNi18-10

•One End Female Thread · One End Male Thread-



•Both Ends Female Thread · Both Ends Male Thread-



Ⓟ SC≤L−ℓ1 Ⓟ Characteristic Values P.2-859

Part Number Type	D	L 1mm Increment	1mm Increment	M (Coarse)	W	ℓ1
One End Female Thread PHRF / Both Ends Female Thread PLRF / One End Male Thread PHNRF / Both Ends Male Thread PLNRF	6	20~50	0~42	M 3	5	8
	8	25~150	0~142	M 4	7	
	10	30~350	0~342	M 5	8	
	12	40~400	0~390	M 6	10	10
	15	50~500	0~490	M 8	13	
	20	60~500	0~490	M10	17	
	25	80~600	0~590	M12	22	
	30	100~700	0~685	M16	27	15

Order Example

Part Number	-	L	-	SC
PHRF10	-	300	-	SC200
PLNRF20	-	400	-	SC310

Days to Ship: 8 Days

Price

■Volume Discount (Ⓟ Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

Ⓟ For orders larger than indicated quantity, please request a quotation.

■One End Female Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~700
PHRF	6				
	8				
	10				
	12				
	15				
	20				
	25				
	30				

■Both Ends Female Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~700
PLRF	6				
	8				
	10				
	12				
	15				
	20				
	25				
	30				

■One End Male Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~700
PHNRF	6				
	8				
	10				
	12				
	15				
	20				
	25				
	30				

■Both Ends Male Thread

Part Number Type	D	€ Unit Price Min. L~200	L201~400	L401~600	L601~700
PLNRF	6				
	8				
	10				
	12				
	15				
	20				
	25				
	30				

Square Posts

–Both Ends Female Thread · One End Male Thread, One End Female Thread–

■Side surfaces wider than Hexagonal Posts' are more convenient for mounting objects.

■Square Posts

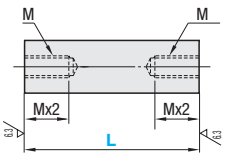
RoHS



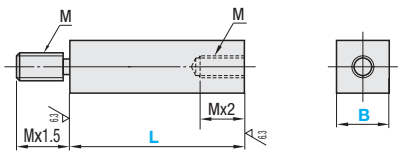
L Dimension Tolerances generally are
L 10~300 ±0.2
L301~400 ±0.3
For L≤200, ganged machining keeps L dimension variations within ±0.02 for a single order.

Type				M Material	S Surface Treatment
Both Ends Female Thread		One End Male Thread, One End Female Thread			
L Dimension Configurable	L Dimension - Thread Diameter Configurable	L Dimension Configurable	L Dimension / Thread Diameter Configurable		
NLRFB	NLRBF	-	NLRGF	1.0038/S235JR	-
LRFB	LRBBF	-	LRBGF		Black Oxide
PLRFB	PLRBF	PLRFG	PLRGF		Electroless Nickel Plating
SLRFB	SLRBF	SLRFG	SLRGF	1.4301/X5CrNi18-10	-

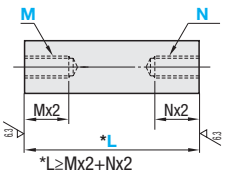
■Both Ends Female Thread
- L Dimension Configurable



■One End Male Thread, One End Female Thread
- L Dimension Configurable

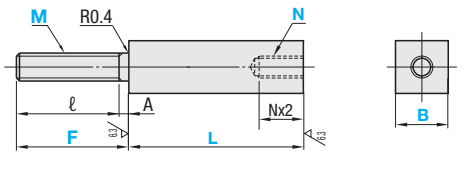


- L Dimension / Thread Diameter Configurable



*L≥Mx2+Nx2

- L Dimension / Thread Diameter Configurable



(T) Tapping may cause slight swelling of B dimension.
(T) Centering hole may remain at thread end.

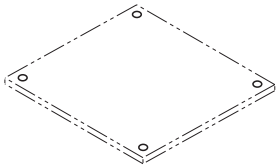
■Both Ends Female Thread L Dimension Configurable / One End Male Thread , One End Female Thread L Dimension Configurable

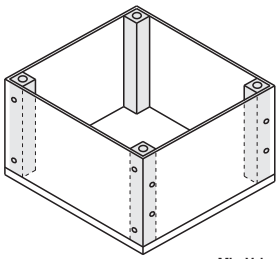
Part Number Type		B	L 1mm Increment	M (Coarse)
Both Ends Female Thread 1.0038/S235JR	One End Male Thread, One End Female Thread	8	10~150	M4
NLRFB		10	15~300	M5
LRFB	1.0038/S235JR	12	25~400	M6
PLRFB	PLRFG	15	30~400	M8
1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	20	40~400	M10
SLRFB	SLRFG	25	50~400	M12
		30	60~400	M16

(T) When L≤Mx4, tapped hole goes through. (T) For One End Male Thread One End Female Thread, L ≥Female Thread Mx3+2.
(T) When L≤Mx6, the pilot hole may go through.

Example

Alteration WTP is used.





■Both Ends Female Thread, L Dimension / Thread Diameter Configurable

Part Number Type	B	L 1mm Increment	M (Coarse) / N (Coarse) Selection
Both Ends Female Thread 1.0038/S235JR	8	20~150	3 4 5
NLRBF	10	20~300	4 5 6
LRBBF	12	25~400	4 5 6 8
PLRBF	15	30~400	4 5 6 8
1.4301/X5CrNi18-10	20	40~400	5 6 8 10 12
SLRBF	25	50~400	6 8 10 12 16
	30	60~400	8 10 12 16

(T) L≥Mx2+Nx2

■One End Male Thread / One End Female Thread, L Dimension / Thread Diameter Configurable

Part Number Type	B	L 1mm Increment	F 1mm Increment	M (Coarse)	N (Coarse)	ℓ
One End Male Thread, One End Female Thread 1.0038/S235JR	8	10~150	8~25	4 5	3 4 5	ℓ=F-A (ℓmax=Mx5)
NLRGF	10	15~300	8~30	4 5 6	4 5 6	
LRBGF	12	25~400	10~40	5 6 8	4 5 6 8	
PLRGF	15	30~400	12~40	6 8 10	4 5 6 8	
1.4301/X5CrNi18-10	20	40~400	15~60	10 12	5 6 8 10 12	
SLRGF	25	50~400	20~80	10 12 16	6 8 10 12 16	
	30	60~400	25~80	12 16 20	8 10 12 16	

- Min. Value of Incomplete External Thread

M	Amin
4	2
5	3
6	4
8	4
10	5
12	6
16	7
20	9

(T) For One End Male Thread One End Female Thread, L ≥Female Thread Nx3+2.

Order Example

Part Number	-	L	-	F	-	M	-	N

(Both Ends Female Thread, L Dimension Configurable) NLRFB10 - 150
(Both Ends Female Thread, L Dimension / Thread Diameter Configurable) SLRBF20 - 400 - M8 - N10
(One End Male Thread One End Female Thread L Dimension / Thread Diameter Configurable) PLRGF1 - 350 - F32 - M8 - N6

Days to Ship

8 Days

Express A 8,00 EUR/ piece P.88

(T) A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Both Ends Female Thread, L Dimension Configurable

Part Number Type	B	€ Unit Price Min. L~100	L101~200	L201~300	L301~400
1.0038/S235JR NLRFB	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/S235JR Black Oxide LRFB	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/S235JR Electroless Nickel Plating PLRFB	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.4301/ X5CrNi18-10 SLRFB	8				
	10				
	12				
	15				
	20				
	25				
	30				

One End Male Thread/ One End Female Thread, L Dimension Configurable

Part Number Type	B	€ Unit Price Min. L~100	L101~200	L201~300	L301~400
1.0038/S235JR Electroless Nickel Plating PLRFG	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.4301/ X5CrNi18-10 SLRFG	8				
	10				
	12				
	15				
	20				
	25				
	30				

Both Ends Female Thread, L Dimension / Thread Diameter Configurable

Part Number Type	B	€ Unit Price Min. L~100	L101~200	L201~300	L301~400
1.0038/S235JR NLRBF	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/S235JR Black Oxide LRBBF	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/S235JR Electroless Nickel Plating PLRBF	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.4301/ X5CrNi18-10 SLRBF	8				
	10				
	12				
	15				
	20				
	25				
	30				

One End Male Thread / One End Female Thread, L Dimension · Thread Diameter Configurable

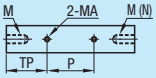
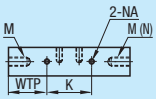
Part Number Type	B	€ Unit Price Min. L~100	L101~200	L201~300	L301~400
1.0038/S235JR NLRGF	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/S235JR Black Oxide LRBGF	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.0038/S235JR Electroless Nickel Plating PLRGF	8				
	10				
	12				
	15				
	20				
	25				
	30				
1.4301/ X5CrNi18-10 SLRGF	8				
	10				
	12				
	15				
	20				
	25				
	30				

Alterations

Part Number - L - M - N - (LKC / TP / WTP)

NLRFB8 - 150 - LKC
NLRBF20 - 400 - M8 - N10 - LKC
SLRBF15 - 100 - M5 - N6 - TP20-P20-WTP30-K30

Alterations	Code	Spec.	Price Adder
L Dimension Tolerance 	LKC	L Dimension tolerances are as follows. Ordering Code LKC L: 10~300 ±0.05; 301~400 ±0.10	4,00

Alterations	Code	Spec.	Price Adder
Female Thread holes on side. 	TP	Adds tapped holes to sides. Ordering Code TP10-P10 Specify TP and P in 1mm increments. For Male Thread, TP≥(2+MA/2). For Female Thread, TP≥Mx2+MA/2. P≤L-TP-M(N)x2-MA/2 When P=0, there will be one tapped hole. Tap Dia. MA (Tap Depth MAx1.5): B 8~10 MA M3; 12~20 M4; 25~30 M5	4,00
Female Thread holes on 2 sides. 	WTP	Adds side tapped holes at 90 degrees from TP. Ordering Code WTP10-K10 Specify WTP and K in 1mm increments. WTP≥(Mx2+M/2) K≤(L−WTP−M(N)x2−M(N)/2) When K=0, there will be one tapped hole. If specified at the TP location, tapped holes might intervene with each other. WTP is applied only when TP is used. One end threaded, one end tapped will have WTP first and K next from the tapped end. Tap Dia. NA (Tap Depth NAx1.5): B 8~10 NA M3; 12~20 M4; 25~30 M5	3,00

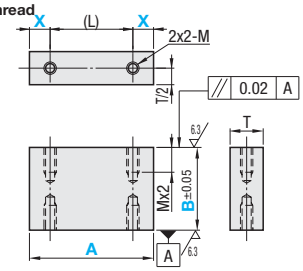
Spacer Blocks
-Female Thread / Through Holes-

RoHS

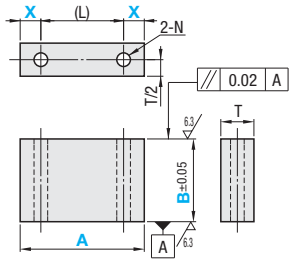


Type				Material	Surface Treatment
Standard		Outer Dia. · Hole Position Configurable			
Female Thread	Through Hole	Female Thread	Through Hole		
BLTB	BLHB	FLTB	FLHB	1.0038/S235JR	Black Oxide
BLTM	BLHM	FLTM	FLHM		Electroless Nickel Plating
BLTA	-	FLTA	FLHA	EN AW-6063/AlMg0,7Si	Clear Anodize
-	BLHS	FLTS	FLHS	1.4301/X5CrNi18-10	-

• Female Thread



• Through Hole



■Standard Type

Part Number Type	No.	A Selection	B 5mm Increment Female Thread	B 5mm Increment Through Hole	T BLTB BLHB BLTM BLHM BLHS	T BLTA	L	M	N
Female Thread 1.0038/S235JR BLTB BLTM / Through Hole 1.0038/S235JR BLHB BLHM	4	32 38 60 75 100 125	15~80	10~50	9	10	L=A-(2xX)	4	4.5
	5				12	12		5	5.5
EN AW-6063/AlMg0,7Si BLTA / 1.4301/X5CrNi18-10 BLHS	6			10~60	16	15		6	6.5
	8			10~80	22	20		8	9

When B≤4xM, Female Thread Hole goes through for Female Thread Type. The tap pilot holes go through if B≤6xM.

*** X Dimension Details**

A	No.4 · 5	No.6	No.8
32	6	7	8
38	6.5	8	9
60	10	10	10
75			
100			
125	12.5	12.5	12.5

■Outer Dia. · Hole Position Configurable Type

Part Number Type	No.	A 1mm Increment	B 1mm Increment Female Thread	B 1mm Increment Through Hole	X 1mm Increment	T FLTB FLTM FLTS FLHB FLHM FLHS	T FLTA FLHA	L	M	N
Female Thread 1.0038/S235JR FLTB FLTM / Through Hole 1.0038/S235JR FLHB FLHM	4	32 ~ 125	15~80	10~50	6~35	9	10	L=A-(2xX)	4	4.5
	5					12	12		5	5.5
EN AW-6063/AlMg0,7Si FLTA / EN AW-6063/AlMg0,7Si FLHA	6			10~60	7~35	16	15		6	6.5
1.4301/X5CrNi18-10 FLTS / 1.4301/X5CrNi18-10 FLHS	8			10~80	8~35	22	20		8	9

When B≤4xM, Female Thread Hole goes through for Female Thread Type. The tap pilot holes go through if B≤6xM. A–(2xX)≥16

Order Example

Part Number	-	A	-	B	-	X
BLTB4	-	38	-	25		
BLHM8	-	60	-	30		
FLTM6	-	78	-	35	-	30

Days to Ship

• Standard Type: 8 Days

• Outer Dia. · Hole Position Configurable Type: 10 Days

Express B: 5,00 EUR/piece

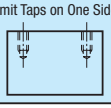
P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

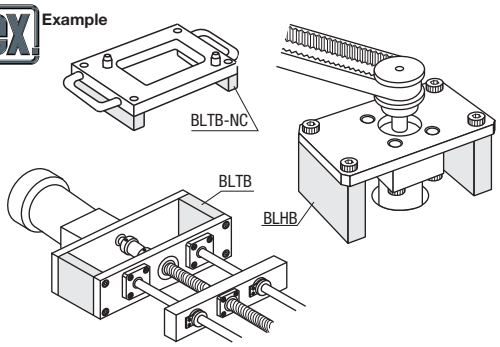
Alterations

Part Number	-	A	-	B	-	X	-	(NC)
BLTA8	-	60	-	30			-	NC

10 Days

Alterations	Code	Spec.	Price Adder
Omit Taps on One Side 	NC	Omits tapped holes on one side. Ordering Code NC. Applicable to Female Thread Type only.	Free of Charge

Example



Price Reduction 10%

CAD Data

Price

• Standard Type

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~49
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

• Outer Dia. · Hole Position Configurable Type

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Standard Type

Part Number Type	No.	A	€ Unit Price Female Thread Min. B~30	B35~60	B65~80	Through Hole Min. B~30	B35~60	B65~80
1.0038/S235JR Black Oxide BLTB BLHB	4	32 · 38						
		60 · 75						
		100 · 125						
	5	32 · 38						
		60 · 75						
		100 · 125						
	6	32 · 38						
		60 · 75						
		100 · 125						
	8	32 · 38						
		60 · 75						
		100 · 125						
1.0038/S235JR Electroless Nickel Plating BLTM BLHM	4	32 · 38						
		60 · 75						
		100 · 125						
	5	32 · 38						
		60 · 75						
		100 · 125						
	6	32 · 38						
		60 · 75						
		100 · 125						
	8	32 · 38						
		60 · 75						
		100 · 125						
EN AW-6063/ AlMg0,7Si Clear Anodize BLTA	4	32 · 38						
		60 · 75						
		100 · 125						
	5	32 · 38						
		60 · 75						
		100 · 125						
	6	32 · 38						
		60 · 75						
		100 · 125						
	8	32 · 38						
		60 · 75						
		100 · 125						
1.4301/ X5CRNI18-10 BLHS	4	32 · 38						
		60 · 75						
		100 · 125						
	5	32 · 38						
		60 · 75						
		100 · 125						
	6	32 · 38						
		60 · 75						
		100 · 125						
	8	32 · 38						
		60 · 75						
		100 · 125						

Outer Dia. · Hole Position Configurable Type

Part Number Type	No.	A	€ Unit Price Female Thread Min. B~34	B35~64	B65~80	Through Hole Min. B~34	B35~64	B65~80
1.0038/S235JR Black Oxide FLTB FLHB	4	32~38						
		39~99						
		100~125						
	5	32~38						
		39~99						
		100~125						
	6	32~38						
		39~99						
		100~125						
	8	32~38						
		39~99						
		100~125						
1.0038/S235JR Electroless Nickel Plating FLTM FLHM	4	32~38						
		39~99						
		100~125						
	5	32~38						
		39~99						
		100~125						
	6	32~38						
		39~99						
		100~125						
	8	32~38						
		39~99						
		100~125						
EN AW-6063/ AlMg0,7Si Clear Anodize FLTA FLHA	4	32~38						
		39~99						
		100~125						
	5	32~38						
		39~99						
		100~125						
	6	32~38						
		39~99						
		100~125						
	8	32~38						
		39~99						
		100~125						
1.4301/ X5CRNI18-10 FLTS FLHS	4	32~38						
		39~99						
		100~125						
	5	32~38						
		39~99						
		100~125						
	6	32~38						
		39~99						
		100~125						
	8	32~38						
		39~99						
		100~125						

Posts for Stands / Device Stands / Brackets for Stands
-Overview-

MISUMI has a wide selection of products for stands for mounting various devices such as cameras and sensors.
Products such as "rotation-resistant" type and "easy setup change" type can match your needs.

■Posts for Stands The posts for stands are for device mounting.

Applicable	Feature	Round	Square
		The posts have an outer diameter g6 for device mounting strut clamps.	The posts for stands do not allow rotations of devices by preventing mounting strut clamps from turning in a rotating direction.
No Scale	Surfaces are finished. Length specifiable in 1mm increments.		
	Page	P.1814	P.1816
With Scale	Scale on surface helps setup changes.		
	Page	P.1815	P.1816

■Device Stands A set of a post for stand and a bracket for device mounting.

Mounting Direction	Vertical Mounting			Side Mounting	
	Compact	Round Flanged	Square Flanged	Compact	Standard
Brackets Shapes					
Feature	Mountable in space-savings.	General and affordable	Narrower than Round Flange Slotted hole selectable for vertical and horizontal adjustments.	Installation footprint significantly reduced compared to Standard Type.	Best for side mounting on transfer lines, etc.
Through Holes	P.1817	P.1819	P.1821	P.1823	P.1824
Slotted Hole	P.1818	-	P.1822	-	-

■Stand-up Brackets The brackets support device mounting posts.

- Round Hole Type

Mounting Direction	Vertical Mounting						Side Mounting			
Shapes	Standard		Cylindrical	Reversed Post Fastening	Square		Standard		Compact	No Flange
	Precision Casting	Cutting			Compact	Standard Fasteners Reversed	Casting	Cutting		
Appearance										
Feature	Up to 68% price reduction compared to machined Type. Best for places that do not require especially good appearances.	MISUMI Standard	No Flange Compact	Posts fixed by a screw from the back side.	Installation footprint reduced by an average 28% compared to the Standard Type.	Securely fastening square type. Reversed Type of opposite hole positions also included in product lineup.	Up to 68% price reduction compared to machined Type. Best for places that do not require especially good appearances.	MISUMI Standard	25-30% shorter in height, approximately 10% narrower in width compared to Standard Type.	Installation footprint less than half compared to Standard Type.
Page	P.1825		P.1826	P.1826	P.1827 · 1828		P.1829 · 1830		P.1831	P.1831

- Square Hole Type

Mounting Direction	Vertical Mounting	Side Mounting
Shapes	Standard	
Appearance	Addition 	Addition 
Feature	Square pipe/ Square bar mountable	Square pipe/ Square bar mountable
Page	P.1832	

Posts for Stands / Caps for Hollow Posts

CAD Data

■Features: Device Stand, Stand-up Brackets and Strut Clamp can be used in combination.

■Posts for Stands

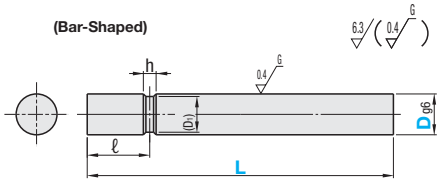
RoHS



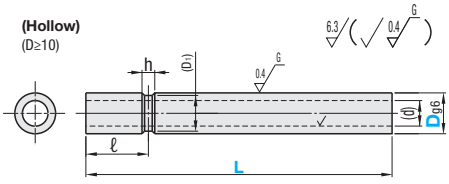
Type		Material / Hardness	Surface Treatment
Bar-Shaped	Hollows		
STN	STA	1.1191/C45E 58HRC~	-
STNM	STAM	Case Induction Hardening (Depth1.0 ~ 1.5)	Electroless Nickel Plating
MSTNM	MSTAM	1.1191/C45E	Electroless Nickel Plating
-	GSTAM	1.1191/C45E	Black Oxide
STNUG	SMSTAM	1.4301/X5CrNi18-10	-

Surface treatment not applied to ends and grooves of STNM · STAM · MSTNM · MSTAM and GSTAM.

(Bar-Shaped)



(Hollow) (D≥10)



Part Number Type		Dg6	L 1mm Increment	(D1)	ℓ	h	(d)
		6	−0.004 −0.012	30~150	4.5	12	4	-
		8	−0.005	30~200	6.5	15		
		10	−0.014	35~250	8.5	18		6.0
Bar-Shaped STN STNM MSTNM STNUG	Hollows STA STAM MSTAM GSTAM SMSTAM	12	−0.006	35~300	10			
		15	−0.017	40~350	13	20	5	10.0
		20	−0.007	45~400	17	25		11.7
		25	−0.020	50~450	22	30	6	15.2
		30		60~450	27			16.0
		35	−0.009	70~500	32	40	8	20.1
		40	−0.025	80~500	37			22.7
		50		100~600	46	50	10	30.8

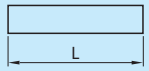
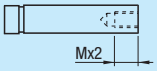
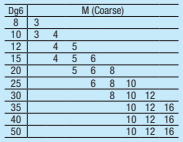
Hollow type is available from D10. STN is available from D8.

Order Example Part Number - L → STNUG12 - 250

Days to Ship 8 Days | Express A | 8,00 EUR/ piece | P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations Part Number - L - (MN · MTC) → STN8 - 100 - MN

Alteration	Code	Spec.	Price Adder
No Groove 	MN	Alteration to No Groove for Set Screw. Ordering Code MN	-1,00
One End Female Thread 	MTC	Female Thread at one end. Ordering Code MTC8 	4,00

Dg6	M (Coarse)
8	3
10	3 4
12	4 5
15	4 5 6
20	5 6 8
25	6 8 10
30	8 10 12
35	10 12 16
40	10 12 16
50	10 12 16

Applicable to Bar-Shaped only.
Not applicable to D=6.

Price ■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Price List	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	L	€ Unit Price Bar-Shaped STN	STNM	MSTNM	STNUG	Hollows STA	STAM		GSTAM	SMSTAM
6	Min. L~100									
	101~150									
8	Min. L~100									
	101~200									
10	Min.L~150									
	151~250									
12	Min.L~150									
	151~300									
15	Min. L~200									
	201~350									
20	Min. L~200									
	201~400									
25	Min. L~200									
	201~450									
30	Min. L~200									
	201~450									
35	Min.L~300									
	301~500									
40	Min.L~300									
	301~500									
50	Min.L~300									
	301~600									

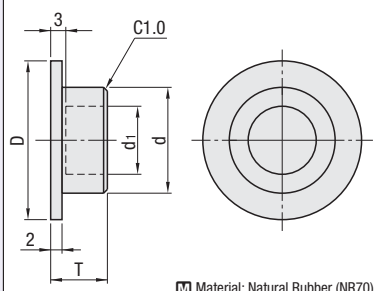
■Features: Caps can be mounted on the end face of Hollow Posts on P.1814~1824.

■Caps for Hollows

RoHS



CAP



M Material: Natural Rubber (NR70)

Part Number Type	No.	D	d	d1	T	€ Unit Price Qty. 1-19	Volume Discount Qty. 20-49
CAP	10	9	6.2	3	8		1,50
	12	11					
	15	14	10.2	6			
	20	18	12.0				
	25	23	15.5	9			
	30	28	16.5	10			
	35	33	20.5	13	10		
	40	38	23.0	15			
	50	48	31.3	16			

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number → CAP25

Days to Ship 8 Days | Express A | 2,00 EUR/ piece | P.88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

NEW

Posts for Stands

-With Scale / Length Configurable with Scale-

Price Reduction
15% on Average

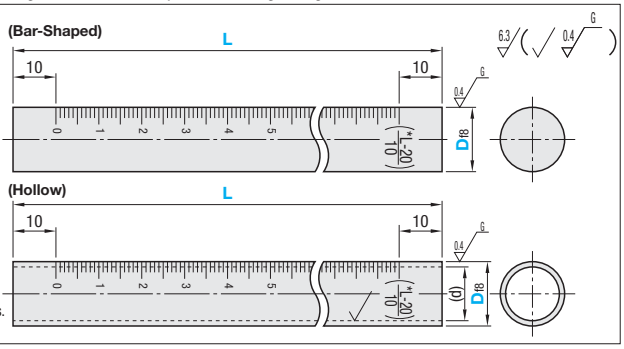
CAD Data

■Features: Easy to adjust positions of cameras and sensors during setup changes. Hollows are capable of storing wiring.

■With Scale RoHS



Type		Material
Bar-Shaped	Hollow	
GSSTN	GSSTA	1.4301/X5CrNi18-10



If wiped with volatile oil, the prints may fade.

* The scale graduations are represented in centimeters.
* Use the scale as an indicator.

Part Number			L d	(d)	€ Unit Price									
Type	Df8				GSSTN					GSSTA				
					L100	L150	L200	L250	L300	L100	L150	L200	L250	L300
GSSTN GSSTA	10	-0.013 -0.035	100 150 200	8										
	12	-0.016 -0.043	100 150 200 250 300	10										
	15		100 150 200 250 300	12.6										
	20	-0.020 -0.053	100 150 200 250 300	16										
	25		200 250 300	-										

Order Example

Part Number	-	L
GSSTN15	-	200
GSSTA20	-	300

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

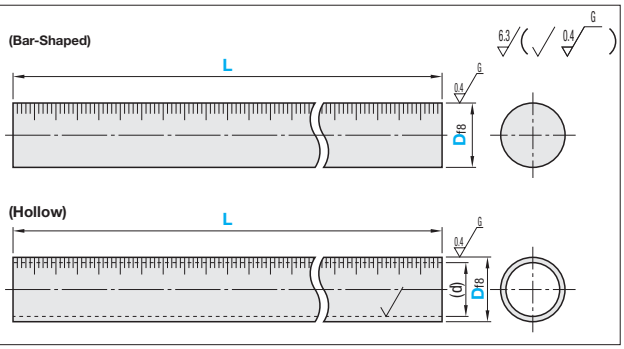
For orders larger than indicated quantity, please request a quotation.

Days to Ship: 6 Days P.87

■Length Configurable with Scale RoHS



Type		Material
Bar-Shaped	Hollow	
FGSTN	FGSTA	1.4301/X5CrNi18-10



If wiped with volatile oil, the prints may fade.

* Scale is not numbered.
* Use the scale as an indicator.

Part Number			L 1mm Increment	(d)	€ Unit Price					
Type	Df8				FGSTN			FGSTA		
					Min. L~200	201~400	401~450	Min. L~200	201~400	401~450
FGSTN FGSTA	10	-0.013 -0.035	35~250	8						
	12	-0.016 -0.043	35~300	10						
	15		40~350	12.6						
	20	-0.020 -0.053	45~400	16						
	25		50~450	20						

Order Example

Part Number	-	L
FGSTN10	-	100
FGSTA20	-	200

Days to Ship: 8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

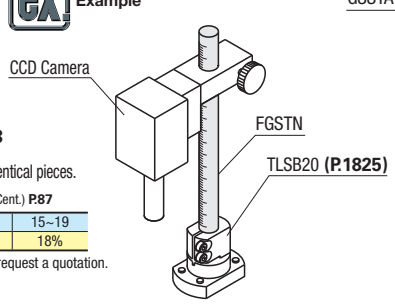
Price

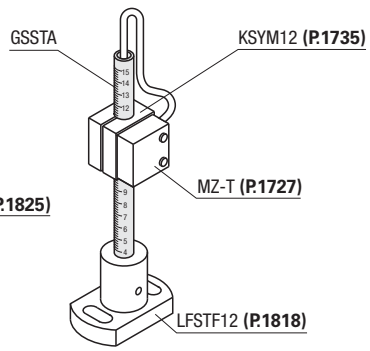
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example





Posts for Stands

-Square Bars · Square Hollows / Length Configurable with Scale-

CAD Data

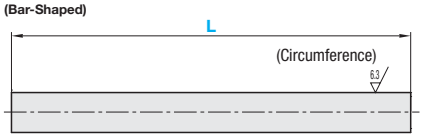
■Features: Use in sets with Stand-up Brackets and strut clamps can prevent sensor / camera from rotating during setup changes. (For brackets for stands, refer to P.1832For strut clamps, refer to P.1851 · 1852.

■Square Bars · Square Hollows RoHS

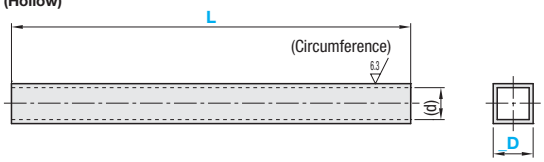


Type		Material
Bar-Shaped	Hollow	
STNQ	STAQ	1.4301/X5CrNi18-10

(Bar-Shaped)



(Hollow)



Part Number			L 1mm Increment	(d)	€ Unit Price					
					STNQ			STAQ		
Type	D				Min. L~200	L201~400	L401~800	Min. L~200	L201~400	L401~800
STNQ STAQ	10	0 -0.1	40~600	8						
	12		40~600	10						
	15		40~600	13						
	20	0 -0.12	40~800	17.6						
	25		40~800	22.6						

Order Example

Part Number	-	L
STNQ12	-	200
STAQ20	-	300

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Days to Ship: 8 Days

Express A 8,00 EUR/ piece P.88

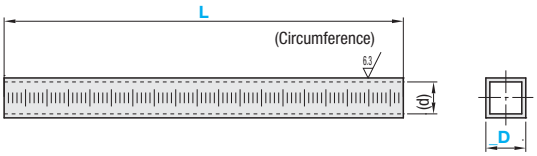
A Express Charge of 21,60 EUR for 3 or more identical pieces.

■Features: Hollows with a scale (w/o numbers), length can be specified in 1mm increments.

■Square Hollows Length Configurable with Scale RoHS



Type	Material
FGSTAQ	1.4301/X5CrNi18-10



If wiped with volatile oil, the prints may fade.

* Scale is not numbered.
* Use the scale as an indicator.

Part Number			L 1mm Increment	(d)	€ Unit Price		
					Min. L~200	L201~400	L401~800
Type	D						
FGSTAQ	10	0 -0.1	40~600	8			
	12		40~600	10			
	15		40~600	13			
	20	0 -0.12	40~800	17.6			
	25		40~800	22.6			

Order Example

Part Number	-	L
FGSTAQ15	-	200

Days to Ship: 8 Days

Express A 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

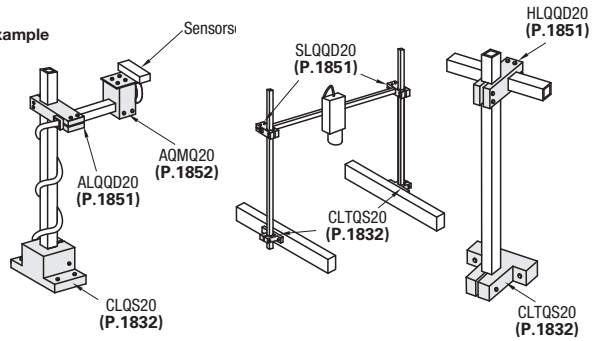
Price

■Volume Discount (Round down to one Cent.)P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Device Stands

-Compact • Through Hole Type-

CAD Data

■Features: A set of a device mounting post and a stand for mounting in space-savings.

■Set (Posts + Brackets)

RoHS



■Bracket Only



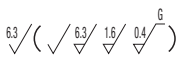
■Set (Posts + Brackets)

Type		Posts		Brackets		Accessory	
Bar-Shaped	Hollows	Material / Hardness	Surface Treatment	Material	Surface Treatment	Bar-Shaped	Hollows
FSBNM	FSBAM	1.1191/C45E Induction Hardening	Electroless Nickel Plating	1.1191/C45E	Black Chrome Plating	Set Screw	Set Screw Cap (P.1814)
MFSBN	MFSBA	1.1191/C45E					
KFSBN	KFSBA		Black Oxide				
MSFSBN	MFSBB	1.4301/X5CrNi18-10	-				
FSTNM	FSTAM	1.1191/C45E Induction Hardening	Electroless Nickel Plating	1.1191/C45E	Electroless Nickel Plating		
MFSTN	MFSTA	1.1191/C45E					
MSFSTN	MFSTB	1.4301/X5CrNi18-10	-				
KBFSBN	KBFSBA	1.1191/C45E	Black Oxide	1.1191/C45E	Black Oxide		
MSFSS	MFSSS	1.4301/X5CrNi18-10	-	1.4301/X5CrNi18-10	-		

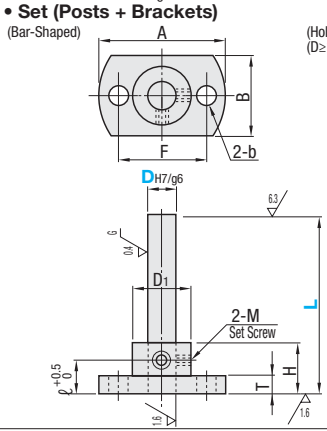
■Bracket Only

Type	Material	Surface Treatment	Accessory
MFSBF	1.1191/C45E	Black Chrome Plating	Set Screw
MFSTF		Electroless Nickel Plating	
MFSLF		Black Oxide	
MFSS	1.4301/X5CrNi18-10	-	

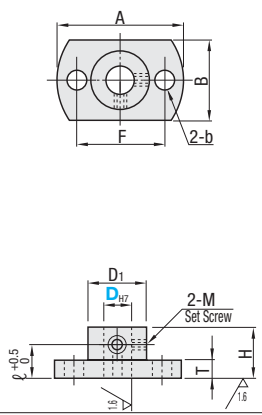
* Case Induction Hardening (Posts): 58HRC~, Depth 1.0~1.5
* For posts for stands only, see **P.1814- 1815**
* No Electroless Nickel Plating and Black Oxide at ends and grooves of Posts.



• Set (Posts + Brackets)



• Bracket Only



Part Number Type			Dg6		L 1mm Increment	A	B	F	D1	H	T	ℓ	b	M	(d)
Set (Bar-Shaped)	Set (Hollow)	Bracket Only													
FSBNM MFSBN KFSBN MSFSBN FSTNM MFSTN MSFSTN KBFSBN MSFSS	FSBAM MFSBA KFSBA MFSBB FSTAM MFSTA MFSTB KBFSBA MFSSS	MFSBF MFSTF MFSLF MFSS	*6	-0.004 -0.012	50~150	33	18	23	14	20	6	12.5	4.5	M4	-
			8	-0.005 -0.014	50~200	38	20	26	16	30	8	15			6.0
			10		50~250	40	22	28	18	35		18			
			12	-0.006 -0.017	50~300	46	24	32	20	35	8	18	5.5	M4	6.0
			15		75~350	56	29	40	25	40		20	6.6	M5	10.0
			20	-0.007 -0.020	75~400	63	34	46	30	45	10	25	6.6	M5	11.7
			25		75~450	78	41	56	37	50		30	9	M6	15.2
			30		100~450	82	46	62	42	60					16.0

Hollow is available from D10. * D6 is available for FSTNM, MFSBN, MFSTN, MSFSTN, MFSBF and MFSTF only. Refer to the price list for availability of brackets as a separate item.

Order Example: Part Number MFSTN15 - L 250 / MFSBF20

Days to Ship
• Set: 8 Days — Express A 8,00 EUR/piece — P. 88
A Express Charge of 21,60 EUR for 3 or more identical pieces.
• Bracket Only: 6 Days — P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Set (Posts + Brackets)

D	L	€ Unit Price											
		Bar-Shaped						Hollows					
		*FSBNM FSTNM	MFSBN MFSTN	KFSBN	*MSFSBN MSFSTN	KBFSBN	MSFSS	FSBAM FSTAM	MFSBA MFSTA	KFSBA	MFSBB MFSTB	KBFSBA	MFSSS
6	Min. L up to 100												
	101~150												
8	Min. L up to 100												
	101~200												
10	Min. L up to 150												
	151~250												
12	Min. L up to 150												
	151~300												
15	Min. L up to 200												
	201~350												
20	Min. L up to 200												
	201~400												
25	Min. L up to 200												
	201~450												
30	Min. L up to 200												
	201~450												

■Bracket Only

D	€ Unit Price		
	MFSBF MFSTF	MFSLF	MFSS
6			
8			
10			
12			
15			
20			
25			
30			

* D=6 is not available for FSBNM and MSFSBN.

Device Stands

-Compact • Slotted Hole Type-

CAD Data

■Features: A set of a device mounting post and a stand for fine-tuning and mounting in space-savings.

■Set (Posts + Brackets)

RoHS



■Bracket Only



■Set (Posts + Brackets)

Type		Posts		Brackets		A Accessory	
Bar-Shaped	Hollows	M Material H Hardness	S Surface Treatment	M Material	S Surface Treatment	Bar-Shaped	Hollows
LFSBN	LFSBA	1.1191/C45E	Electroless Nickel Plating	1.1191/C45E	Black Chrome Plating	Set Screw Washer	Set Screw Washer Cap (P.1814)
LFSTSM	-	1.1191/C45E Induction Hardening	Electroless Nickel Plating	1.1191/C45E	Electroless Nickel Plating		
LFSTN	LFSTA	1.1191/C45E					
LSFSS	-	1.4301/X5CrNi18-10	-	1.4301/X5CrNi18-10	-		

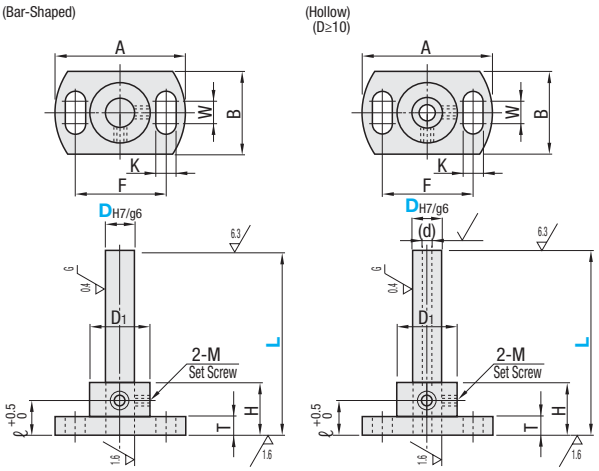
* Case Induction Hardening (Posts): 58HRC~, Depth 1.0~1.5
* For posts for stands only, **P.1814- 1815**
* No Electroless Nickel Plating and Black Oxide at ends and grooves of Posts.
* Surface treatment is not applied to the inside of the slotted holes.

■Bracket Only

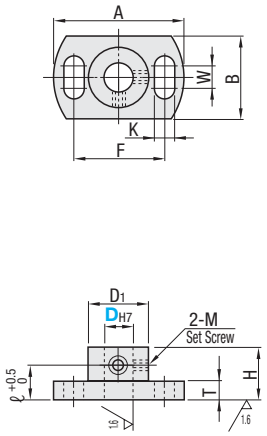
Type	M Material	S Surface Treatment	A Accessory
LFSBF	1.1191/C45E	Black Chrome Plating	Set Screw
LFSTF		Electroless Nickel Plating	

6.3 (6.3 1.6 0.4) G

• Set (Posts + Brackets)



• Bracket Only



Part Number Type		Dg6		L	A	B	F	W	K	D1	H	T	ℓ	M	(d)	Black Chrome Plating Brackets Included Washers	Electroless Nickel Plating Brackets Included Washers	1.4301/X5CrNi18-10 Brackets Included Washers
Set (Bar-Shaped)	Set (Hollow)	6	-0.004 -0.012	50~150	33	18	23	6	4.5	14	20	6	12.5	M4	-	WSSB6-4-2	WSSM6-4-2	WSSS6-4-2
LFSBN	LFSBA	8	-0.005 -0.014	50~200	38	20	26			16	30	8	15			WSSB10-4-2	WSSM10-4-2	WSSS10-4-2
LFSTSM	LFSTA	10		50~250	40	22	28			18	35		18		6			
LFSTN		12	-0.006 -0.017	50~300	46	24	32	6	5.5	20	35	8	18	M4	6	WSSB12-5-2	WSSM12-5-2	WSSS12-5-2
LSFSS		15		75~350	56	29	40	10	6.6	25	40		20	M5	10	WSSB14-6-3	WSSM14-6-3	WSSS14-6-3
Bracket Only		20	-0.007 -0.020	75~400	63	34	46	10	6.6	30	45	10	25	M5	11.7	WSSB14-6-3	WSSM14-6-3	WSSS14-6-3
LFSBF		25		75~450	78	41	56		9	37	50		30	M6	15.2	WSSB16-8-3	WSSM16-8-3	WSSS16-8-3
LFSTF		30		100~450	82	46	62			42	60				16			

Hollow is available from D10. Refer to the price list for availability of brackets as a separate item.

Order Example

Part Number	-	L
LFSTN15	-	250
LFSBF20		

Days to Ship

• Set **8 Days** Express A 8,00 EUR/piece P. 88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• Bracket Only **6 Days** P. 87

Price

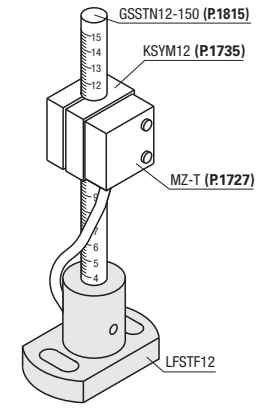
■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example

For Sensor Mounting (with Single Bracket)



■Set (Posts + Brackets)

D	L	€ Unit Price Bar-Shaped LFSBN LFSTN	LFSTSM	LSFSS	Hollows LFSBA LFSTA
6	Min. L up to 100				
	101~150				
8	Min. L up to 100				
	101~200				
10	Min. L up to 150				
	151~250				
12	Min. L up to 150				
	151~300				
15	Min. L up to 200				
	201~350				
20	Min. L up to 200				
	201~400				
25	Min. L up to 200				
	201~450				
30	Min. L up to 200				
	201~450				

■Bracket Only

D	€ Unit Price LFSBF	LFSTF
6		
8		
10		
12		
15		
20		
25		
30		

Device Stands

-Round Flange · Through Hole Type-

■Set (Posts + Brackets)

RoHS



■Bracket Only



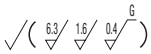
■Set (Posts + Brackets)

Type		Posts		Brackets		Accessory	
Bar-Shaped	Hollows	M Material H Hardness	S Surface Treatment	M Material	S Surface Treatment	Bar-Shaped	Hollows
CSTN	CSTA	1.1191/C45E Induction Hardening	-	EN-JL 1040/ EN-GJL-250	Black Oxide	Set Screw Hexagon Socket Head Cap Screws	Set Screw Hexagon Socket Head Cap Screws Cap (P.1814)
MCSTN	MCSTA	1.1191/C45E	Electroless Nickel Plating				
SCSTN	SCSTA	1.4301/X5CrNi18-10	-				
CSTNM	CSTAM	1.1191/C45E Induction Hardening	Electroless Nickel Plating	EN-JL 1040/ EN-GJL-250	Electroless Nickel Plating		
MCSTNM	MCSTAM	1.1191/C45E					
SCSTNM	SCSTAM	1.4301/X5CrNi18-10	-				

■Bracket Only

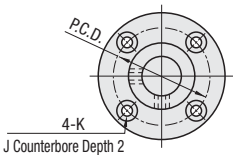
Type		M Material	S Surface Treatment	Accessory	
No Dowel Hole	With Dowel Holes			No Dowel Hole	With Dowel Holes
CSTF	CSPF	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw	Set Screw Dowel Pin (1.3505/100Cr6)
CSTFM	-		Electroless Nickel Plating		

* Case Induction Hardening(Posts): 58HRC~, Depth 1.0~1.5
* No Electroless Nickel Plating and Black Oxide at ends and grooves of Posts.
* For Hexagon Socket Head Cap Screws, a black oxide bracket matches a black oxide screw, and an electroless nickel plating bracket matches a trivalent chromate screw.

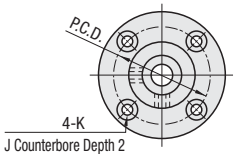


• Set (Post + Bracket)

(Bar-Shaped)

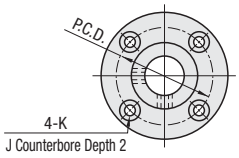


(Hollow)

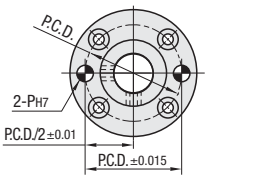


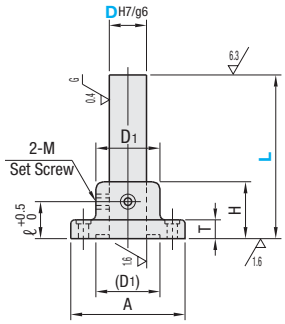
• Bracket Only

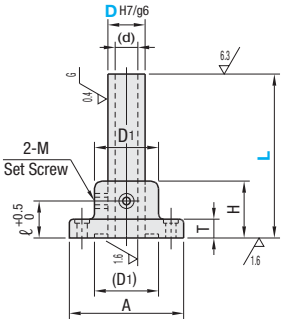
(No Dowel Hole)

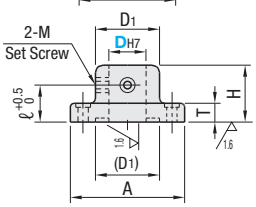


(With Dowel Holes)









Part Number Type		Dg6	L 1mm Increment	A	D1	H	T	ℓ	P.C.D.	K	J	M	(d)	Bracket with Dowel Holes only PH7	Tolerance	Included Dowel Pins (2 Pcs.) Tolerance m6	Included Hexagon Socket Head Cap Screws
Set (Bar-Shaped) CSTN MCSTN SCSTN CSTNM MCSTNM SCSTNM (Hollow) CSTA MCSTA SCSTA CSTAM MCSTAM SCSTAM	10	−0.005 −0.014	50~250	56	26	35	12	18	43	4.5	11	M4	6.0	6	+0.012 0	MSTM6-20	M4–20x4 pcs.
	12	−0.006 −0.017	50~300	68	28				51	5.5	13						M5–20x4 pcs.
	15		75~350	75	31	40		20	56	6.6	15	M5	10.0				M6–25x4 pcs.
	20	−0.007 −0.020	75~400	86	40	45	12	25	65	6.6	15	M5	11.7	6	+0.012 0	MSTM6-20	M6–25x4 pcs.
	25		75~450	100	45	50		30	75	9	18	M6	15.2	8	+0.015 0	MSTM8-20	M8–25x4 pcs.
	30		100~450	106	50	60			80				16.0				
Bracket Only CSTF CSTFM Single-item Bracket with Dowel Holes CSPF	35	−0.009 −0.025	125~500	118	55	70	15	40	90	11	20	M8	20.1	10	+0.015 0	MSTM10-30	M10–35x4 pcs.
	40		150~500	125	60	80			95				22.7				
	50		200~600	140	70	100		50	106	14	24	M10	30.8				M12–35x4 pcs.

Brackets with dowel holes are available only as a single item.

Order Example

Part Number	-	L
MCSPN50 CSTF20	-	500

Days to Ship

• Set: 8 Days | Express A | 8,00 EUR/ piece P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• Bracket Only: 6 Days P.87

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Set (Posts + Brackets)

D	L	€ Unit Price											
		Bar-Shaped						Hollows					
		CSTN	MCSTN	SCSTN	CSTNM	MCSTNM	SCSTNM	CSTA	MCSTA	SCSTA	CSTAM	MCSTAM	SCSTAM
10	50~150												
	151~250												
12	50~150												
	151~300												
15	75~200												
	201~350												
20	75~200												
	201~400												
25	75~200												
	201~450												
30	100~200												
	201~450												
35	125~300												
	301~500												
40	150~300												
	301~500												
50	200~300												
	301~600												

Bracket Only

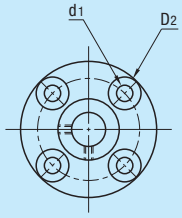
DH7	Tolerance	€ Unit Price		
		CSTF	CSTFM	CSPF
10	$+\frac{0.015}{0}$			
12	$+\frac{0.018}{0}$			
15				
20	$+\frac{0.021}{0}$			
25				
30				
35	$+\frac{0.025}{0}$			
40				
50				

Alterations

Part Number - L - (BH)
CSTN15 - 150 - BH

10 Days

Express Service is not available.

Alterations	Code	Spec.	Price Adder
Mounting Holes Enlarged 	BH	Enlarges mounting holes for fine-tuning. Ordering Code BH	Surface treatment prices vary with bracket materials. Black Oxide 14,00 Electroless Nickel Plating 16,00

D	Included Screws	Adj. Range	d1	D2	Included Washers (P.2-101)	
					Black Oxide	Electroless Nickel Plating
10	M 4	±1	6	13	WSSB10-4-2	WSSM10-4-2
12	M 5		7	15	WSSB12-5-2	WSSM12-5-2
15	M 6	±1.5	9	18	WSSB14-6-3	WSSM14-6-3
20		±2	10	20		
25	M 8		12	22	WSSB16-8-3	WSSM16-8-3
30						
35	M10	±2.5	15	28	WSSB20-10-3	WSSM20-10-3
40						
50	M12	±3	18	32	WSSB25-12-5	WSSM25-12-5

Counterbore Depth is 2mm. 4 screws and washers are included.
Not available for Dowel Hole Type.

Device Stands

-Square Flange • Through Hole Type-

CAD Data

■Features: Smaller vertical dimension enables mounting in narrow spaces.

■Set (Posts + Brackets)

RoHS



■Bracket Only



■Set (Posts + Brackets)

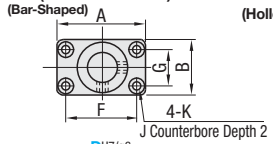
Type		Posts			Brackets		A Accessory	
Bar-Shaped	Hollows	M Material	H Hardness	S Surface Treatment	M Material	S	Bar-Shaped	Hollows
ASTN	ASTA	1.1191/C45E Induction Hardening		-	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw Hexagon Socket Head Cap Screws	Set Screw Hexagon Socket Head Cap Screws Cap (P.1814)
MASTN	MASTA	1.1191/C45E		Electroless Nickel Plating				
KASTN	KASTA			Black Oxide				
SASTN	SASTA	1.4301/X5CrNi18-10		-				
ASTNM	ASTAM	1.1191/C45E Induction Hardening		Electroless Nickel Plating	EN-JL 1040/EN-GJL-250	Electroless Nickel Plating		
MASTNM	MASTAM	1.1191/C45E						
SASTNM	SASTAM	1.4301/X5CrNi18-10		-				

■Bracket Only

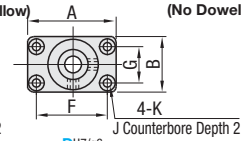
Type		M Material	S Surface Treatment	A Accessory	
No Dowel Hole	With Dowel Holes			No Dowel Hole	With Dowel Holes
ASTF	ASPF	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw	Set Screw Dowel Pin (1.3505/100Cr6)
ASTFM	-		Electroless Nickel Plating		

* Case Induction Hardening (Posts): 58HRC~, Depth 1.0~1.5
* No Electroless Nickel Plating and Black Oxide at ends and grooves of Posts.
* For Hexagon Socket Head Cap Screws, a black oxide bracket matches a black oxide screw, and an electroless nickel plating bracket matches a trivalent chromate screw.

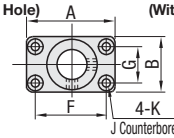
- Set (Posts + Brackets) (Bar-Shaped)



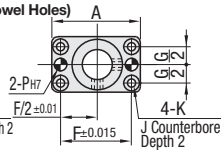
(Hollow)

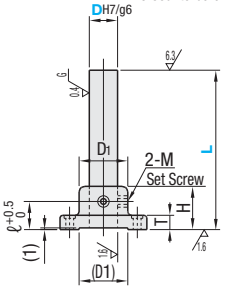


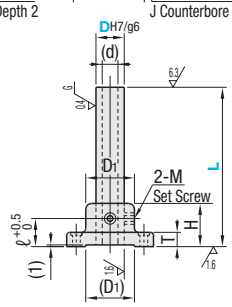
- Bracket Only (No Dowel Hole)

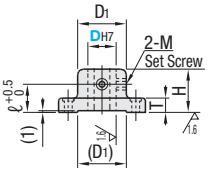


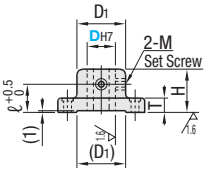
(With Dowel Holes)











Part Number Type		Dg6	L Configurable 1mm Increment	A	B	F	G	D1	H	T	ℓ	K	J	M	(d)	Bracket with Dowel Holes only PH7	Tolerance	Included Dowel Pins (2 Pcs.) Tolerance m6	Included Hexagon Socket Head Cap Screws
(Bar-Shaped)	Set (Hollow)	10	50~250	56	30	40	14	26	35	12	18	4.5	11	M4	6	-	-	-	M4–20x4 pcs.
ASTN	ASTA	12	50~300	62	36	44	18	28				5.5	13						M5–20x4 pcs.
MASTN	MASTA	15	75~350	70	40	50	20	31	40		20	6.6	15	M5	10				M6–25x4 pcs.
KASTN	KASTA	20	75~400	80	50	60	30	40	45	12	25	6.6	15	M5	11.7	6	+0.012 0	MSTM6-20	M6–25x4 pcs.
SASTN	SASTA	25	75~450	100	60	75	36	45	50		30	9	18	M6	15.2	8	+0.015 0	MSTM8-20	M8–25x4 pcs.
ASTNM	ASTAM	30	100~450	106		80		50	60						16.0				
MASTNM	MASTAM	35	125~500	118	80	90	40	55	70	15	40	11	20	M8	20.1	10	+0.015 0	MSTM10-30	M10–35x4 pcs.
SASTNM	SASTAM	40	150~500	125		95		60	80						22.7				
Bracket Only	Single-item Bracket with Dowel Holes	50	200~600	140	100	106	50	70	100		50	14	24	M10	30.8				M12–35x4 pcs.
ASTF	ASPF																		
ASTFM																			

-0.005 -0.014 / -0.006 / -0.017 / -0.007 -0.020 / -0.009 -0.025

Bracket ASPF with Dowel Holes is available from D20. Refer to the price list for bracket availability.

Order Example

Part Number	-	L
ASTN40 / ASTF20	-	400

Days to Ship

• Set: 8 Days — Express A 8,00 EUR/piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• Bracket Only: 6 Days — P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Set (Posts + Brackets)

D	L	€ Unit Price Bar-Shaped ASTN	MASTN	KASTN	SASTN	ASTNM	MASTNM	SASTNM	Hollows ASTA	MASTA	KASTA	SASTA	ASTAM	MASTAM	SASTAM
10	50~150														
	151~250														
12	50~150														
	151~300														
15	75~200														
	201~350														
20	75~200														
	201~400														
25	75~200														
	201~450														
30	100~200														
	201~450														
35	125~300														
	301~500														
40	150~300														
	301~500														
50	200~300														
	301~600														

■Bracket Only

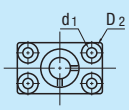
DH7	Tolerance	€ Unit Price ASTF	ASTFM	ASPF
10	+0.015 0			
12	+0.018 0			
15				
20	+0.021 0			
25				
30				
35	+0.025 0			
40				
50				

Alterations

Part Number	L	(BH)
ASTA25	- 400 -	BH

10 Days

Express Service is not available.

Alterations	Code	Spec.	Price Adder
Mounting Holes Enlarged 	BH	Enlarges mounting holes for fine-tuning. Ordering Code BH. Not available for Dowel Hole Type. Counterbore Depth is 2mm. 4 screws and washers are included.	Surface treatment prices vary with bracket materials. Black Oxide 14,00 Electroless Nickel Plating 16,00

D	Included Screws	Adj. Range	d1	D2	Included Washers (P.2101) Black Oxide	Electroless Nickel Plating
10	M4	±1	6	13	WSSB10-4-2	WSSM10-4-2
12	M5		7	15	WSSB12-5-2	WSSM12-5-2
15	M6	±1.5	9	18	WSSB14-6-3	WSSM14-6-3
20			10	20		
25	M8	±2	12	22	WSSB16-8-3	WSSM16-8-3
30						
35	M10	±2.5	15	28	WSSB20-10-3	WSSM20-10-3
40						
50	M12	±3	18	32	WSSB25-12-5	WSSM25-12-5

Device Stands

-Square Flange • Slotted Hole Type-

CAD Data

■Features: A slotted holes enable fine adjustments when mounting.

■Set (Posts + Brackets)

RoHS



■Bracket Only



■Set (Posts + Brackets)

Type				Posts			Brackets		Accessory	
Horizontal Adjustment		Vertical Adjustment		M	H	S	M	S	A	
Bar-Shaped	Hollows	Bar-Shaped	Hollows	Material	Hardness	Surface Treatment	Material	Surface Treatment	Bar-Shaped	Hollows
ASTX	ASPX	ASTY	ASPY	1.1191/C45E	Induction Hardening	-	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw Hexagon Socket Head Cap Screws Washer	Set Screw Hexagon Socket Head Cap Screws Washer Cap (P.1814)
AQTX	AQPX	AQTY	AQPY	1.1191/C45E		Electroless Nickel Plating				
AMTX	AMPX	AMTY	AMPY	1.1191/C45E	Induction Hardening	Electroless Nickel Plating	EN-JL 1040/EN-GJL-250	Electroless Nickel Plating		
APTX	APPX	APTY	APPY	1.1191/C45E						
ACTX	ACPX	ACTY	ACPY	1.4301/X5CrNi18-10		-				

*Case Induction Hardening Posts): 58HR-, Depth 1.0-1.5 *1.4308/G-X6CrNi18-9 is the cast alloy equivalent to 1.4301/X5CrNi18-10. (Stainless Steel 1.4301/X5CrNi18-10 is superior in terms of antirust and non-magnetism.) * No Electroless Nickel Plating at ends and grooves of Posts.

*For Hexagon Socket Head Cap Screws, a black oxide bracket matches a black oxide screw, and an electroless nickel plating bracket matches a trivalent chromate screw.

Surface treatment is not applied to the inside of the slotted holes. Square Flanges (P.1821) have different mounting pitches.

■Bracket Only

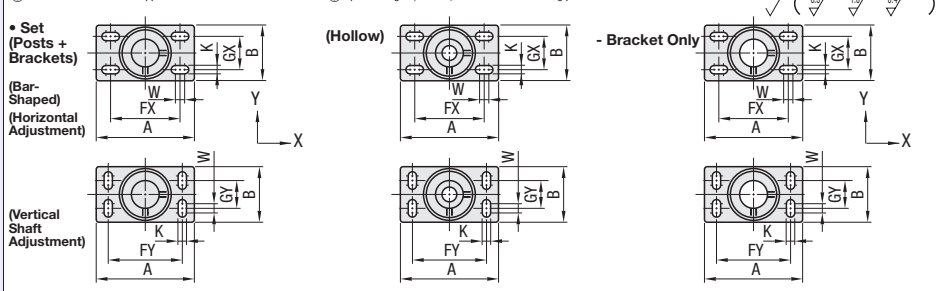
Type		M	S	A
Horizontal Adjustment	Vertical Adjustment	Material	Surface Treatment	Accessory
ABFX	ABFY	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw
AMFX	AMFY		Electroless Nickel Plating	
-	ASFY	1.4308	-	

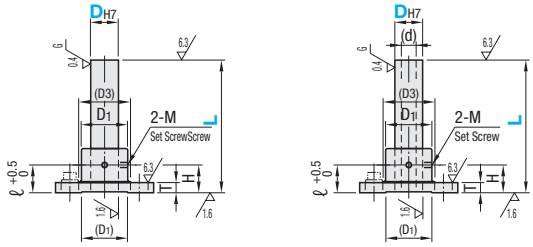
• Set (Posts + Brackets) (Bar-Shaped) (Horizontal Adjustment)

(Hollow)

- Bracket Only

(Vertical Shaft Adjustment)





Part Number Type		D g6	L 1mm Increment	Adj. Range	A	B	FX	FY	GX	GY	K	W	D1	(D3)	H	T	ℓ	M	(d)	Included Hexagon Socket Head Cap Screws
Set Horizontal Adjustment	Bracket Only Horizontal Adjustment																			
(Bar-Shaped)	(Hollow)																			
ASTX	ASPX	ABFX	10	-0.005 -0.014	50~250	±2.5	56	30	40	40	14	14	4.5	5	26	28	35	11	18	M4	6.0	M4–20x4 pcs.
AQTX	AQPX		12	-0.006	50~300		62	36	44	44	18	18	5.5		28	30	35					M5–25x4 pcs.
AMTX	AMPX	AMFX	15	-0.017	75~350	±3	70	40	50	50	20	20	6.6	6	31	33	40		20	M5	10.0	M6–25x4 pcs.
APTX	APPX		20	-0.007 -0.020	75~400	±5	80	50	56	60	35	25	6.6	10	40	43	45	11	25	M5	11.7	M6–25x4 pcs.
ACTX	ACPX		25		75~450		100	60	70	75	36	30	9		45	52	50		30	M6	15.2	M8–25x4 pcs.
Vertical Adjustment	Vertical Adjustment		30		100~450		106		75	80					50	56	60				16.0	
(Bar-Shaped)	(Hollow)																					
ASTY	ASPY	ABFY	35	-0.009 -0.025	125~500	±7.5	118	80	80	90	50	40	11	15	55	60	70	14	40	M8	20.1	M10–35x4 pcs.
AQTY	AQPY		40		150~500		125		88	95					60	66	80				22.7	
AMTY	AMPY	AMFY	50		200~600	±10	140	100	95	106	70	50	14	20	70	77	100		50	M10	30.8	M12–35x4 pcs.
APTY	APPY																					
ACTY	ACPY	ASFY																				

Refer to the price list for bracket availability.

Order Example

Part Number	-	L
ASPX30	-	400
ABFY20		

Days to Ship

• Set: 8 Days — Express A: 8,00 EUR/piece — P88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• Bracket Only: 6 Days — P87

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Set (Posts + Brackets)

D	L	€ Unit Price									
		Bar-Shaped					Hollows				
		ASTX ASTY	AQTX AQTY	AMTX AMTY	APTX APTY	ACTX ACTY	ASPX ASPY	AQPX AQPY	AMPX AMPY	APPX APPY	ACPX ACPY
10	50~150										
	151~250										
12	50~150										
	151~300										
15	75~200										
	201~350										
20	75~200										
	201~400										
25	75~200										
	201~450										
30	100~200										
	201~450										
35	125~300										
	301~500										
40	150~300										
	301~500										
50	200~300										
	301~600										

■Bracket Only

DH7	Tolerance	€ Unit Price				
		ABFX	ABFY	AMFX	AMFY	ASFY
10	+0.015 0					
12	+0.018 0					
15						
20	+0.021 0					
25						
30						
35	+0.025 0					
40						
50						

Device Stands
-Side Mounting - Compact-

CAD Data

■Features: More compact than the Side Mounting Type on the right page with an average 36% reduced footprint.

■Set (Posts + Brackets)

RoHS



■Bracket – Single item



■Set (bracket + post)

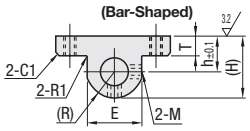
Type		Posts			Brackets		Accessory	
Bar-Shaped	Hollows	M Material	H Hardness	S Surface Treatment	M Material	S Surface Treatment	Bar-Shaped	Hollows
CCTN	CCTA	1.1191/C45E	Induction Hardening	-	EN-JL 1040/ EN-GJL-250	Black Oxide	Set Screw	Set Screw Cap (P.1814)
MCCTN	-	1.1191/C45E		Electroless Nickel Plating				
MCCTNM	-	1.1191/C45E		Electroless Nickel Plating	EN-JL 1040/EN-GJL-250	Electroless Nickel Plating		

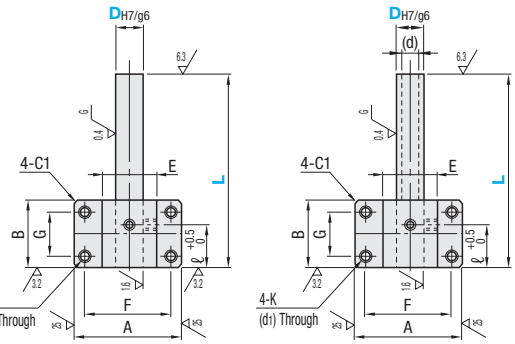
* Case Induction Hardening (Posts): 58HRC~, Depth 1.0~1.5

■Bracket – Single item

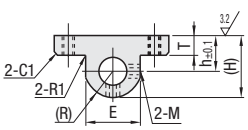
Type	M Material	S Surface Treatment	A Accessory
CCTF	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw
CCTFM		Electroless Nickel Plating	

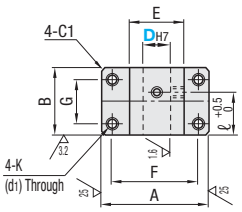
• Set (Posts + Brackets)





• Bracket Only





Mounting holes are tapped for mounting on either front or back side.

Part Number Type		D g6		L 1mm Increment	A	B	F	G	E	(H)	T	ℓ	h	K (d1)	(R)	M	(d)
Set (Bar-Shaped) CCTN, MCCTN, MCCTNM	Set (Hollow) CCTA / Bracket Only CCTF, CCTFM	10	-0.005 -0.014	50~250	45	30	33	15	23	26	9	18	13	M5 (4.3)	13	M4	6.0
		12	-0.006 -0.017	50~300	48	33	35	18	25	28			14		14		
		15		75~350	55	35	40	20	28	31.5		20	16	M6 (5.2)	15.5	M5	10.0
		20	-0.007 -0.020	75~400	65	40	50	22	36	40	9	25	20		20	M5	11.7
		25		75~450	80	48	60	25	44	49.5		30	25	M8 (6.8)	24.5	M6	15.2
		30		100~450	85		65		49	55			28		27		16.0
		35	-0.009 -0.025	125~500	105	60	80	30	59	65.5	12	40	33	M10 (8.6)	32.5	M8	20.1
		40		150~500	110		85		64	71			36		35		22.7
		50		200~600	120	70	95	40	74	81		50	41		40	M10	*30.8

CCTFM is available up to D40.

Order Example

Part Number	-	L
CCTN20 / CCTFM35	-	350

Days to Ship

• Set: 8 Days — Express A: 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• Bracket Only: 6 Days — P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Price List	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

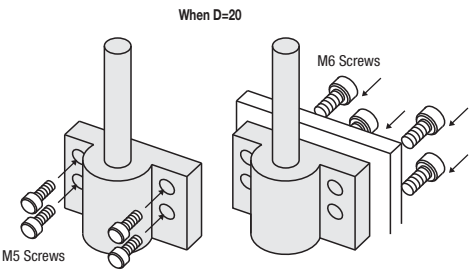
■Set (bracket + post)

D	L	€ Unit Price Bar-Shaped CCTN	MCCTN	MCCTNM	Hollows CCTA
10	50~150				
	151~250				
12	50~150				
	151~300				
15	75~200				
	201~350				
20	75~200				
	201~400				
25	75~200				
	201~450				
30	100~200				
	201~450				
35	125~300				
	301~500				
40	150~300				
	301~500				
50	200~300				
	301~600				

■Bracket – Single item

D	€ Unit Price CCTF	CCTFM
10		
12		
15		
20		
25		
30		
35		
40		
50		

Example



Fix to the mating side with M5 screws. (as Through Holes)

Fix to the bracket side with M6 screws. (as Tapped Holes)

Device Stands

-Side Mounting • Standard-

CAD Data

■Features: Stands affordable and best for side mounting on transfer lines.

■Set (Posts + Brackets)

RoHS



■Bracket – Single item



■Set (bracket + post)

Type		Posts			Brackets		Accessory	
Bar-Shaped	Hollows	M Material	H Hardness	S Surface Treatment	M Material	S Surface Treatment	Bar-Shaped	Hollows
SSTN	SSTA	1.1191/C45E Induction Hardening		-	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw Hexagon Socket Head Cap Screws	Set Screw Hexagon Socket Head Cap Screws Cap (P.1814)
MSSTN	MSSTA	1.1191/C45E		Electroless Nickel Plating				
SSTNM	SSTAM	1.1191/C45E Induction Hardening		Electroless Nickel Plating	EN-JL 1040/EN-GJL-250	Electroless Nickel Plating		
MSSTNM	MSSTAM	1.1191/C45E						
SSSTNM	-	1.4301/X5CrNi18-10		-				

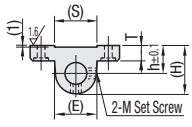
* Case Induction Hardening (Posts): 58HRC~, Depth 1.0~1.5
* No Electroless Nickel Plating and Black Oxide at ends and grooves of Posts.
* For Hexagon Socket Head Cap Screws, a black oxide bracket matches a black oxide screw, and an electroless nickel plating bracket matches a trivalent chromate screw.

■Bracket – Single item

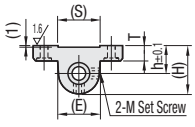
Type		M Material	S Surface Treatment	Accessory	
No Dowel Hole	With Dowel Holes			No Dowel Hole	With Dowel Holes
SSTF	SSPF	EN-JL 1040/EN-GJL-250	Black Oxide	Set Screw	Set Screw Dowel Pins
SSTFM	-		Electroless Nickel Plating		

- Set (Posts + Brackets)

(Bar-Shaped)

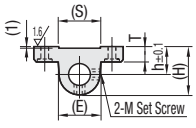


(Hollows)

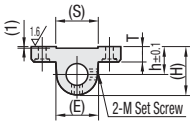


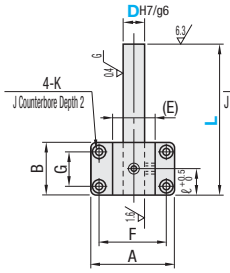
- Bracket Only

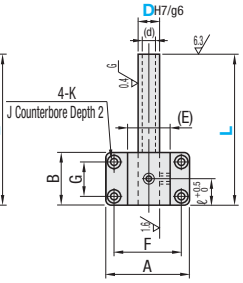
(No Dowel Hole)

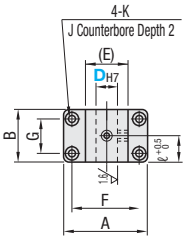


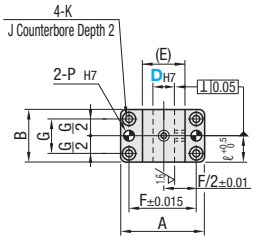
(With Dowel Holes)











Part Number				L 1mm Increment	A	B	(E)	(S)	F	G	(H)	T	ℓ	h	K	(J)	M	(d)	Bracket with Dowel Holes only			Included Hexagon Socket Head Cap Screws
Type			Dg6																PH7	Tolerance	Included Dowel Pins (2 Pcs.) Tolerance m6	
Set (Bar-Shaped)	Set (Hollow)	Bracket Only																				
SSTN	SSTA	SSTF	10	-0.005 -0.014	50~250	58	35	26	26	42	19	28	12	18	15	4.5	11	M4	6.0	-	-	-	M4–20x4 pcs.
			12	-0.006 -0.017	50~300	64	35	28	28	47	18	30			16	5.5	13	M5					M5–20x4 pcs.
			15		75~350	72	40	31	31	52	20	33.5		20	18	6.6	15	M5	10.0				M6–25x4 pcs.
MSSTN	MSSTA	SSTFM	20	-0.007 -0.020	75~400	82	45	40	40	62	25	42	12	25	22	6.6	15	M5	11.7	6	+0.012 0	MSTM6-20	M6–25x4 pcs.
SSTNM	MSSTAM	(With Dowel Holes)	25		75~450	100	60	49	49	75	36	51.5		30	27	9	18	M6	15.2	8	+0.015 0	MSTM8-20	M8–25x4 pcs.
MSSTNM			30		100~450	106		54	54	80		57			30				16.0				
SSSTNM		SSPF	35	-0.009 -0.025	125~500	118	80	65	65	90	40	67.5	15	40	35	11	20	M8	20.1	10	+0.015 0	MSTM10-30	M10–35x4 pcs.
			40		150~500	125		70	70	95		73			38				22.7				
			50		200~600	140	100	80	80	106	50	83		50	43	14	24	M10	30.8				M12–35x4 pcs.

Bracket SSPF with Dowel Holes is available from D20.

Order Example

Part Number	-	L
MSSTN30 SSTF20	-	300

Days to Ship

• Set: 8 Days — Express A — 8,00 EUR/ piece — P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

• Bracket Only: 6 Days — P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Set (bracket + post)

D	L	€ Unit Price								
		Bar-Shaped					Hollows			
		SSTN	MSSTN	SSTNM	MSSTNM	SSSTNM	SSTA	MSSTA	SSTAM	MSSTAM
10	50~150									
	151~250									
12	50~150									
	151~300									
15	75~200									
	201~350									
20	75~200									
	201~400									
25	75~200									
	201~450									
30	100~200									
	201~450									
35	125~300									
	301~500									
40	150~300									
	301~500									
50	200~300									
	301~600									

■Bracket – Single item

D	€ Unit Price		
	SSTF	SSTFM	SSPF
10			
12			
15			
20			
25			
30			
35			
40			
50			

Stand-up Brackets

-Economy / Standard-

CAD Data

Features: Affordable precision casting Brackets for Stands

Economy Type

RoHS

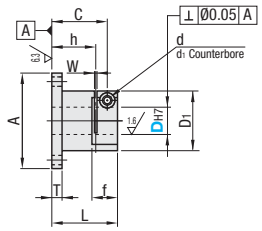




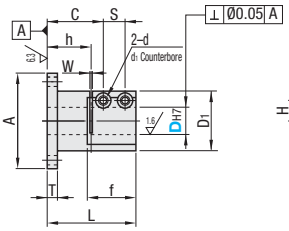
Type		M Material	S Surface Treatment	A Accessory
Compact Flange	Square Flanged			
TLSB	KLSB	1.1191/ C45E	Black Oxide	Hexagon Socket Head Cap Screws
TLSM	KLSM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless)
TLSS	KLSS	1.4301/ X5CrNi18-10	-	

*Hexagon socket head cap screws are included with D10-15 (1pc.) and D20-50 (2pcs.).

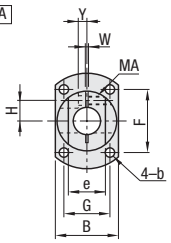
- D Dimension 10~15



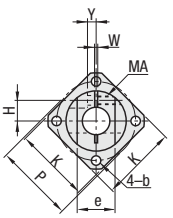
- D Dimension 20~50



Compact Flange



Square Flanged



Part Number Type		DH7	A	B	L	T	D1	F	G	b	C	S	H	Y	d	d1	MA	h	f	e	W	K	P
		10 +0.015 0	45	28	35	10	26	30	18	4.5	29	-	9.5	3	4.5	8	M4	22	15	14	2	35	36
		12 +0.018 0	50	32			30	34	22			-	10.5	3.5						16		38	40
(Compact Flange)	(Square Flanged)	15	58	38	39	12	35	38	26	5.5	32	-	12.5	4	5.5	9.5	M5	24	17	19		44	46
		20 +0.021 0	64	42	50	12	40	42	30	6.6	33.8	10.5	14	6.5	5.5	9.5	M5	27	25	24	2	50	52
TLSB	KLSB	25	80	50	60		48	54	35	9	41.5	12	17	8	6.6	11	M6	34	28	29		62	64
TLSM	KLSM	30	90	60	70	15	58	58	45		47	15	21	8	9	14	M8	38	34	34		68	74
TLSS	KLSS	35 +0.025 0	100	66	80	15	64	66	48	11	55	16	23	11.5	9	14	M8	44	39	41	3	76	82
		40	106	72	90		70	70	54		64	17	26					53	40	46		80	88
		50	125	88	110	18	85	80	68	14	77.5	21.0	32	12	11	17.5	M10	65	48	58		94	105

Refer to the price list for available sizes. The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.

D	€ Unit Price					
	Compact Flange			Square Flanged		
	TLSB	TLSM	TLSS	KLSB	KLSM	KLSS
10						
12						
15						
20						
25						
30						
35						
40						
50						

Order Example: Part Number TLSB20

Days to Ship: 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Standard Type

RoHS

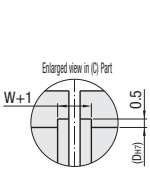




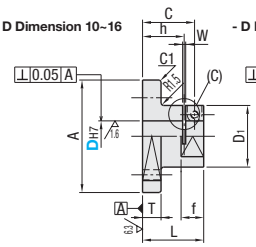
Type	M Material	S Surface Treatment	A Accessory
CLSB	1.0038/S235JR	Black Oxide	Hex. Socket Head Cap Screws
CLSM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless)
CLSAM	EN AW-6061/EN AW-AlMg1SiCu	Clear Anodize	
CLSS	1.4301/X5CrNi18-10	-	

There are deburring marks on (C) area.
Some models may have slit grooves in (B) area.
* Hexagon socket head cap screws are included with D10-15 (1pc.) and D20-50 (2pcs.).

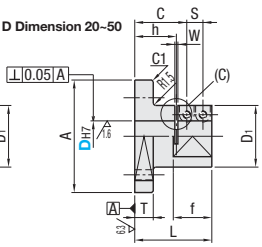


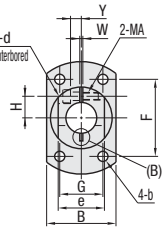


- D Dimension 10~16



- D Dimension 20~50





Part Number Type		DH7	A	B	L	T	D1	F	G	b	C	S	H	Y	d	d1	MA	h	f	e	W	Included Screws	€ Unit Price CLSB	CLSM	CLSAM	CLSS
	10	+0.015 0	50	33	35	10	30	35	18	4.5	29	-	10	5	4.5	8	M4	22	15	20		M4-15, 1 pc.				
	12	+0.018 0	52	35			32	37	20			-	11							22	2					
CLSB	15		58	40	39	12	35	40	24	5.5	32	-	12.5	6	5.5	10	M5	24	17	25		M5-20, 2 pcs.				
CLSM	16											-														
CLSAM	20	+0.021 0	73	45	50	12	40	50	28	6.6	33.8	10.5	14	7	5.5	9.5	M5	27	25	30		M5-20, 2 pcs.				
CLSS	25		93	55	60		50	62	36	9	41.5	12	18	10	6.6	11	M6	34	28	35	2	M6-25, 2 pcs.				
(D10~30)	30		103	65	70	15	60	72	42		47	15	21		9	14	M8	38	34	45		M8-25, 2 pcs.				
	35	+0.025 0	108	70	80	15	65	75	45	11	55	16	24	10	9	14	M8	44	39	50		M8-25, 2 pcs.				
	40		118	75	90		70	78	55		64	17	26	13				53	40	60	3	M8-30, 2 pcs.				
	50		138	90	110	18	85	95	60	14	77.5	21	32	16	11	17.5	M10	65	48	70		M10-35, 2 pcs.				

The tolerance and perpendicularity of DH7 is before slitting. D=16 is for CLSB and CLSM only.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.

Order Example: Part Number CLSB20

Days to Ship - CLSAM / CLSS: 6 Days P.88

- CLSB / CLSM: 8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Stand-up Brackets

-Cylindrical Type / Reversed Fastening Type-

CAD Data

■Features: Non-flanged compact Brackets for Stands. Installation footprint reduced by 30% ~40% compared to Standard Type.

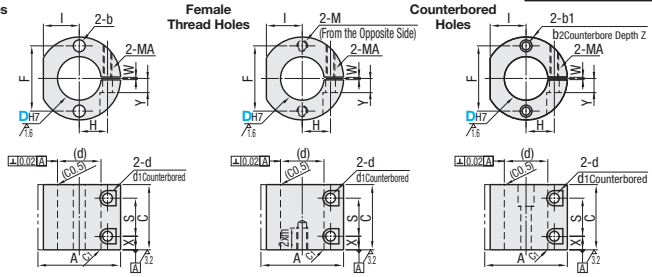
■Cylindrical Type

RoHS



Type: Through Holes	Type: Female Thread H.	Type: Counter-bored H.	M Material	S Surface Treatment	A Accessory
SAYB	SBYB	SCYB	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screws
SAYM	SBYM	SCYM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
SAYA	SBYA	-	EN AW-5056/	Black Anodize	Hexagon Socket Head Cap Screws
SAYS	-	-	1.4301/ X5CrNi18-10	-	Hexagon Socket Head Cap Screws (Stainless Steel)

Through Holes / Female Thread Holes / Counterbored Holes



25 (3.2 1.6)

The C1-chamfered side of D is the datum surface A.

Part Number Type	DH7	A	C	F	I	H	Through Holes b	Female Thread m	Counterbored b1	b2	Z	MA	X	S	d	d1	Y	W	Included Screws
Through Holes SAYB SAYM SAYA SAYS / Female Thread Holes SBYB SBYM SBYA / Counterbored Holes SCYB SCYM	10 +0.015 0	32	19	20	12.5	10.5	5	M5	5	8	4.6	M4	5	9	5	8	5	2	M4-10, 2 pcs
	12 +0.018 0			22.5															
	15	40	21	28	16	13	7	M6	6	9.5	5.5	M5	5.5	10	6	9.5	6		M5-15, 2 pcs
	20	45	29	34	18.5	14	7	M6	6	9.5	5.5	M5	7	15	6	9.5	7	2	M5-20, 2 pcs
	25 +0.021 0	55	34	40	24	18	9	M8	7	11	6.5	M6	7.5	20	7	11	10		M6-25, 2 pcs
	30	60	44	45	27	21							9.5	25					
	35	70	49	54	31	24	11	M10	9	14	9	M8	9.5	30	9	14	12	3	M8-30, 2 pcs
	40 +0.025 0	75	59	58	33	26							12	35			13		
	50	90	69	70	40	33	14	M12	11	17.5	11	M10	14.5	40	11	17.5	14		M10-35, 2 pcs

The tolerance and perpendicularity of D_{H7} is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.
Refer to the price list for available sizes.

Order Example Part Number: SAYB20

Days to Ship 8 Days — Express A 5,00 EUR/piece — P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

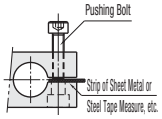
Price ■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

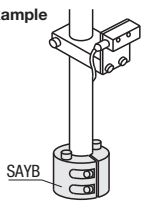
One Point

Shaft bore is machined before the slit is cut. This may cause a shaft bore to close slightly. To expand the bore, use a push screw into the tapped hole as shown below.



D	€ Unit Price: Through Holes Black Oxide SAYB	Through Holes Electroless Nickel Plating SAYM	Through Holes Black Anodize SAYA	Through Holes 1.4301/ X5CrNi18-10 SAYS	Female Thread Holes Black Oxide SBYB	Female Thread Holes Electroless Nickel Plating SBYM	Female Thread Holes Black Anodize SBYA	Counterbored Holes Black Oxide SCYB	Counterbored Holes Electroless Nickel Plating SCYM
10									
12									
15									
20									
25									
30									
35									
40									
50									

Example



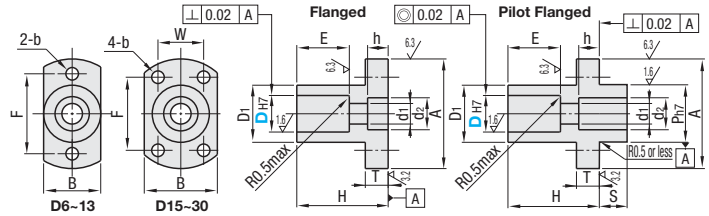
■Reversed Fastening

RoHS

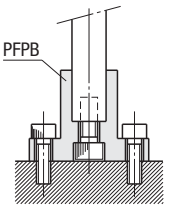


Type: Flanged	Type: Pilot Flanged	M Material	S Surface Treatment
PFPB	KFPB	1.1191/C45E	Black Oxide
PFPM	KFPM		Electroless Nickel Plating
PFPSS	-	1.4301/X5CrNi18-10	-

25 (6.3 3.2 1.6)



Example



Part Number Type	DH7	A	B	H	D1	T	E	d1	d2	h	F	W	b	Ph7	S	Post Mounting Screws	€ Unit Price PFPB	PFPM	PFPSS	KFPB	KFPM
(Flanged) PFPB PFPM PFPSS / (Piloted Flange) KFPB KFPM	6	28	12	16	12	5	9	3.5	6.5	3.5	20	-	3.5	12		M3					
	8	32	15	22	15		12	4.5	8	4.5	24	-	4.5	15	5	M4					
	10	38	18	26	18	8	15	5.5	9.5	5.5	30	-		18		M5					
	12	42	20	32	20	8	18	6.6	11	6.5	32	-	5.5	20	5	M6					
	13																				
	15	48	32	40	25	10	23	9	14	9	32	20	5.5	25	5	M8					
	16																				
	20	55	38	50	30	10	31	11	18	11	35	25	6.6	30		M10					
	25	75	50	62	38	15	38	14	20	14	45	35	9	38	5	M12					
	30	80	55	75	45		45	18	26	18	50	40		45		M16					

Order Example Part Number: PFPB8

Days to Ship 8 Days — Express A 2,00 EUR/ piece — P. 88

A Express Charge of 5,40 EUR for 3 or more identical pieces.

Price ■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

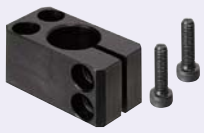
For orders larger than indicated quantity, please request a quotation.

Stand-up Brackets
-Square Compact Type-

CAD Data

■Features: Installation footprint reduced by an average 28% compared to Square Standard (right page).

RoHS

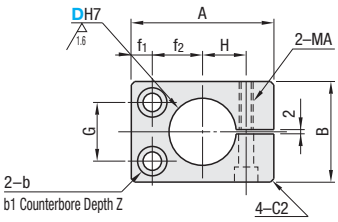




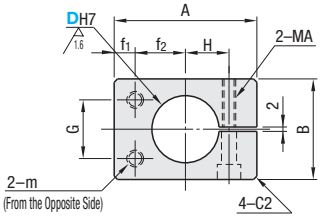
Type		M Material	S Surface Treatment	A Accessory
Through Holes	Female Thread Holes			
CAQB	CBQB	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screws
CAQM	CBQM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)

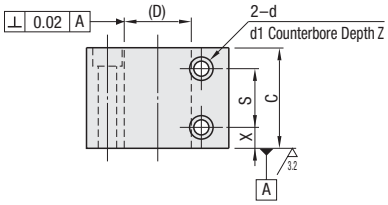
Accessories: CB screws (P.2 - 173) are included with black oxide/black anodized products, and SCB screws (P.2 - 174) are included with the electroless nickel plating products, respectively.

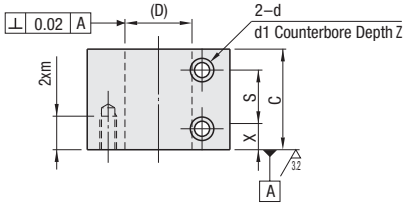
Through Holes



Female Thread Holes







Part Number Type		DH7	A	B	C	f1	f2	G	b	b1	m	H	MA	X	S	d	d1	Z
Through Holes CAQB CAQM	Female Thread Holes CBQB CBQM	10	30	20	19	6	9	11	5	8	M4	9	M4	4.75	9.5	5	8	4.6
		12	32				10					10						
		15	39				14				M5	12						
		20	48	28	27	7.5	17.5	16	7	11	M6	15	M6	7	13	7	11	6.5
		25	52	32	31		20	17				17			17			
		30	63	40	39	10	22.5	20	9	14	M8	21	M8	9.5	20	9	14	9

DH7 +0.015 0 / +0.018 0 / +0.021 0

The tolerance and perpendicularity of DH7 is before slitting. D=30 of CBQB is not available.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.

D	€ Unit Price			
	CAQB	CBQB	CAQM	CBQM
10				
12				
15				
20				
25				
30				

Order Example — Part Number: CAQB20

Days to Ship — 6 Days — P.88

Price

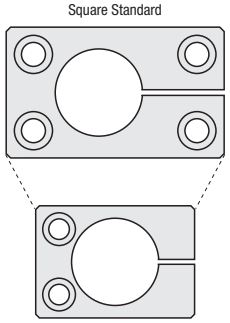
■Volume Discount (Round down to one Cent.) P.87

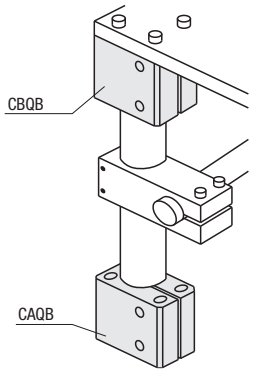
Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example

■Compact Type





Square Compact
Installation footprint reduced by an average of 28%.

Stand-up Brackets

-Square Standard Type - Right/Left Reversed-

CAD Data

■Features: Secure mounting with square shape bases.

■Standard Type

RoHS

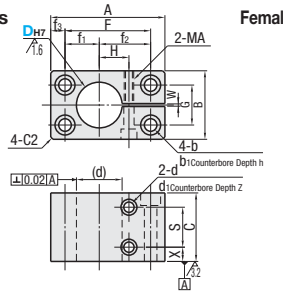




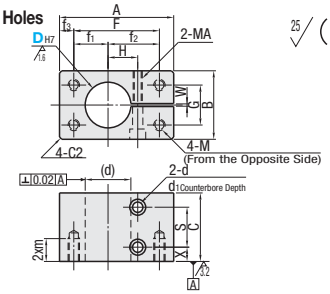
Type		M Material	S Surface Treatment	A Accessory
Through Holes	Female Thread Holes			
SAQB	SBQB	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
SAQM	SBQM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
SAQS	-	1.4301/X5CrNi18-10	-	

Accessories: CB screws (P.2 - 173) are included with black oxide products, and SCB screws (P.2 - 174) are included with the electroless nickel plating products, respectively.

Through Holes



Female Thread Holes



25 (3.2 1.6)

■Right/Left Reversed

RoHS

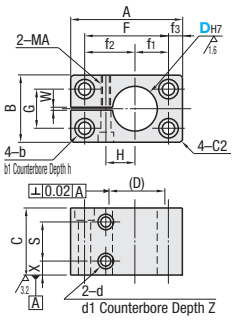




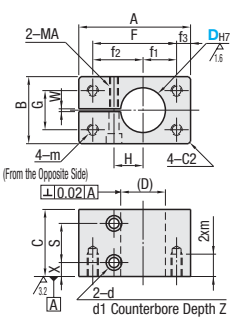
Type		M Material	S Surface Treatment	A Accessories
Through Holes	Female Thread Holes			
SAQBK	SBQBK	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
SAQMK	-		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)

Accessories: CB screws (P.2 - 173) are included with black oxide products, and SCB screws (P.2 - 174) are included with the electroless nickel plating products, respectively.

Through Holes



Female Thread Holes



25 (3.2 1.6)

■Standard Type

Part Number Type	DH7	A	B	C	F	f1	f2	f3	G	b	b1	h	m	H	MA	X	S	d	d1	Z	W	Included Screws
Through Holes Female Thread Holes	10 +0.015 0	40	20	19	28	9	19	6	11	5	8	4.6	M4	9	M4	4.75	9.5	5	8	4.6	2	M4-15, 2 pcs.
SAQB SBQB	12 +0.018 0	42			30	10	20							10								
SAQM SBQM	15	50	22	21	38	14	24		12	6	9.2	5.5	M5	12	M5	5.5	10	6	9.5	5.5		M5-15, 2 pcs
SAQS	20 +0.021 0	60	30	29	45	17.5	27.5	7.5	16	7	11	6.5	M6	15	M6	7	15	7	11	6.5		M6-20, 2 pcs.
	25	65	35	34	50	20	30		20					17			20					M6-25, 2 pcs.
	30	80	45	44	60	22.5	37.5	10	25	9	14	9	M8	21	M8	9.5	25	9	14	9		M8-30, 2 pcs.
	35	85	50	49	65	25	40		30					24			30				3	M8-35, 2 pcs.
	40 +0.025 0	100	60	59	75	30	45	12.5	35	11	17.5	11	M10	26		12	35					M8-40, 2 pcs.
	50	110	70	69	85	32.5	52.5		45					33	M10	14.5	40	11	17.5	11		M10-50, 2 pcs.

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.

■Right/Left Reversed

Part Number Type	DH7	A	B	C	F	f1	f2	f3	G	b	b1	h	m	H	MA	X	S	d	d1	Z	W	Included Screws
Through Holes Female Thread Holes	10 +0.015 0	40	20	19	28	9	19	6	11	5	8	4.6	M4	9	M4	4.75	9.5	5	8	4.6	2	M4-15, 2 pcs.
SAQBK SBQBK	12 +0.018 0	42			30	10	20							10								
SAQMK	15	50	22	21	38	14	24		12	6	9.2	5.5	M5	12	M5	5.5	10	6	9.5	5.5		M5-15, 2 pcs
	20 +0.021 0	60	30	29	45	17.5	27.5	7.5	16	7	11	6.5	M6	15	M6	7	15	7	11	6.5		M6-20, 2 pcs.
	25	65	35	34	50	20	30		20					17			20					M6-25, 2 pcs.
	30	80	45	44	60	22.5	37.5	10	25	9	14	9	M8	21	M8	9.5	25	9	14	9		M8-30, 2 pcs.
	35	85	50	49	65	25	40		30					24			30				3	M8-35, 2 pcs.
	40 +0.025 0	100	60	59	75	30	45	12.5	35	11	17.5	11	M10	26		12	35					M8-40, 2 pcs.
	50	110	70	69	85	32.5	52.5		45					33	M10	14.5	40	11	17.5	11		M10-50, 2 pcs.

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.

■Standard Type

D	€ Unit Price				
	Through Holes			Female Thread Holes	
	SAQB	SAQM	SAQS	SBQB	SBQM
10					
12					
15					
20					
25					
30					
35					
40					
50					

■Right/Left Reversed

D	€ Unit Price		
	Through Holes		Female Thread Holes
	SAQBK	SBQBK	SAQMK
10			
12			
15			
20			
25			
30			
35			
40			
50			

Order Example

Part Number
SAQB20
SBQBK30

Days to Ship

8 Days

Express A 5,00 EUR/ piece

P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

NEW

Stand-up Brackets

-Side Mounting Type - Side Mounting Dowel Hole Type-

Price Reduction
10% on Average

CAD Data

■Features: Easy mounting on transfer lines.

■Side Mounting Type RoHS





■Side Mounting Dowel Hole Type



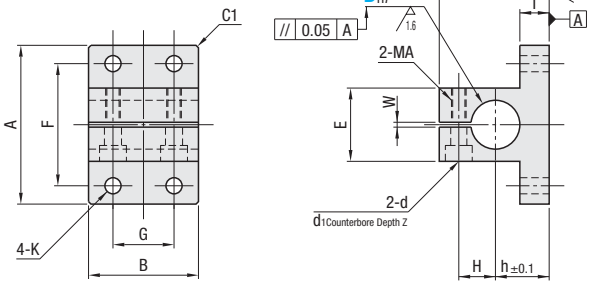


Type		M Material	S Surface Treatment	A Accessory	
Side Mounting	Side Mounting Dowel Holes			Side Mounting	Side Mounting Dowel Holes
CLTB	CLPK	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screws	Hexagon Socket Head Cap Screws Dowel Pins
CLTM	CLPM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless)	Hexagon Socket Head Cap Screws (Stainless Steel) Dowel Pins
CLTBM	-	EN AW-5052/ AlMg2,5	Black Anodize	Hexagon Socket Head Cap Screws	Hexagon Socket Head Cap Screws Dowel Pins
CLTAM	-		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless)	Hexagon Socket Head Cap Screws (Stainless Steel) Dowel Pins
CLTS	-	1.4301/ X5CrNi18-10	-		

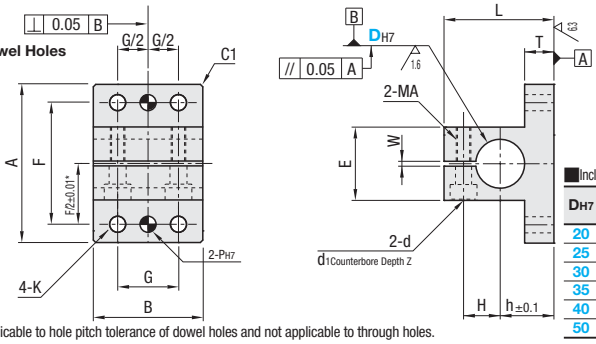
Accessories: CB (P.2 - 173) screws are included with black oxide/black anodized products , and SCB (P.2 - 174) screws are included with the other products, respectively.
Dowel pins (P.2 - 243) are included with the product with dowel holes.

25 / (6.3 / 1.6 /)

Side Mounting



Side Mounting with Dowel Holes



■Included Dowel Pins

DH7	Included Dowel Pins
20	MSTM6-20
25	MSTM8-20
30	
35	MSTM10-30
40	
50	

* Tolerance of ±0.01 is only applicable to hole pitch tolerance of dowel holes and not applicable to through holes.

Part Number Type		DH7	A	B	L	T	F	G	K	h	H	E	d	d1	Z	MA	W	PH7	Tolerance	Included Screws
Side Mounting	Side Mounting With Dowel Holes																			
CLTB CLTM CLTBM CLTAM CLTS	CLPK CLPM	10	40	35	32	10	30	18	4.4	15	10.5	20	5	8	4.5	M4	2	-	-	M4-15, 2 pcs.
		12	44				34		5.5	14	11.5	22	5.5	9	5.5	M5				M5-15, 2 pcs
		15	50	40	38	12	38	20	6.6	18	12.5	25	6.6	11	6.5	M6				M6-15, 2 pcs.
		16																		M6-15, 2 pcs.
		20	65	45	45	12	50	25	6.6	22	15	30	6.6	11	6.5	M6	2	6	0 +0.012	M6-20, 2 pcs.
		25	80	60	53		60	36	9	27	18	35						8	+0.015 0	M6-25, 2 pcs.
		30	90		60	15	70			30	21	45	9	14	9	M8				M8-35, 2 pcs.
		35	105	80	68	15	80	40	11	35	24	50	9	14	9	M8	3	10	+0.015 0	M8-40, 2 pcs.
		40	115		76		90			38	27	60	11	17.5	11	M10				M10-45 2 pcs.
		50	135	100	87	18	105	50	14	43	33	70								M10-50, 2 pcs.

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to P.1814, 1815. Use of a long wrench is recommended for fastening.
Up to D=30 is applicable to CLTS while D=20 is applicable to CLPK and CLPM. ⊗D=16 is not applicable to CLTBM.

Order Example
Part Number
CLTB35
CLPM30

Days to Ship
- CLTBM / CLTAM / CLTS
6 Days P. 87

- CLTB / CLTM / CLPK / CLPM
8 Days Express A 5,00 EUR/piece P. 88
A Express Charge of 13,50 EUR for 3 or more identical pieces.
Express Serviceis not available for CLPK and CLPM.

Alter-ations
Part Number - (TP)
CLTB20 - TP
8 Days ⊗Express Serviceis not available.

Alterations	Code	Spec.	Price Adder
Female Thread Hole Size Change	TP	Changes the mounting holes from through holes to tapped holes. Applicable to CLTB and CLTM only. Available only for D dimension in the right table. D: 15 / 20, 25 / 30 — M: 6, 8	5,00

It is useful for low strength attachment plates, such as aluminum, and for thin plates.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Price List	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price						
	Side Mounting					Side Mounting Dowel Holes	
	CLTB	CLTM	CLTBM	CLTAM	CLTS	CLPK	CLPM
10							
12							
15							
16							
20							
25							
30							
35							
40							
50							

Stand-up Brackets

-Side Mounting Casting Type - Side Mounting Casting Dowel Hole Type / Side Mounting Slotted Hole Type-

NEW

Price Reduction
Up to 15%

CAD Data

■Features: Up to 67% price reduction by cast-producing compared to the standard products (left page).

■Side Mounting Casting Type RoHS





■Side Mounting Casting Dowel Hole Type

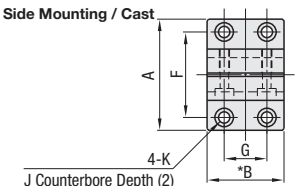




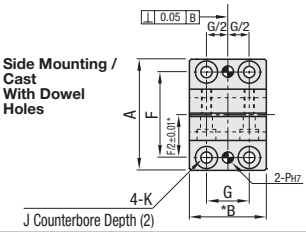
Type: Side Mounting / Cast	Type: Side Mounting / Cast With Dowel Holes	M Material	S Surface Treatment	A Accessory: Side Mounting / Cast	A Accessory: Side Mounting Casting Dowel Hole
CLTBD	CLPBD	EN-JS 1040/ EN-GJS400	Black Oxide	Hexagon Socket Head Cap Screws	Hexagon Socket Head Cap Screws Dowel Pins
CLTMD	CLPMD		Electroless Nickel Plating	Hexagon Socket Head Cap Screws(Stainless)	Hexagon Socket Head Cap Screws (Stainless Steel) Dowel Pins

Accessories: CB screws (P.2-173) and SCB screws (P.2-174) are included with the black oxide products and electroless nickel plating products, respectively. Dowel pins (P.2-243) are included with the product with dowel holes.

Side Mounting / Cast



Side Mounting / Cast With Dowel Holes



Tolerance of casting products
A, B, L, E and T dimensions are for casting tolerance.

Casting Tolerance Class CT12 for JISB0403

above	or less	Tolerance
10	16	±2.2
17	25	±2.3
26	40	±2.5
41	63	±2.8
64	100	±3.0
101	160	±3.5

Included Dowel Pins

DH7	Included Dowel Pins
20	MSTM6-20
25	MSTM8-20
30	
35	MSTM10-30
40	
50	

* ±0.01 of F / 2 part is only applicable to Hole Pitch Tolerance of dowel holes and not applicable to through holes.
* B ends are milled for aesthetics.
* L and T have 2 degrees of draft for cast-mold extraction.

Antirust oil is included with black oxide products and electroless nickel plated products.

Part Number Type	DH7	A	B	L	T	F	G	K	J	h	H	E	d	d1	Z	MA	W	With Dowel Holes PH7	With Dowel Holes Tolerance	Included Screws	€ Unit Price CLTBD	CLTMD	CLPBD	CLPMD
Side Mounting / Cast CLTBD CLTMD	20	65	45	45	12	50	25	6.6	13	22	15	30	6.6	11	6.5	M6	2	6	+0.012 0	M6-20, 2 pcs.				
	25	80	60	53		60	36	9	18	27	18	35						8		M6-25, 2 pcs.				
	30	90		60		70				30	21	45	9	14	9	M8				M8-35, 2 pcs.				
Side Mounting Casting Dowel Hole CLPBD CLPMD	35	105	80	68	15	80	40	11	20	35	24	50							+0.015 0	M8-40, 2 pcs.				
	40	115		76		90				38	27	60	11	17.5	11	M10	3	10		M10-45 2 pcs.				
	50	135	100	87	18	105	50	14	24	43	33	70								M10-50, 2 pcs.				

DH7: +0.021 0 (20–30) / +0.025 0 (35–50)

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to P.1814, 1815. Use of a long wrench is recommended for fastening.
D=30 or less are applicable to CLPBD and CLPMD.

Order Example — Part Number: CLTBD20, CLPMD30

Days to Ship: 6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

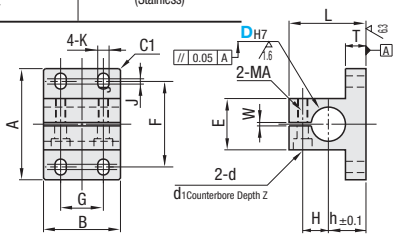
■Side Mounting Slotted Hole Type RoHS





Type	M Material	S Surface Treatment	A Accessory
CLNB	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screws
CLNM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless)
CLNA	EN AW-5052/ AlMg2,5	Clear Anodize	
CLNS	1.4301/ X5CrNi18-10	-	

Accessories: CB screws (P.2-173), and SCB screws (P.2-174) are included with CLNB and the other types.



Part Number Type	DH7	A	B	L	T	G	F	J	K	h	H	E	d	d1	Z	MA	W	Included Screws	€ Unit Price CLNB	CLNM	CLNA	CLNS
CLNB(D20~30 / 40) CLNM(D20~50)	20	65	45	45	12	25	47.5	5.5	6.6	22	15	30	6.6	11	6.5	M6	2	M6-20, 2 pcs.				
	25	80	60	53		36	57.5	7.5	9	27	18	35						M6-25, 2 pcs.				
	30	90		60			67.5			30	21	45	9	14	9	M8		M8-35, 2 pcs.				
CLNA(D20 / 25 /50) CLNS(D20 / 25)	35	105	80	68	15	40	77.5	9.5	11	35	24	50						M8-40, 2 pcs.				
	40	115		76			87.5			38	27	60	11	17.5	11	M10	3	M10-45 2 pcs.				
	50	135	100	87	18	50	102.5	12.5	14	43	33	70						M10-50, 2 pcs.				

DH7: +0.021 0 (20–30) / +0.025 0 (35–50)

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to P.1814, 1815. Use of a long wrench is recommended for fastening.

Order Example — Part Number: CLNB25, CLNA20

Days to Ship
- CLNA / CLNS: 6 Days P. 87
- CLNB / CLNM: 8 Days — Express A 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

NEW

Stand-up Brackets

- Side Mounting Compact Type / Non-flanged Side Mounting Type-

Price Reduction Up to 15%

CAD Data

Features: Compact Brackets for Stands 25~30% shorter in height, and approximately 10% narrower in width compared to Standard Side Mounting Type (P.1829).

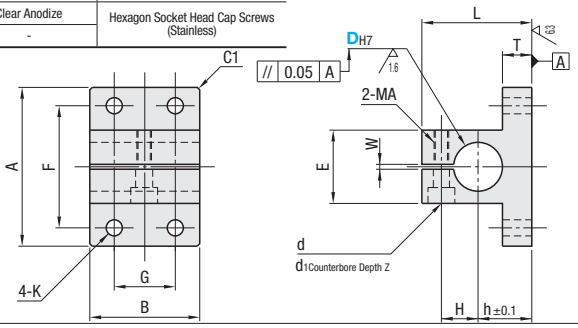
Side Mounting Compact Type

RoHS



Type	Material	Surface Treatment	Accessory
CLCB	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
CLCNM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
CLCBM	EN AW-5052/ AlMg2,5	Black Anodize	Hexagon Socket Head Cap Screws
CLCAM		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless)
CLCS	1.4301/X5CrNi18-10	-	

Accessories: CB screws (P.2-173) and SCB screws (P.2-174) are included with Black Oxide / Black Anodize and the other types, respectively.



Part Number Type	DH7	A	B	L	T	F	G	K	h	H	E	d	d1	Z	MA	W	Included Screws	€ Unit Price CLCB	CLCNM	CLCBM	CLCAM	CLCS
CLCB CLCNM CLCBM CLCAM CLCS (D20~30)	20 +0.021 0	60	30	45	12	45	18	6.6	22	15	30	6.6	11	6.5	M6	2	M6-12, 1 pc.					
	25 +0.021 0	73	45	53		54	30	9	27	18	35						M6-25, 1 pc.					
	30 +0.021 0	83		60		64			30	21	45	9	14	9	M8	2	M8-35, 1 pc.					
	35 +0.025 0	94	60	68	15	72	35	11	35	24	50						M8-40, 1 pc.					
	40 +0.025 0	104		76		82			38	27	60	11	17.5	11	M10	3	M10-45, 1 pc.					
	50 +0.025 0	118	75	87	18	94	45	14	43	33	70						M10-50, 1 pc.					

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.

Order Example Part Number: CLCB35

Days to Ship

- CLCBM · CLCAM · CLCS: **6 Days** P.87
- CLCB · CLCNM: **8 Days** Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

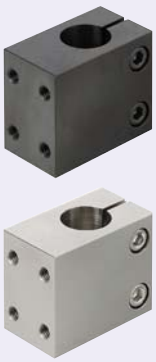
Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Features: Installation footprint reduced by an average 52% compared to the conventional products on **P.1829**.

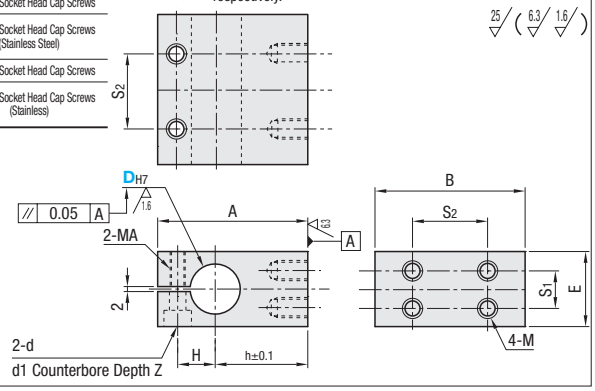
Non-flanged Side Mounting Type

RoHS



Type	Material	Surface Treatment	Accessory
CLHB	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
CLHNM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
CLHBM	EN AW-5052/ AlMg2,5	Black Anodize	Hexagon Socket Head Cap Screws
CLHAM		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless)
CLHS	1.4301/X5CrNi18-10	-	

Accessories: CB screws (P.2-173), and SCB screws (P.2-174) are included with Black Oxide / Black Anodize and the other types respectively.



Part Number Type	DH7	A	B	M	S1	S2	h	H	E	d	d1	Z	MA	Included Screws	€ Unit Price CLHB	CLHNM	CLHBM	CLHAM	CLHS
CLHB CLHNM CLHBM CLHAM CLHS	10 +0.015 0	35	35	M4	10	18	18	10.5	16	5	8	4.5	M4	M6-20, 2pcs.					
	12 +0.018 0	38		M5	12		20	11.5	19	5.5	9.5	5.5	M5	M6-25, 2 pcs					
	15 +0.018 0	45	40	M6	13	20	25	12.5	23	6.6	11	6.5	M6	M8-35 2pcs.					
	20 +0.021 0	53	45		18	25	30	15	30					M8-40 2pcs.					
	25 +0.021 0	59	60	M8	17	36	33	18	35					M10-45, 2					
	30 +0.021 0	67			29		37	21	45	9	14	9	M8	M10-50, 2					

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of fitting shafts: g6, f8. For Posts for Stands, refer to **P.1814, 1815.** Use of a long wrench is recommended for fastening.
D=20~30 are only for CLHBM, CLHAM and CLHS.

Order Example Part Number: CLHB20, CLHBM30

Days to Ship **8 Days** Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

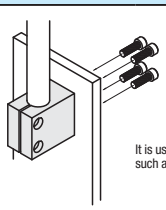
Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



It is useful when tapping is difficult due to weak attachment plates, such as plastic plates or thin plates.

Brackets for Stands Square Hole

- Standard Type/ Side Mounting Hole -

CAD Data

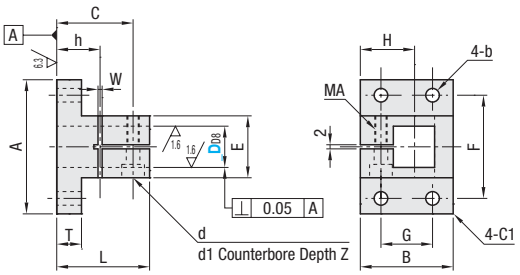
Features: By using in sets with square hollows and strut clamps, sensor / camera can be prevented from rotating during setup changes. (?)Accessories: For Posts for Slides used in sets, refer to **P.1816**

Standard Type RoHS



Type	M Material	S Surface Treatment	A Accessory
CLQB	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
CLQNM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
CLQBM	EN AW-6061/EN AW-AlMg1SiCu	Black Anodize	Hexagon Socket Head Cap Screws
CLQAM		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless Steel)
CLQS	1.4301/X5CrNi18-10	-	

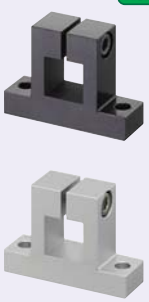
(?)Accessories: CB screws (**P.Z-173**) and SCB screws (**P.Z-174**) are included with Black Oxide / Black Anodize and the other types, respectively.



Part Number Type	DD8		A	B	L	T	E	F	G	b	C	H	d	d1	Z	MA	h	€ Unit Price CLQB	CLQNM	CLQBM	CLQAM	CLQS
CLQB CLQNM CLQBM CLQAM CLQS	10	+0.077 +0.050	38	24	24	7	20	30	14	4.5	17.5	15 16	4.5	8	4.5	M4	10					
	12																					
	15		48	32	36	9	26	38	20	5.5	24	19	5.5	9.5	5.5	M5	12					
	20	+0.098 +0.065	52	36	40	10	30	42	24		26.5	21					13					
	25		62	45	48	12	35	48	28	6.5	32	28	6.5	11	6.5	M6	15					

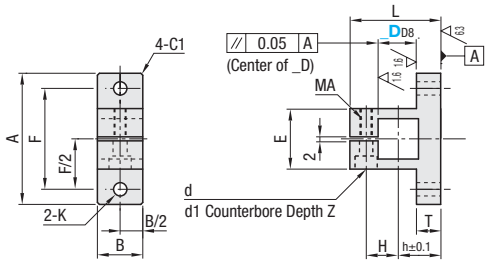
(?)The tolerance and perpendicularity of DD8 is before slitting.
(?)Recommended tolerances of fitting shafts: 0~-0.12. For Posts for Stands, refer to **P.1816.** Use of a long wrench is recommended for fastening.

Side Mounting Hole Type RoHS



Type	M Material	S Surface Treatment	A Accessory
CLTQB	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
CLTQNM		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
CLTQBM	EN AW-6061/EN AW-AlMg1SiCu	Black Anodize	Hexagon Socket Head Cap Screws
CLTQAM		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless Steel)
CLTQS	1.4301/X5CrNi18-10	-	

(?)Accessories: CB screws (**P.Z-173**) and SCB screws (**P.Z-174**) are included with Black Oxide / Black Anodize and the other types, respectively.



Part Number Type	DD8		A	B	L	T	F	K	h	H	E	d	d1	Z	MA	€ Unit Price CLTQB	CLTQNM	CLTQBM	CLTQAM	CLTQS
CLTQB CLTQNM CLTQBM CLTQAM CLTQS	10	+0.077 +0.050	38	11	29 30	7	30	4.5	14	10 11	20	4.5	8	4.5	M4					
	12																			
	15		48	15	36	9	38	5.5	18	13	26	5.5	9.5	5.5	M5					
	20	+0.098 +0.065	52	20	40	10.5	42		19	16	30									
	25		73	24	54	12	65	12	25	20	35	6.5	11	6.5	M6					

(?)The tolerance and perpendicularity of DD8 is before slitting.
(?)Recommended tolerances of fitting shafts: 0~0.12. For Posts for Stands, refer to **P.1816.** Use of a long wrench is recommended for fastening.

Order Example

Part Number
CLQBM15
CLTQS20

Days to Ship

8 Days

Express A 5,00 EUR/ piece **P.88**

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.

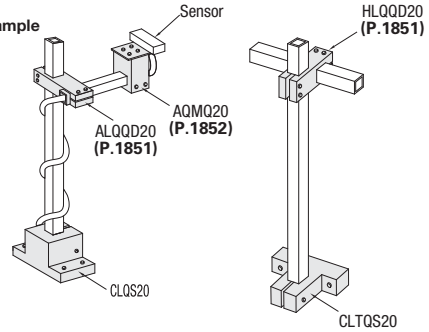
Price

Volume Discount (?)Round down to one Cent.) **P.87**

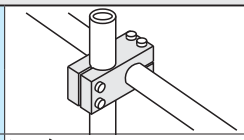
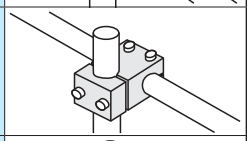
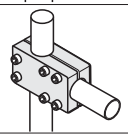
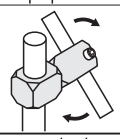
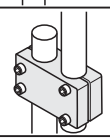
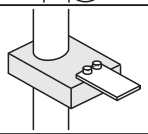
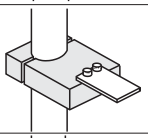
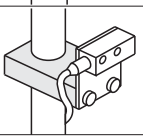
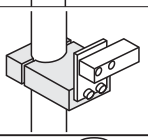
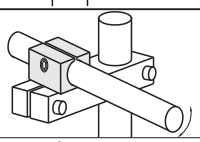
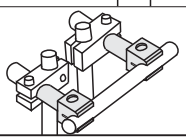
Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

Example



Strut Clamps
-Overview-

Type			Shapes		Feature	Fastening	Page	
							Round Hole	Square Hole
Perpendicular		Two Strut Clamps crossed Strut Clamps	Standard		Most common type Pitch Configurable Type included in product lineup.	Knob / Clamp Levers	P.1834	-
						Screw Fastening	P.1835 ~1839	P.1851
			Separate		Post-assemby mounting onto posts built-in structures	Screw Fastening	P.1840	-
			T-Shaped Separate		Space-saving one-sided post Post-assembly mounting possible	Screw Fastening	P.1841	-
			Rotation		Post angles adjustable	Screw Fastening	P.1843 P.1844	-
Parallel		Two parallel posts fixable	Standard		Parallel posts fixed.	Screw Fastening	P.1842	-
Female Thread	Vertical	Direct device mounting via tapped holes	Standard		Vertical device mounting on Posts	Knob / Clamp Levers	P.1845 P.1846	-
						Screw Fastening	P.1847	P.1852
			Separate		Post-assembly mounting onto posts in structures Vertical work piece mounting onto Post	Screw Fastening	P.1849	-
	Parallel		Standard		Horizontal device mounting onto Post	Knob / Clamp Levers	P.1845 P.1846	-
						Screw Fastening	P.1848	
			Separate		Post-assembly mounting onto posts in structures Horizontal work piece mounting onto Post	Screw Fastening	P.1849	-
Arm / Bar		Mounting onto perpendicular Strut Clamps as guides.	Arm		Post in circumferential rotations via arm mounted onto Strut Clamps	Screw Fastening	P.1854	-
			Bar		Round bar as conveyor guides		P.1854	-

* Products of the same shape include various sizes such as Standard Type and Compact Type.
* Strut Clamps with Knob / Clamp Lever are suitable for frequent setup changes through manual fastening.

Super Compact Strut Clamps / Strut Clamps

-Equal · Unequal Dia. Perpendicular Configurations with a Wing Knob-
-Equal Dia. Perpendicular Configuration with Clamp Levers-

CAD Data

■Features: Affordable and compact Strut Clamps. Wing Knob helps easy setup changes.

■Equal · Unequal Dia. Perpendicular Configurations with a Wing Knob

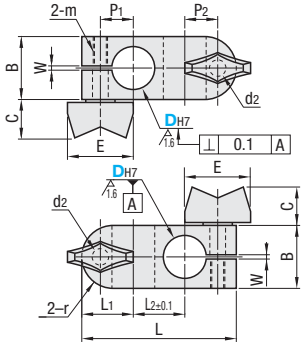
RoHS



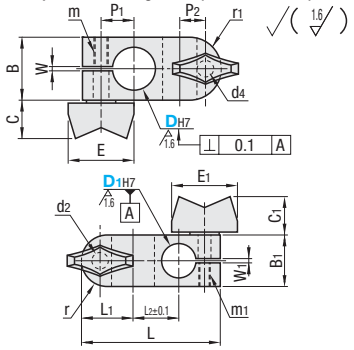
Type		M Material	S Surface Treatment	A Accessory
Equal Dia.	Unequal Dia.			
ALKCC	ALNCC	EN AW-6061/EN AW-AlMg1SiCu	Black Anodize	Wing Knob (Black)
ALKWC	ALNWC		Clear Anodize	Wing Knob (White)

* Head of Wing Knob: Nylon 66 JIS SWRM-10
Thread: Trivalent Chromate

• Equal Dia. Perpendicular Configuration (ALKCC · ALKWC)



• Unequal Dia. Perpendicular Configuration (ALNCC · ALNWC)



■Equal Dia. Perpendicular Configuration with a Wing Knob

Part Number Type	DH7		B	L	L1	L2	r	P1	P2	d2	m	W	Wing Knob E	Wing Knob C	€ Unit Price ALKCC · ALKWC
ALKCC ALKWC	6	+0.012 0	10	29	10.5	8	5	6.5	6.5	3.5	M3	1	18	10.5	
	8	+0.015 0	12	32	11	10	6	7	7						
	10		16	39	13.5	12	8	8.5	8.5	4.5	M4	1.5			
	12	+0.018 0	18	43	14	15	9	9	9						
	15		22	54	18	18	11	11.5	11.5	5.5	M5		28	15	

■Unequal Dia. Perpendicular Configuration with a Wing Knob

Part Number Type	DH7		D1H7		B	B1	L	L1	L2	r	r1	P1	P2	d4	m	W	Wing Knob E	Wing Knob C	m1	W1	Wing Knob E1	Wing Knob C1	€ Unit Price ALNCC · ALNWC
ALNCC ALNWC	8	+0.015 0	6	+0.012 0	12	10	31.5	11	10	5	6	7	6.5	3.5	M3	1	18	10.5	M3	1	18	10.5	
	10	+0.015 0	6	+0.012 0	16	12	37	13.5	12	6	8	8.5	7	4.5	M4	1.5	18	10.5	M4	1	18	10.5	
			8	+0.015 0			36.5		12					3.5					M3				
	12	+0.018 0	8	+0.015 0	18	14	40	14	14	7	9	9	7.5	4.5	M4	1.5	18	10.5	M4	1	18	10.5	
			10				39.5							3.5					M3	1.5			
	15	+0.018 0	10	+0.015 0	22	18	49	18	16	9	11	11.5	9	5.5	M5	1.5	28	15	M5	1.5	28	15	
	15		12	+0.018 0			48.5							4.5					M4		18	10.5	

(P)The tolerance and perpendicularity of DH7 · D1H7 are the tolerances before slitting.
(P)Recommended tolerances of mating shafts are g6 and f8. Except for wing knobs, use of a long wrench is recommended for fastening.

Order Example: Part Number ALKCC8 / ALNCC10 - D1 8

Days to Ship: 6 Days P.87

Price

■Volume Discount (P)Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

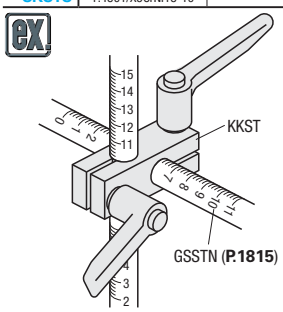
■Features: Easy setup changes, suitable for frequent changes.

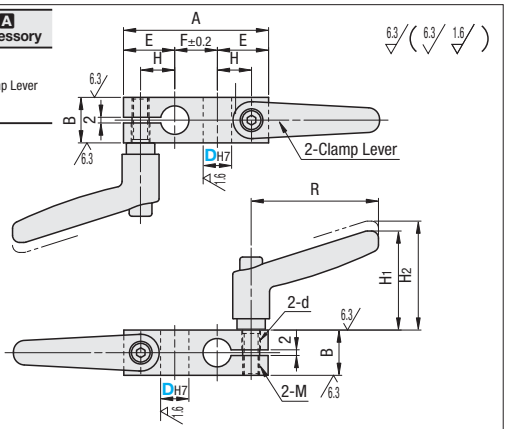
■Equal Dia. Perpendicular Configuration with Clamp Levers

RoHS



Type	M Material	S Surface Treatment	A Accessory
KKST	1.0038/S235JR	Black Oxide	Clamp Lever
MKST		Electroless Nickel Plating	
AKST	EN AW-6063/AlMg0,7Si	Black Anodize	
SKSTS	1.4301/X5CrNi18-10	-	





Part Number Type	DH7		A	B	E	F	H	M	d	R	H1	H2	Clamp Lever	€ Unit Price KKST	MKST	AKST	SKSTS
KKST MKST AKST(D≤30) SKSTS(D≤30)	10	+0.015 0	51	16	18	15	12	M6	6.6	45	35	38.5	CLDM 6-16-M				
	12	+0.018 0	54	19		18							CLDM 6-20-M				
	15		69	22	24	21	16	M8	9	63	45.5	49	CLDM 8-20-M				
	20	+0.021 0	78	28	26	26	19						CLDM 8-25-M				
	25		97	36	32	33	23	M10	11	78	55	59	CLDM 10-32-M				
	30		105	40	34	37	25						CLDM 10-40-M				
	35	+0.025 0	121	45	39	43	29	M12	13	92	67	71	CLDM 12-40-M				

(P)Available D Dimension for AKST and SKSTS is up to 30.
(P)The tolerance and perpendicularity of DH7 is before slitting.
(P)Recommended tolerances of mating shafts are g6 · f8. Use of a long wrench is recommended for fastening.

Order Example: Part Number KKST20 / SKSTS15

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece P.88

(P)A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (P)Round down to one Cent.) P.87

Quantity	1~4	5~19
Rate	€ Unit Price	5%

(P)For orders larger than indicated quantity, please request a quotation.

Super Compact Strut Clamps / Resin Compact Strut Clamps

-Equal Dia. / Unequal Dia. Perpendicular Configurations- -Equal Dia. Perpendicular Configuration-

Price Reduction Up to 20%

CAD Data

■Features: Affordable and compact Strut Clamps.

■Super Compact Strut Clamps Equal Dia. / Unequal Dia. Perpendicular Configurations

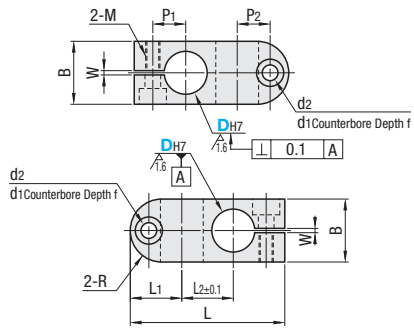
RoHS



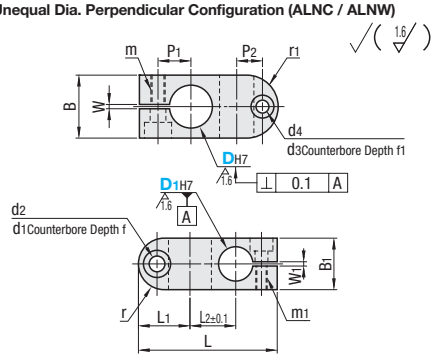


Type		M Material	S Surface Treatment	A Accessory
Equal Dia.	Unequal Dia.			
ALKC	ALNC	EN AW-6061/EN AW-AlMg1SiCu	Black Anodize	Hexagon Socket Head Cap Screws
ALKW	ALNW		Clear Anodize	

Equal Dia. Perpendicular Configuration (ALKC / ALKW)



Unequal Dia. Perpendicular Configuration (ALNC / ALNW)



■Equal Dia. Perpendicular Configuration

Part Number Type	DH7	B	L	L1	L2	r	P1	P2	m	Counterbored Holes d1	Counterbored Holes d2	Counterbored Holes f	W	€ Unit Price ALKC · ALKW
ALKC ALKW	6 +0.012 0	10	29	10.5	8	5	6.5	6.5	M3	6.5	3.5	3.5	1	
	8 +0.015 0	12	32	11	10	6	7	7						
	10 +0.015 0	16	39	13.5	12	8	8.5	8.5	M4	8	4.5	4.5	1.5	
	12 +0.018 0	18	43	14	15	9	9	9						
	15 +0.018 0	22	54	18	18	11	11.5	11.5	M5	9.5	5.5	5.5		

■Unequal Dia. Perpendicular Configuration

Part Number Type	DH7	D1H7	B	B1	L	L1	L2	r	r1	P1	P2	m	Counterbored Holes d1	Counterbored Holes d2	Counterbored Holes f	W	m1	Counterbored Holes d3	Counterbored Holes d4	Counterbored Holes f1	W1	€ Unit Price ALNC · ALNW
ALNC ALNW	8 +0.015 0	6 +0.012 0	12	10	31.5	11	10	5	6	7	6.5	M3	6.5	3.5	3.5	1	M3	6.5	3.5	3.5	1	
	10 +0.015 0	6 +0.012 0	16	12	37.0	13.5	12	6	8	8.5	7	M4	8	4.5	4.5	1.5	M4	8	4.5	4.5	1	
		8 +0.015 0			36.5		12										M3	6.5	3.5	3.5		
	12 +0.018 0	8 +0.015 0	18	14	40.0	14	14	7	9	9	7.5	M4	8	4.5	4.5	1.5	M4	8	4.5	4.5	1	
		10 +0.015 0			39.5												M3	6.5	3.5	3.5	1.5	
	15 +0.018 0	10 +0.015 0	22	18	49.0	18	16	9	11	11.5	9	M5	9.5	5.5	5.5	1.5	M5	9.5	5.5	5.5	1.5	
		12 +0.018 0			48.5												M4	8	4.5	4.5		

The tolerance and perpendicularity of DH7, D1H7 are the tolerances before slitting.
Recommended tolerances of mating shafts are g6 and f8. Except for wing knobs, use of a long wrench is recommended for fastening.

Order Example: Part Number ALKC8 / ALNC10 - D1 8

Days to Ship: 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Included Screws Equal Dia. Perpendicular Configuration

D	Included Screws	
6	M3-6	2 pcs.
8	M3-8	
10	M4-10	
12	M4-12	
15	M5-15	

■Included Screws Unequal Dia. Perpendicular Configuration

D	D1	Included Screws	
8	6	M3-6 / M3-8	1Pc. Each
10	8	M4-6 / M4-10	
10	8	M3-8 / M4-10	
12	10	M4-8 / M4-12	
12	10	M3-10 / M4-12	
15	10	M5-12 / M5-15	
15	12	M4-12 / M5-15	

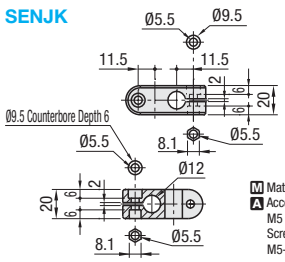
■Features: Affordable Strut Clamps for a purchase of 10 pcs or more. Suitable for large volume use for conveyors, etc. For clamps in sets with stands for sensor mounting, refer to P.1733 and 1734.

■Resin Compact Strut Clamps - Equal Dia. Perpendicular Configuration

RoHS

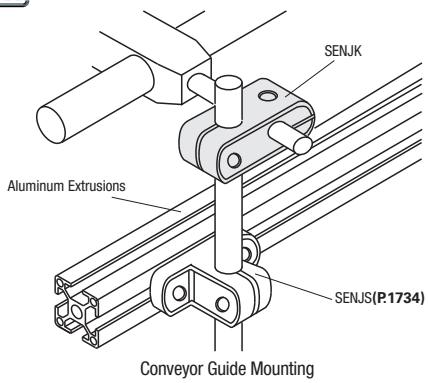


SENJK



M Material: Polyamide
A Accessories:
M5 Nut x 2pcs
Screws (Trivalent Chromate)
M5-12, 2 pcs.

Example



Conveyor Guide Mounting

Resin clamps are not suitable for supporting heavy objects.

Part Number	€ Unit Price Qty.1~9	Volume Discount Price Qty.10~49
SENJK		6,20

Order Example: Part Number SENJK

Days to Ship: 6 Days P.87

For orders larger than indicated quantity, please request a quotation.

Compact Strut Clamps

-Equal Dia. / Unequal Dia. Perpendicular Configurations-

CAD Data

■Equal Dia. Perpendicular Configuration

RoHS

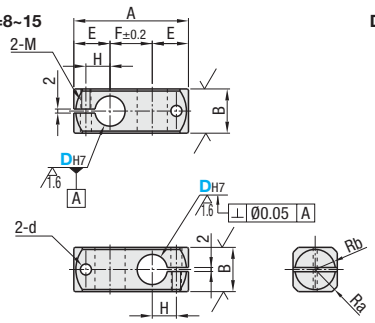


Type	Material	Surface Treatment	Accessory
KDSTR	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MDKTR		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
ALKDR	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
SLKDR	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screws (Stainless Steel)

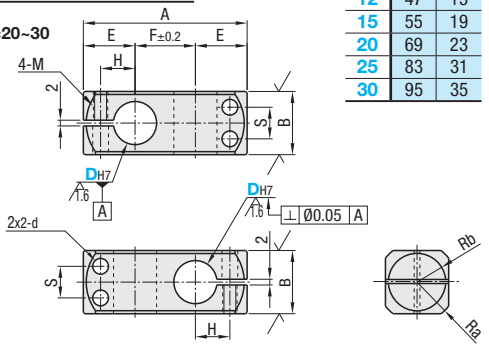
6.3 (1.6)

D	A	F
8	39	11
10	43	13
12	47	15
15	55	19
20	69	23
25	83	31
30	95	35

D=8~15



D=20~30



■Unequal Dia. Perpendicular Configuration

RoHS

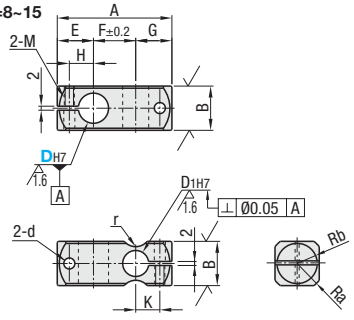


Type	Material	Surface Treatment	Accessory
KLSTNR	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MLSTNR		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
ALKLNR	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
SLKLNR	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screws (Stainless Steel)

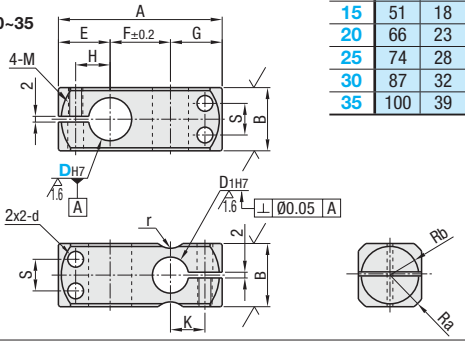
6.3 (1.6)

D	A	F
8	39	12
10	43	14
12	47	16
15	51	18
20	66	23
25	74	28
30	87	32
35	100	39

D=8~15



D=20~35



Part Number Type		DH7		D1H7		B	E	G	H	K	Ra	Rb	r	S	d	M (Coarse)
Equal Dia. Perpendicular Configuration	Unequal Dia. Perpendicular Configuration	8	+0.015 0	6	+0.012 0	12	14	13	8	7	7.6	5	3	-	5.5	M5
		10		8	+0.015 0	16	15	14	9	8	9.8	7	4			
		12	+0.018 0	10			16	15	10	9	10.4		-			
KDSTR	KLSTNR	15				22	18		12		13.8	10	5		6.6	M6
MDKTR	MLSTNR	20	+0.021 0	15	+0.018 0	28	23	20	15	12	17.7	13	7.5	11		
ALKDR	ALKLNR	25				32	26		18		20.9	15		14		
SLKDR	SLKLNR	30		20	+0.021 0	40	30	25	21	16	25.6	19	10	16	9	M8
		35	+0.025 0	25		45	33	28	24	19	29.1	21.5	12.5	18		

(?)D dimension 35 is only applicable to MLSTNR and SLKLNR.
(?)The tolerance and perpendicularity of DH7, D1H7 is the tolerances before slitting.
(?)Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

Order Example

Part Number
KDSTR20
KLSTNR20

Days to Ship: 8 Days

Express A | 5,00 EUR/ piece

P.88

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount ((?)Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

(?)For orders of 30 or more pieces of ALKDR and ALKLNR, please request a quotation for Days to Ship and Price.

■Equal Dia. Perpendicular Configuration

D	€ Unit Price			
	KDSTR	MDKTR	ALKDR	SLKDR
8				
10				
12				
15				
20				
25				
30				

■Unequal Dia. Perpendicular Configuration

D	€ Unit Price			
	KLSTNR	MLSTNR	ALKLNR	SLKLNR
8				
10				
12				
15				
20				
25				
30				
35				

■Included Screws

D	Included Screws	
	Equal Dia. Perpendicular Configuration	Unequal Dia. Perpendicular Configuration
8	M5-12, 2 pcs.	M5-12, 4 pcs.
10	M5-15, 2 pcs	M5-15, 4 pcs.
12	M5-15, 2 pcs	M5-15, 4 pcs.
15	M6-20, 2pcs.	M6-20, 4 pcs.
20	M6-25, 2 pcs	M6-25, 4 pcs.
25	M6-30, 2 pcs.	M6-30, 4 pcs.
30	M8-35 2pcs.	M8-35, 4 pcs.
35	-	M8-40, 4 pcs.

Strut Clamps

–Equal Dia. Perpendicular Configuration / Equal Dia. Perpendicular Configuration Reversed–

Price Reduction
Up to 16%

CAD Data

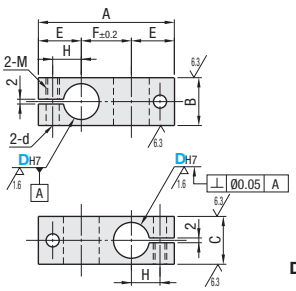
RoHS



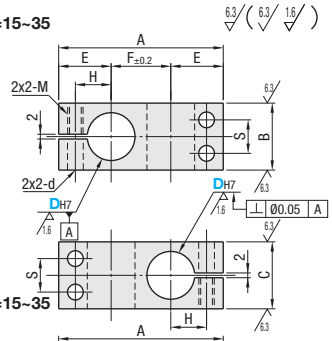
Type		Material	Surface Treatment	Accessory
Equal Dia. Perpendicular Configuration	Equal Dia. Perpendicular Configuration Reversed			
KDST	KDSTK	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MDKT	MDKTK		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
ALKD	ALKDK	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
HLKD	HLKDK		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless Steel)
SLKD	SLKDK	1.4301/X5CrNi18-10	-	

CB screws are included with the black oxide and black anodizing, and SCB screws are included with the other products.

Equal Dia. Perpendicular Configuration D=6~12

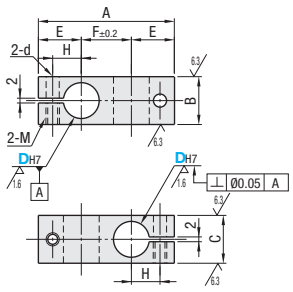


D=15~35

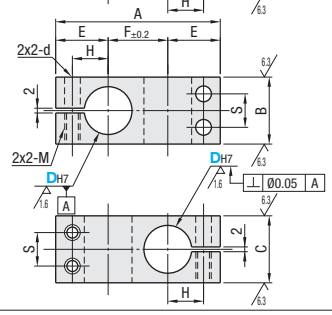


Equal Dia. Perpendicular Configuration D=6~12 Fasteners Reversed

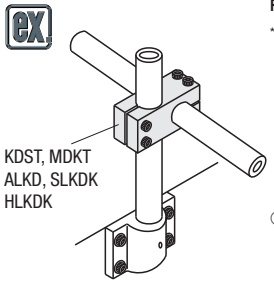
* The fastening screws are inserted in the opposite direction of the above Equal Dia. Perpendicular Configuration.



D=15~35



EN AW-6063/AlMg0,7Si is applicable to D8~35.
1.4301/X5CrNi18-10 is applicable to D8~30.



KDST, MDKT
ALKD, SLKDK
HLKDK

Part Number Type		DH7	A	B	C	E	F	H	S	M (Coarse)	d
Equal Dia. Perpendicular Configuration	Equal Dia. Perpendicular Configuration Reversed										
		6 +0.012 0	34	10	10	12	10	7	-	M4	4.5
		8 +0.015 0	41	12	12	14	13	8	-	M5	5.5
		10 +0.018 0	45	16	16	15	15	9	-		
		12 +0.018 0	49			16	17	10	-		
KDST	KDSTK	15 +0.018 0	57	22	22	18	21	12	11		
MDKT	MDKTK	16 +0.018 0									
ALKD	ALKDK	20 +0.021 0	69	28	28	22	25	15	14	M6	6.6
HLKD	HLKDK	25 +0.021 0	83	32	32	25	33	18	16		
SLKD	SLKDK	30 +0.021 0	95	40	40	29	37	21	20	M8	9
		35 +0.025 0	107	45	45	32	43	24	24		

D Dimension for SLKD and SLKDK is available up to 30.
The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of mating shafts are g6 · f8. Use of a long wrench is recommended for fastening.
D Dimension 6 is not available for ALKD · ALKDK · HLKD · HLKDK · SLKD and SLKDK.
D1 Dimension 16 is not available for Clear Anodize and Reversed Type.

Order Example

Part Number
KDST20

Days to Ship: 8 Days

Express A: 5,00 EUR/ piece

P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

• KDST · MDKT

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

• SLKD

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

• ALKD · HLKD · KDSTK · MDKTK · ALKDK · HLKDK · SLKDK

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price KDST KDSTK	ALKD ALKDK	MDKT MDKTK	HLKD HLKDK	SLKD SLKDK
6					
8					
10					
12					
15					
16					
20					
25					
30					
35					

Included Screws

D	Included Screws
6	M4-10, 2 pcs
8	M5-12, 2 pcs.
10	M5-15, 2 pcs
12	M5-15, 2 pcs
15	M5-20, 4 pcs.
16	M5-20, 4 pcs.
20	M6-25, 4 pcs.
25	M6-30, 4 pcs.
30	M8-35, 4 pcs.
35	M8-40, 4 pcs.

Strut Clamps

–Unequal Dia. Perpendicular Configuration / Unequal Dia. Perpendicular Configuration Reversed–

CAD Data

■Unequal Dia. Perpendicular Configuration
■Unequal Dia. Perpendicular Configuration Reversed

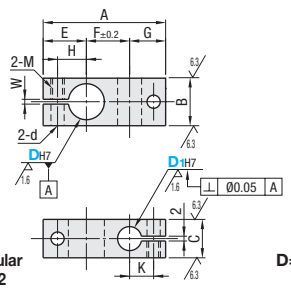
RoHS

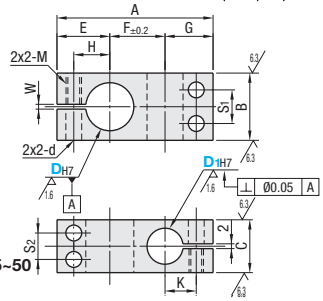


Type		M Material	S Surface Treatment	A Accessory
Equal Dia. Perpendicular Configuration	Equal Dia. Perpendicular Configuration Reversed			
KLSTN	KLSTK	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MLSTN	MLSTK		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
ALKLN	ALKLK	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
HLKLN	-		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless Steel)
SLKLN	SLKLK	1.4301/X5CrNi18-10	-	

CB screws are included with the black oxide and black anodizing, and SCB screws are included with the other products.

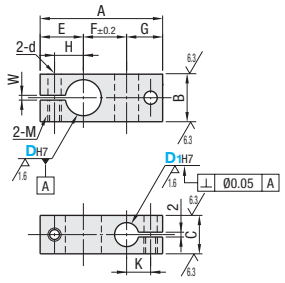
Unequal Dia. Perpendicular Configuration D=8~12 D=15~50

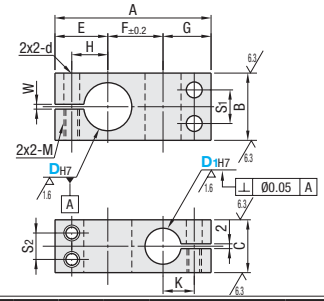




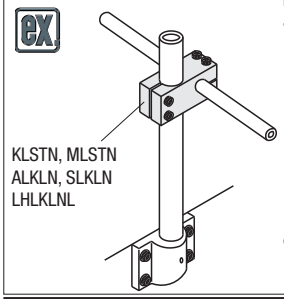
Unequal Dia. Perpendicular Configuration Fasteners Reversed D=8~12 D=15~50

* The fastening screws are inserted in the opposite direction of the above Unequal Dia. Perpendicular Configuration





EX



KLSTN, MLSTN
ALKLN, SLKLN
LHLKLNL

EN AW-6063/AlMg0,7Si is applicable to D10~35.
1.4301/X5CrNi18-10 is applicable to D10~30.

Part Number Type		DH7		D1H7		A	B	C	E	F	G	H	K	S1	S2	M (Coarse)	d	W
Unequal Dia. Perpendicular Configuration	Unequal Dia. Perpendicular Configuration Reversed																	
KLSTN	KLSTK	8	+0.015 0	6	+0.012 0	37	12	9	13	12	12	8	7	-	-	M4	4.5	2
MLSTN	MLSTK	10		8	+0.015 0	43	16	12	15	14	14	9	8	-	-	M5	5.5	
ALKLN	ALKLK	12	+0.018 0			47		16	16	16	15	10	9	-	-			
HLKLN	SLKLK	15		10		51	22	18	18	18		12		11	9			
SLKLN		20	+0.021 0	15	+0.018 0	65	28	22	22	23	20	15	13	14	11	M6	6.6	
		25		16		73	32	25	25	28		18	13	16	14			
		30		20	+0.021 0	85	40	30	29	32	24	21	16	20	15	M8	9	
		35	+0.025 0	25		98	45	35	32	39	27	24	19	24	20			
KLSTN	KLSTK	40	+0.025 0	30	+0.021 0	106	50	40	34	43	29	26	21	25	20	M8	9	3
		50		35	+0.025 0	130	65	50	43	52	35	33	25	32	28	M10	11	

D Dimension for SLKN and SLKLK is available up to 30.
D Dimension 8 is not available for ALKLN · ALKLK · HLKLN · SLKLN · or SLKLK.
The tolerance and perpendicularity of DH7 · D1H7 are the tolerances before slitting.
D1 Dimension 16 is not available for Clear Anodize and Reversed Type.
Recommended tolerances of mating shafts are g6 · f8. Use of a long wrench is recommended for fastening.

Order Example

Part Number	-	D1
KLSTN20	-	15

Days to Ship: 8 Days

Express A 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

• KLSTN · MLSTN

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

• SLKLN

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

• ALKLN · HLKLN · KLSTK · MLSTK · ALKLK · SLKLK

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price KLSTN KLSTK	ALKLN ALKLK	MLSTN MLSTK	HLKLN	SLKLN SLKLK
8					
10					
12					
15					
20					
25					
30					
35					
40					
50					

■Included Screws

D	Included Screws
8	M4-8 · M4-12, 1pc. each
10	M5-12 · M5-10, 1pc. each
12	M5-15, 2 pcs
15	M5-20 · M5-15, 2pcs. each
20	M6-25 · M6-20, 2pcs. each
25	M6-30 · M6-25, 2pcs. each
30	M8-35 · M8-30, 2pcs. each
35	M8-40 · M8-35, 2pcs. each
40	M8-45 · M8-40, 2pcs. each
50	M10-55 · M10-45, 2pcs. each

Strut Clamps

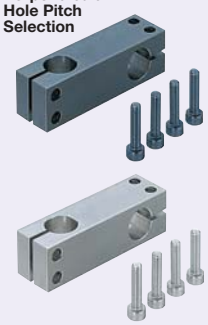
-Equal Dia. Perpendicular Hole Pitch Selectable · Unequal Dia. Perpendicular Hole Pitch Selectable-

CAD Data

■Features: Selectable shaft pitch between two Posts for Stands.

■Equal Dia. Perpendicular Hole Pitch Selection

RoHS



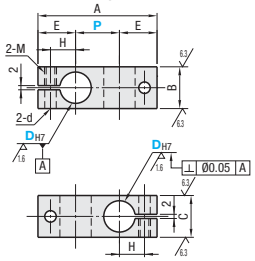
■Unequal Dia. Perpendicular Hole Pitch Selection



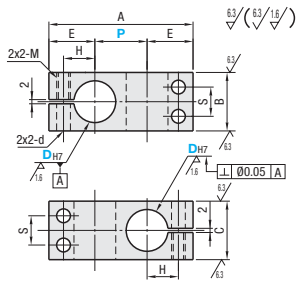
Type		M Material	S Surface Treatment	A Accessory
Equal Dia. Perpendicular Configuration	Unequal Dia. Perpendicular Configuration			
KMKC	KMKD	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MMKC	MMKD		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
AMKC	AMKD	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
SMKC	SMKD	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screws (Stainless Steel)

CB screws are included with the black oxide and black anodizing, and SCB screws are included with the other products.

Equal Dia. Perpendicular Configuration
D=6~12

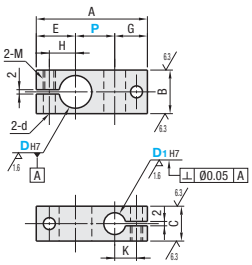


D=15~35

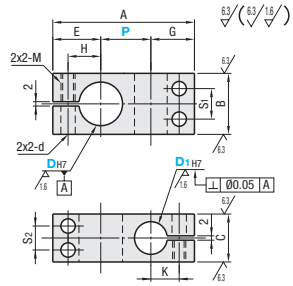


- P Dimension Tolerance: JIS B 0405 Medium Class (**P.1948**)

Unequal Dia. Perpendicular Configuration
D=8~12



D=15~35



- P Dimension Tolerance: JIS B 0405 Medium Class (**P.1948**)

■Equal Dia. Perpendicular Hole Pitch Selection

Part Number Type	DH7		P Selection	A	B	C	E	H	S	M	d
KMKC MMKC AMKC SMKC	6	+0.012 0	10 15 20	A=P+(2xE)	10	10	12	7	-	M4	4.5
	8	+0.015 0	10 15 20 25		12	12	14	8	-	M5	5.5
	10		15 20 25 30		16	16	15	9	-		
	12	+0.018 0					16	10	-		
	15		20 25 30 40		22	22	18	12	11		
	20		25 30 40 50		28	28	22	15	14	M6	6.6
	25	+0.021 0	30 40 50 75		32	32	25	18	16		
	30		50 75 100 150		40	40	29	21	20	M8	9
	35	+0.025 0			45	45	32	24	24		

Refer to the price list for available sizes.
The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

■Unequal Dia. Perpendicular Hole Pitch Selection

Part Number Type	DH7		D1H7		P Selection	A	B	C	E	G	H	K	S1	S2	M	d
KMKD MMKD AMKD SMKD	8	+0.015 0	6	+0.012 0	10 15 20	A=P+E+G	12	9	13	12	8	7	-	-	M4	4.5
	10		8	+0.015 0	15 20 25		16	12	15	14	9	8	-	-	M5	5.5
	12	+0.018 0	10		15 20 25 30		16	16	15	10	9	-	-	-		
	15						22	18	18	15	12	10	11	9		
	20		15	+0.018 0	20 25 30 40		28	22	22	20	15	13	14	11	M6	6.6
	25	+0.021 0			25 30 40 50		32	25	20	18	13	16	14			
	30		20	+0.021 0	30 40 50 75		40	30	29	24	21	16	20	15	M8	9
	35	+0.025 0	25		50 75 100 150		45	35	32	27	24	19	24	20		

D Dimension for SMKD is available up to 30. D Dimension 8 is not available for AMKD and SMKD.
The tolerance and perpendicularity of DH7, D1H7 is the tolerances before slitting.
Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

Order Example

Part Number	-	D1	-	P
KMKC10			-	20
MMKD20	-	15	-	30

Days to Ship: 8 Days

Express A 5,00 EUR/piece

A Express Charge of 13,50 EUR for 3 or more identical pieces.

P.88

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price							
	Equal Dia. Perpendicular Configuration				Unequal Dia. Perpendicular Configuration			
	KMKC	MMKC	AMKC	SMKC	KMKD	MMKD	AMKD	SMKD
6								
8								
10								
12								
15								
20								
25								
30								
35								

■Included Screws

D	Included Screws	
	Equal Dia. Perpendicular Configuration	Unequal Dia. Perpendicular Configuration
6	M4-10, 2 pcs	-
8	M5-12, 2 pcs.	M4-8 / M4-12, 1pc. each
10	M5-15, 2 pcs	M5-12 / M5-10, 1pc. each
12	M5-15, 2 pcs	M5-20, 2 pcs
15	M5-20, 4 pcs.	M5-20 / M5-15, 2pcs. each
20	M6-25, 4 pcs.	M6-25 / M6-20, 2pcs. each
25	M6-30, 4 pcs.	M6-30 / M6-25, 2pcs. each
30	M8-35, 4 pcs.	M8-35 / M8-30, 2pcs. each
35	M8-40, 4 pcs.	M8-40 / M8-35, 2pcs. each

Strut Clamps

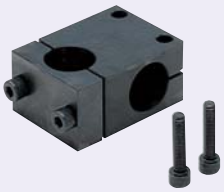
-Equal Dia. Perpendicular Separate Configuration · Unequal Dia. Perpendicular Separate Configuration-

Price Reduction
12% on average

CAD Data

■Features: Post-assembly mounting onto Posts for Stands in structures.

■Separate · Equal Dia. Perpendicular Configuration RoHS



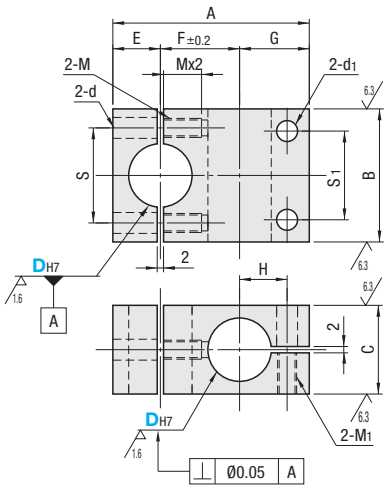
■Separate · Unequal Dia. Perpendicular Configuration



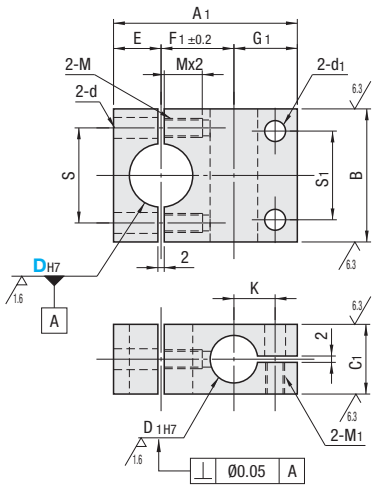
Type		M Material	S Surface Treatment	A Accessory
Equal Dia. Perpendicular Configuration	Unequal Dia. Perpendicular Configuration			
KSBC	KSLC	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MSBC	MSLC		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
ASBC	ASLC	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
SSBC	SSLC	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screws (Stainless Steel)

CB screws are included with the black oxide and black anodizing, and SCB screws are included with the other products.

Equal Dia. Perpendicular Configuration



Unequal Dia. Perpendicular Configuration



Part Number Type	DH7	A	A1	B	C	C1	D1H7	E	F	F1	G	G1	H	K	S	d	M (Coarse)	S1	d1	M1 (Coarse)
Equal Dia. Perpendicular Configuration KSBC MSBC ASBC SSBC	8 +0.015 0	34	-	25	12	-	-	8	13	-	13	-	8	-	16	4.5	M4	15	4.5	M4
	10	37	35		16	12	8 +0.015 0		15	14	14	13	9	8	17			16	5.5	M5
	12 +0.018 0	42	41	28		16	10	10	17	16	15	15	10	9	20			18		
	15	51	45	32	22	18		12	21	18	18		12		23	5.5	M5	22		
Unequal Dia. Perpendicular Configuration (D≥10) KSLC MSLC ASLC SSLC	20	62	58	40	28	22	15 +0.018 0	15	25	23	22	20	15	13	29	6.6	M6	28	6.6	M6
	25 +0.021 0	76	66	45	32	25		18	33	28	25		18		34			30		
	30	89	79	60	40	30	20 +0.021 0	23	37	32	29	24	21	16	44	9	M8	40	9	M8
	35 +0.025 0	101	92	65	45	35	25	26	43	39	32	27	24	19	50			45		

Refer to the price list for available sizes. Unequal Dia. Perpendicular Configuration Type is available for the size larger than D 10.
The tolerance and perpendicularity of DH7, D1H7 is the tolerances before slitting.
Recommended tolerances of fitting shafts for D1: g6 , f8.

Order Example

Part Number
KSBC15
MSLC30

Days to Ship

6 Days P.87

Alterations

Part Number - (ALW)
ASBC15 - ALW

13 Days

Alterations	Code	Spec.	Price Adder
Clear Anodize	ALW	Changes the black anodize of ASBC and ASLC to clear anodize. Applicable to ASBC and ASLC. Stainless steel screws are included.	4,00

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

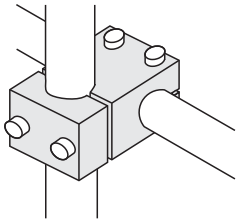
For orders larger than indicated quantity, please request a quotation.

Example

D	€ Unit Price							
	Equal Dia. Perpendicular Configuration				Unequal Dia. Perpendicular Configuration			
	KSBC	MSBC	ASBC	SSBC	KSLC	MSLC	ASLC	SSLC
8								
10								
12								
15								
20								
25								
30								
35								

■Included Screws

D	Included Screws
8	M4-15, 2 pcs. / M4-10, 2 pcs.
10	M4-15, 2 pcs. / M5-15, 2 pcs.
12	M4-18, 2 pcs. / M5-15, 2 pcs.
15	M5-20, 2 pcs. / M5-20, 2 pcs.
20	M6-25, 2 pcs. / M6-25, 2 pcs.
25	M6-30, 2 pcs. / M6-25, 2 pcs.
30	M8-35, 2 pcs. / M8-35, 2 pcs.
35	M8-40, 2 pcs. / M8-40, 2 pcs.



D1 side screws included with Unequal Dia. Perpendicular Configuration Type are shorter than listed above.

Strut Clamps

–Equal Dia. T–Shaped Perpendicular Separate Configuration–

CAD Data

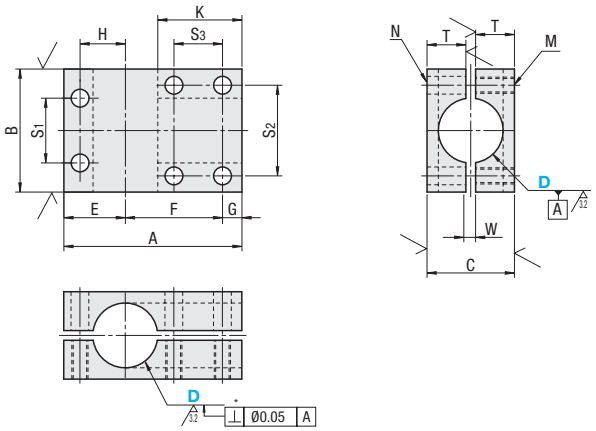
■Features: Post-assembly mounting onto Posts for Stands in structures.

■Equal Dia. T-Shaped Perpendicular Separate Configuration

RoHS



Type	M Material	S Surface Treatment	A Accessory
KLTTS	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MLTTS		Electroless Nickel Plating	
ALTTS	EN AW-6063/AlMg0,7Si	Black Anodize	
SLTTS	1.4301/X5CrNi18-10	-	



Part Number Type	D	A	B	C	E	F	G	H	K	M (Coarse)	N	S1	S2	S3	T	W	€ Unit Price KLTTS	MLTTS	ALTTS	SLTTS
KLTTS MLTTS ALTTS SLTTS	10	35	25	17	14	13	8	9	16	M5	5.5	15	16.5	-	8	1				
	12	40	32	19	15	16	9	10	19			16	20		9					
	15	50		22	16	28	6	11	26.5			18	22	15	10	2				
	20	55	38	27	19	30		14	26			20	28		12	3				
	25	65	44	35	22	37		17	30.5			22	34	18	16					
	30	75	50	41	25	44		20	35			26	40	20	19					

The perpendicularity is the tolerance before slitting. Refer to the price list for available sizes.
Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

Order Example

Part Number
KLTTS15

Days to Ship 8 Days

Express A 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

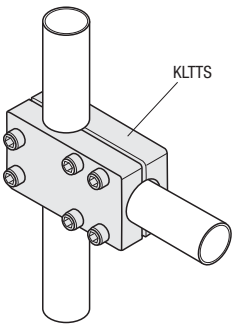
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

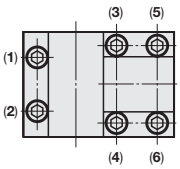
Example



One Point

(Temporary tighten the screws in order of (1) to (6) before final tightening.

(If the shaft on one side is fully tightened first, tightening the other shaft may become difficult.)



■Included Screws

D	KLTTS ALTTS	MLTTS SLTTS
10	CB5–16, 4 pcs.	SCB5–16, 4 pcs.
12	CB5–18, 4 pcs.	SCB5–18, 4 pcs.
15	CB5–20, 6 pcs.	SCB5–20, 6 pcs.
20	CB5–25, 6 pcs.	SCB5–25, 6 pcs.
25	CB5–30, 6 pcs.	SCB5–30, 6 pcs.
30	CB5–35, 6 pcs.	SCB5–35, 6 pcs.

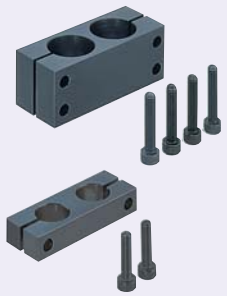
Strut Clamps

-Equal Dia. Parallel Hole Pitch Selectable / Unequal Dia. Parallel Hole Pitch Selectable-

CAD Data

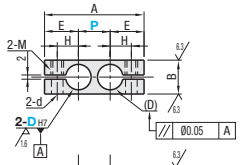
■Features: Two Posts for Stands fixable in parallel.

■Equal Dia. Parallel Hole Pitch Selection RoHS

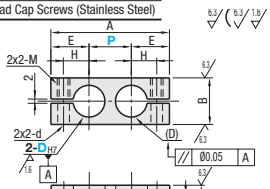


Type		M Material	S Surface Treatment	A Accessory
Standard	Thin			
KKP	KKPT	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MKP	-		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
AKP	-	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
SKP	-	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screws (Stainless Steel)

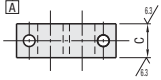
D=8~12



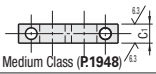
D=15~35



Standard



Thin

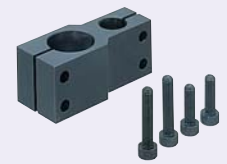


- P Dimension Tolerance: JIS B 0405 Medium Class (P.1948)

Part Number Type		DH7		P Selection	A	B	C	C1	E	H	S	M	d
Standard	Thin	8	+0.015 0	10 15 20 25	A=P+(2xE)	12	12	-	14	8	-	M5	5.5
KKP MKP AKP SKP	KKPT	10		15 20 25 30		16	16	9	15	9	-		
		12	+0.018 0						16	10	-		
		15		20 25 30 40		22	22	12	18	12	11		
		20	+0.021 0	25 30 40 50		28	28	16	22	15	14	M6	6.6
		25		30 40 50 75		32	32	19	25	18	16		
		30		50 75 100 150		40	40		29	21	20	M8	9
		35	+0.025 0			45	45	22	32	24	24		

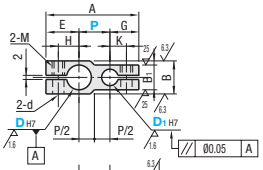
Refer to the price list for available sizes. The tolerance and parallelism of DH7 are the tolerances before slitting.
Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

■Unequal Dia. Parallel Hole Pitch Selection RoHS

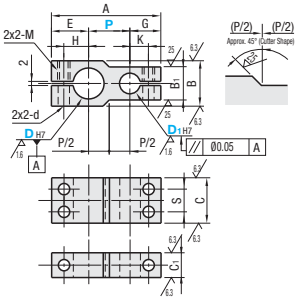


Type		M Material	S Surface Treatment	A Accessories
Standard	Thin			
KKQ	KKQT	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws

D=10 / 12

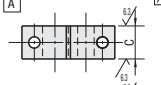


D=15~35

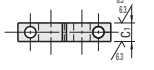


Details of Stepped Part Portion

Standard



Thin



- P Dimension Tolerance: JIS B 0405 Medium Class (P.1948)

Part Number Type		DH7		D1H7		P Selection	A	B	B1	C	C1	E	G	H	K	S	M	d
Standard	Thin	10	+0.015 0	8	+0.015 0	15 20 25	A=P+E+G	16	12	16	9	15	14	9	8	-	M5	5.5
KKQ	KKQT	12	+0.018 0	10		15 20 25 30		16	14	16	9	16	15	10	9	-		
		15						22	16	22	12	18	15	12	9	11		
		20	+0.021 0	15	+0.018 0	20 25 30 40		28	22	28	16	22	19	15	12	14	M6	6.6
		25				25 30 40 50		32	22	32	19	25	19	18	12	16		
		30		20	+0.021 0	30 40 50 75		40	28	40	19	29	23	21	15	20	M8	9
		35	+0.025 0	25		50 75 100 150		45	32	45	22	32	25	24	18	24		

The tolerance and parallelism of DH7, D1H7 are the tolerances before slitting. Refer to the price list for available sizes.
Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

Order Example

Part Number		D1		P
KKP10			-	20
KKQT20	-	15	-	30

Days to Ship 8 Days — Express A 5,00 EUR/piece

A Express Charge of 13,50 EUR for 3 or more identical pieces.

P.88

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price						
	Equal Dia. Parallel					Unequal Dia. Parallel	
	Standard				Thin	Standard	Thin
	KKP	MKP	AKP	SKP	KKPT	KKQ	KKQT
8							
10							
12							
15							
20							
25							
30							
35							

■Included Screws

D	Included Screws (Thin Type requires 1 screw on each side.)	
	Equal Dia. Hole	Unequal Dia. Parallel
8	M5-12, 2 pcs.	-
10	M5-15, 2 pcs.	M5-12 / M5-10, 1 pc. each
12	M5-15, 2 pcs.	M5-15, 2 pcs.
15	M5-20, 4 pcs.	M5-20 / M5-15, 2 pcs. each
20	M6-25, 4 pcs.	M6-25 / M6-20, 2 pcs. each
25	M6-30, 4 pcs.	M6-30 / M6-20, 2 pcs. each
30	M8-35, 4 pcs.	M8-35 / M8-30, 2 pcs each
35	M8-40, 4 pcs.	M8-40 / M8-35, 2 pcs. each

Strut Clamps

-Equal Dia. Rotation · Unequal Dia. Rotation-

Price Reduction
10% on Average

CAD Data

■Equal Dia. Rotation Type



■Unequal Dia. Rotation Type

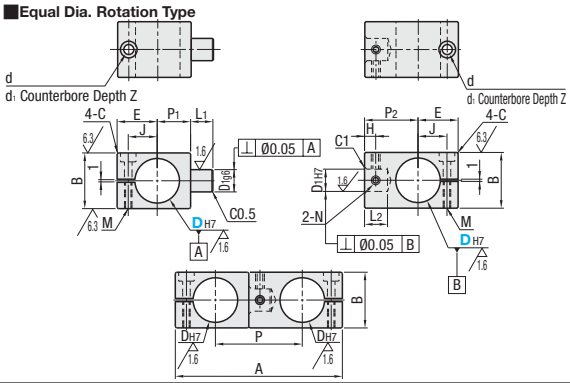


Type		M Material	S Surface Treatment	A Accessory
Equal Dia. Rotation Type	Unequal Dia. Rotation Type			
KLSR	KDSR	1.0038/S235JR	Black Oxide	Hexagon Socket Head Set Screw
MLKR	MDKR		Electroless Nickel Plating	
ALKR	ADKR	EN AW-6063/AlMg0,7Si	Black Anodize	
SLKR	SDKR	1.4301/X5CrNi18-10	-	

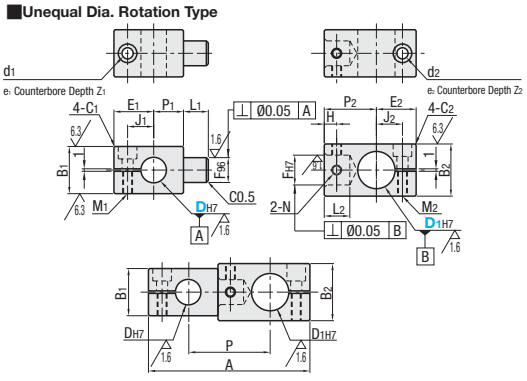
Accessories: CB (P.2 - 173) and MSSK (P.2 - 168) screws are included with black oxide/black anodized products, and SCB (P.2 - 174) and MSSU (P.2 - 168) screws are included with the other products.

6.3 (6.3 1.6)

■Equal Dia. Rotation Type



■Unequal Dia. Rotation Type



■Equal Dia. Rotation Type

Part Number Type	DH7	D1	g6	H7	A	B	P	P1	P2	L1	L2	E	H	J	M	N	d	d1	Z	C
KLSR MLKR ALKR SLKR	8	5	−0.004 −0.012	+0.012 0	42	12	19	7	12	6	6.3	11.5	3	7	M3	M3	3.5	6.0	3	2
	10				51	13	23	9	14			14.0		9	M4		4.5	7.5	5	
	12	+0.018 0			57	15	26	11	15			15.5		10						
	15		10	−0.005 −0.014	+0.015 0	65	19	33	12	21	10	10.3	16.0	5	10.5	M4	M4	4.5	7.5	5	3
	20	+0.021 0			76	25	39	15	24			18.5		13						
	25				88	30	44	18	26			22.0		16	M5	M5	5.5	9.0	5.5	4

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

■Unequal Dia. Rotation Type

Part Number Type	DH7	D1H7	F	g6	H7	A	B1	B2	P	P1	P2	L1	L2	E1	E2	H	J1	J2	M1	M2	N	d1	d2	e1	e2	Z1	Z2	C1	C2
KDSR MDKR ADKR SDKR	8	10 +0.015 0	5	−0.004 −0.012	+0.012 0	46.5	12	13	21	7	14	6	6.3	11.5	14	3	7	9	M3	M4	M3	3.5	4.5	6	7.5	3	5	2	2
	8	12 +0.018 0				49	12	15	22	7	15			11.5	15.5		7	10	M3	M4	M3	3.5	4.5	6	7.5	3	5	2	2
	10	12				53.5	13	15	24	9	15			14	15.5		9	10	M4	M4	M3	4.5	4.5	7.5	7.5	5	5	2	2
	15	20 +0.021 0	10	−0.005 −0.014	+0.015 0	70.5	19	25	36	12	24	10	10.3	16	18.5	5	10.5	13	M4	M4	M4	4.5	4.5	7.5	7.5	5	5	3	3
	15	25				76	19	30	38	12	26			16	22		10.5	16	M4	M5	M5	4.5	5.5	7.5	9	5	5.5	3	4
	20	25				81.5	25	30	41	15	26			18.5	22		13	16	M4	M5	M5	4.5	5.5	7.5	9	5	5.5	3	4

The tolerance and perpendicularity of DH7, D1H7 are the tolerances before slitting.
Recommended tolerances of mating shafts are g6 , f8. Use of a long wrench is recommended for fastening.

Order Example: Part Number - D1 (MLKR10 / KDSR8 - 12)

Days to Ship: 8 Days | Express A 5,00 EUR/ piece | P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1–4	5–12	13–19	20–29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Equal Dia. Rotation Type

D	€ Unit Price			
	KLSR	MLKR	ALKR	SLKR
8				
10				
12				
15				
20				
25				

■Unequal Dia. Rotation Type

D-D1	€ Unit Price			
	KDSR	MDKR	ADKR	SDKR
8-10				
8-12				
10-12				
15-20				
15-25				
20-25				

■Included Screws

D	Included Screws	
	Equal Dia. Rotation Type	Unequal Dia. Rotation Type
8	M3-8, 2 pcs.	M3-8 / M4-8, 1pc. each
10	M4-8, 2 pcs.	M3-8 / M4-10, 1pc. each
12	M4-10, 2 pcs	M4-8 / M4-10, 1pc. each
15	M4-12, 2 pcs.	M4-12 / M4-20, 1pc. each
20	M4-20, 2 pcs.	M4-12 / M5-20, 1pc. each
25	M5-20, 2 pcs	M4-20 / M5-20, 1pc. each

Strut Clamps

-Square Hole Rotation · Round Hole Rotation-

Price Reduction
10% on Average

CAD Data

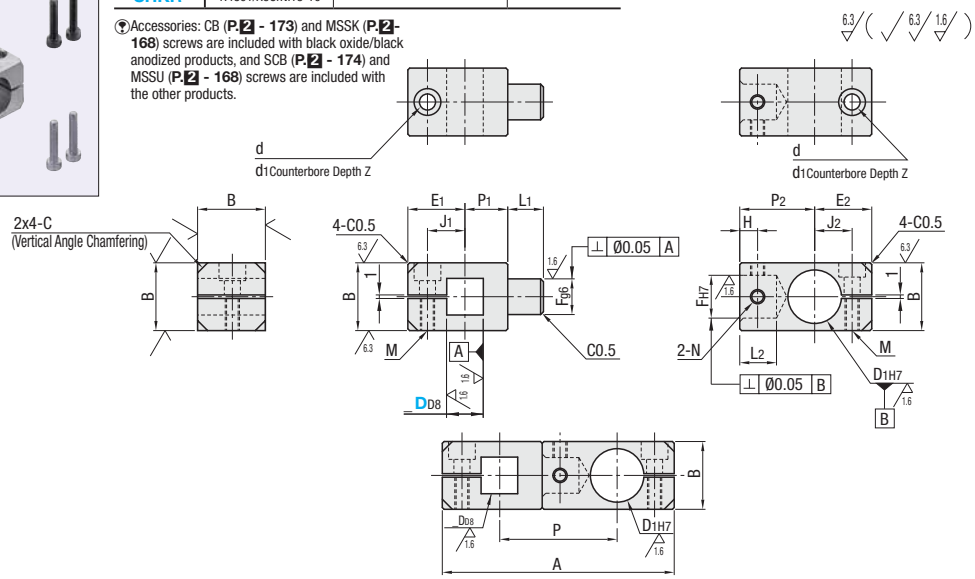
■Features: Combined with Square Hollows and Brackets for Stands, Strut Clamp can prevent rotation while adjusting height.

■Square Hole Rotation · Round Hole Rotation RoHS



Type	Material	Surface Treatment	Accessory
KHKR	1.0038/S235JR	Black Oxide	Hexagon Socket Head Set Screws
MHKR		Electroless Nickel Plating	
AHKR	EN AW-6063/AlMg0,7Si	Black Anodize	
SHKR	1.4301/X5CrNi18-10	-	

Accessories: CB (P.2 - 173) and MSSK (P.2 - 168) screws are included with black oxide/black anodized products, and SCB (P.2 - 174) and MSSU (P.2 - 168) screws are included with the other products.



Part Number Type	DD8*		D1H7*		F	g6	H7	A	B	P	P1	P2	L1	L2	E1	E2	H	J1	J2	M (Coarse)	N (Coarse)	d	d1	Z	C
KHKR MHKR AHKR SHKR	8	+0.062 +0.040	8	+0.015 0	5	-0.004 -0.012	+0.012 0	43	12	19	7	12	6	6.3	12.5	11.5	3	8	7	M3	M3	3.5	6	3	2
	10		10					52	13	23	9	14			15	14		10	9	M4		4.5	7.5	5	
	12	+0.077 +0.050	12	+0.018 0				58	15	26	11	15			16.5	15.5		11	10						
	15		15		10	-0.005 -0.014	+0.015 0	67	19	33	12	21	10	10.3	18	16	5	12.5	10.5		M4				3
	20	+0.098 +0.065	20	+0.021 0				78	25	39	15	24			20.5	18.5		15	13						
	25		25					90	30	44	18	26			24	22		18	16	M5	M5	5.5	9	5.5	4

* The tolerance and perpendicularity of DD8 and D1H7 is the tolerances before slitting.
Recommended tolerances of D1 mating shafts: g6 , f8. Use of a long wrench is recommended for tightening.

Order Example — Part Number: KHKR20

Days to Ship — 8 Days

Example

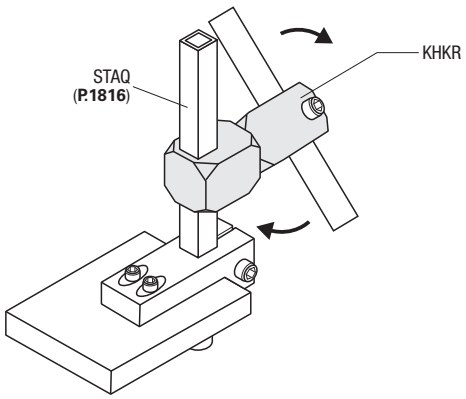
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price			
	KHKR	MHKR	AHKR	SHKR
8				
10				
12				
15				
20				
25				



■Included Screws

D	Included Screws
8	M3-8, 2 pcs.
10	M4-8, 2 pcs.
12	M4-10, 2 pcs
15	M4-12, 2 pcs.
20	M4-20, 2 pcs.
25	M5-20, 2 pcs.

Super Compact Strut Clamps

-Vertical Female Thread with a Wing Knob / Parallel Female Thread with a Wing Knob / Vertical Female Thread / Parallel Female Thread-

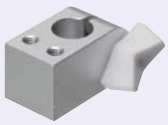
CAD Data

■Features: Affordable and compact tapped Strut Clamps. Wing Knob helps easy setup changes.

■Vertical Female Thread with Wing Knob Parallel Female Thread with Wing Knob

RoHS



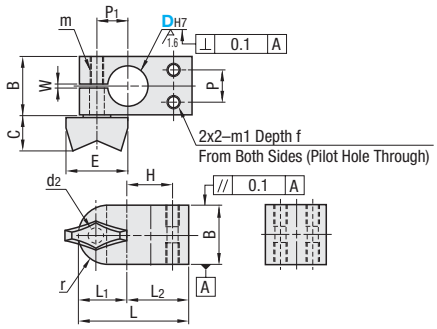


Type		Material	Surface Treatment	Accessory
Vertical Female Thread	Parallel Female Thread			
AMNCC	AQMCC	EN AW-6061/EN AW-AlMg1SiCu	Black Anodize	Wing Knob (Black)
-	AQMWC		Clear Anodize	Wing Knob (White)

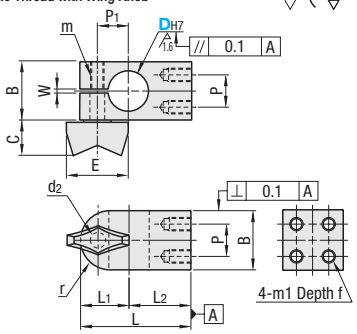
* Head of Wing Knob: Nylon 66
Thread: JIS SWRM–10
(Trivalent Chromate)

√(1.6)

Vertical Female Thread with Wing Knob



Parallel Female Thread with Wing Knob



Part Number			B	L	L1	L2	r	H	m1	f	P	P1	W	d2	m	Wing Knob E	Wing Knob C	€ Unit Price Vertical Female Thread	€ Unit Price Parallel Female Thread
Type	DH7																	AMNCC	AMWCC AQMWC
Vertical Female Thread AMNCC / Parallel Female Thread AQMCC AQMWC	6	+0.012 0	10	21.5	10.5	11	5	8	M2.6	4	5	6.5	1	3.5	M3	18	10.5		
	8	+0.015 0	12	25	11	14	6	10	M3	5	6	7							
	10		16	29.5	13.5	16	8	11	M4	6	8	8.5	1.5	4.5	M4				
	12	+0.018 0	18	32	14	18	9	13				9							
	15		22	41	18	23	11	17	M5	8	12	12		5.5	M5	28	15		

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of mating shafts are g6 and f8. Except for wing knobs, use of a long wrench is recommended for fastening.

Order Example Part Number AQMWC10

Days to Ship 6 Days P.87

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Vertical Female Thread and Parallel Female Thread

RoHS

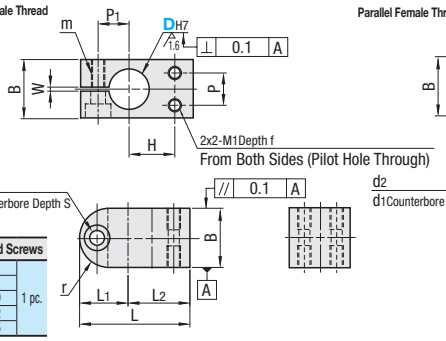




Type		Material	Surface Treatment	Accessory
Vertical Female Thread	Parallel Female Thread			
AMNC	AQMC	EN AW-6061/EN AW-AlMg1SiCu	Black Anodize	Hexagon Socket Head Cap Screws
AMNW	AQMW		Clear Anodize	

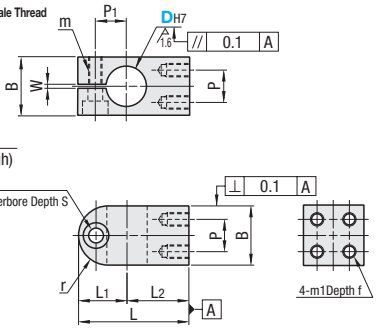
√(1.6)

Vertical Female Thread



D	Included Screws	
6	M3-6	1 pc.
8	M3-8	
10	M4-10	
12	M4-12	
15	M5-15	

Parallel Female Thread



Part Number			B	L	L1	L2	r	H	m1	f	P	P1	W	m	d1	d2	S	€ Unit Price Vertical Female Thread	€ Unit Price Parallel Female Thread
Type	DH7																	AMNC/ AMNW	AQMC/ AQMW
Vertical Female Thread AMNC AMNW / Parallel Female Thread AQMC AQMW	6	+0.012 0	10	21.5	10.5	11	5	8	M2.6	4	5	6.5	1	M3	6.5	3.5	3.5		
	8	+0.015 0	12	25	11	14	6	10	M3	5	6	7							
	10		16	29.5	13.5	16	8	11	M4	6	8	8.5	1.5	M4	8	4.5	4.5		
	12	+0.018 0	18	32	14	18	9	13				9							
	15		22	41	18	23	11	17	M5	8	12	12		M5	9.5	5.5	5.5		

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of mating shafts are g6 and f8. Except for wing knobs, use of a long wrench is recommended for fastening.

Order Example Part Number AMNC8

Days to Ship 6 Days P.88

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Strut Clamps

-Vertical Female Thread with a Clamp Lever / Parallel Female Thread with a Clamp Lever-

CAD Data

■Features: Convenient for frequent setup changes. Vertically adjustable with a clamp lever without tools.

■Vertical / Parallel Female Thread With Clamp Lever



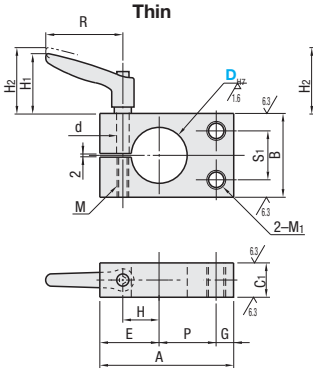
Type			Material	Surface Treatment
Vertical Female Thread	Parallel Female Thread			
Thin	Thin	Standard		
KMKU	KQKU	KQK	1.0038/S235JR	Black Oxide
MMKU	MQKU	MQK		Electroless Nickel Plating
AMKU	AQKU	AQK	EN AW-6063/AlMg0,7Si	Black Anodize
SMKU	SQKU	SQK	1.4301/X5CrNi18-10	-

■For Clamp Levers, refer to P.2-999

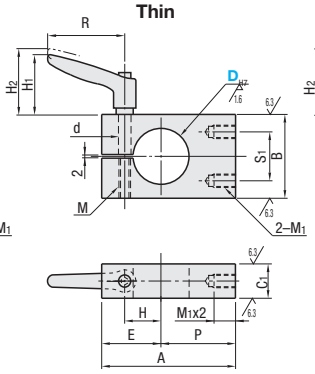
DH7	Thin	Standard
10	CLDM5-16-M	CLDM6-16-M
12		CLDM6-20-M
15	CLDM5-20-M	CLDM8-20-M
20	CLDM6-25-M	CLDM8-25-M
25	CLDM6-32-M	CLDM10-32-M
30		CLDM10-40-M
35	CLDM8-40-M	CLDM12-40-M

6.3 (6.3 1.6)

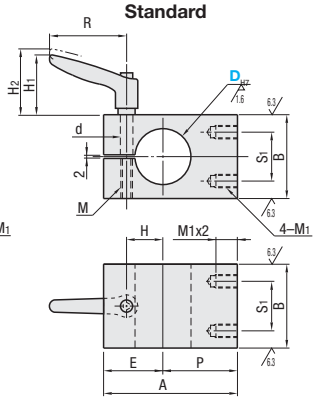
Vertical Female Thread Thin



Parallel Female Thread Thin



Parallel Female Thread Standard



RoHS

■Vertical Female Thread Thin Type

Part Number Type	DH7	P	A	B	C1	E	G	H	S1	M1	M	d	Clamp Lever H1	H2	R	€ Unit Price KMKU	MMKU	AMKU	SMKU
KMKU MMKU AMKU SMKU	10 +0.015 0	11	31	16	9	15	5	9	8	M4	M5	5.5	35	38.5	45				
	12 +0.018 0	13	34			16		10											
	15	17	45	22	12	20	8	12	12	M5									
	20 +0.021 0	20	52	28	16	22	10	15	16	M6	M6	6.6							
	25	23	58	32	19	25		18	20										
	30	27	66	38		29		21	25	M8									
	35 +0.025 0	30	72	45	22	32		24	28		M8	9	45.5	49	63				

Refer to the price list for available sizes. DH7 tolerance is measured before slit machining.
Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

■Parallel Female Thread Thin Type

Part Number Type	DH7	P	A	B	C1	E	H	S1	M1	M	d	Clamp Lever H1	H2	R	€ Unit Price KQKU	MQKU	AQKU	SQKU
KQKU MQKU AQKU SQKU	10 +0.015 0	16	31	16	9	15	9	8	M4	M5	5.5	35	38.5	45				
	12 +0.018 0	18	34			16	10											
	15	25	45	22	12	20	12	12	M5									
	20 +0.021 0	30	52	28	16	22	15	16	M6	M6	6.6							
	25	33	58	32	19	25	18	20										
	30	37	66	38		29	21	25	M8									
	35 +0.025 0	40	72	45	22	32	24	28		M8	9	45.5	49	63				

Refer to the price list for available sizes. DH7 tolerance is measured before slit machining.
Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

■Parallel Female Thread Standard

Part Number Type	DH7	P	A	B	E	H	S1	M1	M	d	Clamp Lever H1	H2	R	€ Unit Price KQK	MQK	AQK	SQK
KQK MQK AQK SQK	10 +0.015 0	16	32	16	16	10	8	M4	M6	6.6	35	38.5	45				
	12 +0.018 0	18	35		17	11											
	15	25	47	22	22	14	12	M5	M8	9	45.5	49	63				
	20 +0.021 0	30	54	28	24	16	16	M6									
	25	33	62	32	29	20	20		M10	11	55	59	78				
	30	37	68	40	31	22	25	M8									
	35 +0.025 0	40	77	45	37	26	28		M12	13	67	71	92				

Refer to the price list for available sizes. DH7 tolerance is measured before slit machining.
Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

Order Example — Part Number: KMKU20 KQKU25 SQK15

Days to Ship: 8 Days — Express A: 5,00 EUR/piece — P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Strut Clamps
–Vertical Female Thread–

CAD Data

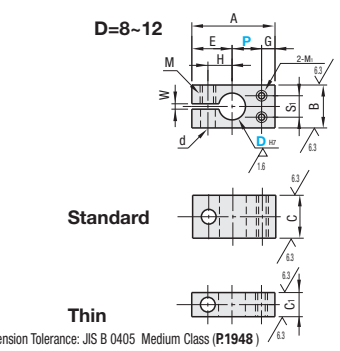
Vertical Female Thread

RoHS



Type				Ⓜ Material	Ⓢ Surface Treatment	Ⓐ Accessory
Pitch Selectable		Pitch Configurable				
Standard	Thin	Standard	Thin			
KMN	KMNU	KML	KMLU	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MMN	MMNU	MML	MMLU		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
AMN	AMNU	-	-	EN AW-6063/ AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
-	WMNU	-	-		Clear Anodize	Hexagon Socket Head Cap Screws
SMN	SMNU	-	-	1.4301/X5CrNi18-10	-	(Stainless Steel)

ⓅCB screws and SCB screws are included with Black Oxide / Black Anodize and the other products.



- P Dimension Tolerance: JIS B 0405 Medium Class (P.1948)

Pitch Selectable

Part Number Type		D_{H7}		P	A	B	C	C_1	E	G	H	S_1	M_1	S	W	M	d
Standard	Thin	8	+0.015 0	10	29	12	12	-	14	5	8	6	M3	-	2	M5	5.5
KMN	KMNU	10		11	31	16	16	9	15		9	8	M4	-			
MMN	MMNU	12	+0.018 0	13	34				16		10			-			
AMN	AMNU	15		17	45	22	22	12	20	8	12	12	M5	12			
SMN (D≤30)	WMNU	16						-									
	SMNU (D≤30)	20	+0.021 0	20	52	28	28	16	22	10	15	16	M6	14		M6	6.6
		25		23	58	32	32	19	25		18	20		16			
		30		27	66	40	40		29		21	25	M8	20		M8	9
		35	+0.025 0	30	72	45	45	22	32		24	28					
KMN	KMNU	40	+0.025 0	35	79	50	50	25	34	10	26	30	M8	20	2	M8	9
		50		45	103	65	65	32	43	15	33	38	M10	32	3	M10	11

Ⓡ Refer to the price list for available sizes. ⓇD=16 is only applicable to Standard Pitch (except clear anodize). ⓇD_{H7} tolerance is measured before slit machining.
ⓇRecommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

Pitch Configurable

Part Number Type		D_{H7}		P Selection	A	B	C	C_1	E	G	H	S_1	M_1	S	W	M	d
Standard	Thin	10	+0.015 0	20 30	A=P+E+G	16	16	9	15	5	9	8	M4	-	2	M5	5.5
KML	KMLU	12	+0.018 0						16		10			-			
MML	MMLU	15		25 30		22	22	12	20	8	12	12	M5	12			
		20	+0.021 0			28	28	16	22	10	15	16	M6	14		M6	6.6
		25		30 40		32	32	19	25		18	20		16			
		30				40	40		29		21	25	M8	20		M8	9
KML	KMLU	40	+0.025 0	40 50	A=P+E+G	50	50	25	34	10	26	30	M8	20	2	M8	9

Ⓡ Refer to the price list for available sizes. ⓇD_{H7} tolerance is measured before slit machining.
ⓇRecommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

Order Example

Part Number	-	P
KMN10		
KMLU20	-	30

Days to Ship

8 Days

Express A 5,00 EUR/piece

P.88

ⓐA Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

• KMN · MMN

Volume Discount (ⓇRound down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

ⓇFor orders of 80 or more, please request a quotation for Days to Ship and Price.

• SMN

Volume Discount (ⓇRound down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

ⓇFor orders of 80 or more, please request a quotation for Days to Ship and Price.

• Others

Volume Discount (ⓇRound down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

ⓇFor orders larger than indicated quantity, please request a quotation.

D	€ Unit Price												
	Pitch Selectable									Pitch Configurable			
	Standard				Thin					Standard		Thin	
	KMN	MMN	AMN	SMN	KMNU	MMNU	AMNU	WMNU	SMNU	KML	MML	KMLU	MMLU
8													
10													
12													
15													
16													
20													
25													
30													
35													
40													
50													

Included Screws

D	Included Screws (The Thin Type has 1 screw on each side.)
8	M5-12, 1 pc.
10	M5-15, 1 pc.
12	M5-15, 1 pc.
15	M5-20, 2 pcs
16	M5-20, 2 pcs
20	M6-25, 2 pcs
25	M6-30, 2 pcs.
30	M8-35 2pcs.
35	M8-40 2pcs.
40	M8-45, 2 pcs.
50	M10-55, 2 pcs.

Strut Clamps
–Parallel Female Thread–

CAD Data

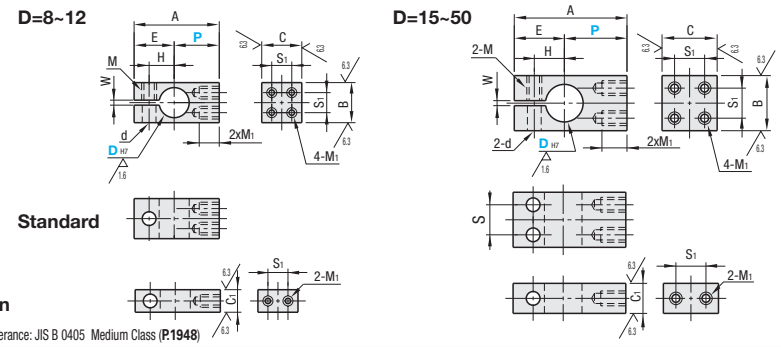
■Parallel Female Thread

RoHS



Type				M Material	S Surface Treatment	A Accessory
Pitch Selectable		Pitch Configurable				
Standard	Thin	Standard	Thin			
KQM	KQMU	KQL	KQLU	1.0038/ S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MQM	MQMU	MQL	MQLU		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
AQM	AQMU	AQL	-	EN AW-6063 /AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
WQM	WQMU	-	-		Clear Anodize	Hexagon Socket Head Cap Screws (Stainless Steel)
SQM	SQMU	SQL	SQLU	1.4301/X5CrNi18-10	-	

CB screws are included with the Black Oxide / Black Anodize, and SCB screws are included with the other products.



- P Dimension Tolerance: JIS B 0405 Medium Class (P.1948)

■Pitch Selectable

Part Number Type		DH7		P	A	B	C	C1	E	H	S1	M1	S	W	M	d
Standard	Thin	8	+0.015 0	15	29	12	12	-	14	8	6	M3	-	2	M5	5.5
		10		16	31	16	16	9	15	9	8	M4	-			
KQM	KQMU	12	+0.018 0	18	34				16	10			-			
MQM	MQMU	15		25	45	22	22	12	20	12	12	M5	12			
AQM	AQMU	16						-								
WQM	WQMU	20	+0.021 0	30	52	28	28	16	22	15	16	M6	14		M6	6.6
SQM(D≤30)	SQMU(D≤30)	25		33	58	32	32	19	25	18	20		16			
		30		37	66	40	40		29	21	25	M8	20		M8	9
		35	+0.025 0	40	72	45	45	22	32	24	28					
KQM	KQMU	40	+0.025 0	45	79	50	50	25	34	26	30	M8	20	2	M8	9
		50		60	103	65	65	32	43	33	38	M10	32	3	M10	11

Refer to the price list for available sizes. D=16 is only applicable to Standard Pitch (except clear anodize). DH7 tolerance is measured before slit machining.
Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

■Pitch Configurable

Part Number Type		DH7		P Selection	A	B	C	C1	E	H	S1	M1	S	W	M	d
Standard	Thin	10	+0.015 0	20 30	A=P+E	16	16	9	15	9	8	M4	-	2	M5	5.5
		12	+0.018 0	25 35					16	10			-			
KQL	KQLU	15		30 40		22	22	12	20	12	12	M5	12			
MQL	MQLU	20	+0.021 0	25 40		28	28	16	22	15	16	M6	14		M6	6.6
AQL	SQLU(D≤20)	25		40 50		32	32	19	25	18	20		16			
SQL (D≤30)		30				40	40		29	21	25	M8	20		M8	9
		35	+0.025 0	50 60		45	45	22	32	24	28					
KQL	KQLU	40	+0.025 0	50 60	A=P+E	50	50	25	34	26	30	M8	20	2	M8	9
		50		50 70		65	65	32	43	33	38	M10	32	3	M10	11

Refer to the price list for available sizes. DH7 tolerance is measured before slit machining.
Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

Order Example

Part Number	-	P
MQM12		
KQLU25	-	40

Days to Ship

8 Days | Express A | 5,00 EUR/piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

• KQM · MQM

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

• SQM

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

• Others

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price																
	Pitch Selectable										Pitch Configurable						
	Standard					Thin					Standard				Thin		
	KQM	MQM	AQM	WQM	SQM	KQMU	MQMU	AQMU	WQMU	SQMU	KQL	MQL	AQL	SQL	KQLU	MQLU	SQLU
8																	
10																	
12																	
15																	
16																	
20																	
25																	
30																	
35																	
40																	
50																	

■Included Screws

D	Included Screws (The Thin Type has 1 screw on each side.)
8	M5-12, 1 pc.
10	M5-15, 1 pc.
12	M5-15, 1 pc.
15	M5-20, 2 pcs
16	M5-20, 2 pcs
20	M6-25, 2 pcs
25	M6-30, 2 pcs.
30	M8-35 2pcs.
35	M8-40 2pcs.
40	M8-45, 2 pcs.
50	M10-55, 2 pcs.

Strut Clamps

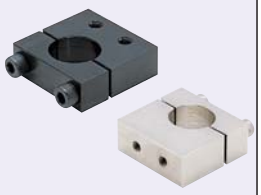
-Vertical Female Thread Separate / Parallel Female Thread Separate-

CAD Data

■Features: Post-assembly mounting onto Posts for Stands in structures.

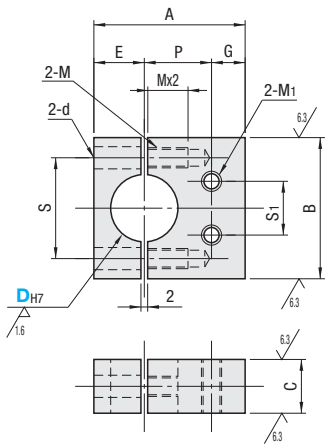
■Vertical Female Thread Separate
Parallel Female Thread Separate

RoHS

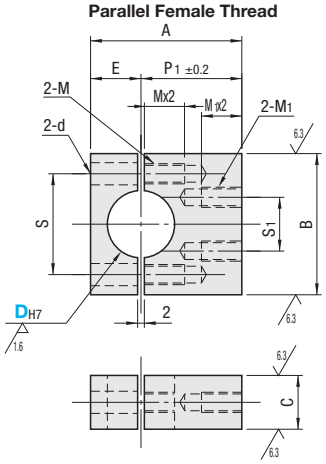


Type		M Material	S Surface Treatment	A Accessory
Vertical Female Thread	Parallel Female Thread			
KRTP	KRPP	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MRTP	MRPP		Electroless Nickel Plating	Hexagon Socket Head Cap Screws (Stainless Steel)
ARTP	ARPP	EN AW-6063/AlMg0,7Si	Black Anodize	Hexagon Socket Head Cap Screws
SRTP	SRPP	1.4301/X5CrNi18-10	-	Hexagon Socket Head Cap Screws (Stainless Steel)

Vertical Female Thread



Parallel Female Thread



Part Number Type		DH7	A	B	C	E	P	P1	G	S	d	M (Coarse)	S1	M1 (Coarse)
Vertical Female Thread	Parallel Female Thread													
KRTP MRTP ARTP SRTP	KRPP MRPP ARPP SRPP													
	10	+0.015 0	24	25	9	8	11	16	5	18	4.5	M4	8	M4
	12	+0.018 0	28	28		10	13	18		20				
	15		37	35	12	12	17	25	8	24	5.5	M5	12	M5
	20	+0.021 0	45	45	16	15	20	30	10	30	6.6	M6	16	M6
	25		51	50	19	18	23	33		35			20	
	30		60	60		23	27	37		44	9	M8	25	M8
	35	+0.025 0	66	65	22	26	30	40		50			28	

DH7 tolerance is measured before slit machining. Bore diameter 35 in not available in ARTP type.

Order Example

Part Number
KRTP15
MRPP20

Days to Ship: 6 Days P.87

Alterations

Part Number	-	(ALW)
ARTP20	-	ALW

13 Days

Alteration	Code	Spec.	Price Adder
Clear Anodize	ALW	Changes the black anodize of ARTP and ARPP to clear anodize. Applicable to ARTP and ARPP. Stainless steel screws are included.	4,00

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

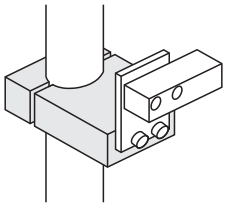
D	€ Unit Price				
	KRTP KRPP	ARTP	ARPP	MRTP MRPP	SRTP SRPP
10					
12					
15					
20					
25					
30					
35					

Bore diameter 35 in not available in ARTP type.

■Included Screws

D	Included Screws	
10	M4-15	2 pcs.
12	M4-18	
15	M5-20	
20	M6-25	
25	M6-30	
30	M8-35	
35	M8-40	

Example



Strut Clamps
-Anti-Rotation Parallel Female Thread-

CAD Data

■Features: Z direction is adjustable while preventing the rotating direction movements such as camera mounting.

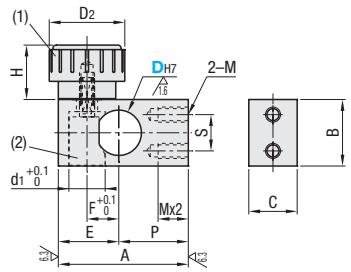
■Anti-Rotation Parallel Female Thread RoHS



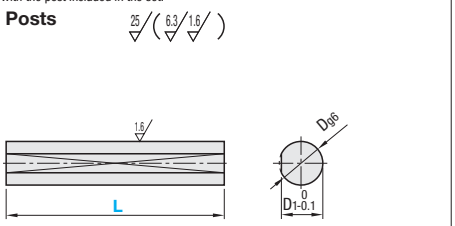
Type		Posts		Strut Clamp	
Set	Strut Clamp only Option	M Material	S Surface Treatment	M Material	S Surface Treatment
KBYKS	KBYK	1.1191/C45E	Electroless Nickel Plating	1.0038/S235JR	Black Oxide
KBYMS	KBYM				Electroless Nickel Plating
KBYSS	KBYS	1.4301/X5CrNi18-10	-	1.4301/X5CrNi18-10	-

(?)A set includes 1pc of clamp and 1pc of post.(?)Use the Strut Clamp on this page with the post included in the set.

Strut Clamps



Posts



No.	Name of Parts	M Material
(1)	Knurled Screws	ABS / Brass (Insert)
(2)	Clamp	CW614N/CuZn39Pb3 (Cadmiumless)

Part Number Type		D	L	D1	A	B	C	S	M	P	E	F	d1	H	D2
Set	Strut Clamp only Option														
KBYKS KBYMS KBYSS	KBYK KBYM KBYS	10	100(D≤20)	9	35	19	12	10	M5	20	15	7.5	10	18	25
		12	150(D≤20)	11	36						16	8.5			
		15	200	14	45	*22(25)	16	12		25	20	10.5	12		
		20	250(12≤D)	19	47	25			M6		22	13			32
		25	300(12≤D)	23.5	55	32		16		30	25	15			

*When D direction of 1.4301/X5CrNi18-10 (= 1.4301/X5CrNi18-10) is 15, B = 25.

Order Example

Part Number	-	L
KBYMS15	-	250
KBYK20		

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P.88

(?)A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (?)Round down to one Cent.) P.87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

(?)For orders larger than indicated quantity, please request a quotation.

■Set

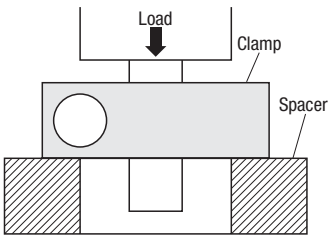
D	€ Unit Price														
	KBYKS					KBYMS					KBYSS				
	L100	L150	L200	L250	L300	L100	L150	L200	L250	L300	L100	L150	L200	L250	L300
10															
12															
15															
20															
25															

■Strut Clamp only Option

D	€ Unit Price		
	KBYK	KBYM	KBYS
10			
12			
15			
20			
25			

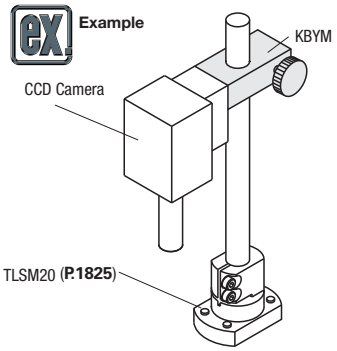
■Reference Data on Retaining ForceMeasured values with D=15 as shown below.
For 1.0038/S235JR=580N
For 1.4301/X5CrNi18-10 = 530N
*The above are test values and not guaranteed.

‹‹Measuring Method for Retention Force››



* Standard Tightening Torque 0.5 series (Nm)
When D10, 12 and 15, =1.5
When D20 and 25, =2.6

Example



Strut Clamps

- Square · Round Perpendicular / Square · Square Perpendicular-

NEW

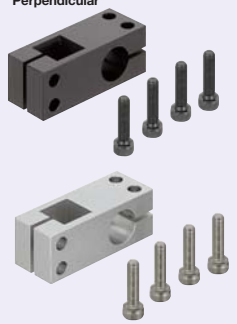
Price Reduction
10% on Average

CAD Data

■Features: Combined with Square Hollows (P.1816) and Brackets for Stands (P.1832),
Strut Clamps can prevent rotation while adjusting height. ☞For hollows and bars used in sets, refer to P.1816

■Square - Round Perpendicular

RoHS



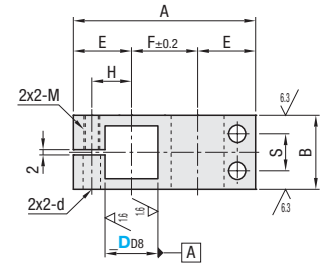
■Square - Square Perpendicular



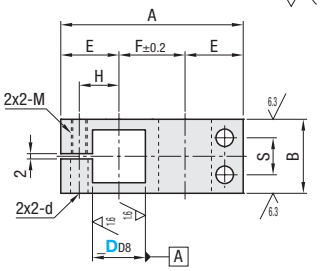
Type		M Material	S Surface Treatment	A Accessory
Square - Round Perpendicular	Square - Square Perpendicular			
BLQD	BLQQD	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws
NLQD	NLQQD		Electroless Nickel Plating	
ALQD	ALQQD	EN AW-6063/ AlMg0,7Si	Black Anodize	
HLQD	HLQQD		Clear Anodize	
SLQD	SLQQD	1.4301/X5CrNi18-10	-	

Accessories: CB screws (P.2-173) and SCB screws (P.2-174) are included with Black Oxide / Black Anodize and the other types.

Square - Round Perpendicular



Square - Square Perpendicular



For D=10 and 12, Dimension S is not available. Screws are tightened at one central position.

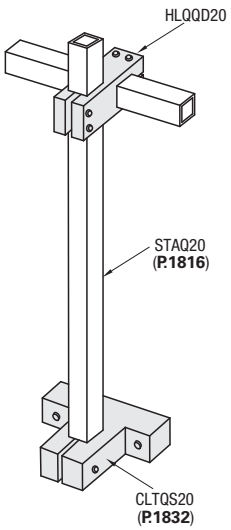
Part Number Type		DD8		D1H7		A	B	C	E	F	H	S	M (Coarse)	d
Square - Round Perpendicular	Square - Square Perpendicular													
BLQD	BLQQD	10	+0.077 +0.050	10	+0.015 0	45	16	16	15	15	9	-	M5	5.5
NLQD	NLQQD	12		12	+0.018 0	49	16	16	16	17	10	-		
ALQD	ALQQD	15		15		57	22	22	18	21	12	11		
HLQD	HLQQD	20	+0.098 +0.065	20	+0.021 0	69	28	28	22	25	15	14	M6	6.6
SLQD	SLQQD	25		25		83	32	32	25	33	18	16		

The tolerance of DD8 and D1H7, and squareness are the tolerances before slitting.
Recommended DD8 tolerance of fitting shafts and D1H7 tolerance of fitting shafts are 0~-0.12 and g6 and g8 respectively. Tightening with a long wrench is recommended.

Order Example

Part Number
ALQD20
SLQQD10

Example



Days to Ship

8 Days

Express A 5,00 EUR/ piece ☞P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

D	€ Unit Price									
	Square - Round Perpendicular					Square - Square Perpendicular				
	1.1191/C45E		EN AW-6063/ AlMg0,7Si		1.4301/ X5CrNi18-10	1.1191/C45E		EN AW-6063/ AlMg0,7Si		1.4301/ X5CrNi18-10
	BLQD	NLQD	ALQD	HLQD	SLQD	BLQQD	NLQQD	ALQQD	HLQQD	SLQQD
10										
12										
15										
20										
25										

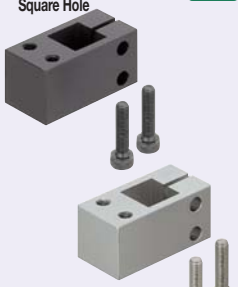
Strut Clamps

-Vertical Female Thread Square Hole / Parallel Female Thread Square Hole-

CAD Data

■Features: Combined with Square Hollows (P.1816) and Brackets for Stands (P.1832),
Strut Clamps can prevent rotation while adjusting height. For hollows and bars used in sets, refer to P.**1816**

■Vertical Tap Connector with Square Hole RoHS



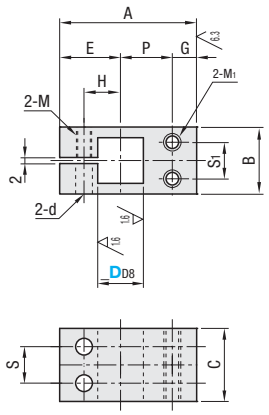
■Parallel Tap Connector with Square Hole



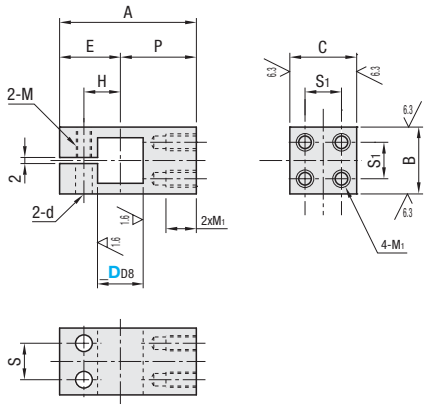
Type		M Material	S Surface Treatment	A Accessory
Vertical Female Thread	Parallel Female Thread			
BMNQ	BQMQ	1.1191/C45E	Black Oxide	Hexagon Socket Head Cap Screws
NMNQ	NQMQ		Electroless Nickel Plating	
AMNQ	AQMQ	EN AW-6063/ AlMg0,7Si	Black Anodize	
WMNQ	WQMQ		Clear Anodize	
SMNQ	SQMQ	1.4301/X5CrNi18-10	-	

Accessories: CB screws (P.**2**-**173**) and SCB screws (P.**2**-**174**) are included with Black Oxide / Black Anodize and the other types.

Vertical Tap Connector with Square Hole



Parallel Tap Connector with Square Hole



For D=10 and 12, Dimension S is not available. Screws are tightened at one central position.

■Vertical Tap Connector with Square Hole

Part Number Type	DD8	P	A	B	C	E	G	H	S1	M1	S	M	d	€ Unit Price AMNQ	BMNQ	NMNQ	WMNQ	SMNQ
BMNQ NMNQ AMNQ WMNQ SMNQ	10	+0.077 +0.050	11	31	16	16	15	5	9	8	M4	-	M5	5.5					
	12		13	34	16	16	16	5	10	8									
	15		17	45	22	22	20	8	12	12	M5	12							
	20	+0.098 +0.065	20	52	28	28	22	10	15	16	M6	14	M6	6.6					
	25		23	58	32	32	25	10	18	20		16							

Tolerance of DD8 is the tolerance before slitting.
Recommended DD8 tolerance of mating shafts is 0~-0.12. Tightening with a long wrench is recommended.

■Parallel Tap Connector with Square Hole

Part Number Type	DD8	P	A	B	C	E	H	S1	M1	S	M	d	€ Unit Price AQMQ	WQMQ	BQMQ	NQMQ	SQMQ
BQMQ NQMQ AQMQ WQMQ SQMQ	10	+0.077 +0.050	16	31	16	16	15	9	8	M4	-	M5	5.5						
	12		18	34	16	16	16	10	8										
	15		25	45	22	22	20	12	12	M5	12								
	20	+0.098 +0.065	30	52	28	28	22	15	16	M6	14	M6	6.6						
	25		33	58	32	32	25	18	20		16								

Tolerance of DD8 is the tolerance before slitting.
Recommended DD8 tolerance of mating shafts is 0~-0.12. Tightening with a long wrench is recommended.

Order Example

Part Number
AMNQ15
SQMQ20

Days to Ship

8 Days | Express A | 5,00 EUR/ piece | P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

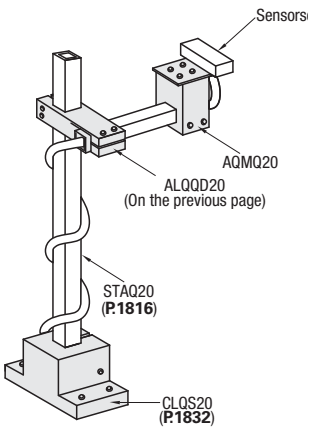
Price

■Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



Strut Clamps

–Slotted Hole / L-Shaped–

CAD Data

■Slotted Hole

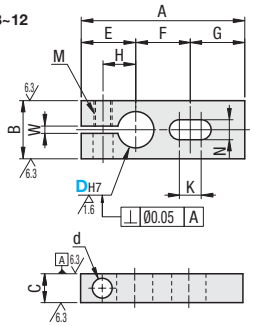
RoHS



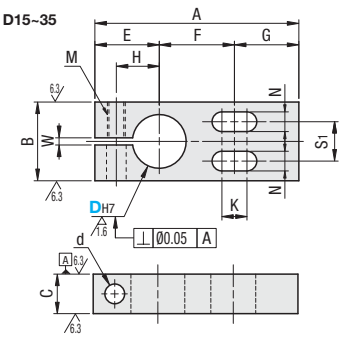
Type	Material	Surface Treatment	Accessory
KMCU	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MMCU	1.0038/S235JR	Electroless Nickel Plating	
AMCU	EN AW-6063/AlMg0,7Si	Black Anodize	
SMCU	1.4301/X5CrNi18-10	-	

6.3/(6.3/1.6/)

D8~12



D15~35



Part Number Type	DH7	A	B	C	E	F	G	H	K	M	N	S1	d	W	€ Unit Price KMCU	€ Unit Price AMCU	Included Screws	€ Unit Price MMCU	€ Unit Price SMCU	Included Screws
KMCU MMCU AMCU SMCU	8 +0.015 0	42	12	8	14	14	14	8	8.5	M5	5.5	-	5.5	2			CB5–10, 1pc.			SCB5–10, 1pc.
	10	45	16	9	15	15	15	9	9.5			-					CB5–15, 1pc.			SCB5–15, 1pc.
	12 +0.018 0	49	16	9	16	17	16	10	10.5			-					CB5–15, 1pc.			SCB5–15, 1pc.
	15	57	22	12	18	21	18	12	12.5			11					CB5–20, 1pc.			SCB5–20, 1pc.
	20	69	28	16	22	25	22	15	15.5	M6	6.5	14	6.6				CB6–25, 1pc.			SCB6–25, 1pc.
	25 +0.021 0	83	32	19	25	33	25	18	18.5			16					CB6–30, 1pc.			SCB6–30, 1pc.
	30	95	40	19	29	37	29	21	20	M8	9	20	9				CB8–35, 1pc.			SCB8–35, 1pc.
	35 +0.025 0	104	45	22	32	40	32	24	23			22					CB8–40, 1pc.			SCB8–40, 1pc.

DH7 tolerance is measured before slit machining. Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for tightening.

■L-Shaped

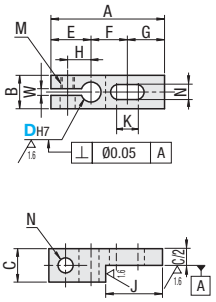
RoHS



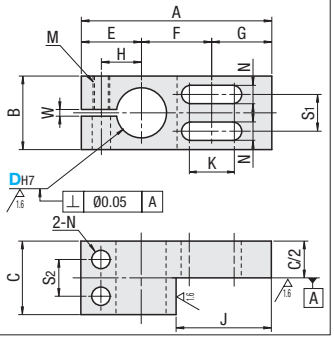
Type	Material	Surface Treatment	Accessory
KLQK	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MLQM		Electroless Nickel Plating	
ALQA	EN AW-6063/AlMg0,7Si	Black Anodize	
SLQS	1.4301/X5CrNi18-10	-	

6.3/(1.6/)

D10~12



D15~30



■Included Screws

D	KLQK ALQA	MLQM SLQS
10	CB5–25, 1pc.	SCB5–25, 1pc.
12	CB5–30, 1pc.	SCB5–30, 1pc.
15	CB5–35, 2pcs.	SCB5–35, 2pcs.
20	CB6–35, 2pcs.	SCB6–35, 2pcs.
25	CB6–35, 2pcs.	SCB6–35, 2pcs.
30	CB8–40, 2pcs.	SCB8–40, 2pcs.

Part Number Type	DH7	A	B	C	E	F	G	H	J	K	M	N	S1	S2	W	€ Unit Price KLQK	€ Unit Price MLQM	€ Unit Price ALQA	€ Unit Price SLQS
KLQK MLQM ALQA SLQS	10 +0.015 0	45	16	16	15	15	15	9	22.5	9.5			-	-					
	12 +0.018 0	49			16	17	16	10	24.5	10.5	M5	5.5	-	-					
	15	57	22	22	18	21	18	12	28.5	12.5			11	11					
	20 +0.021 0	69	28	28	22	25	22	15	34.5	15.5	M6	6.5	14	14	2				
	25	83	32	32	25	33	25	18	41.5	18.5			16	16					
	30 +0.021 0	95	40	40	29	37	29	21	47.5	20	M8	9	20	20					

The tolerance and perpendicularity of DH7 is before slitting.
Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for fastening.

Order Example

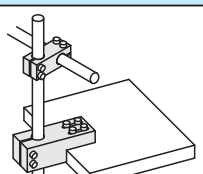
Part Number
MMCU15
KLQK15

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Example



Press and fix the L-shaped portion.

Price

■Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Strut Clamps / Bar Clamps

–Arm–

CAD Data

■Features: Combined with Strut Clamps, mounted posts can be adjusted in a circumferential direction.

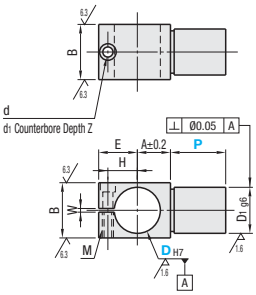
■Strut Clamps

RoHS

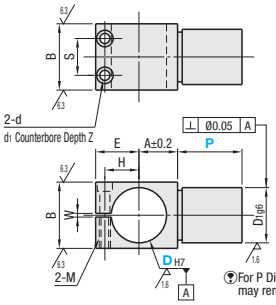


Type	M Material	S Surface Treatment	A Accessory
KLKA	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
MKA		Electroless Nickel Plating	
ALKA	EN AW-6063/AlMg0,7Si	Black Anodize	
SLKA	1.4301/X5CrNi18-10	-	

D8~25



D30 / 35



For P Dimension 50 or more, a centering hole may remain at the end of D1.

Part Number Type	DH7	P Selection	D1g6	A	B	E	H	M	d	d1	Z	S	W	Included Screws	€ Unit Price KLKA	MKA	ALKA	SLKA
KLKA MKA ALKA SLKA(D≤30)	8 +0.015 0	12 30 50	8 -0.005	7	12	10.5	7	M3	3.5	6	3			CB3-8, 1 pc.				
	10		10 -0.014	9	13	13	9							CB4-8, 1 pc.				
	12 +0.018 0	13 30 50	12 -0.006	11	15	14.5	10	M4	4.5	7.5	4	-	2	CB4-10, 1 pc.				
	15	19 30 50	15 -0.017	12	19	15	10.5							CB4-15, 1 pc.				
	20	25 50 70	20 -0.007 -0.020	15	25	17.5	13							CB4-25, 1 pc.				
	25 +0.021 0	30 50 70	25	18	30	21	16							CB5-30, 1 pc.				
	30	35 50 70	30	21	36	23.5	18.5	M5	5.5	9	5	20		CB5-35, 2 pcs.				
	35 +0.025 0	40 70 90	35 -0.009 -0.025	24	40	26.5	21					24		CB5-40, 2 pcs.				

D Dimension for SLKA is available up to 30. DH7 tolerance is measured before slit machining.
Recommended tolerances of mating shafts are g6, f8. Use of a long wrench is recommended for tightening.

Order Example: Part Number MKA10 - P 30

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

- KLKA / MKA

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

- SLKA

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders of 80 or more, please request a quotation for Days to Ship and Price.

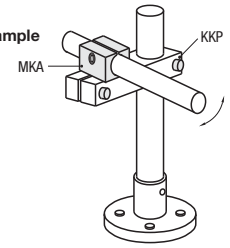
- ALKA

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~12	13~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Example



■Features: Bar Clamps can be used as a guide handle in combination with Strut Clamps.

■Bar Clamps

RoHS

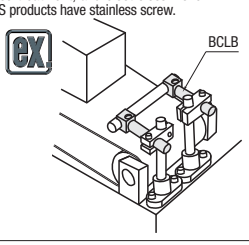


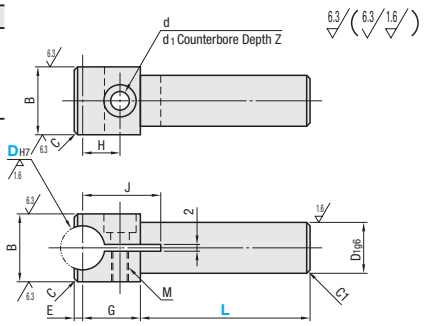
Type	M Material	S Surface Treatment	A Accessory
BCLB	1.0038/S235JR	Black Oxide	Hexagon Socket Head Cap Screws
BCLM		Electroless Nickel Plating	
BCLA	EN AW-6063/AlMg0,7Si	Black Anodize	
BCLS	1.4301/X5CrNi18-10	-	

* Included screw: Black oxide and black anodize products have screw of same surface treatment, and electroless nickel plating and SUS products have stainless screw.

■Included Screws

D	Screw Size
6	M3-8
8	M4-8
10	M5-10
12	M5-10
13	M5-15
15	M6-15
16	M6-15
20	M6-20





For L Dimension 50 or more, a centering hole may remain at the end of D1.

Part Number Type	DH7	L Selection	B	D1g6	G	E	C	H	M	d	d1	Z	J	€ Unit Price BCLB	BCLM	BCLA	BCLS
BCLB BCLM BCLA BCLS	6 +0.012 0	25 40	12	8 -0.005 -0.014	14	1	1	8	M3	3.4	6.5	3.5	17				
	8 +0.015 0		14	10	15	1.5		9	M4	4.5	8	4.5	19				
	10	30 50	16	12	16	2		10	M5	5.5	9.5	5.5	22				
	12		18	12 -0.006 -0.017	17	2.5		11					24				
	13 +0.018 0		20	15	17	2.5		11					27				
	15	50 70	23	16	19	2.5		12					31				
	16		25	20 -0.007 -0.020	20	3	2	13	M6	6.6	11	6.5	34				
	20 +0.021 0		30		21			14					35				

DH7 tolerance is measured before slit machining.

Order Example: Part Number BCLB16 - L 70

Days to Ship: 8 Days

Express A 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Flexible Clamp · Holder Hollow

CAD Data

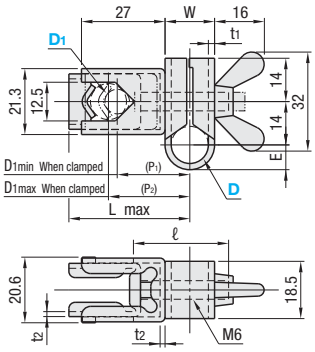
■Features: A circular post and a hexagonal post can be clamped together.



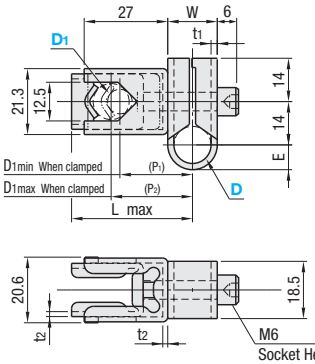
RoHS

Type			M Material	S Surface Treatment
Wing Nut	Hexagon Socket Head Cap Screws	High Torque		
FLEC	FLEB	FLHC	1.0320/St.22	Electroless Nickel Plating
FLES	FLEBS	-	1.4301/ X5CrNi18-10	-

Wing Nut

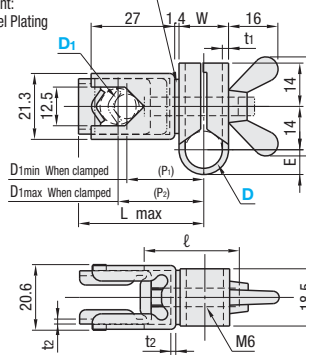


Hexagon Socket Head Cap Screws



High Torque

Toothed Washer
Material: W1-8 Tool Steel
Surface Treatment:
Electroless Nickel Plating



Part Number Type	D	D1 Nominal	D1 Clamping Range	W	E	P1 (min.)	P2 (max.)	Lmax	ℓ	t1	t2 1.0320/St.22	t2 1.4301·X5CrNi18-10	€ Unit Price FLEC	FLES	FLEB	FLEBS	FLHC
Wing Nut Hexagon Socket Head Cap Screws FLEC FLES FLEB FLEBS	12	8	Ø8~12	16	8	(23.5)	(26.3)	39.1	30	2	1.6	1.5					
	15			19	9.5	(25.0)	(27.8)	40.6	35								
High Torque FLHC	12	8	Ø8~12	16	8	(24.9)	(27.7)	40.5	30								
	15			19	9.5	(26.4)	(29.2)	42	35								

Do not tighten the wing nut and cap screw unless shaft is set in D part. Excessive tightening may cause deformation.
Recommended diameter tolerances of mating posts: ±0.05 for Wing Nuts; +0.05 for Hexagon Socket Head Cap Screws.

Order Example

Part Number	-	D1
FLEC12	-	8

Days to Ship

• Wing Nut · Wing Nut High Torque
6 Days P. 88

• Hexagon Socket Head Cap Screws
8 Days

Express A | 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

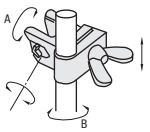
■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

■Features

1. Two axes can be clamped by tightening one wing nut.
2. Flexible clamping is possible as shown in the right figure.



‹Reference› Moment Capacity Data

Data	Sample Tightening Conditions	Standard 1.0320-St.22 FLEC12-8 FLEB	Standard 1.0320-St.22 FLEC15-8 FLEB	Standard JIS SUS FLES12-8 FLEBS	Standard JIS SUS FLES15-8 FLEBS	High Torque 1.0320-St.22 FLHC12-8	High Torque 1.0320-St.22 FLHC15-8
A (Ncm)	1	102.9	235.2	132.3	161.7	232.3	313.1
	2	220.5	470.4	249.9	294.0	429.2	502.7
B (Ncm)	1	205.8	1176	176.4	1176	285.2	1176
	2	294.0	or More	367.5	or More	352.8	or More

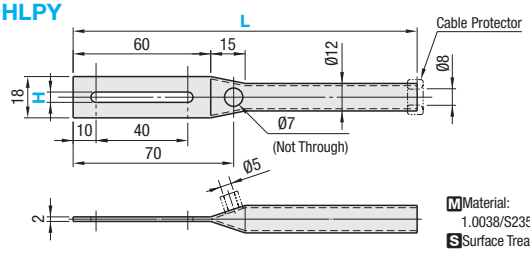
The above data is an example of actually measured values, not guaranteed.
A , B correspond with A and B in the above figure.
The data shows the results of tightening with Hexagonal Nuts instead of Wing Nuts.
The posts are 1.1191/1/C45E Tightening Condition 1: Tightening Torque 100Ncm
Tightening Condition 2: Tightening Torque 200Ncm

■Holder Hollows

RoHS



HLPY



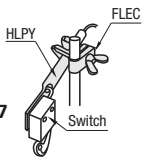
A cable protector is included.

M Material: 1.0038/S235JR
S Surface Treatment: Electroless Nickel Plating

Part Number Type	H	L		€ Unit Price L150	L250
HLPY	4.5	150	250		
	5.5				

Order Example

Part Number	-	L
HLPY4.5	-	150



Days to Ship

6 Days P. 87

Price

■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Flexible Clamps
-Compact-

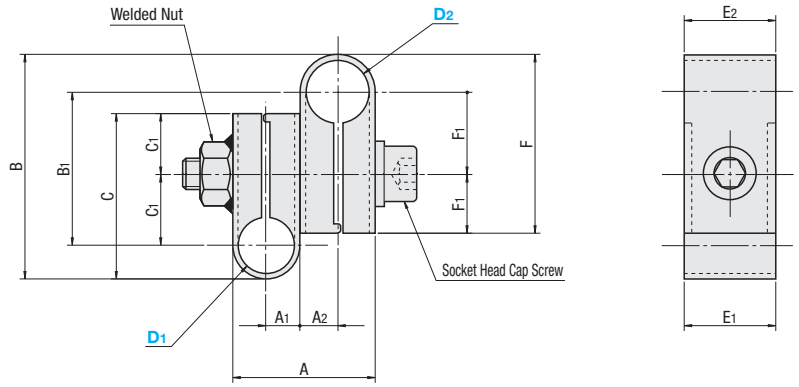
CAD Data

■Features: Easy mounting with one screw. Suitable for mounting a light work piece.

RoHS



Type	Material	Surface Treatment
FLYC	1.0320/St.22	Black Oxide
FLYM	1.0320/St.22	Electroless Nickel Plating
FLYS	1.4301/X5CrNi18-10	-



Part Number Type	D1	D2 d	A	A1	A2	B	B1	C	C1	E1	E2	F	F1	Welded Nut	Hexagon Socket Head Cap Screws
FLYC FLYM FLYS	8	8	22.4	5.6	5.6	40.6	29.4	35	14.7	13	13	35	14.7	M6	M6x30
		10	24.4	5.6	6.6	41.1	28.9	35	14.7	13	15	35	14.2		M6x35
	10	10	26.4	6.6	6.6	41.6	28.4	35	14.2	15	15	35	14.2		M6x40
		12	29.2	6.6	8	42.8	28.2	35	14.2	15	18	36	14		M6x40
	12	12	32	8	8	44	28	36	14	18	18	36	14		M6x40
		15	35	8	9.5	45.3	27.7	36	14	18	18	37	13.7		M6x45
	15	15	38	9.5	9.5	46.6	27.4	37	13.7	18	18	37	13.7		M6x45
		20	43.6	9.5	12.3	57	35	37	13.7	18	23	55	21.3		M6x55
	20	20	49.2	12.3	12.3	67.4	42.6	55	21.3	23	23	55	21.3	M8	M8x65
		25	54.2	12.3	14.8	72.6	45.4	55	21.3	23	25	63	24.1		M8x70
	25	25	59.2	14.8	14.8	77.8	48.2	63	24.1	25	25	63	24.1		M8x75

(P)Recommended diameter tolerance of mating post is +0.1~−0.3.

Order Example

Part Number	-	D2
FLYC10	-	12

Days to Ship: 6 Days P. 87

Price

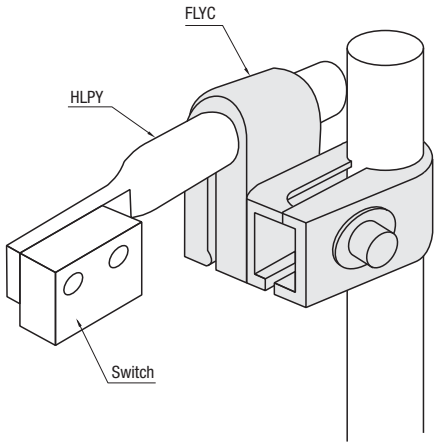
■Volume Discount ((P)Round down to one Cent.) P. 87

Quantity	1~9	10~14	15~19	20~29
Rate	€ Unit Price	5%	10%	18%

(P)For orders larger than indicated quantity, please request a quotation.

D1	D2	€ Unit Price FLYC	FLYM	FLYS
8	8			
	10			
10	10			
	12			
12	12			
	15			
15	15			
	20			
20	20			
	25			
25	25			

Example



Hollow Stands
-Set Screw Type-

CAD Data

Set Screw Type

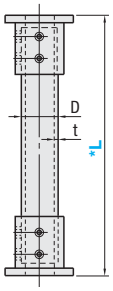
RoHS



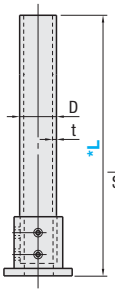
Type							Material		Surface Treatment	Accessory
Round Flanged			Compact Flange			Hollows Non-set Option	Hollows	Brackets		
Set		Brackets	Set		Brackets					
Brackets 2 Pcs.	Bracket 1 Pc.	Non-set Option	Brackets 2 Pcs.	Bracket 1 Pc.	Non-set Option					
PSEW	PSE	PSEF	WPSEW	WPSE	WPSEF	PPEW	1.0480/H240LA	1.0038/S235JR	Trivalent Chromate Plating	Set Screw
PSEWM	PSEM	PSEFM	WPSEWM	WPSEM	WPSEFM	PPEWM	1.0480/H240LA	1.0038/S235JR	Electroless Nickel Plating	
PSEWK	PSEK	-	WPSEWK	WPSEK	-	-	1.0480/H240LA	1.0038/S235JR	Black Oxide	
PSEWS	PSES	PSEFS	-	-	-	PPEWS	1.4301/X5CrNi18-10	1.4301/X5CrNi18-10	-	

√(25) √(6.3)

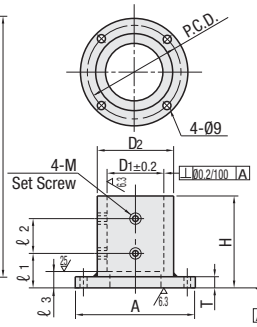
- Set
Brackets 2 Pcs.



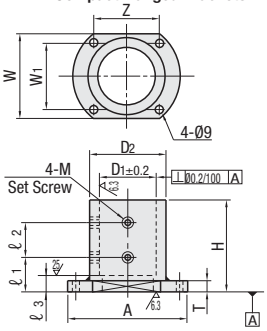
Bracket 1 Pc.



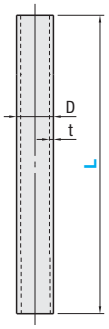
- Bracket Only
Round Flanged Brackets



Compact Flanged Brackets



Hollow only



*This product is offered as a set.
L dimension tolerance is approx. ±2mm.
Consider ℓ3 Dimension when ordering only pipe for combined use with existing Hollow Stand Bracket.

Part Number Type	Nominal	D		L 1mm Increment	t	D1	D2	A	P.C.D.	T	H	ℓ1	ℓ2	M (Coarse)	ℓ3	W	Z	W1
(Set) (Bracket only) Bracket 1 Pc. / Brackets 2 Pcs.	30	30	±0.40	200~800	4.0	30.5	42.7	90	70	10	50	25	15	M6	15	56	56	34
Trivalent Chromate Plating / Electroless Nickel Plating / Black Oxide: PSE / PSEM / PSEK — PSEW / PSEWM / PSEWK — PSEF / PSEFM	40	40		200~800		40.5	54.0	100	80		60		25			64	62	44
	50	50.8	±0.41	200~1000		51.5	65.0	110	90		75	30	30			74	74	50
Trivalent Chromate Plating / Electroless Nickel Plating / Black Oxideg: WPSE / WPSEM / WPSEK — WPSEW / WPSEWM / WPSEWK — WPSEF / WPSEFM	60	60.5	±0.49	200~1000		61.0	76.3	120	100		90	35	40			90	76	70
	70	70	±0.56	300~1000	6.0	70.5	89.1	130	110	12	105	40	45	M8	20	100	80	80
(Hollow only) Trivalent Chromate Plating / Electroless Nickel Plating: PPEW / PPEWM	80	82.6	±0.66	300~1000		83.5	101.6	140	120		120		60			110	86	90
	100	101.6	±0.80	350~1000		102.6	120.0	160	140		150		90			130	94	110
(Set) (Bracket only) Stainless Steel — Bracket 1 Pc. / Brackets 2 Pcs.: PSES / PSEWS / PSEFS	30	32	±0.32	200~800	3.0	32.5	42.7	90	70	10	50	25	15	M6	15	-	-	-
	40	42.7	±0.43	200~800		43.0	50.8	100	80		60		25					
	50	50.8	±0.51	200~1000		51.5	60.5	110	90		75	30	30					
	60	60.5	±0.61	200~1000		61.0	76.3	120	100		90	35	40					
(Hollow only) PPEWS	70	76.3	±0.77	300~1000		77.0	89.1	130	110	12	105	40	45	M8	20			
	80	89.1	±0.90	300~1000		90.0	101.6	140	120		120		60					
	100	101.6	±1.02	350~1000		102.5	114.3	160	140		150		90					

Order Example
Part Number: PSEW50 - L: 600
PSEF100

Days to Ship
8 Days P.88
Express A: 8,00 EUR/piece
A Express Charge of 21,60 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Bracket Only

Nominal	€ Unit Price				
	Round Flanged			Compact Flange	
	Trivalent Chromate Plating	Electroless Nickel Plating	Stainless Steel	Trivalent Chromate Plating	Electroless Nickel Plating
	PSEF	PSEFM	PSEFS	WPSEF	WPSEFM
30					
40					
50					
60					
70					
80					
100					

Set

Nominal	L	€ Unit Price													
		Round Flanged								Compact Flange					
		Trivalent Chromate Plating		Electroless Nickel Plating		Black Oxide		Stainless Steel		Trivalent Chromate Plating		Electroless Nickel Plating		Black Oxide	
		Brackets 2 Pcs.	Bracket 1 Pc.	Brackets 2 Pcs.	Bracket 1 Pc.	Brackets 2 Pcs.	Bracket 1 Pc.	Brackets 2 Pcs.	Bracket 1 Pc.	Brackets 2 Pcs.	Bracket 1 Pc.	Brackets 2 Pcs.	Bracket 1 Pc.	Brackets 2 Pcs.	Bracket 1 Pc.
		PSEW	PSE	PSEWM	PSEM	PSEWK	PSEK	PSEWS	PSES	WPSEW	WPSE	WPSEWM	WPSEM	WPSEWK	WPSEK
30	200~400														
	401~600														
	601~800														
40	200~400														
	401~600														
	601~800														
50	200~400														
	401~600														
	601~800														
	801~1000														
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80	300~400														
	401~600														
	601~800														
	801~1000														
100	350~400														
	401~600														
	601~800														
	801~1000														

Hollow only

Nominal	L	€ Unit Price		
		Trivalent Chromate	Electroless Nickel Plating	Stainless Steel
		PPEW	PPEWM	PPEWS
30	200~ 400			
	401~ 600			
	601~ 800			
40	200~ 400			
	401~ 600			
	601~ 800			
50	200~ 400			
	401~ 600			
	601~ 800			
	801~1000			
60	200~ 400			
	401~ 600			
	601~ 800			
	801~1000			
70	300~ 400			
	401~ 600			
	601~ 800			
	801~1000			
80	300~ 400			
	401~ 600			
	601~ 800			
	801~1000			
100	350~ 400			
	401~ 600			
	601~ 800			
	801~1000			

Hollow Stands
-Welded Type-

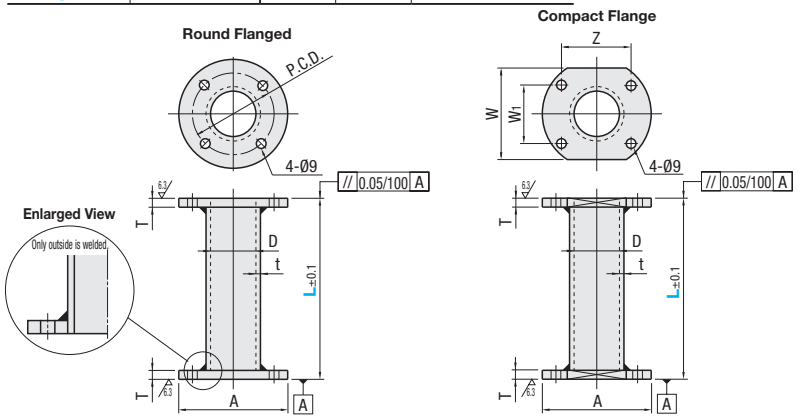
CAD Data

■Features: Hollow Stands with accurate heights that can also be used as a spacer.

■Welded Type RoHS



Type		M Material		S Surface Treatment
Round Flanged	Compact Flange	Hollows	Brackets	
PSYM	WPSYM	1.0480/ H240LA	1.0038/ S235JR	Electroless Nickel Plating
PSYK	-			Black Oxide



Part Number Type	Nominal	L 1mm Increment	D		t	A	P.C.D.	T	W	Z	W1
Round Flanged PSYM PSYK	30	50~300	30	±0.40	4.0	90	70	10	56	56	34
	40		40			100	80		64	62	44
	50		50.8	±0.41		110	90		74	74	50
Compact Flange WPSYM	60		60.5	±0.49	6.0	120	100	12	90	76	70
	70		70	±0.56		130	110		100	80	80

Order Example

Part Number	-	L
PSYM40	-	300

Days to Ship: 10 Days

Express B: 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

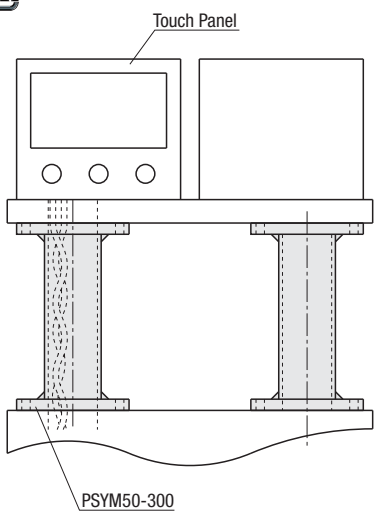
■Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Nominal	L	€ Unit Price		
		Round Flanged		Compact Flange
		Electroless Nickel Plating	Black Oxide	Electroless Nickel Plating
		PSYM	PSYK	WPSYM
30	50~150			
	151~300			
40	50~150			
	151~300			
50	50~150			
	151~300			
60	50~150			
	151~300			
70	50~150			
	151~300			

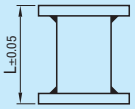
Example



Alterations

Part Number	-	L	-	(LKC)
PSYM40	-	300	-	LKC

10 Days

Alteration	Code	Spec.	Price Adder
	LKC	Changes the tolerance of Dimension L to L±0.05. Ordering Code LKC	10,00

NEW

Hollow Stands

-Male Thread Hollows / Male Thread Hollows Welded-

Features: Can be used with Rotary Connectors on **P.1861**. Select Welded Type for mounting touch panels or boxes.

Hollow Thread



Male Thread Hollows Welded



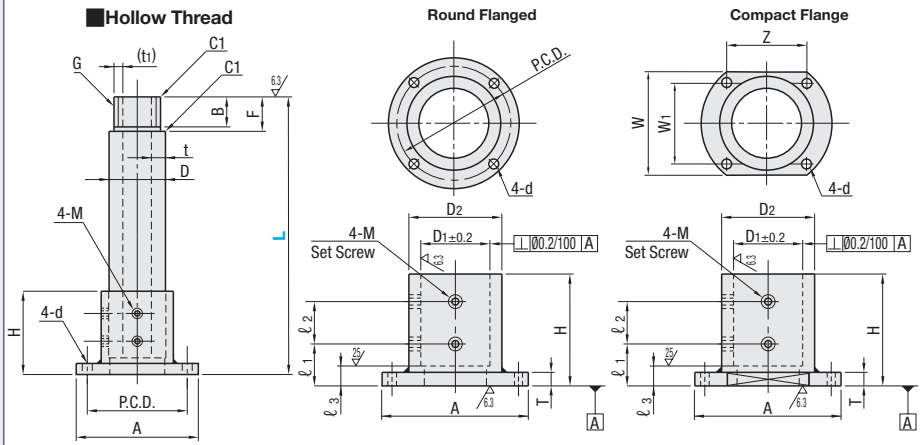
RoHS

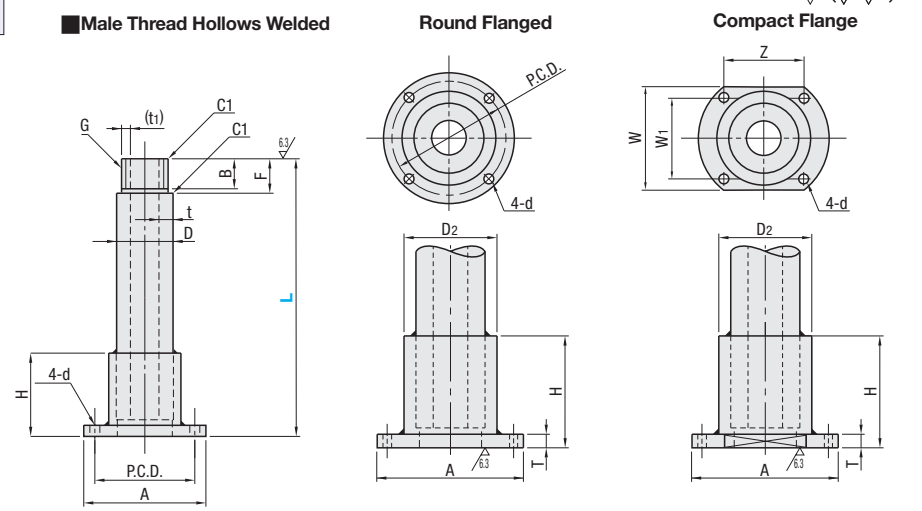
Hollow Thread

Type		Material	Surface Treatment	Portion
Round Flanged	Compact Flange			
PSEG	WPSEG	1.0480/H240LA	Electroless Nickel Plating	Hollows
		1.0038/S235JR		Brackets
PSEGK	WPSEGK	1.0480/H240LA	Black Oxide	Hollows
		1.0038/S235JR		Brackets
PSEGS	-	1.4301/X5CrNi18-10	-	Hollows
		1.4301/X5CrNi18-10		Brackets

Male Thread Hollows Welded

Type		Material	Surface Treatment	Portion
Round Flanged	Compact Flange			
PSYG	WPSYG	1.0480/H240LA	Electroless Nickel Plating	Hollows
		1.0038/S235JR		Brackets





Part Number		G (PF)		L 1mm Increment	F	B	D		D1	D2	t	(t1)	A	P.C.D.	H	d	M	T	H	ℓ1	ℓ2	ℓ3	W	Z	W1
Type	Nominal	Nominal of Thread	Thread Outer Dia.																						
Round Flanged PSEG / PSEGK / PSEGS	28	G1	33.25	200~800	26	23	40	±0.4	40.5	54	7	3.6	100	80	60	9	M6	10	60	25	25	15	64	62	44
Welded Round Flanged PSYG	36	G1 1/4	41.91	200~1000	29	26	50.8	±0.41	51.5	65	8	3.6	110	90	75				75	30	30		74	74	50
	42	G1 1/2	47.80						51.5	65	5	3.5													
	54	G2	59.61		30	27	60.5	±0.49	61	76.3	4	3.6	120	100	90				90	35	40		90	76	70
Compact Flange WPSEG / WPSEGK	70	G2 1/2	75.18	300~1000	35	32	76.3	±0.56	77	89.1	5.5	4.9	130	110	105		M8	12	105	40	45	20	100	80	80
Welded Compact Flange WPSYG	82	G3	87.88		40	37	89.1	±0.9	90	101.6	7	6.3	140	120	120				120		60		110	86	90
	92	G3 1/2	100.33				101.6	±1.02	102	120	6	5.3	160	140	150				150		90		130	94	110

Parallel hollow thread is B class of JIS B 0202.
PSEGS is available for nominal 42 and 54 only.
For Rotary Connectors, see **P.1861 · 1862**
Only for PSEGS54, t dimension is 4.9, and (t1) dimension is 4.4.

Order Example

Part Number	-	L
PSEG42	-	600
WPSYG54	-	300

Days to Ship

- Male Thread Hollows: **8 Days**
  - Express A: 8,00 EUR/piece — P. 88
  - A Express Charge of 21,60 EUR for 3 or more identical pieces.
- Male Thread Hollows Welded: **10 Days**
  - Express B: 5,00 EUR/piece — P. 88
  - A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

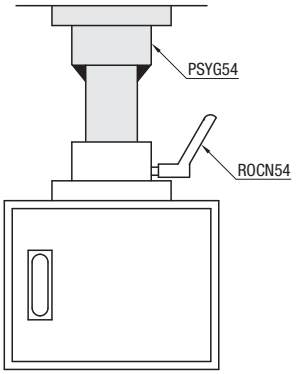
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~4	5~9	10~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

Nominal	L Dimension	€ Unit Price						
		Male Thread Hollows					Male Thread Hollows Welded	
		Round Flanged			Compact Flange		Round Flanged	Compact Flange
		Electroless Nickel Plating	Black Oxide	1.4301/X5CrNi18-10	Electroless Nickel Plating	Black Oxide	Electroless Nickel Plating	Electroless Nickel Plating
		PSEG	PSEGK	PSEGS	WPSEG	WPSEGK	PSYG	WPSYG
28	Min.L~ 400							
	L401~ 600							
	L601~ 800							
36	Min. L ~ 400							
	L401~ 600							
	L601~ 800							
	L801~1000							
42	Min. L ~ 400							
	L401~ 600							
	L601~ 800							
	L801~1000							
54	Min. L ~ 400							
	L401~ 600							
	L601~ 800							
	L801~1000							
70	Min. L ~ 400							
	L401~ 600							
	L601~ 800							
	L801~1000							
82	Min. L ~ 400							
	L401~ 600							
	L601~ 800							
	L801~1000							
92	Min. L ~ 400							
	L401~ 600							
	L601~ 800							
	L801~1000							

Example



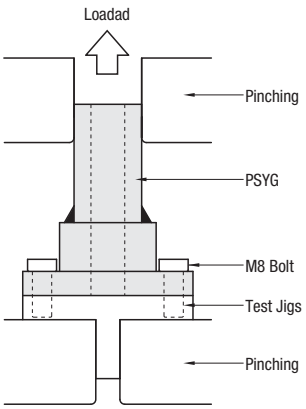
Use "Male Thread Hollows Welded" for mounting this product upside down.

«Reference data on Tensile Load»

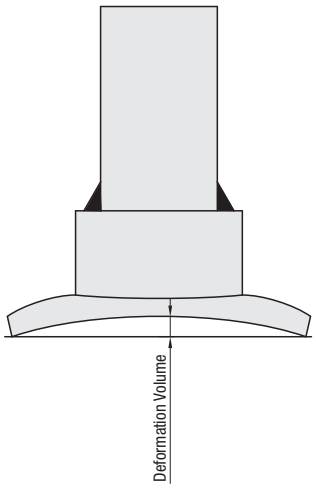
The result of fracture test by the following measuring method (N=3)

Nominal	Fracture Location	Fracture Load (kN)		Deformation Amount (mm)	
		Maximum	Min.	Maximum	Min.
28	All at M8 screws	186.016	181.891	0.907	0.666
54	All at M8 screws	176.484	172.094	0.024	0.011

«Measuring Method of Tensile Load»



«Deformation Amount»



Deformation amount is the value from the flange sample's center area.

Rotary Connectors
-Round Flange · Compact Flange-

Price Reduction
Up to 7%

CAD Data

Features: Touch panels and boxes can be freely rotated.

Round Flanged RoHS

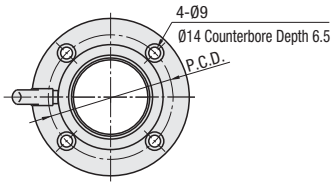


Compact Flange RoHS

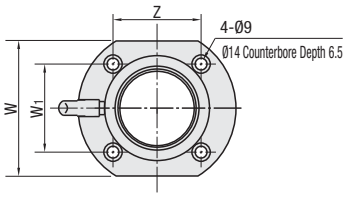


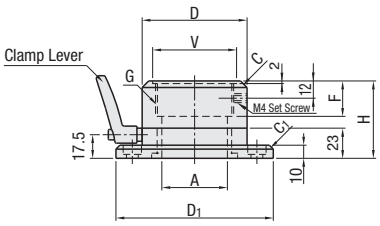
Type		M Material	S Surface Treatment	A Accessory		
Round Flanged	Compact Flange			Clamp Lever	Screws	Nut
ROCN	WROCN	1.0038/S235JR	Electroless Nickel Plating	CLMD	CB8-20x4	LBNR8x4
ROCK	WROCK	1.0038/S235JR	Black Oxide	CLMD	CB8-20x4	LBNR8x4
ROCSH	WROCS	1.4301/X5CrNi18-10	-	CLMS	SCB8-20x4	SLBNR8x4

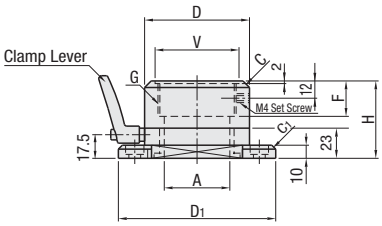
Round Flanged



Compact Flange







Structure with inner stopper prevents 360° rotation.

Part Number Type	Part Number Nominal	A	D	D1	G (PF)	F	H	C	V	P.C.D.	C1	W	W1	Z	Applicable Hollows	*Reference Values X1 (N)	*Reference Values X2 (N)
Round Flanged	28	20	50	85	G1	23	55	3	35	65	1.5	52	34	56	G28	16.4	23.5
ROCN	36	28	60	95	G1 1/4	26	58		45	75		62	44	62	G36	17.2	24.8
ROCK	42	33	65	100	G1 1/2			5	50	80		67	49	64	G42	18.4	30.3
ROCSH	54	48	80	120	G2	27	59		64	95	3	82	64	72	G54	19.6	32.3
Compact Flange	70	62	96	138	G2 1/2	32	63		78	112		98	76	82	G70	20.8	33.4
WROCN	82	72	106	148	G3	37	68		90	122		108	86	88	G80	22	34.1
WROCK	92	85	118	160	G3 1/2				103	134		120	94	96	G92	23.2	36.7
WROCS																	

Applicable hollows are based on JIS C 8305 Rigid steel conduits. * Reference values are not guaranteed.

Order Example Part Number: ROCN42

Days to Ship 6 Days P. 87

Price

Volume Discount (Round down to one Cent.) P. 87

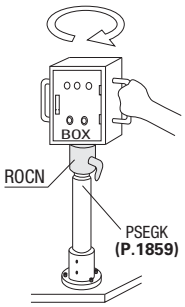
Quantity	1~9	10~12	13~14	15~19
Rate	€ Unit Price	5%	10%	18%

For orders larger than indicated quantity, please request a quotation.

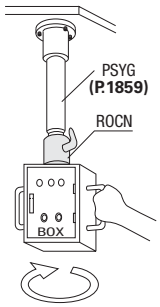
Nominal	€ Unit Price					
	Round Flanged			Compact Flange		
	ROCN	ROCK	ROCSH	WROCN	WROCK	WROCS
28						
36						
42						
54						
70						
82						
92						

Example

Application Example 1



Example 2



* Assume BOX load is 50kg.
- As shown in Example 1, X1(N) is the force needed to turn the handle.
- As shown in Example 2, X2(N) is the force needed to turn the handle.

Rotary Connectors

- Moment Load Allowable - Single Flanged · Double Flanged-

CAD Data

Features: Built-in bushings enable uses under moment loads.

Single Flanged RoHS

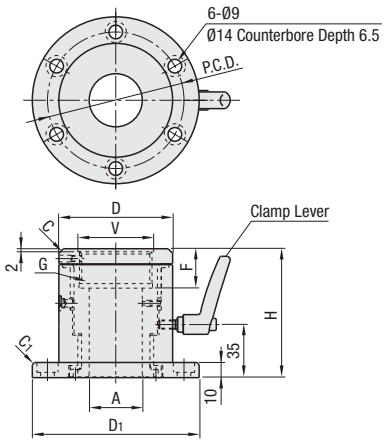


Doubled Flanged RoHS

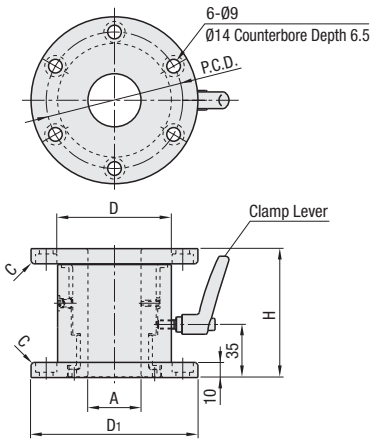


Type		M Material	S Surface Treatment	A Accessory		
Single Flanged	Double Flanged			Clamp Lever	Screws	Nut
HRCN	HRCNW	1.0038/S235JR	Electroless Nickel Plating	CLMD	CB8-20x6	LBNR8x6

Single Flanged (HRCN)



Double Flanged (HRCNW)



Structure with inner stopper prevents 360° rotation.

Single Flanged

Part Number Type	Part Number Nominal	A	D	D1	G (PF)	F	H	C	V	P.C.D.	C1	Applicable Hollows	Allowable Moment Load (Calculated Values) N · m	€ Unit Price Qty. 1~4
HRCN	42	35	75	110	G1 1/2	26	85	3	50	90	1.5	G42	300	
	54	50	90	125	G2	27	85		64	105		G54	500	
	70	65	105	140	G2 1/2	32	85		78	120		G70	750	
	82	80	120	155	G3	37	90		92	135		G80	1000	

Applicable hollows are based on JIS C 8305 Rigid steel conduits. * Allowable moment loads are not guaranteed values.

For orders larger than indicated quantity, please request a quotation.

Doubled Flanged

Part Number Type	Part Number Nominal	A	D	D1	H	C	P.C.D.	Allowable Moment Load (Calculated Values) N / m	€ Unit Price Qty. 1~4
HRCNW	42	35	75	110	85	1.5	90	300	
	54	50	90	125	85		105	500	
	70	65	105	140	85		120	750	
	82	80	120	155	90		135	1000	

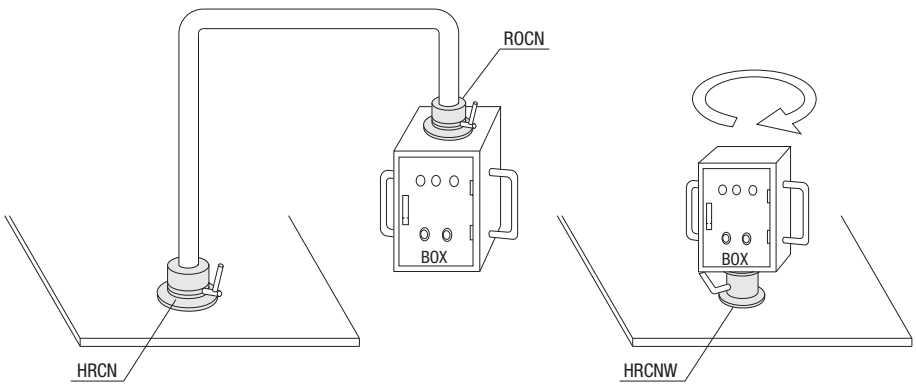
* Allowable moment loads are not guaranteed values.

For orders larger than indicated quantity, please request a quotation.

Order Example Part Number HRCNW54

Days to Ship 6 Days P. 87

Example



Usable under moment load.

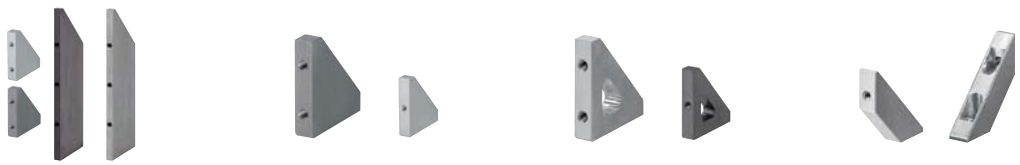
Box mountable without a pipe.

Gussets · Angle Plates · Welded Steel Stands

Gussets/ Angle Plates/ Welded Steel Stands



Product Name	Precision Casting Economy Gussets - Through Holes , Hole Position Fixed Type -	Gussets - Through Hole & Counterbored Hole, Hole Position Fixed Type -	- Through Hole, Hole Position Specified Type -
Page	1864	1865	1866



Gussets - Female Thread, Hole Position Fixed Type -	-Female Thread, Hole Position Specified Type-	-Reduced Weight Type-	–Bridge Type–
1867	1868	1869	1870



Angle Plates - Cast Iron / Dimension Fixed Type -	- Aluminum / Stainless Steel / Dimension Fixed Type -	- Mounting Holes Selectable / Holes Position Fixed Type -
1871	1872	1873



Angle Plates - Mounting Surface Female Thread Holes and Mounting Holes Position Specified Type-	- Hole Position Specified Type -	- Side A (Base Surface) Machining Specified Type -
1874	1875	1877



Angle Plates - Opposite Angle Dowel Type-	- Wide Type -	Welded Angle Plates - Compact and No Hole Type -	- No Hole Type and Hole Position Specified Type -
1878	1878	1879	1880



Welded Steel Stands -Shaped Steel Type	-Shaped Steel Height Specified Type-	- Shaped Steel Lower Wide Type -	–Plate Type–
1881	1882	1883	1884

Precision Casting Economy Gussets
- Through Holes, Hole Position Fixed Type -

CAD Data

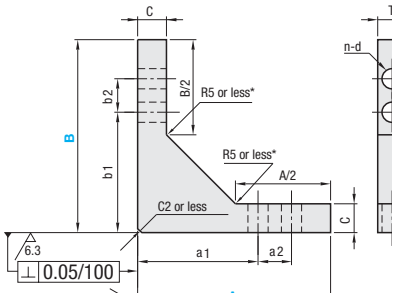
■**Features:** Use of Precision Casting has realized price reduction by average 47% and maximum 57%. These are equal with the conventional products in perpendicularity and accuracies.

RoHS





Type	Material	Surface Treatment
RQDB	1.0038/S235JR	Black Oxide
RQDM		Electroless Nickel Plating
RQDW	EN AC-46200	Clear Anodize



When A=30 or 50, side A has one mounting hole.
When B=30 or 50, side B has one mounting hole.
* For some sizes, R is made small in order to prevent interference of bolt head.

Part Number Type	A	B	T 1.0038/S235JR	T EN AC-46200	n (No. of Holes)	d	a1	a2	b1	b2	C	€ Unit Price RQDB	€ Unit Price RQDM	€ Unit Price RQDW
RQDB (Black Oxide) RQDM (Electroless Nickel Plating) RQDW (Clear Anodize)	30*	30*	12	10	2	5.5	20	-	20	-	8			
		50*							35					
		80			3				50	15				
	50*	50*			2		35	-	35	-	12			
		80			3				50	15				
		100							60	20				
	80	80		12	4	6.5	50	15	50	15	20			
		100							60	20				
	100	100					60	20	60	20	25			
		150							90	30				

*When A=30 or 50, side A has one mounting hole, and when B= 30 or 50, side B has one mounting hole.

Order Example

Part Number	-	B
RQDB30	-	80
RQDW100	-	150

Days to Ship

6 Days P87

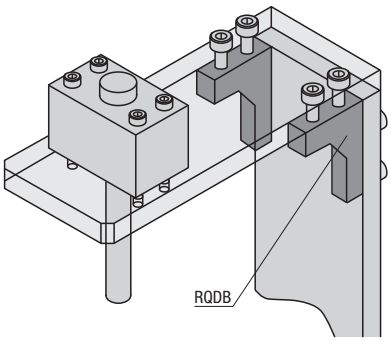
Price

■**Volume Discount** (Round down to one Cent.) P87

Quantity	1~4	5~9	10~15
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example



■Precision Casting Economy Gussets are optimal for reinforcing where not visible or appearance is not important.

■**Difference between Precision Casting Gussets and Machined Gussets**
Although Precision Casting Gussets are inferior to Machined Gussets in luster, they are equal with Machined Gussets (Standard Class) in perpendicularity.

■**Material Properties of EN AC-46200 (Aluminum Alloy Casting)**
It is suitable for casting, and has high tensile strength and low rate of elongation. It is used for general purpose.

■**Comparison Table of Tensile Strength**

Representative Values of Mechanical Properties	
Tensile Strength (N/mm²)	
EN AW-5052/AlMg2,5	EN AC-46200
260	170 or More

Gussets

- Through Hole and Counterbored Hole · Hole Position Fixed Type -

Reduced Delivery Time

CAD Data

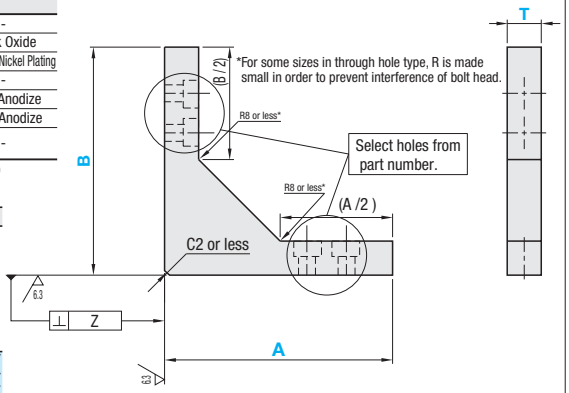
Features: Hole Type can be selected from through holes and counterbored holes. In addition, hole on either A side or B side can be changed to tapped holes.



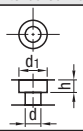
RoHS

Type			Material	Surface Treatment
Standard Class (Perpendicularity Z0.05/100)		Precision Class (Perpendicularity Z0.02/100)		
Through Hole	Counterbored Hole	Through Hole		
RBDS	RBYS	RGDS	1.0038/ S235JR	-
RBDB	RBYB	RGDB		Black Oxide
RBDM	RBYM	RGDM		Electroless Nickel Plating
RBDA	RBYA	RGDA	EN AW-5052/ AlMg2,5	-
RBDW	RBYW	RGDW		Clear Anodize
RBDV	RBYV	RGDV		Black Anodize
RBDF	-	RGDF	1.4301/ X5CrNi18-10	-

⊗B200 or more are not available for precision types and counterbored types)

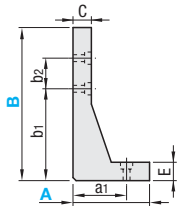


Hole and Bolt Selection Table

Hole Type	Through Hole	Counterbored Hole
Shape		
Machining Specifications	Dimension / Screw Nominal Diameter: 5 / 6 / 8; d: 5.5 / 6.5 / 9	Bolt Nominal Diameter: 4 / 5 / 6; d: 4.5 / 5.5 / 6.5; d1: 8 / 9.5 / 11; h: 4.4 / 5.4 / 7

■Detailes Listed in Dimensional Section

When A=30 or 50



A	a1	C
30	20	8
50	35	(When B is 100 or less) 12 / (When B=150) 17

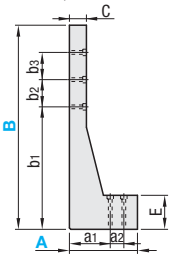
B	b1	b2	E
30	20	- *	8
50	35		(When A=30) 8 / (When A=50) 12
80	50	15	(When A=30) 8 / (When A=50) 12
100	60	20	12
150	90	30	20

*1 mounting hole for B50 or less.

T	Through Hole (Screw Nominal Diameter)	Counterbored Hole (Screw Nominal Diameter)
10 or 12	5	4
16	8	6

*The nominal diameter is recommended bolt size.
For details of dimension, see Hole and Bolt Selection Table.

When A=80 , 100 or 150



A	a1	a2	C
80	50	15	(When B is 100 or less) 20 / (When B is 150 or more) 25
100	60	20	(When B is 150 or less) 25 / (When B is 200 or more) 35
150	90	30	40

B	b1	b2	b3	E
80	50	15	- *	20
100	60	20	- *	(When A=80) 20 / (When A=100) 25
150	90	30	- *	(When A=80) 30 / (When A=100) 25 / (When A=150) 40
200	140	20	20	40
250	160	30	30	40
300	180	40	40	40

*2 mounting holes for B150 or less.

T	Through Hole (Screw Nominal Diameter)	Counterbored Hole (Screw Nominal Diameter)
12	6	5
16	8	6

*The nominal diameter is recommended bolt size.
For details of dimension, see Hole and Bolt Selection Table.

■Standard Class Through Hole · Counterbored Hole (⊗B200 or more are not available for counterbored types)

Part Number Type		A	B Selection	T 1.0038	T EN AW-5052 · 1.4301
Through Hole (1.0038/S235JR)	Counterbored Hole (1.0038/S235JR)	30	30 50 80 100	12	10
RBDS	RBYS	50	50 80 100	12	10
RBDB	RBYB		150	12 16	12 16
RBDM (EN AW-5052/AlMg2,5)	RBYM (EN AW-5052/ AlMg2,5)	80	80 100 150 200 250	12 16	12 16
RBDA	RBYA	100	100 150 200 250 300	12 16	12 16
RBDW	RBYW	150	150 200 250 300	12 16	12 16
RBDV (1.4301/X5CrNi18-10)	RBYV				
RBDF					

■Precision Class Through Hole

Part Number Type	A	B Selection	T 1.0038/	T EN AW-5052 · 1.4301
Through Hole (1.0038/S235JR)	30	30 50 80 100	12	10
RGDS	50	50 80 100	12	10
RGDB		150	12 16	12 16
RGDM (EN AW-5052/AlMg2,5)	80	80 100 150	12 16	12 16
RGDA	100	100 150	12 16	12 16
RGDW	150	150	12 16	12 16
RGDV (1.4301/X5CrNi18-10)				
RGDF				

Order Example Part Number - B - T : RBDA100 - 150 - T12

Days to Ship 8 Days

Express A 5,00 EUR/ piece P.88

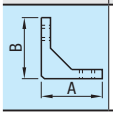
Delivery Time of T=16 has been reduced to 8rd day shipping.

⊗Express Service is not available.

⊗A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Service is not available for Black Anodize.

Alterations Part Number - B - T - (ASY / BSY) : RBYB100 - 150 - T16 - ASY5

Days to Ship 8 Days ⊗Express Service is not available.

Alteration	Code	Spec.	Price Adder
	ASY BSY	Changes holes on either A side or B side to tapped holes. Hole Diameter can be selected. Ordering Code Change of the hole on A side….ASY4 Change of the hole on B side….BSY5 Female Thread hole may go through.	3,50

T	Female Thread Hole Dia. Selection
10	4 or 5
12	4 or 5 or 6
16	5 or 6 or 8

Price euros

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~15	16~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example of calculation of € Unit Price
RBDA100-150-T16
A+B=A Dimension+B Dimension=100+150=250
From the Price List below, when A+B=250 and T=16, unit price is 0,02 EUR 8,20.

Examples of Precision Grade Price Calculation
RGDA100-150-T16
RBDA € Unit Price 28,20 EURx1.1=31,02 EUR → 28,20 EUR (Round down to ten Cent)

€ Unit Price (Tolerance Precision Type: Price in the table x 1.11)

A+B	Through Hole												Counterbored Hole									
	1.0038/S235JR						EN AW-5052/AlMg2,5				1.4301/X5CrNi18-10		1.0038/S235JR						EN AW-5052/AlMg2,5			
	RBDS		RBDB		RBDM		RBDA		RBDW · RBDV		RBDF		RBYS		RBYB		RBYM		RBYA		RBYW · RBYV	
	T=12	T=16	T=12	T=16	T=12	T=16	T=10 · 16	T=12	T=10 · 16	T=12	T=10 · 16	T=12	T=12	T=16	T=12	T=16	T=12	T=16	T=10 · 16	T=12	T=10 · 16	T=12
60																						
80																						
100																						
110																						
130																						
150																						
160																						
180																						
200																						
230																						
250																						
280																						
300																						
330																						
350																						
400																						
450																						

Gussets

- Through Hole, Hole Position Specified Type -

CAD Data

Features: The mounting hole pitch can be selected. When the mounting hole pitch does not match with the fixed dimension (Through Hole) on left page, the following standard is available.

RoHS

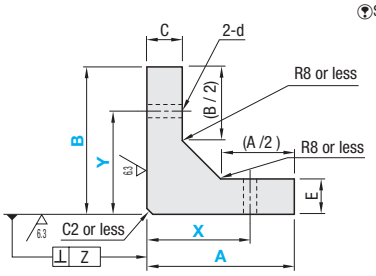




Type Standard Class (Perpendicularity Z0.05/100)	Material	Surface Treatment
RBPDS	1.0038/S235JR	-
RBPDB		Black Oxide
RBPDM		Electroless Nickel Plating
RBPDA	EN AW-5052/AlMg2,5	-
RBPDW		Clear Anodize
RBPDF	1.4301/X5CrNi18-10	-

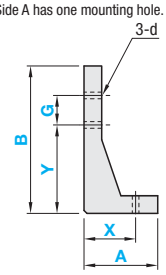
When A is 30 or 50 and B is30 or 50

Both side A and side B have one mounting hole.

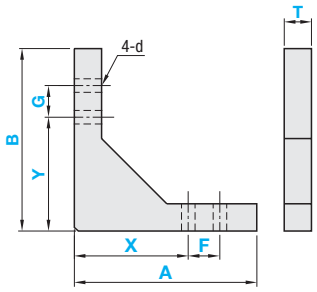


When A is 30 or 50 and B is 80 or 100

Side A has one mounting hole.



When A=80 or 100



Dimension	H (Nominal Diameter)				
	3	4	5	6	8
d	3.5	4.5	5.5	6.5	9

Part Number Type	A	B	1mm Increment Side A Hole Pitch X	Side A Hole Pitch F	Side B Hole Pitch Y	Side B Hole Pitch G	H (d Nominal Dia.)	T 1.0038/S235JR	T EN AW-5052/AlMg2,5 1.4301/X5CrNi18-10	C	E
Through Hole (1.0038/S235JR) RBPDS RBPDB RBPDM (EN AW-5052/AlMg2,5) RBPDA RBPDW (1.4301/X5CrNi18-10) RBPDF	30	30 50	20~24	- *1	Y≥(B/2)+6	- *2	3 4 5	12	10	8	8
		80				G≥Hx2 and Y+G≤B-6 0*3					
	50	50	30~44			- *2				12	12
		80 100				G≥Hx2 and Y+G≤B-6 0*3					
	80	80 100	50~56	F≥Hx2 and X+F≤A-8 0*3	Y≥(B/2)+8	G≥Hx2 and Y+G≤B-8 0*3	5 6 8	12	12	20	20
	100	100 150	60~76							25	25

*1 When A=30, 50, side A has 1 mounting hole and specification of F dimension is not required.
*2 When B = 30, 50, side B has 1 mounting hole and specification of G dimension is not required.
*3 When 0 is specified for F and G dimensions, 1 mounting hole is provided.

Order Example

Part Number	-	B	-	X	-	F	-	Y	-	G	-	H	-	T
RBPDS50	-	100	-	X40			-	Y70	-	G20	-	H4	-	T12
RBPDA100	-	150	-	X70	-	F0	-	Y90	-	G15	-	H6	-	T12

Days to Ship 10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~15	16~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

A+B	€ Unit Price 1.0038/S235JR RBPDS	RBPDB	RBPDM	EN AW-5052/AlMg2,5 RBPDA	RBPDW	1.4301/X5CrNi18-10 RBPDF
60						
80						
100						
110						
130						
150						
160						
180						
200						
250						

Gussets

-Female Thread, Hole Position Fixed Type-

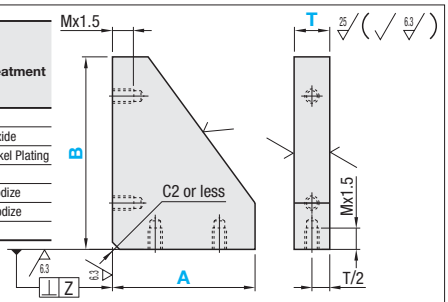
Reduced Delivery Time

CAD Data



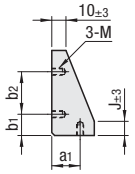
Type		M Material	S Surface Treatment
Standard Class (Perpendicularity Z0.05/100)	Precision Class (Perpendicularity Z0.02/100)		
RBBS	RGBS	1.0038/S235JR	-
RBBB	RGBB		Black Oxide
RBBM	RGBM		Electroless Nickel Plating
RBBA	RGBA	EN AW-5052/AlMg2,5	-
RBBW	RGBW		Clear Anodize
RBBV	RGBV		Black Anodize
RBBF	RGBF	1.4301/X5CrNi18-10	-

⊗Precision Grade is not specifiable for B200 or more.



■For details of dimension, see Hole and Bolt Selection Table.

When A = 20 and 30,



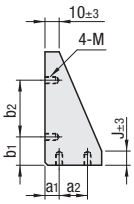
A	a1
20	12.5
30	20

B	b1	b2	J
30	10	*10	10
40	10	20	
50	15	20	
60	15	30	
80	15	50	
100	20	60	B - (A - 10)

The Manufacturing tolerance of * is +0.2 0 other dimensions are general tolerance (JISB0405). ☞P.1948

T	M
6	3
9 or 10	5
12	6

When A=40,



A	a1	a2
40	*10	*20

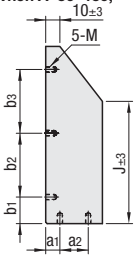
* When B=40, in order to prevent interference, (a1, a2) dimensions are (15, 15). When B=50, 60 and T12, similarly (a1, a2) dimensions are (15, 15).

B	b1	b2	b3	J
40	15	15	-	10
50	*12.5	*25	-	
60	15	30	-	
80	20	40	-	
100	20	60	-	
150	37.5	75	-	B - (A - 10)
200	30	75	75	

* When B=50, in order to prevent interference, (a1, a2) dimensions are (15, 20).
☞See the next page when B=200.

T	M
9 or 10	5
12	6
16	8

When A=50~150,



A	a1	a2
50	12.5	25
60	15	30
80	20	40
100	25	50
150	37.5	75

B	b1	b2	b3	J
50	12.5	25	-	10
60	15	30	-	
80	20	40	-	
100	25	50	-	
150	37.5	75	-	
200	30	75	75	B - (A - 10)
250	30	100	100	
300	30	120	120	

☞2 mounting holes for B150 or less.

T	M
9 or 10	5
12	6*
16	8

*M8 when B≥100.

Part Number Type		A	B Selection										T 1.0038/S235JR · 1.4301/X5CrNi18-10			T EN AW-5052/AlMg2,5		
Standard Class (Perpendicularity Z0.05/100) (1.0038/S235JR)	Precision Class (Perpendicularity Z0.02/100) (1.0038/S235JR)	20	30	40	50	60	80						6			6		
RBBS	RGBS	30	30										6	12		6	12	
RBBB	RGBB			40	50	60	80	100					9	12		10	12	
RBBM	RGBM	40		40	50	60	80	100					9	12		10	12	
(EN AW-5052/AlMg2,5)	(EN AW-5052/AlMg2,5)								150	200				12	16		12	16
RBBA	RGBA	50			50	60	80	100					9	12		10	12	
RBBW	RGBW								150	200	250			12	16		12	16
RBBV	RGBV	60				60	80	100					9	12		10	12	
(1.4301/X5CrNi18-10)	(1.4301/X5CrNi18-10)								150	200	250	300		12	16		12	16
RBBF	RGBF	80					80	100	150				9	12	16	10	12	16
⊗Precision Grade is not specifiable for B200 or more.										200	250	300		12	16		12	16
		100						100	150				9	12	16	10	12	16
										200	250	300		12	16		12	16
		150							150	200	250	300		12	16		12	16

Order Example

Part Number	-	B	-	T
RBBS50	-	100	-	9

Alterations

Part Number	-	B	-	T	-	(NL)
RBBS80	-	100	-	12	-	NL

8 Days

⊗Express Service is not available.

Days to Ship

8 Days | Express A | 5,00 EUR/ piece

☞A Express Charge of 13,50 EUR for 3 or more identical pieces.
⊗Express Service is not available for Black Anodize.

Delivery Time of T=16 has been reduced to 8rd day shipping.

Price

■Volume Discount (☞Round down to one Cent.) P.87

Quantity	1~9	10~15	16~19
Rate	€ Unit Price	5%	10%

☞For orders larger than indicated quantity, please request a quotation.

Alteration	Code	Spec.	Price Adder
	NL	1 tapped hole at the center of side A. Ordering Code NL ⊗Not applicable when A=20, 30.	-1,00

Example of calculation of € Unit Price
RBBS50-100-9
A+B=A Dimension+B Dimension=50+100=150
From the Price List below, when A+B=150 and T=9, unit price is 15,70 EUR

Examples of Precision Grade Price Calculation
RGBS50-100-9
RBBS € Unit Price 15,70 EUR x1.1=17,27 EUR → 17,20 EUR (Round down to ten Cent)

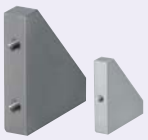
A+B	€ Unit Price (Tolerance Precision Type: Price in the table x 1.1)																	
	1.0038 · S235JR									EN AW-5052/AlMg2,5						1.4301/X5CrNi18-10		
	RBBS			RBBB			RBBM			RBBA			RBBW RBBV			RBBF		
	T=6 · 9	T=12	T=16	T=6 · 9	T=12	T=16	T=6 · 9	T=12	T=16	T=6 · 10	T=12	T=16	T=6 · 10	T=12	T=16	T=6 · 9	T=12	T=16
50																		
60																		
70																		
80																		
90																		
100																		
110																		
120																		
130																		
140																		
150																		
160																		
180																		
190																		
200																		
210																		
230																		
240																		
250																		
260																		
280																		
300																		
310																		
330																		
350																		
360																		
380																		
400																		
450																		

Gussets
-Female Thread, Hole Position Specified Type-

Reduced Delivery Time

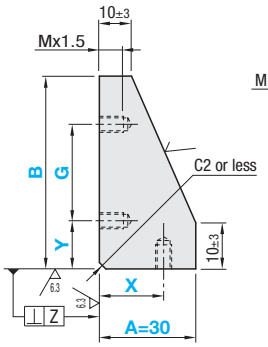
■Features: When the mounting hole pitch does not match with the fixed dimension on left page, the following standard is available.

RoHS

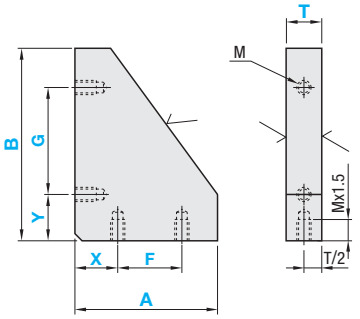


Type Standard Class (Perpendicularity Z0.05/100)	M Material	S Surface Treatment
RBPBS	1.0038/S235JR	-
RBPBB		Black Oxide
RBPBM		Electroless Nickel Plating
RBPBA	EN AW-5052/ AlMg2,5	-
RBPBW		Clear Anodize

■When A=30



■When A=40~100, 25 (√ 6.3)



Ⓟ When A=30, side A has one mounting hole. Ⓟ Depending on the specified dimension, pilot hole for tapping may go through to the reverse side.

Part Number Type	A	B Selection	1mm Increment Side A Hole Pitch X	F	Side B Hole Pitch Y	G	M (Coarse)	T 1.0038/S235JR	T EN AW-5052/AlMg2,5
Standard Class (1.0038/S235JR) RBPBS RBPBB RBPBM (EN AW-5052/AlMg2,5) RBPBA RBPBW	30	30 40 50 60 80	X>Mx2 *1	- *2	Y≥Mx2 *1	G≥Mx2 and Y+G≤B-6 *3	4 5 6	9	10
							5 6	12	12
	40	40 50 60 80 100		F≥Mx2 and X+F≤A-6 *3			4 5 6	9	10
							5 6	12	12
	50	50 60 80 100					4 5 6	9	10
							5 6	12	12
	60	60 80 100					4 5 6	9	10
							5 6	12	12
	80	80 100 150		0 *4		0 *4	4 5 6	9	10
							5 6 8	12	12
	100	100 150					4 5 6	9	10
							5 6 8	12	12

*1 The first tapped hole is distanced twice or more that of thread diameter from edge surface in order to prevent interference.
*2 When A = 30, side A has 1 mounting hole and specification of F dimension is not required.
*3 Set apart the second tapped hole twice or more M (thread diameter) from the first and 6mm or more from the edge surface.
*4 When 0 is specified for F and G dimensions, 1 mounting hole is available.

Order Example

Part Number	B	X	F	Y	G	M	T
RBPBS30	60	X20		Y20	G20	M6	T9
RBPBW60	100	X20	F20	Y25	G50	M6	T12

Days to Ship 8 Days

Price

■Volume Discount (Ⓟ Round down to one Cent.) P87

Quantity	1~9	10~15	16~19
Rate	€ Unit Price	5%	10%

Ⓟ For orders larger than indicated quantity, please request a quotation.

Example of calculation of € Unit Price
RBPBS30-60-X20-Y20-G20-M6-T9
A+B=A Dimension+B Dimension=30+60=90
From the Price List below, when A+B=90 and T=16, unit price is 19,90 EUR

A+B	€ Unit Price 1.0038/S235JR RBPBS T=9	RBPBS T=12	RBPBB T=9	RBPBB T=12	RBPBM T=9	RBPBM T=12	EN AW-5052/AlMg2,5 RBPBA T=10	RBPBA T=12	RBPBW T=10	RBPBW T=12
60										
70										
80										
90										
100										
110										
120										
130										
140										
150										
160										
180										
200										
230										
250										

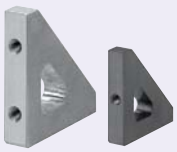
Gussets
-Reduced Weight Type-

Reduced Delivery Time

CAD Data

Features: Reduced Weight Type. Weight saving by maximum 35% has been realized.

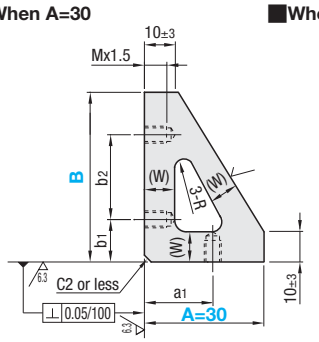
RoHS



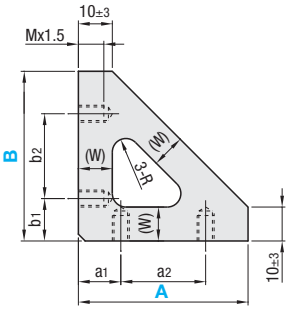
Type	Material	Surface Treatment
RACM	1.0038/S235JR	Electroless Nickel Plating
RACA	EN AW-5052/ AlMg2,5	-
RACW		Clear Anodize
RACV		Black Anodize

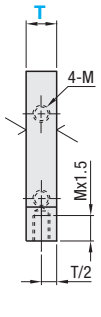
25 (6.3)

When A=30



When A=40 or more





When A=30 or 50, side A has one tapped hole. Some portion of tapped hole may go through.

Part Number Type	A	B	T 1.0038/S235JR	T EN AW-5052/AlMg2,5	M	Side A Pitch a1	Side A Pitch a2	Side B Pitch b1	Side B Pitch b2	Removed Material (W)	Removed Material R	Weight (g:Reference Value) 1.0038/S235JR	Weight (g:Reference Value) EN AW-5052/AlMg2,5	€ Unit Price RACM	RACA	RACW	RACV
(1.0038/S235JR) RACM	30	30	6	6	3	20	-	10	*10	6	4	27.5	9.8				
			12	12	6							55.0	19.6				
		40	9	10	5				20			49.4	20.1				
			12	12	6							67.5	24.1				
		50	9	10	5			15	20			58.5	23.9				
			12	12	6							80.3	28.7				
		60	9	10	5				30			68.4	28.0				
			12	12	6							94.0	33.6				
		80	9	10	5				50			88.1	36.2				
			12	12	6							121.4	43.4				
	40	40	9	10	5	15	15	15	15	8	4	67.7	27.3				
			12	12	6							91.8	32.8				
		50	9	10	5	10	20	12.5	25			78.4	31.8				
			12	12	6	15	15	15	20			106.9	38.2				
		60	9	10	5	10	20		30			89.5	36.5				
			12	12	6	15	15					122.6	43.8				
		80	9	10	5	10	20	20	40			112.5	46.1				
			12	12	6							154.7	55.3				
		100	9	10	5				60			135.7	55.8				
			12	12	6							187.2	67.0				
(EN AW-5052/AlMg2,5) RACA RACW RACV	50	50	9	10	5	12.5	25	12.5	25	10	4	101.4	40.8				
		60	9	10				15	30			113.6	46.0				
		80	9	10				20	40			139.8	57.1				
			12	12	6							191.6	68.5				
		100	9	10	5			25	50			166.7	68.4				
			12	12	8							229.4	82.0				
	60	60	9	10	5	15	30	15	30	10	4	125.8	51.4				
			12	12	6							172.5	61.7				
		80	9	10	5			20	40			150.7	62.3				
			12	12	6							208.8	74.8				
		100	9	10	5			25	50			176.2	73.4				
			12	12	8							245.8	88.1				
	80	80	9	10	5	20	40	20	40	12	5	202.3	83.2				
			12	12	6							279.0	99.8				
		100	9	10	5			25	50			231.6	96.3				
			12	12	8							322.5	115.6				
		150	9	10	5			37.5	75			307.3	129.9				
			12	12	8							434.0	155.9				
	100	100	9	10	5	25	50	25	50	15	6	309.7	127.1				
			12	12	8							426.3	152.5				
		150	9	10	5			37.5	75			398.2	166.8				
			12	12	8							557.7	200.1				

Some tapped holes may go through. The Manufacturing tolerance of * is $^{+0.2}_{0}$. Other dimensions are general tolerance (JISB0405).

Order Example

Part Number	-	B	-	T
RACM40	-	60	-	9
RACA40	-	60	-	10

Days to Ship: 8 Days

Delivery Time of RACV has been reduced to 8rd day shipping.

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~15	16~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Gussets
–Bridge Type–

Reduced Delivery Time

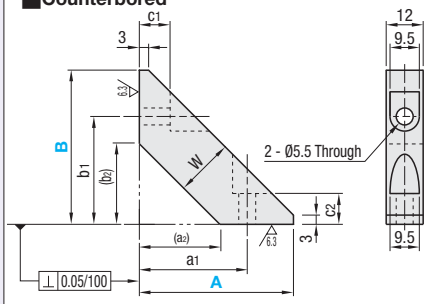
CAD Data

■**Features:** Bridge shape enables uses where there are interferences such as wirings. (Refer to the application example)

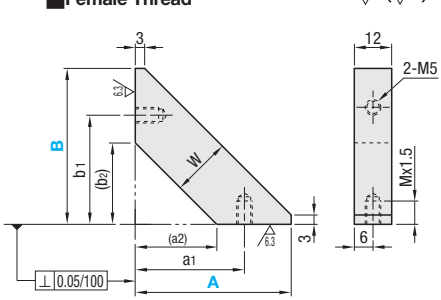


Type		Material	Surface Treatment
Counterbored	Female Thread Hole		
RBUSS	-	1.0038/S235JR	-
RBUB	-		Black Oxide
RBUM	-		Electroless Nickel Plating
RBUA	-	EN AW-5052/AlMg2,5	-
RBUW	RBJW		Clear Anodize
RBUV	-		Black Anodize
RBUF	-	1.4301/X5CrNi18-10	-

■Counterbored



■Female Thread



Part Number Type		A	B	a1	b1	(a2)	(b2)	c1	c2	W
Counterbored	Female Thread Hole	50	50	40	40	26.1	26.1	5	5	19
(1.0038/S235JR) RBUSS RBUB RBUM			80	40	60	29.5	48.4	10	10	
			100		80	30.3	62.6	5		
(EN AW-5052/AlMg2,5) RBUA RBUW RBUV	(EN AW-5052/AlMg2,5) RBJW	80	80	65	65	51.8	51.8	10	10	22
			100		80	54.2	68.3			
(1.4301/X5CrNi18-10) RBUF		100	100	85	85	71.8	71.8	10	10	22
			150		125	75.6	114.6			

A	B	€ Unit Price							
		Counterbored Hole							Female Thread Hole
		RBUSS	RBUB	RBUM	RBUA	RBUW	RBUV	RBUF	RBJW
50	50								
	80								
	100								
80	80								
	100								
100	100								
	150								

Order Example

Part Number	-	B
RBUF100	-	150
RBJW50	-	80

Days to Ship: 8 Days

Delivery Time of RBUV has been reduced to 8rd day shipping.

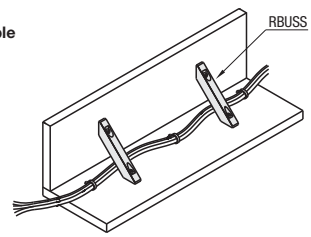
Price

■**Volume Discount** (Round down to one Cent.) P. 87

Quantity	1~9	10~15	16~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

Example

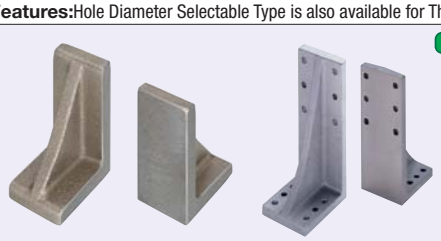


■It can be installed without interference of wiring

Angle Plates
- Cast Iron, Dimension Fixed Type -

CAD Data

Features: Hole Diameter Selectable Type is also available for Through Hole Type and Through Hole and Dowel Hole Type.

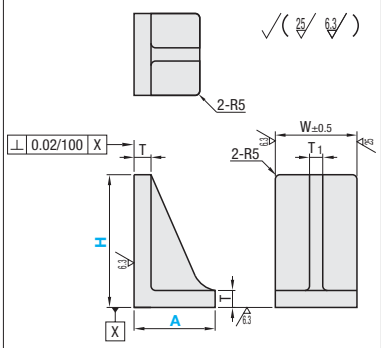


RoHS

Type	Hole Machining Selection	Material	Surface Treatment
IK	FB(No Hole Type) D(Through Hole Type) K(Through Hole and Dowel Hole Type) DM(Through Hole Diameter Selectable Type) KM(Through Hole and Dowel Hole Diameter Selectable Type)	EN-JL 1040/ EN-GJL-250	Primer Coating (Gray)
BIK			Black Oxide
MIK			Electroless Nickel Plating

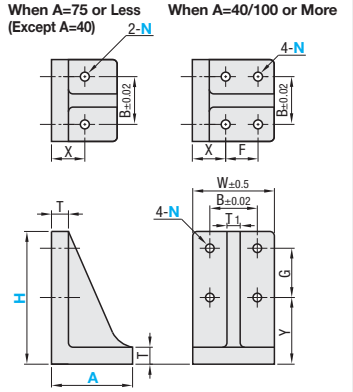
⊗BIKDM and MIKKM are not selectable.
Ⓥ Surface treatment is not applied to the machined surfaces and holes.

Hole Machining Selection FB (No Hole Type)



Part Number Type	H	A	Angle Plate Body W	T	T1	€ Unit Price No Hole Type IKFB	BIKFB	MIKFB
No Hole Type IKFB BIKFB MIKFB	60	40	30	8	6			
	100	40	30	8	6			
		50S	50	15	8			
		50	100		14			
		100						
	150	50	50	15	8			
		70	100		14			
		75	75					
		100	100					
	200	75	75	15	14			
		120	100					
	250	120	100	18	15			
	300	150						
	350	150						
	400	150						

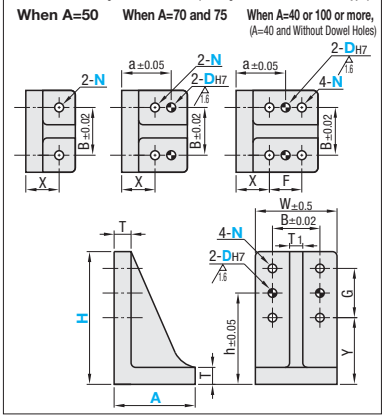
Hole Machining Selection D / DM (Through Hole Type)



Part Number Type	H	A	Angle Plate Body W	T	T1	Through Hole N	N (Selec.)	B	X	F	Y	G	€ Unit Price Through Hole Diameter Fixed IKD	BIKD	MIKD	Through Hole Diameter Selectable IKDM	MIKDM
Through Hole Type (Through Hole Diameter Fixed) IKD BIKD MIKD (Through Hole Diameter Selectable) IKDM MIKDM	60	40	30	8	6	3.5	-	20	15	15	30	20					
	100	40	30	8	6	3.5	-	20	15	15	55	30					
		50S	50	15	8	9	10 12 14	30	35	-							
		50	100		14	11		70			45	40					
		100							45	40							
	150	50	50	15	8	9		30	35	-	75	60					
		70	100		14	11		70	40								
		75	75					50									
		100	100					70	45	40							
	200	75	75	15	14	11		50	40	-	110	70					
		120	100					70	50	50							
	250	120	100	18	15	11		70	50	50	140	90					
	300	150							40	90	190						
	350	150									230	100					
	400	150									260	120					

Ⓥ Select N (Selection) for IKDM and MIKDM.
Ⓥ Portions without specific dimensions is same as FB (No Hole Type).

Hole Machining Selection K / KM (Through Hole and Dowel Hole Type)



Part Number Type	H	A	Angle Plate Body W	T	T1	Through Hole N	N (Selection)	B	X	F	Y	G	Dowel Hole DH7	DH7 (Selection)	a	h	€ Unit Price Through Hole and Dowel Hole Diameter Fixed IKK	BIKK	MIKK	Through Hole and Dowel Hole Diameter Selectable IKKM	BIKKM
Bolt Hole and Dowel Hole Type (Through Hole and Dowel Hole Diameter Fixed) IKK BIKK MIKK (Through Hole and Dowel Hole Diameter Selectable) IKKM BIKKM	60	40	30	8	6	3.5	-	20	15	15	30	20	3	-	-	40					
	100	40	30	8	6	3.5	-	20	15	15	55	30	3	-	-	70					
		50S	50	15	8	9	10 12 14	30	35	-			6	6 8 10							
		50	100		14	11		70			45	40	10		65	65					
		100							45	40											
	150	50	50	15	8	9		30	35	-	75	60	6		-						
		70	100		14	11		70	40				10		55	105					
		75	75					50													
		100	100					70	45	40					65						
	200	75	75	15	14	11		50	40	-	110	70	10		55	145					
		120	100					70	50	50					75						
	250	120	100	18	15	11		70	50	50	140	90	10		75	185					
	300	150							40	90	190				85	235					
	350	150									230	100				280					
	400	150									260	120				320					

Ⓥ Select N (Selection) and DH7 for IKKM and BIKKM.
Ⓥ Portions without specific dimensions is same as FB (No Hole Type).

Order Example

Part Number - A - N - D

IKFB350 - 150
IKDM100 - 100 - N10
BIKKM200 - 120 - N12 - D8

Days to Ship

8 Days
•Through Hole Diameter Selectable
Through Hole and Dowel Hole Diameter Selectable
10 Days

Price

Volume Discount (Ⓥ Round down to one Cent.) P.87

Quantity	1~19	20~49
Rate	€ Unit Price	5%

Ⓥ For orders larger than indicated quantity, please request a quotation.

Angle Plates

- Aluminum · Stainless Steel / Dimension Fixed Type -

CAD Data

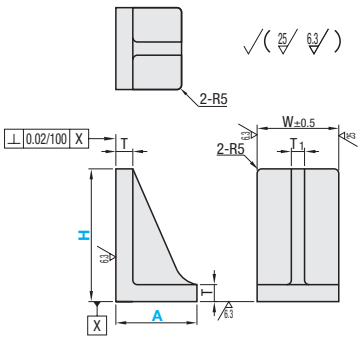


Type	Hole Machining Selection	Material
AIK	FB(No Hole Type) D(Through Hole Type) K(Through Hole and Dowel Hole Type)	(W=60) EN AC-42200/G-AlSi7Mg (W=100) EN AC-51300/G-AlMg5
SIK		1.4305/X10CrNiS18-9

⊗SIKFB and SIKK are not selectable.

■Hole Machining SelectionFB(No Hole Type)

AIKFB

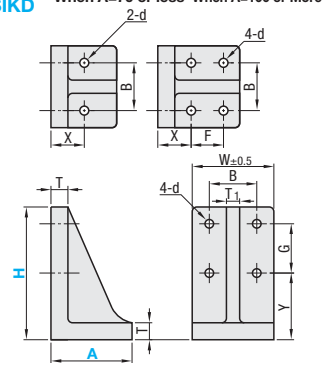


Part Number Type	H	A	W	T	T1	€ Unit Price
No Hole Type AIKFB	60	60	60	10	10	
	70					
	80					
	90					
	100	50	100	15	14	
		60	60	10	10	
		100	100	15	14	
	150	70	100	15	14	
		100				
	200	120	100	15	14	
	250	120	100	18	15	
	300	150	100	18	15	
	350					
	400					

■Hole Machining SelectionD(Through Hole Type)

AIKD SIKD

When A=70 or less When A=100 or More



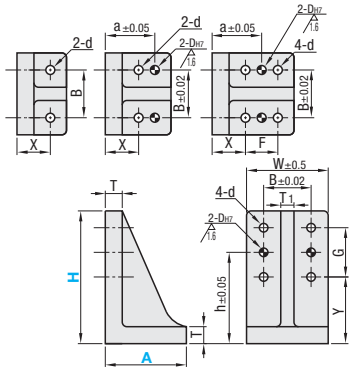
Part Number Type	H	A	Angle Plate Body W	T	T1	Through Hole d	B	X	F	Y	G	€ Unit Price AIKD	SIKD
Through Hole Type AIKD SIKD	60	60	60	10	10	6.5	35	30	-	25	25		
	70									30			
	80									35	30		
	90										35	⊗	
	100	50	100	15	14	11	70	35	-	45	40		
		60	60	10	10	6.5	35	30	-	40			
		100	100	15	14	11	70	45	40	45			
	150	70	100	15	14	11	70	40	-	75	60		
		100						45	40				
	200	120	100	15	14	11	70	50	50	110	70		⊗
	250	120	100	18	15	11	70	50	50	140	90		⊗
	300	150	100	18	15	11	70	40	90	190	90		⊗
	350									230	100		⊗
	400									260	120		⊗

(?)Portions without specific dimensions is same as FB (No Hole Type).

■Hole Machining SelectionK(Through Hole and Dowel Hole Type)

AIKK

When A=50 When A=60 or 70 When A=100 or More



Part Number Type	H	A	Angle Plate Body W	T	T1	Through Hole d	B	X	F	Y	G	Dowel Hole DH7	a	h	€ Unit Price
Bolt Hole and Dowel Hole Type AIKK	60	60	60	10	10	6.5	35	30	-	25	25	6	45	37.5	
	70									30				42.5	
	80									35	30			50	
	90										35			52.5	
	100	50	100	15	14	11	70	35	-	45	40	10	-	65	
		60	60	10	10	6.5	35	30	-	40		6	45	60	
		100	100	15	14	11	70	45	40	45		10	65	65	
	150	70	100	15	14	11	70	40	-	75	60	10	55	105	
		100						45	40				65		
	200	120	100	15	14	11	70	50	50	110	70	10	75	145	
	250	120	100	18	15	11	70	50	50	140	90	10	75	185	
	300	150	100	18	15	11	70	40	90	190	90	10	85	235	
	350									230	100			280	
	400									260	120			320	

(?)Portions without specific dimensions is same as FB (No Hole Type).

Order Example: Part Number AIKFB70 - A 60

Days to Ship: •Material 1.4305-EN AC-51300/G-AlMg5rNiS18-9, EN AC-51300/G-AlMg5 (W=100) 8 Days; •Material EN AC 42200/G-AlSi7Mg-T5 (W=60) 2 Days; 6 Days P.87

Price

■Volume Discount (?)Round down to one Cent.) P.87

Quantity	1~19	20~49
Rate	€ Unit Price	5%

(?)For orders larger than indicated quantity, please request a quotation.

Angle Plates

- Mounting Hole Selectable and Hole Position Fixed Type -

Reduced Delivery Time

Price Reduction 15%

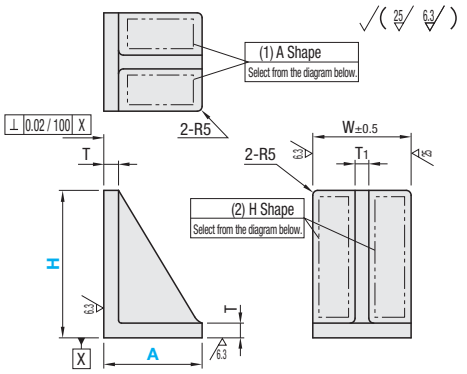
CAD Data

Features: Combinations not standardized in other pages such as slotted holes and tapped holes are available as desired.



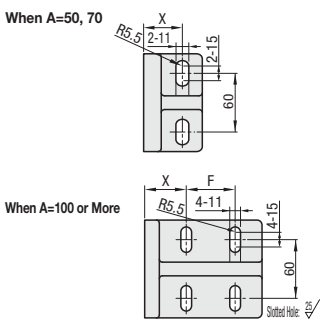
Type	Side A Hole Shape See the figure below.	Side H Hole Shape See the figure below.	Material	Surface Treatment
IK	X	X	EN-JL 1040/ EN-GJL-250	Primer Coating (Gray)
BIK	Y	Z		Black Oxide
MIK	K	K		Electroless Nickel Plating
AIK		T	EN AC-51300/	-

EN-JL 1040/EN-GJL-250 surface treatment is not applied to the machined surfaces and holes.

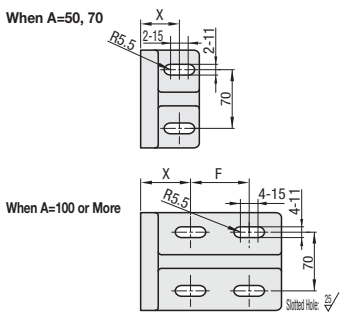


(1) A Shape

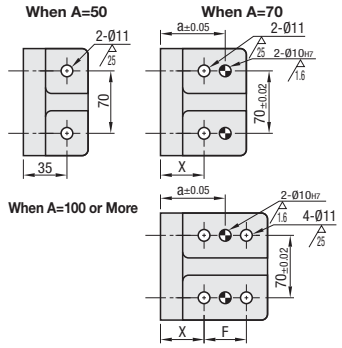
X(Slotted Hole X Direction)



Y(Slotted Hole Y Direction)

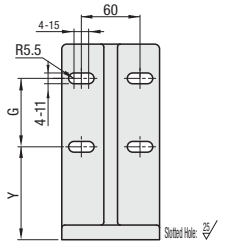


K(Through Holes and Dowel Holes)

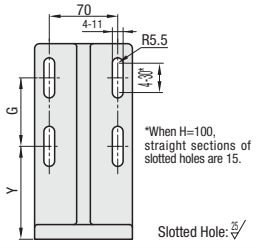


(2)H Shape Selection

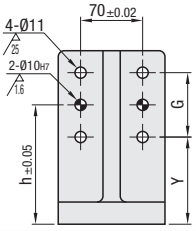
X(Slotted Hole X Direction)



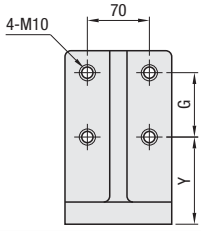
Z(Slotted Hole Z Direction)



K(Through Holes and Dowel Holes)



T(Female Thread Hole)



Part Number Type	(1) Side A Shape	(2) Side H Shape	H	A	Angle Plate Body W	T	T1	Side A · Side H: Slotted Hole (Shape Selection XYZ) X	F	Y	G	Through Hole & Dowel Hole (Shape Selection K) X	F	Y	G	a	h	Female Thread Hole (Shape Selection T) Y	G
IK BIK MIK AIK	X (Slotted Hole X Direction) Y (Slotted Hole Y Direction) K (Through Holes and Dowel Holes)	X (Slotted Hole X Direction) Z (Slotted Hole Z Direction) K (Through Holes and Dowel Holes) T (Female Thread Hole)	100	50	100	15	14	33	-	40	40	35	-	45	40	-	65	45	40
				100				45	40			45	40			65			
			150	70				45	-	60	60	40	-	75	60	55	105	75	60
				100				40	40			45	40			65			
			200	120				45	50	95	70	50	50	110	70	75	145	110	70
			250	120		18	15	45	50	125	90	50	50	140	90	75	185	140	90
			300	150					80	175			90	190		85	235	190	
			350	150						215	100	40		230	100		280	230	100
			400	150						245	120			260	120		320	260	120

H	A	Body Price IK_ _	BIK_ _	MIK_ _	AIK_ _	€ Slotted Hole (Shape Selection XYZ)	Through Hole and Dowel Hole (Shape Selection K)	Female Thread Hole (Shape Selection T)
100	50							
	100							
150	70							
	100							
200	120							
250	120							
300	150							
350								
400								

Order Example

Part Number					
Type	A Side Selection	H Side Selection	H	-	A
IK	Y	K	150	-	100

Days to Ship: 10 Days

Express B 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Material Price + Hole Machining Price of Side A+Side B= € Unit Price

(Example of Price Calculation) Side (A) Side (B)

IKYK150-100 € Unit Price 24,70 EUR+Slotted Hole 18,90 EUR+Dowel Hole 9,50 EUR =53,10 EUR (Rounded down to ten Cent.)

AIKXX200-120 € Unit Price 42,60 EUR+ Slotted Hole 18,90 EUR+ Slotted Hole 18,90 EUR = 80,40 EUR (Round down to ten Cent)

Angle Plates

- Mounting Surface Female Thread Holes and Mounting Holes Position Specified -

CAD Data

Features: Female Thread hole position on the mounting surface (side H) can be specified according to the customer's work piece.

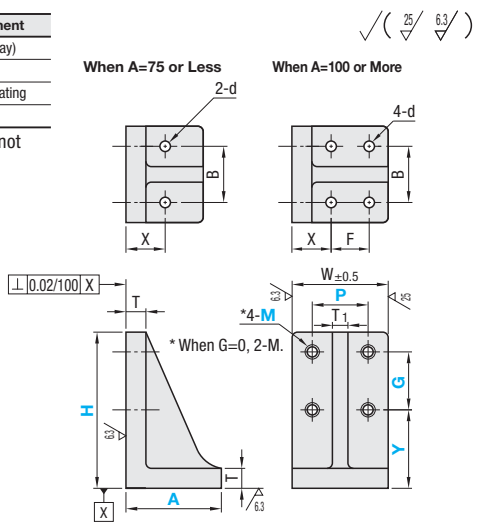
Female Thread Mounting Holes

RoHS



Type	Material	Surface Treatment
IKFT	EN-JL 1040/EN-GJL-250	Primer Coating (Gray)
IKFTB		Black Oxide
IKFTM		Electroless Nickel Plating
IKFTA	EN AC-51300/G-AlMg5	-

EN-JL 1040/EN-GJL-250 surface treatment is not applied to the machined surfaces and holes.



Part Number Type	H	A	1mm Increment P	Y	G	Female Thread Hole M	Angle Plate Body W	T	T1	Through Hole d	B	X	F
IKFT (Primer Coating / Gray) IKFTB (Black Oxide) IKFTM (Electroless Nickel Plating) IKFTA (Aluminum Casting)	60	40	20	15~25	0 9~30	4	30	8	6	3.5	20	15	-
	100	40	20	15~70	0 9~70		30	8	6	3.5	20	15	-
		50	30~70	25~60	0 10~65	5 6 8 10 12	100	15	14	11	70	35	-
		100										45	40
	150	50	30	25~110	0 10~115		50	15	8	9	30	35	-
		70	30~70				100		14	11	70	40	-
		75	30~45				75				50		-
		100	30~70				100				70	45	40
	200	75	30~70	25~160	0 10~165		75	15	14	11	50	40	-
		120					100				70	50	50
	250	120	30~70	30~205	0 10~210		100	18	15	11	70	50	50
	300	150		30~255	0 10~260							40	90
	350	150		30~305	0 10~310								
	400	150		30~355	0 10~360								

Tap depth is Mx2. (The pilot holes for tapping go through.)
M+T1+10≤P≤W-M-10 (inapplicable when A=40) (Please specify within the range in order to prevent machining limits and interference of bolt head.)
T+M+5≤Y≤H-2M-10
M+5≤G≤H-Y-M-5 (inapplicable when G=0)

Order Example

Part Number	-	A	-	P	-	Y	-	G	-	M
IKFTB60	-	A40	-	P20	-	Y25	-	G0	-	M4

Days to Ship 8 Days

Price

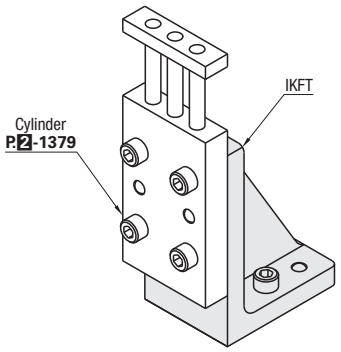
Volume Discount (Round down to one Cent.) P87

Quantity	1~4	5~9
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Example

H	A	€ Unit Price EN-JL 1040/EN-GJL-250 IKFT	IKFTB	IKFTM	EN AC-51300/G-AlMg5 IKFTA
60	40				
100	40				
	50				
	100				
150	50				
	70				
	75				
	100				
200	75				
	120				
250	120				
300	150				
350					
400					



Female Thread holes on mounting surfaces can be specified according to the work piece.

Angle Plates
- Hole Position Specified Type -

Features: Hole position on both the mounting surface (side H) and the base surface (side A) can be specified. (For hole diameter changes, specify as an alteration)

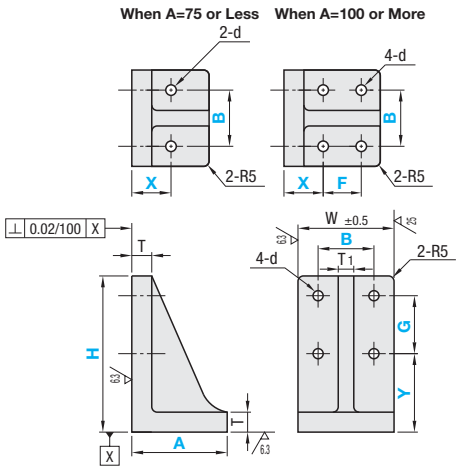
Mounting Hole Specified Type RoHS



Through Hole	Through Hole and Dowel Hole	M Material	S Surface Treatment
IKDF	IKF	EN-JL 1040/EN-GJL-250	Primer Coating (Gray)
BIKDF	BIKF		Black Oxide
MIKDF	MIKF		Electroless Nickel Plating
AIKDF	AIKF	EN AC-51300/G-AlMg5	-

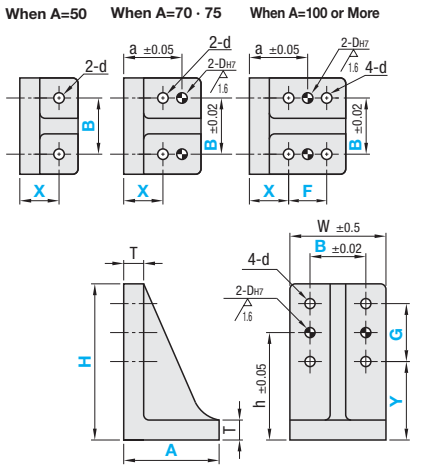
EN-JL 1040/EN-GJL-250 surface treatment is not applied to the machined surfaces and holes.

Through Hole Type



Through Hole and Dowel Hole Type

(Portions with no specific dimensions shown in the diagram are same as Through Hole Type)



Through Hole Type

Part Number Type	H	A	Angle Plate Body W	T	T1	Through Hole Side A · H B	Side A 1mm Increment X	Side A 1mm Increment F	Side H 1mm Increment Y	Side H 1mm Increment G	Hole Dia. d
IKDF (Primer Coating / Gray) BIKDF (Black Oxide) MIKDF (Electroless Nickel Plating) AIKDF (Aluminum Casting)	100	*50S	50	15	8	30	35	-	35~55	30~50	9
		50	100		14	50~75					11
		100					35~55	30~50			
	150	50	50	15	8	30	35	-	35~105	30~100	9
		70	100		14	50~75	40				11
		75	75			40~50	35~40				
		100	100			50~75	35~55	30~50			
	200	75	75	15	14	40~50	35~40	-	35~155	30~150	11
		120	100			50~75	35~75	30~70			
	250	120	100	18	15	50~75	40~75	30~65	50~205	30~185	11
	300	150		18	15	50~75	40~105	30~95	50~255	30~235	
	350					50~75			50~305	30~285	
	400					50~75			50~355	30~335	

Y+G≤H−15, X+F≤A−15 When A=50 or 70, the ordering code X and F are not required. When A=75, the ordering code F is not required. When A=50, the ordering code B is not required.
* Except for A dimension, dimensions of A=50S is smaller than those of A=50.

Through Hole and Dowel Hole Type

Part Number Type	H	A	Angle Plate Body W	T	T1	Through Hole Side A and H B	Side A 1mm Increment X	Side A 1mm Increment F	Side H 1mm Increment Y	Side H 1mm Increment G	Hole Dia. d	Dowel Hole Side A a	Dowel Hole Side H h	Hole Dia. DH7
IKF (Primer Coating / Gray) BIKF (Black Oxide) MIKF (Electroless Nickel Plating) AIKF (Aluminum Casting)	100	*50S	50	15	8	30	35	-	35~55	30~50	9	-	Y+(G/2)	6
		50	100		14	50~75					11			10
		100					35~55	30~50				X+(F/2)		
	150	50	50	15	8	30	35	-	35~105	30~100	9	-		6
		70	100		14	50~75	40				11	55		10
		75	75			40~50	35~40							
		100	100			50~75	35~55	30~50				X+(F/2)		
	200	75	75	15	14	40~50	35~40	-	35~155	30~150	11	55		10
		120	100			50~75	35~75	30~70				X+(F/2)		
	250	120	100	18	15	50~75	40~75	30~65	50~205	30~185	11	X+(F/2)		10
	300	150		18	15	50~75	40~105	30~95	50~255	30~235				
	350					50~75			50~305	30~285				
	400					50~75			50~355	30~335				

Y+G≤H−15, X+F≤A−15 When A=50 or 70, the ordering code X and F are not required. When A=75, the ordering code F is not required. When A=50, the ordering code B is not required.
* Except for A dimension, dimensions of A=50S is smaller than those of A=50.

Order Example

Part Number	-	A	-	B	-	X	-	F	-	Y	-	G
IKDF100	-	A50S							-	Y40	-	G40
BIKDF150	-	A70	-	B60					-	Y50	-	G100
AIKF150	-	A100	-	B60	-	X35	-	F40	-	Y50	-	G70

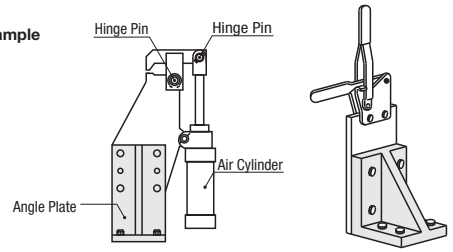
Days to Ship

10 Days

Express B | 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Example



Hole position can be specified according to the customer's work piece.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

H	A	€ Unit Price							
		Through Hole Type				Through Hole and Dowel Hole Type			
		EN-JL 1040/EN-GJL-250			EN AC-51300	EN-JL 1040/EN-GJL-250			EN AC-51300
		IKDF	BIKDF	MIKDF	AIKDF	IKF	BIKF	MIKF	AIKF
100	50S								
	50								
	100								
150	50								
	70								
	75								
	100								
200	75								
	120								
250	120								
300	150								
350									
400									

Alterations

Part Number	-	A	-	B	-	X	-	F	-	Y	-	G	-	(MC•HK•HD•AK•AD)
IKF200	-	A120	-	B70	-	X40	-	F40	-	Y50	-	G100	-	MC - HD6

10 Days — Express Service is not available.

Alterations	Changes the tapped holes on the mounting surface (side H)	Changes the through hole dia. on the mounting surface (side H)	Changes the dowel hole dia. on the mounting surface (side H)	Changes the through hole dia. on the base surface (side A)	Changes the dowel hole dia. on the base surface (side A)
Code	MC	HK	HD	AK	AD
Spec.	Changes the holes 4-d (through holes) on side H to tapped holes.	Changes the holes 4-d (Through Holes) on side H to small dia.	Changes the through hole 2-DH7 (dowel hole) on side H to small dia.	Changes the holes 2-d or 4-d (through holes) on side A to small dia.	Changes the through hole 2-DH7 (dowel hole) on side A to small dia.
	d: MC — 9: M8; 11: M10	d: HK — 9: 4.5 5.5 6.5; 11: 5.5 6.5 9	DH7: HDH7 — 6: 3 4 5; 10: 5 6 8	d: AK — 9: 4.5 5.5 6.5; 11: 5.5 6.5 9	DH7: ADH7 — 6: 3 4 5; 10: 5 6 8
	Ordering Code: MC	Ordering Code: HK5.5	Ordering Code: HD8	Ordering Code: AK9	Ordering Code: AD8
	Combination with HK is not available.	Combination with MC is not available.	Applicable to Through Hole and Dowel Hole Type only		Applicable to Through Hole and Dowel Hole Type only (Except A=50)
Price Adder	Free of Charge	Free of Charge	Free of Charge	Free of Charge	Free of Charge

Angle Plates

- Side A (Base Surface) Machining Specified Type -

CAD Data

■**Features:** These Types can be used in even limited installation space because both the base surface (A dimension) and width (W dimension) can be specified. (For hole diameter changes, specify as an alteration)

■Hole Machining SelectionFB (No Hole Type) ■Hole Machining SelectionD (Through Hole Type) ■Hole Machining SelectionK (Through Hole and Dowel Hole Type)

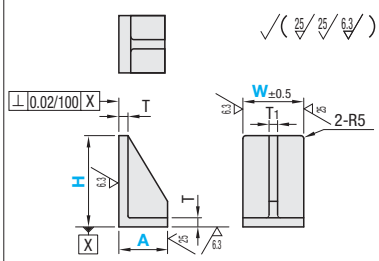


RoHS

Type	Hole Machining Selection	Material	Surface Treatment
IKC	FB (No Through Hole)	EN-JL 1040/EN-GJL-250	Primer Coating (Gray)
BIKC	D (Through Hole)		Black Oxide
MIKC	K (Through Holes and Dowel Holes)		Electroless Nickel Plating
AIKC		EN AC-51300/ G-AlMg5	-

(P) EN-JL 1040/EN-GJL-250 surface treatment is not applied to the machined surfaces and holes.
(P) A dimension is ground from the gusset side. As shown in the pictures, no surface treatment is applied on the gusset side.
⊗ BIKCK is not selectable.

■Hole Machining SelectionFB (No Hole Type)

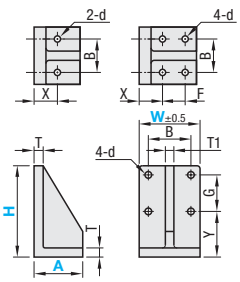


Part Number		Angle Plate Body			
Type	H	A 5mm Increment	W Selection	T	T1
IKCFB BIKCFB MIKCFB AIKCFB	100	50	75 80 100	15	14
		80~100			
	150	65~75	60 75 100	15	14
		80~100	75 80 100		
	200	65~75	60 75	15	14
		85~120	75 80 100		
	250	85~120	75 80 100	18	15
	300	90~150			
	350	90~150		18	15
	400	90~150			

⊗ For AIKCFB, W60 is not available.

■Hole Machining SelectionD (Through Hole Type)

When A=75 or Less When A=80 or More

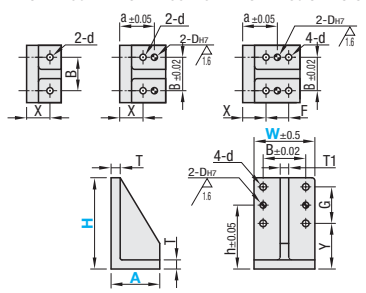


Part Number		Angle Plate Body				Through Hole								
						d		B						
Type	H	A 5mm Increment	W Selection	T	T1	W=60	W=75 · 80 · 100	W=60	W=75 · 80	W=100	X	F	Y	G
IKCD BIKCD MIKCD AIKCD	100	50	75 80 100	15	14	-	11	-	50	70	35	-	45	40
		80~100										A-50		
	150	65~75	60 75 100	15	14	9	11	40	50	70	35	-	75	60
		80~100	75 80 100			-		-				A-50		
	200	65~75	60 75	15	14	9	11	40	50	-	35	-	110	70
		85~120	75 80 100			-		-		70	40	A-50		
	250	85~120	75 80 100	18	15	-	11	-	50	70	40	A-55	140	90
	300	90~150											190	90
	350	90~150		18	15		11		50	70	40	A-60	230	100
	400	90~150											260	120

⊗ For AIKCD, W60 is not available.
(P) Portions without specific dimensions is same as FB (No Hole Type).

■Hole Machining SelectionK (Through Hole and Dowel Hole Type)

When A=50 When A=65~75 When A=80 or More



Part Number		Angle Plate Body				Through Hole								Dowel Hole			
						d		B						DH7			
Type	H	A 5mm Incr.	W Selection	T	T1	W=60	W=75 · 80 · 100	W=60	W=75 · 80	W=100	X	F	Y	G	W=60	W=75 · 80 · 100	a	h
IKCK MIKCK AIKCK	100	50	75 80 100	15	14	-	11	-	50	70	35	-	45	40	-	10	-	65
		80~100										A-50					X+(F/2)	
	150	65~75	60 75 100	15	14	9	11	40	50	70	35	-	75	60	6	10	A-15	105
		80~100	75 80 100			-		-				A-50			-		X+(F/2)	
	200	65~75	60 75	15	14	9	11	40	50	-	35	-	110	70	6	10	A-15	145
		85~120	75 80 100			-		-		70	40	A-50			-		X+(F/2)	
	250	85~120	75 80 100	18	15	-	11	-	50	70	40	A-55	140	90	-	10	X+(F/2)	185
	300	90~150											190	90				235
	350	90~150		18	15		11		50	70	40	A-60	230	100				280
	400	90~150											260	120				320

⊗ For AIKCK, W60 is not available.
(P) Portions without specific dimensions is same as FB (No Hole Type).
(P) BIKCK is not selectable.

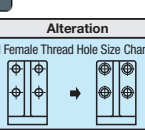
Order Example

Part Number	-	A	-	W
IKCFB100	-	A85	-	W75
MIKCK150	-	A65	-	W80

Days to Ship: 10 Days

Alterations

Part Number	-	A	-	W	-	(MC)
IKCD100	-	A85	-	W75	-	MC

Alteration	Code	Spec.	Price Adder
Side H Female Thread Hole Size Change 	MC	Changes the holes 4-d (through holes) on side H to tapped holes. d: MC; 9: M8; 11: M10; Ordering Code: MC	Free of Charge

Price

■**Volume Discount** (P) Round down to one Cent.) P. 87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

(P) For orders larger than indicated quantity, please request a quotation.

H	A	€ Unit Price										
		No Hole Type				Through Hole Type				Through Hole and Dowel Hole Type		
		EN-JL 1040/EN-GJL-250			EN AC-51300	EN-JL 1040/EN-GJL-250			EN AC-51300	EN-JL 1040/EN-GJL-250		EN AC-51300
		IKCFB	BIKCFB	MIKCFB	AIKCFB	IKCD	BIKCD	MIKCD	AIKCD	IKCK	MIKCK	AIKCK
100	50											
	80~100											
150	65~75											
	80~100											
200	65~75											
	85~120											
250	85~120											
300	90~150											
350	90~150											
400	90~150											

Angle Plates

- Opposite Angle Dowel Type, Wide Type -

Price Reduction 20%

CAD Data

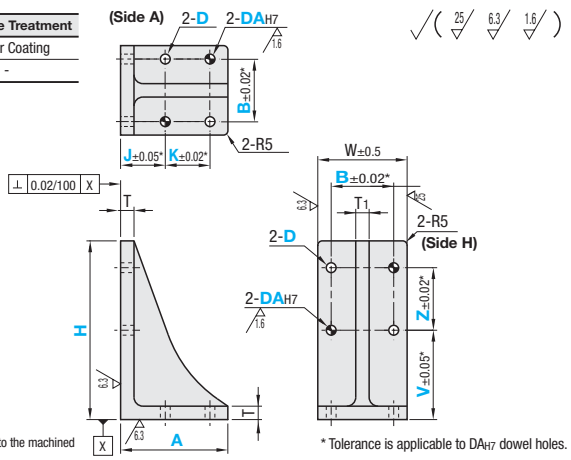
Features: Through hole diameter and dowel hole diameter are selectable. Select them depending on the application.

Opposite Angle Dowel Type

RoHS



Type	Material	Surface Treatment
IKKB	EN-JL 1040/EN-GJL-250	Primer Coating
AIKKB	EN AC-51300/G-AlMg5	-



EN-JL 1040/EN-GJL-250 Surface treatment is not applied to the machined surfaces and holes.

* Tolerance is applicable to DA_{H7} dowel holes.

Part Number Type	H	A	D Selection	DA Selection	Angle Plate Body W	T	T1	Side A · H B	Side A J	K	Side H V	Z	€ Unit Price IKKB	AIKKB
IKKB / AIKKB	100	50S	4 5 6	3 4 5	50	15	8	30	25	10	45	40		
		100	7 9 11	6 8 10	100		14	70	45	40				
	150	50	456	3 4 5	50	15	8	30	25	10	75	60		
		70	7 9 11	6 8 10	100		14	70	40	15				
		75			75			50	40	20				
		100			100			70	45	40				
	200	75	7 9 11	6 8 10	75	15	14	50	40	20	110	70		
		120			100			70	50	50				
	250	120	7 9 11	6 8 10	100	18	15	70	50	50	140	90		
	300	150							40	90	190			
	350	150									230	100		
	400	150									260	120		

Order Example: Part Number IKKB150 - A A100 - D D7 - DA DA10

Days to Ship: 8 Days

Price

Volume Discount (Round down to one Cent.) P. 87

Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

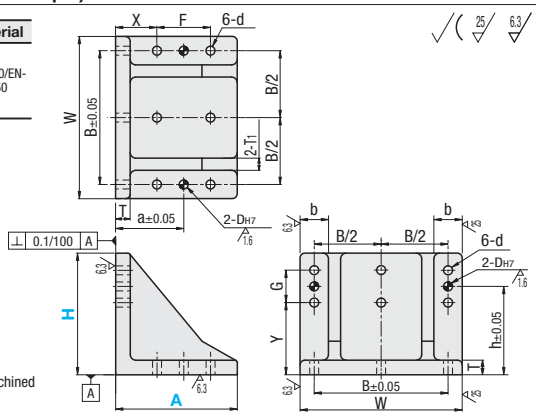
Features: Can be used in height space-savings. (Refer to the example)

Wide Type

RoHS



Type	Mounting Holes	Material
WIKFB	No Hole	EN-JL 1040/EN-GJL-250
WIKD	With Mounting Holes	
WIKK	With Mounting Holes • Dowel Holes	



Primer coating (gray) is not applied to the machined surfaces and holes.

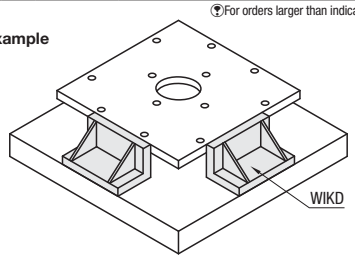
Part Number Type	H	A	W	T	T1	B	a	X	F	h	Y	G	DH7	b	d	WIKFB € Unit Price Qty. 1~19	WIKFB Volume Discount 20~49	WIKD € Unit Price Qty. 1~19	WIKD Vol. Discount 20~49	WIKK € Unit Price Qty. 1~19	WIKK Vol. Discount 20~49
WIKFB	100	100	200	18	15	165	59	39	40	59	39	40	10	35	11						
WIKD	150	100	200							109	89										
WIKK	150	150	200				84	51	66												

For orders larger than indicated quantity, please request a quotation.

Order Example: Part Number WIKD100 - A 100

Days to Ship: 8 Days

Example



Welded Angle Plates

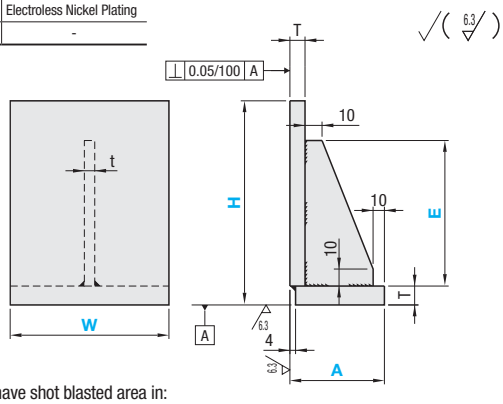
- Compact and No Hole Type -

CAD Data

Features: The most compact dimensions of both base surface (A dimension) and width (W dimension) are available. Select according to installation space.



Type	M Material	S Surface Treatment
BRWS	1.0038/S235JR	-
BRWB		Black Oxide
BRWM		Electroless Nickel Plating
BRWF	1.4301/X5CrNi18-10	-



The 1.0038/S235JR products have shot blasted area in:

Part Number Type	A	W	H 5mm Increment	E Selection	T	t
BRWS (No Treatment)	50	40	50~250	25 50 90 140 190	10	6
		50				
		60				
		70				
		80				
		100				
BRWB (Black Oxide) BRWM (Electroless Nickel Plating)	60	50	50~250	25 50 90 140 190	10	6
		60				
		70				
		80				
		100				
BRWF (Stainless Steel)	70	70	50~250	25 50 90 140 190	10	6
		80				
		100				
	80	80				
		100				

Order Example

Part Number	-	W	-	H	-	E
BRWS60	-	W100	-	H200	-	E50

Days to Ship

10 Days | Express B | 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

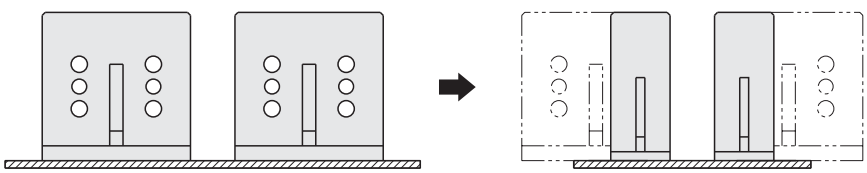
Volume Discount (Round down to one Cent.) P. 87

Quantity	1~19	20~49
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

A	W	€ Unit Price															
		BRWS				BRWB				BRWM				BRWF			
		H50~100	H105~150	H155~200	H205~250	H50~100	H105~150	H155~200	H205~250	H50~100	H105~150	H155~200	H205~250	H50~100	H105~150	H155~200	H205~250
50	40																
	50																
	60																
	70																
	80																
	100																
60	50																
	60																
	70																
	80																
	100																
70	70																
	80																
	100																
80	80																
	100																

Example



Conventional Product

Small Type

Its compact base surface has realized in the availability in even space-saving.

Welded Angle Plates

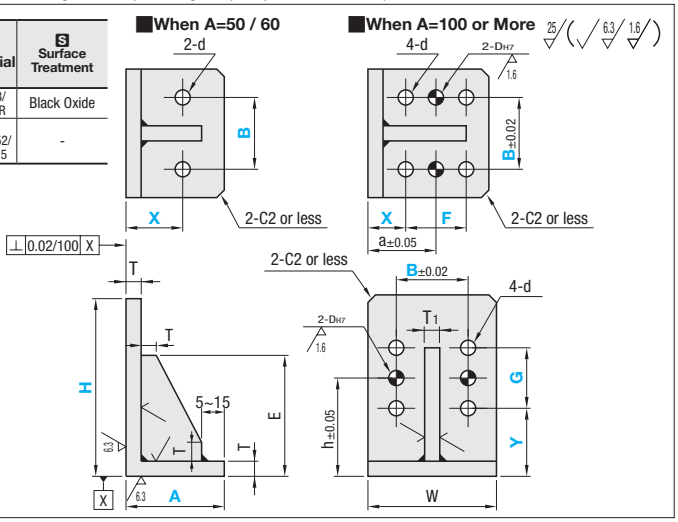
- No Hole Type and Hole Position Specified Type -

CAD Data

Features: The mounting hole pitch can be freely selected. (For mounting hole shape changes, specify as an alteration)



Type		Material	Surface Treatment
No Hole	Hole Positions Specified		
IKYSB	IKYS	1.0038/ S235JR	Black Oxide
IKYSAB	IKYSA	EN AW-5052/ AlMg2,5	-



No Hole Type

Part Number Type	H	A	W	T	T1	E
IKYSB IKYSAB	100	50	100	10 (10)	9 (10)	65
		100				80
	120	100				100
	150	100				135
	200	60				
		100				165
	250	60		14 (13)	12 (12)	
		100				200
	300	100				235
	350	120				265
	400	150		20 (23)	16 (15)	335
	500	150				

Dimensions in ( ) are for IKYSAB.

Hole Position Specified Type

Part Number Type	H	A	1mm Increment B	X	F	Y	G	Fixed Dimension W	T	T1	E	a	h	D	d
IKYS IKYSA	100	50	50~75	30~35	-	35~55	30~50	100	10 (10)	9 (10)	65	X+(F/2)	Y+(G/2)	10	11
		100		30~55	30~55						80				
	120	100				35~75	30~70				100				
	150	100				35~105	30~100								
	200	60		35~45	-	35~155	30~150				135				
		100		35~55	30~50										
	250	60		35~45	-	50~205	30~185				165				
		100		35~55	30~50				14 (13)	12 (12)					
	300	100				50~255	30~235				200				
	350	120		40~75	30~65	50~305	30~285				235				
	400	150		40~105	30~95	50~355	30~335		20 (23)	16 (15)	265				
	500	150				50~455	30~435				335				

Y+G≤H−15X+F≤A−15 Dimensions in ( ) are for IKYSA.

H	A	No Hole Type IKYSB € Unit Price	IKYSB Volume Discount	IKYSAB € Unit Price	IKYSAB Volume Discount	Hole Position Specified Type IKYS € Unit Price	IKYS Volume Discount	IKYSA € Unit Price	IKYSA Volume Discount
		Qty. 1~19	20~49	Qty. 1~19	20~49	Qty. 1~19	20~49	Qty. 1~19	20~49
100	50								
	100								
120	100								
150	100								
200	60								
	100								
250	60								
	100								
300	100								
350	120								
400	150								
500	150								

For orders larger than indicated quantity, please request a quotation.

Order Example

Part Number	-	A
IKYSB100	-	100

Part Number	-	A	-	B	-	X	-	F	-	Y	-	G
IKYS120	-	A100	-	B75	-	X40	-	F30	-	Y40	-	G50

Days to Ship

10 Days

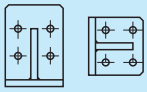
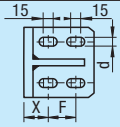
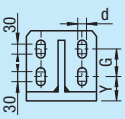
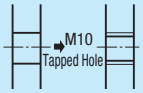
Express B 5,00 EUR/ piece P. 88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Alterations

Part Number	-	A	-	B	-	X	-	F	-	Y	-	G	-	(NKC · LN · HN · MC)
IKYS120	-	A100	-	B75	-	X40	-	F30	-	Y40	-	G50	-	NKC

Alterations are applicable to IKYS and IKYSA.

	Omit Dowel Holes	Slotted Hole		Female Thread Hole
Alterations				
Code	NKC	LN	HN	MC
Spec.	Omits all dowel holes. Ordering Code NKC	Changes the d holes A surface to slotted holes. Ordering Code LN. When A=50 or 60, two slotted holes are machined. When A=50, the slotted hole length is 10mm. * There is no dowel hole on the slotted hole side. X+F≤A-20	Changes the d holes H surface to slotted holes. Ordering Code HN. When H=100 or 120 or 150, distance between the slotted holes is 20mm. * There is no dowel hole on the slotted hole side. Y+G≤H−30	Changes the holes 4-d (Ø11 Through Holes) on side H to tapped holes M10. Ordering Code MC
Price Adder	-5,00	18,00	18,00	Free of Charge

A	X	F
50	33	-
60	40	-
100	40~45	35~40
120	45~65	35~55
150	55~95	35~75

H	Y	G
100	38	40
120	45	50
150	60~75	45~60
200	90~115	55~80
250	120~160	60~100
300	145~202	65~125
350	175~255	65~145
400	210~300	70~160
500	300~400	70~170

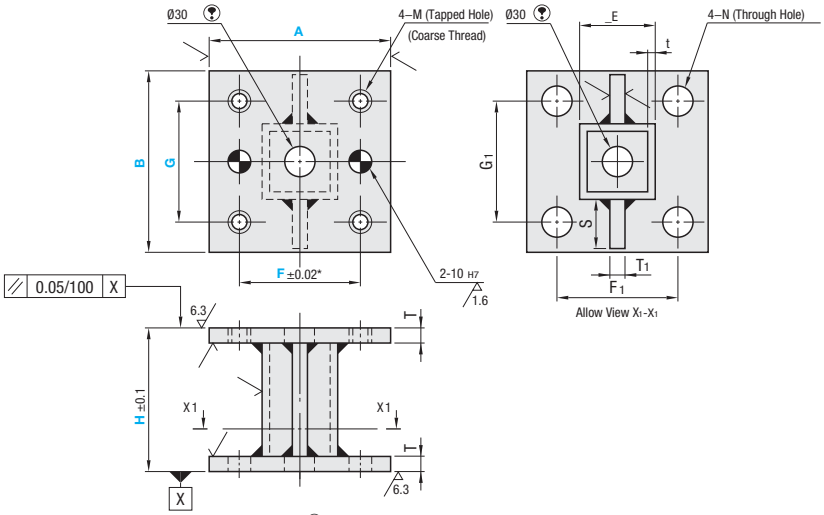
Welded Steel Stands
- Shaped Steel Type -

Price Reduction 20%

CAD Data



Type		Material	Surface Treatment
No Hole Type	Hole Position Specified Type		
YSSTC	YSCT	1.0038/S235JR	-
YSSTB	YSST		Black Oxide
YSSTM	YSMT		Electroless Nickel Plating
-	YSFT	1.4301/X5CrNi18-10	-



Ø30 hole is common for no hole type and hole position specified type. *Tolerance is applicable to DH7 dowel holes.

No Hole Type

Part Number Type	A	B	H Selection	T	T1	E	t	S	€ Unit Price YSSTC H100	YSSTC H150 H200	YSSTC H250 H300	YSSTB H100	YSSTB H150 H200	YSSTB H250 H300	YSSTM H100	YSSTM H150 H200	YSSTM H250 H300
YSSTC YSSTB YSSTM	100	100	100 150 200 250 300	10	9	50	3.2	22									
		120						32									
		150						44									
	125	120				75	4.5	19									
	150	150		14	12			32									
	200	200				100		44									

Hole Position Specified Type

Part Number Type	A	B	H Selection	1mm Increment G	F	T	T1	E	t	S	F1	G1	M	N	€ Unit Price YSCT H100	YSCT H150 H200	YSCT H250 H300	YSST H100	YSST H150 H200	YSST H250 H300	YSMT H100	YSMT H150 H200	YSMT H250 H300	YSFT H100	YSFT H150 H200	YSFT H250 H300
YSCT YSST YSMT YSFT	100	100	100 150 200 250 300	30~80	70~80	10	9	50	3.2	22	80	80	M10	11												
		120		30~100						32		100														
		150		30~130						44		130														
	125	120		30~100	95~100			75	4.5	19	100	100														
	150	150		35~120	95~120	14	12			32	120	120	M12	14												
	200	200		35~170	120~170			100		44	160	160														

Order Example

Part Number	-	B	-	H	-	G	-	F
YSSTB100	-	B150	-	H300				
YSST150	-	B150	-	H200	-	G100	-	F95

Alterations

Part Number	-	B	-	H	-	G	-	F	-	(HKC)
YSST150	-	B150	-	H200	-	G100	-	F95	-	HKC

10 Days ⊗Express Service is not available.

Days to Ship

10 Days | Express B | 5,00 EUR/ piece P.88

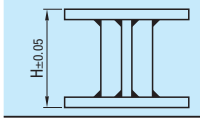
A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.88

Quantity	1~19	20~49
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

Alteration	Code	Spec.	Price Adder
	HKC	Changes the tolerance of dimension H to H±0.05. Ordering Code HKC	10,00

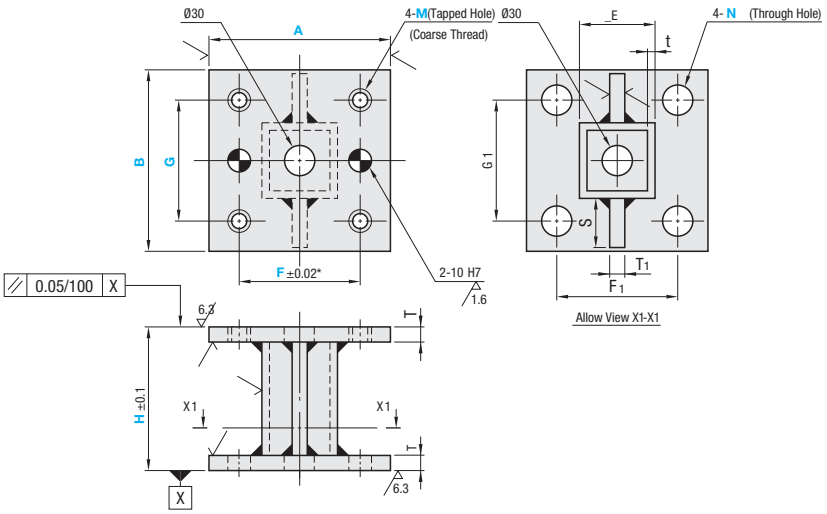
Welded Steel Stands

–Shaped Steel Height Specified-

CAD Data



Type	Material	Surface Treatment
YSCFT	1.0038/S235JR	-
YSSFT		Black Oxide
YSMFT		Electroless Nickel Plating



* Tolerance is applicable to DH7 dowel holes.

Part Number		B	1mm Increment			Selection		T	T1	E	t	S	F1	G1
Type	A		H	G	F	M (Female Thread Hole)	N (Through Hole)							
YSCFT YSSFT YSMFT	100	100	100~300	30~80	70~80	8 10 12	9 11 14	10	9	50	3.2	22	80	80
		120		30~100								32		100
		150		30~130								44		130
	125	120		30~100	95~100					75	4.5	19	100	100
	150	150		30~120	95~120			14	12			32	120	120
	200	200		30~170	120~170					100		44	160	160

Order Example

Part Number	-	B	-	H	-	G	-	F	-	M	-	N
YSCFT100	-	B150	-	H251	-	G80	-	F74	-	M8	-	N11

Days to Ship 10 Days

Price

Volume Discount (Round down to one Cent.) P.87

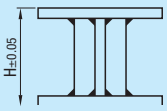
Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

A	B	H 1mm Increment	€ Unit Price YSCFT	YSSFT	YSMFT
100	100	100~150			
		151~200			
		201~250			
		251~300			
	120	100~150			
		151~200			
		201~250			
		251~300			
	150	100~150			
		151~200			
		201~250			
		251~300			
125	120	100~150			
		151~200			
		201~250			
		251~300			
150	150	100~150			
		151~200			
		201~250			
		251~300			
200	200	100~150			
		151~200			
		201~250			
		251~300			

Alterations

Part Number	-	B	-	H	-	G	-	F	-	M	-	N	- (HKC)
YSCFT100	-	B150	-	H251	-	G80	-	F74	-	M8	-	N11	- HKC

Alteration	Code	Spec.	Price Adder
	HKC	Changes the tolerance of dimension H to H±0.05. Ordering Code HKC	10,00

Welded Steel Stands
- Shaped Steel Lower Wide Type -

Price Reduction 20%

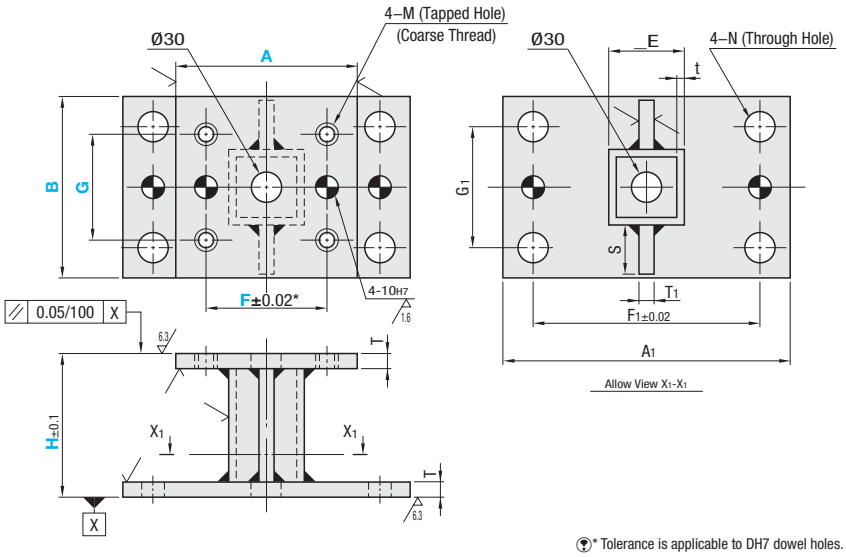
CAD Data

Features: Wide Bottom Type makes it easy to work on bolts and dowel holes on the bottom plate because of no interference of tools on upper surface.

RoHS



Type	Material	Surface Treatment
YSCTW	1.0038/ S235JR	-
YSSTW		Black Oxide
YSMTW		Electroless Nickel Plating



* Tolerance is applicable to DH7 dowel holes.

Part Number Type	A	B	H Selection	1mm Increment G	1mm Increment F	A1	T	T1	E	t	S	F1	G1	M	N
YSCTW (No Surface Treatment) YSSTW (Black Oxide) YSMTW (Electroless Nickel Plating)	100	100	100 150 200 250 300	30~80	70~80	170	10	9	50	3.2	22	150	80	M10	11
		120		30~100							32		100		
		150		30~130							44		130		
	125	120		30~100	95~100				75	4.5	19		100		
	150	150		35~120	95~120	260	14	12			32	240	120	M12	14
	200	200		35~170	120~170				100		44		160		

Order Example Part Number - B - H - G - F
YSSTW125 - B120 - H200 - G100 - F100

Days to Ship 10 Days

Price

Volume Discount (Round down to one Cent.) P87

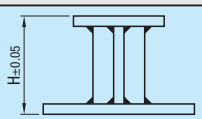
Quantity	1~9	10~19
Rate	€ Unit Price	5%

For orders larger than indicated quantity, please request a quotation.

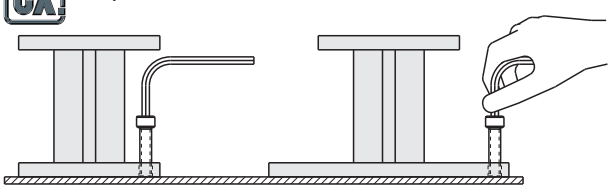
Alterations

A	B	H	€ Unit Price YSCTW	YSSTW	YSMTW
100	100	100			
		150 · 200			
		250 · 300			
	120	100			
		150 · 200			
		250 · 300			
	150	100			
		150 · 200			
		250 · 300			
125	120	100			
		150 · 200			
		250 · 300			
150	150	100			
		150 · 200			
		250 · 300			
200	200	100			
		150 · 200			
		250 · 300			

Part Number - B - H - G - F - (HKC)
YSCTW150 - B150 - H250 - G100 - F120 - HKC

Alteration	Code	Spec.	Price Adder
	HKC	Changes the tolerance of dimension H to H±0.05. Ordering Code HKC	15,00

Example



Conventional Product
Interference of tools makes fastening task difficult.

Lower Wide Type
Lower wide type makes fastening task easier.

Welded Steel Stands
–Plate Type–

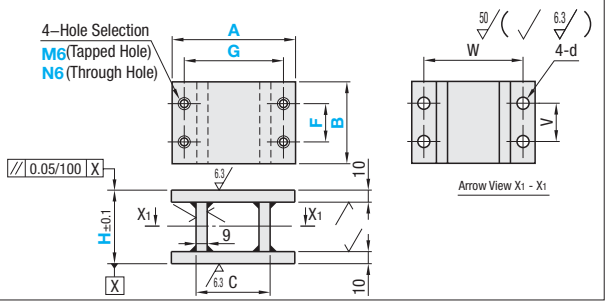
CAD Data

Features: Height and mounting hole pitch are configurable by 1mm increment.



Type	M Material	S Surface Treatment
YSSP	1.0038/ S235JR	-
YSBP		Black Oxide
YSMP		Electroless Nickel Plating
YSFP	1.4301/ X5CrNi18-10	-

The 1.0038/S235JR products have shot blasted area in:



Part Number Type	A	B	H	F	G	Hole Selection	C	V	W	d
YSSP (No Surface Treatment) YSBP (Black Oxide) YSMP (Electroless Nickel Plating) YSFP (Stainless Steel)	100	50	50~200	15≤F≤B–20	80	M6 (Female Thread Hole) N6 (Ø6.5 Through Hole)	50	30	80	6.5
		60						40		
		70						50		
		80						60		
		100						80		
	120	50			90~100		60	30	100	9
		60						40		
		70						50		
		80						60		
		100						80		
		120						100		
	150	50			105~130		75	30	130	
		60						40		
		70						50		
		80						60		
		100						80		
		120						90	120	11
		150						120		
	200	50			130~180		100	30	170	
		60						40		
		70						50		
		80						60		
		100						70		
		120						90		
		150						120		
		200						170		

Order Example

Part Number	-	B	-	H	-	F	-	G	-	Hole Selection
YSSP100	-	B100	-	H150	-	F75	-	G80	-	M6
YSSP200	-	B150	-	H200	-	F100	-	G150	-	N6

Days to Ship: 10 Days

Express B: 5,00 EUR/ piece P.88

A Express Charge of 13,50 EUR for 3 or more identical pieces.

Price

Volume Discount (Round down to one Cent.) P.87

Quantity	1~19	20~49
Rate	€ Unit Price	5%

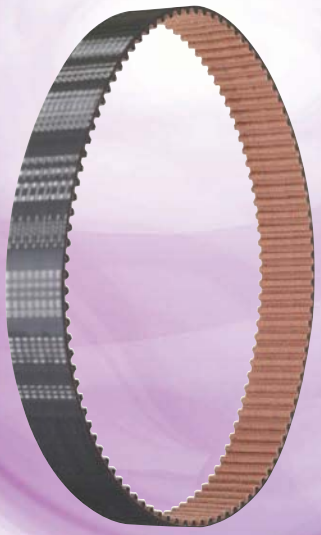
For orders larger than indicated quantity, please request a quotation.

Part Number Type	A	B	€ Unit Price YSSP H50~100	YSSP H101~150	YSSP H151~200	YSBP H50~100	YSBP H101~150	YSBP H151~200	YSMP H50~100	YSMP H101~150	YSMP H151~200	YSFP H50~100	YSFP H101~150	YSFP H151~200
YSSP YSBP YSMP YSFP	100	50												
		60												
		70												
		80												
		100												
	120	50												
		60												
		70												
		80												
		100												
		120												
	150	50												
		60												
		70												
		80												
		100												
		120												
		150												
	200	50												
		60												
		70												
		80												
		100												
		120												
		150												
		200												

Alterations

Part Number	-	B	-	H	-	(HNC)
YSBP200	-	B150	-	H200	-	HNC

Alteration	Code	Spec.	Price Adder
	HNC	Eliminates the top installation holes (M6 or N6). Ordering Code HNC Specification of dimensions F and G and hole types are not necessary.	-5,00




SSEBZ10
SSEBZ10





Technical Data

•SI (International System of Units) ····· 1887
•Quantifiers, Unit Symbols, Chemical Symbols and Symbols of Elements ····· 1889
•Calculation of Cubic Volume and Weight / Physical Properties of Materials ····· 1889
•Calculation of Area, Center of Gravity and Geometrical Moment of Inertia ····· 1890
•Roughness Ranges by Various Processes ····· 1891
•Geometric Tolerance Indications ····· 1892
•Selection of Ball Screws ····· 1893
•Calculation of Life Span of Linear Systems ····· 1901
•Selection of Single Axis Actuator ····· 1905
•Radial Bearing (Class 0) Tolerancs and Allowances ····· 1909
•About IP Codes for Sensor Switches ····· 1909
•How to Use Coil Springs and Precautions ····· 1910
•Spring Calculations ····· 1911
•Designing of Chain Drive Mechanism ····· 1913
•Free Flow Chain / Table Top Chain Selection ····· 1921
•Selection of Flat Belts ····· 1922
•Selection of Transmission Timing Belts ····· 1923
•Selection of Conveyor Timing Belts ····· 1940
•Synchronous Belt Reference Information ····· 1941
•Synchronous Belt Replacement Signs ····· 1942
•Selection of Synchronous Belt Iron Rubber® ····· 1943
•Technical Data
–Toothed Pulleys– ····· 1947
–Regular Machining Dimension Tolerance– ····· 1948
–Basis of Fitting Selection– ····· 1949
–Dimensional Tolerances and Fitting– ····· 1949
–Dimension Tolerance for Regularly Used Fitting (Axis)– ····· 1950
–Dimension Tolerance for Regularly Used Fitting (Hole)– ····· 1950
–Surface Roughness– ····· 1951
–Drawing Indications of Surface Texture– ····· 1952
–Hardness Conversion Table– ····· 1953
–Metric Coarse Screw Threads– ····· 1954
–Metric Fine Screw Threads– ····· 1955
–Taper Pipe Threads– ····· 1956
–Hexagon Socket Head Cap Screws– ····· 1957
–Proper Bolt Axial Tightening Force and Proper Tightening Torque– ····· 1959
–Strength of Bolts, Screw Plugs and Dowel Pins– ····· 1960
–Hexagon Socket Set Screws Flat Type– ····· 1961
–Hexagon Bolts– ····· 1962
–Hexagon Nuts– ····· 1963
–Cotter Pins– ····· 1963
–Spring Pins– ····· 1964
–Retaining Rings E Type– ····· 1964
–Retaining Rings C Type– ····· 1965
–Machine Keys and Key Grooves– ····· 1967
•Materials
–Metal Table EN - JIS– ····· 1969
–Metal Table JIS - EN– ····· 1974
–Plastic Table– ····· 1979
–Surface Treatments– ····· 1983

[Technical Data]
SI (International System of Units) Excerpt from JIS Z 8203(2000)

1. International System of Units(SI)and Usage.

1-1. Scope of Application This standard specifies how to use the International System of Units(SI)and other international unitary systems, as well as units used in correlation with units from international systems, and other units which may be used.

1-2. Terms and Definitions Terminology used in this specification and definitions thereof are as follows.

(1) International System of Units(SI) Coherent system of units adopted and recommended by the International Committee on Weights and Measures. It contains base units and supplementary units, units derived from them and their integral exponents to the 10th power.

(2) SI Unit Generic term used to describe base units, supplementary units or derived units of the International System of Units(SI).

(3) 1 Base Unit Those units are given in **Table 1**.

(4) 2 Supplementary Units Those supplementary units are given in **Table 2**.

Table 1. Base Units

Base Quantity	Unit	Symbol	Definition
Length	Meter	m	A meter is the length of the path traveled by light in a vacuum during a time interval of $\frac{1}{299\ 792\ 458}$ of a second.
Mass	Kilogram	kg	A kilogram is a unit of mass(neither weight nor force), it is equal to the mass of the international prototype of the kilogram.
Time	Second	s	A second is the duration of 9 192 631 770 periods of radiation corresponding to the transition between the two hyperfine levels of the ground state of the cesium 133 atom.
Current	Ampere	A	An ampere is that constant current which, if maintained in two straight parallel conductors of infinite length, of negligible circular cross-section, and placed 1 meter apart in a vacuum, would produce between these conductors a force equal to 2×10^{-7} Newton per meter of length.
Thermodynamic Temperature	Kelvin	K	Kelvin, a unit of thermodynamic temperature, is the fraction $\frac{1}{273.16}$ of the thermodynamic temperature of the triple point of water.
Amount of Substance	Mole	mol	A mole is the amount of substance of a system that contains as many elementary particles(1) or aggregation of elementary particles as there are atoms in 0.012 kilogram of carbon 12 and when the mole is used, the elementary particles must be specified.
Luminance Intensity	Candela	cd	A candela is the luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency 540×10^{12} hertz and that has a radiant intensity in that direction of $\frac{1}{683}$ watt per steradian.

Note(1) The elementary particles here must be atoms, molecules, ions, electrons or other particles.

Table 2. Supplementary Units

Base Quantity	Unit	Symbol	Definition
Plane Angle	Radian	rad	A radian is the plane angle between two radii of a circle that cuts off an arc on the circumference equal in length to the radius.
Solid Angle	Steradian	sr	A steradian is the solid angle which, having its vertex in the center of a sphere, cuts off an area of the surface of the sphere equal to that of a square with sides equal in length to the radius of the sphere.

(5)3 Derived Units The supplementary units algebraically expressed using mathematical symbols such as plus, minus, etc. The SI derived units with special names and symbols are given in Table 3.

Examples of SI Derived Units Expressed in Terms of Base Units

Base Quantity	Base Quantity	
	Name	Symbol
Area	Square	m^2
Volume	Cubic Meter	m^3
Velocity	Meter/Second	m/s
Acceleration	Meter/Second×2	m/s^2
Wave Number	Every Meter	m^{-1}
Density	Kilogram Every Cubic Meter	kg/m^3
Current Density	Ampere Every Square Meter	A/m^2
Magnetic Field Strength	Ampere Every Meter	A/m
Concentration (of Substance)	Mole Every Cubic Meter	mol/m^3
Specific Volume	Cubic Meter Every Kilogram	m^3/kg
Luminance	Candela Every Square Meter	cd/m^2

Table 3 SI Derived Units with Special Names and Symbols

Base Quantity	Base Quantity		Expression in Terms of Base Units or Supplementary Units, Supplementary Units or Other SI Units
	Name	Symbol	
Frequency	Hertz	Hz	1 Hz =1 s^{-1}
Force	Newton	N	1 N =1 $kg\cdot m/s^2$
Pressure, Stress	Pascal	Pa	1 Pa =1 N/m^2
Energy, Work, Heat Quantity	Joule	J	1 J =1 N·m
Work Rate, Process Rate, Power, Electric Power	Watt	W	1 W =1 J/s
Electric Charge, Quantity of Electricity	Coulomb	C	1 C =1 A·s
Electric Potential, Potential Difference, Voltage, Electromotive Force	Volts	V	1 V =1 J/C
Electrostatic Capacity, Capacitance	Farad	F	1 F =1 C/V
Electric Resistance	Ohm	Ω	1 Ω =1 V/A
Conductance	Siemens	S	1 S =1 Ω^{-1}
Magnetic Flux	Weber	Wb	1 Wb =1 V·s
Magnetic Flux Density	Tesla	T	1 T =1 Wb/m^2
Inductance	Henry	H	1 H =1 Wb/A
Celsius Temperature	Degree Celsius or Degree	℃	1 t℃ =(t+273.15)k
Luminous Flux	Lumen	lm	1 lm =1 cd·sr
Illuminance	Lux	lx	1 lx =1 lm/m^2
Radioactivity	Becquerel	Bq	1 Bq =1 s^{-1}
Absorbed Dose	Gray	Gy	1 Gy =1 J/kg
Dose Equivalent	Sievert	Sv	1 Sv =1 J/kg

1-3. Multiples of 10 of SI Units

(1)Prefix The multiples and the names and symbols of prefixes to express integer multiples of 10 of SI Units are shown in Table 4.

Table 4 Prefix.

Multiples of Unit	Prefix		Multiples of Unit	Prefix		Multiples of Unit	Prefix	
	Name	Symbol		Name	Symbol		Name	Symbol
10^{18}	Exsa	E	10^{2}	Hecto	h	10^{-9}	Nano	n
10^{15}	Peta	P	10^{1}	Deca	da	10^{-12}	Pico	p
10^{12}	Tera	T	10^{-1}	Deci	d	10^{-15}	Femto	f
10^{9}	Giga	G	10^{-2}	Centi	c	10^{-18}	Atto	a
10^{6}	Mega	M	10^{-3}	Milli	m			
10^{3}	Kilo	k	10^{-6}	Micro	μ			

2. Conversion Tables for SI and Conventional Units

(The units enclosed by thick lines are the SI units.)

	N	dyn	kgf
Force	1	1×10^{5}	$1.019\ 72\times10^{-1}$
	1×10^{-5}	1	$1.019\ 72\times10^{-6}$
	9.806 65	$9.806\ 65\times10^{5}$	1

	Pa·s	cP	P
Viscosity	1	1×10^{3}	1×10
	1×10^{-3}	1	1×10^{-2}
	1×10^{-1}	1×10^{2}	1

Note) $1P=1dyn\cdot s/cm^2=1g/cm\cdot s$
$1Pa\cdot s=1N\cdot s/m^2$, $1cP=1mPa\cdot s$

	Pa or N/m²	**MPa or N/mm²**	kgf/mm²	kgf/cm²
Stress	1	1×10^{-6}	$1.019\ 72\times10^{-7}$	$1.019\ 72\times10^{-5}$
	1×10^{6}	1	$1.019\ 72\times10^{-1}$	$1.019\ 72\times10$
	$9.806\ 65\times10^{6}$	9.806 65	1	1×10^{2}
	$9.806\ 65\times10^{4}$	$9.806\ 65\times10^{-2}$	1×10^{-2}	1

Note) $1Pa=1N/m^2$, $1MPa=1N/mm^2$

	m²/s	cSt	St
Kinematic Viscosity	1	1×10^{6}	1×10^{4}
	1×10^{-6}	1	1×10^{-2}
	1×10^{-4}	1×10^{2}	1

Note) $1St=1cm^2/s$, $1cSt=1mm^2/s$

	Pa	**kPa**	**MPa**	bar	kgf/cm²	atm	mmH_2O	mmHg or Torr
Pressure	1	1×10^{-3}	1×10^{-6}	1×10^{-5}	$1.019\ 72\times10^{-5}$	$9.869\ 23\times10^{-6}$	$1.019\ 72\times10^{-1}$	$7.500\ 62\times10^{-3}$
	1×10^{3}	1	1×10^{-3}	1×10^{-2}	$1.019\ 72\times10^{-2}$	$9.869\ 23\times10^{-3}$	$1.019\ 72\times10^{2}$	7.500 62
	1×10^{6}	1×10^{3}	1	1×10	$1.019\ 72\times10$	9.869 23	$1.019\ 72\times10^{5}$	$7.500\ 62\times10^{3}$
	1×10^{5}	1×10^{2}	1×10^{-1}	1	1.019 72	$9.869\ 23\times10^{-1}$	$1.019\ 72\times10^{4}$	$7.500\ 62\times10^{2}$
	$9.806\ 65\times10^{4}$	$9.806\ 65\times10$	$9.806\ 65\times10^{-2}$	$9.806\ 65\times10^{-1}$	1	$9.678\ 41\times10^{-1}$	1×10^{4}	$7.355\ 59\times10^{2}$
	$1.013\ 25\times10^{5}$	$1.013\ 25\times10^{2}$	$1.013\ 25\times10^{-1}$	1.013 25	1.033 23	1	$1.033\ 23\times10^{4}$	$7.600\ 00\times10^{2}$
	9.806 65	$9.806\ 65\times10^{-3}$	$9.806\ 65\times10^{-6}$	$9.806\ 65\times10^{-5}$	1×10^{-4}	$9.678\ 41\times10^{-5}$	1	$7.355\ 59\times10^{-2}$
	$1.333\ 22\times10^{2}$	$1.333\ 22\times10^{-1}$	$1.333\ 22\times10^{-4}$	$1.333\ 22\times10^{-3}$	$1.359\ 51\times10^{-3}$	$1.315\ 79\times10^{-3}$	$1.359\ 51\times10$	1

Note) $1Pa=1N/m^2$

	J	kW·h	kgf·m	kcal
Work, Energy, Heat Quantity	1	$2.777\ 78\times10^{-7}$	$1.019\ 72\times10^{-1}$	$2.388\ 89\times10^{-4}$
	$3.600\ \times10^{6}$	1	$3.670\ 98\times10^{5}$	$8.600\ 0\ \times10^{2}$
	9.806 65	$2.724\ 07\times10^{-6}$	1	$2.342\ 70\times10^{-3}$
	$4.186\ 05\times10^{3}$	$1.162\ 79\times10^{-3}$	$4.268\ 58\times10^{2}$	1

Note) $1Pa=1N/m^2$, $1MPa=1N/mm^2$

	W	kgf·m/s	PS	kcal/h
Power Heat Flow	1	$1.019\ 72\times10^{-1}$	$1.359\ 62\times10^{-3}$	$8.600\ 0\ \times10^{-1}$
	9.806 65	1	$1.333\ 33\times10^{-2}$	8.433 71
	$7.355\ \times10^{2}$	$7.5\ \times10$	1	$6.325\ 29\times10^{2}$
	1.162 79	$1.185\ 72\times10^{-1}$	$1.580\ 95\times10^{-3}$	1

Note) Note1W=1J/s, PS:French Horsepower

	W/(m·K)	kcal/(h·m·°C)
Thermal Conductivity	1	$8.600\ 0\times10^{-1}$
	1.162 79	1

	W/(m²·K)	kcal/(h·m²·°C)
Coefficient of Heat Transfer	1	$8.600\ 0\times10^{-1}$
	1.162 79	1

	J/(kg·K)	kcal/(kg·°C) cal/(g·°C)
Specific Heat	1	$2.388\ 89\times10^{-4}$
	$4.186\ 05\times10^{3}$	1

[Technical Data] Quantifiers, Unit Symbols, Chemical Symbols and Symbols of Elements Excerpts from JIS Z 8202
Calculation of Cubic Volume and Weight / Physical Properties of Materials

Greek Symbols

Uppercase	Lowercase	Pronunciation	Conventional Usage
A	α	alpha	Angle, Coefficient
B	β	beta	Angle, Coefficient
Γ	γ	gamma	Angle, Weight Per Unit Area, Relationship(Uppercase)
Δ	δ	delta	Small Change, Density, Displacement
E	ε	epsilon	Small Amount, Distortion
Z	ζ	zeta	Variable
H	η	eta	Variable
Θ	θ	theta	Angle, Temperature, Time
I	ι	iota	
K	κ	kappa	Radius of Gyration
Λ	λ	lambda	Wavelength, Characteristic Value
M	μ	mu	Friction Coefficient 10^{-6}(Micro)
N	ν	nu	Frequency
Ξ	ξ	xi	Variable
O	o	omicron	
Π	π	pi	Circle Ratio(3.14159...) Angle Symbol of Product(Uppercase)
P	ρ	rho	Radius, Density
Σ	σ	sigma	Stress, Standard Deviation Summation(Uppercase)
T	τ	tau	Time Constant, Time, Torque
Υ	υ	upsilon	
Φ	ϕ, φ	phi	Angle, Function, Diameter
X	χ	chi	
Ψ	ψ	psi	Angle, Function
Ω	ω	omega	Angular Verocity=2πf Ohm:Unit of Electric Resistance(Uppercase)

Reference unless otherwise specified, lowercase letters are the norm.

Characteristics of Materials

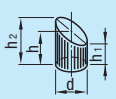
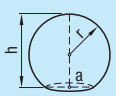
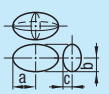
Material	Specific Gravity	Thermal Expansion Coefficient ×10⁻⁶/°C	Young's Modulus {Kgf/mm²}
Mild Steel	7.85	11.7	21000
NAK80® (Daido Steel)	7.8	12.5	20500
1.2379/X155CrVMo12-1	7.85	11.7	21000
1.2344/X40CrMoV5-1	7.75	10.8	21000
1.3343/S6-5-2	8.2	10.1	22300
Carbide V30	14.1	6.0	56000
Carbide V40	13.9	6.0	54000
Cast Iron	7.3	9.2~11.8	7500~10500
1.4301/X5CrNi18-10	8.0	17.3	19700
1.4125/X105CrMo17	7.78	10.2	20400
Oxygen Free Coppers CW008A	8.9	17.6	11700
6/4 Brass CW509L	8.4	20.8	10300
Beryllium Copper C1720	8.3	17.1	13000
Aluminum EN AW-1100	2.7	23.6	6900
Duralumin EN AW-7075	2.8	23.6	7200
Titanium	4.5	8.4	10600

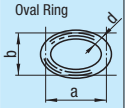
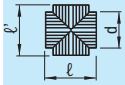
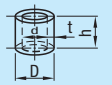
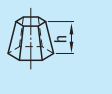
Name of Elements and Atomic Symbols

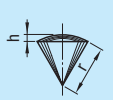
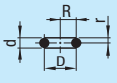
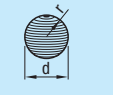
Atomic Number	Name	Symbol	Atomic Number	Name	Symbol
1	Hydrogen	H	53	Iodine	I
2	Helium	He	54	Xenon	Xe
3	Lithium	Li	55	Cesium	Cs
4	Beryllium	Be	56	Barium	Ba
5	Boron	B	57	Lanthanum	La
6	Carbon	C	58	Cerium	Ce
7	Nitrogen	N	59	Praseodymium	Pr
8	Oxygen	O	60	Neodymium	Nd
9	Fluorine	F	61	Promethium	Pm
10	Neon	Ne	62	Samarium	Sm
11	Sodium	Na	63	Europium	Eu
12	Magnesium	Mg	64	Gadolinium	Gd
13	Aluminum	Al	65	Terbium	Tb
14	Silicon	Si	66	Dysprosium	Dy
15	Phosphorous	P	67	Holmium	Ho
16	Sulfur	S	68	Erbium	Er
17	Chlorine	Cl	69	Thulium	Tm
18	Argon	Ar	70	Ytterbium	Yb
19	Potassium	K	71	Lutetium	Lu
20	Calcium	Ca	72	Hafnium	Hf
21	Scandium	Sc	73	Tantalum	Ta
22	Titanium	Ti	74	Tungsten	W
23	Vanadium	V	75	Rhenium	Re
24	Chromium	Cr	76	Osmium	Os
25	Manganese	Mn	77	Iridium	Ir
26	Iron	Fe	78	Platinum	Pt
27	Cobalt	Co	79	Gold	Au
28	Nickel	Ni	80	Mercury	Hg
29	Copper	Cu	81	Thallium	Tl
30	Zinc	Zn	82	Lead	Pb
31	Gallium	Ga	83	Bismuth	Bi
32	Germanium	Ge	84	Polonium	Po
33	Arsenic	As	85	Astatine	At
34	Selenium	Se	86	Radon	Rn
35	Bromine	Br	87	Francium	Fr
36	Krypton	Kr	88	Radium	Ra
37	Rubidium	Rb	89	Actinium	Ac
38	Strontium	Sr	90	Thorium	Th
39	Yttrium	Y	91	Protactinium	Pa
40	Zirconium	Zr	92	Uranium	U
41	Niobium	Nb	93	Neptunium	Np
42	Molybdenum	Mo	94	Plutonium	Pu
43	Technetium	Tc	95	Americium	Am
44	Ruthenium	R	96	Curium	Cm
45	Rhodium	Rh	97	Berkelium	Bk
46	Palladium	Pd	98	Californium	Cf
47	Silver	Ag	99	Einsteinium	Es
48	Cadmium	Cd	100	Fermium	Fm
49	Indium	In	101	Mendelevium	Md
50	Tin	Sn	102	Nobelium	No
51	Antimony	Sb	103	Lawrencium	Lr
52	Tellurium	T			

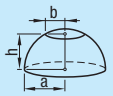
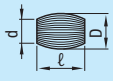
Reference This table is based on Appendix A(Names and Symbols of Elements)of ISO 31/8-1980 (Amounts and Units of Physical Chemistry and Molecular Physics) and Appendix C(Names and Symbols of Radionuclides) of ISO 31/9-1980(Amounts and Units of Atomic Physics and Nuclear Physics).

How to Calculate the Volume

Solid	Volume V
Turncated Cylinder 	$V=\frac{\pi}{4}d^2h$ $=\frac{\pi}{4}d^2\left(\frac{h_1+h_2}{2}\right)$
Pyramid 	$V=\frac{h}{3}A=\frac{h}{6}arn$ A=Area of Base r=Radius of inscribed circle a=Length of a side of a regular polygon n=Number of the sides of a regular polygon
Spherical Crown 	$V=\frac{\pi h^2}{3}(3r-h)$ $=\frac{\pi h}{6}(3a^2+h^2)$ a is the radius.
Ellipsoid 	$V=\frac{4}{3}\pi abc$ In case of spheroid (b=c) $V=\frac{4}{3}\pi ab^2$

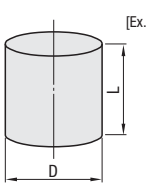
Solid	Volume V
Oval Ring 	$V=\frac{\pi^2}{4}d^2\frac{\sqrt{a^2+b^2}}{2}$
Cross Cylinder 	$V=\frac{\pi}{4}d^2(\ell+\ell'-\frac{d}{3})$
Hollow(Cylinder) 	$V=\frac{\pi}{4}h(D^2-d^2)$ $=\pi th(D-t)$ $=\pi th(d+t)$
Turncated Pyramid 	$V=\frac{h}{3}(A+a+\sqrt{Aa})$ A.a=Area of both ends

Solid	Volume V
Spherical Segment 	$V=\frac{2}{3}\pi r^2h$ $=2.0944r^2h$
Torus 	$V=2\pi^2Rr^2$ $=19.739Rr^2$ $=\frac{\pi^2}{4}Dd^2$ $=2.4674Dd^2$
Circular Cone 	$V=\frac{\pi}{3}r^2h$ $=1.0472r^2h$
Sphere 	$V=\frac{4}{3}\pi r^3=4.1888r^3$ $=\frac{\pi}{6}d^3=0.5236d^3$

Solid	Volume V
Spherical Belt 	$V=\frac{\pi h}{6}(3a^2+3b^2+h^2)$
Barrel 	When the circumference makes a curve equal to the circular arc, $V=\frac{\pi\ell}{12}(2D^2+d^2)$ When the circumference makes a curve equal to a parabolic line, $V=0.209\ell(2D^2Dd+1/4d^2)$

How to Calculate the Weight

Weight W[g]= Volume[cm³]× Specific Gravity



[Ex.]Material:Mild Steel

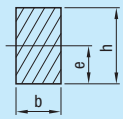
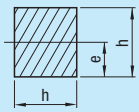
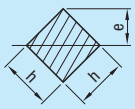
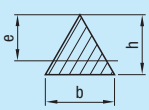
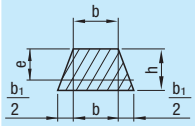
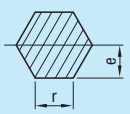
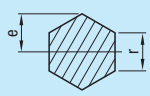
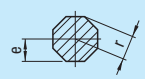
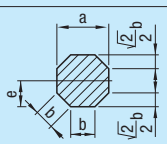
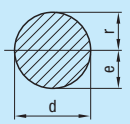
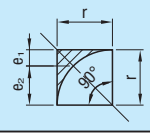
D=Ø16 L=50mm the weight is:

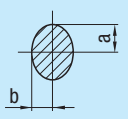
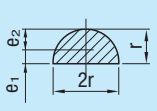
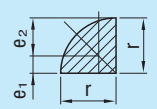
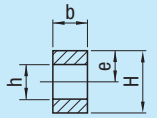
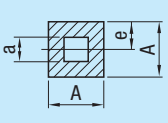
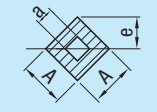
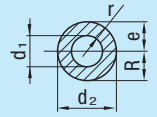
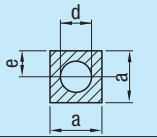
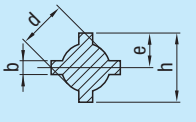
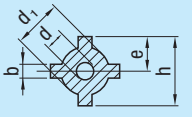
The specific gravity of W= $\frac{\pi}{4}D^2\times L\times W$

$=\frac{\pi}{4}\times1.6^2\times5\times7.85$

≈79[g]

[Technical Data]
Calculation of Area, Center of Gravity and Geometrical Moment of Inertia

Cross Section	A	e	I	Z=I/e
	bh	$\frac{h}{2}$	$\frac{bh^3}{12}$	$\frac{bh^2}{6}$
	h^2	$\frac{h}{2}$	$\frac{h^4}{12}$	$\frac{h^3}{6}$
	h^2	$\frac{h}{2}\sqrt{2}$	$\frac{h^4}{12}$	$0.1179h^3=\frac{\sqrt{2}}{12}h^3$
	$\frac{bh}{2}$	$\frac{2}{3}h$	$\frac{bh^3}{36}$	$\frac{bh^2}{24}$
	$(2b+b_1)\frac{h}{2}$	$\frac{1}{3}\times\frac{3b+2b_1}{2b+b_1}h$	$\frac{6b^2+6bb_1+b_1^2}{36(2b+b_1)}h^3$	$\frac{6b^2+6bb_1+b_1^2}{12(3b+2b_1)}h^2$
	$\frac{3\sqrt{3}}{2}r^2$ $=2.598r^2$	$\sqrt{\frac{3}{4}}r=0.886r$	$\frac{5\sqrt{3}}{16}r^4=0.5413r^4$	$\frac{5}{8}r^3$
		r		$\frac{5\sqrt{3}}{16}r^3=0.5413r^3$
	$2.828r^2$	$0.924r^2$	$\frac{1+2\sqrt{2}}{6}r^4$ $=0.6381r^4$	$0.6906r^3$
	$0.8284a^2$	$b=\frac{a}{1+\sqrt{2}}$ $=0.4142a$	$0.0547a^4$	$0.1095a^3$
	$\pi r^2=\frac{\pi d^2}{4}$	$\frac{d}{2}$	$\frac{\pi d^4}{64}=\frac{\pi r^4}{4}$ $=0.0491d^4$ $\approx 0.05d^4$ $=0.7854r^4$	$\frac{\pi d^3}{32}=\frac{\pi r^3}{4}$ $=0.0982d^3$ $\approx 0.1d^3$ $=0.7854r^3$
	$r^2\left(1-\frac{\pi}{4}\right)$ $=0.2146r^2$	$e_1=0.2234r$ $e_2=0.7766r$	$0.0075r^4$	$\frac{0.0075r^4}{e_2}$ $=0.00966r^3$ $\approx 0.01r^3$

Cross Section	A	e	I	Z=I/e
	πab	a	$\frac{\pi}{4}ba^3=0.7854\,ba^3$	$\frac{\pi}{4}ba^2=0.7854\,ba^2$
	$\frac{\pi}{2}r^2$	$e_1=0.4244r$ $e_2=0.5756r$	$\left(\frac{\pi}{8}-\frac{8}{9\pi}\right)r^4$ $=0.1098r^4$	$Z_1=0.2587r^3$ $Z_2=0.1908r^3$
	$\frac{\pi}{4}r^2$	$e_1=0.4244r$ $e_2=0.5756r$	$0.055r^4$	$Z_1=0.1296r^3$ $Z_2=0.0956r^3$
	$b(H-h)$	$\frac{H}{2}$	$\frac{b}{12}(H^3-h^3)$	$\frac{b}{6H}(H^3-h^3)$
	A^2-a^2	$\frac{A}{2}$	$\frac{A^4-a^4}{12}$	$\frac{1}{6}\frac{A^4-a^4}{A}$
	A^2-a^2	$\frac{A}{2}\sqrt{2}$	$\frac{A^4-a^4}{12}$	$\frac{A^4-a^4}{12A}\sqrt{2}$ $=\frac{0.1179(A^4-a^4)}{A}$
	$\frac{\pi}{4}(d_2^2-d_1^2)$	$\frac{d_2}{2}$	$\frac{\pi}{64}(d_2^4-d_1^4)$ $=\frac{\pi}{4}(R^4-r^4)$	$\frac{\pi}{32}\left(\frac{d_2^4-d_1^4}{d_2}\right)$ $=\frac{\pi}{4}\times\frac{R^4-r^4}{R}$
	$a^2-\frac{\pi d^2}{4}$	$\frac{a}{2}$	$\frac{1}{12}\left(a^4-\frac{3\pi}{16}d^4\right)$	$\frac{1}{6a}\left(a^4-\frac{3\pi}{16}d^4\right)$
	$2b(h-d)$ $+\frac{\pi}{4}d^2$	$\frac{h}{2}$	$\frac{1}{12}\left\{\frac{3\pi}{16}d^4+b(h^3-d^3)+b^3(h-d)\right\}$	$\frac{1}{6h}\left\{\frac{3\pi}{16}d^4+b(h^3-d^3)+b^3(h-d)\right\}$
	$2b(h-d)+$ $\frac{\pi}{4}(d_1^2-d^2)$	$\frac{h}{2}$	$\frac{1}{12}\left\{\frac{3\pi}{16}(d_1^4-d^4)+b(h^3-d_1^3)+b^3(h-d_1)\right\}$	$\frac{1}{6h}\left\{\frac{3\pi}{16}(d_1^4-d^4)+b(h^3-d_1^3)+b^3(h-d_1)\right\}$

A:Sectional area e:Distance of Center of Gravity I:Geometrical Moment of Inertia
Z=I/e:Cross Section Coefficient

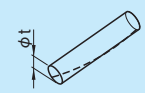
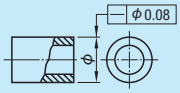
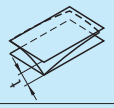
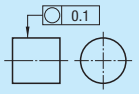
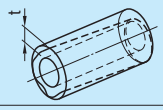
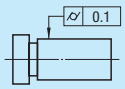
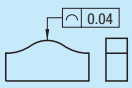
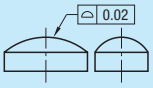
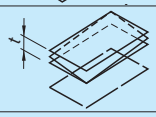
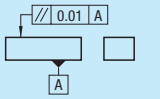
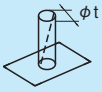
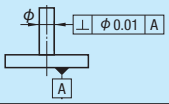
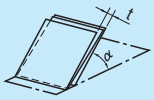
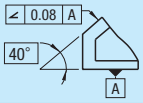
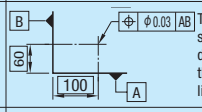
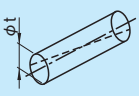
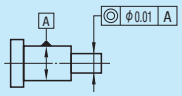
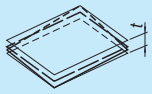
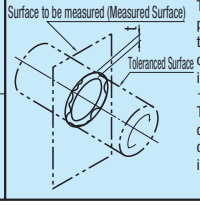
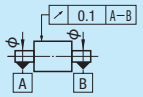
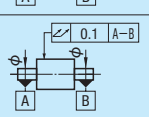
[Technical Data]
Roughness Ranges by Various Processes

Arithmetic Average Roughness Ra		0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50	100
Traditional Roughness Notations	Maximum Height Rmax.	0.1 –S	0.2 –S	0.4 –S	0.8 –S	1.6 –S	3.2 –S	6.3 –S	12.5 –S	25 –S	50 –S	100 –S	200 –S	400 –S
	Reference Value of Standard Length (mm)	0.25				0.8			2.5		8		25	
	Finish Symbol	▽▽▽▽				▽▽▽			▽▽		▽		–	
Processes	Forging								Precise					
	Casting								Precise					
	Die Casting													
	Hot Rolling													
	Cold Rolling													
	Drawing													
	Extruding													
	Tumbling													
	Sand Blasting													
	Rolling													
	Face Milling						Precise							
	Planing													
	Carving / Slotting													
	Milling						Precise							
	Precision Boring													
	Filing						Precise							
	Round Turning				Precise		Fine		Medium			Coarse		
	Boring						Precise							
	Drilling													
	Reaming					Precise								
	Broaching					Precise								
	Shaping													
	Milling			Precise	Fine		Medium			Coarse				
	Honing			Precise										
	Stone Lapping	Precise												
	Buff Finishing			Precise										
	Fine Sanding			Precise										
	Lapping	Precise												
	Hydro Honing			Precise										
	Burnishing													
	Roller Finishing													
	Sinker EDM													
	Wire EDM													
	Chemical Polishing						Precise							
	Electropolishing		Precise											

[Technical Data]
Geometric Tolerance Indications

Excerpts from JIS B0021(1984)

■ Geometric Tolerances and Symbols

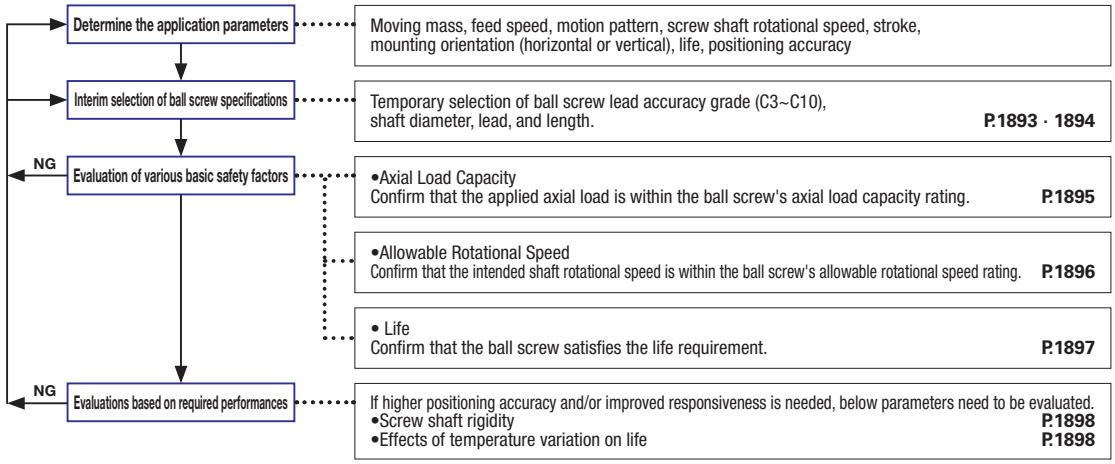
Tolerance Types		Symbols	Definition of Tolerance Zones	Illustrated Examples and Interpretations
Form Tolerance	Straightness	—	 If the tolerance value is preceded by a Ø symbol, this tolerance zone is the range within a cylinder of diameter t.	 If a tolerance frame is connected to a dimension that indicates the diameter of a cylinder, the axis line of the cylinder shall be contained within a cylinder of 0.08mm diameter.
	Flatness	▱	 The tolerance zone is the area between two parallel planes separated by distance t.	 This surface shall be contained within two parallel planes separated by 0.08mm.
	Circularity	○	 The tolerance zone in the subject plane is the area between two concentric circles separated by distance t.	 The circumference of arbitrary axis perpendicular cross sections shall be contained between two concentric circles separated by 0.1mm on the same plane.
	Cylindricity	⌭	 The tolerance zone is the range contained between two coaxial cylinder surfaces separated by distance t.	 The subject surface shall be contained between two coaxial cylinder surfaces separated by 0.1mm.
	Profile of Line	⌒	 The tolerance zone is the range contained between the two enveloping lines formed by a circle with diameter t with the center located on the theoretically correct profile curve.	 On arbitrary cross-sections parallel to the projection plane, the subject profile shall be contained between the two envelope lines formed by a 0.04mm diameter circle with the center located on the theoretically correct profile curve.
	Profile of Surface	⌓	 The tolerance zone is the range contained between the two enveloping surfaces formed by a sphere with diameter t with the center located on the theoretically correct profile surface.	 The subject surface shall be contained between the two enveloping surfaces formed by a 0.02mm diameter sphere with the center located on the surface containing the theoretically correct profile.
Orientation Tolerance	Parallelism	//	 The tolerance zone is the range contained between two planes parallel to the datum plane separated by distance t.	 The surface indicated by the arrow leader shall be contained between two planes parallel to the datum plane A separated by 0.01mm in the direction of the arrow leader.
	Perpendicularity Tolerance	⊥	 If the tolerance value is preceded by a Ø symbol, the tolerance zone is the range contained within a cylinder of diameter t perpendicular to the datum plane.	 The axis of the cylinder indicated by the arrow leader shall be contained within a 0.01mm cylinder perpendicular to the datum plane A.
	Angularity	∠	 The tolerance zone is the range contained between two parallel planes inclined at a specified angle to the datum plane and separated from each other by distance t.	 The surface indicated by the arrow leader shall be contained between two parallel planes inclined theoretically exactly by 40 degrees to the datum plane A, and separated by 0.08mm in the direction of the arrow of the leader.
Positional Tolerance	Positional Tolerance	⌖	 The tolerance zone is the range contained within a circle or sphere of diameter t with its center located at theoretically true location of the subject point (True Position).	 The point indicated by the arrow leader shall be contained within a 0.03mm diameter circle with its center located at the true location 60mm from the datum line A, and 100mm from the datum line B.
	Coaxiality or Concentricity	◎	 If the tolerance value is preceded by a Ø symbol, the tolerance zone is the range within a cylinder of diameter t with axis coinciding matching the datum axis line.	 The axis of the cylinder indicated by the arrow leader shall be contained within a cylinder of diameter 0.01mm with axis coinciding the datum axis line A.
	Symmetry	⌯	 The tolerance zone is the range contained between two parallel planes separated by distance t and located symmetrically with relation to the datum plane.	 The central plane indicated by the arrow leader shall be contained between two parallel planes separated by 0.08mm and located symmetrically in relation to the datum plane A.
Runout Tolerance	Runout Tolerance	↗	 The tolerance zone is an arbitrary surface perpendicular to the datum axis between two concentric cylinders with centers common with the datum axis, separated in radial direction by the distance t.	 The radial run-out of the cylinder surface indicated by the arrow leader shall not exceed 0.1mm on any measuring plane perpendicular to the datum axis line when the cylinder is rotated about the datum axis A-B.
	Total Runout	⌰	The tolerance zone is between two concentric cylinders with centers common with the datum axis, separated in radial direction by distance t.	 The total radial runout of the cylinder surface indicated by the arrow leader shall not exceed 0.1mm at any point on the cylinder surface when the cylinder is rotated about the datum axis A-B.

The lines used in the Tolerance Zone definitions mean the following.
Thick solid or broken line: Shape Thin dash-dot line: Center line Thick dash-dot line: Datum
Thin alternating long and two short dashed line: Supplementary projection plane or cross section plane Thin solid or broken line: Tolerance range
Thick alternating long and two short dashed line: Projection of shape onto supplementary plane or cross section plane

[Technical Data]
Selection of Ball Screws 1

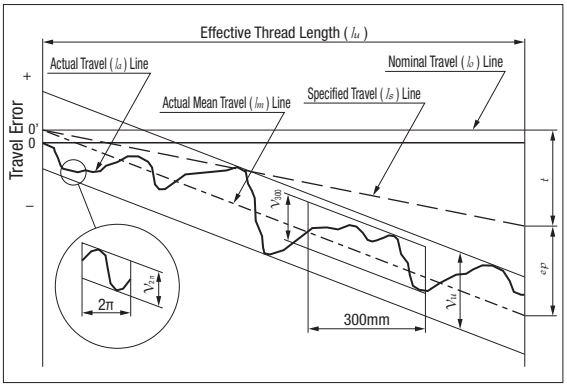
1. Ball Screw Selection Procedure

Basic ball screw selection procedure and required evaluation items are shown below.



2. Ball Screw Lead Accuracy

Ball screw lead accuracy is defined by JIS Standards property parameters (ep, vu, v300, v2π).
Parameter definitions and allowable values are shown below.
In general, a ball screw lead accuracy grade is selected by evaluating if the Actual Mean Travel Error of a candidate is within the allowable positioning error.



Terms	Symbols	Meaning
Actual Mean Travel Error	ep	A value that is Specified Travel subtracted from Actual Mean Travel.
Variation		The maximum difference of the actual travel contained between two lines drawn parallel to the actual mean travel, and is defined by three parameters below.
	v_u	Variation for the effective thread length of screw shaft.
	v_{300}	Variation for an arbitrarily taken length of 300mm within the effective thread length of screw shaft.
	$v_{2\pi}$	Variation for an arbitrary one revolution (2πrad) taken within the effective thread length of screw shaft.
Specified Travel	l_s	Axial travel compensated for temperature rise and loading conditions, in relation to the Nominal Travel (Lead).
Specified Travel Target Value	t	A value that is Nominal Travel subtracted from Specified Travel, over the effective thread length. This value is set to compensate for possible screw shaft expansion and contraction due to temperature changes and applied loads. The value is to be determined based on experiments or experiences.
Actual Travel	l_a	Actually measured travel distance
Actual Mean Travel	l_m	A straight line representing the actual travel trend. A straight line obtained by the least-squares method or other approximation methods from the curve representing the actual travel.

Table 1. Positioning Screw (C Class) Actual Mean Travel Error (±ep) and Variation (u) allowances Unit : μm

Thread Effective Length (mm)		Accuracy Grade			
		C3		C5	
over	or less	Actual Mean Travel Error	Variation	Actual Mean Travel Error	Variation
	315	12	8	23	18
315	400	13	10	25	20
400	500	15	10	27	20
500	630	16	12	30	23
630	800	18	13	35	25
800	1000	21	15	40	27
1000	1250	24	16	46	30
1250	1600	29	18	54	35

Table 2. Positioning Screws (C Class) variation per 300mm (300) Variation per rotation (2π) standard values Unit : μm

Accuracy Grade	C3		C5	
Parameters	V_{300}	$V_{2\pi}$	V_{300}	$V_{2\pi}$
Standard Values	8	6	18	8

Table 3. Transfer Screw (Ct Class) variation per 300mm (300) Standards Unit : μm

Accuracy Grade	Ct7	Ct10
V_{300}	52	210

Actual Mean Travel Error (ep) for Transfer Screws (Ct Class) is calculated as $ep=2 \cdot Lu/300 \cdot V_{300}$

3. Axial Clearances of Ball Screws

Axial clearance does not affect positioning accuracy if the feed is unidirectional, but will generate backlash and negatively affect on positioning accuracy if the direction or the axial load is reversed.

■Table 4. Axial Clearances of Rolled Ball Screws

Types	Prod. Example	Screw Shaft Ø	Lead	Axial Clearance (mm)
Standard Nut Accuracy Grade C7	BSST	8	2	0.03 or less
		10	4	
		12	4	
		15	5	
			10	
			20	
		20	5	
			10	0.05 or less
			20	0.03 or less
		25	5	
			10	0.07 or less
Standard Nut Accuracy Grade C10	BSSZ BSSR	8	2	0.05 or less
			4	
		10	2	
			4	
			10	
		12	4	
			10	0.10 or less
		14	5	
		15	5	
			10	
			20	
		20	5	
			10	0.15 or less
			20	0.10 or less
		25	5	
			10	0.20 or less
			25	0.12 or less
		28	6	0.10 or less
		32	10	0.20 or less
			32	0.15 or less
Compact Nut Accuracy Grade C10	BSSC	8	2	0.05 or less
		10	2	
		12	4	
		15	5	0.10 or less
			10	
		20	5	
			10	
		25	5	
Block Nut Accuracy Grade C10	BSBR	15	5	0.10 or less
		20		
		25		
		15	10	
		20		
		25		

■Table 5. Axial Clearances of Precision Ball Screws

Types	Prod. Example	Screw Shaft Ø	Lead	Axial Clearance (mm)
Standard Nut Accuracy Grade C3	BSX	6	1	0 (Preloaded)
		8	1	
			2	
		10	2	
		12	2	
			5	
		15	5	
Standard Nut Accuracy Grade C5	BSS (BSL)	8	2	0.005 or less
		10	2	
			4	
			10	
		12	2	
			4	
			5	
			10	
		15	5	
			10	
			20	
			40	0.010 or less
		20	5	0.005 or less
			10	
			20	
			40	
		25	5	
			10	
			20	
Standard Nut Accuracy Grade C7	BSSE	8	2	0.030 or less
		10	2	
			4	
		12	2	
			5	
			10	
		15	5	
			10	
			20	
		20	5	
			10	
			20	
		25	10	
			20	

Selection Example of Lead Accuracy

<Requirements>
· Ball screw diameter Ø15, lead 20.
· Stroke 720mm
· Positioning accuracy ±0.05mm/720mm

<Selection Details>
Select an appropriate lead accuracy grade based on the application requirements.

(1) Evaluating the screw thread length
Stroke+Nut Length+Margin=720+62+60=842
*The Margin shown above is an overrun buffer, and normally determined as 1.5~2 times the screw lead.
Lead 20x1.5x2 (both ends)=60

(2) Evaluating the lead accuracy
P.1893 Table 1. is referenced and an Actual Mean Travel Error ±ep for 842mm ball screw thread.
C3 · · · ±0.021mm/800~1000mm
C5 · · · ±0.040mm/800~1000mm

(3) Determining the lead accuracy
It can be determined that a C5 grade (±0.040/800~1000mm) ball screw can satisfy the required positioning accuracy of ±0.05/720mm.

Selection Example of Axial Clearance

<Requirements>
· Ball screw diameter Ø15, lead 5.
· Allowable backlash ±0.01mm

<Selection Details>
From Table 5., it can be determined that C5 grade with 0.005mm or less axial clearance satisfies the allowable backlash amount of 0.01mm for the Ø15 group.

4. Allowable Axial Load

Allowable Axial Load is a load with a safety margin built-in against a shaft bucking load.
Axial load that applies to a ball screw needs to be less than Allowable Maximum Axial Load.
Allowable Axial Load can be obtained by the following formula.
Additionally, approximate Allowable Axial Load can be obtained from Table 1. Allowable Axial Load Graph.

•Allowable Axial Load (P)

$$P = \frac{n\pi^2 EI}{\ell^2}\alpha = m\frac{d^4}{\ell^2}\times 10^4 (N)$$

Where:
P: Allowable Axial Load (N)
ℓ: Distance between Points of Buckling Load (mm)
E: Young's Modulus (2.06×10^5N/mm^2)
I: Min. Geometrical Moment of Inertia of Across Root Thread Area (mm^4)

$$I = \frac{\pi}{64} d^4$$

d : Thread Root Diameter (mm)
n, m : Coefficient Determined by Method of Screw Support

Method of Screw Support	n	m
Support - Support	1	5
Fixed - Support	2	10
Fixed - Fixed	4	19.9
Fixed- Free	0.25	1.2

α : Safety Factor = 0.5
For higher safety, a higher safety factor should be required.

Allowable Axial Load Calculation Example

Find the Allowable Axial Load for Fig.1

<How to use>
· Thread shaft diameter Ø15, Lead 5
· Mounting method Fixed - Support
· Distance between Points of Buckling Load ℓ_1 820mm
· Screw Shaft Root Diameter d 12.5

<Calculations>
g=15.1 since the mounting method is Fixed-Supported,
the Allowable Rotational Speed (Nc) is,

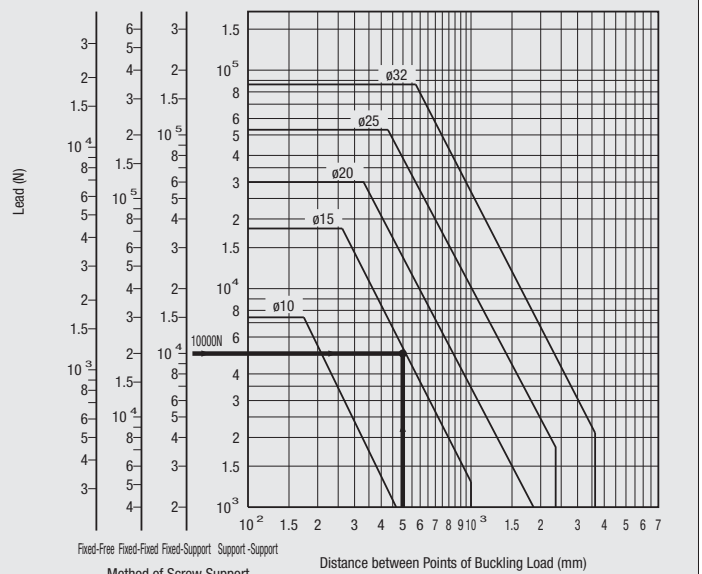
$$P = m\frac{d^4}{\ell^2}\times10^4 = 10\times\frac{12.5^4}{820^2}\times10^4 = 3630(N)$$

Therefore, the rotational speed will need to be 3024min^{-1} or less.

Table.1



•Figure1. Allowable Axial Load Curve



Screw Shaft Dia. Calculation Example

<Requirements>
· Distance between Points of Buckling Load 500mm
· Mounting method Fixed - Support
· the max. axial load 10000N

<Calculations>
(1) Find the intersection between a distance of 500mm between load acting points and the axial load of 10000daN(from the fixed-support graduation).[Figure 1]

(2) Read the shaft diameter of the diagonal line nearest to the intersection on the outside. The shaft diameter can be a min. 15mm.

5. Allowable Rotational Speed

Ball screw rotational speed is determined by required feed speed and the given screw lead, and needs to be less than the Allowable Maximum Rotational Speed.
Ball screw rotational speed is evaluated based on the shaft's critical speed and ball recirculation speed limitation DmN value.

5-1. Critical Speed

Allowable rotational speed is defined as a speed 80% or less of the Critical Speed where the rotational speed coincides with a natural resonant frequency of the screw shaft.
The Allowable Rotational Speed can be obtained by the following formula.
Additionally, approximate Allowable Rotational Speeds can be obtained from Table 2. Allowable Maximum Rotational Speed Graph.

•Allowable Rotational Speed (min^{-1})

$$N_C = fa \frac{60\lambda^2}{2\pi\ell^2}\sqrt{\frac{EI\times10^3}{\gamma}} = g\frac{d}{\ell^2}10^7\,(\text{min}^{-1})$$

Where:
ℓ: Distance of Supports (mm)
fa: Safety Factor (0.8)
E: Young's Modulus (2.06×10^5N/mm^2)
I: Min. Geometrical Moment of Inertia of Across Root Thread Area (mm^4)

$$I = \frac{\pi}{64}d^4$$

d: Thread Root Diameter (mm)
γ: Specific Gravity (7.8×10^{-6}kg/mm^3)
A: Root Thread Section Area (mm^2)

$$A = \frac{\pi}{4}d^2$$

g, λ: Coefficient Determined by Method of Screw Support

Method of Screw Support	g	λ
Support - Support	9.7	π
Fixed - Support	15.1	3.927
Fixed - Fixed	21.9	4.73
Fixed- Free	3.4	1.875

Allowable Rotational Speed Calculation Example

Find the Allowable Maximum Rotational Speed for Fig.2

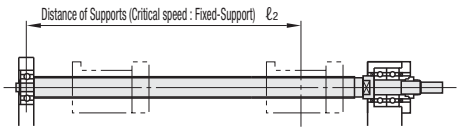
<How to use>
· Thread shaft diameter ø15, Lead 5
· Mounting method Fixed - Support
· Distance between Points of Buckling Load ℓ_1 790mm

<Calculations>
g=15.1 since the mounting method is Fixed-Supported,
the Allowable Rotational Speed (Nc) is,

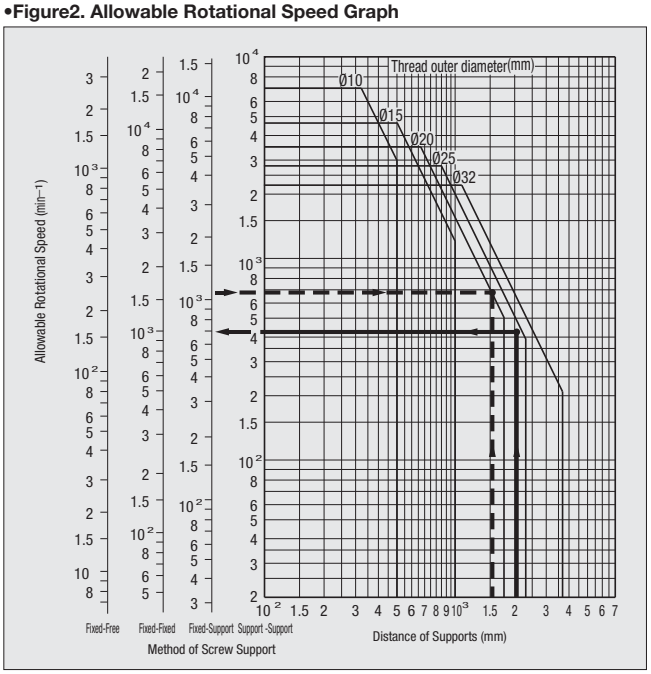
$$N_C = g\frac{d}{\ell^2}10^7(\text{min}^{-1}) = 15.1\times\frac{12.5}{790^2}\times10^7(\text{min}^{-1}) = 3024(\text{min}^{-1})$$

Therefore, the rotational speed will need to be 3024min^{-1} or less.

Table.2



•Figure2. Allowable Rotational Speed Graph



Allowable Rotational Speed Calculation Example

<Requirements>
· Thread outer diameter 20
· Distance of Supports 1500mm
· Mounting method Fixed - Support

<Calculations>
(1) From Table 2., find a intersection of a vertical line from Supported Span Distance 1500mm and Screw Shaft O.D. Ø20 line.

(2) The value 1076min-1 on the Fixed-Supported scale (Y-Axis) that corresponds to the intersection of (1) above is the Allowable Maximum Speed.

Screw Shaft Dia. Calculation Example

<Requirements>
· Distance of Supports 2000mm
· Maximum Revolution Frequency 1000min^{-1}
· the max. axial load Fixed - Fixed

<Calculations>
(1) From Table 2., find a intersection of a vertical line from Supported Span Distance 2000mm and a horizontal line from Fixed-Fixed max. speed scale (Y-Axis) at 1000min^{-1}.

(2) A line that reaches down to the intersection in (1) is the Ø25 ball screw that satisfies the required speed of 1000min^{-1}.

5-2. DmN Value

The DmN value represents a ball recirculation (orbit) speed limit within a ball nut.
If this vale is exceeded, the recirculation components will be damaged.

•Allowable Rotational Speed (min^{-1})

DmN≦70000 (Precision Ball Screws)
DmN≦50000 (Rolled Ball Screws)

Where:

Dm: Thread outer diameter(mm)+A Value

N: Maximum Revolution Frequency(min^{-1})

Ball Dia.	A Value
1.5875	0.3
2.3812	0.6
3.175	0.8
4.7625	1.0
6.35	1.8

6. Life Span

Ball screw's life is defined as: Total number of rotations, time, or distance where either the ball rolling surfaces or the balls begin to exhibit repetitive stress caused flaking. Ball screw's life can be calculated based on Basic Dynamic Load Rating with the following formula.

6-1. Life Hours (Lh)

$$L_h = \frac{10^6}{60N_m}\left(\frac{C}{P_m f_w}\right)^3 (hrs)$$

Where:
L_h: Life Span Hours (hrs)
C: Basic Dynamic Load Rating (N)
P_m: Mean Axial Load (N)
N_m: Mean Revolution Frequency (min^{-1})
f_w: Work Factor

Impactless Run	f_w = 1.0~1.2
Normal Run	f_w = 1.2~1.5
Run with Impact	f_w = 1.5~2.0

•Basic Dynamic Load Rating : C
Basic Dynamic Load Rating (C) is defined as: An axial load which a group of same ball screws are subjected and 90% of the specimen will reach 1 million rotations (10^6) without experiencing any flaking of the rolling surfaces. See product catalog pages for the Basic Dynamic Load Ratings.

*Setting life span hours longer than what is actually necessary not only requires a larger ball screw, but also increases the price.
In general, the following standards are used for life span hours:

Machine Tools:20,000hrs	Automatic Control Equipment:15,000hrs
Industrial Machinery:10,000hrs	Measuring Instruments:15,000hrs

*The basic dynamic load rating that satisfies the set life span hours is expressed by the following formula.

$$C = \left(\frac{60L_hN_m}{10^6}\right)^{\frac{1}{3}} P_m f_w (N)$$

Life Calculation Example

<Requirements>

· Ball Screw Model	BSS1520(Ø15 Lead 5)
· Mean Axial Load Pm	250N
· Mean Revolution Frequency Nm	2118 (min^{-1})
· Work Factor fw	1.2

<Calculations>
Since Basic Dynamic Load Rating C for BSS1520 is 4400N,

$$L_h = \frac{10^6}{60\times2118}\left(\frac{4400}{250\times1.2}\right)^3 = 24824(hr)$$

Therefore, Life will be 24824 hours.

6-2. Axial Load

Axial loads that apply on the screw shafts will vary depending on applicable motion profile such as acceleration, constant velocity, and deceleration phases. Following formula can be used.

-Axial Load Formula-
Constant Velocity · · · Axial Load (Pb)=μWg
Acceleration · · · Axial Load (Pa)=Wα+μWg
Deceleration · · · Axial Load (Pc)=Wα-μWg

* Omit the "μ" for vertical applications.

μ: Linear bearing friction coefficient (0.02 or Linear Guides)
W: Load Mass N
g: Gravitational Acceleration 9.8m/s^2
α: Acceleration (*)

(*) Acceleration (α)=(Vmax/t)x10^{-3}
Vmax: Rapid Feed Rate mm/s
t: Acceleration/Deceleration Time s

6-3. Formulae for Average Axial Load and Average Rotational Speed

Average Axial Load and Average Rotational Speed are calculated based on proportions of motion profiles.
Average Axial Load and Average Rotational Speed for Motion profiles in Table 1. can be calculated with the formula 2.

[Table 1. Motion Profile] ($t_1+t_2+t_3$=100%)

Motion Profile	Axial Load	Rotational Speed	Hours Ratio
A	P_1N	N_1min-1	$t_{1\%}$
B	P_2N	N_2min-1	$t_{2\%}$
C	P_3N	N_3min-1	$t_{3\%}$

[Formula 2. Average Axial Load Calculation]

$$P_m = \left(\frac{P_1^3N_1t_1+P_2^3N_2t_2+P_3^3N_3t_3}{N_1t_1+N_2t_2+N_3t_3}\right)^{\frac{1}{3}} (N)$$

$$N_m = \frac{N_1t_1+N_2t_2+N_3t_3}{t_1+t_2+t_3} (min^{-1})$$

For case of a machine tool application, Max. Load (P1) would be for the heaviest cutting cycles, Regular Load (P2) is for the general cutting conditions, and Minimum Load (P3) is for the non-cutting rapid feeds during positioning moves.

Average Axial Load and Average Rotational Seed Calculation Example

<Requirements>

Motion Profile	Axial Load	Rotational Speed	Hours Ratio
A	343N	1500min	29.4%
B	10N	3000min	41.2%
C	324N	1500min	29.4%

<Calculations>

(1) Average Axial Load

$$P_m = \left(\frac{343^3\times1500\times0.294+10^3\times3000\times0.412+324^3\times1500\times0.294}{1500\times0.294+3000\times0.412+1500\times0.294}\right)^{\frac{1}{3}} = 250(N)$$

Therefore, the Average Axial Load Pm will be 250N.

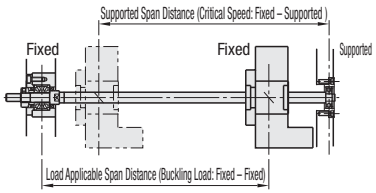
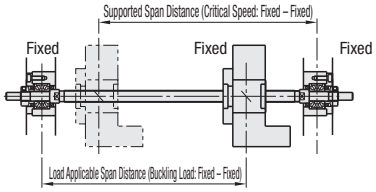
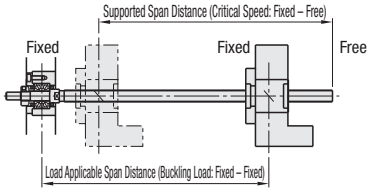
(2) Average Rotational Speed

$$N_m = \left(\frac{1500\times0.294+3000\times0.412+1500\times0.294}{0.294+0.412+0.294}\right) = 2118(min^{-1})$$

Therefore, the Average Rotational Speed Nm will be 2118min.

7. Screw Shaft Mounting Arrangements

Representative ball screw mounting arrangements are shown below.

Mounting Methods	Application Example
	· Typical method · Medium ~ High Speeds · Medium ~High Accuracy For Support Units, Standard Type BRW / BUR is selected.
	· Medium Speeds · High Accuracy · For Support Units, Standard Type BRW is selected.
	· Low Speeds · For Short Screw Shafts · Medium Accuracy · For Support Units, Economy Type BRWE is selected

8. Temperature and Life

When ball screws are continuously used at 100°C or higher, or used momentarily at very high temperatures, Basic Dynamic/Static Load Ratings will be reduced according to the temperature rise due to changes in material compositions.

However, there will be no effects up to 100°C. Basic Dynamic Load Rating C" and Basic Static Load Rating Co" at 100°C or higher with the temperature factors ft and ft' can be expressed with the following formula.

C"=ftC(N)
Co"=ft'Co(N)

Temperature °C	100 or less	125	150	175	200	225	250	350
ft	1.0	0.95	0.90	0.85	0.75	0.65	0.60	0.50
ft'	1.0	0.93	0.85	0.78	0.65	0.52	0.46	0.35

Normal usage range is -20~80°C. For application in high temperature, use of heat resistant grease as well as heat resistivity of other components should be evaluated.

9. Rigidity

In order to improve accuracies and system response of precision machinery and equipment, feed screw related component rigidity must be evaluated. Rigidity of feed screw system can be expressed with the following formula.

$$K=\frac{P}{\delta}\ (N/\mu m)$$

Where:
P: Axial Loads Applied on Feed Screw System (daN)
δ: Elastic Deformation of Feed Screw System (μm)
Additionally, the following relationship exists between the feed screw system rigidity and other various construction element rigidity.

$$\frac{1}{K}=\frac{1}{K\ell}+\frac{1}{Kn}+\frac{1}{Kb}+\frac{1}{Kh}$$

Where:
$K\ell$: Screw Shaft Compressive/Tensile Rigidity
Kn: Nut Rigidity
Kb: Support Bearing Rigidity
Kh: Nut and Bearing Mount Rigidity

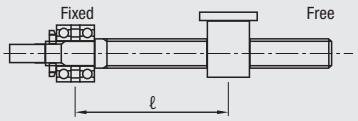
•Screw Shaft Compressive/Tensile Rigidity : $K\ell$

$$K\ell=\frac{P}{\delta\ell}\ (N/\mu m)$$

Where:
P: Axial Load (N)
$\delta\ell$: Screw Shaft Expansion/Contraction (μm)

The expansion and contraction are expressed in the following formula. The expansion and contraction will directly appear as ball screw backlash.

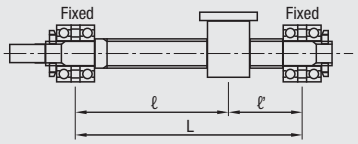
(1) Fixed-Free Arrangement



$$\delta\ell=\frac{4P\ell}{E\pi d^2}\times10^3(\mu m)$$

Where:
P: Axial Load (N)
E: Young's Modulus ($2.06\times10^5 N/mm^2$)
d: Screw Shaft Root Diameter (mm)
ℓ: Load Applicable Span Distance (mm)

(2) Fixed-Fixed Arrangement



$$\delta\ell=\frac{4P\ell\ell'}{E\pi d^2L}\times10^3(\mu m)$$

Where:
P: Axial Load(N)
E: Young's Modulus ($2.06\times10^5 N/mm^2$)
d: Screw Shaft Root Diameter (mm)
ℓ,ℓ': Load Applicable Span Distance (mm)
L: Mounting Span Distance (mm)

The formula produces the max. value when $\ell=\ell'=\frac{L}{2}$

$$\left(\ \delta\ell=\frac{PL}{E\pi d^2}\times10^3\ \right)$$

Therefore, the max. shaft expansion and contraction will be 1/4 of Fixed-Free arrangement.

10. Driving Torque

This selection provides a guide for selecting ball screw frictional properties and the driving motor.

10-1. Friction and Efficiency

Ball screw efficiency can be expressed in the following formulas; wherein μ is the coefficient of friction and β is the screw's lead angle. Variables are determined through analysis of a dynamic model.

When rotational force is converted into axial force (Forward Action)

$$\eta = \frac{1-\mu \tan\beta}{1+\mu/\tan\beta}$$

When axial force is converted into rotational force (Reverse Action)

$$\eta' = \frac{1-\mu/\tan\beta}{1+\mu\tan\beta}$$

10-2. Load Torque

The load torque(constant speed driving torque) required in drive source design(motors,etc.)is calculated as follows.

(1) Forward Action

Torque required when converting rotational force into axial force

$$T = \frac{PL}{2\pi\eta} \ (N \cdot cm)$$

Where:

T: Load Torque (N·cm)

P: External Axial Load (N)

L: Ball Screw Lead (cm)

η: Ball Screw Efficiency (0.9)

(2) Reverse Action

External axial load when converting axial force into rotational

$$P = \frac{2\pi T}{\eta' L} \ (N)$$

Where:

P: External Axial Load (N)

T: Load Torque (N·cm)

L: Ball Screw Lead (cm)

η': Ball Screw Efficiency (0.9)

(3) Friction Torque Caused by Preloading

This is a torque generated by preloading. As external loads increase, the preload of the nut is released and therefore the friction torque by preloading also decreases.

Under No load

$$T_P = K\frac{P_L L}{2\pi} \ (N \cdot cm)$$

$$K = 0.05(\tan\beta)^{-\frac{1}{3}}$$

Where:

P_L: Preload (N)

L: Ball Screw Lead (cm)

K: Coefficient of Internal Friction

β: Lead Angle $\beta \fallingdotseq \tan^{-1}\left(\frac{L}{\pi D}\right)$

D: Thread Outer Diameter

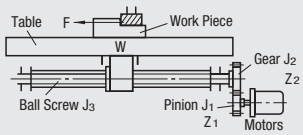
11. Selecting the Driving Motors

When selecting a driving motor, it is necessary to satisfy the following conditions:

1.Ensure a marginal force sufficient to counter the load torque exerted on the motor's output thread.

2.Enable starting, stopping at prescribed pulse speeds, sufficiently powered to counter the moment of inertia exerted on the motor's output thread.

3.Obtain the prescribed acceleration and deceleration constants, sufficient to counter the moment of inertia exerted on the motor's output thread.



(1) Constant Speed Torque Exerted on the Motor Output Thread

This is the amount of torque required to drive the output thread against the applied external load, at a constant speed.

$$T_1 = \left(\frac{PL}{2\pi\eta} + T_P\frac{(3P_L - P)}{3P_L}\right)\frac{Z_1}{Z_2} \ (N \cdot cm)$$

Where: $P \leqq 3P_L$

T_1: Driving Torque at Constant Speed (N·cm)

P: External Axial Load (N)

$P = F + \mu Mg$

F: Thrust Reaction Produced in Cutting Force (N)

M: Masses of Table and Work Piece (kg)

μ: Coefficient of Friction on Sliding Surfaces

g: Gravitational Acceleration (9.8m/s^2)

L: Ball Screw Lead (cm)

η: Mechanical Efficiency of Ball Screw or Gear

T_P: Friction Torque Caused by Preloading (N·cm) Referto Formula 10-2-(3)

P_L: Preload (N)

Z_1: Number of Pinion's Teeth

Z_2: No. of Gear's Teeth

(2) Acceleration Torque Exerted on the Motor Output Thread

This is the amount of torque required to drive the output shaft against the external load during acceleration.

$$T_2 = J_M\omega = J_M\frac{2\pi N}{60t} \times 10^{-3} \ (N \cdot cm)$$

$$J_M = J_1 + J_4 + \left(\frac{Z_1}{Z_2}\right)^2\left\{(J_2 + J_3 + J_5 + J_6)\right\} \ (kg \cdot cm^2)$$

Where:

T_2: Driving Torque in Acceleration (N·cm)

ω: Motor Thread Angular Acceleration (rad/s^2)

N: Motor Thread Revolutions (min^{-1})

t: Acceleration (s)

J_M: Moment of Inertia Exerted on the Motor (kg·cm^2)

J_1: Moment of Inertia Exerted on Pinion (kg·cm^2)

J_2: Moment of Inertia Exerted on Gear (kg·cm^2)

J_3: Moment of Inertia Exerted on Ball Screw (kg·cm^2)

J_4: Moment of Inertia Exerted on Motor's Rotor (kg·cm^2)

J_5: Moment of Inertia of Moving Body (kg·cm^2)

J_6: Moment of Inertia of Coupling (kg·cm^2)

M: Masses of Table and Work Piece (kg)

L: Ball Screw Lead (cm)

Moment of inertia exerted on cylinders as screws and cylinders such as Gears (Calculation of J_1~J_4, J_6)

$$J = \frac{\pi\gamma}{32} D^4\ell \ (kg \cdot cm^2)$$

Where:

D: Cylinder Outer Diameter (cm)

ℓ: Cylinder Length (cm)

γ: Material Specific Gravity

$\gamma = 7.8 \times 10^{-3}$ (kg/cm^3)

$$J_5 = M\left(\frac{L}{2\pi}\right)^2 \ (kg \cdot cm^2)$$

(3) Total Torque Exerted on the Motor Output Thread

Overall torque can be obtained by adding results from formulas (1) and (2).

$$T_M = T_1 + T_2 = \left(\frac{PL}{2\pi\eta} + T_P\frac{(3P_L - P)}{3P_L}\right)\frac{Z_1}{Z_2} + J_M\frac{2\pi N}{60t} \times 10^{-3} (N \cdot cm)$$

Where:

T_M: Total Torque Exerted on the Motor Output Thread (N·cm)

T_1: Driving Torque at Constant Speed (N·cm)

T_2: Driving Torque at In Acceleration (N·cm)

Once you have temporarily found the type of motor you need, check

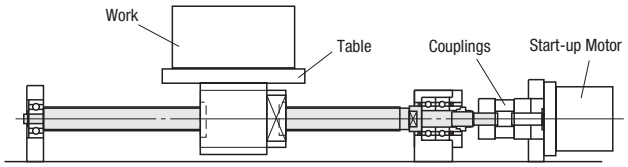
1. effective torque,
2. acceleration constant and
3. motor overload properties and heat tolerance during repeated starting, stopping.

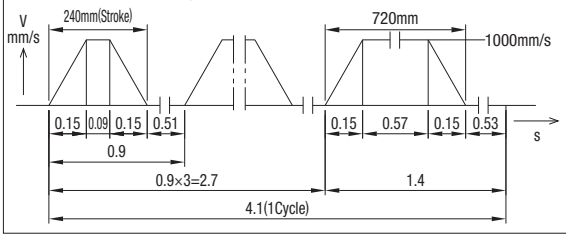
It is necessary to ensure a sufficient margin for these parameters.

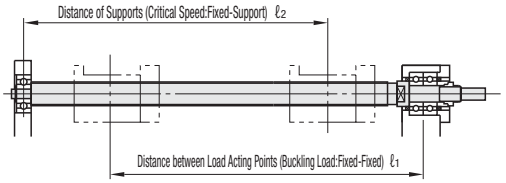
12. Example of Selection of Ball Screws

Condition of Use

•Work & Table Mass	W=50(kg)
•Maximum Strokes	Smax.=720(mm)
•Threading Speed	Vmax.=1000(mm/s)
•Acceleration Constant	t=0.15(s)
•Positioning Precision	±0.1/720(mm)
•Repeat Accuracy	±0.01(mm)
•Life Span	Lh=30000Hours
•Direct Acting Guide Coefficient of Friction	μ=0.02
•Driving Motor	Nmax.=3000(min⁻¹)
•Duty Cycle Model Diagram	







1. Setting Lead (L)

Set lead based on maximum motor revolutions and threading speed. Use the following formula.

$$L \geqq \frac{Vmax \times 60}{Nmax} = \frac{1000 \times 60}{3000} = 20$$

Required lead is 20mm or higher.

2. Nut selection

(1) Calculating Axial Load

P.1897, 6-2. Axial Load calculation formula is used to obtain the axial loads for each segment of a motion profile.

· At Constant Speed

Axial Load (Pb) =μWg=0.02×50×9.8≒10 (N)

· In Acceleration

Acceleration(α) = (Vmax/t)×10^{-3} = (100/0.15)×10^{-3}=6.67 (m/s^2)

Axial Load (Pa) =Wα+μWg=50×6.67+0.02×50×9.3≒343 (N)

· In Deceleration

Axial Load (Pc) Wα-μWg=50×6.67-0.02×50×9.8≒324 (N)

(2) Actual moving time during each segment in a motion profile

Below derived from Duty Cycle Model Diagram.

Operating Pattern	In Acceleration	At Constant Speed	In Deceleration	Total Operating Time
Operating Time	0.60	0.84	0.60	2.04

(3) Summary of Axial Loads, Rotational Speeds, and Operation Time for Each Motion Profile

Operating Pattern	In Acceleration	At Constant Speed	In Deceleration
Axial Load	343N	10N	324N
Revolutions Frequency	1500min^{-1}	3000min^{-1}	1500min^{-1}
Operating Time Ratio	29.4%	41.2%	29.4%

(4) Calculating the Average Axial Load with a formula in **P.1897**, 6-3.

$$\text{Mean Axial Load(Pm)} = \left(\frac{P_1^3N_1t_1 + P_2^3N_2t_2 + P_3^3N_3t_3}{N_1t_1 + N_2t_2 + N_3t_3} \right)^{\frac{1}{3}} = 250(N)$$

(5) Calculating the mean turns

$$\text{Mean Turns (Nm)} = \frac{N_1t_1 + N_2t_2 + N_3t_3}{t_1 + t_2 + t_3} = 2118(min^{-1})$$

(6) Calculation of the required basic dynamic load rating

(1) Calculating Continuous Operational Life (Lho)

A Continuous Operational Life which is derived by subtracting Resting time from Desired Life while a motion profile of 4.01s with a moving time of 2.04s can be calculated as follows.

$$\text{Lho=Desired Life (Lh)} \times \left(\frac{2.04}{4.1} \right) = 14927 \text{ (Hours)}$$

(2) Calculating Required Basic Dynamic Load Rating

P.1897 6-1. contains a formula for calculating a Basic Dynamic Load Rating for continuous operational life.

$$C = \left(\frac{60L_{ho}N_m}{10^6} \right)^{\frac{1}{3}} \times P_m \times f_w = \left(\frac{60 \times 14927 \times 2118}{10^6} \right)^{\frac{1}{3}} \times 250 \times 1.2 = 3700(N)$$

(7) Tentative Ball Screw Selection

A ball screw to satisfy the requirements of Lead 20 and Basic Dynamic Load Rating of 3700N, BSS1520 is tentatively selected.

3. Accuracy Evaluation

(1) Evaluating Accuracy Grades and Axial Clearances

P.1893 2. "Ball Screw Lead Accuracy" section shows a table for accuracy values of various Accuracy Grades.

From the lead accuracy value table, it can be confirmed that the C5 Grade with Actual Mean Travel Error ±ep 0.040/800~1000mm will satisfy the requirement of ±0.1/720mm, and a BSS1520 is suitable.

Additionally, the Precision Screws axial clearance table on shows that axial clearance of BSS1520 is 0.005 or less.

The required positioning repeatability is ±0.01mm, and it can be confirmed that BSS1520 satisfies the requirement.

4. Screw Shaft Selection

(1) Determining the Overall Length

Screw Shaft O.A.L. (L)=

Max. Stroke+Nut Length+Margin+Shaft End Terminations (both sides). Therefore,

Max Stroke:	720mm
Nut Length:	62mm
Margin:	Lead×1.5=60mm
Shaft End Termination Dims.:	72

Screw Shaft O.A.L. (L)=720+62+60+72=914mm

* The Margin is provided as a countermeasure in case overruns, and the amount is typically set as 1.5~2 times the screw lead.
Lead 20×1.5×2(Ends)=60

(2) Evaluating the Allowable Axial Load

Load Applicable Span Distance l1 is 820mm, and the Axial Load can be obtained by the formula on **P.1895**, "4. Allowable Axial Load" as below.

$$P = m \frac{d^4}{\ell^2} 10^4 = 10 \times \frac{12.5^4}{820^2} \times 10^4 = 3660N$$

The above formula produces an Axial Load value of 343N which is well within the Allowable Max. Axial Load 3660N, and suitability is confirmed.

(3) Evaluating the Allowable Max. Rotational Speed

Shaft supported span is 790mm, and the formula in "5-1. Critical Speed" on produces a value for the Critical Speed Nc as **P.1896**

$$Nc = g \frac{d}{\ell^2} 10^7 = 15.1 \times \frac{12.5}{790^2} \times 10^7 = 3024min^{-1}$$

The max. speed requirement of 3000min^{-1} is within the Critical Speed of 3024min^{-1}, and the suitability is confirmed.

Additionally, the DmN value can be evaluated with the formula in **P.1896**, "5-2. DmN Value" as...

DmN=(Shaft O.D.+A value)×Max Rotational Speed=15.8×3000=47400≤70000

and the suitability is confirmed.

5. Selection Result

From the above, it is determined that a suitable ball screw model is BSS1520-914.

[Technical Data]
Calculation of Life Span of Linear Systems 1

■ Allowable Load

•Basic Dynamic Load Rating (C)

Basic dynamic load rating is a constant load applied in a constant direction that enables each linear system of the same series to travel 50×10^3m under the same conditions, without 90% of the material suffering damage from rolling contact fatigue.

•Basic Static Load Rating (Co)

Basic static load rating is the static load exerted on contacting parts under maximum stress, at which the sum of the permanent deformation in the rolling element and rolling contact surface equals 0.0001 times the diameter of the rolling element.

•Allowable Static Moment (M_P, M_Y, M_R)

Allowable static moment is a critical static moment load that acts upon a system at the loading moment. It is set in accordance with the permanent deformation as in basic static load rating Co.

•Static Safety Factor (f_s)

Static safety factors are given in Table-1. When a linear system is still or moving at low speed, basic static load rating Co must be divided by fs in accordance with the conditions of use.

Table-1 Static Safety Factor(Lower Limit of f_s)

Condition of Use	Lower Limit of f_s
Under Normal Operating Conditions	1~2
When Smooth Travel is Required	2~4
When Subjected to Vibrations, Impacts	3~5

Allowable Load (N) ≤ C_o/f_s

Allowable Moment (N·m) ≤ $(M_P, M_Y, M_R)/f_s$

fs:Static Safety Factor Co:Basic Static Load (N)

M_P, M_Y, M_R : Static Allowable Moment (N·m)

■ Life Span

When a load is applied to a linear system, the system moves back and forth in a linear direction. In the process, repeated stress acts upon rolling elements and rolling contact surfaces, causing damage referred to as flaking from material fatigue.

The life span of a linear system is measured in terms of the total travel distance covered by the system up until initial flaking occurs.

•Rated Life Span (L)

Rated life span is the total travel distance that each linear system of the same series can endure under the same conditions, without the occurrence of flaking in 90% of the system.

Rated life span can be obtained as follows from the basic dynamic load rating and various loads exerted on the linear system.

For Ball Bearings $L=\left(\frac{C}{P}\right)^3\cdot50$

For Roller Bearings $L=\left(\frac{C}{P}\right)^{10/3}\cdot50$

L: Rated Life Span (km)

C: Basic Dynamic Load Rating (N)

P: Acting Load (N)

•When actually using a linear system, the first thing you must do is to calculate the load. It is necessary to consider load also in terms of vibration and impact that occur during operation, as well as its distribution across the entire linear system as it moves back and forth in a linear direction. Calculations are not simple. Operating temperature also significantly influences useful life. When these parameters are taken into consideration, the above formula is transformed as follows:

For Ball Bearings $L=\left(\frac{f_H\cdot f_T\cdot f_C}{f_W}\cdot\frac{C}{P}\right)^3\cdot50$

For Roller Bearings $L=\left(\frac{f_H\cdot f_T\cdot f_C}{f_W}\cdot\frac{C}{P}\right)^{10/3}\cdot50$

L: Rated Life Span (km)

f_H: Hardness Coefficient (See Fig.1)

C: Basic Dynamic Load Rating (N)

f_T: Temperature Coefficient (See Fig.2)

P: Acting Load (N)

f_C: Contact Coefficient (See Table 3)

f_W: Load Coefficient (See Table 4)

The Life span can be computed as a number of hours by obtaining the travel distance for a unit of time.

It can be obtained by using the following formula, in which stroke length and stroke cycles are assumed to be constant.

$L_h=\frac{L\cdot10^3}{2\cdot\ell_s\cdot n_1\cdot60}$

L_h: Life Span Hours (hr)

ℓ_s: Stroke Length (m)

L: Rated Life Span (km)

n_1: Reciprocating Times per Minute (cpm)

■ Friction Resistance and Required Thrust

Using the following formula, the friction resistance (required thrust) can be obtained from the load and the seal resistance specified by the system.

$F=\mu\cdot W+f$

F: Friction Resistance (N)

μ: Dynamic Friction Coefficient

W: Weight Loaded

f: Seal Resistance (2N~5N)

Table-2 Dynamic Friction Coefficient

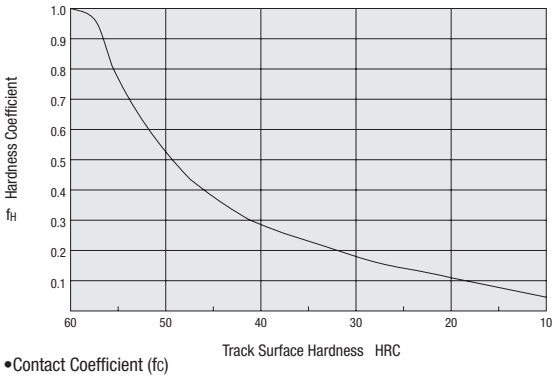
Type	Dynamic Friction Coefficient (μ)
Miniature Slide Guides	0.004~0.006
Medium Load Slide Guides	0.002~0.003
Slide Ways	0.001~0.003
Slide Tables	0.001~0.003
Linear Bushings	0.002~0.003
Linear Ball Bushings	0.0006~0.0012

•Hardness Coefficient(f_H)

In a linear system, the shaft must be hard enough to withstand contact with the ball bearings. Unless sufficient hardness is provided, the allowable load can decrease, resulting in a short useful life.

Compensate the rated life span with the hardness coefficient.

Fig-1. Hardness Coefficient



•Contact Coefficient (fc)

In general, two or more linear systems are used with each shaft. Depending on the machining precision, the load exerted on each of the respective systems can vary. In this case, the load applied on each linear system changes depending on the machining precision, therefore it cannot be uniformly applied. As a result, allowable load per linear system changes depending on the number of linear systems on one axis.

Compensate the rated life span with the contact coefficient in Table-3.

•Load Coefficient (fw)

When calculating the load that acts on a linear system, it is necessary to work with precise figures for material weight, the force of inertia resulting from operating speed, load moment, various changes that occur over time, and so on. However, it is difficult to have accurate calculation for oscillating movement as beside the normal repetition of start and stop, other factors such as vibration and impact also need to be considered.

Therefore, the life span calculation needs to be simplified using the load coefficient in Table-3.

■ Linear Bushings

Rated life span can be obtained as follows from the basic dynamic load rating and the load to the linear bushing.

$$L=\left(\frac{f_H \cdot f_T \cdot f_C}{f_W} \cdot \frac{C}{P}\right)^3 \cdot 50$$

L: Rated Life Span (km) f_H: Hardness Coefficient (See Fig.1)

C: Basic Dynamic Load Rating (N) f_T: Temperature Coefficient (See Fig.2)

P: Working Load (N) f_C: Contact Coefficient (See Table3)

fw: Load Coefficient (See Table4)

The Life span can be computed as a number of hours by obtaining the travel distance for a unit of time. It can be obtained using the following formula, in which stroke length and stroke cycles are assumed to be constant.

$$L_h=\frac{L \cdot 10^3}{2 \cdot \ell_s \cdot n_1 \cdot 60}$$

L_h: Life Span Hours (hr) ℓ_s: Stroke Length (m) L: Rated Life Span (km)

n_1: Reciprocating Times per Minute (cpm)

•Temperature Coefficient (f_T)

When temperature in a linear system exceeds 100˚C, the hardness of the system and the shaft become degraded. This decreases the allowable load to a greater extent than when the system is used at ambient temperature, and can shorten the life span.

Compensate the rated life span with the temperature coefficient.

Fig.-2 Temperature Coefficient

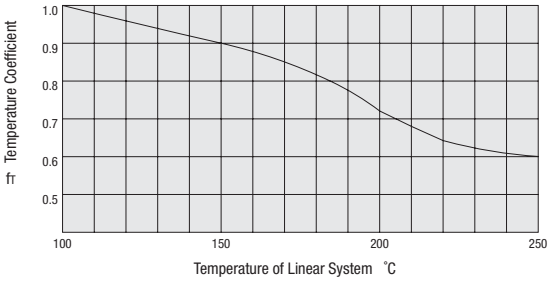


Table-3. Contact Coefficient

Number of Bearings per Shaft	Contact Coefficient fc
1	1.00
2	0.81
3	0.72
4	0.66
5	0.61

Table-4. Load Coefficients

Condition of Use	fw
Low speed with no external vibration or impact (Max. 15m/min)	1.0~1.5
Middle range speed with no exerted vibration or impact of considerable force(Max. 60m/min)	1.5~2.0
High speed with no external vibration or impact (Over 60m/min)	2.0~3.5

■ Linear Ball Bushings

Rated life span can be obtained as follows from the basic dynamic load rating and the load to the linear ball bushing.

$$L=\left(\frac{f_H \cdot f_T \cdot f_C}{f_W} \cdot \frac{C}{P}\right)^3 \cdot 50$$

L: Rated Life Span (km) f_H: Hardness Coefficient (See Fig.1)

C: Basic Dynamic Load Rating (N) f_T: Temperature Coefficient (See Fig.2)

P: Working Load (N) f_C: Contact Coefficient (See Table 3)

fw: Load Coefficient (See Table 4)

Life Span Hours

·For revolution and reciprocating motion

$$L_h=\frac{10^6 \cdot L}{60\sqrt{(dm \cdot n)^2+(10 \cdot S \cdot n_1)^2}/dm}$$

·For reciprocating motion

$$L_h=\frac{10^6 \cdot L}{600 \cdot S \cdot n_1/(\pi \cdot dm)}$$

L_h: Life Span Hours(hr) S: Stroke Length(mm) n: Revolutions per Minute(rpm)

n_1: Strokes Per Minute(cpm)

dm: Pitch Diameter of Ball(mm)≈1.15dr

·Revolution and reciprocal motion allowable values

$$DN \geq dm \cdot n+10 \cdot S \cdot n_1$$

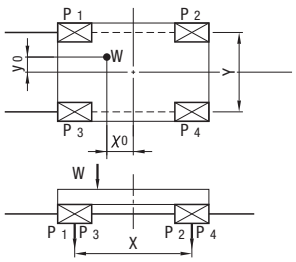
[Technical Data]
Calculation of Life Span of Linear Systems 2

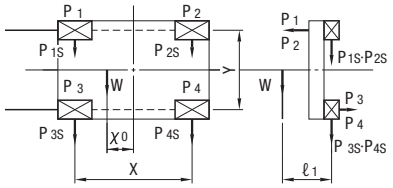
•Load Calculations

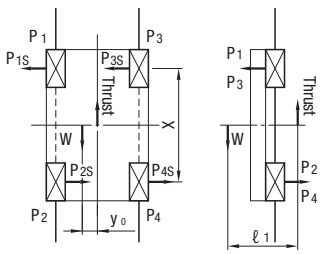
Since a linear system bears the weight of the work while it performs a reciprocating linear motion, the load exerted on the system can vary depending on the work's center of gravity, thrust acting position change, and the speed changes by starting, stopping and acceleration, deceleration.

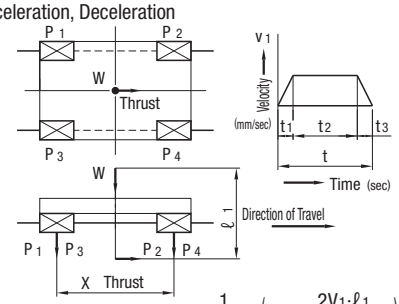
It is necessary to take these conditions into consideration when selecting a linear system.

Table-5. Use Conditions and Load Calculation Formulas

<table>
<tr><th>Type</th><th>Condition of Use and Load</th><th>Type</th><th>Condition of Use and Load</th></tr>
<tr><td>1</td><td>Horizontal Axis
 

$P_1=\frac{1}{4}W+\frac{X_0}{2X}W+\frac{y_0}{2Y}W$
$P_2=\frac{1}{4}W-\frac{X_0}{2X}W+\frac{y_0}{2Y}W$
$P_3=\frac{1}{4}W+\frac{X_0}{2X}W-\frac{y_0}{2Y}W$
$P_4=\frac{1}{4}W-\frac{X_0}{2X}W-\frac{y_0}{2Y}W$</td><td>3</td><td>Perpendicular to Horizontal Axis
 

$P_1=P_2=P_3=P_4=\frac{\ell_1}{2X}W$
$P_{1S}=P_{3S}=\frac{1}{4}W+\frac{X_0}{2X}W$
$P_{2S}=P_{4S}=\frac{1}{4}W-\frac{X_0}{2X}W$</td></tr>
<tr><td>2</td><td>Vertical Axis
 

$P_1=P_2=P_3=P_4=\frac{\ell_1}{2X}W$
$P_{1S}=P_{2S}=P_{3S}=P_{4S}=\frac{y_0}{2X}W$</td><td>4</td><td>In Acceleration, Deceleration
 

•Acceleration at Starting $P_1=P_3=\frac{1}{4}W\left(1+\frac{2V_1\cdot\ell_1}{g\cdot t_1\cdot X}\right)$
$P_2=P_4=\frac{1}{4}W\left(1-\frac{2V_1\cdot\ell_1}{g\cdot t_1\cdot X}\right)$
•Deceleration at Stopping $P_1=P_3=\frac{1}{4}W\left(1-\frac{2V_1\cdot\ell_1}{g\cdot t_3\cdot X}\right)$
$P_2=P_4=\frac{1}{4}W\left(1+\frac{2V_1\cdot\ell_1}{g\cdot t_3\cdot X}\right)$
•Constant Speed $P_1=P_2=P_3=P_4=\frac{1}{4}W$
g:Gravitational Acceleration=9.8×10^3mm/sec^2</td></tr>
</table>

W :Acting Load(N) P_1,P_2,P_3,P_4:Load applied to the Linear System(N)

X,Y: Linear System Span(mm) V:Moving Speed(mm/sec)

t_1 :Acceleration Time(sec) t_3:Deceleration Time(sec)

Fig-3. Stepped Load Fluctuation

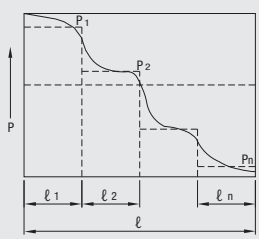


Fig-4. Flat Fluctuation Load

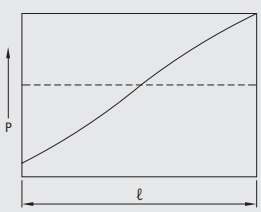
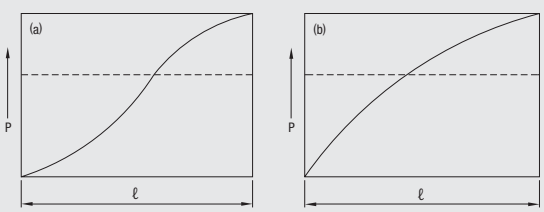


Fig-5. Sinusoidal Load Fluctuation



•Mean Load Derived from Fluctuating Loads

In general, the load acting upon a linear system can change according to how the system is used.This happens for example when the reciprocating motion is started, stopped as compared to constant speed motion, and whether or not work is present during transfer, etc. Therefore, in order to correctly design the life span under various conditions and fluctuating loads, it is necessary to obtain a mean load and apply it to the life span calculations.

(1) When load changes in steps by a travel distance(Fig-3)

Travel distance ℓ_1 subjected to load P_1

Travel distance ℓ_2 subjected to load P_2

⋮ ⋮

Travel distance ℓn subjected to load Pn

Mean load Pm can be obtained by using the following formula:

$$P_m = \sqrt[3]{\frac{1}{\ell}\left(P_1^3\ell_1 + P_2^3\ell_2 \cdots + P_n^3\ell n\right)}$$

P_m : Mean Load Derived from Fluctuating Loads(N) ℓ : Total Travel Distance(m)

(2) When load changes almost linearly(Fig-4)

Mean load P_m can be approximated by the following formula:

$$P_m \approx \frac{1}{3}(P_{min} + 2\cdot P_{max})$$

P_{min} : Min. Fluctuating Load (N)

P_{max}: Max. Fluctuating Load(N)

(3) When the load change resembles a sinusoidal curve as shown in Fig-5 (a), (b), Mean Load Pm can be approximated by the following formula:

Fig-5(a) $P_m \approx 0.65P_{max}$
Fig-5(b) $P_m \approx 0.75P_{max}$

■ Slide Guides

Rated life span is the total travel distance each linear guide of the same series can endure under the same conditions, without the occurrence of flaking in 90% of the system.

Rated life span can be obtained as follows from the basic dynamic load rating and the load to the slide guide.

$$L = \left(\frac{f_T}{f_w}\cdot\frac{C}{P}\right)^3\cdot 50 \qquad (1)$$

L : Rated Life Span(km) C : Basic dynamic load rating(N)

f_T : Temperature Coefficient(See Fig-2) P : Acting Load(N)

fw : Load Coefficient(See Fig-4)

The life span hours can be computed as a number of hours by obtaining the travel distance for a unit of time.It can be obtained by using the following formula, in which stroke length and stroke cycles are assumed to be constant.

$$Lh = \frac{L\cdot 10^3}{2\cdot \ell s\cdot n_1\cdot 60} \qquad (2)$$

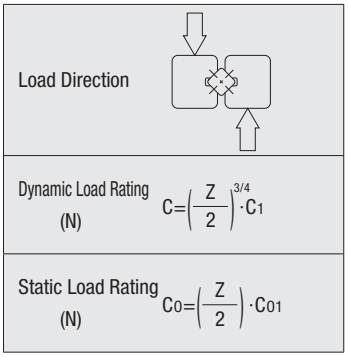
Lh : Life Span Hours(hr) ℓs : Stroke Length(m)

L : Rated Life Span(km) n_1 : Reciprocating Times per Minute(cpm)

■ Slide Ways

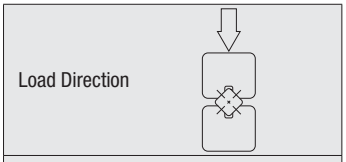
Rated load for slide ways is determined by the rolling elements(numbers of rollers). It can be calculated by using the following formulas:

One shaft is used



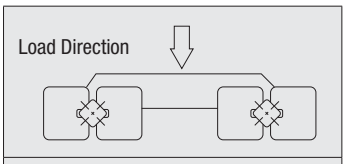
Dynamic Load Rating (N)	$C=\left(\frac{Z}{2}\right)^{3/4}\cdot C_1$
Static Load Rating (N)	$C_0=\left(\frac{Z}{2}\right)\cdot C_{01}$

One shaft is used vertically



Dynamic Load Rating (N)	$C=\left(\frac{Z}{2}\right)^{3/4}\cdot C_1\cdot 2^{7/9}$
Static Load Rating (N)	$C_0=\left(\frac{Z}{2}\right)\cdot C_{01}\cdot 2$

Two shafts are used in parallel



Dynamic Load Rating (N)	$C=\left(\frac{Z}{2}\right)^{3/4}\cdot C_1\cdot 2^{7/9}$
Static Load Rating (N)	$C_0=\left(\frac{Z}{2}\right)\cdot C_{01}\cdot 2$

C_1 : Basic Dynamic Load Rating per Roller(N)

C_{01} : Basic Static Load Rating per Roller(N)

Z : Number or Rolling Elements

The life span for slide ways is calculated by using the following formula.

$$L = \left(\frac{f_T\cdot C}{f_w\cdot P}\right)^{10/3}\cdot 50$$

L : Life Span Hours(km) C : Dynamic Load Rating(N)

f_T : Temperature Coefficient(See Fig-2) P : Acting Load(N)

fw : Load Coefficient(See Fig-4)

Life Span Hours

$$Lh = \frac{L\cdot 10^3}{2\cdot \ell s\cdot n_1\cdot 60}$$

Lh : Life Span Hours(hr) ℓs : Stroke Length(m)

L : Life Span Hours(km) n_1 : Reciprocating Times per Minute(cpm)

[Technical Data]
Selection of Single Axis Actuators 1

Select the nominal LX actuator from the travel and the rating list below.

➡

Determine the ball screw lead so that the operation speed will be within the maximum speed shown in (Table 4). At this stage, the selection is temporary.

➡

Examine the load applied to the rail and put it in formulas (1) and (2) on **page 1906**. Obtain the equivalent load Fe for each process and put it in formula (3) on **page 1906**. Obtain the average load Fm and calculate the lifetime.

➡

Examine the load applied to the ball screw and the support bearing. Put it in formula (3) on **page 1906**, obtain the average load Fm and calculate the lifetime.

■Rated load (Table 1)

Item			LX2001	LX2005	LX2602	LX2605	LX3005	LX3010	LX4510	LX4520
Rail	Dynamic load rating Ca (N)		3277		6522		9732	6305	18450	11826
	Static load rating Coa (N)		6199		11871		17218	9271	32441	17175
	Radial clearances		−3~0		−4~0		−4~0		−6~0	
Ball screw	Dynamic load rating Ca (N)	Advanced	482	822	1712	1600	1831	1129	4167	2499
	Static load rating Coa (N)	Advanced	642	1026	2251	2097	2389	1386	5945	3381
	Thread shaft diameter (mm)		6	6	8	8	10	10	15	15
	Lead (mm)		1	5	2	5	5	10	10	20
	Core diameter		5.3	4.918	6.4	6.46	8.2		11.7	
	Ball center diameter		6.15	6.3	8.3	8.3	10.3	10.3	15.5	15.75
Bearing (fixed side)	Axial load	Dynamic load rating Ca (N)	730		1637		2702		4335	
		Static load rating Coa (N)	461		1205		2197		4106	

■Moment equivalent coefficient at rail (Table 2)

Type	Block	Kp	Ky	Kr
LX20_ _	1 piece	0.228	0.228	0.0667
	Close contact between 2 pcs.	0.144	0.144	0.0667
LX26_ _	1 piece	0.17	0.17	0.0527
	Close contact between 2 pcs.	0.114	0.114	0.0527
LX30_ _	1 piece	0.137	0.137	0.0445
	Close contact between 2 pcs.	0.0917	0.0917	0.0445
LX45_ _	1 piece	0.1115	0.1115	0.0334
	Close contact between 2 pcs.	0.0840	0.0840	0.0334

■Rail geometrical moment of inertia (Table 3)

Type	Lx (mm⁴)	Ly (mm⁴)	Mass (kg/100mm)	Center of Gravity h (mm)
LX2001	3.2×10^3	5.2×10^4	0.22	4.4
LX2606	1.0×10^4	1.4×10^5	0.37	6.1
LX30_ _	2.5×10^4	3.1×10^5	0.6	7.8
LX45_ _	8.8×10^4	10.4×10^5	1.10	11.0

■Allowable Static Load / Allowable Static Moment (Table 4)

Type	No. of blocks	Allowable Static Load (kg)	Allowable Static Moment (N·m)		
		Horizontal	Ma	Mb	Mc
LX20_ _	B1	6199	27	27	93
	B2	12398	353	353	186
LX20_ _C	B1	6199	27	27	93
	B2	12398	353	353	186
LX26_ _	B1	11871	70	70	225
	B2	23742	902	902	450
LX26_ _C	B1	11871	70	70	225
	B2	23742	902	902	450
LX3005	B1	17218	126	126	387
	B2	34436	1515	1515	774
LX3005C	B1	17218	126	126	387
	B2	34436	1515	1515	774
LX3010	B1	17218	126	126	387
	B2	34436	1515	1515	774
LX3010C	B1	17218	126	126	387
	B2	34436	1515	1515	774
LX4510	B1	32441	291	291	972
	B2	64882	3945	3945	1944
LX4520	B1	32441	291	291	972
	B2	64882	3945	3945	1944

■Allowable Static Load / Allowable Static Moment (Short Block) (Table 5)

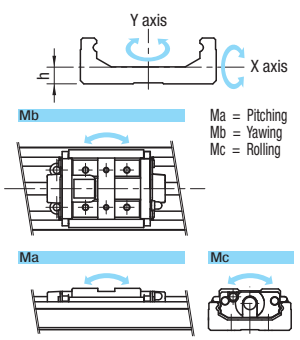
Type	No. of blocks	Allowable Static Load (kg)	Allowable Static Moment (N·m)		
		Horizontal	Ma	Mb	Mc
LX3005	S1	9271	63	63	208
	S2	18542	579	579	417
LX3010	S1	9271	63	63	208
	S2	18542	579	579	417
LX4510	S1	17175	145	145	515
	S2	34350	1444	1444	1029
LX4520	S1	17175	145	145	515
	S2	34350	1444	1444	1029

■Maximum travel speed (Table 6)

Type	Lead	L (mm)	Maximum travel speed (mm/s)
			Advanced
LX20_ _	01	–	190
	05	–	690
LX26_ _	02	–	290
	05	–	520
LX30_ _	06	150	410
		200	410
		300	410
		400	410
		500	370
		600	250
	10	150	830
		200	830
		300	830
		400	830
		500	740
		600	500
LX45_ _	10	340	550
		390	550
		440	550
		490	550
		540	550
		590	550
	20	340	1110
		390	1110
		440	1110
		490	1110
		540	1110
		590	1110

■Load coefficient fw (Table 7)

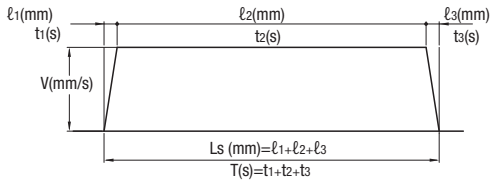
Vibration/ impact	Speed	fw
Subtle	Super-low speed V≤ 0.25m/s	1~1.2
Small	Low speed 0.25m/s<V≤ 1m/s	1.2~1.5
Medium	Medium speed 1m/s <V≤ 2m/s	1.5~2
Large	High speed 2m/s<V	2~3.5



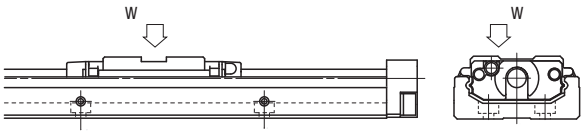
Life Span

For the LX actuator, calculate the life span of the rail, ball screw and support bearing. The actuator life span is determined to be the smallest value from among these results.

Load mass : W kg
Stroke : Ls mm
Acceleration : a mm/s^2
Maximum speed : v mm/s
Gravity : g=9.81m/s^2
acceleration : Horizontal
Speed diagram : (Fig. 1)
Operating conditions : (Fig. 2)



Speed diagram (Fig. 1)



Status of load applied (Fig. 2)

Examination Selection

Select the temporary model number based on the load mass W (kg) and the maximum speed V (mm/s). Then prepare a speed diagram based on the acceleration, maximum speed and travel. The conditions that can develop this speed diagram will serve as the basis for the selection calculation.

Calculation Lifetime Calculation Example

Examine the status of the load applied (Fig. 2) to the rail of the LX actuator. Put each load in the formula below (formula (1) for single nut block specifications and formula (2) for double nut block specifications), and obtain the equivalent load Fe.

Equivalent Load

•In the case of single block

$$Fe=Y_HF_H+Y_VF_V+Y_PK_PMa+Y_YK_YMb+Y_RK_RMc \quad -(1)$$

•In the case of double block

$$Fe=Y_HF_H/2+Y_VF_V/2+Y_RK_RMa+Y_PK_PMb+Y_YK_YMc \quad -(2)$$

F_e : Equivalent Load
F_H : Horizontal load acting on blocks
F_V : Vertical load applied to the block
Ma : Pitching direction moment applied to the block
Mb : Yawing direction moment applied to the block
Mc : Rolling direction moment applied to the block
Kp : Equivalent coefficient for pitching direction moment
Ky : Equivalent coefficient for yawing direction moment
Kr : Equivalent coefficient for rolling direction moment
Y_H, Y_V, Y_P, Y_Y, Y_R:1.0 or 0.5

When the actuator is used under moment loads, calculate the load by multiplying the guide moment equivalent coefficient in Table 2. In formulas (1) and (2), in order to obtain the equivalent load Fe, the maximum value among FH, Fv, KpMa, KyMb and KrMc is determined to be 1.0, and the remaining items are set at 0.5.

Average Load

As Ma and Mb for the LX actuator vary with acceleration and deceleration, obtain the average load Fm from formula (3).

$$Fm=\sqrt[3]{\frac{1}{Ls}\left(Fe1^3\cdot L1+Fe2^3\cdot L2+Fe3^3\cdot L3\cdot\cdot Fen^3\cdot Ln\right)} \quad -(3)$$

Fm: Average load for fluctuating loads (N) L: Total travel distance (km)

Rail Life Span

Obtain the rail life span for the LX actuator from formula (4).

$$L=La\times\left(\frac{C}{fw\cdot Fm}\right)^3 \quad -(4)$$

L: Rail lifetime (km) La: Travel distance (km) fw: Load coefficient
C: Basic dynamic load rating (N)

When the travel length and the number of reciprocal motions per minute are constant, the number of life span hours can be calculated from formula (5).

$$Lh=\frac{L\times10^6}{2\cdot\ell s\cdot n1\times60} \quad -(5)$$

Lh: Life span hours (h) ℓs: Travel (mm) n1: Reciprocal motions per minute

Life span of ball screw and support areas

Obtain the average load from the load applied in the axial direction. Calculate life span for both ball screws and bearings from formula (6). Obtain the average load from formula (3).

$$Lr=\left(\frac{Ca}{fw\cdot Fm}\right)^3\cdot\ell\times10^6 \quad -(6)$$

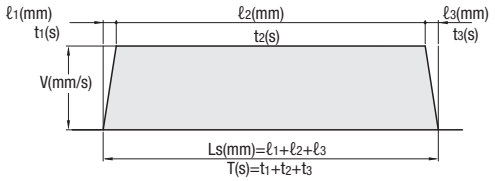
Lr: Life span of ball screw (km) ℓ: Ball screw lead (mm))
fw: Load coefficient Ca: Basic dynamic load rating of screw and support (N)

Rated lifetime calculation example

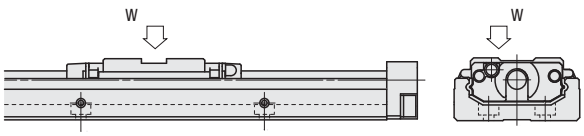
1 Model number for examination

Operating conditions : LX26
Rail : C (Basic dynamic load rating)=6522N Co (Basic static load rating)=11871N
Ball screw : Ca (Basic dynamic load rating)=1712N Coa (Basic static load rating)=2251N
Support bearings : Ca (Basic dynamic load rating)=1637N Poa (Basic static load rating)=1205N

Load mass : 10kg
Maximum speed : 250mm/s
Acceleration : 833mm/s^2
Stroke : 200mm
Gravity : g=9.81m/s^2
Position : Horizontal
Speed diagram : (Fig. 1)
Operating Conditions : (Fig. 2)



Speed diagram (Fig. 1)



Status of load applied (Fig. 2)

2 Examination

Temporary selection

Use a travel distance of 200 mm with an acceleration of 833 mm/s^2 and a maximum speed of 250 mm/s. Based on these conditions, assume that the LX26 series is used. (The selection software can be used on the Misumi website after customer registration has been completed.)

3 Calculation

3–1 Examination of rail

Multiply the moment equivalent coefficient in the table with the load according to the condition in which one nut block is used.

Load for nut block

1) At constant speed

$Fe_1=Yv\ Fv=Yv\cdot W\cdot g=1\cdot 10\cdot 9.81=98.1(N)$

2) At acceleration

$Fe_2=YvFv+Yp\ Kp\ Ma=0.5\cdot 98.1+1\cdot 0.17\cdot 70\cdot 0=60.95(N)$

3) At deceleration

$Fe_3=Yv\ Fv+Yp\ Kp\ Ma=0.5\cdot 98.1+1\cdot 0.17\times 70\cdot 0=60.95(N)$

Static safety coefficient

$$fs=\frac{Co}{Femax}=\frac{Co}{W\cdot g}=\frac{11871}{98.1}=121.1$$

Rated life span

Axial average load

$$Fm=\sqrt[3]{\frac{1}{Ls}\left(Fe_1^3\cdot L_1+Fe_2^3\cdot L_2+Fe_3^3\cdot L_3\cdot\cdot Fen^3\cdot Ln\right)}=87.72(N)$$

Rated life span

$$L=\left(\frac{C}{fw\cdot Fm}\right)^3\times 50=11.89\times 10^6$$

fw: Load coefficient 1.2
La: Travel distance

3–2 Examination of ball screw

Obtain the axial loads for the parts and the average load from the speed diagram.

Lifetime of ball screw

Axial load
1) At constant speed

$Fe_1=\mu\cdot W\cdot g=0.01\times 10\times 9.81=0.981(N)$

2) At acceleration

$Fe_2=Fe_1+W\cdot a\times 10^{-3}=0.981+10\cdot 0.833=9.311(N)$

3) At deceleration

$Fe_3=Fe_1-W\cdot a\times 10^{-3}=7.352(N)$

Static safety coefficient

$$fs=\frac{Coa}{Femax}=\frac{Coa}{Fe_2}=\frac{2251}{9.311}=241.76$$

Buckling load

$$P_1=\frac{n\cdot\pi^2\cdot E\cdot I}{\ell a^2}\times 0.5=5562.02(N)$$

P_1 : Buckling load
ℓa : Distance between mounting points 250(mm)
E : Young's modules $2.06\times10^5(N/mm^2)$
n : Coefficient according to mounting method
0.5: Safety factor
I : Minimum geometrical moment of inertia of screw shaft

$$I=\frac{\pi\cdot d_1^4}{64}=85.49(mm^4)$$

d_1 : Root diameter of screw shaft 6.46(mm)

Allowable tension/compression load

$$P_2=\frac{\delta\cdot\pi\cdot d_1^2}{4}=4818.06$$

P_2 : Allowable tension/compression load (N)
δ : Allowable tension/compression stress $147(N/mm^2)$
d_1 : Root diameter of screw shaft 6.46(mm)

Critical speed

$$N1=\frac{60\cdot\lambda^2}{2\pi\cdot\ell b^2}\cdot\sqrt{\frac{E\times10^3\cdot I}{\gamma\cdot A}}\times0.8=12485(min^{-1})$$

N1 : Critical speed
ℓb : Distance between mounting points
E : Young's modules $2.06\times10^5(N/mm^2)$
λ : Coefficient according to mounting method (Fixed-Support 3.927)
γ : Density $(7.85\times10^{-6}kg/mm^3)$
0.8: Safety factor

DN value

$DN=62250(\leq70000)$

D : Ball center to center diameter (8.3mm)
N : Maximum number of operating revolutions (min^{-1})

Rated life span

Axial average load

$$Fm=\sqrt[3]{\frac{1}{Ls}\left(Fe_1^3\cdot L_1+Fe_2^3\cdot L_2+Fe_3^3\cdot L_3\cdot\cdot Fen^3\cdot Ln\right)}=6.096(N)$$

Rated life span

$$L=\left(\frac{Ca}{fw\cdot Fm}\right)^3\cdot\ell\times10^6=25.64\times10^6(km)$$

fw : Load coefficient 1.2
ℓ : Ball screw lead 2 (mm)

3–3 Examination of support bearing

Axial load

$Fe_1=0.981(N)$
$Fe_2=9.311(N)$
$Fe_3=7.352(N)$

Static safety coefficient

$$fs=\frac{Poa}{Femax}=\frac{Poa}{Fe_2}=129.42$$

Equivalent load

Axial average load

$$Fm=\sqrt[3]{\frac{1}{Ls}\left(Fe_1^3\cdot L_1+Fe_2^3\cdot L_2+Fe_3^3\cdot L_3\cdot\cdot Fen^3\cdot Ln\right)}=6.096(N)$$

Rated lifetime

$$L=\left(\frac{Ca}{fw\cdot Fm}\right)^3\cdot\ell\times10^6=22.41\times10^6(km)$$

fw : Load coefficient 1.2
ℓ : Ball screw lead 2 (mm)

LX2602	Rail	Ball screw	Support bearing
Static safety factor	121.1	241.76	129.42
Buckling load (N)	–	5562.02	–
Allowable tension/compression load (N)	–	4818.06	–
Critical speed (min^{-1})	–	12485	–
DN value	–	62250	–
Rated lifetime (km)	11.89×10^6	22.31×10^6	19.505×10^6
Maximum axial load (N)	–	9.311	–
Maximum number of operating revolutions	–	7500	–

[Technical Data]
Radial Bearing (Class 0) Tolerances and Allowances
Excerpts from JIS B 1514

About IP Codes for Sensor Switches

Radial Bearing(Class 0)Tolerances and Allowances

(1) Inner Wheel

Unit μm

d(mm) Nominal Inner Ø of Bearing		$\triangle_{dmp}$		Diameter Series 9 V_{dp}	Diameter Series 0,1 V_{dp}	Diameter Series 2,3,4 V_{dp}	V_{dmp}	K_{ia}	Single Bearing $\triangle_{Bs}$		Bearings in Combinations $\triangle_{Bs}$		V_{Bs}
More	or Less	Above	Below	Max.			Max.	Max.	Above	Below	Above	Below	Max.
0.6(1)	2.5	0	−8	10	8	6	6	10	0	−40	–	–	12
2.5	10	0	−8	10	8	6	6	10	0	−120	0	−250	15
10	18	0	−8	10	8	6	6	10	0	−120	0	−250	20
18	30	0	−10	13	10	8	8	13	0	−120	0	−250	20
30	50	0	−12	15	12	9	9	15	0	−120	0	−250	20
50	80	0	−15	19	19	11	11	20	0	−150	0	−380	25
80	120	0	−20	25	25	15	15	25	0	−200	0	−380	25
120	180	0	−25	31	31	19	19	30	0	−250	0	−500	30
180	250	0	−30	38	38	23	23	40	0	−300	0	−500	30
250	315	0	−35	44	44	26	26	50	0	−350	0	−500	35
315	400	0	−40	50	50	30	30	60	0	−400	0	−630	40
400	500	0	−45	56	56	34	34	65	0	−450	–	–	50
500	630	0	−50	63	63	38	38	70	0	−500	–	–	60
630	800	0	−75	–	–	–	–	80	0	−750	–	–	70
800	1000	0	−100	–	–	–	–	90	0	−1000	–	–	80
1000	1250	0	−125	–	–	–	–	100	0	−1250	–	–	100
1250	1600	0	−160	–	–	–	–	120	0	−1600	–	–	120
1600	2000	0	−200	–	–	–	–	140	0	−2000	–	–	140

(1)0.6mm is included in this class. (2)Applies to each orbit ring made for bearing combination.

(2) Outer Ring

D(mm) Nominal Outer Ø of Bearing		$\triangle_{Dmp}$		Open Bearing, Sealed Bearing, Shielded Bearing Diameter Series 9 V_{DP} f	Diameter Series 0,1 V_{DP} f	Diameter Series 2,3,4 V_{DP} f	Diameter Series 2,3,4 V_{DP} f	(4) V_{Dmp}	K_{ea}	$\triangle_{Cs}$		V_{Cs}
More	or Less	Above	Below	Max.				Max.	Max.	Above	Below	Max.
2.5(3)	6	0	−8	10	8	6	10	6	15			
6	18	0	−8	10	8	6	10	6	15			
18	30	0	−9	12	9	7	12	7	15			
30	50	0	−11	14	11	8	16	8	20			
50	80	0	−13	16	13	10	20	10	25			
80	120	0	−15	19	19	11	26	11	35			
120	150	0	−18	23	23	14	30	14	40			
150	180	0	−25	31	31	19	38	19	45			
180	250	0	−30	38	38	23	–	23	50	Depends on $\triangle_{Bs}$ tolerance against d of the same bearing.		Depends on $\triangle_{Bs}$ tolerance against d of the same bearing.
250	315	0	−35	44	44	26	–	26	60			
315	400	0	−40	50	50	30	–	30	70			
400	500	0	−45	56	56	34	–	34	80			
500	630	0	−50	63	63	38	–	38	100			
630	800	0	−75	94	94	55	–	55	120			
800	1000	0	−100	125	125	75	–	75	140			
1000	1250	0	−125	–	–	–	–	–	160			
1250	1600	0	−160	–	–	–	–	–	190			
1600	2000	0	−200	–	–	–	–	–	220			
2000	2500	0	−250	–	–	–	–	–	250			

(3)2.5mm is included in this class. (4)Applies when a retaining ring is not installed.

Dimension Tolerance

- $\triangle_{dmp}$: Tolerance of Mean Inner Diameter within the Plane
- $\triangle_{Dmp}$: Tolerance of Mean Outer Diameter within the Plane
- $\triangle_{Bs}$: Measured Inner Ring Tolerance or Height Tolerance of Center Orbiting Plate
- $\triangle_{Cs}$: Measured Outer Ring Tolerance

Dimensional inequality

- V_{dp} : Inner Ø Inequality within the Plane
- V_{dmp} : Mean Inner Ø Inequality within the Plane
- V_{Dp} : Outer Ø Inequality within the Plane
- V_{Dmp}: Mean Outer Ø Inequality within the Plane
- V_{Bs} : Inequality of Inner Ring Widths
- V_{Cs} : Inequality of Outer Ring Widths

Rotation Precision

- K_{ia} : Radial Deviation of Inner Rings
- K_{ea} : Radial Deviation of Outer Rings

·IP codes in this catalog are based on"Protection Statement for Equipments"of IEC 529:1989.
Sealing ability may be affected by the conditions or environment in which it is used, such as cutting oil, chemicals, or existence of dust.



Characteristic Numeral	Ingress of Solid Foreign Objects	Ingress of Water with Harmful Effects
0	Non-Protected	Non-Protected
1	Protected against solid foreign objects 50mm in diameter or greater.	Protected against vertically falling water drops.
2	Protected against solid foreign objects 12.5mm in diameter or greater.	Protected against vertically falling water drops angled within 15 degree.
3	Protected against solid foreign objects 2.5mm in diameter or greater.	Protected against spraying water.
4	Protected against solid foreign objects 1.0mm in diameter or greater.	Protected against splashing water.
5	Dust-protected: Prevents the penetration of dust in amounts interfering with equipment operation.	Protected against water jetting from any direction.
6	Dust-tight:No ingress of dust.	Protected against powerful water jetting from any direction.
7	–	Protected against ingress of water in quantities causing harmful effects when the enclosure is temporarily immersed.
8	–	Protected against ingress of water in quantities causing harmful effects when the enclosure is continuously immersed in water under conditions more severe than No. 7, as determined by the parties concerned.

How to Use Coil Springs and Precautions

MISUMI is engaged in a constant effort to design coil springs(excluding Round Wire Springs)with optimum cross-sectional shape and maximum durability. When using the springs, pay due attention to the following precautions and undesirable usage that should be avoided for the sake of safety.

(1) Always Use A Spring Guide
When used without a spring guide, the coil spring may buckle or bend midway. This can cause it to break since the internal surface of the bending is subjected to concentrated high stress. Be sure to use a spring guide, such as a shaft and an outer diameter guide, with the coil spring.
*In most cases, the best results are obtained by inserting a shaft all the way through the coil spring, from top to bottom, as an inner diameter guide.

(2) Clearance between the Spring Inner Diameter and Shaft
When clearance between the spring and the shaft is insufficient, the coil spring's internal surface may come into contact with the shaft and be subject to abrasion at that point. This can lead to the spring eventually breaking at the point of wear. Excessive clearance with shaft, on the other hand, can lead to buckling of the coil spring. It is recommended that the shaft diameter be set approximately 1.0 mm smaller than the inner diameter of the coil spring.
When the coil spring has a long free length(i.e., free length/OD is 4 or larger), set up a step on the shaft as shown in Fig.-1 to prevent the coil spring's internal surface from touching the shaft when it bends.

(3) Clearance between The Spring OD and Counterbore Hole
The coil spring expands in the outward direction when it deflects. Insufficient clearance between the spring and the counterbore hole restrains expansion, and the resulting concentration of stress can cause the coil spring to break. It is recommended that the counterbore diameter be set approximately 1.5mm larger than the outer diameter of the coil spring. The counterbore configuration shown in Fig.-1 is ideal for a coil spring with a long free length.

(4) Avoid A Short Shaft Length and Shallow Counterbore Hole Depth
If the guide is too short, the coil spring may touch the guides tip when it is buckled. The resulting friction can cause the coil spring to break. It is recommended that the guide length be set longer than half of the initial height. Also make sure to chamfer the shaft to around C3 level.

(5) Do Not Use in Excess of The Maximum Deflection(300,000 times limit)or Near Its Solid Length
When the coil spring is used in excess of the 300,000 times limit, its Cross-section starts receiving stress that is higher than the theoretical value. This can cause the coil spring to break. Furthermore, when the coil spring is used at around its solid length, its active coils gradually adhere to each other, increasing the spring constant value and causing the load curve to rise, as shown in Fig.-2. Do not use the coil spring in excess of the 300,000 times limit.

(6) Set up An Initial Deflection
When there is a gap for the coil spring to move vertically, it receives an impact force that causes it to bend midway or to buckle.
Setting up an initial deflection stabilizes the top and bottom ends of the spring.

(7) Avoid Entrapment of Debris or Foreign Matter
Debris or foreign matter that becomes caught between the coils cause that part of the coil spring to stop functioning as active coils, forcing the other coils to deflect, as shown in Fig.-3. This effectively reduces the number of active coils, increasing the stress on the spring, and eventually causing it to break. Be careful not to allow debris or foreign matter to clog the coils.

(8) Keep Mounting Faces Parallel
The coil spring should be mounted properly, with its mounting faces top and bottom faces parallel to each other. Misalignment can cause the spring to bend midway, subjecting the bend to high stress. This can cause the spring to break at the point. The same applies to the dies in which the coil spring is used, if the parallel alignment between the dies is poor, as shown in Fig.-4, the coil spring can bend midway or exceed the 300,000 times limit prematurely. Keep the coil spring mounting faces as perfectly parallel as possible to prevent this from occurring.

(9) Do Not Use Coil Springs in Series
If you use two coil springs in series, they will tend to bend, as shown in Fig.-5. This can cause them to move out of the shaft, counterbore holes. If this happens, this coil spring will eventually break for the same reasons described in (1) above. Moreover, due to spring load differences, the weaker spring is overcome by, and deflects more than, the stronger spring, as shown in Fig.-6. This will make the weaker spring more prone to damage, or cause it to break.

(10) Do Not Use Two Coil Springs in Parallel
Use of two coil springs in parallel, as shown in Fig.-7, may result in the inner coils being sandwiched between the outer coils, or vice versa, when they contract. This can cause the coil springs to break for the same reason noted in (4).

(11) Do Not Use the Coil Spring Horizontally
When the coil spring is used horizontally, the internal surface of the spring will come into contact with the shaft, causing abrasion at those spots. The spring will eventually break at these weakened spots.

MISUMI Endurance Test Conditions

(1)Spring Guide Formula
Shaft Penetration
Shapt Dia.: -1.0mm less than d dimension

(2)Initial Deflection
1.0mm

(3)Amplitude
Deflection with 300,000 time limit value

(4)Velocity
180spm

*The maximum number of allowable operating times may vary depending on the service conditions.

Fig-1

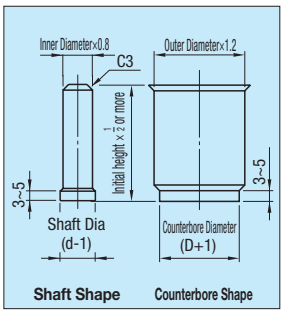


Fig-2

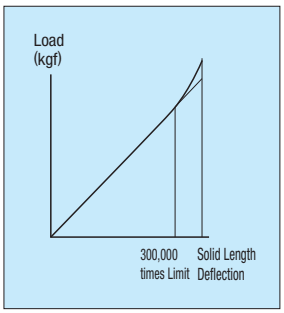


Fig-3

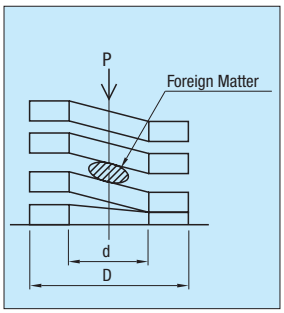


Fig-4

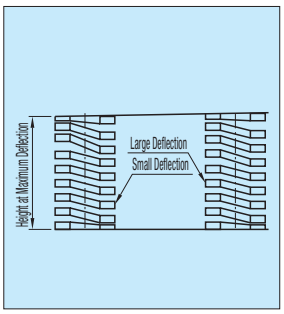


Fig-5

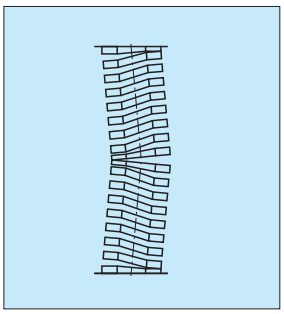


Fig-6

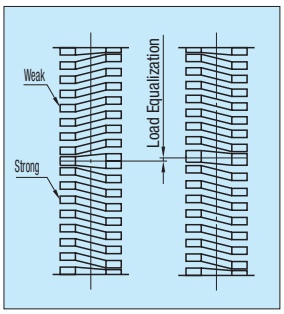
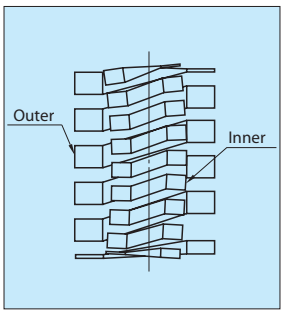


Fig-7



[Technical Data]
Spring Calculations
Excerpts from JIS B 2704(2000)

1. Calculation

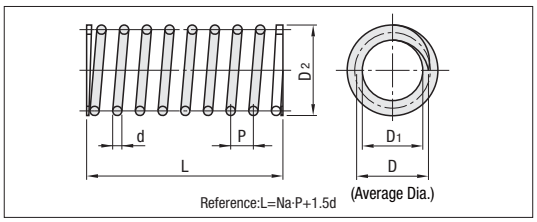
1.1 Symbols Used in Spring Design Formulae

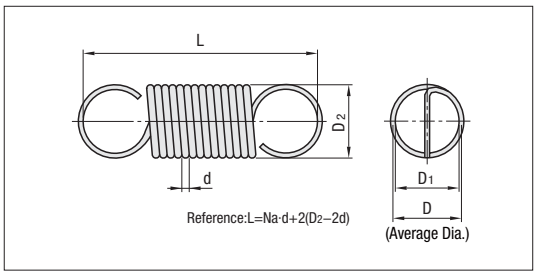
Symbols used in spring design formulae are shown in Table 1.

Table 1 Meaning of Symbols

Symbol	Meaning of Symbols	Unit
d	Diameter of Material	mm
D_1	Inner Diameter of a Coil	mm
D_2	Outer Diameter of a Coil	mm
D	Coil Mean Diameter= $\frac{D_1+D_2}{2}$	mm
N_t	Total Number of Winding	–
N_a	Number of Active Winding	–
L	Free Length(Length)	mm
Hs	Solid Length	mm
p	Pitch	mm
P_i	Initial Tension	N{kgf}
c	Spring Index $c=\frac{D}{d}$	–
G	Shear Modulus of Elasticity	N/mm²{kgf/mm²}
P	Load on Spring	N{kgf}
δ	Spring Deflection	mm
k	Spring Constant	N/mm{kgf/mm}
τ_0	Torsional Stress	N/mm²{kgf/mm²}
τ	Corrected Torsional Stress	N/mm²{kgf/mm²}
τ_i	Initial Stress	N/mm²{kgf/mm²}
χ	Stress Correction Factor	–
f	Frequency	Hz
U	Spring-Retained Energy	N·mm{kgf·mm}
ω	Per Unit Volume Material Weight	kg/mm³
W	Mass of Moving Parts	kg
g	Gravitational Acceleration (1)	mm/s²

Note (1) In spring calculations, a gravitational acceleration of 9806.65mm/s², is used.





1.2 Basic Formulae Used in Designing of Springs

1.2.1 Compression Springs, and Tension Springs without Initial Tension

$$\delta=\frac{8N_aD^3P}{Gd^4} \quad (1) \qquad \tau=\chi\tau_0 \quad (5)$$

$$k=\frac{P}{\delta}=\frac{Gd^4}{8N_aD^3} \quad (2) \qquad d=\sqrt[3]{\frac{8DP}{\pi\tau_0}}=\sqrt[3]{\frac{8\chi DP}{\pi\tau}} \quad (6)$$

$$\tau_0=\frac{8DP}{\pi d^3} \quad (3) \qquad N_a=\frac{Gd^4\delta}{8D^3P}=\frac{Gd^4}{8D^3k} \quad (7)$$

$$\tau_0=\frac{Gd\delta}{\pi N_aD^2} \quad (4) \qquad U=\frac{P\delta}{2}=\frac{k\delta^2}{2} \quad (8)$$

1.2.2 Tension Springs with Initial Tension (Where:P>Pi)

$$\delta=\frac{8N_aD^3(P-P_i)}{Gd^4} \quad (1) \qquad \tau=\chi\tau_0 \quad (5)$$

$$k=\frac{P-Pi}{\delta}=\frac{Gd^4}{8N_aD^3} \quad (2) \qquad d=\sqrt[3]{\frac{8DP}{\pi\tau_0}}=\sqrt[3]{\frac{8\chi DP}{\pi\tau}} \quad (6)$$

$$\tau_0=\frac{8DP}{\pi d^3} \quad (3) \qquad N_a=\frac{Gd^4}{8D^3k}=\frac{Gd^4\delta}{8D^3(P-P_i)} \quad (7)$$

$$\tau_0=\frac{Gd\delta}{\pi N_aD^2}+\tau_i \quad (4) \qquad U=\frac{(P+P_i)\delta}{2} \quad (8)$$

1.3 Points to Note when Designing Springs

1.3.1 Shear Modulus of Elasticity

Shear modulus of elasticity(G)listed in Table 2 is recommended for the designing of springs.

Table 2 Shear Modulus of Elasticity(G)

Material		G Value N/mm²(kgf/mm²)	Symbol
Spring Steel		78×10^3{8×10^3}	JIS SUP6,1.7108, JIS SUP9,1.7176, 1.8159, 1.7138,1.7102, ISO 60CrMo33
Hard Steel Wire		78×10^3{8×10^3}	JIS SW-B,JIS SW-C
Piano Wire		78×10^3{8×10^3}	JIS SWP
Oil Tempered Steel Wire		78×10^3{8×10^3}	SWO,SWO-V,SWOC-V, SWOSC-V,SWOSM,SWOSC-B
Stainless Steel Wire	1.6900	69×10^3{7×10^3}	1.6900
	1.4301		1.4301
	1.4301-N1		1.4301-N1
	1.4401		1.4401
	1.4568-J1	74×10^3{7.5×10^3}	1.4568-J1

1.3.2 Number of Active Winding

The number of active winding can be determined as follows.

(1) Compression Springs

$N_a=N_t-(X_1+X_2)$

Where X1 and X2: are the number of turns at each end of the coil.

(a) When only the end of the coil is in contact with the next free coil

[Corresponding to (a) ~ (c) in Fig.2]

$X_1=X_2=1$

Therefore, $N_a=N_t-2$

(b) When the end of the coil is not in contact with the next coil, and the spring end has $\frac{3}{4}$ of a turn.

[Corresponding to (a) ~ (e) in Fig.2]

$X_1=X_2=0.75$

Therefore, $N_a=N_t-1.5$

(2) Tension Springs The number of active winding can be determined as follows. But hooks are ignored.

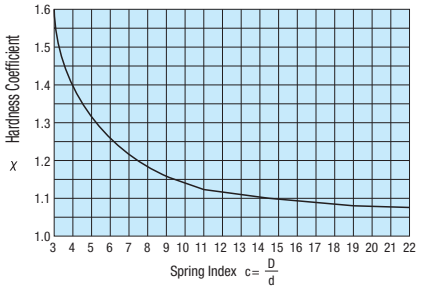
$N_a=N_t$

1.3.3 Stress Correction Factor

The stress correction factor relative to the spring index (C) can be determined by using the following formula or based on Fig.1.

$$\chi = \frac{4c-1}{4c-4} + \frac{0.615}{c} \quad \cdots\cdots (9)$$

Fig-1.Hardness Coefficient : χ



1.3.4 Solid Length

The solid length of a spring can normally be obtained by using the following simplified formula.
Generally, the purchaser of a compression spring does not specify the solid length of the spring.

$$Hs=(Nt-1)d+(t_1+t_2) \quad \cdots\cdots (10)$$

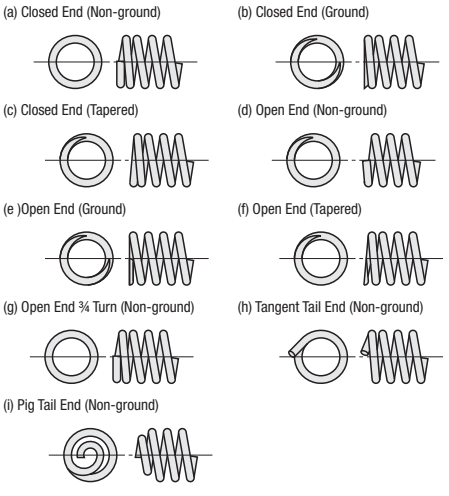
where, (t_1+t_2) : is the sum of the thicknesses of the coil ends.

As for those compression springs, both ends of which are shaped as shown in (b), (c), (e) or (f) of Figure 2 and for which the solid length needs to be specified, the following formula can be used to obtain the maximum solid length. However, the actual maximum solid length can be greater than the value thus calculated depending on the shape of the spring in question.

$$Hs=Nt\times d_{max} \quad \cdots\cdots (11)$$

where dmax : d is the material diameter with the maximum tolerance.

Fig-2. Coil End Shape



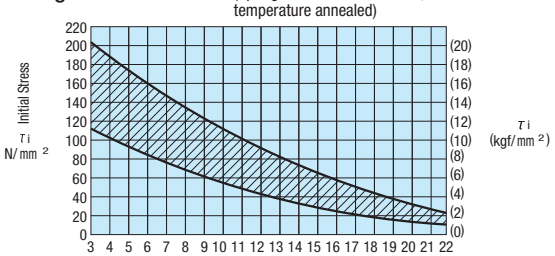
1.3.5 Initial Tension of Tension Springs

Cold-formed solid-coiled tension springs are subjected to initial tension (Pi). The initial tension can be obtained using the following formula.

$$P_i = \frac{\pi d^3}{8D}\tau_i \quad \cdots\cdots (12)$$

On solid-coiled piano wire, hard steel wire, and other steel wires that are not low-temperature annealed, the initial stress occurs within the hatched range shown in Fig.3. However, if materials other than steel wire are used, or the wire in question is low-temperature annealed, the initial stress taken from within the hatched range in Fig.3 should be corrected as follows.

Fig-3 Initial Stress : τi (Spring formed from steel coil, not low-temperature annealed)



(1) When using stainless steel wire, decrease the initial stress value for steel wire by 15%.
(2) If the spring is low-temperature annealed after being formed, decrease the value by 20~35% for springs made of piano wire, hard steel wire, or other stainless steel wires, and by 15~25% for springs made of stainless steel wire.

Reference In place of Fig.3, the following empirical formula can be used to establish the initial stress for springs before low-temperature annealing.

$$\tau_i = \frac{G}{100c}$$

The following examples are for applications of this formula to obtain the initial tension.

(1) Piano Wire / Hard Steel Wire [$G=78\times10^3$N/mm^2 {8×10^3kgf/mm^2}]

Initial Stress $\tau_i = \frac{G}{100c}\times0.75$ (0.75 by 25, reduction by low-temperature annealing).

Initial Tension $P_i = \frac{\pi d^3}{8D}\tau_i = \frac{Gd^4}{255D^2}\times0.75 = \frac{229d^4}{D^2}\left\{\frac{24d^4}{D^2}\right\}$

(2) When using stainless steel wire [$G=69\times10^3$N/mm^2{7×10^3kgf/mm^2}]

Initial Stress $\tau_i = \frac{G}{100c}\times0.8$(0.8 by 20, reduction by low-temperature annealing).

Initial Tension $P_i = \frac{\pi d^3}{8D}\tau_i = \frac{Gd^4}{255D^2}\times0.8 = \frac{216d^4}{D^2}\left\{\frac{22d^4}{D^2}\right\}$

1.3.6 Surging

In order to prevent surging, the spring selected should be as that its natural frequency does not resonate with any of the natural frequencies that may act upon the spring. The initial tension can be obtained using the following formula.

$$f=a\sqrt{\frac{kg}{W}}=a\frac{70d}{\pi NaD^2}\sqrt{\frac{G}{\omega}} \quad \cdots\cdots (13)$$

Where, $a=\frac{i}{2}$:when both spring ends are either free or fixed

$a=\frac{2i-1}{4}$:When one spring end is fixed while the other end is free $i=1,2,3\cdots$

$G=78\times10^3$N/mm^2{8×10^3kgf/mm^2},
$w=76.93\times10^{-6}$ N/mm^3{7.85×10^{-6}kgf/mm^3} If both spring ends are either free or fixed, the natural primary frequency of a spring can be obtained as follows.

$$f_1=3.56\times10^5\frac{d}{NaD^2} \quad \cdots\cdots (13)$$

1.3.7 Other Points to Note

In spring design calculations, the following points should also be taken into account.

(1) Spring Index Excessive local stress can result from too small spring index. Machinability is compromised if the spring index is too great or small. The spring index should be selected from the range of 4~15 when hot forming, and from the range of 4~22 when cold forming.

(2) Slenderness Ratio In order to ensure the correct number of active winding, the slenderness ratio for a compression spring (Ratio of free height to coil mean diameter) should be 0.8 or greater. Furthermore, buckling considered, it is generally recommended that the slenderness ratio be selected from the range of 0.8 ~ 4 to prevent buckling.

(3) Number of Active Winding The number of active winding should be 3 or more in order to stabilize spring characteristics.

(4) Pitch Generally, when the pitch exceeds 0.5D, the spring deflection (load) increases to the extent that the coil diameter changes. This requires correction of the deflection and torsional stress values obtained by the basic formulae. Therefore, the pitch should be 0.5D or smaller. The pitch can generally be estimated using the following simplified formula.

$$p=\frac{L-Hs}{Na}+d \quad \cdots\cdots (14)$$

Selection of Power Transmission Efficiency

The table of transmission performance in this catalog (P. 1916) is based on the following conditions.

1) The chain drive mechanism is run in an atmosphere with a temperature of -10˚C~+60˚C and with no abrasive particles.
2) There is no adverse impact on the mechanism, such as corrosive gas or high humidity.
3) The two shafts between which power is transmitted are parallel with each other and correctly installed.
4) The recommended lubrication method and oil are used.
5) The power transmission is subjected to minimum load variation.

Power Transmission Coefficient for Multiple Chains

On multiple roller chains, the load is not shared evenly between each chain row. Therefore, the power transmission efficiency of multiple roller chains cannot be obtained by simply multiplying the power transmission efficiency of a single chain by the number of chain rows. The power transmission efficiency of multiple roller chains should be obtained by multiplying the power transmission efficiency of a single chain by the multiple chain power transmission coefficient.

Table 2. Power Transmission Coefficient for Multiple Chains

Number of Roller Chain Rows	Multiple Row Coefficient
2 lines	x1.7
3 lines	x2.5
4 lines	x3.3
5 lines	x3.9
6 lines	x4.6

Application Coefficient Table

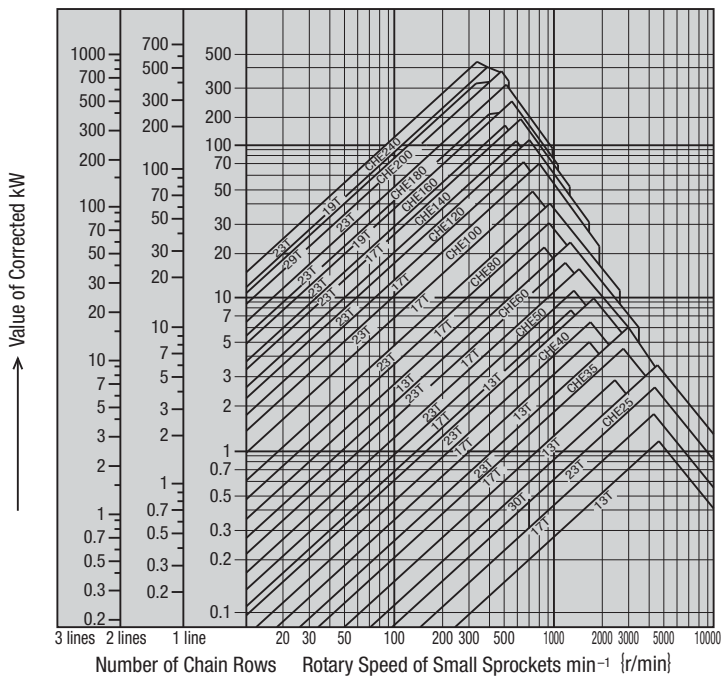
The power transmission efficiency table (P.1916) is based on minimum load variation. The transmitted kW shown in the table should be corrected as follows depending on the actual magnitude of load variation.

Table 1. Application Coefficient Table

Impact Type	Prime Motor Type / Typical	Turbine Motor	Internal Combustion Engine	
			With Fluidic Mechanism	Without Fluidic Mechanism
Smooth Transmission	Belt conveyor with small load variation, Chain conveyor, Centrifugal pump, Centrifugal blower, General textile machinery, General machinery with small load variation.	x1.0	x1.0	x1.2
Transmission with Moderate Impact	Centrifugal compressor, Marine propeller, Conveyor with moderate load variation, Automatic furnace, Drier, Pulverizer, General machine tools, Compressor, General earth-moving machinery, General paper manufacturing machinery	x1.3	x1.2	x1.4
Transmission with Large Impact	Press, Crusher, Construction and mining machinery, Vibrator, Oil well digger, Rubber mixer, Roll, Rollgang, General machinery with reverse or impact load	x1.5	x1.4	x1.7

Selection Guide Table

Table 3. Selection Guide Table



How to Read The Table

Ex. Corrected kW=5kW
Rotary Speed of Small Sprockets=300r/min
When single chain

The intersection point of the vertical axis (corrected kW) and the horizontal axis (rotary speed 300r/min) is below CHE 60 23T (23 toothed) and above 17T (17 toothed) A closer look at the location of the intersection point indicates that it most probably corresponds to 19T.

Specification Selection for Operation under Normal Conditions

1.Operating Conditions

When selecting roller chains, the following 7 parameters should be taken into account.

1. Machine to be used
2. Impact Type
3. Prime Motor Type
4. Power Transmission(kW)
5. Diameter and Rotary Speed of High-Speed Shaft
6. Diameter and Rotary Speed of Low-Speed Shaft
7. Inter-Shaft Distance

2. Application Coefficient

Select the application coefficient from the application table(Table 1) that is appropriate for the machine to be driven and the prime motor type.

3. Corrected Power Transmission(kW)

Correct the power transmission(kW)using the application coefficient.

- Single Chain…Corrected Power Transmission(kW)=Power Transmission(kW)×Application Coefficient
- Multiple Chains…Select the appropriate coefficient from the table multiple-chain power transmission coefficients(Table 2).

$$\text{Corrected Power Transmission(kW)} = \frac{\text{Power Transmission(kW)} \times \text{Application Coefficient}}{\text{Multiple Row Coefficient}}$$

4. Chain and Number of Sprocket Teeth

Using the selection guide table(Table 3)or the power transmission efficiency tables, select the chain and the number of small sprocket teeth that satisfy the rotary speed of the high-speed shaft and the corrected power transmission(kW). The chain pitch should be as small as possible, as long as the required power transmission efficiency is achieved. This should minimize noise and ensure smooth transmission of power. (If a single chain does not provide the required power transmission efficiency, use multiple chains instead. If the installation space requires that the inter-shaft distance as well as the outer diameter of sprocket be minimized, use small-pitch multiple chains.)There should be a minimum wrap angle of 120° between the small sprocket and the chain.

5. Number of Large Sprocket Teeth

Number of Large Sprocket Teeth = Number of Small Sprocket Teeth × Speed Ratio Once the number of small sprocket teeth is determined, multiplying this by the speed ratio provides the number of large sprocket teeth. Generally, the appropriate number of small sprocket teeth is 17 or greater, or 21 or greater for high-speed operation, or 12 or greater for low speed operation. The number of large sprocket teeth should be 120 or less.Select the sprocket with as great a number of teeth as possible for a speed ratio of 1:1 or 2:1. The speed ratio should normally be 1:7 or less, and ideally 1:5.

6. Shaft Diameter

Ensure that the small sprocket selected as above is compatible with the diameter of the existing shaft on which it is to be installed. Refer to the specification table on this page. When the shaft diameter is too large for the bore in the sprocket, select another sprocket with a greater number of teeth or a larger chain.

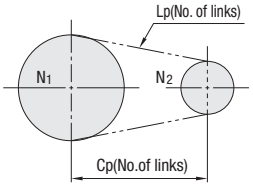
7. Inter-shaft Distance between Sprockets

The distance between the shafts can be reduced as long as the sprockets do not interfere with each other and the wrap angle between the small sprocket and the chain is 120° or more.

Generally, the inter-shaft distance should preferably be 30~50 times the pitch of the chain used. Under pulsating load conditions, decrease the distance to 20 times the chain pitch or less.

8. Chain Length and Distance between Shaft Centers

Once the chain, the number of teeth on both sprockets, and the inter-shaft distance are available, determine the number of chain links as follows.



Lp:Chain Length Expressed in Number of Links

N_1 : Number of Large Sprocket Teeth

N_2 : Number of Small Sprocket Teeth

Cp: Distance between Shaft Centers Expressed in Number of Links

π : ≈3.14

(1) Calculating the chain length (when the number of sprocket teeth N_1 and N_2 and the distance between shaft centers Cp are available)

$$Lp = \frac{N_1+N_2}{2} + 2Cp + \frac{\left(\frac{N_1-N_2}{2\pi}\right)^2}{Cp}$$

*Round up decimals of Lp to the next whole number.

Generally, when the chain length number of chain links obtained is an odd number, this should be raised to the next even number. When the inter-shaft distance demands the chain length to be an odd number, an offset link needs to be used. However, it should be avoided and an even number should be used as much as possible by adjusting the number of sprocket teeth or the inter-shaft distance.

(2) Calculating the distance between shaft centers (when the number of sprocket teeth N_1,and N_2 as the chain length Lp are available)

$$Cp = \frac{1}{8}\left\{2Lp-N_1-N_2+\sqrt{(2Lp-N_1-N_2)^2 - \frac{8}{\pi^2}(N_1-N_2)^2}\right\}$$

The pitch number obtained by the chain length formula is, in most cases, only approximate and not in exact agreement with a given inter-shaft distance. Therefore, it will be necessary to calculate the exact distance between the shaft centers based on the required overall length.

Example of Selection for Operation under Normal Conditions

The following is an example of selection when a 3.7 kW 1,000r/min electric (motor) is used to drive a compressor.

[1] Operating Conditions

1) Machine to be used····· Compressor,10 hours operation
2) Impact Type ····· Smooth Transmission
3) Prime Motor Type ····· Electric Motor
4) Power Transmission ····· 3.7kW
5) Rotary Speed ····· 1000r/min

[2] Application Coefficient

From Table 1, an application coefficient of 1.2 is selected.

[3] Corrected Power Transmission(kW)

Corrected Power Transmission(kW)=Power Transmission(kW)×Application Coefficien

=3.7kW×1.2=4.44kW

[4] Chain and Number of Sprocket Teeth

Searching the selection guide table(Table 3)for a combination of 1,000 r/min and 4.44 kW provides a CHE40 chain and 17T sprocket.

On the power transmission efficiency table for the CHE40 chain, a combination of 13T and 1,000r/min provides a power transmission efficiency of 4.09 kW, which does not meet the required 4.44 kW. Therefore, 19T, which achieves 4.6 kW, should be selected to meet the requirement.

Results The CHE40 chain should be selected.

Number of Small Sprocket Teeth=19T

Specification Selection for Low-Speed Operation

In operations using a chain speed of 50 m/min. or less, chain elongation due to wear can almost be ignored. Under such low-speed conditions, the service life of the chain largely depends on its fatigue strength. Low-speed operation is more economical than operation under normal conditions. Low speed is recommended for operations with fewer startups and stops that enable smooth power transmission. Selection of ambient atmosphere, layout, lubrication, etc. for low-speed operation is the same as that for operation under normal conditions. Selection should be made in accordance with the following formula.

Max. Allowable Tension of Chain	≥	Max. Tension N Working on Chain	x	Application Coefficient (Table 1) P.1913	x	Speed Coefficient (Table 4)

Table 4. Speed Coefficients

Roller Chain Speed	Speed Coefficient
0~15 m/min	1.0
15~30	1.2
30~50	1.4
50~70	1.6

[1]Operating Conditions

Same as for "Specifications Selection for Operation under Normal Conditions"

[2] Chain and Number of Small Sprocket Teeth

From the selection guide table 3(P. 1913), select a chain and a sprocket slightly undersized for the rotary speed(r/min)and the prime mover(kW)used.

[3] Calculating the Chain Speed

Based on the sprocket selected(chain pitch, number of teeth)and the number of revolutions(r/min), calculate the chain speed as follows.

$$V=\frac{P\cdot N\cdot n}{1000}\ (m/min)$$

V: Chain Speed(m/min)
P: Chain Pitch(mm)
N: Number of Sprocket Teeth
n: Rotary of Sprocket Teeth(r/min)

[4] Calculating the Max. Working Load on Chain

Calculating the Maximum Working Load on the Chain

$$F=\frac{60\cdot kW}{V}\ (kN)$$

F : Load on Chain(kN)
V : Chain Speed(m/min)
kW: Power Transmission(kW)

[5] Application Coefficient

From the application coefficient table(Table 1), select the appropriate coefficient.

[6] Speed Coefficient

Based on the chain speed obtained in[3]above, calculate the appropriate speed coefficient.

[7] Maximum Allowable Tension of Chain

In the formula, substitute the values obtained in[4]~[6]above as well as the maximum allowable tension(P.1253~P.1263)for the chain selected in[2]above. Check whether these values satisfy the formula. If not, try again with another chain and sprocket set.

[8] Number of Large Sprocket Teeth, Shaft Diameter, and Chain Length same as for Specification Selection for Operation under Normal Conditions.

Specification Selection for Low-Speed Operation with Impact Load

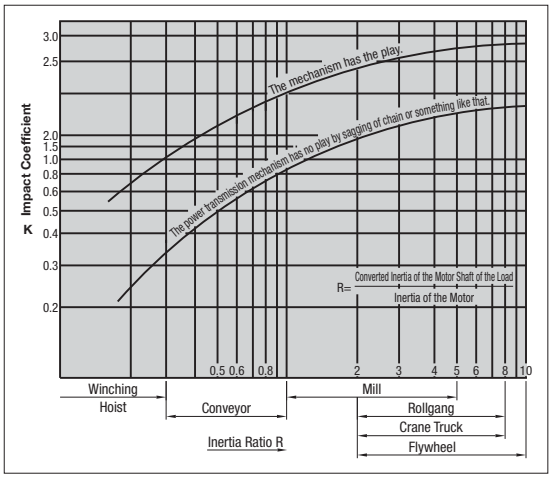
In operations with a great amount of impact loading due to frequent startups, stops, reversing, or braking, the inertia(GD^2)of the prime mover and the driven machine needs to be taken into account.
Under such conditions, exercise extreme caution, as the chain can be subjected to loads much greater than in operation under normal conditions.
Select the chain using the following formula.

Max. Allowable Load of Chain N	≥	Load Acting on Chain as Calculated from the Starting Torque of the Prime Mover	x	Impact Coefficient (Table 5)	x	Speed Coefficient (Table 4)

Impact Coefficient

This is a constant, shown in(Table 5), determined by the ratio of inertia(GD^2)of prime mover to driven machine as well as the magnitude of play in the power transmission mechanism used.
When the power transmission mechanism has excessive play, it loads greater impact than those in the table can result.

Table 5. Impact Coefficient



Selection of Stainless Roller Chains(CHES)

Selection of stainless roller chains follows the specification selection for low-speed operation.

1). The maximum allowable tension for CHES(stainless type) is lower than that for CHE(steel type).

2). Avoid using offset links as much as possible.

Selection based on temperature

Selection of Roller Chains Based on Temperature

The following table shows selection criteria for roller chains by size based on temperature and the associated reduction in strength.

1) Problems associated with roller chain operation at high temperature
   (1)Reduced hardness and resultant increase in wear
   (2)Elongation due to softening
   (3)Poor lubrication and flexing and wear increase due to oil deterioration and carbonization
   (4)Wear increase and poor flexing due to scale
2) Problems associated with roller chain operation at low temperature
   (1)Low-temperature brittleness and resultant reduction in impact strength
   (2)Solidification of lubricating oil
   (3)Poor flexing due to attachment of frost and ice

Guide Table for Roller Chain Power Transmission Efficiency at High, Low Temperature

Temperature	CHE Roller Chain	
	CHE60 or Less	CHE80 or Above
-60℃ or below	–	–
-60℃ ~ -50℃	–	–
-50℃ ~ -40℃	–	Cannot Be Used
-40℃ ~ -30℃	Cannot Be Used	Catalog Value×1/4
-30℃ ~ -20℃	Catalog Value×1/4	Catalog Value×1/3
-20℃ ~ -10℃	Catalog Value×1/3	Catalog Value×1/2
-10℃ ~ 60℃	Catalog Value	Catalog Value
60℃ ~ -150℃	Catalog Value	Catalog Value
150℃ ~ 200℃	Catalog Value×3/4	Catalog Value×3/4
200℃ ~ 250℃	Catalog Value×1/2	Catalog Value×1/2
Above 250℃	Cannot Be Used	Cannot Be Used

Selection of Stainless Roller Chains for High-Temperature Operation

(1)Follow the specification selection for low-speed operation up to 400℃.(Do not use the specification selection method for operation under normal conditions.)
(2)Above 400℃, use the temperature coefficient described below.
(3)Formula

Max. Working Load on Chain × Application Coefficient (Table 1) × Speed Coefficient (Table 4) × Temperature Coefficient (Kt) ≤ Max. Allowable Tension of Chain

Temperature Coefficient(Kt)

Temperature	Coefficient(Kt)
400℃ Less	1.0
400℃ ~ 500℃	1.2
500℃ ~ 600℃	1.5
600℃ ~ 700℃	1.8
Above 700℃	Cannot Be Used

Take account of corrosion resistance, which begins to decline above 400℃.

Power and Torque

1kW=102kgf·m/sec 1PS=735.5W(Metric Power)
1kW=1000W 1HP=745.7W(Imperial Power) } ≈750W

*Torque :1kg·m=100kg·cm
1kg·m=9.8N·m (newton metre)
1N·m=0.120kg·m
1r/min =1rpm

Obtaining Power from Torque and Rotary Speed

$$\text{Output (kW)} = \frac{\text{Torque((N·m)} \times \text{Rotary speed(r/min)}}{9.55 \times 1000}$$

CHE35 (Single Chain) (kW)

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets min(r/min)																								
	50	100	300	500	700	900	1200	1500	1800	2100	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	10000
9	0.06	0.11	0.29	0.46	0.63	0.79	1.02	1.25	1.48	1.69	1.98	1.62	1.29	1.05	0.88	0.75	0.66	0.57	0.51	0.46	0.41	0.37	0.34	0.31	0.27
10	0.07	0.12	0.33	0.52	0.71	0.89	1.15	1.40	1.65	1.89	2.22	1.90	1.51	1.23	1.04	0.88	0.77	0.67	0.60	0.53	0.48	0.43	0.40	0.37	0.31
11	0.07	0.13	0.37	0.57	0.78	0.98	1.27	1.55	1.83	2.10	2.46	2.19	1.74	1.42	1.19	1.02	0.88	0.78	0.69	0.61	0.55	0.50	0.46	0.43	0.36
12	0.08	0.15	0.40	0.63	0.86	1.07	1.40	1.71	2.01	2.31	2.70	2.50	1.98	1.62	1.36	1.16	1.01	0.88	0.78	0.70	0.63	0.57	0.52	0.48	0.41
13	0.09	0.16	0.44	0.69	0.94	1.17	1.52	1.86	2.19	2.52	2.95	2.81	2.24	1.83	1.53	1.31	1.13	0.99	0.88	0.79	0.71	0.65	0.59	0.54	0.46
14	0.10	0.18	0.47	0.75	1.01	1.28	1.65	2.01	2.37	2.73	3.19	3.15	2.50	2.04	1.72	1.46	1.27	1.11	0.98	0.88	0.80	0.72	0.66	0.60	0.51
15	0.10	0.19	0.51	0.81	1.10	1.37	1.78	2.17	2.56	2.94	3.44	3.49	2.77	2.27	1.90	1.62	1.40	1.23	1.10	0.98	0.88	0.80	0.73	0.67	0.57
16	0.11	0.20	0.54	0.87	1.17	1.47	1.90	2.33	2.75	3.15	3.69	3.84	3.05	2.50	2.10	1.79	1.55	1.36	1.21	1.08	0.97	0.88	0.81	0.74	0.63
17	0.12	0.22	0.58	0.93	1.25	1.57	2.04	2.48	2.93	3.36	3.94	4.21	3.34	2.74	2.29	1.95	1.69	1.49	1.32	1.18	1.07	0.97	0.88	0.81	0.69
18	0.13	0.23	0.62	0.98	1.33	1.67	2.16	2.64	3.12	3.58	4.19	4.59	3.64	2.98	2.50	2.13	1.85	1.62	1.44	1.29	1.16	1.05	0.96	0.88	0.75
19	0.13	0.25	0.66	1.04	1.41	1.77	2.29	2.80	3.30	3.80	4.44	4.98	3.95	3.23	2.71	2.31	2.01	1.76	1.56	1.40	1.26	1.14	1.04	0.95	0.82
20	0.14	0.26	0.69	1.10	1.49	1.87	2.42	2.96	3.49	4.01	4.69	5.37	4.27	3.49	2.94	2.50	2.16	1.90	1.69	1.51	1.36	1.23	1.13	1.04	0.88
21	0.15	0.28	0.73	1.16	1.57	1.97	2.55	3.13	3.68	4.23	4.95	5.78	4.59	3.75	3.15	2.69	2.33	2.04	1.81	1.62	1.46	1.33	1.21	1.11	0.95
22	0.16	0.28	0.77	1.22	1.66	2.07	2.69	3.28	3.87	4.47	5.20	6.12	4.92	4.03	3.37	2.88	2.50	2.19	1.95	1.74	1.57	1.42	1.30	1.19	1.02
23	0.16	0.30	0.81	1.28	1.74	2.18	2.82	3.45	4.06	4.66	5.45	6.43	5.26	4.30	3.60	3.08	2.67	2.34	2.08	1.86	1.68	1.52	1.39	1.28	1.09
24	0.17	0.31	0.85	1.34	1.82	2.28	2.95	3.61	4.25	4.89	5.71	6.73	5.60	4.59	3.84	3.28	2.84	2.50	2.22	1.98	1.79	1.62	1.48	1.36	1.16
25	0.18	0.33	0.89	1.40	1.90	2.38	3.08	3.77	4.44	5.10	5.97	7.03	5.96	4.88	4.09	3.49	3.02	2.66	2.36	2.10	1.90	1.72	1.57	1.45	1.23
26	0.19	0.34	0.93	1.46	1.98	2.48	3.22	3.93	4.63	5.33	6.23	7.34	6.32	5.17	4.33	3.70	3.21	2.81	2.50	2.24	2.01	1.83	1.67	1.53	1.31
28	0.20	0.37	1.00	1.58	2.15	2.69	3.48	4.26	5.02	5.77	6.75	7.98	7.06	5.78	4.84	4.14	3.59	3.15	2.79	2.50	2.25	2.04	1.87	1.72	1.46
30	0.22	0.40	1.08	1.71	2.31	2.90	3.75	4.59	5.41	6.21	7.27	8.58	7.83	6.41	5.37	4.59	3.98	3.49	3.10	2.77	2.50	2.27	2.07	1.90	1.62
32	0.23	0.43	1.16	1.83	2.48	3.11	4.02	4.92	5.80	6.60	7.76	9.18	8.65	7.06	5.92	5.05	4.38	3.84	3.41	3.05	2.75	2.50	2.28	2.10	0
35	0.25	0.48	1.28	2.01	2.73	3.42	4.44	5.42	6.39	7.34	8.58	10.1	9.85	8.06	6.77	5.78	5.01	4.40	3.90	3.49	3.15	2.86	2.61	2.40	0
40	0.29	0.54	1.47	2.33	3.16	3.95	5.13	6.27	7.38	8.50	9.92	11.7	12.1	9.85	8.28	7.06	6.12	5.37	4.77	4.27	3.84	3.49	0		
45	0.34	0.62	1.67	2.65	3.58	4.49	5.82	7.11	8.36	9.62	11.3	13.3	14.4	11.8	9.85	8.43	7.30	6.41	5.68	5.09	0				
Lubrication Method	A		B							C															

Lubrication Method A:Drop Lubrication, B:Oil Bath Lubrication C:Forced Circulation Lubrication by Pump ※Not applicable to selection of CHES-type chains.

CHE40 (Single Chain) **(kW)**

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets min (r/min)																								
	10	25	50	100	200	300	400	500	700	900	1000	1200	1400	1600	1800	2100	2400	2700	3000	3500	4000	5000	6500	7000	8000
9	0.03	0.07	0.14	0.26	0.48	0.69	0.90	1.10	1.49	1.87	2.05	2.42	2.78	3.07	2.57	2.04	1.67	1.40	1.19	0.95	0.78	0.56	0.43	0.34	0.28
10	0.04	0.08	0.16	0.29	0.54	0.78	1.01	1.23	1.67	2.10	2.31	2.72	3.12	3.51	3.01	2.39	1.96	1.64	1.40	1.11	0.91	0.65	0.49	0.40	0.32
11	0.04	0.09	0.17	0.32	0.60	0.87	1.12	1.37	1.85	2.32	2.55	3.01	3.45	3.89	3.48	2.76	2.26	1.89	1.62	1.28	1.05	0.75	0.57	0.46	0.37
12	0.04	0.10	0.19	0.35	0.66	0.95	1.23	1.50	2.04	2.55	2.80	3.30	3.80	4.28	3.96	3.15	2.57	2.16	1.84	1.46	1.19	0.86	0.65	0.51	0.43
13	0.04	0.11	0.21	0.39	0.72	1.04	1.34	1.64	2.22	2.78	3.06	3.60	4.14	4.67	4.47	3.55	2.90	2.43	2.08	1.65	1.35	0.96	0.73	0.58	0.48
14	0.05	0.12	0.22	0.42	0.78	1.12	1.45	1.78	2.40	3.01	3.31	3.90	4.48	5.06	5.00	3.96	3.25	2.72	2.32	1.87	1.51	1.09	0.82	0.65	0.53
15	0.05	0.13	0.24	0.45	0.84	1.21	1.57	1.91	2.59	3.25	3.57	4.21	4.83	5.45	5.54	4.39	3.60	3.01	2.57	2.04	1.67	1.19	0.91	0.72	0.59
16	0.06	0.14	0.26	0.48	0.90	1.30	1.68	2.05	2.78	3.48	3.83	4.51	5.18	5.84	6.10	4.84	3.96	3.32	2.83	2.25	1.87	1.32	1.00	0.80	0.65
17	0.06	0.15	0.28	0.51	0.96	1.38	1.79	2.19	2.96	3.72	4.09	4.81	5.53	6.24	6.68	5.30	4.34	3.64	3.11	2.47	2.02	1.45	1.10	0.87	0.72
18	0.07	0.16	0.29	0.54	1.02	1.47	1.90	2.33	3.15	3.95	4.34	5.12	5.88	6.63	7.28	5.78	4.73	3.96	3.39	2.69	2.20	1.57	1.19	0.95	0
19	0.07	0.16	0.31	0.58	1.09	1.66	2.02	2.47	3.34	4.19	4.60	5.42	6.24	7.03	7.83	6.27	5.13	4.30	3.67	2.92	2.39	1.71	1.30	1.03	0
20	0.07	0.18	0.33	0.61	1.14	1.65	2.13	2.61	3.53	4.43	4.87	5.74	6.59	7.43	8.28	6.77	5.54	4.64	3.96	3.15	2.57	1.87	1.40	1.11	0
21	0.08	0.19	0.34	0.65	1.21	1.74	2.25	2.75	3.72	4.67	5.13	6.05	6.95	7.83	8.73	7.28	5.96	5.00	4.27	3.39	2.77	1.98	1.51	1.19	0
22	0.08	0.19	0.37	0.68	1.27	1.83	2.36	2.89	3.92	4.91	5.39	6.36	7.30	8.21	9.18	7.83	5.39	5.36	4.57	3.63	2.97	2.13	1.62	1.28	0
23	0.09	0.20	0.38	0.72	1.33	1.92	2.48	3.04	4.11	5.15	5.66	6.67	7.68	8.65	9.62	8.36	6.83	5.73	4.89	3.88	3.18	2.28	1.73	1.37	0
24	0.10	0.22	0.40	0.75	1.40	2.01	2.60	3.18	4.30	5.39	5.93	6.98	8.06	9.03	10.1	8.88	7.28	6.10	5.21	4.13	3.39	2.42	1.84	1.46	0
25	0.10	0.22	0.42	0.78	1.45	2.10	2.72	3.32	4.49	5.63	6.19	7.30	8.36	9.47	10.5	9.47	7.76	6.49	5.54	4.39	3.60	2.57	1.96	0	
26	0.10	0.23	0.43	0.81	1.52	2.19	2.83	3.46	4.68	5.88	6.46	7.61	8.73	9.85	11.0	10.1	8.21	6.89	5.88	4.66	3.82	2.73	2.08	0	
28	0.11	0.25	0.47	0.88	1.64	2.37	3.07	3.75	5.08	6.37	7.01	8.28	9.47	10.7	11.9	11.2	9.18	7.68	6.56	5.21	4.27	3.05	2.32	0	
30	0.12	0.28	0.51	0.95	1.78	2.55	3.30	4.04	5.47	6.66	7.53	8.88	10.2	11.5	12.8	12.5	10.1	8.50	7.28	5.78	4.73	3.39	2.57	0	
32	0.13	0.29	0.54	1.01	1.90	2.74	3.54	4.33	5.86	7.36	8.06	9.55	11.0	12.3	13.7	13.7	11.2	9.40	8.06	6.37	5.21	3.73	0		
35	0.14	0.32	0.60	1.12	2.10	3.01	3.91	4.77	6.46	8.13	8.88	10.5	12.1	13.6	15.1	15.7	12.8	10.7	9.18	7.28	5.96	4.27	0		
40	0.16	0.37	0.69	1.30	2.42	3.48	4.51	5.51	7.46	9.33	10.3	12.2	14.0	15.7	17.5	19.2	15.7	13.1	11.2	8.88	7.28	5.21	0		
45	0.19	0.43	0.79	1.47	2.75	3.95	5.13	6.27	8.50	10.6	11.7	13.8	15.8	17.8	19.8	22.8	18.7	15.7	13.4	10.6	8.73	0			
Lubrication Method	A				B					C															

Lubrication Method A:Drop Lubrication B:Oil Bath Lubrication C:Forced Circulation Lubrication by Pump

Not applicable to selection of CHES-type chains. See P.1919 for CHEM Type.

CHE50 (Single Chain) **(kW)**

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets min (r/min)																								
	10	25	50	100	200	300	400	500	700	900	1000	1200	1400	1600	1800	2100	2400	2700	3000	3500	4000	4500	5000	5500	6000
9	0.07	0.14	0.27	0.50	0.94	1.35	1.75	2.14	2.90	3.64	4.00	4.71	4.49	3.67	3.08	2.44	2.00	1.68	1.43	1.13	0.93	0.78	0.66	0.57	0.51
10	0.07	0.16	0.31	0.57	1.05	1.51	1.69	2.40	3.25	4.07	4.48	5.28	5.26	4.30	3.60	2.86	2.34	1.96	1.68	1.33	1.09	0.91	0.78	0.67	0.59
11	0.08	0.18	0.34	0.63	1.16	1.68	2.18	2.66	3.60	4.52	4.97	5.86	6.06	4.96	4.16	3.30	2.70	2.27	1.93	1.54	1.25	1.05	0.90	0.78	0.69
12	0.09	0.19	0.37	0.69	1.28	1.84	2.39	2.92	3.96	4.96	5.45	6.43	6.91	5.65	4.74	3.76	3.08	2.58	2.20	1.75	1.43	1.20	1.02	0.89	0.78
13	0.10	0.22	0.40	0.75	1.40	2.01	2.61	3.19	4.31	5.41	5.95	7.01	7.76	6.38	5.34	4.24	3.47	2.91	2.48	1.97	1.61	1.35	1.16	1.00	0
14	0.10	0.23	0.43	0.81	1.51	2.18	2.83	3.45	4.68	5.86	6.45	7.61	8.73	7.12	5.98	4.74	3.88	3.25	2.76	2.20	1.81	1.51	1.29	1.12	0
15	0.11	0.25	0.47	0.87	1.63	2.35	3.04	3.72	5.04	6.32	6.95	8.21	9.40	7.91	6.62	5.26	4.30	3.60	3.08	2.44	2.00	1.68	1.43	1.24	0
16	0.12	0.27	0.50	0.94	1.75	2.52	3.26	3.99	5.40	6.77	7.45	8.80	10.1	8.73	7.30	5.79	4.74	3.97	3.39	2.69	2.20	1.84	1.57	1.37	0
17	0.13	0.29	0.54	1.00	1.87	2.69	3.48	4.26	5.77	7.23	7.98	9.40	10.7	9.55	7.98	6.34	5.19	4.35	3.72	2.95	2.41	2.02	1.72	1.50	0
18	0.13	0.31	0.57	1.07	1.98	2.86	3.71	4.53	6.13	7.68	8.43	10.0	11.4	10.4	8.73	6.91	5.65	4.74	4.04	3.21	2.63	2.20	1.88	0	
19	0.14	0.32	0.60	1.13	2.10	3.04	3.93	4.80	6.51	8.13	8.95	10.6	12.2	11.3	9.47	7.46	6.13	5.14	4.39	3.48	2.85	2.39	2.04	0	
20	0.15	0.34	0.64	1.19	2.22	3.21	4.16	5.07	6.87	8.58	9.47	11.2	12.8	12.2	10.2	8.06	6.62	5.55	4.74	3.76	3.08	2.58	2.20	0	
21	0.16	0.36	0.67	1.26	2.34	3.38	4.38	5.35	7.24	9.10	10.0	11.8	13.5	13.1	11.0	8.73	7.12	5.98	5.10	4.04	3.31	2.78	2.37	0	
22	0.16	0.38	0.71	1.37	2.47	3.55	4.60	5.62	7.61	9.55	10.5	12.4	14.2	14.0	11.8	9.33	7.61	6.41	5.47	4.34	3.55	2.98	2.54	0	
23	0.17	0.40	0.75	1.39	2.59	3.73	4.83	5.90	7.98	10.0	11.0	13.0	14.9	15.0	12.6	10.0	8.21	6.85	5.85	4.64	3.80	3.19	0		
24	0.19	0.42	0.78	1.45	2.71	3.90	5.06	6.18	8.36	10.5	11.6	13.6	15.6	16.0	13.4	10.7	8.73	7.30	6.23	4.95	4.04	3.39	0		
25	0.19	0.43	0.81	1.51	2.83	4.08	5.28	6.46	8.73	11.0	12.1	14.2	16.3	17.0	14.2	11.3	9.25	7.76	6.62	5.26	4.30	3.60	0		
26	0.20	0.46	0.85	1.58	2.95	4.25	5.51	6.74	9.10	11.4	12.6	14.8	17.0	18.1	15.1	12.0	9.85	8.21	7.03	5.57	4.57	3.83	0		
28	0.22	0.49	0.92	1.72	3.20	4.61	5.98	7.30	9.85	12.4	13.7	16.0	18.4	20.1	16.9	13.4	11.0	9.18	7.83	6.23	5.10	4.27	0		
30	0.23	0.53	0.99	1.85	3.45	4.97	6.44	7.83	10.70	13.5	14.7	17.3	19.8	22.4	18.7	14.8	12.2	10.2	8.73	6.91	5.65	0			
32	0.25	0.57	1.06	1.98	3.70	5.33	6.90	8.43	11.4	14.3	15.7	18.6	21.3	24.0	20.7	16.4	13.4	11.3	9.62	7.61	6.23	0			
35	0.28	0.63	1.17	2.19	4.07	5.86	7.61	9.33	12.6	15.7	17.3	20.4	23.5	26.5	23.6	18.7	15.4	12.8	11.0	8.73	7.12	0			
40	0.32	0.72	1.35	2.52	4.71	6.77	8.80	10.70	14.5	18.2	20.0	23.6	27.1	30.6	28.9	22.9	18.7	15.7	13.4	10.7	0				
45	0.36	0.82	1.54	2.86	5.34	7.68	10.0	12.2	16.5	20.7	22.8	26.8	30.8	34.6	34.4	27.3	22.4	18.7	16.0	0					
Lubrication Method	A				B					C															

Lubrication Method A:Drop Lubrication B:Oil Bath Lubrication C:Forced Circulation Lubrication by Pump

Not applicable to selection of CHES-type chains. See P.1919 for CHEM Type.

CHE60 (Single Chain) **(kW)**

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets min (r/min)																								
	10	25	50	100	150	200	300	400	500	600	700	800	900	1000	1100	1200	1400	1600	1800	2000	2500	3000	3500	4000	4500
9	0.11	0.25	0.46	0.87	1.25	1.61	2.33	3.01	3.69	4.34	4.98	5.62	6.25	6.87	7.45	6.54	5.19	4.25	3.56	3.04	2.18	1.66	1.31	1.07	0.90
10	0.12	0.28	0.52	0.97	1.40	1.81	1.86	3.38	4.13	4.86	5.59	6.30	7.00	7.68	8.36	7.68	6.08	4.98	4.17	3.56	2.55	1.94	1.54	1.26	1.05
11	0.13	0.31	0.57	1.07	1.54	2.01	2.89	3.74	4.57	5.39	6.19	6.98	7.76	8.50	9.33	8.88	7.02	5.74	4.81	4.11	2.94	2.24	1.78	1.45	1.22
12	0.15	0.34	0.63	1.18	1.70	2.20	3.17	4.11	5.03	5.92	6.80	7.68	8.50	9.40	10.2	10.1	7.98	6.54	5.48	4.68	3.35	2.55	2.02	1.66	1.39
13	0.16	0.37	0.69	1.29	1.86	2.40	3.46	4.48	5.48	6.45	7.42	8.36	9.33	10.2	11.1	11.3	9.03	7.38	6.18	5.28	3.77	2.87	2.28	1.87	0
14	0.18	0.40	0.75	1.40	2.01	2.60	3.74	4.86	5.94	6.99	8.06	9.03	10.1	11.0	12.1	12.7	10.1	8.28	6.91	5.90	4.22	3.22	2.55	2.09	0
15	0.19	0.43	0.81	1.50	2.16	2.80	4.04	5.28	6.39	7.53	8.65	9.77	10.8	11.9	13.0	14.0	11.2	9.18	7.68	6.54	4.68	3.56	2.83	2.31	0
16	0.20	0.46	0.87	1.61	2.32	3.01	4.33	5.61	6.86	8.06	9.25	10.4	11.6	12.8	14.0	15.1	12.3	10.1	8.43	7.21	5.15	3.92	3.11	2.55	0
17	0.22	0.49	0.93	1.72	2.48	3.21	4.63	5.99	7.32	8.65	9.92	11.2	12.5	13.7	14.8	16.1	13.5	11.0	9.25	7.91	5.65	4.30	3.41	2.79	0
18	0.23	0.52	0.98	1.83	2.63	3.42	4.92	6.37	7.76	9.18	10.5	11.9	13.2	14.5	15.8	17.1	14.7	12.0	10.1	8.58	6.15	4.68	3.72	3.04	0
19	0.25	0.56	1.04	1.94	2.79	3.62	5.21	6.75	8.28	9.70	11.2	12.6	14.0	15.4	16.8	18.1	16.0	13.1	10.9	9.33	6.68	5.08	4.03	3.30	0
20	0.26	0.59	1.10	2.05	2.95	3.83	5.51	7.14	8.73	10.3	11.8	13.4	14.8	16.3	17.8	19.2	17.2	14.1	11.8	10.1	7.21	5.48	4.35	0	
21	0.27	0.62	1.16	2.16	3.11	4.03	5.80	7.53	9.18	10.8	12.5	14.0	15.6	17.2	18.7	20.2	18.5	15.1	12.7	10.8	7.76	5.90	4.68	0	
22	0.28	0.65	1.22	2.28	3.27	4.24	6.11	7.91	9.70	11.4	13.1	14.8	16.4	18.1	19.7	21.3	19.8	16.3	13.6	11.6	8.28	6.33	5.02	0	
23	0.30	0.69	1.28	2.38	3.43	4.45	6.41	8.28	10.1	11.9	13.7	15.5	17.2	18.9	20.7	22.3	21.2	17.4	14.5	12.5	8.88	6.77	5.36	0	
24	0.31	0.72	1.34	2.50	3.60	4.66	6.71	8.65	10.6	12.5	14.4	16.2	18.1	19.8	21.6	23.3	22.6	18.5	15.5	13.3	9.47	7.21	5.72	0	
25	0.33	0.75	1.40	2.61	3.76	4.86	7.01	9.10	11.1	13.1	15.0	16.9	18.9	20.7	22.6	24.4	24.0	19.7	16.5	14.1	10.1	7.68	6.08	0	
26	0.34	0.78	1.45	2.72	3.92	5.08	7.31	9.47	11.6	13.7	15.7	17.7	19.7	21.6	23.6	25.4	25.5	20.9	17.5	14.9	10.7	8.13	6.45	0	
28	0.37	0.84	1.58	2.95	4.24	5.50	7.91	10.3	12.5	14.8	17.0	19.2	21.3	23.4	25.5	27.6	28.5	23.3	19.5	16.7	11.9	9.10	0		
30	0.40	0.91	1.70	3.18	4.57	5.92	8.50	11.0	13.5	16.0	18.3	20.7	23.0	25.2	27.5	29.7	31.6	25.9	21.7	18.5	13.3	10.1	0		
32	0.43	0.98	1.83	3.40	4.90	6.36	9.18	11.9	14.5	17.1	19.6	22.2	24.6	27.1	29.5	31.9	34.8	28.5	23.9	20.4	14.6	11.1	0		
35	0.47	1.07	2.01	3.75	5.40	7.00	10.1	13.1	16.0	18.8	21.6	24.4	27.1	29.8	32.5	35.1	39.8	32.6	27.3	23.3	16.7	12.7	0		
40	0.54	1.25	2.32	4.33	6.24	8.06	11.6	15.1	18.4	21.7	25.0	28.1	31.3	34.4	37.5	40.6	46.6	39.8	33.3	28.5	20.4	0			
45	0.62	1.41	2.63	4.92	7.09	9.18	13.2	17.2	21.0	24.7	28.3	32.0	35.6	39.1	42.6	46.0	52.9	47.5	39.8	34.0	24.3	0			
Lubrication Method	A			B							C														

Lubrication Method A:Drop Lubrication B:Oil Bath Lubrication C:Forced Circulation Lubrication by Pump

Not applicable to selection of CHES-type chains. See P.1919 for CHEM Type.

CHE80 (Single Chain) **(kW)**

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets min (r/min)																								
	10	25	50	100	150	200	300	400	500	600	700	800	900	1000	1100	1200	1400	1600	1800	2000	2200	2400	2700	3000	3400
9	0.25	0.58	1.08	2.02	2.91	3.77	5.43	7.03	8.58	10.1	11.6	13.1	12.7	10.8	9.40	8.21	6.53	5.35	4.48	3.83	3.32	2.91	2.44	2.08	1.73
10	0.28	0.65	1.22	2.26	3.26	4.22	6.09	7.91	9.62	11.3	13.1	14.7	14.8	12.7	11.0	9.62	7.68	6.27	5.25	4.48	3.89	3.41	2.86	2.44	2.02
11	0.31	0.72	1.34	2.51	3.61	4.68	6.74	8.73	10.7	12.6	14.5	16.3	17.2	14.6	12.7	11.1	8.80	7.23	6.06	5.17	4.48	3.93	3.30	2.81	1.27
12	0.35	0.79	1.48	2.75	3.97	5.14	7.41	9.62	11.7	13.8	15.9	17.9	19.5	16.6	14.5	12.7	10.1	8.21	6.90	5.89	5.11	4.48	3.76	3.21	0
13	0.38	0.87	1.61	3.01	4.33	5.61	8.06	10.4	12.8	15.1	17.3	19.5	21.7	18.8	16.3	14.3	11.3	9.33	7.76	6.65	5.76	5.06	4.24	3.62	0
14	0.41	0.93	1.75	3.25	4.69	6.07	8.73	11.3	13.9	16.3	18.7	21.2	23.5	21.0	18.2	16.0	12.7	10.4	8.73	7.43	6.44	5.65	4.74	4.04	0
15	0.44	1.01	1.88	3.51	5.05	6.54	9.40	12.2	14.9	17.6	20.2	22.8	25.4	23.3	20.2	17.8	14.1	11.5	9.62	8.21	7.14	6.27	5.25	4.48	0
16	0.47	1.08	2.01	3.76	5.42	7.02	10.1	13.1	16.0	18.9	21.6	24.5	27.2	25.7	22.2	19.5	15.5	12.7	10.6	9.10	7.83	6.90	5.79	4.94	0
17	0.51	1.16	2.15	4.01	5.78	7.46	10.8	14.0	17.1	20.1	23.1	26.1	29.0	28.1	24.4	21.4	16.9	13.9	11.6	9.92	8.58	7.53	6.33	5.41	0
18	0.54	1.22	2.29	4.27	6.15	7.98	11.5	14.8	18.2	21.4	24.6	27.8	30.9	30.7	26.6	23.3	18.5	15.1	12.7	10.8	9.40	8.21	6.90	5.89	0
19	0.57	1.30	2.42	4.53	6.52	8.43	12.2	15.7	19.2	22.7	26.1	29.4	32.7	33.2	28.8	25.3	20.1	16.4	13.7	11.7	10.1	8.95	7.46	6.39	0
20	0.60	1.37	2.57	4.78	6.89	8.95	12.8	16.6	20.4	24.0	27.6	31.1	34.5	35.9	31.1	27.3	21.6	17.8	14.8	12.7	11.0	9.62	8.06	0	
21	0.63	1.45	2.70	5.04	7.27	9.40	13.6	17.5	21.5	25.3	29.1	32.7	36.5	38.6	33.4	29.4	23.3	19.1	16.0	13.7	11.9	10.4	8.73	0	
22	0.67	1.52	2.84	5.30	7.61	9.92	14.2	18.5	22.6	26.6	30.6	34.5	38.3	41.4	35.9	31.5	25.0	20.4	17.2	14.6	12.7	11.1	9.33	0	
23	0.70	1.60	2.98	5.57	7.98	10.4	15.0	19.4	23.7	27.9	32.1	36.2	40.2	44.2	38.3	33.6	26.7	21.9	18.4	15.7	13.6	11.9	10.0	0	
24	0.73	1.67	3.13	5.83	8.43	10.9	15.7	20.3	24.8	29.2	33.6	37.9	42.1	46.3	40.9	35.9	28.5	23.3	19.5	16.6	14.5	12.7	10.6	0	
25	0.77	1.75	3.26	6.09	8.80	11.3	16.3	21.2	25.9	30.9	35.1	39.5	44.0	48.4	43.4	38.1	30.3	24.6	20.7	17.8	15.4	13.5	11.3	0	
26	0.80	1.83	3.40	6.36	9.18	11.9	17.1	22.2	27.0	31.9	36.6	41.3	45.9	50.4	46.1	40.4	32.1	26.3	22.0	18.8	16.3	14.3	12.0	0	
28	0.87	1.98	3.69	6.89	9.92	12.8	18.5	23.9	29.3	34.5	39.7	44.7	49.8	54.7	51.5	45.2	35.9	29.4	24.6	21.0	18.2	16.0	0		
30	0.93	2.13	3.98	7.42	10.7	13.8	19.9	25.8	31.6	37.2	42.7	48.2	53.6	58.9	57.1	50.1	39.8	32.5	27.3	23.3	20.2	17.8	0		
32	1.00	2.28	4.26	7.98	11.4	14.8	21.3	27.7	33.9	39.9	45.8	51.6	57.4	63.1	62.9	55.2	43.8	35.9	30.1	25.7	22.2	19.5	0		
35	1.10	2.51	4.69	8.73	12.6	16.3	23.6	30.5	37.3	43.9	50.4	56.9	63.3	69.6	72.0	63.2	50.1	41.0	34.4	29.4	25.4	0			
40	1.28	2.90	5.42	10.1	14.5	18.9	27.2	35.2	43.0	50.7	58.3	65.7	73.9	80.6	87.3	76.8	61.3	50.1	42.0	35.9	14.9	0			
45	1.45	3.30	6.15	11.5	16.6	21.4	30.9	40.0	48.9	57.6	66.2	74.6	82.8	91.0	99.2	91.8	73.1	59.8	50.1	40.3	0				
Lubrication Method	A			B					C																

Lubrication Method A:Drop Lubrication B:Oil Bath Lubrication C:Forced Circulation Lubrication by Pump

Not applicable to selection of CHES-type chains. See P.1919 for CHEM Type.

[Technical Data]
Designing of Chain Drive Mechanism 4

■The table of transmission performance CHEM40 (1line Chain) (kw)

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets (r/min)											
	10	25	50	100	200	300	400	500	700	900	1000	1200
9	0.05	0.11	0.21	0.39	0.71	1.04	1.34	1.68	2.22	2.77	3.08	3.59
10	0.05	0.13	0.24	0.44	0.79	1.15	1.49	1.87	2.47	3.08	3.42	
11	0.06	0.15	0.26	0.48	0.87	1.27	1.64	2.05	2.72	3.39	3.80	
12	0.06	0.16	0.29	0.52	0.95	1.38	1.79	2.24	2.96	3.73		
13	0.07	0.18	0.31	0.57	1.03	1.50	1.94	2.43	3.27	4.05		
14	0.08	0.19	0.33	0.61	1.13	1.64	2.13	2.64	3.53			
15	0.08	0.20	0.36	0.65	1.21	1.76	2.29	2.83	3.78			
16	0.09	0.22	0.38	0.70	1.29	1.88	2.44	3.02	4.03			
17	0.09	0.23	0.41	0.74	1.37	2.00	2.59	3.21				
18	0.10	0.24	0.43	0.80	1.45	2.11	2.74	3.40				
19	0.10	0.26	0.45	0.86	1.57	2.28	2.95	3.65				
20	0.11	0.27	0.48	0.91	1.66	2.40	3.11	3.85				
21	0.11	0.28	0.50	0.95	1.74	2.52	3.26	4.04				
22	0.12	0.30	0.53	1.00	1.82	2.66	3.45	4.23				
23	0.12	0.31	0.55	1.04	1.92	2.81	3.61	4.42				
24	0.13	0.32	0.60	1.11	2.03	2.96	3.84					
25	0.13	0.34	0.63	1.15	2.11	3.08	4.00					
26	0.14	0.35	0.65	1.20	2.19	3.20	4.16					
27	0.15	0.36	0.68	1.25	2.28	3.33	4.32					
28	0.15	0.38	0.70	1.29	2.36	3.45	4.48					
30	0.16	0.40	0.75	1.40	2.53	3.70						
32	0.17	0.43	0.80	1.51	2.80	4.05						
35	0.19	0.47	0.88	1.65	3.06	4.43						
40	0.22	0.54	1.00	1.88	3.50							
45	0.24	0.61	1.13	2.12	3.94							

■The table of transmission performance CHEM50 (1line Chain) (kw)

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets (r/min)											
	10	25	50	100	200	300	400	500	600	700	800	900
9	0.11	0.24	0.44	0.82	1.49	2.17	2.80	3.39	3.99	4.61	5.19	5.72
10	0.12	0.27	0.49	0.91	1.66	2.41	3.11	3.76	4.44	5.12	5.80	
11	0.14	0.29	0.54	1.00	1.83	2.65	3.42	4.14	4.88	5.63		
12	0.15	0.32	0.59	1.09	1.99	2.89	3.74	4.51	5.35	6.18		
13	0.16	0.35	0.64	1.18	2.16	3.14	4.07	4.91	5.80			
14	0.17	0.37	0.69	1.27	2.32	3.38	4.45	5.29	6.24			
15	0.19	0.40	0.74	1.36	2.49	3.62	4.76	5.67				
16	0.20	0.43	0.79	1.45	2.66	3.86	5.08	6.05				
17	0.21	0.45	0.84	1.54	2.82	4.10	5.40	6.43				
18	0.22	0.48	0.89	1.63	2.99	4.34	5.72					
19	0.24	0.51	0.97	1.79	3.31	4.81	6.21					
20	0.25	0.53	1.03	1.89	3.49	5.07	6.54					
21	0.26	0.56	1.08	1.98	3.66	5.32	6.86					
22	0.27	0.58	1.13	2.08	3.83	5.57						
23	0.29	0.61	1.18	2.17	4.01	5.83						
24	0.30	0.66	1.23	2.29	4.26	6.14						
25	0.31	0.68	1.28	2.38	4.44	6.39						
26	0.32	0.71	1.33	2.48	4.62	6.65						
27	0.34	0.74	1.38	2.57	4.80	6.90						
28	0.35	0.77	1.44	2.67	4.97	7.16						
30	0.37	0.82	1.54	2.86	5.33							
32	0.40	0.88	1.66	3.05	5.68							
35	0.44	0.97	1.81	3.34	6.22							
40	0.50	1.11	2.07	3.81	7.11							
45	0.56	1.24	2.33	4.29								

■The table of transmission performance CHEM60 (1line Chain) (kw)

Number of Small Sprocket Teeth	Rotary Speed of Small Sprockets (r/min)											
	10	25	50	100	150	200	250	300	400	500	600	700
9	0.18	0.41	0.76	1.41	2.02	2.63	3.22	3.78	4.91	6.00	7.06	8.14
10	0.21	0.46	0.85	1.57	2.24	2.93	3.58	4.20	5.45	6.66	7.92	
11	0.23	0.51	0.93	1.73	2.47	3.22	3.94	4.62	6.00	7.33		
12	0.25	0.55	1.02	1.89	2.69	3.51	4.34	5.04	6.54	8.07		
13	0.27	0.60	1.10	2.04	2.97	3.88	4.75	5.46	7.23			
14	0.29	0.64	1.21	2.24	3.23	4.22	5.16	6.12	7.86			
15	0.31	0.69	1.30	2.41	3.46	4.52	5.53	6.56	8.43			
16	0.33	0.73	1.38	2.57	3.69	4.82	5.90	6.99				
17	0.35	0.78	1.47	2.73	3.92	5.12	6.27	7.43				
18	0.37	0.83	1.56	2.89	4.16	5.42	6.64	7.87				
19	0.39	0.89	1.69	3.17	4.51	5.89	7.21	8.46				
20	0.41	0.94	1.78	3.33	4.75	6.20	7.59	8.91				
21	0.43	0.98	1.87	3.50	4.99	6.51	7.97					
22	0.45	1.03	1.96	3.67	5.23	6.82	8.35					
23	0.47	1.08	2.05	3.83	5.46	7.13	8.73					
24	0.49	1.16	2.14	4.04	5.81	7.58	9.11					
25	0.51	1.21	2.23	4.20	6.05	7.90	9.67					
26	0.53	1.25	2.32	4.37	6.29	8.22						
28	0.58	1.35	2.49	4.71	6.78	8.85						
30	0.62	1.45	2.67	5.05	7.26	9.48						
32	0.66	1.56	2.93	5.53	7.96							
35	0.72	1.70	3.21	6.05	8.71							
40	0.82	1.95	3.66	6.92	9.95							
45	0.92	2.19	4.12	7.78								

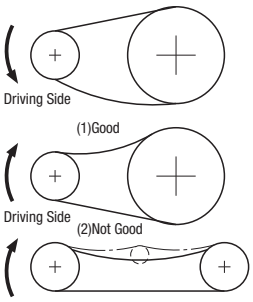
Installation Way

(A) Arrangement of Shafts

Horizontal Arrangement

Even when the shafts are arranged horizontally, the following points should be taken into account in terms of the rotary direction of the shafts. In (2) and (3) shown, elongation of the chain may prevent the chain links from leaving the sprocket teeth smoothly, resulting in biting. In (3) shown, the load bottom and slack top sides of the chain may come into contact with each other; to prevent this, use an idler or something equivalent.

Horizontal Arrangement

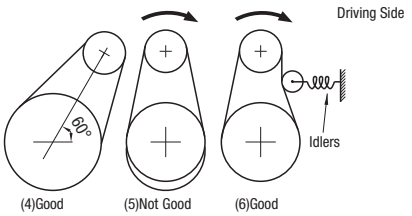


(Change the rotating direction or use an idler)

Vertical Arrangement

In (5) shown, an elongated chain may sag below the bottom sprockets. In this case, when a small sprocket is arranged below a large sprocket, the elongated chain may drop away from the small sprocket. To prevent this, the shafts should be arranged as in (4) , maintaining the angle at a maximum of 60°. When the mechanism in question or the installation space requires a vertical arrangement, place the small sprocket above the large sprocket and use an idler, etc. on the outside or inside as shown in (6) .

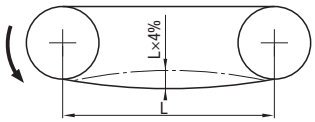
Vertical Arrangement



(B) Deflection

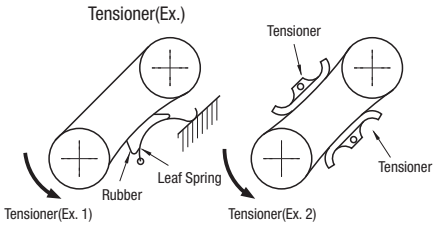
The deflection should normally be maintained at approximately 4% of the distance between the shafts, and approximately 2% in the following instances.

A. The shafts are arranged almost vertical transmission.
B. The distance between the shafts is 1 m or more.
C. The chain needs to be started and stopped frequently under heavy load.
D. The chain needs to be run in the reverse direction.



(C)Load Fluctuation

When the load varies during operation, install an initial tension either on the load or loose side of the chain. This can remove vibration and reduce the noise of the chain.



Lubrication

The service life of roller chains depends heavily on lubrication. Therefore, correct lubrication is extremely important. Today, as chains are increasingly run at higher speeds, they need to be lubricated more efficiently.

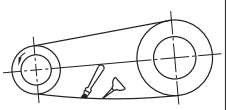
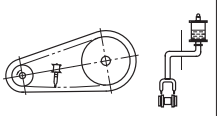
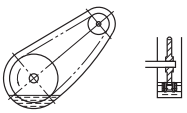
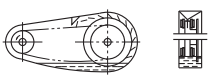
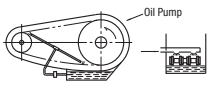
Benefits of Lubrication Oil

Oil applied into the space between pins, bushings and rollers forms oil film. Which then helps reduce wear of parts as well as absorb impact. Oil also cools down heat generated in the chain. Use good quality mineral oil to lubricate roller chains.

Recommended Lubricating Oil

Lubrication Method	A , B				C			
Temperature(℃) / Chain No.	-10 ~ 0	0 ~ 40	40 ~ 50	50 ~ 60	-10 ~ 0	0 ~ 40	40 ~ 50	50 ~ 60
CHE25~50	SAE10	SAE20	SAE30	SAE40	SAE10	SAE20	SAE30	SAE40
CHE60~80	SAE20	SAE30	SAE40	SAE50				

The lubrication methods (mentioned in the power transmission efficiency tables are based on the followings.)

Lubrication	Method	Service Interval and Oiling Quantity	Notes
A	Hand Oiling 	Apply oil by hand using a hand oiler or a brush, normally at least once everyday.	While slowly turning the chain, apply oil evenly 3~4 times onto the entire length of the chain. Be careful not to allow hands or clothing to be caught between the chain and the sprocket. When the mechanism is run for the first time after oiling, be careful to excess oil splashing over.
	Drop Lubrication 	Oil the chain in a manner such that approximately 5~20 drops of oil are applied onto the chain per minute.	It is recommended that a simple casing be installed over the chain to prevent oil from splashing over.
B	Oil Bath Lubrication 	Dip the bottom of the chain approximately 10 mm below the oiled surface.	Use a leak-free oil container. Before installing the oil container, wash it carefully to remove dust, dirt and other foreign particles. Maintain the correct oil level. Do not overfill the container.
	Rotating Plate Lubrication 	The chain is oiled by a rotating plate. Dip the plate approximately 20mm below the oil level. The wind velocity of the plate should be 200 m/min or faster.	
C	Forced Circulation Lubrication by Pump 	It is necessary to adjust the oil quantity appropriately to prevent overheating.	Use a leak-free oil container. Before installing the oil container, wash it carefully to remove dust, dirt and other foreign particles.

[Technical Data]
Free Flow Chain / Table Top Chain Selection

Selection Procedure for Free Flow Conveyor Chains

[Step 1] Confirm Usage Condition

Confirm that the following conditions are true.
Temp.: -10°C ~ +80°c
Chain Velocity: 5~15m/min
Conveyor Length: 15m or less
Environment: No abrasive dusts, corrosive gasses, or high humidity

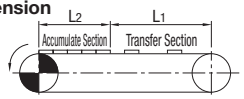
[Step 2] Finalize Chain Selection

Calculate Transferred Item Mass per 1m, and select a chain satisfying the Allowable Load Mass from the table below.
$WA(kg/m)=(W_1+W_2)/PL$
WA: Transferred Item Mass per 1m (kgf)
W_1: Workpiece Mass (kgf)
W_2: Pallet Mass (kgf)
P_L: Pallet Move Distance (m)

Table 1 Allowable Load Mass

Chain	Allowable Load Mass (kgf/m)
WCHE3	30
WCHE4	55
WCHE5	75

[Step 3] Confirm Allowable Tension



$$T=G/1000\times(Hw+Cw)L_1 \cdot fc+Aw \cdot L_2 \cdot fa+(Aw+Cw)L_2 \cdot fr+1.1Cw(L_1+L_2) \cdot fc$$

T: Max. Tension Applied on Chain (kN)
L_1: Transfer Section Length (m)
L_2: Accumulation Section Length (m)
Hw: Transfer Section Transferred Mass including pallets (kg/m)
Aw: Accumulation Section Transferred Mass including pallets (kg/m)
Cw: Chain Weight (kg/m)
fa: Friction Coefficient of Transferred Item and Chain During Accumulation
fc: Friction Coefficient of Chain and Rail
fr: Friction Coefficient of Chain and Rail During Accumulation
G: Gravitational Acceleration=9.80665 (m/s^2)

Table 2 Friction Coefficient of Free Flow Conveyor Chains

	Friction Coefficient
fa	0.10
fc	0.08
fr	0.20

(T) Max. Tension Applied on Chain is multiplied with (Table 3 K_1) Velocity Factor and (Table 4 K_2) Transferred Item Load Factor.
Tension per single chain is calculated (Two chains typically used for free-flow conveyors).
Allowable Chain Tension $\geq (T\times K_1\times K_2)/2$
If the calculated result exceeds the allowable tension of selected chain, re-select a chain one size larger or re-calculate with conveyor length divided into shorter sections.

Table 3 Velocity Factor Table

Chain Velocity m/min.	Factor K_1
1~4 or less	1.0
Over 4, 8 or less	1.1
Over 8, 10 or less	1.2
Over 10, 14 or less	1.5
Over 14, 18 or less	1.6

Table 4 Transferred Item Load Factor

Average Transferred Item Weight Wa (kg/m)	Factor K_2
30 or less	1.00
31~40	1.10
41~50	1.15
51~70	1.20
71~90	1.25
91~120	1.35

Table 5 Max. Allowable Tension for Free Flow Conveyor Chains

Chain Velocity m/min.	Allowable Tension (kN)
WCHE3	0.55
WCHE4	0.88
WCHE5	1.37

Selection Procedure for Table Top Conveyor Chains

[Step 1] Calculate Effective Tension (Fe)

$Fe=g \cdot (m \cdot Lc \cdot \mu R+(m+M) \cdot (Lc-A) \cdot \mu R+MA \cdot A \cdot (\mu c+\mu R)+m \cdot A \cdot \mu R)$

Fe: Effective Tension (N)
Lc: Conveyor Length (m)
A: Accumulation Span Length (m)
* A=0 when there is no Accumulation.
M: Mass of Transferred Item
MA: Mass of Transferred Item for Accumulation Section
m: Chain Mass (kg/m)
μc: Dynamic Friction Coefficient of Chain and Transferred Item
μR: Dynamic Friction Coefficient of Chain and Rail
g: Gravitational Acceleration=9.80665 (m/sec^2)

Table 1 Friction Coefficient

Lubrication Method	Material of Transferred Item				
	Steel	Aluminum	Glass	Paper	Plastic
Dry	0.25	0.2	0.15	0.3	0.2
Soap Water	0.15	0.12	0.1	–	0.15

Lubrication Method	Gide Rail Material			
	Steel	Stainless steel	UHMW Polyethylene	Nylon
Dry	0.2	0.2	0.15	0.2
Soap Water	0.12	0.12	0.1	0.14

*The Friction Coefficients above are estimated values with safety ratio added, for use as tension calculation components.

[Step 2] Calculate Post-adjusted Tension based on conditions

Fs=Fe · Cs

Fs: Post-adjusted Tension (N)
Cs: Load Correction Factor

For frequent starts and stops	=1.2
For wear intensive applications	=1.2
For multiple row use	=1.25
For other than above	=1.0

[Step 3] Calculate Chain Allowable Tension

Fadm=FN · Va · Ta
Fadm: Allowable Tension (N)
FN: Max. Allowable Tension (N)
Va: Velocity Factor
Ta: Temperature Factor

Table 2 Maximum Allowable Tension

Type	Nominal	Max. Allowable Tension (N)
TPCH	826	1650
	1143	

Table 3 Velocity Factor

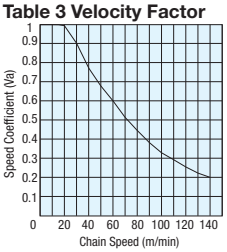
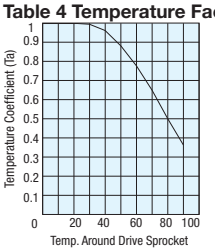


Table 4 Temperature Factor



[Step 4] Compare Allowable Tension and Post-adjusted Tension

If Fs≤Fadm, the selection is applicable.

[Step 5] Calculating Required Power

$P=Fs \cdot V/(60 \cdot \eta)$
P: Required Power (W)
V: Chain Velocity (m/min)
η: Transmission Efficiency

[Technical Data]
Selection of Flat Belts

Allowable Stress for Tension Member

Check the belt that is selected for allowable stress, using the following procedures.

1. Calculating the Effective Tension

The effective tension of a belt can be calculated using Formula 1.

Formula1 $F=f(W_G+W_1+W_2)L+f(W_1+W_3)L\pm W_G \cdot H$

(Carrier Side) (Return Side) (Vertical Side)

F: Effective Tension

f: Rolling friction coefficient of rollers, or friction coefficient between belt and supports (Select from Table -1)

ωG: Weight of Carried Materials per Meter of Belt kg/m

ω1: Weight of belt per Meter kg/m

ω2: Carrier Roller Weight per 1m kg/m (Select from Table -2)

ω3: Return Roller Weight per 1m kg/m (Select from Table -2)

L: Conveyor Horizontal Length m

H: Vertical Height (+Up angle, -Down angle) m

Table of f Values(Table 1)

Belt Surface in Contact with Supports	Smooth	Cloth Surfaced
Roller Support	0.05	0.05
Roller+Steel Plate Support	0.2	0.3
Steel Supported (SUS·SS)	0.4	0.5
Plywood Support	0.5	0.6

(When knife edges are used, add 0.2 to the above values in Table -1.)

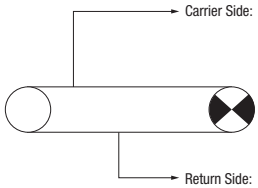


Table of Roller Weight (Table 2)

Roller Dia. (mm)	Single Roller (kg/roller)	Allowable Load (kg/roller)
28.6	0.2	50

Table-2 shows the weight of the revolving parts of a roller that meets (JISB8805-1965).
For accurate calculation, check the actual weight of the roller being used.

2. Power Requirement

Formula 2 $P=\frac{F \cdot V}{60000}$

P: Power Requirement kW
F: Effective Tension N
V: Belt Speed m/min
60000: 60×102 (Constant)

3. Motor Power

Formula 3 $Pm=\frac{P}{\eta}$

Pm: Motor Power kW
P: Power Requirement kW
η: Mechanical Efficiency
(Standard Mechanical Efficiency Range: 0.5~0.65)

For efficient operation, it is recommended to check the motor property if the motor for use has a power rating less than 0.1kW.

4. Using the Tension on the Loose Side to Calculate Maximum Tension

Formula 4 $F_{M1}=F \cdot K$

F_{M1}: Maximum Tension N
F: Effective Tension N
K: Coefficient

Using Value μ selected from Table-3 and the wrap angle (θ), select value K from Table-4.
(When the wrap angle (θ) is not listed in Table 4, Calculate from)

$K=\frac{e^{\mu\theta}}{e^{\mu\theta}-1}$

μ: Friction coefficient between driving pulley and belt (Select from Table-3)
e: Base of Natural Logarithm (2.718)
θ': Radian ($\theta=\theta\times\frac{2\pi}{360}$)

List of μ values (Table-3)

Pulley Surface \ Surface Shape in Contact with Pulley		Smooth	Cloth Surfaced
Bare Steel Pulley	Dry	0.2	0.3
	Wet	0.15	0.2
Rubber Ranking Pulley	Dry	0.3	0.35
	Wet	0.2	0.25

Table of Value K Based on Wrap Angle (θ) (Table-4)

θ° \ μ	0.1	0.15	0.2	0.25	0.3	0.35	0.5
180	3.8	2.7	2.2	1.9	1.7	1.5	1.3
190	3.6	2.6	2.1	1.8	1.6	1.5	1.3
200	3.4	2.5	2.0	1.8	1.6	1.5	1.3
210	3.3	2.4	2.0	1.7	1.5	1.4	1.2
220	3.2	2.3	1.9	1.7	1.5	1.4	1.2
230	3.1	2.3	1.9	1.6	1.4	1.4	1.2

5. Using Pretension to Calculate Maximum Tension

Formula 5 $F_{M2}=F+B \cdot T_C$

FM2: Maximum Tension N
B: Belt Width cm
TC: Initial Tension N/cm
(Select from Table-5)

Table of Tc Values (Table-5)

No. of Tension Members (No. of Plys)	1 Pc.
Initial Tension (N/cm)	1.5

Compare F_{M1} (Formula 4) and F_{M2} (Formula 5), and Make the larger as the Max. Tension FM.

6. Allowable Stress

Formula 6 $C\geq\frac{F_M}{B}$

C: Allowable Stress for Belt N/cm
FM: Effective Tension kg
B: Belt Width cm

When the allowable stress for the belt being used is equal to or higher than the maximum tension per 1cm width of the belt as expressed by Formula 6 above, the belt is suitable for use.

[Technical Data]
Selection of Transmission Timing Belts 1

[Step 1] Setting the Required Design Conditions

(1) Machine Type (2) Power Transmission (3) Load Variances (4) Operation Duration per Day (5) Small Pulley Rotational Speed
(6) Rotation Ratio (Lg. Pulley # of Teeth / Small Pulley # of Teeth) (7) Shaft Center Distance (Interim) (8) Pulley Diameter Limitation (9) Other Usage Conditions

[Step 2-a] Calculating Design Power……MXL/XL/L/H/S_M/MTS_M/T Series

•Design Power (Pd) =Transmission Power (Pt) x Overload Factor (Ks)
· Calculate Transmission Power at Motor Rated Power Output. (Ideally should be calculated with the load applied to the belt)
· Overload Factor (Ks)=Ko+Kr+Ki Overload Factor (Ks)=Lo+Kr+Ki Ko: Overload Correction Factor (Table 1) Kr: Rotation Ratio Correction Factor (Table 2) Ki: Idler Correction Factor (Table 3)

Table 1. Load Correction Factor (Ko)

Typical Machines Using a Belt	Motor					
	Max. Output not Exceeding 300% of Rated Value			Max. Output Exceeding 300% of Rated Value		
	AC Motor (Standard Motor, Synchronous Motor) DC Motor (Shunt), Engine with 2 or More Cylinders			Special Motor (High torque), Single-Cylinder Engine DC Motor (Series), Operation with Lye Shaft or Clutch		
	Operation Hours			Operation Hours		
	Intermittent use 1 Day 3 to 5 hrs	Regular Use 1 Day 8 to 12 hrs	Continuous Use 1 Day 8 to 12 hrs	Intermittent use 1 Day 3 to 5 hrs	Regular Use 1 Day 8 to 12 hrs	Continuous Use 1 Day 8 to 12 hrs
Exhibit Instrument, Projector, Measuring Instrument, Medical Machine	1.0	1.2	1.4	1.2	1.4	1.6
Cleaner, Sewing Machine, Office Machine, Carpentry Lathe, Belt Sawing Machine	1.2	1.4	1.6	1.4	1.6	1.8
Light Load Belt Conveyor, Packer, Sifter	1.3	1.5	1.7	1.5	1.7	1.9
Liquid Mixer, Drill Press, Lathe, Screw Machine, (Circular Sawing) Machine, Planer, Washing Machine, Paper Manufacturing Machine (Excluding Pulp Manufacturing Machine), Printing Machine	1.4	1.6	1.8	1.6	1.8	2.0
Mixer (Cement and Viscous Matter), Belt Conveyor (Ore, Coal and Sand), Grinder, Shaping Machine, Boring Machine, Milling Machine, Compressor (Centrifugal), Vibration Sifter, Textile Machine (Warper and Winder), Rotary Compressor, Compressor (Reciprocal)	1.5	1.7	1.9	1.7	1.9	2.1
Conveyor (Apron, Pan, Bucket and Elevator), Extraction, Fan, Blower (Centrifugal, Suction and Discharge), Power Generator, Exciter, Hoist, Elevator, Rubber Processor (Calender, Roll and Extruder), Textile Machine (Weaving Machine, Fine Spinning Machine, Twisting Machine and Weft Winding Machine)	1.6	1.8	2.0	1.8	2.0	2.2
Centrifugal Separator, Conveyor (Flight and Screw), Hammer Mill, Paper Manufacturing Machine (Pulpapitor)	1.7	1.9	2.1	1.9	2.1	2.3

Typical machines using a belt are listed above. For other machines using a belt, a load correction coefficient should be fixed by reference to this table.
In the case of starts and stops over 100 times per day or rapid acceleration and deceleration, check the above values multiplied by 1.3. (MTS_M only)

Table 2. Speed Ration Correction Coefficient (Kr)

Speed Ratio	Coefficient (Kr)
1.00 to 1.25	0
1.25 to 1.75	0.1
1.75 to 2.50	0.2
2.50 to 3.50	0.3
3.50 or more	0.4

Table 3. Idlers Correction Coefficient (Ki)

Position of Idler	Coefficient (Ki)
Inside the loose side of the belt	0
Outside the loose side of the belt	0.1
Inside the loose side of the belt	0.1
Outside the loose side of the belt	0.2

[Step 2-b] Calculating Design Power ……For P_M/UP_M Series

•Design Power (Pd) =Transmission Power (Pt) x Overload Factor (Ks)
· Calculate Transmission Power at Motor Rated Power Output. (Ideally should be calculated with the load applied to the belt)
· Normal Motor Load Factor (Ks)=Ko+Ki+Kr+Kh
Ko: Application Coefficient (Table 4) Ki: Idler Correction Factor (Table 5) Kr: Speed Multiplication Correction Factor (Table 6) Kh: Operation Time Correction Factor (Table 7)

Table 4. Application Coefficient (Ko)

Type of Passive Unit \ Type of Motor (Peak Output/Basic Output)				Ⅰ 200% or Less	Ⅱ 200 to 300	Ⅲ 300% or More
A	Extremely Smooth Transmission			1.0	1.2	1.4
B	Fairly Smooth Transmission			1.3	1.5	1.7
C	Transmission with Moderate Impact			1.6	1.8	2.0
D	Transmission with Considerable Impact			1.8	2.0	2.2
E	Transmission with Large Impact			2.0	2.2	2.5
Motor	AC Motor	Single-Phase		–	–	All Types
		Squirrel-Cage Induction	2 Poles	100kW or More	90~3.7kW	2.2kW or Less
			4 Poles	55kW or More	45kW or Less	–
			6 Poles	37kW or More	30kW or Less	–
			8 Poles	15kW or More	11kW or Less	–
		Wire-Wound	4 Poles	–	15kW or Less	11kW or Less
			6 Poles	–	11kW or Less	7.5kW or Less
			8 Poles	–	5.5kW or Less	3.7kW or Less
		Synchronous Motor		–	Average Torque	High Torque
	DC Motor			Shunt	Compound	Series
	Internal Combustion Engine			8 or More Cylinders	7 ~ 5 Cylinders	4 ~ 2 Cylinders
	Hydraulic Motor			–	–	All Types

Note)When the transmission involves regular, reverse revolutions, large momentum or extreme impact, a basic-use coefficient of 2.5 or more can be used.

Type	Typical Passive Machines
A	Measuring Instrument, Camera Device, Radar, Medical Machine, Projector
B	Belt Conveyor (For Light Load) Chain Conveyor (For Light Load) Driller Press, Lathe, Screw Machine Electric Typewriter, Calculator, Duplicator, Printing Press, Cutter, Paper Folder, Printer, Mixer, Calender-Dryer, Lathe, Belt Sawing Machine, Plane, Circular Sawing Machine, Planer, Mixer (Liquid), Bread Baking Machine, Flour Kneading Machine, Sifter (Drum and Cone), Sawing Machine
C	Belt Conveyor (Ore, Coal, Sand), Elevator, Boring Mill, Grinder, Milling Machine, Shaper, Metal Sawing Machine, Wind Hoist, Dryer, Washing Machine (Including a Wringer), Excavator, Mixer, Granulating Machine, Pump (Centrifugal, Gear and Rotary), Compressor (High-Speed Center), Stirrer, Mixer (Viscous Matter), Centrifugal Forced Blower, General Rubber Handling Machine, Power Generator, Sifter (Electric)
D	Conveyor (Apron, Bucket, Flight, Screw), Hoist, Cutting Press, Shattering Machine, Pulp Manufacturing Machine, Weaving Machine, Spinning Machine, Twisting Machine, Blender, Centrifugal Separator, Blower (Axial Flow, for Mining and Roots), General Construction Equipment, Hammer Mill, Roligang
E	Crank Press, Pump (Reciprocal), Compressor (Reciprocating), Civil Engineering, Mining Equipment Including Crushing Machine (Ball, Rod, Gravel), Rubber Mixer

Table 5. Correction Coefficient when Idler is Used (Ki)

Location of Idler in Use	Inside	Outside
Loose Side of the Belt	0	+0.1
Tense Side of the Belt	+0.1	+0.2

Should be added for each idler.

Table 6. Speed Increase Correction Coefficient (Kr)

Speed Increase Ratio	Correction Coefficient
1 to 1.25	0
1.25 to 1.75	+0.1
1.75 to 2.5	+0.2
2.5 to 3.5	+0.3
3.5 or more	+0.4

Table 7. Operating Correction Coefficient (Kh)

Operation Hours	Correction Coefficient
Operated 10 or More Hours a Day	+0.1
Operated 20 or More Hours a Day	+0.2
Operated 500 Hours or Less (For Seasonal Operation)	–0.2

[Step 2-c] Calculating the Design Power……2GT/3GT Series

•Design Power (Pd) =Transmission Power (Pt) ×Overload Coefficient (Ks)
· Calculate the Transmission Power (Pt) in terms of the rated power of the prime motor. (Originally, it is ideal to calculate from the actual load applied to the belt)
A: Normal Motor Load Factor (Ks)=Ko+Ki+Kr+Kh
Ko: Load Correction Factor (Table 8) Ki: Idler Correction Factor (Table 9) Kr: Speed Multiplication Correction Factor (Table 10) Kh: Operation Time Correction Factor (Table 11)
B: Servo Motor Kp, other table*

Table 8. Load Correction Factor (Ko)

Type of Motor			Ⅰ	Ⅱ	Ⅲ
Peak Output/Basic Output			150% or Less	Over 150%~200% or Less	Over 250%
AC Motor	Single-Phase		–	–	All Types
	Squirrel Cage Type	2 Phase	–	–	All Types
		4 Phase	–	37Kw or More	30Kw or Less
		6 Phase · 8 Phase	–	–	All Types
	Wound Field Type	4 Phase	–	–	15Kw or Less
		6 Phase	–	–	11Kw or Less
		8 Phase	–	–	5.5Kw or Less
Synchronous Motor			–	Standard Torque Type	High Torque Type
DC Motor			Shunt	Wound Field	Series
Hydraulic Motor			–	–	All Types
Office Machinery	Printer · Fax Machine · Copy Machine		–	1.2	1.4
Home Appliance	Juicer		–	1.4	1.6
	Vacuum Cleaner		1	1.2	1.4
Finance Equipment	Money Exchanger · Ticket Machine · Ticket Gates · Bank Teller Machine		1.3	1.4	1.5
Food · Medicine · Medical Equipment	Bakery Equipment		1.2	1.4	1.6
	Mixer · Granulator		1.4	1.6	1.8
	Centrifuge		1.5	1.7	1.9
	Medical Machinery · Measurement Equipment		1	1.2	1.4
Machine Tool	Drill Press · Lathe		1.2	1.4	1.6
	Milling Machine		1.3	1.5	1.7
	Wood Lather		1.2	1.4	1.6
Printing Book Making	Printer · Book Making Machine · Cutter		1.2	1.4	1.6
Textile Machine	Textile · Knitting Machinery		1.3	1.5	1.7
Sawing Machine	Sawing Machine – Home Use		–	1.2	1.4
	Sawing Machine – Industrial		–	1.6	1.8
Belt Conveyor · Packaging Machine	Belt Conveyor – Light Objects		1.1	1.3	1.5
	Packaging Machine		1.2	1.4	1.6
Film · Wire Making Machine	Calender · Extruder		1.4	1.6	1.8
	Wire Making Machinery		1.4	1.6	1.8

Table 9. Idler Correction Factor (Ki)

Idler Position	Inside	Outside
Loose Side of the Belt	0	+0.1
Tense Side of the Belt	+0.1	+0.2

Table 10. Speed Multiplication Correction Factor (Kr)

Speed Increase Ratio	Correction Factor
1 or More Less than 1.25	0
1.25 or More Less than 1.75	+0.1
1.75 or More Less than 2.5	+0.2
2.5 or More Less than 3.5	+0.3
3.5 or More	+0.4

Table 11. Operation Time Correction Factor (Kh)

Operation Time	Correction Factor
Less than 10 hours (Everyday)	0
10~16 Hours Continuous (Everyday)	+0.2
16~24 Hours Continuous (Everyday)	+0.4
300 Hours/Year or Less (Seasonal operations etc.)	–0.2

Table 12. Special Motor Correction Factor (Kp)

Motor Type	Load Correction Factor
Servo Motor	Design as Kp=2.5 for Rated Output, and Kp=0.5 for Peak Output (Rational speed as applied speed)
Spindle Motor	Design as Kp=2.2 for Rated Output and Base Rotational Speed

[Step 2-d] Calculating Designed Power …… For EV5GT/EV8YU Series

•Design Power (Pd) =Transmission Power (Pt) x Overload Factor (Ks)
· Calculate Transmission Power at Motor Rated Power Output. (Ideally should be calculated with the load applied to the belt)
· Overload Factor (Ks)=Ko+Ki+Kr+Kh+Km
Ko: Load Correction Factor (Table 13) Ki: Idler Correction Factor (Table 14) Kr: Speed Multiplication Correction Factor (Table 15) Kh: Operation Time Correction Factor (Table 16) Km: Start/Stop Correction Factor (Table 17)

Table 13. Load Correction Factor (Ko)

Prime Motor Type		Induction Motor	Spindle Motor	Servo Motor (Peak Output/Rated Output)		
				200% or Less	201~299%	300% or More
Robot	Scara Type	2.0	2.0	1.6	1.7	1.8
Injection Mold Machine	Mold Fastening · Ball Screw Drive	1.8	1.8	1.3	1.4	1.5
Machine Tool	Lathe · Drill Press	1.6	1.3	1.2	1.3	1.4
Machine Tool	Milling Machine	1.7	1.3	1.2	1.3	1.4
Conveyor		1.8	1.8	1.4	1.5	1.6
Medical Machinery · Measurement Equipment		1.5	1.5	1.1	0.1	0.2
Packaging Machine		1.6	1.5	1.1	0.1	0.2
Agitator · Mixer	Liquid	1.6	1.6	1.2	1.3	1.4
	Viscous Material	1.7	1.7	1.3	1.4	1.5
Drilling Machine · Granulator		1.8	1.8	1.4	1.5	1.6
Centrifuge		1.9	1.9	1.5	1.6	1.7
Mills	Ball · Rods	2.2	2.2	1.7	1.8	1.9
Printing Machine · Book Making Machine		2.0	2.0	1.6	1.7	1.8
Paper Making Machine	Calender · Dryer	2.0	2.0	1.6	1.7	1.8
Textile Machine		2.0	2.0	1.6	1.7	1.8
Wire Related	Wire Drawing & Twisting Machine	2.1	2.0	1.6	0.1	0.2
Woodworking Machine		1.7	1.7	1.2	1.3	1.4
Pump		2.0	2.0	1.6	1.7	1.8
Compressor	Reciprocating · Rotating	2.0	2.0	1.6	1.7	1.8
Fan · Blower	Axial Flow · Roots	2.0	1.8	1.3	1.4	1.5
Generator · Exciter		1.8	1.8	1.4	1.5	1.6
Rubber Industry Machinery · Lumber Mill Machinery		2.0	2.0	1.6	1.7	1.8

Table 14. Idler Correction Factor (Ki)

No Idler	0
Inside Idler	0.1×(Qty-1)
Outside Idler	0.1×(Qty-1)

Table 15. Speed Multiplication Correction Factor (Kr)

Operation Duration (Hours/Day)	Correction Factor
1 or More Less than 1.25	0
1.25 or More Less than 1.75	0.1
1.75 or More Less than 2.5	0.2
2.5 or More Less than 3.5	0.3
3.5 or More	0.4

Table 16. Operation Time Correction Factor (Kh)

Operation Duration (Hours/Day)	Correction Factor
≦8	0.1
8<16	0.2
16≦	0.3

Table 17. Start/Stop Correction Factor (Km)

Start/Stop Frequency (Times/Day)	Correction Factor
≦10	0.1
11<100	0.2
101<500	0.3
501<	0.4

[Technical Data]
Selection of Transmission Timing Belts 2

[Step 3] Temporarily Selecting the Type of Belt from Selection Guide Table

Table 18. Selection Guide Table 1 (MXL,XL,L,H,T5,T10)

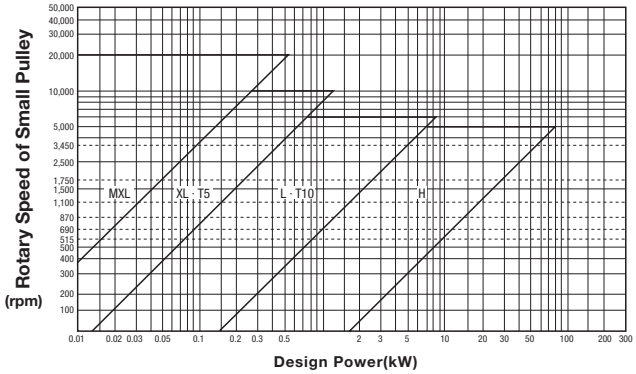


Table 19. Selection Guide Table 2 (S_M series)

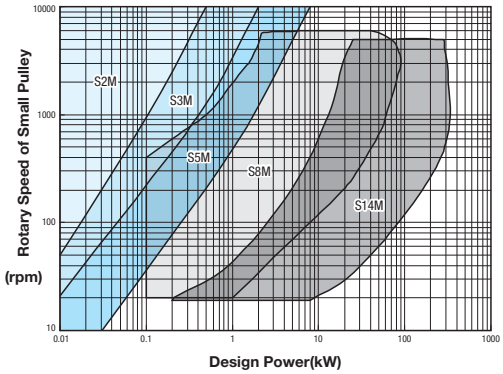


Table 20. Selection Guide Table 3 (P_M series)

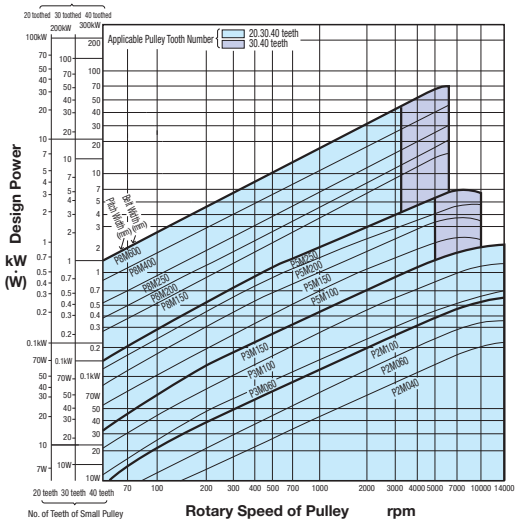


Table 21. Selection Guide Table 4 (MTS8M)

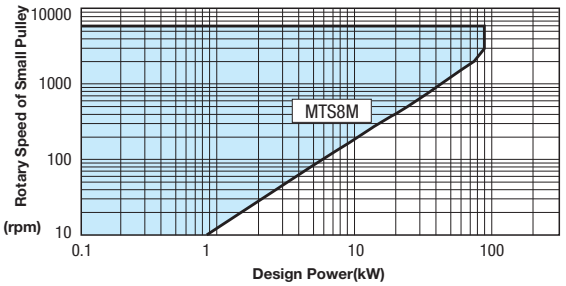


Table 22. Selection Guide Table 5 (UP_M series)

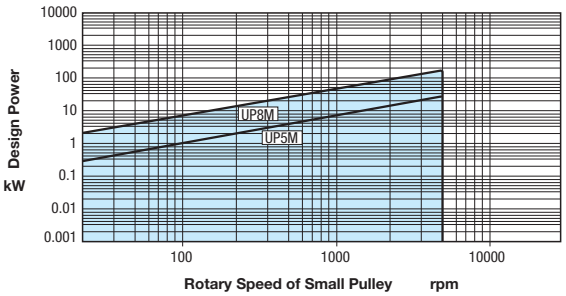


Table 23. Selection Guide Table (2GT·3GT series)

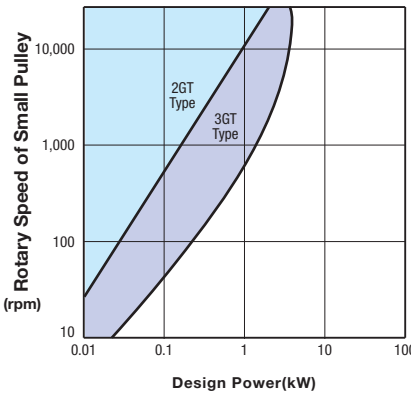
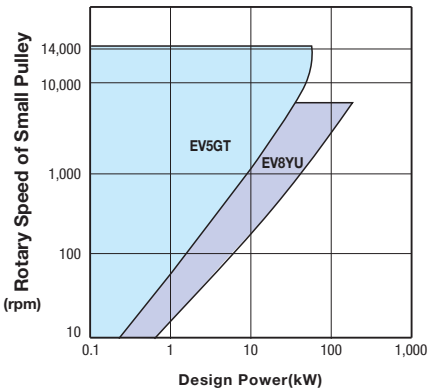


Table 24. Selection Guide Table (EV5GT·EV8YU series)



[Step 4] Determining Number of Teeth of Large and Small Pulley, Belt Length, Inter-Shaft Distance

(1) Select the number of teeth of large and small pulley from P.1929~1939, which can satisfy the predeterminated speed ratio.
(However, note that the number of teeth for small pulley should be larger than the min. number of teeth shown in Table 25.)

$$\text{Speed Ratio} = \frac{\text{Number of Teeth of Large Pulley}}{\text{Number of Teeth of Small Pulley}}$$

Table 25. Min. Number of Teeth of Pulley

Rotary Speed of Small Pulley (rpm)	Type of Belt, Minimum Number of Teeth											
	MXL	XL	L	H	S2M	S3M	S5M	S8M	S14M	MTS8M	T5	T10
900 or Less	12	10	12	14	14	14	14	22	–	24	12	14
Over 900 1200 or Less	12	10	12	16	14	14	16	24	34	24	12	16
Over 1200 1800 or Less	14	11	14	18	16	16	20	26	38	24	14	18
Over 1800 3600 or Less	16	12	16	20	18	18	24	28	40	24	16	20
Over 3600 4800 or Less	–	16	20	24	20	20	26	30	48	24	20	22
Over 4800 10000 or Less	–	–	–	–	20	20	26	–	–	–	–	–

(2) Determine approx. belt circum. length (Lp') in terms of temporary inter-shaft distance (C'), diameter of large pulley (Dp) and diameter of small pulley (dp).

$$Lp' = 2C' + \frac{\pi(Dp+dp)}{2} + \frac{(Dp-dp)^2}{4C'}$$

C' : Temporary Inter-shaft Distance
dp : Pitch Diameter of Small Pulley (mm)
Dp : Pitch Diameter of Large Pulley (mm)
Lp' : Approx. Belt Circum. Length (mm)

(3) Determine a belt circum. length (Lp') that is the nearest value to approx. belt circum. length referring to P.1189~1200, and then calculate the correct inter-shaft distance using the following formula.

$$C = \frac{b + \sqrt{b^2 - 8(Dp-dp)^2}}{8}$$

$$b = 2Lp - \pi(Dp+dp)$$

Dp : Pitch Diameter of Large Pulley (mm)
dp : Pitch Diameter of Small Pulley (mm)
Lp : Belt Circum. Length (mm)
C : Inter-shaft Distance

[Step 5] Determining Belt Width

(1)Calculate an approx. belt width using the following formula, and then select a belt width (Bw:mm) that is the nearest value to the approximated value.

$$Bw = \frac{Pd}{Ps \cdot Km} \times Wp$$

Pd: Design Power
Ps: Reference Transmission Capacity ……Use the Reference Transmission Capacity Table on P.1929~1939.
Km: Engagement Correction Coefficient(Table 26)
Wp: Reference Belt Width(Table 27)

Table 26. Engagement Correction Coefficient (Km)

No. of Teeth Engaged Zm	More than 6	5	4	3	2
Km	1.0	0.8	0.6	0.4	0.2

Table 27. Reference Belt Width (Wp)

Type of Belt	MXL	XL	L	H	S2M	S3M	S5M	S8M	S14M	MTS8M
Reference Belt Width	6.4	25.4	25.4	25.4	4	6	10	60	120	60

Type of Belt	P2M	P3M	P5M	P8M	T5	T10
Reference Belt Width	4	6	10	15	10	10

$$\text{No. of Teeth Engaged (Zm)} = \frac{Zd \cdot \theta}{360°}$$

$$\theta = 180° - \frac{57.3(Dp-dp)}{C}$$

Zd: No.of Teeth of Small Pulley
θ : Contact Angle(°)
Dp: Pitch Diameter of Large Pulley(mm)
dp: Pitch Diameter of Small Pulley(mm)
C:Inter-shaft Distance(mm)

(2)Check if Design Power (Pd) satisfies the following formula. (If not, select the belt width of one size larger again.)

· Pd<Ps · Km · Kb
*2GT · 3GT · EV5GT · EV8YU
· Pd<Ps · Km · Kb · KL

Pd : Design Power
Ps : Reference Transmission Capacity
Km: Engagement Correction Coefficient
Kb : Width Correction Coefficient (Table 28)
KL: Length Correction Coefficient (Table 29)

Table 28. Width Correction Coefficient(Kb)

Type of Belt	Belt Width Nominal	mm	Width Correction Coefficient Kb
MXL	019	4.8	0.72
	025	6.4	1.00
	037	9.5	1.57
	050	12.7	2.18
XL	025	6.4	0.15
	031	7.9	0.21
	037	9.5	0.28
	050	12.7	0.42
L	050	12.7	0.42
	075	19.1	0.71
	100	25.4	1.00
	150	38.1	1.56
H	075	19.1	0.71
	100	25.4	1.00
	150	38.1	1.56
	200	50.8	2.14

Type of Belt	Belt Width Nominal	mm	Width Correction Coefficient Kb
S2M	040	4	1.00
	060	6	1.59
	100	10	2.84
S3M	060	6	1.00
	100	10	1.79
	150	15	2.84
S5M	100	10	1.00
	150	15	1.59
	250	25	2.84
S8M MTS8M	150	15	0.21
	250	25	0.37
	300	30	0.45
	400	40	0.63
S14M	400	40	0.29
	600	60	0.45

Type of Belt	Belt Width Nominal	mm	Width Correction Coefficient Kb
P2M	40	4	1.00
	60	6	1.59
P3M	100	10	1.78
	150	15	2.84
P5M	100	10	1.00
	150	15	1.59
P8M	150	15	1.00
	250	25	1.79
T5	100	10	1.00
	150	15	1.60
	200	20	2.30
	250	25	2.90
T10	150	15	1.60
	200	20	2.30
	250	25	2.90
	300	30	3.50
	400	40	4.60
	500	50	5.80

Type of Belt	Belt Width Nominal	mm	Width Correction Coefficient Kb
2GT	4	4	1.00
	6	6	1.67
	9	9	2.67
3GT	6	6	1.00
	9	9	1.66
	15	15	2.97
EV5GT	9	9	0.53
	12	12	0.76
	15	15	1.00
EV8YU	15	15	0.71
	20	20	1.00
	25	25	1.29

Table 29. Length Correction Coefficient(KL)

Length Correction Coefficient(KL)	0.80	0.90	1.00	1.10	1.20
2GT Belt Length(mm)	130 or less	131~182	183~280	281~419	420 or less
3GT Belt Length(mm)	190 or less	191~260	261~400	401~599	600 or less
EV5GT Belt Length(mm)	440 or less	441~550	551~800	801~1100	1001 or less
EV8YU Belt Length(mm)	600 or less	601~900	901~1250	1251~1799	1800 or less

[Technical Data]
Selection of Transmission Timing Belts 3 -Transmission Capacity Table-

[Step 6] Check if Inter-Shaft Distance Adjustment Range is Larger than that in Table 16

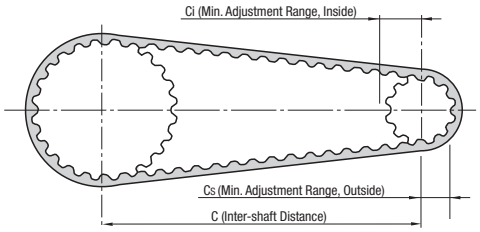


Table 16. Minimum Inter-Axial Distance Adjustment Range

Belt Length	Length Tolerance	Inter-Shaft Distance Tolerance	MXL		XL		L		H		S2M S3M S5M		S8M S14M		MTS8M		P2M P3M P5M		P8M		T5		T10	
			Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs
150 or Less	±0.35	±0.18		3		3		3		3		2		3		–		3		3		3		3
150 to 250	±0.41	±0.21		3		3		3		3		2		3		3		3		3		3		3
250 to 380	±0.46	±0.23		5		5		5		5		2		3		3		3		3		5		5
380 to 500	±0.51	±0.26		10		10		10		10		2		3		3		3		3		10		10
500 to 750	±0.60	±0.30	3	10	5	10	10	10	15	10	10	3	15	5	15	3	10	5	15	5	5	10	10	10
750 to 1000	±0.66	±0.33		15		15		15		15		3		5		5		5		5		15		15
1000 to 1250	±0.76	±0.38		15		15		15		15		5		10		5		10		10		15		15
1250 to 1500	±0.82	±0.41		25		25		25		25		5		10		10		10		10		25		25
1500 to 1750	±0.86	±0.43		25		25		25		25		5		10		10		10		10		25		25
1750 to 2000	±0.92	±0.46		30		30		30		30		5		10		10		10		10		30		30

Belt Length		Length Tolerance	Inter-Shaft Distance Tolerance	2GT		3GT		EV5GT		EV8YU	
				Ci	Cs	Ci	Cs	Ci	Cs	Ci	Cs
	150 or Less	± 0.40	± 0.20		3		3		3		3
Over 150	250 or Less	± 0.40	± 0.20		3		3		3		3
Over 250	380 or Less	± 0.46	± 0.23		3		3		3		3
Over 380	500 or Less	± 0.50	± 0.25		3		3		3		3
Over 500	750 or Less	± 0.60	± 0.30	4	5	5	5	10	5	20	5
Over 750	1000 or Less	± 0.66	± 0.33		5		5		5		5
Over 1000	1250 or Less	± 0.76	± 0.38		10		10		10		10
Over 1250	1500 or Less	± 0.82	± 0.41		10		10		10		10
Over 1500	1750 or Less	± 0.86	± 0.43		10		10		10		10
Over 1750	2000 or Less	± 0.92	± 0.46		10		10		10		10

■Notes on Operation

1. Be careful to avoid the ingress of foreign particles.
   When solid foreign particles enter during operation, it can scratch the belt and adversely affect the engagement of the belt and the pulley.
   In some cases, the pulley may disengage, land on the teeth of the pulley, and be cut.
2. Avoid Adhesion of oil.
   Oil on the rubber timing belt may wet and expand it, drastically shortening its service life.
   (a)Take special care when using solvent type oil.
   (b)A small amount of lubricant or grease, however, rarely causes a trouble.
3. Do not use the belt in a humid atmosphere.
4. Please use a well-ventilated safety cover.
5. The service life of the belt, when used at a high temperature (80˚C or more), can be drastically shortened.

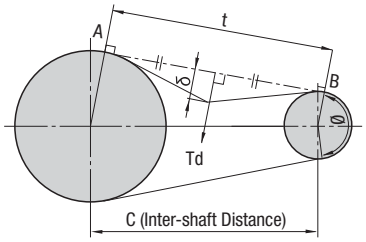
‹Reference›Belt Width Tolerance (Unit: mm)

Belt Width	Belt Length			
	351 or Less	351 to 840	840 to 1680	1680 or More
10 or Less	+0.3 −0.6	+0.3 −0.6	+0.3 −0.6	+0.6 −0.6
10 to 40	+0.6 −0.6	+0.6 −0.6	+0.6 −0.6	+0.6 −0.6
40 to 50	+0.6 −0.6	+0.6 −0.6	+1.0 −1.0	+1.0 −1.3

Cautions on Use of Belt

■How to Extend Belt

When the belt is too taut, its service life can be shortened, while when it is not taut enough, the belt may (jump off) the groove of the pulley due to an activating torque or shock load. Keep the belt stationary and optimize its tautness. The warp load necessary to provide the optimum tautness can be calculated from values representing the belt, its width and the span in equation A below.



$$Td = \frac{Ti + \frac{t \times Y}{Lp}}{16} \quad \cdots\cdots \text{Equation A}$$

Td: Load N Needed for Deflection d at the Center of Span t

Ti : Initial Tension N — From Table 31

Y : Correction Coefficient — From Table 31

δ : Deflection (mm) — δ=0.016t

t : Span Length (mm) — $t = \sqrt{C^2 - \frac{(Dp-dp)^2}{4}}$

Lp : Length of the Belt (mm)

C : Inter-shaft Distance (mm)

dp : Diameter of the Pitch Circle of the Small Pulley (mm)

Dp : Diameter of the Pitch Circle of the Large Pulley (mm)

Table 31. Initial Tension (Ti) and Correction Coefficient (Y)

Type	Ti·Y	Belt Nominal Width / Belt Width mm	019 / 4.8	025 / 6.4	031 / 7.9	037 / 9.5	050 / 12.7	075 / 19.1	100 / 25.4	150 / 38.1	200 / 50.8
MXL	Ti	Max. Value	9.8	13.7	–	21.6	29.9	–	–	–	–
	N	Recommended Value	5.8	8.2		12.9	18.0				
	Coefficient Y		–	–	–	–	–	–	–	–	–
XL	Ti	Max. Value	–	29	37	44	67	–	–	–	–
	N	Recommended Value		18	25	32	51				
	Coefficient Y		–	3.8	5.4	7.6	11.8	–	–	–	–
L	Ti	Max. Value	–	–	–	–	76	125	175	273	–
	N	Recommended Value					52	87	123	191	
	Coefficient Y		–	–	–	–	44.1	75.5	107	165	–
H	Ti	Max. Value	–	–	–	–	–	293	421	646	889
	N	Recommended Value						222	312	486	668
	Coefficient Y		–	–	–	–	–	142	205	317	423

Type	Ti·Y	Belt Nominal Width / Belt Width mm	60 / 6	100 / 10	150 / 15	250 / 25
P2M	Ti	Max. Value	13	–	–	–
	N	Recommended Value	9.8			
	Coefficient Y		0.9	–	–	–
P3M	Ti	Max. Value	–	46	74	–
	N	Recommended Value		34	55	
	Coefficient Y		–	1.9	3.0	–
P5M	Ti	Max. Value	–	147	225.4	–
	N	Recommended Value		107.8	166.6	
	Coefficient Y		–	56.9	82.4	–
P8M	Ti	Max. Value	–	–	294	509.6
	N	Recommended Value			225.4	382.2
	Coefficient Y		–	–	135	239

Type	Ti·Y	Belt Nominal Width / Belt Width mm	40 / 4	60 / 6	100 / 10	150 / 15	250 / 25	300 / 30	400 / 40	600 / 60
S2M	Ti	Max. Value	7.8	12.7	22.6	–	–	–	–	–
	N	Recommended Value	5.9	9.8	16.7					
	Coefficient Y		9.8	15.7	27.4	–	–	–	–	–
S3M	Ti	Max. Value	–	26	46	73	–	–	–	–
	N	Recommended Value		20	34	54				
	Coefficient Y		–	26.5	46.1	75.5	–	–	–	–
S5M	Ti	Max. Value	–	–	77	124	221	–	–	–
	N	Recommended Value			58	93	166			
	Coefficient Y		–	–	52.8	85.5	151.0	–	–	
S8M MTS8M	Ti	Max. Value	–	–	–	294	510	628	873	
	N	Recommended Value				226	382	470	657	
	Coefficient Y		–	–	–	98	196	235	333	
S14M	Ti	Max. Value	–	–	–	–	–	–	1226	1912
	N	Recommended Value							1108	1726
	Coefficient Y		–	–	–	–	–	–	686	1059

Type	Ti·Y	Belt Nominal Width / Belt Width mm	100 / 10	150 / 15	200 / 20	250 / 25	300 / 30	400 / 40	500 / 50
T5	Ti	Max. Value	37.3	59	85	106	–	–	–
	N	Recommended Value	24.5	39	59	74			
	Coefficient Y		16.7	26.5	38.2	47.5	–	–	–
T10	Ti	Max. Value	–	162	235	294	363	500	628
	N	Recommended Value		108	157	196	245	333	422
	Coefficient Y		–	71.6	104.9	130.4	163.8	222.6	281.5

Type	Ti·Y	Belt Nominal Width / Belt Width mm	4 / 4	6 / 6	9 / 9	12 / 12	15 / 15	20 / 20	25 / 25
2GT	Ti	Max. Value	12.2	20.5	32.8	–	–	–	–
	N	Recommended Value	9.4	15.8	25.2				
	Coefficient Y		–	–	–	–	–	–	–
3GT	Ti	Max. Value	–	38	57	–	96	–	–
	N	Recommended Value		29	44		74		
	Coefficient Y		–	–	–	–	–	–	–
EV5GT	Ti	Max. Value	–	–	92	127	163	–	–
	N	Recommended Value			71	98	125		
	Coefficient Y		–	–	–	–	–	–	–
EV8YU	Ti	Max. Value	–	–	–	–	273	364	455
	N	Recommended Value					210	280	350
	Coefficient Y		–	–	–	–	–	–	–

Table 32. Reference Transmission Capacity of MXL Ps -Nominal Width of Belts 025(6.4mm)- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	12	14	15	16	18	20	22	24	25	26	28	30	32	36	40
Diameter of the Pitch Circle(mm)	7.76	9.06	9.70	10.35	11.64	12.94	14.23	15.52	16.17	16.82	18.11	19.40	20.70	23.29	25.97
950	9.0	10.5	11.3	12.0	13.5	15.0	16.5	18.0	18.8	19.6	21.1	22.6	24.1	27.1	30.1
1160	11.0	12.8	13.8	14.7	16.5	18.4	20.2	22.0	23.0	23.9	25.7	27.6	29.4	33.1	36.7
1425		15.8	16.9	18.0	20.3	22.6	24.8	27.1	28.2	29.3	31.6	33.9	36.1	40.6	45.1
1750		19.4	20.8	22.2	24.9	27.7	30.5	33.3	34.7	36.0	38.8	41.6	44.3	49.9	55.4
2850			33.9	36.1	40.6	45.1	49.6	54.1	56.4	58.6	63.1	67.6	72.1	81.0	90.0
3450			41.0	43.7	49.2	54.6	60.1	65.5	68.2	70.9	76.3	81.7	87.1	97.9	108.6
100	0.9	1.1	1.1	1.2	1.4	1.5	1.7	1.9	1.9	2.0	2.2	2.3	2.5	2.8	3.1
200	1.9	2.2	2.3	2.5	2.8	3.1	3.4	3.8	3.9	4.1	4.4	4.7	5.0	5.7	6.3
300	2.8	3.3	3.5	3.8	4.2	4.7	5.2	5.7	5.9	6.1	6.6	7.1	7.6	8.5	9.5
400	3.8	4.4	4.7	5.0	5.7	6.3	6.9	7.6	7.9	8.2	8.8	9.5	10.1	11.4	12.6
500	4.7	5.5	5.9	6.3	7.1	7.9	8.7	9.5	9.9	10.3	11.1	11.9	12.6	14.2	15.8
600	5.7	6.6	7.1	7.6	8.5	9.5	10.4	11.4	11.9	12.3	13.3	14.2	15.2	17.1	19.0
700	6.6	7.7	8.3	8.8	10.0	11.1	12.2	13.3	13.8	14.4	15.5	16.6	17.7	19.9	22.2
800	7.6	8.8	9.5	10.1	11.4	12.6	13.9	15.2	15.8	16.5	17.7	19.0	20.3	22.8	25.3
900	8.5	10.0	10.7	11.4	12.8	14.2	15.7	17.1	17.8	18.5	19.9	21.4	22.8	25.7	28.5
1000	9.5	11.1	11.9	12.6	14.2	15.8	17.4	19.0	19.8	20.6	22.2	23.8	25.3	28.5	31.7
1100	10.4	12.2	13.0	13.9	15.7	17.4	19.2	20.9	21.8	22.6	24.4	26.1	27.9	31.4	34.8
1200	11.4	13.3	14.2	15.2	17.1	19.0	20.9	22.8	23.8	24.7	26.6	28.5	30.4	34.2	38.0
1300		14.4	15.4	16.5	18.5	20.6	22.6	24.7	25.7	26.8	28.8	30.9	32.9	37.1	41.2
1400		15.5	16.6	17.7	19.9	22.2	24.4	26.6	27.7	28.8	31.0	33.3	35.5	39.9	44.3
1500		16.6	17.8	19.0	21.4	23.8	26.1	28.5	29.7	30.9	33.3	35.6	38.0	42.8	47.5
1600		17.7	19.0	20.3	22.8	25.3	27.9	30.4	31.7	32.9	35.5	38.0	40.5	45.6	50.7
1700		18.8	20.2	21.5	24.2	26.9	29.6	32.3	33.7	35.0	37.7	40.4	43.1	48.5	53.8
1800		19.9	21.4	22.8	25.7	28.5	31.4	34.2	35.6	37.1	39.9	42.8	45.6	51.3	57.0
2000			23.8	25.3	28.5	31.7	34.8	38.0	39.6	41.2	44.3	47.5	50.7	57.0	63.3
2200			26.1	27.9	31.4	34.8	38.3	41.8	43.6	45.3	48.8	52.2	55.7	62.7	69.6
2400			28.5	30.4	34.2	38.0	41.8	45.6	47.5	49.4	53.2	57.0	60.8	68.3	75.9
2600			30.9	32.9	37.1	41.2	45.3	49.4	51.5	53.5	57.6	61.7	65.8	74.0	82.1
2800				35.5	39.9	44.3	48.8	53.2	55.4	57.6	62.0	66.4	70.8	79.6	88.4
3000				38.0	42.8	47.5	52.2	57.0	59.3	61.7	66.4	71.2	75.9	85.3	94.6
3200				40.5	45.6	50.7	55.7	60.8	63.3	65.8	70.8	75.9	80.9	90.9	100.9
3400				43.1	48.5	53.8	59.2	64.5	67.2	69.9	75.2	80.6	85.9	96.5	107.1
3600				45.6	51.3	57.0	62.7	68.3	71.2	74.0	79.6	85.3	90.9	102.1	113.3
3800					54.1	60.1	66.1	72.1	75.1	78.1	84.0	90.0	95.9	107.7	119.5
4000					57.0	63.3	69.6	75.9	79.0	82.1	88.4	94.6	100.9	113.3	125.6
4200					59.8	66.4	73.0	79.6	82.9	86.2	92.8	99.3	105.8	118.8	131.8
4400					62.7	69.6	76.5	83.4	86.8	90.3	97.1	104.0	110.8	124.4	137.9
4600					65.5	72.7	79.9	87.1	90.7	94.3	101.5	108.6	115.8	129.9	144.0
4800					68.3	75.9	83.4	90.9	94.6	98.4	105.8	113.3	120.7	135.4	150.0

*Values in the table above are for nominal belt width 025(6.4mm). For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 33. Reference Transmission Capacity of XL Ps -Nominal Width of Belts 100(25.4mm)- (kW)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	10	11	12	14	15	16	18	19	20	21	22	24	25	26	28	30
Diameter of the Pitch Circle(mm)	16.17	17.79	19.40	22.64	24.26	25.87	29.11	30.72	32.34	33.96	35.57	38.81	40.43	42.04	45.28	48.51
950	0.14	0.16	0.17	0.20	0.21	0.23	0.26	0.27	0.29	0.30	0.32	0.35	0.36	0.38	0.41	0.43
1160	0.17	0.19	0.21	0.25	0.26	0.28	0.32	0.33	0.35	0.37	0.39	0.42	0.44	0.46	0.50	0.53
1425			0.26	0.30	0.32	0.35	0.39	0.41	0.43	0.46	0.48	0.52	0.54	0.57	0.61	0.65
1750			0.32	0.37	0.40	0.43	0.48	0.51	0.53	0.56	0.59	0.64	0.67	0.69	0.75	0.80
2850			0.52	0.61	0.65	0.07	0.78	0.82	0.87	0.91	0.95	1.04	1.08	1.12	1.21	1.29
3450			0.63	0.74	0.79	0.84	0.94	1.00	1.05	1.10	1.15	1.25	1.30	1.35	1.45	1.55
100	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
200	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.09
300	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.08	0.09	0.09	0.10	0.11	0.11	0.12	0.12	0.13
400	0.06	0.06	0.07	0.08	0.09	0.09	0.11	0.11	0.12	0.12	0.13	0.14	0.15	0.16	0.17	0.18
500	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.16	0.18	0.19	0.20	0.21	0.23
600	0.09	0.10	0.11	0.12	0.13	0.14	0.16	0.17	0.18	0.19	0.20	0.22	0.23	0.24	0.25	0.27
700	0.10	0.11	0.12	0.15	0.16	0.17	0.19	0.20	0.21	0.22	0.23	0.25	0.27	0.28	0.30	0.32
800	0.12	0.13	0.14	0.17	0.18	0.19	0.22	0.23	0.24	0.25	0.27	0.29	0.30	0.32	0.34	0.37
900	0.13	0.15	0.16	0.19	0.20	0.22	0.25	0.26	0.27	0.29	0.30	0.33	0.34	0.36	0.38	0.41
1000	0.15	0.16	0.18	0.21	0.23	0.24	0.27	0.29	0.30	0.32	0.33	0.37	0.38	0.40	0.43	0.46
1100	0.16	0.18	0.20	0.23	0.25	0.27	0.30	0.32	0.33	0.35	0.37	0.40	0.42	0.44	0.47	0.50
1200	0.18	0.20	0.22	0.25	0.27	0.29	0.33	0.35	0.37	0.38	0.40	0.44	0.46	0.48	0.51	0.55
1300			0.24	0.28	0.30	0.32	0.36	0.38	0.40	0.42	0.44	0.48	0.50	0.52	0.56	0.59
1400			0.25	0.30	0.32	0.34	0.38	0.41	0.43	0.45	0.47	0.51	0.53	0.56	0.60	0.64
1500			0.27	0.32	0.34	0.37	0.41	0.43	0.46	0.48	0.50	0.55	0.57	0.59	0.64	0.69
1600			0.29	0.34	0.37	0.39	0.44	0.46	0.49	0.51	0.54	0.59	0.61	0.63	0.68	0.73
1700			0.31	0.36	0.39	0.41	0.47	0.49	0.52	0.54	0.57	0.62	0.65	0.67	0.73	0.78
1800			0.33	0.38	0.41	0.44	0.49	0.52	0.55	0.58	0.60	0.66	0.69	0.71	0.77	0.82
2000			0.37	0.43	0.46	0.49	0.55	0.58	0.61	0.64	0.67	0.73	0.76	0.79	0.85	0.91
2200			0.40	0.47	0.50	0.54	0.60	0.64	0.67	0.70	0.74	0.80	0.84	0.87	0.94	1.00
2400			0.44	0.51	0.55	0.59	0.66	0.70	0.73	0.77	0.80	0.88	0.91	0.95	1.02	1.09
2600			0.48	0.56	0.59	0.63	0.71	0.75	0.79	0.83	0.87	0.95	0.99	1.03	1.10	1.18
2800			0.51	0.60	0.64	0.68	0.77	0.81	0.85	0.89	0.94	1.02	1.06	1.10	1.19	1.27
3000			0.55	0.64	0.69	0.73	0.82	0.87	0.91	0.96	1.00	1.09	1.14	1.18	1.27	1.35
3200			0.59	0.68	0.73	0.78	0.88	0.92	0.97	1.02	1.07	1.16	1.21	1.26	1.35	1.44
3400			0.62	0.73	0.78	0.83	0.93	0.98	1.03	1.08	1.13	1.23	1.28	1.33	1.43	1.53
3600			0.66	0.77	0.82	0.88	0.98	1.04	1.09	1.14	1.20	1.30	1.35	1.41	1.51	1.61
3800					0.87	0.92	1.04	1.09	1.15	1.21	1.26	1.37	1.43	1.48	1.59	1.69
4000					0.91	0.97	1.09	1.15	1.21	1.27	1.33	1.44	1.50	1.55	1.67	1.78
4200					0.96	1.02	1.14	1.21	1.27	1.33	1.39	1.51	1.57	1.63	1.74	1.86
4400					1.00	1.07	1.20	1.26	1.33	1.39	1.45	1.58	1.64	1.70	1.82	1.94
4600					1.05	1.12	1.25	1.32	1.38	1.45	1.52	1.64	1.71	1.77	1.90	2.02
4800					1.09	1.16	1.30	1.37	1.44	1.51	1.58	1.71	1.78	1.84	1.97	2.10

*Values in the table above are for nominal belt width 100(25.4mm). For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 34. Reference Transmission Capacity of L Ps -Nominal Width of Belts 100(25.4mm)- (kW)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	12	14	15	16	18	19	20	21	22	24	25	26	28	30	32	36	40	48
Diameter of the Pitch Circle(mm)	36.38	42.45	45.48	48.51	54.57	57.61	60.64	63.67	66.70	72.77	75.80	78.83	84.89	90.96	97.02	109.15	121.28	145.53
725	0.33	0.39	0.42	0.44	0.50	0.53	0.56	0.58	0.61	0.67	0.70	0.72	0.78	0.83	0.89	1.00	1.11	1.33
870	0.40	0.47	0.50	0.53	0.60	0.63	0.67	0.70	0.73	0.80	0.83	0.87	0.93	1.00	1.07	1.20	1.33	1.59
950	0.44	0.51	0.55	0.58	0.66	0.69	0.73	0.77	0.80	0.87	0.91	0.95	1.02	1.09	1.16	1.31	1.45	1.73
1160	0.53	0.62	0.67	0.71	0.80	0.85	0.89	0.93	0.98	1.07	1.11	1.15	1.24	1.33	1.41	1.59	1.76	2.09
1425		0.77	0.82	0.87	0.98	1.04	1.09	1.14	1.20	1.31	1.36	1.41	1.52	1.62	1.73	1.93	2.13	2.52
1750		0.94	1.01	1.07	1.20	1.27	1.34	1.40	1.47	1.59	1.66	1.72	1.85	1.97	2.10	2.34	2.58	3.02
2850				1.73	1.93	2.03	2.13	2.23	2.33	2.52	2.62	2.71	2.89	3.07	3.24	3.56	3.84	4.31
3450				2.07	2.31	2.43	2.54	2.66	2.77	2.99	3.09	3.19	3.39	3.58	3.76	4.07	4.33	4.67
100	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.12	0.13	0.15	0.18
200	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.23	0.24	0.27	0.30	0.37
300	0.13	0.16	0.17	0.18	0.20	0.22	0.23	0.24	0.25	0.27	0.29	0.30	0.32	0.34	0.37	0.41	0.46	0.55
400	0.18	0.21	0.23	0.24	0.27	0.29	0.30	0.32	0.34	0.37	0.38	0.40	0.43	0.46	0.49	0.55	0.61	0.74
500	0.23	0.27	0.29	0.30	0.34	0.36	0.38	0.40	0.42	0.46	0.48	0.50	0.54	0.58	0.61	0.69	0.77	0.92
600	0.27	0.32	0.34	0.37	0.41	0.44	0.46	0.48	0.51	0.55	0.58	0.60	0.64	0.69	0.74	0.83	0.92	1.10
700	0.32	0.37	0.40	0.43	0.48	0.51	0.54	0.56	0.59	0.64	0.67	0.70	0.75	0.81	0.86	0.97	1.07	1.28
800	0.37	0.43	0.46	0.49	0.55	0.58	0.61	0.64	0.68	0.74	0.77	0.80	0.86	0.92	0.98	1.10	1.22	1.46
900	0.41	0.48	0.52	0.55	0.62	0.66	0.69	0.73	0.76	0.83	0.86	0.90	0.97	1.03	1.10	1.24	1.37	1.64
1000	0.46	0.54	0.58	0.61	0.69	0.73	0.77	0.81	0.84	0.92	0.96	1.00	1.07	1.15	1.22	1.37	1.52	1.81
1100	0.51	0.59	0.63	0.68	0.76	0.80	0.84	0.89	0.93	1.01	1.05	1.09	1.18	1.26	1.34	1.51	1.67	1.99
1200	0.55	0.64	0.69	0.74	0.83	0.87	0.92	0.97	1.01	1.10	1.15	1.19	1.28	1.37	1.46	1.64	1.81	2.15
1300		0.70	0.75	0.80	0.90	0.95	1.00	1.05	1.09	1.19	1.24	1.29	1.39	1.48	1.58	1.77	1.96	2.32
1400		0.75	0.81	0.86	0.97	1.02	1.07	1.12	1.18	1.28	1.34	1.39	1.49	1.59	1.70	1.90	2.10	2.48
1500		0.81	0.86	0.92	1.03	1.09	1.15	1.20	1.26	1.37	1.43	1.48	1.59	1.70	1.81	2.03	2.24	2.64
1600		0.86	0.92	0.98	1.10	1.16	1.22	1.28	1.34	1.46	1.52	1.58	1.70	1.81	1.93	2.15	2.38	2.80
1700		0.91	0.98	1.04	1.17	1.23	1.30	1.36	1.42	1.55	1.61	1.68	1.80	1.92	2.04	2.28	2.51	2.95
1800		0.97	1.03	1.10	1.24	1.31	1.37	1.44	1.51	1.64	1.70	1.77	1.90	2.03	2.15	2.40	2.64	3.10
1900				1.16	1.31	1.38	1.45	1.52	1.59	1.73	1.80	1.86	2.00	2.13	2.27	2.52	2.77	3.24
2000				1.22	1.37	1.45	1.52	1.59	1.67	1.81	1.89	1.96	2.10	2.24	2.38	2.64	2.90	3.38
2200				1.34	1.51	1.59	1.67	1.75	1.83	1.99	2.06	2.14	2.29	2.44	2.59	2.87	3.14	3.64
2400				1.46	1.64	1.73	1.81	1.90	1.99	2.15	2.24	2.32	2.48	2.64	2.80	3.10	3.38	3.87
2500				1.52	1.70	1.80	1.89	1.97	2.06	2.24	2.32	2.41	2.58	2.74	2.90	3.20	3.49	3.98
2600				1.58	1.77	1.86	1.96	2.05	2.14	2.32	2.41	2.50	2.67	2.84	3.00	3.31	3.59	4.09
2800				1.70	1.90	2.00	2.10	2.20	2.29	2.48	2.58	2.67	2.85	3.02	3.19	3.51	3.80	4.27
3000				1.81	2.03	2.13	2.24	2.34	2.44	2.64	2.74	2.84	3.02	3.20	3.38	3.70	3.98	4.43
3200				1.93	2.15	2.27	2.38	2.48	2.59	2.80	2.90	3.00	3.19	3.38	3.55	3.87	4.15	4.56
3400				2.04	2.28	2.40	2.51	2.62	2.73	2.95	3.05	3.16	3.35	3.54	3.72	4.04	4.30	4.65
3600				2.15	2.40	2.52	2.64	2.76	2.87	3.10	3.20	3.31	3.51	3.70	3.87	4.18	4.43	4.71
3800					2.52	2.65	2.77	2.89	3.01	3.24	3.35	3.45	3.66	3.84	4.02	4.31	4.54	4.73
4000					2.64	2.77	2.90	3.02	3.14	3.38	3.49	3.59	3.80	3.98	4.15	4.43	4.62	4.72
4200					2.76	2.89	3.02	3.15	3.27	3.51	3.62	3.73	3.93	4.11	4.27	4.53	4.69	4.66
4400					2.87	3.01	3.14	3.27	3.40	3.64	3.75	3.85	4.05	4.23	4.38	4.61	4.72	4.56
4600					2.99	3.13	3.26	3.39	3.52	3.76	3.87	3.97	4.17	4.33	4.48	4.67	4.73	4.42
4800					3.10	3.24	3.38	3.51	3.64	3.87	3.98	4.09	4.27	4.43	4.56	4.71	4.72	4.23

* [ ] The circumferential speed of pulley is 33(m/s)or more; a dynamic balance for the pulley is essential.
*Values in the table above are for nominal belt width 100(25.4mm). For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 35. Reference Transmission Capacity of H Ps -Nominal Width of Belts 100(25.4mm)- (kW)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	14	15	16	18	19	20	21	22	24	25	26	28	30	32	36	40	48
Diameter of the Pitch Circle(mm)	56.60	60.64	64.68	72.77	76.81	80.85	84.89	88.94	97.02	101.06	105.1	113.19	121.28	129.36	145.53	161.70	194.04
725	1.33	1.43	1.52	1.71	1.81	1.90	2.00	2.09	2.28	2.38	2.47	2.66	2.85	3.04	3.41	3.79	4.53
870	1.60	1.71	1.83	2.05	2.17	2.28	2.40	2.51	2.74	2.85	2.96	3.19	3.41	3.64	4.08	4.53	5.41
950			1.99	2.24	2.37	2.49	2.61	2.74	2.99	3.11	3.23	3.48	3.72	3.97	4.45	4.93	5.89
1160			2.43	2.74	2.89	3.04	3.19	3.34	3.64	3.79	3.94	4.23	4.53	4.82	5.41	5.99	7.12
1425				3.35	3.54	3.72	3.91	4.09	4.45	4.63	4.81	5.17	5.53	5.89	6.59	7.27	8.61
1750				4.11	4.33	4.55	4.78	5.00	5.44	5.66	5.87	6.31	6.73	7.16	7.98	8.79	10.32
2850						7.27	7.61	7.95	8.61	8.93	9.25	9.87	10.48	11.06	12.16	13.15	14.80
3450						8.68	9.07	9.45	10.19	10.55	10.91	11.59	12.24	12.85	13.95	14.87	16.09
100	0.18	0.19	0.21	0.23	0.25	0.26	0.27	0.28	0.31	0.32	0.34	0.36	0.39	0.42	0.47	0.52	0.63
200	0.36	0.39	0.42	0.47	0.50	0.52	0.55	0.57	0.63	0.65	0.68	0.73	0.79	0.84	0.94	1.05	1.26
300	0.55	0.59	0.63	0.71	0.75	0.79	0.83	0.86	0.94	0.98	1.02	1.10	1.18	1.26	1.42	1.57	1.89
400	0.73	0.79	0.84	0.94	1.00	1.05	1.10	1.15	1.26	1.31	1.36	1.47	1.57	1.68	1.89	2.10	2.52
500	0.92	0.98	1.05	1.18	1.25	1.31	1.38	1.44	1.57	1.64	1.71	1.84	1.97	2.10	2.36	2.62	3.14
600	1.10	1.18	1.26	1.42	1.50	1.57	1.65	1.73	1.89	1.97	2.05	2.20	2.36	2.52	2.83	3.14	3.76
700	1.29	1.38	1.47	1.65	1.75	1.84	1.93	2.02	2.20	2.30	2.39	2.57	2.75	2.93	3.30	3.66	4.38
800	1.47	1.57	1.68	1.89	1.99	2.10	2.20	2.31	2.52	2.62	2.73	2.93	3.14	3.35	3.76	4.17	4.99
900	1.65	1.77	1.89	2.13	2.24	2.36	2.48	2.60	2.83	2.95	3.06	3.30	3.53	3.76	4.22	4.68	5.59
1000			2.10	2.36	2.49	2.62	2.75	2.88	3.14	3.27	3.40	3.66	3.92	4.17	4.68	5.19	6.18
1100			2.31	2.60	2.74	2.88	3.02	3.17	3.45	3.59	3.74	4.02	4.30	4.58	5.14	5.69	6.77
1200			2.52	2.83	2.99	3.14	3.30	3.45	3.76	3.92	4.07	4.38	4.68	4.99	5.59	6.18	7.35
1300				3.06	3.23	3.40	3.57	3.74	4.07	4.24	4.40	4.73	5.06	5.39	6.03	6.67	7.91
1400				3.30	3.48	3.66	3.84	4.02	4.38	4.55	4.73	5.09	5.44	5.79	6.48	7.16	8.47
1500				3.53	3.72	3.92	4.11	4.30	4.68	4.87	5.06	5.44	5.81	6.18	6.91	7.63	9.01
1600				3.76	3.97	4.17	4.38	4.58	4.99	5.19	5.39	5.79	6.18	6.57	7.35	8.10	9.55
1700				3.99	4.21	4.43	4.64	4.86	5.29	5.50	5.71	6.13	6.55	6.96	7.77	8.56	10.07
1800				4.22	4.45	4.68	4.91	5.14	5.59	5.81	6.03	6.48	6.91	7.35	8.19	9.01	10.57
1900						4.93	5.17	5.41	5.89	6.12	6.35	6.82	7.27	7.73	8.61	9.46	11.06
2000						5.19	5.44	5.69	6.18	6.43	6.67	7.16	7.63	8.10	9.01	9.89	11.53
2100						5.44	5.70	5.96	6.48	6.73	6.99	7.49	7.98	8.47	9.41	10.32	11.99
2200						5.69	5.96	6.23	6.77	7.03	7.30	7.82	8.33	8.83	9.81	10.73	12.43
2300						5.94	6.22	6.50	7.06	7.33	7.61	8.15	8.68	9.19	10.19	11.14	12.85
2400						6.18	6.48	6.77	7.35	7.63	7.91	8.47	9.01	9.55	10.57	11.53	13.25
2500						6.43	6.73	7.03	7.63	7.93	8.22	8.79	9.35	9.89	10.94	11.91	13.63
2600						6.67	6.99	7.30	7.91	8.22	8.52	9.10	9.68	10.24	11.30	12.28	13.99
2800						7.16	7.49	7.82	8.47	8.79	9.10	9.72	10.32	10.90	11.99	12.99	14.65
3000						7.63	7.98	8.33	9.01	9.35	9.68	10.32	10.94	11.53	12.64	13.63	15.21
3200						8.10	8.47	8.83	9.55	9.89	10.24	10.90	11.53	12.14	13.25	14.22	15.67
3400						8.56	8.95	9.33	10.07	10.42	10.78	11.45	12.10	12.71	13.81	14.75	16.02
3600						9.01	9.41	9.81	10.57	10.94	11.30	11.99	12.64	13.25	14.33	15.21	16.26
3800								10.28	11.06	11.44	11.80	12.50	13.15	13.75	14.80	15.60	16.38
4000								10.73	11.53	11.91	12.28	12.99	13.63	14.22	15.21	15.92	16.37
4200								11.18	11.99	12.37	12.75	13.44	14.08	14.65	15.56	16.16	16.23
4400								11.61	12.43	12.81	13.19	13.87	14.49	15.03	15.86	16.31	15.94
4600								12.03	12.85	13.23	13.60	14.28	14.87	15.37	16.09	16.39	15.51
4800								12.43	13.25	13.63	13.99	14.65	15.21	15.67	16.26	16.37	14.93

* [ ] The circumferential speed of pulley is 33(m/s)or more; a dynamic balance for the pulley is essential.
*Values in the table above are for nominal belt width 100(25.4mm). For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 36. Reference Transmission Capacity of S2M Ps -Belt Width 4mm- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	14	15	16	18	20	22	24	25	26	28	30	32	36	40	44	48	50	60
Diameter of the Pitch Circle(mm)	8.91	9.55	10.19	11.46	12.73	14.01	15.28	15.92	16.55	17.83	19.10	20.37	22.92	25.46	28.01	30.56	31.83	38.20
870	11	12	14	16	19	21	23	25	26	28	30	33	37	41	46	50	52	62
1160	13	15	17	20	23	26	29	31	32	35	38	41	46	52	57	62	65	77
1750	17	20	22	27	31	35	39	41	43	47	51	55	63	70	78	85	88	105
3500	26	30	34	41	49	56	63	67	70	77	83	90	102	115	126	138	143	170
50	1	1	1	2	2	2	2	2	2	3	3	3	3	4	4	5	5	6
100	2	2	2	3	3	4	4	4	5	5	5	6	6	7	8	8	9	11
150	3	3	3	4	5	5	6	6	6	7	7	8	9	10	11	12	12	15
200	4	4	4	5	6	7	7	8	8	9	9	10	11	13	14	15	16	19
250	4	5	5	6	7	8	9	9	10	10	11	12	14	15	17	18	19	23
300	5	5	6	7	8	9	10	11	11	12	13	14	16	18	19	21	22	26
350	6	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	25	30
400	6	7	8	9	10	11	13	13	14	15	16	18	20	22	25	27	28	33
450	7	8	8	10	11	13	14	15	15	17	18	19	22	25	27	30	31	37
500	7	8	9	11	12	14	15	16	17	18	20	21	24	27	29	32	33	40
550	8	9	10	11	13	15	16	17	18	20	21	23	26	29	32	35	36	43
600	8	9	10	12	14	16	18	18	19	21	23	24	28	31	34	37	39	46
650	9	10	11	13	15	17	19	20	21	22	24	26	30	33	36	40	41	49
700	9	10	12	14	16	18	20	21	22	24	26	28	31	35	39	42	44	52
750	10	11	12	14	17	19	21	22	23	25	27	29	33	37	41	44	46	55
800	10	12	13	15	17	20	22	23	24	26	28	31	35	39	43	47	49	58
850	11	12	13	16	18	21	23	24	25	28	30	32	36	41	45	49	51	61
900	11	13	14	16	19	22	24	25	26	29	31	34	38	43	47	51	53	63
950	12	13	14	17	20	22	25	26	28	30	33	35	40	44	49	53	56	66
1000	12	14	15	18	21	23	26	27	29	31	34	36	41	46	51	55	58	69
1100	13	14	16	19	22	25	28	29	31	34	36	39	44	50	55	60	62	74
1200	14	15	17	20	24	27	30	31	33	36	39	42	47	53	58	64	66	79
1300	14	16	18	22	25	28	32	33	35	38	41	44	50	56	62	68	71	84
1400	15	17	19	23	26	30	33	35	37	40	44	47	53	60	66	72	75	89
1500	16	18	20	24	28	31	35	37	39	42	46	49	56	63	69	75	79	94
1600	17	19	21	25	29	33	37	39	41	44	48	52	59	66	73	79	82	98
1700	17	19	22	26	30	34	39	41	43	46	50	54	62	69	76	83	86	103
1800	18	20	23	27	31	36	40	42	44	48	52	56	64	72	79	86	90	107
1900	18	21	23	28	33	37	42	44	46	50	55	59	67	75	82	90	94	111
2000	19	22	24	29	34	39	43	46	48	52	57	61	69	78	85	93	97	115
2200	20	23	26	31	36	41	46	49	51	56	61	65	74	83	92	100	104	124
2400	21	24	27	33	38	44	49	52	54	59	64	69	79	88	97	106	111	131
2600	22	25	28	35	40	46	52	55	57	63	68	73	84	93	103	112	117	139
2800	23	26	30	36	42	49	55	57	60	66	72	77	88	98	109	118	123	146
3000	24	28	31	38	44	51	57	60	63	69	75	81	92	103	114	124	129	153
3200	25	29	32	39	46	53	60	63	66	72	79	85	96	108	119	130	135	160
3400	26	30	33	41	48	55	62	65	69	75	82	88	100	112	124	135	140	167
3600	26	30	34	42	50	57	64	68	71	78	85	92	104	117	129	140	146	173
3800	27	31	35	44	51	59	67	70	74	81	88	95	108	121	133	145	151	179
4000	28	32	36	45	53	61	69	73	76	84	91	98	112	125	138	150	156	185
4500	29	34	39	48	57	66	74	78	82	90	98	106	121	135	149	162	168	199
5000	30	36	41	51	60	70	79	83	88	96	105	113	129	144	159	173	179	211
5500	32	37	43	53	63	74	83	88	93	102	111	119	136	152	168	183	190	223
6000	33	38	44	56	66	77	87	92	97	107	117	126	143	160	176	192	199	233
6500	33	40	46	58	69	80	91	97	102	112	122	132	150	168	184	200	208	243
7000	34	41	47	60	72	83	95	100	106	117	127	137	156	174	192	208	216	251
7500	34	41	48	61	74	86	98	104	110	121	132	142	162	181	198	215	223	259
8000	35	42	49	63	76	89	101	107	113	125	136	147	167	187	205	222	229	265
8500	35	43	50	64	78	91	104	110	116	128	140	151	172	192	210	227	235	270
9000	35	43	51	65	80	94	107	113	119	132	144	155	177	197	215	232	240	275

*Values in the table above are for 4mm belt width. For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 37. Reference Transmission Capacity of S3M Ps -Belt Width 6mm- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	14	15	16	18	20	22	24	25	26	28	30	32	36	40	44	48	50	60
Diameter of the Pitch Circle(mm)	13.37	14.32	15.28	17.19	19.10	21.01	22.92	23.87	24.83	26.74	28.65	30.56	34.38	38.20	42.02	45.84	47.75	57.30
870	53	58	62	73	79	87	95	99	103	110	118	125	140	155	169	182	188	222
1160	67	72	78	92	99	110	119	124	129	139	148	158	176	194	212	229	238	279
1750	92	100	107	128	137	151	165	171	178	192	205	218	243	268	291	315	326	381
3500	154	167	180	215	230	255	277	289	300	322	344	365	407	446	484	521	539	624
50	5	5	6	7	7	8	8	9	9	10	11	11	13	14	15	17	17	20
100	9	9	10	12	13	14	15	16	17	18	19	21	23	25	28	30	31	37
150	12	13	14	17	18	20	22	23	24	26	27	29	33	36	39	43	44	52
200	16	17	18	22	23	26	28	29	30	33	35	37	42	46	50	54	56	67
250	19	21	22	26	28	31	34	35	37	39	42	45	50	55	61	66	68	80
300	22	24	26	31	33	36	39	41	43	46	49	52	58	65	71	76	79	94
350	25	27	29	35	37	41	45	47	49	52	56	59	66	73	80	87	90	106
400	28	31	33	39	42	46	50	52	54	58	62	66	74	82	90	97	101	119
450	31	34	36	43	46	51	55	58	60	64	69	73	82	90	99	107	111	131
500	34	37	39	47	50	55	60	63	65	70	75	80	89	99	108	117	121	143
550	37	40	43	51	54	60	65	68	71	76	81	86	97	107	116	126	131	154
600	39	43	46	54	58	64	70	73	76	82	87	93	104	114	125	135	140	165
650	42	46	49	58	62	69	75	78	81	87	93	99	111	122	133	144	150	176
700	45	48	52	62	66	73	79	83	86	92	99	105	118	130	142	153	159	187
750	47	51	55	65	70	77	84	87	91	98	105	111	124	137	150	162	168	198
800	50	54	58	69	73	81	89	92	96	103	110	117	131	145	158	171	177	208
850	52	57	61	72	77	86	93	97	101	108	116	123	138	152	166	179	186	218
900	55	59	64	76	81	90	97	101	105	113	121	129	144	159	173	187	194	228
950	57	62	66	79	84	94	102	106	110	118	127	135	150	166	181	196	203	238
1000	60	64	69	82	88	97	106	110	115	123	132	140	157	173	188	204	211	248
1100	64	69	75	89	95	105	114	119	124	133	142	151	169	186	203	220	228	267
1200	69	74	80	95	102	113	122	128	133	143	152	162	181	200	218	235	244	286
1300	73	79	85	101	108	120	130	136	141	152	162	173	193	213	232	250	260	304
1400	78	84	90	107	115	127	138	144	150	161	172	183	204	225	245	265	275	322
1500	82	89	95	113	121	134	146	152	158	170	182	193	216	238	259	280	290	340
1600	86	93	100	119	127	141	154	160	166	179	191	203	227	250	272	294	305	357
1700	90	98	105	125	134	148	161	168	174	187	200	213	238	262	285	308	319	373
1800	94	102	110	130	140	155	168	175	182	196	209	222	248	273	298	322	333	390
1900	98	106	114	136	146	161	175	183	190	204	218	232	259	285	310	335	347	406
2000	102	110	119	141	151	168	182	190	198	212	227	241	269	296	322	348	361	421
2200	110	119	128	152	163	180	196	204	212	228	244	259	289	318	346	374	387	452
2400	117	127	136	162	174	193	210	218	227	244	261	277	309	340	369	398	413	481
2600	124	135	145	173	185	205	223	232	241	259	277	294	328	360	392	422	437	509
2800	131	142	153	182	195	216	235	245	255	274	292	311	346	380	413	446	461	536
3000	138	150	161	192	205	228	248	258	268	288	308	327	364	400	435	468	484	562
3200	145	157	169	201	216	239	260	270	281	302	322	342	381	419	455	490	507	588
3400	151	164	177	210	225	250	272	283	294	316	337	358	398	437	475	511	528	612
3600	157	171	184	219	235	260	283	295	306	329	351	373	415	455	494	531	549	635
3800	164	177	191	228	244	271	294	306	318	342	365	387	431	473	513	551	570	658
4000	170	184	198	237	253	281	305	318	330	355	378	402	447	490	531	570	590	679
4500	184	200	216	257	275	305	332	345	359	385	411	436	484	530	574	616	636	729
5000	198	215	232	277	297	329	357	372	386	414	442	468	520	568	614	658	679	774
5500	211	230	248	296	317	351	381	396	412	442	471	499	553	603	651	696	717	813
6000	224	243	263	313	336	372	404	420	436	468	498	528	584	636	685	731	753	848
6500	236	256	277	331	354	392	426	443	460	492	524	555	613	667	717	763	784	876
7000	247	269	291	347	371	411	446	464	482	516	549	580	640	695	745	791	812	900
7500	259	281	304	363	388	430	466	485	503	538	572	604	665	721	771	816	836	917
8000	269	293	316	378	404	447	485	504	523	559	594	627	688	744	793	837	856	929
8500	279	304	328	392	419	464	503	522	542	579	614	648	710	765	813	855	873	935
9000	289	315	340	406	434	480	520	540	559	597	633	667	729	784	830	869	885	935

*Values in the table above are for 6mm belt width. For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 38. Reference Transmission Capacity of S5M Ps -Belt Width 10mm- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	14	15	16	18	20	22	24	25	26	28	30	32	36	40	44	48	60
Diameter of the Pitch Circle(mm)	22.28	23.87	25.46	28.65	31.83	35.01	38.20	39.79	41.38	44.56	47.75	50.93	57.30	63.66	70.03	76.39	95.49
870	173	192	210	246	282	317	352	369	386	420	453	486	551	614	677	738	916
1160	216	239	263	309	355	399	443	465	487	529	572	613	695	775	854	931	1154
1750	293	326	359	425	488	551	613	643	673	733	792	849	963	1073	1181	1286	1587
3500	475	534	592	705	816	923	1029	1080	1131	1231	1330	1425	1611	1787	1955	2115	2544
50	16	18	19	22	25	28	31	33	34	37	40	43	48	54	59	64	80
100	30	32	35	41	46	52	57	60	62	68	73	78	88	98	108	118	147
150	42	46	50	58	66	73	81	85	89	96	104	111	125	140	154	168	209
200	53	58	63	74	84	94	104	108	113	123	132	142	161	179	197	215	268
250	64	70	76	89	101	113	125	131	137	149	160	172	194	217	239	260	324
300	74	81	89	103	118	132	146	153	160	173	187	200	227	253	279	304	378
350	84	92	101	118	134	150	166	174	182	198	213	228	259	288	318	346	431
400	93	103	112	131	150	168	186	195	203	221	238	255	289	323	355	388	482
450	103	113	124	145	165	185	205	215	224	244	263	282	319	356	392	428	532
500	112	123	135	158	180	202	224	234	245	266	287	308	349	389	428	467	581
550	121	133	146	170	195	218	242	254	265	288	311	333	378	421	464	506	629
600	129	143	156	183	209	235	260	272	285	310	334	358	406	453	499	544	676
650	138	152	167	195	223	250	278	291	304	331	357	383	434	484	533	581	722
700	146	161	177	207	237	266	295	309	323	351	379	407	461	514	566	618	767
750	154	171	187	219	250	281	312	327	342	372	401	431	488	544	599	654	812
800	162	179	197	231	264	296	329	345	361	392	423	454	514	574	632	689	856
850	170	188	206	242	277	311	345	362	379	412	445	477	541	603	664	724	899
900	178	197	216	253	290	326	362	379	397	432	466	500	566	632	696	759	941
950	185	205	225	264	303	341	378	396	415	451	487	522	592	660	727	793	983
1000	193	214	234	275	315	355	394	413	432	470	507	544	617	688	758	826	1025
1100	207	230	252	297	340	383	425	446	466	507	548	588	666	743	818	892	1106
1200	221	246	270	318	364	410	456	478	500	544	588	630	715	797	877	956	1185
1300	235	261	287	338	388	437	485	509	533	580	626	672	762	849	935	1019	1262
1400	248	276	304	358	411	463	515	540	565	615	664	713	808	901	992	1081	1338
1500	262	291	320	378	434	489	543	570	597	649	701	753	853	951	1047	1141	1411
1600	274	305	336	397	456	514	571	600	628	683	738	792	898	1001	1102	1200	1483
1700	287	319	352	415	478	539	599	629	658	716	774	830	941	1049	1155	1258	1553
1800	299	333	367	434	499	563	626	657	688	749	809	868	984	1097	1207	1314	1621
1900	311	347	382	452	520	587	653	685	717	781	844	905	1026	1144	1258	1370	1688
2000	323	360	397	470	541	611	679	713	746	813	878	942	1068	1189	1308	1424	1753
2200	346	386	426	504	581	656	730	767	803	874	944	1013	1148	1279	1406	1529	1879
2400	367	411	454	538	620	701	780	819	858	934	1009	1082	1226	1365	1500	1630	1998
2600	389	435	480	570	658	744	828	870	911	991	1071	1149	1301	1448	1590	1727	2111
2800	409	458	507	602	695	786	875	919	962	1048	1132	1214	1374	1528	1677	1820	2218
3000	429	481	532	633	731	826	920	967	1012	1102	1190	1277	1445	1606	1761	1910	2319
3200	448	502	556	662	765	866	965	1013	1061	1155	1247	1338	1513	1680	1841	1995	2414
3400	466	524	580	691	799	904	1008	1058	1108	1206	1303	1397	1579	1752	1918	2076	2502
3600	484	544	603	719	832	942	1049	1102	1154	1256	1356	1454	1642	1821	1992	2153	2584
3800	501	564	626	747	864	978	1090	1145	1199	1305	1408	1509	1704	1888	2062	2227	2659
4000	518	583	647	773	895	1014	1130	1186	1242	1352	1459	1563	1763	1951	2129	2296	2728
4500	558	629	699	837	970	1098	1224	1285	1345	1463	1578	1689	1901	2098	2282	2452	2870
5000	595	672	748	896	1039	1177	1312	1377	1441	1566	1688	1804	2025	2228	2414	2581	2966
5500	629	712	793	951	1104	1251	1393	1462	1530	1661	1788	1909	2135	2340	2523	2683	3014
6000	661	749	835	1003	1164	1319	1468	1540	1611	1747	1878	2002	2231	2434	2609	2756	3011
6500	690	783	874	1051	1220	1382	1537	1612	1685	1825	1958	2084	2312	2508	2672	2800	2955
7000	716	814	910	1096	1272	1440	1600	1677	1752	1895	2029	2154	2378	2563	2709	2812	2841
7500	741	843	943	1137	1320	1493	1657	1735	1811	1955	2090	2213	2428	2598	2720	2791	2666
8000	763	870	974	1174	1363	1540	1708	1787	1863	2007	2140	2260	2462	2611	2703	2735	2427
8500	783	894	1001	1208	1402	1583	1752	1831	1908	2050	2179	2294	2479	2602	2658	2643	2122
9000	801	915	1026	1239	1436	1620	1790	1869	1944	2084	2208	2315	2479	2570	2583	2513	1745

* [ ] The circumferential speed of pulley is 33(m/s)or more; a dynamic balance for the pulley is essential.

*Values in the table above are for 10mm belt width. For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 39. Reference Transmission Capacity of S8M Ps -Belt Width 60mm- (kW)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	20	21	22	24	25	26	28	30	32	34	36	38	40	44	48	50	60	72	84
Diameter of the Pitch Circle(mm)	50.93	53.48	56.02	61.12	63.66	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	127.32	152.79	183.35	213.90
870	6.38	6.70	7.02	7.66	7.98	8.29	8.93	9.56	10.20	10.83	11.47	12.10	12.73	14.00	15.25	15.88	19.01	22.73	26.41
1160	8.51	8.93	9.35	10.20	10.62	11.05	11.89	12.73	13.58	14.42	15.25	16.09	16.93	18.60	20.26	21.08	25.19	30.03	34.77
1750	12.81	13.44	14.07	15.34	15.97	16.61	17.86	19.12	20.37	21.62	22.86	24.10	25.33	27.78	30.20	31.40	37.29	44.09	50.52
3500	25.33	26.56	27.78	30.20	31.40	32.59	34.96	37.29	39.60	41.86	44.09	46.28	48.42	52.57	56.62	58.42	67.02	75.09	80.26
50	0.37	0.39	0.40	0.44	0.46	0.48	0.51	0.55	0.59	0.62	0.66	0.70	0.73	0.81	0.88	0.92	1.10	1.32	1.54
100	0.73	0.77	0.81	0.88	0.92	0.95	1.03	1.10	1.18	1.25	1.32	1.40	1.47	1.62	1.76	1.84	2.20	2.64	3.08
200	1.47	1.54	1.62	1.76	1.84	1.91	2.06	2.20	2.35	2.50	2.64	2.79	2.94	3.23	3.52	3.67	4.40	5.28	6.16
300	2.20	2.31	2.42	2.64	2.75	2.86	3.08	3.30	3.52	3.74	3.96	4.18	4.40	4.84	5.28	5.50	6.60	7.92	9.24
400	2.94	3.08	3.23	3.52	3.67	3.82	4.11	4.40	4.70	4.99	5.28	5.58	5.87	6.46	7.04	7.34	8.80	10.55	12.30
500	3.67	3.85	4.04	4.40	4.59	4.77	5.14	5.50	5.87	6.24	6.60	6.97	7.34	8.07	8.80	9.16	10.99	13.17	15.34
600	4.40	4.62	4.84	5.28	5.50	5.72	6.16	6.60	7.04	7.48	7.92	8.36	8.80	9.67	10.55	10.99	13.17	15.78	18.37
700	5.14	5.39	5.65	6.16	6.42	6.68	7.19	7.70	8.21	8.72	9.24	9.75	10.26	11.28	12.30	12.80	15.34	18.37	21.37
800	5.87	6.16	6.46	7.04	7.34	7.63	8.21	8.80	9.38	9.97	10.55	11.13	11.71	12.88	14.04	14.62	17.51	20.94	24.34
900	6.60	6.93	7.26	7.92	8.25	8.58	9.24	9.89	10.55	11.21	11.86	12.52	13.17	14.47	15.78	16.42	19.66	23.50	27.29
1000	7.34	7.70	8.07	8.80	9.16	9.53	10.26	10.99	11.72	12.44	13.17	13.89	14.62	16.06	17.51	18.22	21.80	26.03	30.20
1100	8.07	8.47	8.87	9.67	10.08	10.48	11.28	12.08	12.88	13.68	14.47	15.27	16.08	17.65	19.23	20.01	23.92	28.54	33.07
1200	8.80	9.24	9.67	10.55	10.99	11.42	12.30	13.17	14.04	14.91	15.77	16.64	17.51	19.23	20.94	21.80	26.03	31.02	35.90
1300	9.53	10.00	10.48	11.42	11.90	12.37	13.31	14.26	15.20	16.14	17.07	18.01	18.94	20.80	22.65	23.57	28.12	33.48	38.68
1400	10.26	10.77	11.28	12.30	12.80	13.31	14.33	15.34	16.35	17.36	18.37	19.37	20.37	22.37	24.35	25.33	30.20	35.90	41.41
1500	10.99	11.53	12.08	13.17	13.71	14.26	15.34	16.42	17.51	18.58	19.66	20.73	21.80	23.92	26.03	27.08	32.25	38.29	44.09
1600	11.71	12.30	12.88	14.04	14.62	15.20	16.35	17.50	18.66	19.80	20.94	22.08	23.22	25.47	27.71	28.82	34.29	40.64	46.71
1700	12.44	13.06	13.68	14.91	15.52	16.14	17.36	18.58	19.80	21.01	22.22	23.43	24.63	27.01	29.37	30.54	36.30	42.95	49.26
1800	13.17	13.82	14.47	15.78	16.42	17.07	18.37	19.66	20.94	22.22	23.50	24.77	26.03	28.54	31.02	32.25	38.29	45.22	51.75
1900	13.89	14.58	15.27	16.64	17.32	18.01	19.37	20.73	22.08	23.43	24.77	26.10	27.43	30.06	32.66	33.95	40.25	47.44	54.17
2000	14.62	15.34	16.06	17.51	18.22	18.94	20.37	21.80	23.22	24.63	26.03	27.43	28.82	31.57	34.29	35.63	42.18	49.62	56.52
2100	15.34	16.10	16.86	18.37	19.12	19.87	21.37	22.86	24.35	25.82	27.29	28.75	30.20	33.07	35.90	37.29	44.09	51.75	58.79
2200	16.06	16.86	17.65	19.23	20.01	20.80	22.36	23.92	25.47	27.01	28.54	30.06	31.57	34.56	37.49	38.94	45.96	53.83	60.98
2300	16.79	17.61	18.44	20.09	20.91	21.73	23.36	24.98	26.59	28.19	29.78	31.37	32.93	36.03	39.07	40.57	47.81	55.86	63.08
2400	17.51	18.37	19.23	20.94	21.80	22.65	24.34	26.03	27.71	29.37	31.02	32.66	34.29	37.49	40.64	42.18	49.62	57.83	65.10
2500	18.22	19.12	20.01	21.80	22.68	23.57	25.33	27.08	28.82	30.54	32.25	33.95	35.63	38.94	42.18	43.77	51.40	59.74	67.02
2600	18.94	19.87	20.80	22.65	23.57	24.49	26.31	28.12	29.92	31.71	33.48	35.23	36.96	40.38	43.71	45.34	53.15	61.59	68.84
2700	19.66	20.62	21.58	23.50	24.45	25.40	27.29	29.16	31.02	32.87	34.69	36.50	38.29	41.80	45.22	46.89	54.85	63.38	70.57
2800	20.37	21.37	22.36	24.35	25.33	26.31	28.26	30.20	32.12	34.02	35.90	37.76	39.60	43.20	46.71	48.42	56.52	65.10	72.19
2900	21.09	22.12	23.14	25.19	26.21	27.22	29.23	31.23	33.21	35.16	37.09	39.01	40.89	44.59	48.17	49.92	58.15	66.75	73.70
3000	21.80	22.86	23.92	26.03	27.08	28.13	30.20	32.25	34.29	36.30	38.28	40.25	42.18	45.97	49.62	51.40	59.74	68.33	75.09
3100	22.51	23.61	24.70	26.87	27.95	29.03	31.16	33.27	35.36	37.43	39.46	41.48	43.46	47.32	51.05	52.86	61.29	69.84	76.38
3200	23.22	24.35	25.47	27.71	28.82	29.92	32.12	34.29	36.43	38.55	40.63	42.69	44.72	48.66	52.45	54.29	62.79	71.27	77.54
3300	23.92	25.09	26.24	28.54	29.68	30.82	33.07	35.29	37.49	39.66	41.79	43.90	45.96	49.98	53.83	55.69	64.25	72.63	78.57
3400	24.63	25.82	27.01	29.37	30.54	31.71	34.02	36.30	38.55	40.76	42.95	45.09	47.20	51.29	55.19	57.07	65.66	73.90	79.48
3600	26.03	27.29	28.54	31.03	32.25	33.48	35.90	38.28	40.64	42.95	45.22	47.44	49.62	53.84	57.83	59.74	68.33	76.20	80.90
3700	26.73	28.02	29.30	31.85	33.10	34.36	36.83	39.27	41.67	44.02	46.33	48.60	50.81	55.08	59.11	61.03	69.60	77.22	81.41
3800	27.43	28.75	30.06	32.66	33.95	35.23	37.76	40.24	42.69	45.09	47.44	49.74	51.99	56.30	60.36	62.29	70.81	78.15	81.77
3900	28.12	29.48	30.82	33.48	34.79	36.10	38.68	41.21	43.71	46.15	48.54	50.87	53.15	57.51	61.59	63.52	71.96	78.98	81.98
4000	28.82	30.20	31.57	34.29	35.63	36.96	39.59	42.18	44.72	47.20	49.62	51.99	54.29	58.69	62.79	64.72	73.06	79.72	82.04
4200	30.20	31.64	33.07	35.90	37.29	38.68	41.41	44.09	46.71	49.26	51.75	54.18	56.52	60.98	65.10	67.02	75.09	80.90	
4400	31.57	33.07	34.56	37.50	38.94	40.38	43.20	45.96	48.66	51.28	53.83	56.30	58.69	63.18	67.29	69.18	76.89	81.68	
4600	32.93	34.49	36.03	39.08	40.57	42.05	44.97	47.81	50.58	53.26	55.86	58.37	60.78	65.29	69.35	71.20	78.43	82.02	
4800	34.29	35.90	37.49	40.64	42.18	43.71	46.71	49.62	52.45	55.19	57.83	60.37	62.79	67.29	71.27	73.06	79.72	81.92	
5000	35.63	37.30	38.94	42.18	43.77	45.34	48.42	51.40	54.29	57.07	59.74	62.30	64.72	69.18	73.06	74.77	80.74	81.34	
5200	36.96	38.68	40.37	43.71	45.34	46.95	50.10	53.14	56.08	58.90	61.59	64.15	66.57	70.96	74.71	76.32	81.47		
5400	38.29	40.05	41.79	45.22	46.89	48.54	51.75	54.85	57.83	60.67	63.38	65.94	68.33	72.63	76.20	77.69	81.91		
5600	39.60	41.41	43.20	46.71	48.42	50.10	53.37	56.52	59.53	62.39	65.10	67.64	70.00	74.18	77.54	78.89	82.04		
5800	40.89	42.76	44.59	48.18	49.92	51.64	54.96	58.15	61.19	64.05	66.75	69.27	71.58	75.60	78.71	79.91			
6000	42.18	44.09	45.96	49.63	51.40	53.15	56.52	59.74	62.79	65.66	68.33	70.81	73.06	76.89	79.72	80.73			

*Because the durability in terms of hours decreases in the [- - -] marked range, this range should be avoided whenever possible.

* [ ] The circumferential speed of pulley is 33(m/s)or more; a dynamic balance for the pulley is essential.

*Values in the table above are for 60mm belt width. For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

[Technical Data]
Selection of Transmission Timing Belts 6 -Transmission Capacity Table-

Table 40. Reference Transmission Capacity of S14M Ps -Belt Width 120mm- (kW)

Number of Teeth of the Pulley(T) / Pitch Dia. (mm) / Rotary Speed of Small Pulley(rpm)	28	30	32	34	36	40	42	44	48	50	56	60	64	72	84
	124.78	133.69	142.60	151.52	160.43	178.25	187.17	196.08	213.90	222.82	249.55	267.38	285.21	320.86	374.33
575	32.08	34.36	36.63	38.90	41.17	45.68	47.94	50.19	54.67	56.91	63.58	68.00	72.39	81.10	93.92
690	38.45	41.17	43.88	46.59	49.29	54.67	57.36	60.03	65.35	68.00	75.89	81.09	86.26	96.44	111.32
870	48.35	51.75	55.14	58.52	61.88	68.57	71.90	75.20	81.77	85.03	94.68	101.02	107.27	119.49	136.99
1160	64.12	68.57	73.00	77.40	81.77	90.41	94.69	98.92	107.27	111.39	123.46	131.27	138.87	153.39	173.25
1750	95.20	101.57	107.84	114.03	120.11	131.93	137.68	143.29	154.11	159.32	174.00	182.96	191.21	205.36	220.00
3450	172.13	181.10	189.39	196.95	203.72	214.76	218.93	222.13	225.47						
20	1.12	1.20	1.28	1.36	1.44	1.60	1.68	1.76	1.92	2.00	2.24	2.40	2.56	2.88	3.36
40	2.24	2.40	2.56	2.72	2.88	3.20	3.36	3.52	3.84	4.00	4.48	4.80	5.12	5.76	6.71
60	3.36	3.60	3.84	4.08	4.32	4.80	5.04	5.28	5.76	6.00	6.71	7.19	7.67	8.63	10.07
80	4.48	4.80	5.12	5.44	5.76	6.39	6.71	7.03	7.67	7.99	8.95	9.59	10.23	11.51	13.42
90	5.04	5.40	5.76	6.12	6.47	7.19	7.55	7.91	8.63	8.99	10.07	10.79	11.51	12.94	15.10
100	5.60	6.00	6.39	6.79	7.19	7.99	8.39	8.79	9.59	9.99	11.19	11.99	12.79	14.38	16.77
200	11.19	11.99	12.78	13.58	14.38	15.98	16.78	17.57	19.17	19.96	22.35	23.94	25.53	28.71	33.47
300	16.78	17.97	19.17	20.36	21.56	23.94	25.14	26.33	28.71	29.90	33.47	35.84	38.21	42.94	49.99
400	22.35	23.94	25.53	27.12	28.71	31.88	33.47	35.05	38.21	39.79	44.51	47.65	50.78	57.01	66.27
500	27.92	29.90	31.88	33.86	35.84	39.79	41.76	43.72	47.64	49.60	55.45	59.33	63.20	70.87	82.22
600	33.47	35.84	38.21	40.58	42.94	47.64	49.99	52.34	57.00	59.33	66.27	70.87	75.43	84.47	97.76
700	39.00	41.76	44.51	47.26	49.99	55.45	58.17	60.88	66.27	68.96	76.95	82.22	87.45	97.76	112.80
800	44.51	47.65	50.77	53.90	57.01	63.19	66.27	69.34	75.43	78.46	87.45	93.36	99.21	110.68	127.26
900	49.99	53.51	57.00	60.49	63.97	70.87	74.29	77.70	84.47	87.82	97.75	104.27	110.68	123.19	141.06
1000	55.45	59.33	63.19	67.04	70.87	78.46	82.22	85.96	93.36	97.03	107.84	114.90	121.82	135.23	154.11
1100	60.88	65.12	69.34	73.54	77.70	85.96	90.05	94.10	102.11	106.06	117.68	125.23	132.60	146.75	166.35
1200	66.27	70.87	75.43	79.97	84.47	93.36	97.76	102.11	110.68	114.90	127.26	135.23	142.97	157.70	177.67
1300	71.63	76.57	81.47	86.34	91.16	100.66	105.35	109.97	119.07	123.53	136.53	144.87	152.91	168.02	188.00
1400	76.95	82.22	87.45	92.63	97.76	107.84	112.80	117.69	127.26	131.94	145.49	154.12	162.37	177.67	197.26
1500	82.22	87.82	93.36	98.85	104.27	114.90	120.11	125.23	135.23	140.10	154.11	162.94	171.32	186.69	205.36
1600	87.45	93.36	99.21	104.99	110.68	121.82	127.26	132.60	142.97	148.00	162.36	171.31	179.72	194.73	212.22
1700	92.63	98.85	104.98	111.04	116.99	128.60	134.25	139.78	150.46	155.62	170.22	179.21	187.53	202.03	217.76
1800	97.76	104.27	110.68	116.99	123.19	135.23	141.06	146.75	157.70	162.94	177.67	186.59	194.73	208.45	221.89
1900	102.83	109.62	116.29	122.85	129.27	141.70	147.69	153.51	164.65	169.95	184.67	193.43	201.26	213.94	224.54
2000	107.85	114.90	121.82	128.61	135.23	147.99	154.12	160.05	171.31	176.63	191.21	199.69	207.11	218.44	225.62
2100	112.80	120.10	127.26	134.25	141.06	154.11	160.34	166.35	177.67	182.96	197.25	205.36	212.22	221.89	
2200	117.69	125.23	132.60	139.78	146.75	160.05	166.35	172.40	183.70	188.93	202.79	210.39	216.56	224.26	
2300	122.51	130.27	137.83	145.19	152.30	165.78	172.13	178.18	189.39	194.51	207.78	214.76	220.10	225.47	
2400	127.26	135.23	142.97	150.47	157.70	171.31	177.67	183.70	194.72	199.69	212.22	218.43	222.80	225.50	
2500	131.94	140.10	147.99	155.62	162.94	176.63	182.97	188.93	199.69	204.46	216.06	221.39	224.63		
2600	136.54	144.87	152.90	160.63	168.02	181.82	188.00	193.86	204.27	208.78	219.29	223.59	225.54		
2700	141.06	149.54	157.70	165.51	172.93	186.58	192.77	198.49	208.45	212.66	221.89	225.01	225.50		
2800	145.50	154.12	162.36	170.23	177.67	191.21	197.26	202.79	212.22	216.06	223.83	225.62			
2900	149.85	158.58	166.90	174.80	182.22	195.58	201.46	206.76	215.55	218.98	225.08				
3000	154.12	162.94	171.31	179.21	186.59	199.69	205.36	210.39	218.43	221.39	225.62				
3100	158.29	167.19	175.58	183.46	190.76	203.53	208.95	213.66	220.86	223.28					
3200	162.37	171.31	179.71	187.53	194.73	207.10	212.22	216.56	222.80	224.63					
3300	166.35	175.32	183.70	191.44	198.49	210.39	215.16	219.09	224.25	225.42					
3400	170.23	179.21	187.53	195.16	202.03	213.37	217.76	221.22	225.20	225.63					
3500	174.00	182.96	191.21	198.69	205.36	216.06	220.01	222.94	225.62						
3600	177.67	186.59	194.72	202.04	208.45	218.43	221.89	224.26							
3700	181.23	190.08	198.08	205.18	211.32	220.49	223.41	225.14							
3800	184.67	193.43	201.26	208.12	213.94	222.21	224.54	225.58							
3900	188.00	196.63	204.27	210.86	216.31	223.59	225.28	225.58							
4000	191.21	199.69	207.10	213.38	218.44	224.63	225.62								
4100	194.30	202.60	209.75	215.68	220.30	225.30									
4200	197.26	205.36	212.22	217.76	221.89	225.62									
4300	200.09	207.95	214.49	219.61	223.21										
4400	202.79	210.39	216.56	221.22	224.26										
4500	205.36	212.66	218.43	222.59	225.01										
4600	207.79	214.76	220.10	223.71	225.47										
4700	210.08	216.68	221.56	224.58	225.64										
4800	212.22	218.43	222.80	225.20											
4900	214.22	220.00	223.83	225.55											
5000	216.06	221.39	224.63	225.63											

*Because the durability in terms of hours decreases in the [- - - -] marked range, this range should be avoided whenever possible.
*The circumferential speed of pulley is 33 (m/s) or more in the [ ] marked range; a dymanic balance for the pulley is essential.
*The [ ] marked range should be avoided whenever possible, as above two factors overlap here.*Values in the table above is for nominal belt width 120 (120mm). For other belt widths, those values should be multiplied by the width correction coefficient in Table 28.

Table 41. Reference Transmission Capacity of MTS8M Ps -Belt Width 60mm- (kW)

Number of Teeth of the Pulley(T) / Pitch Dia. (mm) / Rotary Speed of Small Pulley(rpm)	24	26	28	30	32	34	36	38	40	42	44	46	48	50	60	72	84
	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	106.95	112.05	117.14	122.23	127.32	152.79	183.35	213.90
50	1.35	1.47	1.58	1.70	1.82	1.93	2.05	2.17	2.27	2.37	2.46	2.56	2.66	2.75	3.21	3.75	4.27
100	2.71	2.94	3.17	3.40	3.63	3.87	4.11	4.35	4.54	4.74	4.93	5.12	5.31	5.50	6.42	7.50	8.54
200	4.91	5.32	5.73	6.15	6.57	6.99	7.42	7.85	8.20	8.54	8.89	9.22	9.56	9.89	11.52	13.41	15.23
300	6.91	7.48	8.06	8.64	9.23	9.83	10.43	11.04	11.52	12.00	12.47	12.94	13.41	13.87	16.12	18.71	21.20
400	8.77	9.50	10.23	10.98	11.73	12.48	13.25	14.02	14.63	15.23	15.82	16.41	16.99	17.57	20.38	23.62	26.72
500	10.53	11.40	12.29	13.18	14.08	14.99	15.92	16.85	17.57	18.28	18.99	19.69	20.38	21.07	24.40	28.22	31.88
600	12.20	13.22	14.24	15.28	16.33	17.39	18.46	19.55	20.38	21.20	22.02	22.82	23.62	24.40	28.22	32.59	36.76
700	13.80	14.95	16.11	17.29	18.48	19.69	20.91	22.15	23.09	24.01	24.92	25.82	26.72	27.60	31.88	36.76	41.39
800	15.32	16.61	17.91	19.23	20.56	21.91	23.28	24.66	25.70	26.72	27.72	28.72	29.70	30.68	35.39	40.74	45.81
900	16.79	18.21	19.64	21.09	22.56	24.05	25.56	27.10	28.22	29.34	30.44	31.52	32.59	33.65	38.77	44.57	50.04
1000	18.21	19.75	21.31	22.89	24.50	26.13	27.78	29.46	30.68	31.88	33.06	34.23	35.39	36.53	42.03	48.25	54.09
1100	19.57	21.24	22.92	24.64	26.38	28.14	29.94	31.76	33.06	34.35	35.62	36.87	38.10	39.32	45.19	51.80	57.98
1200	20.89	22.67	24.48	26.33	28.20	30.10	32.04	34.00	35.39	36.76	38.10	39.43	40.74	42.03	48.25	55.22	61.71
1300	22.16	24.06	26.00	27.97	29.97	23.01	34.08	36.19	37.66	39.10	40.52	41.93	43.31	44.67	51.21	58.52	65.29
1400	23.38	25.40	27.46	29.56	31.69	33.86	36.07	38.33	39.87	41.39	42.89	44.36	45.81	47.24	54.09	61.71	68.73
1500	24.57	26.71	28.88	31.10	33.37	35.67	38.02	40.41	42.03	43.62	45.19	46.73	48.25	49.74	56.88	64.79	72.03
1600	25.71	27.97	30.26	32.61	35.00	37.44	39.92	42.46	44.15	45.81	47.44	49.05	50.63	52.18	59.59	67.76	75.19
1700	26.82	29.19	31.60	34.07	36.59	39.16	41.78	44.46	46.22	47.95	49.64	51.31	52.95	54.56	62.23	70.63	78.22
1800	27.89	30.37	32.90	35.49	38.14	40.84	43.60	46.42	48.25	50.04	51.79	53.52	55.22	56.88	64.78	73.40	81.12
1900	28.92	31.51	34.16	36.87	39.65	42.48	45.38	48.35	50.23	52.08	53.90	55.68	57.43	59.15	67.27	76.07	83.89
2000	29.92	32.62	35.39	38.22	41.12	44.09	47.13	50.23	52.18	54.09	55.96	57.79	59.59	61.36	69.68	78.64	86.53
2100	30.89	33.70	36.57	39.53	42.55	45.65	48.83	52.08	54.09	56.05	57.97	59.86	61.71	63.51	72.03	81.12	89.05
2200	31.82	37.74	37.73	40.80	43.95	47.19	50.50	53.90	55.96	57.97	59.95	61.88	63.77	65.62	74.30	83.50	91.43
2300	32.72	35.74	38.85	42.04	45.32	48.68	52.14	55.68	57.79	59.86	61.88	63.85	65.79	67.68	76.51	85.79	
2400	33.59	36.72	39.93	43.25	46.65	50.15	53.74	57.43	59.59	67.71	63.77	65.79	67.76	69.68	78.64	87.98	
2500	34.42	37.66	40.99	44.42	47.95	51.58	55.31	59.15	61.36	63.51	65.62	67.68	69.68	71.64	80.72	90.08	
2600	35.23	38.57	42.01	45.56	49.21	52.98	56.85	60.83	63.09	56.29	67.43	69.52	71.56	73.55	82.72	92.09	
2700	36.00	39.44	43.00	46.67	50.45	54.34	58.36	62.48	64.78	67.02	69.21	71.33	73.40	75.41	84.66		
2800	36.75	40.29	43.96	47.74	51.65	55.68	59.83	64.11	66.45	68.73	70.94	73.09	75.19	77.23	86.53		
2900	37.46	41.11	44.89	48.79	52.82	56.99	61.28	65.70	68.08	70.39	72.64	74.82	76.94	78.99	88.34		
3000	38.15	41.90	45.78	49.80	53.96	58.26	62.70	67.27	69.68	72.03	74.30	76.50	78.64	80.71	90.08		
3200	39.44	43.39	47.49	51.75	56.16	60.72	65.44	70.31	72.79	75.19	77.51	79.76	81.93	84.02			
3400	40.61	44.76	49.08	53.57	58.23	63.07	68.07	73.25	75.78	78.22	80.58	82.85	85.04	87.14			
3600	41.67	46.02	50.55	55.28	60.19	65.30	70.59	76.07	78.64	81.12	83.50	85.79	87.98	90.08			
3800	42.63	47.17	51.92	56.88	62.04	67.42	73.00	78.78	81.39	83.89	86.29	88.58	90.76				
4000	43.47	48.21	53.17	58.36	63.78	69.42	75.30	81.39	84.02	86.53	88.93	91.21					
4200	44.21	49.14	54.31	59.73	65.41	71.32	77.49	83.89	86.53	89.04	91.43						
4400	44.85	49.96	55.35	61.00	66.92	73.11	79.57	86.29	88.93	91.43							
4600	45.38	50.68	56.27	62.16	68.33	74.80	81.55	88.57	91.21								
4800	45.81	51.29	57.09	63.21	69.64	76.37	83.42	90.76									
5000	46.14	51.80	57.81	64.15	70.83	77.84	85.18										
5200	46.36	52.20	58.41	64.99	71.92	79.20	86.84										
5400	46.48	52.51		65.72	72.90	80.46											
5600	46.51	52.70		66.34	73.78												
5800	46.43			66.86	74.54												
6000	46.25																

*Because the durability in terms of hours decreases in the [- - - -] marked range, this range should be avoided whenever possible.
*Because the circumferential speed of pulley within the [ ] marked range is higher than 20m/sec, this range should be avoided whenever possible.
*Values in the table above is for nominal belt width 600(60mm). For other belt widths, those values should be multiplied by the width correction coefficient, Kb, shown in Table 28.

Table 42. Reference Transmission Capacity of P2M Ps -Belt Width 4mm-

(W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	14	15	16	18	20	22	24	25	26	28	30	32	34	36	40	42	44	48
Diameter of the Pitch Circle(mm)	8.91	9.55	10.19	11.46	12.73	14.01	15.28	15.92	16.55	17.83	19.10	20.37	21.65	22.92	25.46	26.74	28.01	30.56
100	2	2	2	2	3	3	3	3	3	4	4	5	5	6	7	7	8	9
200	3	3	4	5	5	6	7	7	7	8	9	10	11	11	13	14	15	17
400	6	6	7	8	9	10	11	12	13	14	15	16	17	19	22	24	25	28
600	8	9	10	11	12	14	16	17	18	19	20	22	23	25	29	31	33	37
800	10	11	12	13	16	18	19	20	21	23	25	27	29	31	36	38	41	46
1000	12	13	14	16	18	20	23	24	25	27	30	32	34	37	42	45	48	54
1200	14	15	16	19	21	23	26	26	28	31	34	37	40	42	48	51	54	61
1400	16	17	18	21	24	26	29	30	32	35	38	41	44	47	54	57	61	68
1450	16	18	19	21	24	27	30	31	33	36	39	42	45	48	55	59	62	70
1500	16	18	19	22	25	28	31	32	34	37	40	43	46	50	57	60	64	71
1600	17	18	20	23	26	29	32	33	35	39	43	46	49	53	60	64	67	75
1750	19	20	22	25	28	31	35	37	38	42	45	49	53	56	64	68	71	79
1800	19	21	23	25	29	32	35	37	38	42	46	50	54	57	65	69	73	81
2000	21	22	24	28	31	34	38	40	42	46	50	54	58	62	70	74	78	87
2400	24	26	28	32	36	40	44	46	48	52	56	61	65	70	80	85	89	99
3000		30	32	37	42	46	52	54	57	62	67	72	77	82	93	98	102	115
3600		35	38	43	48	53	59	62	64	70	76	82	88	94	106	112	118	131
4000		38	41	47	52	58	64	67	70	76	82	88	94	101	114	120	127	140
5000			48	55	61	68	75	78	82	89	96	104	111	118	132	139	147	162
6000			55	63	70	78	86	90	93	101	109	117	125	133	149	157	164	180
8000				76	86	95	105	109	114	123	132	141	150	158	176	184	192	209
10000				91	101	111	122	127	132	142	151	161	170	178	196	203	210	224
12000					114	125	136	141	146	157	166	175	183	190	206	211	217	228
14000					125	136	148	153	158	168	176	185	190	196	208	214	220	232

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

Table 43. Reference Transmission Capacity of P3M Ps -Belt Width 6mm-

(W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	10	12	14	15	16	18	20	22	24	25	26	28	30	32	34	36	40	42
Diameter of the Pitch Circle(mm)	9.55	11.46	13.37	14.32	15.28	17.19	19.10	20.01	22.92	23.87	24.83	26.74	28.65	30.56	32.47	34.38	38.20	40.11
100	4	5	6	6	7	8	9	10	12	12	13	14	15	17	19	20	22	23
200	8	11	12	13	14	16	18	20	23	24	25	28	31	34	36	38	45	47
400	14	17	20	22	24	27	32	35	39	41	43	47	51	56	61	65	75	79
600	19	23	28	30	33	37	42	47	53	55	58	63	69	75	81	87	100	105
800	24	29	35	38	41	46	53	59	65	68	72	79	85	92	99	107	123	129
1000	28	35	41	44	48	55	62	69	77	81	84	92	100	109	118	126	144	151
1200	33	40	47	51	55	63	71	79	88	92	97	106	115	125	135	144	164	172
1400	37	45	54	58	62	71	80	89	99	104	109	119	129	140	151	162	184	193
1450	38	46	55	59	64	72	82	90	102	106	111	122	133	144	155	166	188	197
1500	39	47	56	60	65	75	84	93	104	109	114	125	135	147	158	170	193	202
1600	41	49	59	63	68	79	88	98	109	114	120	131	142	154	166	178	202	212
1750	44	54	63	68	74	84	95	106	118	124	129	141	153	165	177	190	215	226
1800		55	65	70	75	86	97	108	120	126	131	143	155	168	181	193	219	230
2000		59	70	75	81	93	105	117	129	135	142	155	168	182	196	209	237	249
2400		68	81	87	93	107	121	134	148	155	162	177	192	207	223	238	270	284
3000			95	103	112	125	142	158	175	183	191	208	226	243	261	279	316	332
3600			110	118	127	145	163	182	201	210	219	238	258	278	298	318	359	377
4000			119	128	138	158	176	196	216	226	236	257	278	299	321	342	386	405
5000			141	152	163	186	208	231	255	267	278	302	326	351	375	399	448	470
6000				174	187	212	238	264	291	304	317	343	370	397	424	451	505	530
8000					232	263	293	324	356	371	387	418	448	479	508	538	597	627
10000						308	342	377	413	430	446	480	512	545	574	604	663	696
12000						349	386	423	460	477	495	530	562	594	620	646	699	734
14000							424	462	500	517	534	568	597	626	645	665	704	739

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

Table 44. Reference Transmission Capacity of P5M Ps -Belt Width 10mm- (W)

Rotary Speed of Small Pulley (rpm) \ No. of Teeth of Small Pulley	12	14	16	18	20	22	24	25	26	28	30	32	34	36	40	42	44	48	56
Diameter of the Pitch Circle (mm)	19.10	22.28	25.46	28.65	31.83	35.05	38.20	39.79	41.38	44.56	47.75	50.93	54.11	57.30	63.66	66.85	70.03	76.39	89.15
100	23	26	31	35	41	46	52	55	58	64	70	76	81	86	103	110	118	133	158
200	46	53	63	72	81	92	104	109	115	126	138	151	164	177	205	220	235	267	316
400	77	90	106	122	138	155	173	182	192	211	231	251	272	294	337	361	385	434	514
600	105	123	144	165	188	211	235	247	259	284	310	337	365	394	452	482	513	577	684
800	131	153	179	205	234	262	291	306	322	353	385	417	451	485	556	592	629	706	837
1000	156	182	212	243	276	309	343	361	379	415	453	491	530	570	651	694	738	825	977
1200	179	209	244	280	316	355	394	414	435	476	518	561	605	650	742	790	838	937	1110
1400	201	235	274	319	355	399	443	465	487	532	580	628	677	726	828	880	933	1040	1230
1450		242	282	323	365	409	453	476	499	546	594	643	694	745	850	903	957	1070	1260
1500		248	288	333	374	420	466	489	512	560	609	659	711	762	869	925	981	1090	1290
1600		261	303	348	393	441	489	514	538	588	639	691	745	799	910	970	1030	1140	1350
1750		278	325	372	420	471	522	548	575	628	683	738	795	852	970	1040	1100	1220	1430
1800			332	380	430	481	532	559	586	640	696	753	810	868	989	1050	1110	1240	1460
2000			360	412	465	520	576	605	633	691	751	812	874	937	1060	1130	1200	1330	1570
2400			413	472	532	595	658	691	723	789	857	925	992	1060	1210	1280	1350	1500	2030
3000				557	628	701	775	812	850	926	1000	1080	1150	1240	1400	1485	1570	1730	2120
3600				638	719	801	883	925	966	1050	1140	1230	1310	1400	1580	1670	1760	1940	2250
4000					776	865	953	997	1040	1130	1220	1320	1450	1500	1690	1785	1880	2060	2380
5000					911	1010	1110	1160	1210	1320	1420	1520	1620	1720	1920	2010	2110	2300	2610
6000						1140	1260	1310	1370	1480	1580	1690	1790	1900	2100	2190	2290	2460	2720
8000							1490	1550	1600	1720	1830	1930	2020	2120	2270	2330	2400	2480	2480
10000								1710	1760	1860	1940	2020	2080	2130	2170	2160	2150	2040	
12000								1770	1810	1880	1910	1940	1920	1900					
14000									1750	1760	1710	1660							

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

Table 45. Reference Transmission Capacity of P8M Ps -Belt Width 15mm- (kW)

Rotary Speed of Small Pulley (rpm) \ No. of Teeth of Small Pulley	20	22	24	26	28	30	32	34	36	38	40	44	48	50	56	60	64	72
Diameter of the Pitch Circle (mm)	50.93	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	127.32	142.06	152.79	162.97	183.35
100	0.16	0.17	0.19	0.21	0.23	0.26	0.31	0.41	0.44	0.48	0.51	0.56	0.60	0.63	0.70	0.74	0.78	0.89
200	0.32	0.35	0.39	0.42	0.45	0.50	0.59	0.69	0.78	0.85	0.91	0.99	1.07	1.14	1.23	1.35	1.40	1.57
400	0.65	0.71	0.77	0.84	0.90	0.95	1.09	1.25	1.37	1.48	1.59	1.72	1.86	1.94	2.16	2.30	2.43	2.71
600	0.96	1.06	1.16	1.25	1.35	1.45	1.53	1.70	1.86	2.02	2.17	2.37	2.55	2.66	2.95	3.12	3.30	3.66
800	1.29	1.41	1.54	1.67	1.80	1.93	2.06	2.18	2.31	2.51	2.69	3.02	3.16	3.27	3.64	3.83	4.08	4.75
870	1.40	1.54	1.68	1.82	1.96	2.10	2.24	2.38	2.51	2.66	2.86	3.16	3.36	3.48	3.90	4.13	4.44	4.98
1000	1.61	1.77	1.93	2.09	2.25	2.41	2.57	2.73	2.89	2.99	3.16	3.64	3.84	4.00	4.47	4.78	5.09	5.71
1160	1.86	2.05	2.24	2.42	2.61	2.79	2.98	3.16	3.35	3.53	3.84	4.08	4.44	4.62	5.17	5.52	6.48	7.28
1200	1.93	2.12	2.31	2.51	2.70	2.89	3.07	3.27	3.46	3.60	3.82	4.22	4.59	4.78	5.34	5.71	6.08	7.52
1400	2.25	2.45	2.70	2.94	3.15	3.37	3.59	3.80	4.03	4.25	4.47	4.90	5.34	5.55	6.20	6.62	7.04	8.68
1450	2.33	2.55	2.79	3.04	3.26	3.65	3.72	3.94	4.17	4.40	4.63	5.07	5.53	5.75	6.41	6.85	7.28	8.96
1500	2.41	2.64	2.89	3.15	3.37	3.72	3.84	4.07	4.31	4.55	4.78	5.25	5.71	5.94	6.62	7.07	7.51	9.25
1600	2.57	2.83	3.07	3.35	3.59	3.84	4.09	4.34	4.59	4.84	5.09	5.59	6.08	6.32	7.04	7.52	7.98	9.81
1750	2.81	3.08	3.36	3.64	3.92	4.20	4.47	4.74	5.01	5.28	5.56	6.09	6.63	6.88	7.68	8.17	8.70	10.6
1800	2.89	3.18	3.72	3.75	4.03	4.31	4.59	4.87	5.15	5.43	5.71	6.26	6.80	7.07	7.86	8.38	8.90	10.9
2000	3.20	3.52	4.01	4.15	4.47	4.78	5.09	5.40	5.71	6.01	6.32	6.93	7.52	7.81	8.68	9.24	9.81	11.9
2400	3.84	4.22	4.59	4.97	5.34	5.71	6.08	6.44	6.80	7.16	7.52	8.22	9.05	9.24	9.86	10.9	11.5	13.8
3000	4.63	5.20	5.62	6.02	6.52	6.81	7.32	7.76	8.22	8.71	9.02	9.84	10.7	11.1	12.2	12.6	12.9	14.6
3600		5.82	6.34	6.75	7.27	7.67	8.17	8.65	9.14	9.72	10.0	10.8	11.7	12.2	13.1	13.9	13.9	15.3
4000			7.06	7.48	8.14	8.46	9.00	9.60	10.0	10.7	11.0	11.7	12.7	13.2	14.0	14.7	14.9	15.8
5000				8.81	9.60	10.2	10.7	11.3	11.7	12.4	12.8	13.6	14.5	14.8	15.7			
6000				10.2	11.2	11.9	12.3	13.0	13.2	14.1	14.5	14.9	15.8	16.0				

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.
* [ ] The circumferential speed of pulley is 33(m/s)or more; a dynamic balance for the pulley is essential.

Table 46. Reference Transmission Capacity of UP5M Ps -Belt Width 10mm- (W)

Rotary Speed of Small Pulley (rpm) \ No. of Teeth of Small Pulley	12	14	16	18	20	22	24	26	28	30	32	36	40	44	48	50	60	72
Diameter of the Pitch Circle (mm)	19.10	22.28	25.46	28.65	31.83	35.01	38.20	41.38	44.56	47.75	50.93	57.30	63.66	70.03	76.39	79.58	95.49	114.59
20	10	12	15	17	19	21	24	26	29	31	34	39	45	51	58	61	78	101
40	19	23	28	32	36	40	45	49	54	59	64	74	85	96	108	114	147	187
60	27	32	39	45	50	56	63	69	76	83	90	104	119	135	152	161	206	267
100	41	50	60	69	78	88	97	107	118	128	139	162	185	210	236	249	321	420
200	76	92	111	128	145	162	180	198	215	237	257	298	342	388	436	460	592	774
400	141	170	206	236	267	299	332	366	401	437	474	550	631	715	804	849	1092	1430
500	172	207	251	287	325	364	405	446	488	532	577	670	769	871	979	1034	1330	1741
600	202	243	295	338	382	428	475	524	574	625	678	788	903	1024	1151	1216	1563	2045
800	260	314	380	436	492	552	613	675	740	806	875	1016	1164	1320	1483	1567	2016	2637
1000	316	382	463	531	600	672	747	822	901	982	1065	1238	1418	1609	1806	1909	2454	3210
1200	376	453	550	630	713	799	887	977	1070	1167	1265	1470	1685	1910	2146	2266	2913	3811
1400	436	526	637	730	826	924	1026	1132	1240	1351	1466	1702	1951	2212	2484	2625	3372	4409
1450		544	658	755	854	957	1061	1171	1283	1397	1516	1760	2017	2288	2569	2714	3488	4559
1500		561	681	780	883	988	1098	1209	1324	1444	1566	1819	2084	2364	2654	2803	3601	4707
1600		599	724	831	940	1052	1169	1287	1410	1537	1667	1935	2218	2514	2823	2984	3833	5007
1750		652	790	907	1025	1147	1275	1405	1539	1677	1817	2111	2420	2743	3080	3254	4178	5455
1800			813	931	1053	1179	1309	1443	1582	1724	1868	2171	2486	2820	3165	3344	4293	5605
2000			902	1032	1169	1309	1453	1601	1754	1912	2071	2407	2757	3124	3508	3707	4687	6201
2400			1068	1222	1386	1552	1720	1897	2077	2262	2453	2849	3261	3695	4146	4378	5485	7293
3000				1517	1714	1918	2130	2348	2570	2798	3034	3520	4027	4559	5108	5389	6614	8885
3600				1794	2029	2272	2519	2774	3039	3307	3584	4151	4743	5361	5996	6320	7629	10250
4000					2245	2513	2785	3067	3358	3655	3956	4577	5226	5895	6583	6932	8040	11069
5000					2747	3072	3404	3747	4090	4446	4807	5542	6301	7066	7843	8229	9048	
6000					3217	3585	3969	4359	4757	5154	5559	6376	7185	7995	8776	9159		
8000							5002	5455	5908	6361	6795	7624	8366	8993	9465	9619		
10000								6313	6747	7156	7518	8072	8349	8253				
12000								6824	7142	7359	7475	7316						
14000								6848	6882	6730								

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

Table 47. Reference Transmission Capacity of UP8M Ps -Belt Width 15mm- (kW)

Rotary Speed of Small Pulley (rpm) \ No. of Teeth of Small Pulley	20	22	24	26	28	30	32	34	36	38	40	44	48	50	56	60	64	72
Diameter of the Pitch Circle (mm)	50.93	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	127.32	142.60	152.79	162.97	183.35
20	0.11	0.12	0.13	0.14	0.15	0.17	0.18	0.19	0.20	0.21	0.23	0.25	0.28	0.29	0.33	0.36	0.40	0.46
40	0.19	0.21	0.24	0.26	0.28	0.30	0.33	0.36	0.38	0.40	0.42	0.47	0.52	0.55	0.62	0.67	0.73	0.84
60	0.27	0.31	0.34	0.37	0.40	0.44	0.47	0.50	0.53	0.56	0.60	0.67	0.74	0.77	0.89	0.96	1.04	1.20
100	0.43	0.48	0.52	0.57	0.62	0.67	0.71	0.77	0.82	0.88	0.93	1.03	1.14	1.20	1.38	1.50	1.62	1.87
200	0.76	0.84	0.93	1.01	1.10	1.19	1.28	1.37	1.46	1.57	1.69	1.85	2.06	2.16	2.48	2.70	2.93	3.40
300	1.06	1.17	1.29	1.41	1.54	1.66	1.78	1.92	2.05	2.18	2.29	2.59	2.88	3.03	3.48	3.79	4.11	4.79
400	1.32	1.47	1.62	1.78	1.93	2.09	2.25	2.41	2.59	2.75	2.92	3.28	3.65	3.84	4.41	4.81	5.22	6.08
500	1.57	1.75	1.93	2.12	2.30	2.50	2.69	2.89	3.09	3.30	3.50	3.93	4.37	4.60	5.30	5.78	6.29	7.32
600	1.81	2.01	2.22	2.44	2.65	2.88	3.10	3.33	3.57	3.80	4.05	4.54	5.06	5.32	6.14	6.71	7.29	8.51
700	2.04	2.26	2.50	2.75	2.99	3.24	3.50	3.75	4.02	4.29	4.57	5.13	5.72	6.02	6.95	7.59	8.26	9.65
800	2.25	2.51	2.77	3.04	3.31	3.59	3.87	4.17	4.46	4.76	5.07	5.70	6.35	6.69	7.73	8.45	9.20	10.75
900	2.46	2.74	3.03	3.32	3.61	3.92	4.24	4.55	4.88	5.21	5.55	6.25	6.97	7.34	8.48	9.29	10.11	11.83
1000	2.66	2.96	3.28	3.58	3.91	4.24	4.58	4.93	5.28	5.64	6.02	6.78	7.56	7.96	9.22	10.08	10.99	12.88
1100	2.86	3.19	3.52	3.87	4.23	4.59	4.95	5.33	5.71	6.10	6.51	7.32	8.18	8.62	9.99	10.93	11.91	13.97
1200	3.06	3.42	3.78	4.15	4.53	4.92	5.31	5.72	6.13	6.55	6.98	7.87	8.79	9.26	10.74	11.76	12.83	15.05
1300	3.26	3.64	4.02	4.42	4.82	5.24	5.67	6.10	6.54	6.99	7.45	8.40	9.40	9.90	11.49	12.59	13.73	16.11
1400	3.46	3.86	4.27	4.69	5.12	5.57	6.01	6.47	6.95	7.43	7.92	8.94	9.99	10.53	12.23	13.40	14.62	17.17
1450	3.55	3.96	4.39	4.82	5.26	5.72	6.18	6.66	7.15	7.64	8.15	9.20	10.28	10.84	12.59	13.80	15.06	17.69
1500	3.65	4.07	4.51	4.95	5.41	5.87	6.35	6.85	7.35	7.85	8.38	9.46	10.58	11.15	12.95	14.20	15.50	18.22
1600	3.83	4.27	4.73	5.21	5.69	6.18	6.69	7.21	7.74	8.28	8.84	9.98	11.16	11.77	13.68	15.00	16.37	19.26
1750	4.11	4.59	5.08	5.59	6.12	6.64	7.19	7.75	8.32	8.91	9.50	10.74	12.03	12.69	14.75	16.19	17.68	20.81
1800	4.19	4.69	5.20	5.71	6.25	6.79	7.35	7.92	8.52	9.11	9.72	11.00	12.31	12.99	15.10	16.58	18.11	21.32
2000	4.56	5.09	5.65	6.21	6.79	7.39	8.00	8.63	9.28	9.93	10.61	11.99	13.44	14.18	16.51	18.14	19.82	23.37
2400	5.25	5.87	6.51	7.17	7.85	8.54	9.27	10.00	10.75	11.52	12.31	13.95	15.65	16.53	19.27	21.20	23.18	27.38
2800	5.91	6.61	7.34	8.09	8.87	9.66	10.48	11.32	12.18	13.06	13.97	15.84	17.81	18.81	21.97	24.19	26.49	31.35
3000	6.22	6.97	7.75	8.54	9.37	10.21	11.09	11.97	12.89	13.82	14.79	16.78	18.87	19.94	23.31	25.68	28.13	33.30
3600	6.93	7.79	8.66	9.56	10.49	11.45	12.44	13.46	14.50	15.57	16.66	18.94	21.33	22.56	26.44	29.15	31.97	37.94
4000	7.36	8.29	9.20	10.18	11.18	12.20	13.27	14.36	15.48	16.63	17.81	20.27	22.85	24.18	28.37	31.30	34.36	40.81
5000	8.29	9.34	10.41	11.52	12.68	13.87	15.10	16.38	17.68	19.02	20.40	23.26	26.29	27.84	32.75	36.20		
6000	9.05	9.05	11.41	12.65	13.95	15.28	16.66	18.08	19.55	21.06	22.61	25.85	29.24	31.02	36.56	40.46		

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.
* [ ] The circumferential speed of pulley is 33(m/s)or more; a dynamic balance for the pulley is essential.

[Technical Data]
Selection of Transmission Timing Belts 8 -Transmission Capacity Table-

Table 48. Reference Transmission Capacity of T5 Ps -Belt Width 10mm- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	12	14	16	18	20	22	24	28	30
Diameter of the Pitch Circle(mm)	19.10	22.28	25.46	28.65	31.83	35.01	38.20	44.56	47.75
1160	98.5	114.9	131.3	147.7	164.1	180.5	196.9	229.7	246.1
1750	134.3	156.7	179.1	201.5	223.9	246.3	268.7	313.5	335.9
3500	222.5	259.6	296.7	333.7	370.8	407.9	445.0	519.1	556.2
100	10.7	12.4	14.2	16.0	17.8	19.5	21.3	24.9	26.6
200	20.8	24.3	27.7	31.2	34.7	38.2	41.6	48.6	52.0
300	30.5	35.6	40.7	45.7	50.8	55.9	61.0	71.2	76.2
400	39.7	46.4	53.0	59.6	66.2	72.9	79.5	92.7	99.4
500	48.6	56.7	64.8	72.9	81.0	89.1	97.2	113.4	121.5
600	57.0	66.5	76.0	85.6	95.1	104.6	114.1	133.1	142.6
700	65.1	76.0	86.8	97.7	108.6	119.4	130.3	152.0	162.8
800	72.9	85.0	97.2	109.3	121.5	133.6	145.8	170.1	182.2
900	80.3	93.7	107.1	120.5	133.9	147.3	160.7	187.5	200.9
1000	87.5	102.1	116.7	131.3	145.9	160.5	175.0	204.2	218.8
1100	94.4	110.2	125.9	141.6	157.4	173.1	188.9	220.3	236.1
1200	101.1	117.9	134.8	151.6	168.5	185.3	202.2	235.9	252.7
1300	107.5	125.5	143.4	161.3	179.2	197.2	215.1	250.9	268.9
1400	113.8	132.8	151.7	170.7	189.7	208.6	227.6	265.5	284.5
1500	119.9	139.8	159.8	179.8	200.0	219.2	239.7	279.7	299.7
1600	125.8	146.7	167.7	188.6	209.6	230.6	251.5	293.4	314.4
1700	131.5	153.4	175.4	197.3	219.2	241.1	263.0	306.9	328.8
1800	137.1	160.0	182.9	205.7	228.6	251.4	274.3	320.0	342.8
1900	142.6	166.4	190.2	214.0	237.7	261.5	285.3	332.8	356.6
2000	148.0	172.7	197.4	222.1	246.7	271.4	296.1	345.4	370.1
2200	158.6	185.0	211.4	237.8	264.3	290.7	317.8	370.0	396.4
2400	168.8	196.9	225.1	253.2	281.4	309.5	337.6	393.9	422.0
2600	178.8	208.7	238.5	268.3	298.1	327.9	357.7	417.3	447.1
2800	188.7	220.2	251.6	283.1	314.5	346.0	377.4	440.4	471.8
3000	198.5	231.6	264.6	297.7	330.8	363.9	397.0	463.1	496.2
3200	208.2	242.8	277.5	312.2	346.9	381.6	416.3	485.7	520.4
3400	217.7	254.0	290.3	326.6	362.9	399.2	435.5	508.0	544.3
3600	227.2	265.1	303.0	340.8	378.7	416.6	454.4	530.2	568.1
3800	236.6	276.0	315.5	354.9	394.3	433.8	473.2	552.1	591.5
4000	245.8	286.8	327.7	368.7	409.7	450.7	491.6	573.6	614.5
4200	254.8	297.3	339.7	382.2	424.7	467.2	509.6	594.6	637.0
4400	263.5	307.4	351.4	395.3	439.2	483.1	527.1	614.9	658.8
4600	271.9	317.2	362.5	407.8	453.1	498.4	543.7	634.4	679.7
4800	279.7	326.4	373.0	419.6	466.2	512.8	559.5	652.7	699.3
5000	287.0	334.8	382.7	430.5	478.3	526.2	574.0	669.7	717.5
5500			402.2	452.4	502.7	553.0	603.2	703.8	754.1
6000			412.1	463.6	515.1	566.6	618.1	721.1	772.6
6500			408.2	459.2	510.2	561.2	612.2	714.3	765.3
7000			385.3	433.5	481.7	529.8	578.0	674.3	722.5
7500			337.7	379.9	422.1	464.3	506.6	591.0	633.2
8000				290.8	323.1	355.5	387.8	452.4	484.7
8500				157.7	175.3	192.8	210.3	245.4	262.9

*Avoiding the [ ] marked ranges is recommended as endurance time is shorten
*The above table shows values for the nominal width 10 (10mm). Multiply a value in the table by correction coefficient Kb in the table 28 for other widths.

Table 49. Reference Transmission Capacity of T10 Ps - Belt Width 10mm- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley	12	14	16	18	20	22	24	26	28	30	32	36	40	44	48
Diameter of the Pitch Circle(mm)	38.20	44.56	50.93	57.30	63.66	70.03	76.39	82.76	89.12	95.49	101.86	114.59	127.32	140.06	152.79
870	254.9	297.4	339.9	382.4	424.9	467.4	509.9	552.4	594.9	637.4	679.8	764.8	849.8	938.8	1019.8
1160	321.2	374.8	428.3	481.8	535.4	588.9	642.4	696.0	749.5	803.0	856.6	963.7	1070.7	1177.8	1284.9
1750	438.3	511.3	584.4	657.4	730.5	803.5	876.6	949.6	1022.7	1095.7	1168.8	1314.9	1461.0	1607.1	1753.2
3500	725.8	846.8	967.8	1088.7	1209.7	1330.6	1451.6	1572.6	1693.6	1814.6	1935.5	2177.5	2419.4	2661.4	2903.3
100	34.8	40.6	46.4	52.1	57.9	63.7	69.5	75.3	81.1	86.9	92.7	104.3	115.9	127.5	139.1
200	67.9	79.2	90.5	101.9	113.2	124.5	135.8	147.1	158.4	169.8	181.1	203.7	226.3	249.0	271.6
300	99.5	116.1	132.7	149.3	165.8	182.4	199.0	215.6	232.2	248.8	265.3	298.5	331.7	364.9	398.0
400	129.7	151.3	172.9	194.5	216.1	237.7	259.4	281.0	302.6	324.2	345.8	389.0	432.3	475.5	518.7
500	158.5	184.9	211.3	237.8	264.2	290.6	317.0	343.4	369.8	396.3	422.7	475.5	528.3	581.2	634.0
600	186.1	217.1	248.1	279.1	310.1	341.1	372.2	403.2	434.2	465.2	496.2	558.2	620.3	682.3	744.3
700	212.5	247.9	283.3	318.7	354.2	389.6	425.0	460.4	495.8	531.2	566.6	637.5	708.3	779.1	850.0
800	237.8	277.5	317.1	356.7	396.4	436.0	475.6	515.3	554.9	594.5	634.2	713.4	792.7	872.0	951.3
900	262.1	305.8	349.5	393.2	436.9	480.6	524.3	568.0	611.7	655.3	699.0	786.4	873.8	961.2	1048.6
1000	285.5	333.1	380.7	428.3	475.9	523.5	571.1	618.7	666.2	713.8	761.4	856.6	951.8	1047.0	1142.1
1100	308.1	359.4	410.8	462.1	513.5	564.8	616.2	667.5	718.8	770.2	821.5	924.2	1026.9	1129.6	1232.3
1200	329.8	384.8	439.8	494.7	549.7	604.7	659.7	714.6	769.6	824.6	879.6	989.5	1099.4	1209.4	1319.3
1300	350.9	409.4	467.8	526.3	584.8	644.3	701.4	760.2	818.7	877.2	935.7	1052.6	1169.6	1286.5	1403.5
1400	371.3	433.1	495.0	556.9	618.8	680.6	742.5	804.4	866.3	928.1	990.0	1113.8	1237.5	1361.3	1485.0
1500	391.0	456.2	521.4	586.6	651.7	716.9	782.1	847.3	912.4	977.6	1042.8	1173.1	1303.5	1433.8	1564.2
1600	410.3	478.7	547.1	615.4	683.8	752.2	820.6	889.0	957.4	1025.7	1094.1	1230.9	1367.7	1504.4	1641.2
1700	429.1	500.6	572.1	643.6	715.1	786.6	858.1	929.6	1001.2	1072.7	1144.2	1287.2	1430.2	1573.3	1716.3
1800	447.4	522.0	596.5	671.1	745.7	820.2	894.8	969.4	1043.9	1118.5	1193.1	1342.2	1411.3	1640.5	1781.6
1900	465.4	542.9	620.5	698.0	775.6	853.1	930.7	1008.3	1085.8	1163.4	1240.9	1396.1	1551.2	1706.3	1861.4
2000	483.0	563.5	643.9	724.4	804.9	885.4	965.9	1046.4	1126.9	1207.4	1287.9	1448.9	1609.9	1770.9	1931.8
2200	517.3	603.5	689.7	776.0	862.2	948.4	1034.6	1120.8	1207.1	1293.3	1379.5	1551.9	1724.4	1896.8	2069.2
2400	550.7	642.5	734.3	826.1	917.9	1009.7	1101.4	1193.8	1285.0	1376.8	1468.6	1652.2	1835.8	2019.3	2202.9
2600	583.5	680.7	777.9	875.2	972.4	1069.7	1166.9	1264.1	1361.4	1458.6	1555.9	1750.4	1944.9	2139.3	2333.8
2800	615.7	718.3	820.9	923.5	1026.1	1128.7	1231.3	1333.9	1436.6	1539.2	1641.8	1847.0	2052.3	2257.5	2462.7
3000		755.4	863.4	971.3	1079.2	1187.1	1295.0	1402.9	1510.9	1618.8	1726.7	1942.5	2158.4	2374.2	2590.1
3200		792.2	905.4	1018.6	1131.8	1244.9	1358.1	1471.2	1584.5	1697.6	1810.8	2037.2	2263.5	2489.9	2716.2
3400		828.7	947.1	1065.5	1183.8	1302.2	1420.6	1539.0	1657.4	1775.8	1894.2	2130.9	2367.7	2604.5	2841.2
3600		864.8	988.4	1111.9	1235.4	1358.9	1482.5	1606.0	1729.6	1853.2	1976.7	2223.8	2470.9	2718.0	2965.1
3800		900.5	1029.1	1157.7	1286.4	1415.0	1543.6	1672.2	1800.9	1929.6	2058.2	2315.5	2572.8	2830.0	3087.3
4000			1069.2	1202.8	1336.5	1470.0	1603.7	1737.3	1871.1	2004.7	2138.4	2405.7	2673.0	2940.3	3207.6
4200			1108.3	1246.9	1385.4	1523.9	1662.4	1800.9	1939.6	2078.1	2216.7	2493.7	2770.8	3047.9	3325.0
4400			1146.2	1289.5	1432.8	1576.0	1719.2	1862.5	2005.9	2149.2	2292.5	2579.0	2865.6	3152.1	3438.7
4600			1182.5	1330.3	1478.1	1625.8	1773.6	1921.4	2069.4	2217.2	2365.0	2660.6	2956.3	3251.9	3547.5
4800			1216.7	1368.8	1520.9	1672.8	1824.9	1976.9	2129.2	2281.3	2433.4	2737.6	3041.8	3345.9	3650.1
5000			1248.3	1404.3	1560.4	1716.2	1872.2	2028.3	2184.5	2340.6	2496.6	2808.7	3120.8	3432.8	3744.9
5200			1276.7	1436.3	1595.9	1755.2	1914.8	2074.4	2234.2	2393.8	2553.4	2872.6	3191.8	3510.9	3830.1
5400			1301.3	1463.9	1626.6	1789.0	1951.6	2114.2	2277.2	2439.9	2602.5	2927.8	3253.2	3578.5	3903.8
5600			1321.2	1486.4	1651.5	1816.4	1981.5	2146.7	2312.2	2477.3	2642.5	2972.8	3303.1	3633.4	3963.7
5800			1335.8	1502.8	1669.8	1836.4	2003.4	2170.3	2337.7	2504.7	2671.7	3005.6	3339.6	3673.5	4007.5
6000			1344.2	1512.2	1680.2	1847.8	2015.8	2184.3	2352.3	2520.3	2688.3	3024.4	3360.4	3696.5	4032.5

*Avoiding the [ ] marked ranges is recommended as endurance time is shorten
*Balance the traveling speed as wind velocity of pulley in the [ ] marked range reaches more than 33 (m/s)
*The above table shows values for the nominal width 10 (10mm). Multiply a value in the table by correction coefficient Kb in the table 28 for other widths.

Table 50. Reference Transmission Capacity of 2GT Ps -Belt Width 4mm- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley / Diameter of the Pitch Circle(mm)	12	14	16	18	20	22	24	26	28	30	32	36	40	44	48	50	60	72
	7.64	8.91	10.19	11.46	12.73	14.01	15.28	16.55	17.83	19.10	20.37	22.92	25.46	28.01	30.56	31.83	38.20	45.84
20	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.7	1.9	2.2	2.5	2.6	3.4	4.0
40	0.8	1.0	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.4	2.7	3.1	3.6	4.1	4.6	4.9	6.3	7.6
60	1.1	1.4	1.6	1.8	2.1	2.3	2.6	2.9	3.2	3.5	3.8	4.4	5.1	5.8	6.6	7.0	9.1	10.9
100	1.7	2.1	2.4	2.8	3.2	3.6	4.0	4.5	4.9	5.4	5.9	6.9	8.0	9.1	10.3	11.0	14.3	17.2
200	3.0	3.6	4.3	5.0	5.7	6.4	7.2	8.0	8.8	9.7	10.6	12.5	14.5	16.6	18.9	20.1	26.4	31.7
300	4.2	5.0	5.9	6.9	7.9	8.9	10.0	11.1	12.3	13.6	14.9	17.6	20.4	23.5	26.8	28.5	37.7	45.3
400	5.2	6.3	7.4	8.6	9.9	11.2	12.6	14.1	15.6	17.2	18.8	22.3	26.0	30.0	34.3	36.5	48.5	58.2
500	6.1	7.4	8.8	10.2	11.8	13.4	15.1	16.8	18.7	20.6	22.6	26.8	31.4	36.2	41.4	44.1	58.8	70.6
600	7.0	8.5	10.1	11.8	13.5	15.4	17.4	19.4	21.6	23.8	26.2	31.2	36.5	42.2	48.3	51.5	68.9	82.6
700	7.8	9.5	11.3	13.2	15.2	17.4	19.6	21.9	24.4	27.0	29.6	35.3	41.4	48.0	55.0	58.7	78.6	94.4
800	8.6	10.5	12.5	14.6	16.8	19.2	21.7	24.3	27.1	30.0	33.0	39.4	46.2	53.6	61.5	65.6	88.2	105.8
870	9.1	11.1	13.3	15.5	17.9	20.5	23.2	26.0	28.9	32.0	35.2	42.1	49.5	57.5	66.0	70.4	94.7	113.7
900	9.3	11.4	13.6	15.9	18.4	21.0	23.8	26.7	29.7	32.9	36.2	43.3	50.9	59.1	67.9	72.4	97.5	117.0
1000	10.0	12.3	14.6	17.2	19.9	22.7	25.7	28.9	32.2	35.7	39.3	47.1	55.4	64.4	74.1	79.1	106.7	128.0
1160	11.1	13.6	16.3	19.1	22.1	25.4	28.8	32.3	36.1	40.0	44.2	53.0	62.5	72.7	83.7	89.5	121.0	145.2
1200	11.4	13.9	16.6	19.6	22.7	26.0	29.5	33.2	37.0	41.1	45.3	54.4	64.2	74.8	86.1	92.0	124.6	149.5
1400	12.6	15.4	18.5	21.8	25.3	29.1	33.0	37.2	41.6	46.2	51.1	61.4	72.6	84.7	97.7	104.5	141.9	170.3
1450	12.9	15.8	19.0	22.4	26.0	29.8	33.9	38.2	42.7	47.5	52.5	63.1	74.7	87.2	100.6	107.6	146.2	175.4
1600	13.7	16.8	20.3	23.9	27.8	32.0	36.4	41.1	46.0	51.2	56.6	68.2	80.8	94.4	109.0	116.6	158.8	190.6
1750	14.5	17.8	21.5	25.4	29.6	34.1	38.8	43.8	49.1	54.7	60.6	73.1	86.7	101.4	117.2	125.5	171.2	205.4
1800	14.7	18.2	21.9	25.9	30.2	34.8	39.6	44.7	50.2	55.9	61.9	74.7	88.6	103.7	119.9	128.4	175.3	210.3
2000	15.7	19.4	23.4	27.8	32.4	37.4	42.7	48.3	54.2	60.4	66.9	81.0	96.2	112.8	130.5	139.9	191.4	229.7
2400	17.4	21.7	26.3	31.2	36.6	42.3	48.4	54.9	61.8	69.0	76.6	93.0	110.9	130.2	151.1	162.1	222.8	267.3
2800	19.0	23.7	28.8	34.4	40.4	46.9	53.8	61.1	68.9	77.1	85.8	104.4	124.8	146.9	170.8	183.4	253.1	303.7
3200	20.3	25.5	31.1	37.3	43.9	51.1	58.8	66.9	75.6	84.7	94.4	115.2	138.1	162.9	189.8	204.0	282.4	338.9
3600	21.5	27.1	33.2	39.9	47.2	55.0	63.4	72.4	81.9	92.0	102.6	125.6	150.9	178.4	208.2	223.9	311.0	373.2
4000	22.6	28.6	35.1	42.4	50.2	58.7	67.8	77.5	87.9	98.9	110.5	135.6	163.2	193.3	225.9	243.2	338.9	406.7
5000	24.7	31.6	39.2	47.7	56.9	66.9	77.7	89.2	101.6	114.7	128.7	158.9	192.2	228.7	268.3	289.3	406.0	487.2
6000	26.2	33.8	42.4	52.0	62.5	73.9	86.3	99.6	113.8	129.0	145.1	180.2	219.1	261.7	308.1	332.7	469.8	563.8
7000	27.1	35.5	45.0	55.5	67.2	79.9	93.8	108.8	124.8	142.0	160.2	200.0	244.2	292.8	345.8	373.9	531.0	637.3
8000	27.6	36.6	46.9	58.4	71.1	85.2	100.4	117.0	134.7	153.8	174.1	218.4	267.8	322.2	381.6	413.2	590.0	708.0
10000	27.5	37.5	49.2	62.4	77.1	93.5	111.4	130.9	151.9	174.6	198.7	251.8	311.2	376.8	448.7	487.0	702.1	842.6
12000	26.0	36.9	49.8	64.4	81.0	99.5	119.8	142.0	166.1	192.1	220.0	281.4	350.3	426.8	510.7	555.6	807.9	969.5
14000	23.5	35.1	48.9	64.9	83.1	103.5	126.1	150.9	177.9	207.1	238.4	307.8	385.9	472.8	568.5	619.7	908.3	1090.0

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

Table 51. Reference Transmission Capacity of 3GT Ps -Belt Width 6mm- (W)

Rotary Speed of Small Pulley(rpm) \ No. of Teeth of Small Pulley / Diameter of the Pitch Circle(mm)	12	14	16	18	20	22	24	26	28	30	32	36	40	48	54	60	72	80
	11.46	13.37	15.28	17.19	19.10	21.01	22.92	24.83	26.74	28.65	30.56	34.38	38.20	45.84	51.57	57.30	68.75	76.39
20	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	5.9	6.4	6.9	7.8	8.7	10.5	11.8	13.1	15.7	17.4
40	3.6	4.5	5.5	6.4	7.3	8.2	9.1	10.0	10.9	11.8	12.6	14.3	16.0	19.3	21.7	24.2	28.9	32.0
60	5.0	6.4	7.7	9.0	10.3	11.6	12.9	14.2	15.4	16.7	17.9	20.4	22.8	27.5	30.9	34.4	41.1	45.5
100	7.6	9.7	11.8	13.9	15.9	18.0	19.9	21.9	23.9	25.9	27.8	31.6	35.3	42.6	48.0	53.4	63.8	70.6
200	13.1	16.9	20.8	24.6	28.2	32.0	35.6	39.2	42.8	46.4	49.9	56.8	63.6	76.8	86.5	96.1	114.8	127.0
300	17.7	23.2	28.7	34.1	39.2	44.6	49.6	54.8	59.9	65.0	69.8	79.6	89.2	107.7	121.4	134.8	161.0	178.1
400	21.9	28.9	35.9	42.8	49.4	56.3	62.7	69.3	75.7	82.2	88.4	100.9	113.0	136.5	153.9	171.0	204.1	225.7
500	25.6	34.2	42.6	51.0	58.9	67.2	74.9	82.9	90.6	98.5	105.9	121.0	135.6	163.8	184.7	205.1	244.8	270.7
600	29.1	39.0	48.9	58.7	67.8	77.5	86.5	95.8	104.8	114.0	122.6	140.1	157.1	189.8	214.0	237.7	283.7	313.5
700	32.2	43.6	54.8	66.0	76.4	87.4	97.6	108.2	118.4	128.9	138.6	158.5	177.8	214.8	242.2	269.1	321.0	354.7
800	35.2	47.9	60.4	72.9	84.6	96.9	108.3	120.1	131.5	143.2	154.1	176.2	197.7	239.0	269.4	299.3	357.0	394.3
870	37.2	50.8	64.2	77.6	90.1	103.3	115.5	128.2	140.4	152.9	164.6	188.3	211.3	255.4	288.0	319.8	381.4	421.3
900	38.0	52.0	65.8	79.6	92.4	106.0	118.6	131.6	144.2	157.0	169.0	193.3	217.0	262.3	295.8	328.5	391.7	432.6
1000	40.6	55.9	71.0	86.0	100.0	114.9	128.5	142.7	156.4	170.4	183.4	210.0	235.7	285.0	321.3	356.8	425.4	469.8
1160	44.4	61.8	78.8	95.8	111.6	128.4	143.8	159.9	175.2	191.1	205.7	235.6	264.5	319.9	360.7	400.6	477.4	527.0
1200	45.4	63.2	80.7	98.2	114.4	131.7	147.5	164.0	179.8	196.1	211.1	241.9	271.6	328.4	370.3	411.2	490.0	540.9
1400	49.6	69.9	89.7	109.6	128.0	147.5	165.5	184.2	202.1	220.5	237.5	272.2	305.7	369.8	416.9	462.9	551.4	608.3
1450	50.6	71.5	91.9	112.3	131.2	151.4	169.8	189.0	207.4	226.4	243.9	279.5	314.0	379.8	428.3	475.5	566.2	624.6
1600	53.4	76.0	98.2	120.3	140.8	162.6	182.5	203.3	223.2	243.7	262.6	301.1	338.4	409.3	461.5	512.3	609.8	672.5
1750	56.0	80.4	104.2	128.0	149.9	173.4	194.8	217.2	238.5	260.5	280.8	322.1	362.0	437.9	493.7	548.0	652.0	718.7
1800	56.8	81.7	106.1	130.5	152.9	176.9	198.8	221.7	243.5	266.0	286.7	328.9	369.7	447.2	504.2	559.6	665.7	733.7
2000	59.9	87.1	113.6	140.1	164.5	190.6	214.4	239.3	263.0	287.4	309.8	355.7	399.8	483.7	545.3	605.1	719.3	792.3
2400	65.2	96.6	127.3	158.1	186.2	216.4	243.8	272.4	299.7	327.9	353.7	406.3	456.9	552.8	622.9	690.9	820.1	902.2
2800	72.9	105.0	139.7	174.4	206.1	240.2	271.0	303.3	334.0	365.8	394.6	453.7	510.4	617.2	695.3	770.7	913.1	1003.1
3200	80.8	112.3	150.9	189.4	224.5	262.4	296.4	332.2	366.2	401.3	433.1	498.2	560.6	677.7	763.0	845.1	999.1	1095.6
3600	88.4	118.7	161.0	203.2	241.6	283.1	320.3	359.3	396.4	434.7	469.3	540.2	607.8	734.5	826.3	914.4	1078.4	1180.2
4000	95.9	124.3	170.2	216.0	257.5	302.4	342.6	384.9	424.9	466.3	503.5	579.8	652.4	787.8	885.6	979.0	1151.3	1257.0
5000	113.8	135.2	189.6	243.9	292.7	345.8	392.9	442.6	489.4	537.9	581.1	669.6	753.3	907.4	1017.3	1120.7	1306.3	1415.8
6000	130.7	154.3	204.6	266.8	322.3	383.0	436.3	492.7	545.5	600.3	648.7	747.7	840.5	1008.6	1126.6	1235.3	1422.5	1526.3
7000	147.0	173.3	216.0	285.5	347.2	414.7	473.7	536.1	594.2	654.6	707.3	815.0	915.0	1092.4	1214.1	1323.1	1499.2	1586.5
8000	162.6	191.5	224.1	300.4	367.7	441.6	505.6	573.4	636.2	701.3	757.6	872.2	977.3	1159.1	1279.9	1383.5	1534.5	1593.4
10000	192.2	225.7	259.3	320.5	397.5	482.4	554.7	631.3	701.2	773.7	834.6	957.4	1066.1	1240.3	1343.8	1418.4	1471.0	1431.9
12000	219.7	257.3	294.6	331.6	413.4	507.3	585.4	668.1	742.3	818.9	880.9	1004.0	1106.6	1249.1	1312.0	1329.1	1209.3	1008.1
14000	245.5	286.4	326.7	366.1	416.7	517.2	598.6	684.8	760.0	837.2	896.5	1010.9	1096.9	1180.1	1175.5	1102.1		

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

[Technical Data]
Selection of Transmission Timing Belts 9 -Transmission Capacity Table-

Table52. Reference Transmission Capacity of EV5GT Ps -Belt Width 15mm- (W)

No. of Teeth of Small Pulley / Diameter of the Pitch Circle(mm) / Rotary Speed of Small Pulley(rpm)	14	16	18	20	22	24	26	28	30	32	36	40	44	48	54	60	72	80
	22.28	25.46	28.65	31.83	35.01	38.20	41.38	44.56	47.75	50.93	57.30	63.66	70.03	76.39	85.94	95.49	114.59	127.32
20	13	18	22	27	33	38	42	47	52	56	64	72	80	87	97	108	128	139
40	24	33	41	50	61	70	79	88	96	104	120	136	150	163	183	203	240	263
60	33	46	58	72	87	100	113	126	139	150	173	196	216	236	264	293	348	380
100	50	71	91	113	136	157	178	199	219	237	273	310	343	374	419	465	552	604
200	85	125	163	205	248	287	326	365	403	438	506	575	636	695	780	867	1031	1129
300	115	173	228	289	350	407	464	520	574	625	723	823	912	996	1119	1244	1482	1623
400	142	217	289	369	447	520	594	667	737	803	931	1060	1176	1285	1445	1607	1914	2096
500	166	258	347	445	539	629	718	808	894	974	1131	1289	1430	1564	1759	1957	2333	2555
600	188	297	402	518	627	733	839	944	1046	1141	1325	1511	1678	1836	2065	2298	2740	3002
700	208	333	454	589	712	834	956	1077	1193	1302	1514	1728	1919	2101	2364	2632	3139	3439
800	227	368	505	657	795	933	1069	1206	1337	1460	1699	1940	2156	2360	2657	2958	3529	3866
870	239	392	540	704	851	1000	1147	1294	1436	1569	1826	2086	2319	2539	2858	3183	3797	4161
900	244	402	554	724	875	1028	1180	1332	1478	1615	1880	2148	2388	2615	2944	3279	3912	4286
1000	260	434	602	789	954	1122	1289	1456	1616	1767	2058	2352	2616	2865	3227	3593	4288	4698
1160	284	483	675	890	1075	1268	1459	1649	1832	2004	2337	2672	2973	3257	3669	4087	4878	5343
1200	289	495	693	915	1105	1304	1500	1696	1885	2062	2405	2751	3061	3353	3778	4209	5023	5502
1400	315	551	780	1035	1251	1478	1704	1929	2145	2349	2742	3138	3493	3828	4314	4807	5736	6282
1450	321	565	801	1065	1286	1521	1754	1986	2209	2419	2825	3233	3599	3945	4446	4954	5912	6474
1600	338	605	863	1152	1391	1647	1901	2155	2397	2627	3070	3516	3914	4291	4837	5390	6430	7040
1750	354	643	923	1237	1494	1771	2046	2320	2583	2831	3311	3793	4224	4631	5221	5817	6939	7595
1800	358	655	943	1264	1527	1811	2093	2374	2644	2899	3390	3884	4326	4743	5347	5958	7106	7777
2000	376	703	1020	1374	1659	1971	2280	2589	2884	3164	3703	4244	4728	5185	5846	6513	7765	8494
2400	406	791	1165	1584	1911	2278	2641	3003	3349	3678	4309	4943	5509	6042	6812	7587	9034	9868
2800	440	872	1301	1783	2151	2571	2986	3400	3795	4171	4892	5615	6259	6865	7737	8613	10238	11165
3200	486	945	1429	1973	2380	2851	3318	3782	4225	4647	5455	6263	6982	7657	8625	9594	11379	12384
3600	529	1011	1550	2155	2598	3120	3636	4150	4640	5107	5998	6888	7679	8419	9477	10531	12456	13522
4000	571	1072	1665	2330	2808	3379	3944	4505	5041	5550	6522	7492	8350	9151	10291	11423	13466	14575
5000	667	1202	1925	2738	3296	3986	4667	5343	5985	6597	7758	8910	9920	10854	12167	13450	15686	16815
6000		1305	2153	3108	3737	4539	5330	6112	6853	7559	8889	10199	11335	12372	13803	15172	17429	18431
7000		1382	2352	3445	4136	5044	5936	6817	7648	8438	9915	11358	12590	13695	15183	16561	18641	19343
8000			2524	3749	4495	5501	6487	7459	8370	9235	10835	12383	13677	14812	16285	17586	19259	
9000			2671	4023	4815	5912	6984	8037	9018	9946	11645	13265	14586	15706	17086	18212		
10000				4266	5096	6277	7426	8550	9591	10570	12339	13998	15303	16361	17560			
12000				4660	5541	6865	8141	9375	10498	11541	13356	14976	16113	16883				
14000				4930	5825	7256	8617	9915	11067	12113	13831	15238						

*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

Table53. Reference Transmission Capacity of EV8YU Ps -Belt Width 20mm- (W)

No. of Teeth of Small Pulley / Diameter of the Pitch Circle(mm) / Rotary Speed of Small Pulley(rpm)	20	22	24	26	28	30	32	34	36	38	40	44	48	54	60	64	72	80
	50.93	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	137.51	152.79	162.97	183.35	203.72
10	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.10	0.12	0.13	0.14	0.16	0.18
20	0.07	0.08	0.09	0.10	0.10	0.11	0.13	0.13	0.14	0.15	0.16	0.18	0.20	0.23	0.26	0.28	0.32	0.36
40	0.13	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.36	0.40	0.46	0.52	0.56	0.64	0.72
60	0.18	0.21	0.23	0.26	0.29	0.32	0.35	0.38	0.41	0.44	0.48	0.54	0.60	0.69	0.78	0.84	0.96	1.08
100	0.28	0.33	0.37	0.42	0.47	0.52	0.57	0.62	0.67	0.72	0.78	0.88	0.99	1.14	1.30	1.40	1.60	1.80
200	0.52	0.60	0.69	0.79	0.89	0.99	1.10	1.20	1.29	1.39	1.52	1.73	1.96	2.27	2.58	2.79	3.19	3.60
300	0.74	0.86	0.99	1.13	1.29	1.45	1.62	1.76	1.90	2.05	2.25	2.57	2.92	3.38	3.85	4.18	4.78	5.40
400	0.94	1.10	1.28	1.47	1.67	1.89	2.12	2.30	2.50	2.70	2.97	3.40	3.86	4.48	5.12	5.56	6.37	7.20
500	1.13	1.34	1.56	1.80	2.05	2.32	2.61	2.84	3.08	3.33	3.68	4.23	4.81	5.59	6.38	6.94	7.95	8.99
600	1.32	1.57	1.83	2.12	2.42	2.75	3.10	3.38	3.67	3.97	4.38	5.04	5.75	6.68	7.64	8.31	9.53	10.78
700	1.50	1.79	2.10	2.43	2.79	3.17	3.58	3.90	4.24	4.59	5.08	5.86	6.68	7.77	8.89	9.68	11.10	12.57
800	1.68	2.00	2.36	2.74	3.15	3.59	4.05	4.43	4.81	5.22	5.78	6.66	7.61	8.86	10.14	11.04	12.67	14.34
870	1.80	2.15	2.54	2.95	3.40	3.87	4.38	4.79	5.21	5.65	6.26	7.23	8.26	9.62	11.01	11.99	13.76	15.58
900	1.85	2.21	2.61	3.04	3.50	4.00	4.52	4.94	5.38	5.83	6.47	7.47	8.54	9.95	11.39	12.40	14.23	16.11
1000	2.02	2.42	2.86	3.34	3.85	4.40	4.99	5.46	5.94	6.45	7.15	8.27	9.46	11.03	12.63	13.75	15.78	17.88
1160	2.28	2.74	3.26	3.81	4.41	5.05	5.73	6.27	6.83	7.42	8.24	9.54	10.92	12.75	14.60	15.91	18.26	20.68
1200	2.34	2.82	3.35	3.92	4.54	5.20	5.91	6.47	7.06	7.66	8.51	9.86	11.29	13.17	15.09	16.45	18.87	21.37
1400	2.65	3.21	3.83	4.50	5.22	5.99	6.82	7.48	8.16	8.86	9.86	11.43	13.11	15.30	17.54	19.11	21.93	24.83
1450	2.73	3.31	3.94	4.64	5.39	6.19	7.05	7.72	8.43	9.16	10.20	11.82	13.56	15.83	18.15	19.78	22.69	25.68
1600	2.95	3.59	4.29	5.06	5.88	6.77	7.72	8.47	9.24	10.05	11.20	12.99	14.91	17.41	19.96	21.75	24.95	28.23
1750	3.17	3.87	4.63	5.47	6.37	7.34	8.39	9.20	10.05	10.93	12.19	14.15	16.25	18.98	21.75	23.71	27.18	30.75
1800	3.24	3.96	4.75	5.61	6.53	7.53	8.61	9.44	10.31	11.22	12.52	14.54	16.69	19.50	22.35	24.36	27.93	31.58
2000	3.52	4.32	5.19	6.14	7.17	8.29	9.48	10.41	11.37	12.38	13.82	16.06	18.46	21.56	24.71	26.94	30.85	34.86
2400	4.06	5.01	6.05	7.19	8.43	9.76	11.20	12.30	13.45	14.65	16.39	19.07	21.93	25.61	29.34	31.97	36.55	41.21
2800	4.57	5.66	6.88	8.20	9.64	11.20	12.87	14.15	15.48	16.87	18.90	22.00	25.31	29.55	33.82	36.82	41.99	47.22
3200	5.05	6.29	7.67	9.18	10.82	12.59	14.50	15.95	17.46	19.03	21.35	24.86	28.60	33.35	38.12	41.46	47.14	52.83
3600	5.50	6.89	8.43	10.12	11.96	13.95	16.08	17.69	19.38	21.12	23.72	27.62	31.78	37.01	42.22	45.86	51.95	57.98
4000	5.94	7.47	9.17	11.03	13.06	15.26	17.62	19.39	21.23	23.15	26.02	30.30	34.84	40.50	46.10	50.00	56.39	
5000	6.91	8.79	10.87	13.16	15.65	18.34	21.24	23.37	25.59	27.88	31.39	36.50	41.90	48.40	54.68			
6000	7.75	9.94	12.38	15.05	17.97	21.12	24.52	26.95	29.47	32.08	36.16	41.92	47.96	54.90				
7000	8.44	10.92	13.68	16.70	20.00	23.57	27.39	30.06	32.82	35.65	40.22	46.41	52.84					
8000	8.99	11.72	14.76	18.09	21.72	25.63	29.82	32.65	35.55	38.52	43.45							

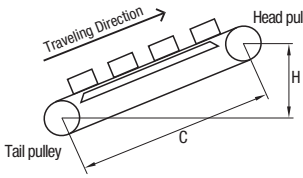
*Because the durability in terms of hours decreases in the [ ] marked range, this range should be avoided whenever possible. For other belt widths, values above should be multiplied by the width correction coefficient shown in Table 28.

[Technical Data]
Selection of Conveyor Timing Belts

■Conveyer belts selection procedure

The following steps for selection is based on the case that sizes of head pulley and tail pulley are same. (Follow the steps 1 -3 even when sizes of head pulley and tail pulley are different)
Use a head pulley as a driving pulley.
For belt installation and tension control, make the structure of the driven side to be adjustable of alignment and center distance with set screws.
*Head Pulley: The front of the pulley against traveling direction
Tail Pulley: The rear end of the pulley against traveling direction

[Step 1] Calculate effective tension (Te).



Te (N) Effective tension
G (Kg) Net weight of load placed on the belt surface
μ Friction coefficient of belt vs. table (Table 1)
H (mm) Lift
C (mm) Tentative center dimension (conveyor length)

Table 1. Typical Friction Coefficient of Belt versus Table

Table Material	Steel	Stainless	Aluminium	UHMW	Teflon
Friction coefficient: μ	0.65	0.68	0.42	0.31	0.21

[Step 2] Calculate design tension (Td).

$$Td = K \cdot Te$$

Td (N) Design Tension
K Overload Coefficient
Te (N) Effective Tension

$$K = K1 + K2 + K3$$

K1 Correction factors for daily operation hours
K2 Belt length correction coefficient
K3 Belt speed correction coefficient

Table 2. K1 Correction Factors for Daily Operation Hours Unit: hour

~5	5~8	8~12	12~16	16~24
1.0	1.1	1.2	1.3	1.4

Table 3. K2 Belt Length Correction Factors Unit : mm

~1500	1501~3000	3001~4500	4501~
0.3	0.2	0.1	0.0

Table 4. K3 Belt Speed Correction Factors Unit : m/minute

~60	61~90	91~120
0.0	0.1	0.2

[Step 3] Select belt type, belt width and pulley dimension.

(1) Select from Table 5 a belt type and a width which have a greater allowable tension than the designed tension.

Table 5. Allowable Tension of Joint Belts Unit : N

Belt Type	Belt width (mm)						
	10	15	20	25	30	40	50
S5M	120	180	–	300	–	–	–
S8M	–	235	–	392	471	627	–
T5	58	87	116	145	–	–	–
T10	–	180	240	300	360	481	601
AT5	74	110	–	–	–	–	–
AT10	–	234	312	391	–	–	–

Unit : N

Belt Type	Belt Nominal Width				
	050	075	100	150	200
L	92	138	184	276	–
H	–	163	216	324	432

(2) Select a pulley with a larger number of teeth than the minimum allowable number in Table 6 for both of driving and driven pulley.

Table 6. Number of Minimum Allowable Number of Teeth for Pulleys

Belt Type	L	H	S5M	S8M	T5	T10	AT5	AT10
Pitch (mm)	9.525	12.7	5	8	5	10	5	10
Min. No. of Pully Teeth	14	14	14	24	12	14	20	14
Pully Diameter (mm)	42.45	56.60	22.28	61.12	19.10	44.56	31.83	44.56

[Step 4] Determine belt length (no. of teeth) and center distance.

(1) Obtain approximate belt length from tentative center dimension (C') and approximate pulley diameter (Dp').

$$Lp' = 2 \cdot C' + \pi \cdot Dp'$$

Lp' (mm) Approx. belt length
C' (mm) Tentative center dimension
Dp' (mm) Approx. pully diameter

(2) Determine the number of teeth required from the approximate belt length (Lp') and pitch (P). Round down the obtained number of teeth (N) to the nearest whole number.

$$N = Lp' / P$$

N No. of belt teeth
p (mm) Pitch

*Check the minimum teeth of belt which is available.

(3) Obtain the proper belt length from the number of teeth (N) and pitch (P).

$$Lp = P \cdot N$$

Lp (mm) Belt length

(4) Determine proper center distance with the following formula:

$$C = P \cdot (N - Dz)/2$$

C (mm) Center Distance
Dz No. of teeth of pulley

[Step 5] Confirm the ajustment margin for the center distance is larger than figures in Table7-a and 7-b.

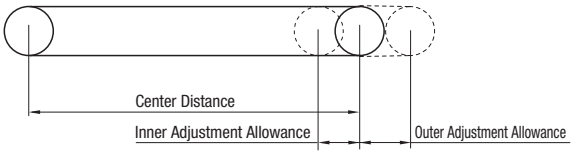


Table 7-a: Inner Adjustment Allowance (Attachment Allowance)

Belt Type	Inner Adjustment Allowance
L	More than 10mm
H	More than 15mm
S5M	More than 10mm
S8M	More than 15mm
T5	More than 5mm
T10	More than 10mm
AT5	More than 10mm
AT10	More than 15mm

Table 7-b: Outer Adjustment Allowance (Tension Allowance)

Distance between shafts (mm)	Outer Adjustment Allowance
~ 500	More than 5mm
501~1000	More than 10mm
1001~1500	More than 15mm
1501~2000	More than 20mm
2001~2500	More than 25mm
2501~	More than 1% of center distance

[Step 6] Install timing belt.

Install the belt with the installation tension in Table 8.
Axis weight at this time is twice the installation tension.

$$Fs = 2 \cdot Ti$$

Fs (N) Shaft load
Ti (N) Fixing Tension (Table 8)

Table 8. Installation Tension for Joint Belts Unit : N

Belt Type	Belt width (mm)						
	10	15	20	25	30	40	50
S5M	60	90	–	150	–	–	–
S8M	–	117	–	196	235	313	–
T5	29	43	58	72	–	–	–
T10	–	90	120	150	180	240	300
AT5	37	55	–	–	–	–	–
AT10	117	156	195	–	–	–	–

Unit : N

Belt Type	Belt Nominal Width				
	050	075	100	150	200
L	46	69	92	138	–
H	–	81	108	162	216

Reference: Table on Open-end belts Allowable Tension Unit : N

Belt Type	Material	Belt width (mm)							
		6	10	15	20	25	30	40	50
S3M	Polyurethane	127	–	–	–	–	–	–	–
S5M	Rubber	–	310	490	–	–	–	–	–
	Polyurethane		215	323		539			
S8M	Rubber	–	–	–	–	950	–	–	–
	Polyurethane			647		1176	1412	1882	
T5	Polyurethane	–	112	166	225	284	–	–	–
T10	Polyurethane	–	–	299	397	529	627	862	1064
AT5	Polyurethane	–	147	221	–	–	–	–	–
AT10	Polyurethane	–	–	469	625	781	–	–	–

Unit : N

Belt Type	Material	Belt Nominal Width (mm)						
		025	037	050	075	100	150	200
XL	Rubber	–	45	70	–	–	–	–
	Polyurethane	66	102	142				
L	Rubber	–	–	95	165	–	–	–
	Polyurethane			259	387	519		
H	Rubber	–	–	–	–	600	–	–
	Polyurethane				397	529	799	1093

When using belts for other purpose than conveyance (e.g. transmission), for polyurethane belt S3M; design with 1/2 of the allowable tension in the table; for XL, L, H, S5M, S8M, T5 and T10, design with approx. 2/3 of the allowable tension in the table.

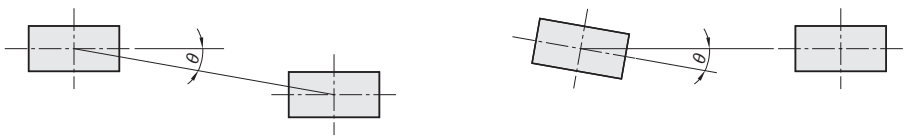
Synchronous Belt Reference Information

Early failures and countermeasures

Abnormal Phenomena	Cause	Measures
Abnormal Wear of Belt Side Faces	· Pulley misalignment · Pulley shafts misalignments · Bent pulley flanges	· Realign · Correct shaft misalignments · Correct bent pulley flanges
Tooth Contact Pressure Surface Abnormal Wear	· Overload · Belt tension too high, too low	· Redesign with a wide belt or use larger belt pitch · Adjust initial belt tension
Belt abnormal wear of pulley contacting area	· Pulley tooth shape incorrect · Belt tension too high	· Adjust initial belt tension · Remake pulley taking note of tooth tip radius
Broken/missing tooth	· Pulley diameter too small · Small pulley meshing 6 teeth or less · Shock loading exists	· Redesign · Increase small pulley tooth mesh or redesign · Avoid shock loading on belt · Increase belt width
Severed Core Wire	· Overload · Core wire decreased elasticity or corrosion · Induction of foreign matter · Excessive temperature	· Redesign · Check belt storage and shipping history/condision · Avoid shocks · Provide a belt cover · Lower environment temperature
Cracks on Backing Rubber	· Usage in low temperature · Pulley diameter too small	· Raise environment temp. · Increase pulley diameter
Heat Degradation of Rubber	· Rubber degradation due to high enviroment temperature	· Lower environment temperature
Rubber Swelling	· Contact with oils · Contact with water	· Avoid oil from contacting · Avoid water from contacting
Abnormal Wear of Pulley Teeth	· Overload · Belt tension too high · Pulley material too soft	· Redesign · Adjust initial belt tension · Apply surface hardening treatment on pulley or change pulley material
Pulley Circumference Wear	· Pulley service life has been reached · Belt tension too high (core wire visible on belt back side)	· Replace with a new pulley · Replace with new pulley and belt, and use lower belt tension
Abnormal Sound	· Belt tension too high · Overload · Pulley diameter too small · Pulley tooth shape incorrect	· Realign · Adjust initial belt tension · Redesign · Correct pulley tooth geometry
Apparent Belt Stretch	· Shaft center distance too small · Loose machine base	· Adjust to correct shaft distance · Reinforce machine base

About Pulley Alignments

Misaligned pulleys may cause early belt failure and flange damages.
Align as show below



•MXL/XL/L/H/S_M/MTS_M/T Series

Belt width(mm)	10	20	30≦
tanθ	5/1000	3/1000	2/1000

•P_M/UP_M

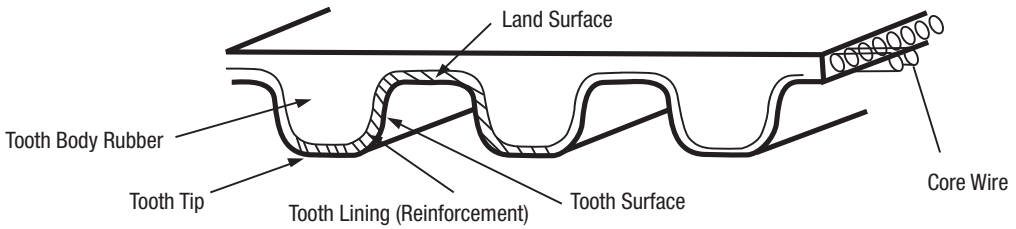
Belt width(mm)	≦30
tanθ	5/1000

•_GT/EV5GT/EV8YU

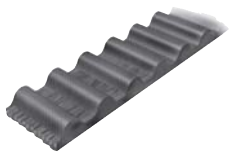
Belt width(mm)	≦20	20<40
tanθ	6/1000	3/1000

Synchronous Belt Replacement Signs

Names of Belt Components



Examples of Belt Replacement Signs

Examples	Condition
1. When belt tooth reinforcement fabric is worn and rubber/core wire are exposed. When tooth surface/grooves are worn and rubber/core wire are exposed	
2. When the backing rubber shows cracks due to hardening	
3. When cracks reaching the rubber are seen at tooth base	
4. Belt side faces are damaged due to wear	
5. When missing tooth can be seen	
6. When excessive wear can be seen on belt back side	
7. When belt or core wire are broken	

These are belt replacement timing guides. Early or periodical replacements are recommended even the signs shown above are not yet visible.

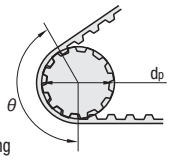
[Technical Data]
Selection of Synchronous Belt Iron Rubber® 1

®Iron Rubber® is a registered trademark of NOK Corporation.

Iron Rubber® Belts (**P.1203**~**P.1205**) are selected based on applied Load Torque (Nm) or Transmission Capacity (kW).

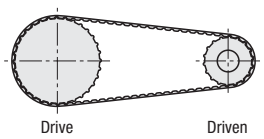
■ Selection Condition

Conditions Needed For Selecting
- · Pulley Pitch Diameter: d_p (mm)
- · Pulley Rotational Speed: n (rpm)
- · Pulley Wrap Angle: θ (°)
- · Load Torque: Md (Nm) or Transmission Capacity: P (kW)

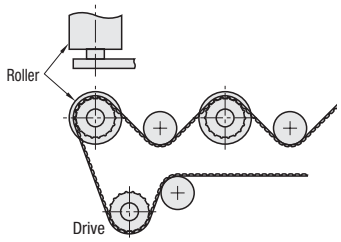


Fundamentally use the Drive side pulley for calculations. When the Driven side pulley is also transmitting torque, calculate for the Driven side also, and make the belt selection based on more severe side.

Ex. 1) When Drive Pulley Diameter > Driven Pulley Diameter, also calculate for the Driven side pulley.



Ex. 2) When the driven pulley is connected to a roller, also calculate for the Driven side.



■ Selection Method

[Step 1] Load Torque, Transmission Capacity Corrections

Back-side Idler Correction

• When a Transmission Capacity is given as a conditional parameter

$P = P_0 \times (1+0.1 \times f)$

P : Transmission Capacity Used for Selection (kW)
P_0 : Transmission Capacity Given as Conditional Parameter (kW)
f : Number of Back-side Idlers

• When a Load Torque is given as a conditional parameter

$Md = Md_0 \times (1+0.1 \times f)$

Md : Transmission Capacity Used for Selection (Nm)
Md_0 : Transmission Capacity Given as Conditional Parameter (Nm)
f : Number of Back-side Idlers

[Step 2] Selection of Belt Model

Select belt model using Simplified Selection Chart on **P.1945**.

• When a Transmission Capacity is given as a conditional parameter
Select belt model based on Transmission Capacity and Pulley Speed (See Table 6)

• When a Load Torque is given as a conditional parameter
Select belt model based on Load Torque and Number of Sm. Pulley Tooth (See Table 7)

[Step 3] Selection of Pulley Tooth Count Z

Note the Min. Pulley Tooth Count when selecting the number of tooth. (See Table 1)

Table 1: Min. Pulley Tooth Count

Rotational Speed (rpm)	MA3	MA5	MA8	AT5	AT10	T5	T10	MXL	XL	L	H
600 or Less	18	15	20	15	15	12	14	12	10	10	14
720 or Less										12	
900 or Less			22								
1200 or Less		16	24		18		16				16
1800 or Less	20	20	26	16	20	14	18	14	12	14	18
3000 or Less	22	24	28	18	22	16	20	16		16	20

[Step 4] Selection of Belt Tooth Count ZB

<When pulley ratio is not 1:1>
Obtain belt tooth count from belt length.
Select belt loop length from shaft distance (C), Lg. Pulley Dia., and Sm. Pulley Dia.

$$Lp = 2C + \frac{\pi(Dp+dp)}{2} + \frac{(Dp-dp)^2}{4C}$$

C : Shaft Center Distance
dp : Sm. Pulley Number of Tooth (mm)
Dp : Lg. Pulley Number of Tooth (mm)
Lp : Belt length (mm)

Calculate number of tooth from belt length.

$$Z_B = \frac{Lp}{t}$$

Z_B : Belt Tooth CountS
t : Belt Pitch (exT10 → t=10)

<When pulley ratio is 1:1>

$$Z_B = \frac{2C}{t} + Z$$

C : Shaft Center Distance
t : Belt Pitch
z: Number of Pulley Tooth

[Step 5] Calculating Tooth Mesh Count

<When pulley ratio is not 1:1>

$$Z_E = \frac{z_1}{180} \times \cos^{-1} \frac{t(z_2-z_1)}{2\pi C}$$

z_1 : Sm. Pulley Number of Tooth
z_2 : Lg. Pulley Number of Tooth

<When pulley ratio is 1:1>

$$Z_E = \frac{z}{2}$$

z : Number of Pulley Tooth

However, Max. Number of Effective Meshed Teeth on the right table will be the upper limit.

Table 2: Max. Number of Effective Meshed Teeth

Belt Type	Max. Number of Effective Meshed Teeth
Long Synchronous Belt	6
Open End Belt	12

[Step 6] Calculating Minimum Belt Width bc

Calculate the minimum belt width from Allowable Transmission Capacity and Allowable Transmission Torque on **P.1945**.

• When a Transmission Capacity is given as a conditional parameter

Table 8 (**P.1945**) Allowable Transmission Capacity (Ps) is used.

$$bc = \frac{P \times 10^4}{Ps \times ZE \times z} \times fw$$

bc: Belt Width (mm)
P: Transmission Capacity (kW)
Ps: Allowable Transmission Capacity
ZE: Number of Meshing Teeth

fw: Width Factor (Long Synchronous Belt T10150 : 1.5 / Others : 1)
Z: Pulley Tooth Count

• When a Load Torque is given as a conditional parameter

Table 9 (**P.1945**) Allowable Transmission Torque (Mds) is used.

$$bc = \frac{Md \times 10^3}{Mds \times ZE \times z} \times fw$$

Md: Load Torque (Nm)
Mds: Allowable Transmission Torque
ZE : Number of Meshing Teeth

fw: Width Factor (Long Synchronous Belt T10150 : 1.5 / Others : 1)
Z: Pulley Tooth Count

Select standard belt widths larger than the calculated minimum width bc.

[Step 7] Confirming Min. Shaft Center Distance Adjustment Range

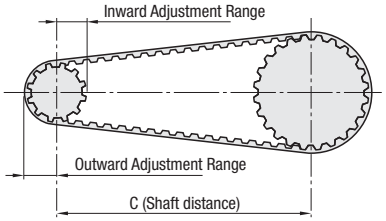
Refer to the table below for Min. Shaft Center Distance Adjustment Range taking in consideration the mounting and adjustment range.

Table 3: Outside Adjustment Range

Outside Adjustment Range (mm)	Outside Adjustment Range (mm)
600 or Less	5
Over 600~1000 or Less	10
Over 1000~1500 or Less	15
Over 1500~2000 or Less	20
Over 2000~2500 or Less	25
Over 2500~3000 or Less	30
Over 3000	Shaft Center Distance × 0.01

Table 4: Inside Adjustment Range

Model	Inside Adjustment Range (mm)
MA3, T5, XL, MXL	5
MA5, AT5, L	10
MA8, AT10, T10, H	15



For flanged pulleys, allow ample adjustment margin taking the flange diameter in consideration.

■ Notes on Selection

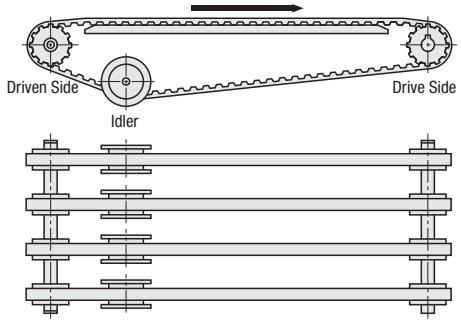
• Load Torque and Transmitted Power

Load torque and transmitted power should be calculated for absolute max. load values applicable to the belt for safety.

• For Multiple Belt Parallel Use

· If each belt receives an equal load, calculate with a value of total load divided by the number of belts used.
However, if the load on each belt may potentially become uneven, calculate with the max. load applicable on one belt.

· The mechanism should be designed to facilitate individual belt tension adjustments.



• When an Idler is used

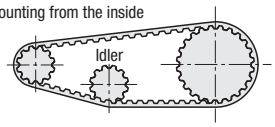
· If use of Idler is unavoidable, always use the Idler on the slack side.

· Position the Idler on the inside if possible.
When positioning an Idler on the inside, use one with more teeth than the smaller side pulley.
For placing the Idler on the outside, use a flat pulley without crowning.

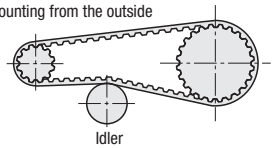
Table 5. Minimum Idler Diameter

Belt Type	Minimum Idler Diameter (mm)
MA3	30
MA5, AT5	40
MA8, AT10	80
T5	30
T10	70
MXL	15
XL	30
L	50
H	90

Mounting from the inside



Mounting from the outside



Selection of Synchronous Belt Iron Rubber® 2

–Selection Guide Table / Allowable Transmission Capacity / Allowable Transmission Torque–

Table 6: Selection Guide Table 1 (Transmission Capacity)

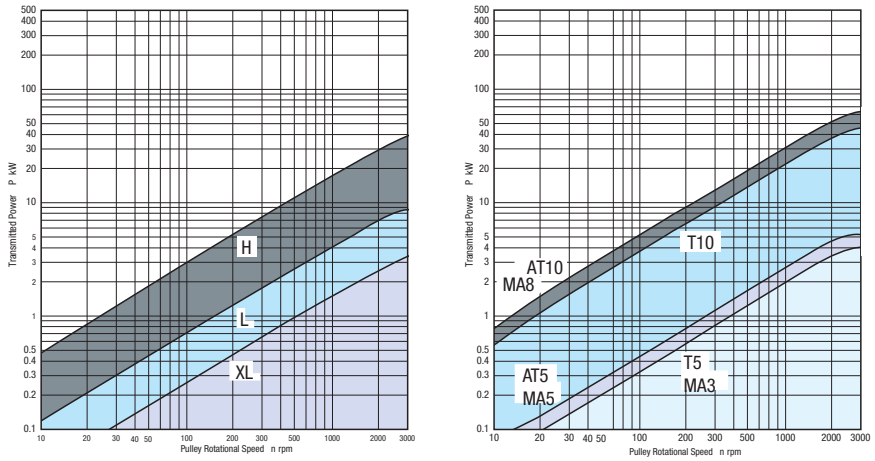


Table 7: Selection Guide Table 2 (Torque)

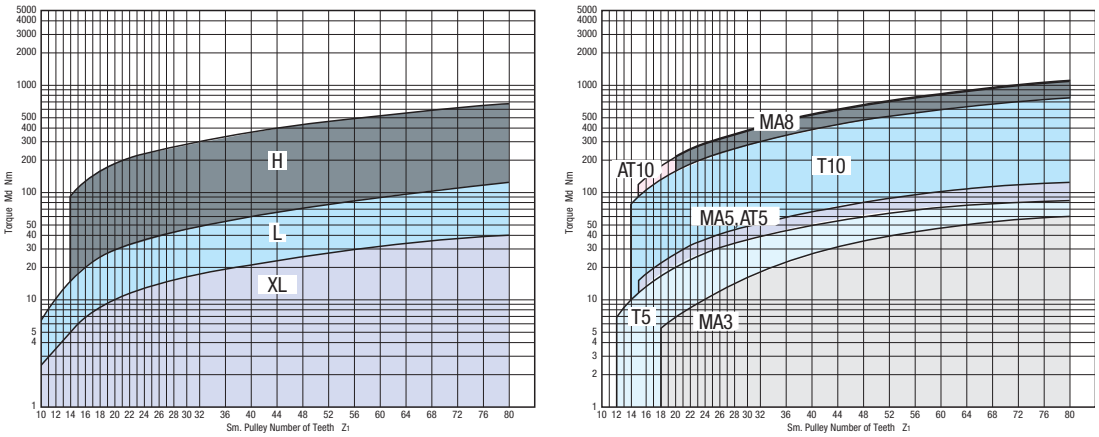


Table 8: Allowable Transmission Capacity (Ps)

Pulley Rotational Speed n (rpm)	MA3	MA5	MA8	AT5	AT10	T5	T10	MXL	XL	L	H
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.026	0.052	0.181	0.052	0.226	0.043	0.181	0.007	0.044	0.129	0.206
40	0.050	0.101	0.351	0.101	0.439	0.084	0.351	0.014	0.085	0.250	0.401
60	0.074	0.147	0.511	0.147	0.639	0.123	0.511	0.020	0.124	0.364	0.583
80	0.096	0.192	0.661	0.192	0.826	0.160	0.661	0.026	0.161	0.471	0.753
100	0.116	0.233	0.800	0.233	1.000	0.194	0.800	0.032	0.196	0.572	0.910
200	0.211	0.422	1.423	0.422	1.779	0.351	1.423	0.058	0.354	1.019	1.616
300	0.296	0.592	1.984	0.592	2.480	0.494	1.980	0.082	0.498	1.419	2.250
400	0.376	0.753	2.496	0.753	3.120	0.627	2.490	0.104	0.632	1.789	2.830
500	0.452	0.905	2.976	0.905	3.720	0.754	2.980	0.126	0.760	2.140	3.370
600	0.525	1.050	3.432	1.050	4.290	0.875	3.430	0.147	0.881	2.470	3.880
700	0.593	1.187	3.864	1.187	4.830	0.989	3.870	0.168	0.999	2.780	4.370
800	0.662	1.324	4.280	1.324	5.350	1.104	4.280	0.188	1.113	3.080	4.830
900	0.728	1.456	4.664	1.456	5.830	1.213	4.680	0.208	1.223	3.370	5.280
1000	0.791	1.538	5.064	1.538	6.330	1.319	5.070	0.227	1.330	3.650	5.720
1100	0.854	1.708	5.440	1.708	6.800	1.423	5.440	0.247	1.434	3.920	6.130
1200	0.914	1.829	5.800	1.829	7.250	1.524	5.800	0.266	1.536	4.190	6.540
1300	0.974	1.947	6.152	1.947	7.690	1.623	6.150	0.285	1.636	4.440	6.930
1400	1.031	2.060	6.496	2.060	8.120	1.719	6.490	0.303	1.733	4.690	7.310
1500	1.088	2.180	6.824	2.180	8.530	1.814	6.830	0.322	1.829	4.930	7.680
1600	1.144	2.290	7.152	2.290	8.940	1.907	7.150	0.340	1.923	5.170	8.040
1700	1.199	2.400	7.464	2.400	9.330	1.998	7.460	0.358	2.010	5.400	8.390
1800	1.254	2.510	7.776	2.510	9.720	2.090	7.770	0.378	2.110	5.620	8.730
1900	1.308	2.610	8.072	2.610	10.090	2.180	8.070	0.394	2.190	5.840	9.060
2000	1.356	2.720	8.368	2.720	10.460	2.260	8.370	0.413	2.280	6.060	9.390
2200	1.458	2.920	8.936	2.920	11.170	2.430	8.940	0.448	2.450	6.480	10.020
2400	1.560	3.120	9.480	3.120	11.850	2.600	9.480	0.485	2.620	6.880	10.630
2600	1.656	3.310	10.008	3.310	12.510	2.760	10.010	0.520	2.780	7.270	11.210
2800	1.746	3.490	10.512	3.490	13.140	2.910	10.510	0.556	2.940	7.640	11.760
3000	1.838	3.680	11.000	3.680	13.750	3.060	11.000	0.590	3.090	8.000	12.300

Table 9: Allowable Transmission Torque (Mds)

Pulley Rotational Speed n (rpm)	MA3	MA5	MA8	AT5	AT10	T5	T10	MXL	XL	L	H
0	1.260	2.520	8.888	2.520	11.110	2.100	8.890	0.344	2.130	6.310	10.150
20	1.230	2.460	8.640	2.460	10.800	2.050	8.640	0.339	2.080	6.140	9.860
40	1.200	2.400	8.392	2.400	10.490	2.000	8.390	0.328	2.030	5.970	9.560
60	1.173	2.350	8.136	2.350	10.170	1.955	8.140	0.319	1.976	5.800	9.270
80	1.144	2.290	7.888	2.290	9.860	1.906	7.890	0.311	1.923	5.630	8.980
100	1.114	2.230	7.640	2.230	9.550	1.857	7.640	0.303	1.871	5.460	8.690
200	1.006	2.010	6.800	2.010	8.500	1.677	6.800	0.276	1.690	4.860	7.720
300	0.943	1.887	6.304	1.887	7.880	1.572	6.300	0.260	1.584	4.520	7.150
400	0.898	1.797	5.952	1.797	7.440	1.497	5.950	0.249	1.509	4.270	6.740
500	0.864	1.728	5.680	1.728	7.100	1.440	5.680	0.241	1.451	4.080	6.430
600	0.836	1.671	5.456	1.671	6.820	1.393	5.460	0.234	1.403	3.920	6.180
700	0.811	1.623	5.272	1.623	6.590	1.352	5.270	0.229	1.363	3.790	5.960
800	0.791	1.581	5.112	1.581	6.390	1.318	5.110	0.225	1.328	3.680	5.770
900	0.772	1.545	4.968	1.545	6.210	1.287	4.970	0.221	1.298	3.580	5.610
1000	0.756	1.512	4.840	1.512	6.050	1.260	4.840	0.217	1.270	3.490	5.460
1100	0.741	1.482	4.720	1.482	5.900	1.235	4.720	0.214	1.245	3.410	5.320
1200	0.728	1.456	4.616	1.456	5.770	1.213	4.620	0.211	1.223	3.330	5.200
1300	0.715	1.430	4.520	1.430	5.650	1.192	4.520	0.209	1.202	3.260	5.090
1400	0.704	1.407	4.432	1.407	5.540	1.173	4.430	0.207	1.182	3.200	4.980
1500	0.693	1.386	4.344	1.386	5.430	1.155	4.350	0.205	1.164	3.140	4.890
1600	0.683	1.366	4.264	1.366	5.330	1.138	4.270	0.203	1.148	3.080	4.800
1700	0.673	1.347	4.192	1.347	5.240	1.122	4.190	0.201	1.132	3.030	4.710
1800	0.665	1.329	4.120	1.329	5.150	1.108	4.120	0.200	1.117	2.980	4.630
1900	0.656	1.312	4.056	1.312	5.070	1.094	4.060	0.198	1.103	2.940	4.560
2000	0.648	1.296	3.952	1.296	4.940	1.080	4.000	0.197	1.089	2.890	4.480
2200	0.634	1.267	3.880	1.267	4.850	1.056	3.880	0.195	1.065	2.810	4.350
2400	0.620	1.240	3.776	1.240	4.720	1.033	3.770	0.193	1.042	2.740	4.230
2600	0.607	1.215	3.672	1.215	4.590	1.012	3.680	0.191	1.021	2.670	4.120
2800	0.596	1.192	3.584	1.192	4.480	0.993	3.590	0.190	1.002	2.610	4.010
3000	0.585	1.170	3.504	1.170	4.380	0.975	3.500	0.188	0.984	2.550	3.910

Allowable Tension

Table 10: Joint Processed Belt (Iron Rubber®) Allowable Tension Unit: N

Type of Belt	Belt Width						
	025	037	050	075	100	150	200
XL	90	135	175	–	–	–	–
L	–	–	320	480	640	–	–
H	–	–	–	480	640	960	1280

Unit: N

Type of Belt	Belt Width					
	100	150	200	250	400	500
T5	150	200	270	350	–	–
T10	–	320	440	640	960	1280
AT5	210	350	–	–	–	–
AT10	–	890	890	1070	–	–

Table 11: Open End Belt (Iron Rubber®) Allowable Tension Unit: N

Type of Belt	Belt Width						
	025	037	050	075	100	150	200
XL	180	270	350	–	–	–	–
L	–	–	640	960	1280	–	–
H	–	–	–	960	1280	1920	2560

Unit: N

Type of Belt	Belt Width						
	070	100	150	200	250	400	500
MA3	200	300	400	–	–	–	–
MA5	–	470	740	960	–	–	–
MA8	–	–	1620	2160	2700	–	–
T5	200	300	400	550	700	–	–
T10	–	–	640	880	1280	1920	2560
AT5	–	470	740	–	–	–	–
AT10	–	–	1620	2160	2700	–	–

Initial Tension Setup

Determine the Initial Tension based on the maximum tension that occurs during operation.
Initial tension is equal throughout the entire belt loop during non-running and idling states.
There are Tension and Slack sides on belts during operation. The differential of the tension is called Effective Tension.
This differential via the pulleys generates torque or transmission capacity.
For toothed belt applications, apply initial tension not cause belt sags on the Slack side.
When a sag is evident during the start-up, it indicates that the initial tension is insufficient.

$$U = \frac{2 \times 10^3 \times Md}{dp} \quad \text{Or} \quad U = \frac{19.1 \times 10^6 \times P}{n \times dp}$$

Elasticity Guideline $0.5U < Fv < 0.5F$

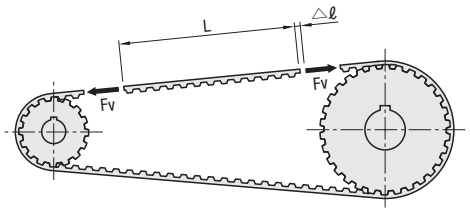
U: Effective Tension (N)
Md: Load Torque (Nm)
P: Transmission Capacity (kW)
dp: Pulley Diameter (mm)
n: Pulley Rotational Speed (rpm)
Fv: Initial Tension (N)
F: Allowable Tension (N)

Method for Checking Initial Tension

• Method by Checking Belt Elongation

Belt elongation (guideline) at Allowable Tension F,

Joint Process	0.2% = 2mm/m
Open End	0.4% = 4mm/m



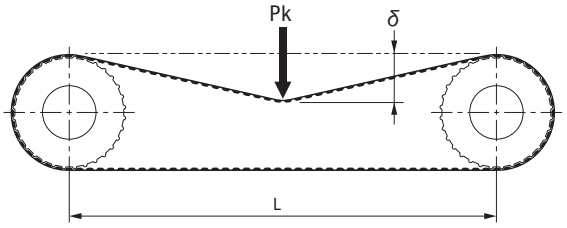
Force and elongation follows Hooke's Law (In proportional relationship), and the intermediate value can be obtained by calculations.

• Method Using Belt Vibrations

$Fv = 4 \times f^2 \times m \times \ell^2$

Fv: Belt Tension (N)
f: Vibration Frequency (Hz)
m: Belt Weight Per 1m (kg/m)
ℓ: Span Length

• Method Using Deflection Force and Deflection Amount



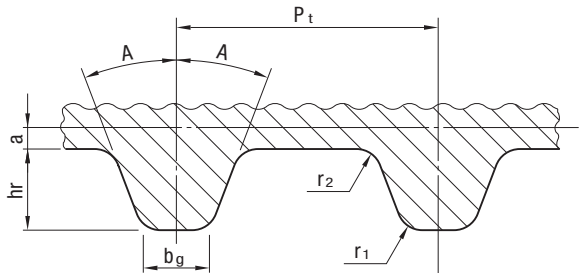
Pk = Fv/16

Adjust to make deflection δ to [δ=L/64]

Pk: Deflection Force (N)
Fv: Desired Tension (N)
δ : Deflection Amount (mm)
L: Span Length (mm)

[Technical Data]
Toothed Pulleys Excerpts from JIS B 1856(1993)

1.Dimensions of the Rack for the Cutter and the Tolerances



The pulley should have involute teeth, which are created and shaped by the cutter. The dimensions of the rack for the cutter and the tolerances as determined by analyzing the shape of the rack with a projector, shape measuring instrument or the like, should be agree with the relevant figures in the table below.

Unit: mm

Type	Number of Teeth of the Pulley Z	Pt	A ±0.12	hr +0.05 0	bg +0.05 0	r_1 ±0.03	r_2 ±0.03	2a(1) (Reference)
MXL	10 ≤ Z ≤ 23	2.032 ± 0.008	28°	0.64	0.61	0.30	0.23	0.508
	24 ≤ Z		20°		0.67			
XL	10 ≤ Z	5.080 ± 0.010	25°	1.40	1.27	0.61	0.61	0.508
L	10 ≤ Z	9.525 ± 0.012	20°	2.13	3.10	0.86	0.53	0.762
H	14 ≤ Z ≤ 19	12.700 ± 0.016	20°	2.59	4.24	1.47	1.04	1.372
	20 ≤ Z						1.42	

Note ([1]) : a is a measurement indicating the position corresponding to the pitch line (Centerline of the Core Line of the Belt) of the belt corresponding to the shape of the rack for the cutter.

2. Tolerance of Adjacent Pitch Error and Cumulative Pitch Error

Unit: mm

Addendum Circle Diameter of Pulley do	Allowable Value	
	Tolerance of Adjacent Pitch Error	Accumulated Pitch Error
5.96 ≤ d_o ≤ 25.40	0.03	0.05
25.40 < d_o ≤ 50.80	0.03	0.08
50.80 < d_o ≤ 101.60	0.03	0.10
101.60 < d_o ≤ 177.80	0.05	0.13
177.80 < d_o ≤ 304.80	0.05	0.15
304.80 < d_o ≤ 508.00	0.08	0.18
508.00 < d_o ≤ 762.00	0.08	0.20
762.00 < d_o ≤ 967.16	0.08	0.23

3. Tolerance of Side Deflection

Unit: mm

Addendum Circle Diameter of Pulley do	Tolerance of Deflection (TIR)(2)
5.96 ≤ d_o ≤ 101.60	0.10
101.60 < d_o ≤ 254.00	Addendum Circle Dia. d_o×0.001
254.00 < d_o ≤ 967.16	0.25+[(Addendum Circle Dia. do-254.00)×0.0005]

Note ([2]) : TIR is an abbreviation for Total Indicator Reading and refers to the difference between the max. deflection reading and the min. deflection reading.

4. Tolerances of Addendum Circle Diameter

Unit: mm

Addendum Circle Diameter of Pulley do	Tolerance
5.96 ≤ d_o ≤ 25.40	$^{+0.05}_{0}$
25.40 < d_o ≤ 50.80	$^{+0.08}_{0}$
50.80 < d_o ≤ 101.60	$^{+0.10}_{0}$
101.60 < d_o ≤ 177.80	$^{+0.13}_{0}$
177.80 < d_o ≤ 304.80	$^{+0.15}_{0}$
304.80 < d_o ≤ 508.00	$^{+0.18}_{0}$
508.00 < d_o ≤ 762.00	$^{+0.20}_{0}$
762.00 < d_o ≤ 967.16	$^{+0.23}_{0}$

5. Tolerance of Circumferential Deflection of Addendum Circle

Unit: mm

Addendum Circle Diameter of Pulley do	Tolerance of Circumferential Deflection
5.96 ≤ d_o ≤ 203.20	0.13
203.20 < d_o ≤ 967.16	0.13 + [(Addendum Circle Dia. do-203.20) × 0.0005]

6. Tolerance of Cylindricity and Parallelism

Unit: mm

Nominal Widths of Pulley	Cylindricity Tolerance	Parallelism Tolerance
025~050	0.01	0.03
075~150	0.02	
200 · 300	0.04	0.04
400 · 500	0.06	0.05

[Technical Data]
Regular Machining Dimension Tolerance

Excerpts from JIS B 0405, 0419(1991)

1. Regular Cut Dimension Tolerance B 0405-1991-

Tolerances in Respect of Length Excluding Chamfered Portion

Unit: mm

Tolerance Class		Classification of Reference Dimension							
Symbol	Description	0.5 (1) or More 3 or Less	More than 3 6 or Less	More than 6 30 or Less	More than 30 120 or Less	More than 120 400 or Less	More than 400 1000 or Less	More than 1000 2000 or Less	More than 2000 4000 or Less
		Tolerance							
f	Precision Grade	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	–
m	Medium	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	Coarse	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	±4
v	Extremely Coarse	–	±0.5	±1	±1.5	±2.5	±4	±6	±8

Note (1) : A reference dimension less than 0.5 mm is followed by a tolerance.

2.Tolerances in Respect of the Length of the Chamfered Portion (Radius of rounding for edges and edge chamfering dimension)

Unit: mm

Tolerance Class		Classification of Reference Dimension		
Symbol	Description	0.5 (2) or More 3 or Less	More than 3 6 or Less	More than 6
		Tolerance		
f	Precision Grade	±0.2	±0.5	±1
m	Medium			
c	Coarse	±0.4	±1	±2
v	Extremely Coarse			

Note (2) : A reference dimension less than 0.5 mm is followed by a tolerance.

3. Angle Tolerance

Tolerance Class		Length of Shorter Side (Unit: mm)				
Symbol	Description	10 or Less	More than 10 50 or Less	More than 50 120 or Less	More than 120 400 or Less	More than 400
		Tolerance				
f	Precision Grade	±1°	±30'	±20'	±10'	± 5'
m	Medium					
c	Coarse	±1°30'	± 1°	±30'	±15'	±10'
v	Extremely Coarse	±3°	± 2°	± 1°	±30'	±20'

4.Regular Perpendicularity Tolerance B 0419-1991-

Unit: mm

Tolerance Class	Nominal Length of Shorter Side			
	100 or Less	More than 100 300 or Less	More than 300 1000 or Less	More than 1000 3000 or Less
	Perpendicularity Tolerance			
H	0.2	0.3	0.4	0.5
K	0.4	0.6	0.8	1
L	0.6	1	1.5	2

5. Regular Straightness and Flatness Tolerance

Unit: mm

Tolerance Class	Nominal Length					
	10 or Less	More than 10 30 or Less	More than 30 100 or Less	More than 100 300 or Less	More than 300 1000 or Less	More than 1000 3000 or Less
	Regular Straightness and Flatness Tolerance					
H	0.02	0.05	0.1	0.2	0.3	0.4
K	0.05	0.1	0.2	0.4	0.6	0.8
L	0.1	0.2	0.4	0.8	1.2	1.6

6.Regular Symmetry Tolerance

Unit: mm

Tolerance Class	Nominal Length			
	100 or Less	More than 100 300 or Less	More than 300 1000 or Less	More than 1000
	Symmetry Tolerance			
H	0.5			
K	0.6		0.8	1
L	0.6	1	1.5	2

			H6	H7	H8	H9	Applicable Part	Functional Classification		Application Example
Can be Moved Relatively	Clearance Fit	Loose Fit				c9	Part which accommodates a wide gap or moving part which needs a gap. Part which accommodates a wide gap to facilitate assembling. Part which needs an appropriate gap even at a high temperature.	Part whose structure needs a gap. {Inflates. Large position error {Fitting length is long.		Piston Ring and the Ring Groove Fitting by means of a loose set pin.
		Light Roll Fit			d9	d9	Part which accommodates or needs a gap.	Cost needs to be reduced. {Manufacturing Cost {Maintenance Cost		Crank Web and Pin Bearing(Side) Exhaust Valve Box and the Sliding Part of a Spring Bearing Piston Ring and the Ring Groove
		Roll Fit		e7	e8	e9	Part which accommodates a wide gap or needs a gap. Fairly wide gap, well greased bearing. Bearing subjected to a high temperature, high speed and heavy load(high-degree forced lubrication).	Regular Rotary or Sliding Part (Must be well greased.)		Fitting of the Exhaust Valve Box Main Bearing for the Crank Shaft Regular Sliding Part
			f6	f7	f7 f8		Fitting so as to provide an appropriate gap to permit movement(high-quality fitting). Regular normal temperature bearing lubricated with grease or oil.	Regular Fitting (Often comes apart.)		Part in which a cooled exhaust valve box is inserted. Regular Shaft and Bushing Link Device Lever and Bushing
		Fine Roll Fit	g5	g6			Continuously revolving part of a precision machine under a light load. Fitting with a narrow gap so as to permit movement(spigot and positioning). Precision sliding part.	Part required to make a precision motion with virtually no play.		Link Device Pin and Lever Key and its Groove Precision Control Valve Rod
Cannot be Moved Relatively	Transition Fit	Sliding Fit	h5	h6	h7 h8	h9	Fitting so as to permit movement by hand, with a lubricant applied.(high-quality positioning) Special High Precision Sliding Part Unimportant Stationary Part	Can be disassembled, reassembled without damaging component parts.	Force cannot be transmitted by the fitting force alone.	Fitting a rim and a boss together Fitting the gear of a precision gear device
		Push Fit	h5 h6	js6			Fitting which accommodates a light gap. Precision fitting which locks both parts while the unit is used. Fitting which allows assembling and disassembling with a wooden or lead hammer.			Fitting Coupling Flanges Together Governor Path and Pin Fitting a Gear Rim and a Boss Together
		Driving Fit	js5	k6			Fitting which requires an iron hammer or hand press for assembling, disassembling(a key or the like is necessary to prevent inter-part shaft rotation). Precision positioning.			Fixing the Shaft of a Gear Pump and a Casing Together Reamer Bolts
			k5	m6			Same as the above for assembling and disassembling. Precision positioning which allows no gap.			Reamer Bolts Fixing the piston of hydraulic equipment and a shaft together Fitting a Coupling Flange and a Shaft Together
		Light Press Fit	m5	n6			Fitting which requires considerable force for assembling, disassembling. Precision stationary fitting(a key or the like is necessary for high torque transmission purposes)		Slight force can be transmitted by the fitting force alone.	Shaft of a Flexible Coupling and Gear(Passive Side) Precision Fitting Insertion of a Suction Valve and Valve Guide
	Interference Fit	Press Fit	n5 n6	p6			Fitting which requires much force for assembling, disassembling(a key or the like is necessary for high torque transmission). Light press fitting or the like is necessary for non-ferrous component parts. Standard press fitting is required for iron component parts and a bronze part and a copper part.	Hard to disassemble without damaging component parts.		Insertion of a Suction Valve and Valve Guide Fixing a Gear and a Shaft Together(Low Torque) Shaft of a Flexible Coupling and a Gear(Drive Side)
			p5	r6			Same as the above for assembling and disassembling Shrinkage press fitting, cold press fitting or forced press fitting is required for large component parts.			Coupling and Shaft
		Strong Press Fit, Shrinkage Fit, Freeze Fit	r5	s6 t6 u6 x6			Firmly coupled together and requires shrinkage press fitting, cold press fitting or forced press fitting. Permanent assembly, which can not come apart. Press fitting or the like is required for light alloy members.		Considerable force can be transmitted by the fitting force alone.	Attaching and Fixing a Bearing Bushing Insertion of a Suction Valve and Valve Box Fixing a Coupling Flange and a Shaft Together(High Torque) Fixing the Rim of a Drive Gear and a Boss Together Attaching and Fixing a Bearing Bushing

1.1 Fitting, with Regularly Used Hole Adopted as Reference

Reference Hole	Class of Tolerance Range for Shafts																		
	Clearance Fit							Transition Fit			Interference Fit								
H6						f6	g5 g6	h5 h6	js5 js6	k5 k6	m5 m6	n6*	p6*						
H7					e7	f6 f7	g6	h6 h7	js6 js7	k6	m6	n6	p6*	r6*	s6	t6	u6	x6	
H8				e8	f8	f7		h8											
H9			d9	e8	e9			h8											
H10	b9	c9	d9	e9				h9											

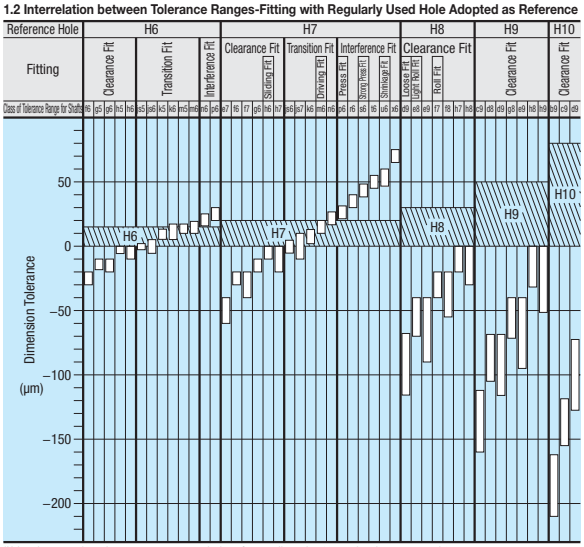
[Note]*An exception may arise according to the dimensional sectioning scheme.

2.1 Fitting, with Regularly Used Shaft Adopted as Reference

Reference Shaft	Class of Tolerance Range for Holes																		
	Clearance Fit							Transition Fit			Interference Fit								
h5							H6	JS6	K6	M6	N6*	P6							
h6					F6	G6	H6 H7	JS6 JS7	K6 K7	M6 M7	N6 N7	P6* P7*	R7	S7	T7	U7	X7		
h7				E7	F7		H7												
h8			D8	E8	F8		H8												
			D9	E9			H9												
h9			D8	E8			H8												
	C9	D9	E9				H9												
	B10	C10	D10																

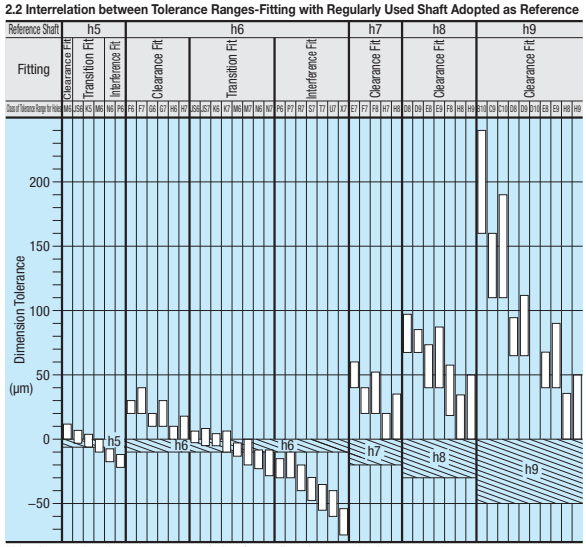
[Note]*An exception may arise according to the dimensional sectioning scheme.

1.2 Interrelation between Tolerance Ranges-Fitting with Regularly Used Hole Adopted as Reference



*Values in cases where the measurement exceeds the reference dimension 18 mm, but does not exceed 30 mm.

2.2 Interrelation between Tolerance Ranges-Fitting with Regularly Used Shaft Adopted as Reference



*Values in cases where the measurement exceeds the reference dimension 18 mm, but does not exceed 30 mm.

[Technical Data]
Dimension Tolerance for Regularly Used Fitting

Excerpts from JIS B 0401 (1999)

Dimension Tolerance of Shaft, Regularly Used Fitting

Reference Dimension (mm)		Class of Tolerance Range for Shafts																										Unit μm
More than	or Less	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	js5	js6	js7	k5	k6	m5	m6	n5*	n6	p6	r6	s6	t6	u6	x6
–	3	−140 −165	−60 −85	−20 −34	−20 −45	−14 −24	−14 −28	−14 −39	−6 −12	−6 −16	−6 −20	−2 −6	−2 −8	0 −4	0 −6	0 −10	0 −14	0 −25	±2	±3	±5	+4 0	+6 0	+6 +2	+8 +2	+8 +4	+10 +4	+12 +6	+16 +10	+20 +14	–	+24 +18	+26 +20
3	6	−140 −170	−70 −100	−30 −48	−30 −60	−20 −32	−20 −38	−20 −50	−10 −18	−10 −22	−10 −28	−4 −9	−4 −12	0 −5	0 −8	0 −12	0 −18	0 −30	±2.5	±4	±6	+6 +1	+9 +1	+9 +4	+12 +4	+13 +8	+16 +8	+20 +12	+23 +15	+27 +19	–	+31 +23	+36 +28
6	10	−150 −186	−80 −116	−40 −62	−40 −76	−25 −40	−25 −47	−25 −61	−13 −22	−13 −28	−13 −35	−5 −11	−5 −14	0 −6	0 −9	0 −15	0 −22	0 −36	±3	±4.5	±7.5	+7 +1	+10 +1	+12 +6	+15 +6	+16 +10	+19 +10	+24 +15	+28 +19	+32 +23	–	+37 +28	+43 +34
10	14	−150	−95	−50	−50	−32	−32	−32	−16	−16	−16	−6	−6	0	0	0	0	0	±4	±5.5	±9	+9	+12	+15	+18	+20	+23	+29	+34	+39	–	+44	+51 +40
14	18	−193	−138	−77	−93	−50	−59	−75	−27	−34	−43	−14	−17	−8	−11	−18	−27	−43				+1	+1	+7	+7	+12	+12	+18	+23	+28		+33	+56 +45
18	24	−160	−110	−65	−65	−40	−40	−40	−20	−20	−20	−7	−7	0	0	0	0	0	±4.5	±6.5	±10.5	+11	+15	+17	+21	+24	+28	+35	+41	+48	–	+54 +41	+67 +54
24	30	−212	−162	−98	−117	−61	−73	−92	−33	−41	−53	−16	−20	−9	−13	−21	−33	−52				+2	+2	+8	+8	+15	+15	+22	+28	+35	+54 +41	+61 +48	+77 +64
30	40	−170 −232	−120 −182	−80	−80	−50	−50	−50	−25	−25	−25	−9	−9	0	0	0	0	0	±5.5	±8	±12.5	+13	+18	+20	+25	+28	+33	+42	+50	+59	+64 +48	+76 +60	–
40	50	−180 −242	−130 −192	−119	−142	−75	−89	−112	−41	−50	−64	−20	−25	−11	−16	−25	−39	−62				+2	+2	+9	+9	+17	+17	+26	+34	+43	+70 +54	+86 +70	
50	65	−190 −264	−140 −214	−100	−100	−60	−60	−60	−30	−30	−30	−10	−10	0	0	0	0	0	±6.5	±9.5	±15	+15	+21	+24	+30	+33	+39	+51	+60 +41	+72 +53	+85 +66	+106 +87	–
65	80	−200 −274	−150 −224	−146	−174	−90	−106	−134	−49	−60	−76	−23	−29	−13	−19	−30	−46	−74				+2	+2	+11	+11	+20	+20	+32	+62 +43	+78 +59	+94 +75	+121 +102	
80	100	−220 −307	−170 −257	−120	−120	−72	−72	−72	−36	−36	−36	−12	−12	0	0	0	0	0	±7.5	±11	±17.5	+18	+25	+28	+35	+38	+45	+59	+73 +51	+93 +71	+113 +91	+146 +124	–
100	120	−240 −327	−180 −267	−174	−207	−107	−126	−159	−58	−71	−90	−27	−34	−15	−22	−35	−54	−87				+3	+3	+13	+13	+23	+23	+37	+76 +54	+101 +79	+126 +104	+166 +144	
120	140	−260 −360	−200 −300																										+88 +63	+117 +92	+147 +122		
140	160	−280 −380	−210 −310	−145 −208	−145 −245	−85 −125	−85 −148	−85 −185	−43 −68	−43 −83	−43 −106	−14 −32	−14 −39	0 −18	0 −25	0 −40	0 −63	0 −100	±9	±12.5	±20	+21 +3	+28 +3	+33 +15	+40 +15	–	+52 +27	+68 +43	+90 +65	+125 +100	+159 +134	–	–
160	180	−310 −410	−230 −330																										+93 +68	+133 +108	+171 +146		
180	200	−340 −455	−240 −355																										+106 +77	+151 +122			
200	225	−380 −495	−260 −375	−170 −242	−170 −285	−100 −146	−100 −172	−100 −215	−50 −79	−50 −96	−50 −122	−15 −35	−15 −44	0 −20	0 −29	0 −46	0 −72	0 −115	±10	±14.5	±23	+24 +4	+33 +4	+37 +17	+46 +17	–	+60 +31	+79 +50	+109 +80	+159 +130	–	–	–
225	250	−420 −535	−280 −395																										+113 +84	+169 +140			
250	280	−480 −610	−300 −430	−190	−190	−110	−110	−110	−56	−56	−56	−17	−17	0	0	0	0	0	±11.5	±16	±26	+27	+36	+43	+52	–	+66	+88	+126 +94	–	–	–	–
280	315	−540 −670	−330 −460	−271	−320	−162	−191	−240	−88	−108	−137	−40	−49	−23	−32	−52	−81	−130				+4	+4	+20	+20		+34	+56	+130 +98				
315	355	−600 −740	−360 −500	−210	−210	−125	−125	−125	−62	−62	−62	−18	−18	0	0	0	0	0	±12.5	±18	±28.5	+29	+40	+46	+57	–	+73	+98	+144 +108	–	–	–	–
355	400	−680 −820	−400 −540	−299	−350	−182	−214	−265	−98	−119	−151	−43	−54	−25	−36	−57	−89	−140				+4	+4	+21	+21		+37	+62	+150 +114				
400	450	−760 −915	−440 −595	−230	−230	−135	−135	−135	−68	−68	−68	−20	−20	0	0	0	0	0	±13.5	±20	±31.5	+32	+45	+50	+63	–	+80	+108	+166 +126	–	–	–	–
450	500	−840 −995	−480 −635	−327	−385	−198	−232	−290	−108	−131	−165	−47	−60	−27	−40	−63	−97	−155				+5	+5	+23	+23		+40	+68	+172 +132				

Dimension Tolerance of Hole, Regularly Used Fitting

Reference Dimension (mm)		Class of Tolerance Range for Holes																											Unit μm
More than	or Less	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	JS6	JS7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
–	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0	+14 0	+25 0	+40 0	±3	±5	0 −6	0 −10	−2 −8	−2 −12	−4 −10	−4 −14	−6 −12	−6 −16	−10 −20	−14 −24	–	−18 −28	−20 −30
3	6	+188 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0	+18 0	+30 0	+48 0	±4	±6	+2 −6	+3 −9	−1 −9	0 −12	−5 −13	−4 −16	−9 −17	−8 −20	−11 −23	−15 −27	–	−19 −31	−24 −36
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0	±4.5	±7.5	+2 −7	+5 −10	−3 −12	0 −15	−7 −16	−4 −19	−12 −21	−9 −24	−13 −28	−17 −32	–	−22 −37	−28 −43
10	14	+220	+138	+165	+77	+93	+120	+50	+59	+75	+27	+34	+43	+17	+24	+11	+18	+27	+43	+70	±5.5	±9	+2	+6	−4	0	−9	−5	−15	−11	−16	−21	–	−26	−33 −51
14	18	+150	+95	+95	+50	+50	+50	+32	+32	+32	+16	+16	+16	+6	+6	0	0	0	0	0			−9	−12	−15	−18	−20	−23	−26	−29	−34	−39		−44	−38 −56
18	24	+244	+162	+194	+98	+117	+149	+61	+73	+92	+33	+41	+53	+20	+28	+13	+21	+33	+52	+84	±6.5	±10.5	+2	+6	−4	0	−11	−7	−18	−14	−20	−27	–	−33	−46 −67
24	30	+160	+110	+110	+65	+65	+65	+40	+40	+40	+20	+20	+20	+7	+7	0	0	0	0	0			−11	−15	−17	−21	−24	−28	−31	−35	−41	−48	−33 −54	−40 −61	−56 −77
30	40	+270 +170	+182 +120	+220 +120	+119	+142	+180	+75	+89	+112	+41	+50	+64	+25	+34	+16	+25	+39	+62	+100	±8	±12.5	+3	+7	−4	0	−12	−8	−21	−17	−25	−34	−39 −64	−51 −76	–
40	50	+280 +180	+192 +130	+230 +130	+80	+80	+80	+50	+50	+50	+25	+25	+25	+9	+9	0	0	0	0	0			−13	−18	−20	−25	−28	−33	−37	−42	−50	−59	−45 −70	−61 −86	
50	65	+310 +190	+214 +140	+260 +140	+146	+174	+220	+90	+106	+134	+49	+60	+76	+29	+40	+19	+30	+46	+74	+120	±9.5	±15	+4	+9	−5	0	−14	−9	−26	−21	−30 −60	−42 −72	−55 −85	−76 −106	–
65	80	+320 +200	+224 +150	+270 +150	+100	+100	+100	+60	+60	+60	+30	+30	+30	+10	+10	0	0	0	0	0			−15	−21	−24	−30	−33	−39	−45	−51	−32 −62	−48 −78	−64 −94	−91 −121	
80	100	+360 +220	+257 +170	+310 +170	+174	+207	+260	+107	+126	+159	+58	+71	+90	+34	+47	+22	+35	+54	+87	+140	±11	±17.5	+4	+10	−6	0	−16	−10	−30	−24	−38 −73	−58 −93	−78 −113	−111 −146	–
100	120	+380 +240	+267 +180	+320 +180	+120	+120	+120	+72	+72	+72	+36	+36	+36	+12	+12	0	0	0	0	0			−18	−25	−28	−35	−38	−45	−52	−59	−41 −76	−66 −101	−91 −126	−131 −166	
120	140	+420 +260	+300 +200	+360 +200																											−48 −88	−77 −117	−107 −147			
140	160	+440 +280	+310 +210	+370 +210	+208 +145	+245 +145	+305 +145	+125 +85	+148 +85	+185 +85	+68 +43	+83 +43	+106 +43	+39 +14	+54 +14	+25 0	+40 0	+63 0	+100 0	+160 0	±12.5	±20	+4 −21	+12 −28	−8 −33	0 −40	−20 −45	−12 −52	−36 −61	−28 −68	−50 −90	−85 −125	−119 −159	–	–	
160	180	+470 +310	+330 +230	+390 +230																											−53 −93	−93 −133	−131 −171			
180	200	+525 +340	+355 +240	+425 +240																											−60 −106	−105 −151				
200	225	+565 +380	+375 +260	+445 +260	+242 +170	+285 +170	+355 +170	+146 +100	+172 +100	+215 +100	+79 +50	+96 +50	+122 +50	+44 +15	+61 +15	+29 0	+46 0	+72 0	+115 0	+185 0	±14.5	±23	+5 −24	+13 −33	−8 −37	0 −46	−22 −51	−14 −60	−41 −70	−33 −79	−63 −109	−113 −159	–	–	–
225	250	+605 +420	+395 +280	+465 +280																											−67 −113	−123 −169				
250	280	+690 +480	+430 +300	+510 +300	+271	+320	+400	+162	+191	+240	+88	+108	+137	+49	+69	+32	+52	+81	+130	+210	±16	±26	+5	+16	−9	0	−25	−14	−47	−36	−74 −126				
280	315	+750 +540	+460 +330	+540 +330	+190	+190	+190	+110	+110	+110	+56	+56	+56	+17	+17	0	0	0	0	0			−27	−36	−41	−52	−57	−66	−79	−88	−78 −130	–	–	–	–
315	355	+830 +600	+500 +360	+590 +360	+299	+350	+440	+182	+214	+265	+98	+119	+151	+54	+75	+36	+57	+89	+140	+230	±18	±28.5	+7	+17	−10	0	−26	−16	−51	−41	−87 −144				
355	400	+910 +680	+540 +400	+630 +400	+210	+210	+210	+125	+125	+125	+62	+62	+62	+18	+18	0	0	0	0	0			−29	−40	−46	−57	−62	−73	−87	−98	−93 −150	–	–	–	–
400	450	+1010 +760	+595 +440	+690 +440	+327	+385	+480	+198	+232	+290	+108	+131	+165	+60	+83	+40	+63	+97	+155	+250	±20	±31.5	+8	+18	−10	0	−27	−17	−55	−45	−103 −166				
450	500	+1090 +840	+635 +480	+730 +480	+230	+230	+230	+135	+135	+135	+68	+68	+68	+20	+20	0	0	0	0	0			−32	−45	−50	−63	−67	−80	−95	−108	−109 −172	–	–	–	–

Reference In each column, the upper value is the upper dimensional tolerance, and the lower figure is the lower one. [Note]*:n5 is the previous version of JIS. Presented here because many MISUMI products conform to this version.

[Technical Data]
Surface Roughness

JIS B 0601(1994)
Excerpts from JIS B 0031(1994)

1. Varieties of Surface Roughness Indicators

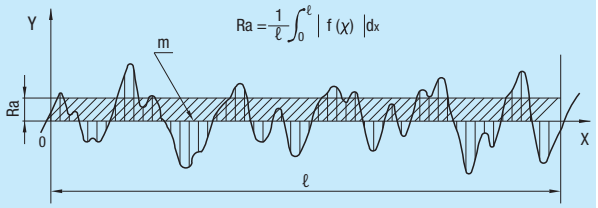
Definitions and presentations of arithmetic average roughness(Ra), maximum height(Ry), 10 spot average roughness(Rz), average concave to convex distance(Sm), average distance between local peaks S and load length rate tp are given as parameters indicating the surface roughness of an industrial product. Surface roughness is the arithmetical average of values at randomly extracted spots on the surface of an object.

[Centerline average roughness(Ra_{75})is defined in the supplements to JIS B 0031 and JIS B 0601.]

Typical calculations of surface roughness

Arithmetic Average Roughness Ra

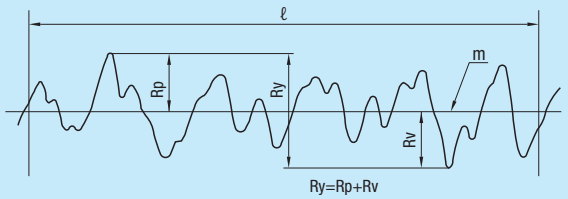
A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. This portion is presented in a new graph with the X axis extending in the same direction as the average line and the Y axis representing the magnitude. Ra is represented by the equation shown at right, in microns(μm).



Maximum Height Ry

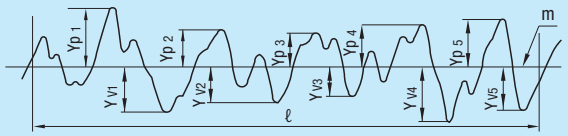
A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. The gap between the peak line and the trough line is measured in the direction in which the magnitude axis extends, in microns(μm).

Reference A portion without an abnormally high peak or abnormally low trough, which may be regarded as a flaw, is cut out over the reference length.



Ten-spot Average Roughness Rz

A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. The average of the levels(Yp)of the highest peak to the fifth highest peak as measured from the average line and the average of the levels(Yp)of the lowest trough to the fifth lowest trough similarly measured in the said portion are added together. Rz is this sum, in microns(μm).



$$Rz=\frac{|Yp_1+Yp_2+Yp_3+Yp_4+Yp_5|+|Yv_1+Yv_2+Yv_3+Yv_4+Yv_5|}{5}$$

$Yp_1, Yp_2, Yp_3, Yp_4, Yp_5$: Levels of the highest peak to the fifth highest peak in the said portion with the reference length ℓ.

$Yv_1, Yv_2, Yv_3, Yv_4, Yv_5$: Levels of the lowest trough to the fifth lowest trough in the said portion with the reference length ℓ.

Reference Relation between Arithmetic Average Roughness(Ra)and Conventional Parameters

Arithmetic Average Roughness Ra			Maximum Height Ry	Ten-spot Average Roughness Rz	Reference Length of Ry(Rz) ℓ(mm)	Conventional Finish Symbol
Standard Series	Cut-off Value c(mm)	Graphical Representation of Surface Texture	Standard Series			
0.012 a 0.025 a 0.05 a 0.1 a 0.2 a	0.08 0.25 0.8	0.012 ~ 0.2	0.05 s 0.1 s 0.2 s 0.4 s 0.8 s	0.05 z 0.1 z 0.2 z 0.4 z 0.8 z	0.08 0.25	
0.4 a 0.8 a 1.6 a		0.4 ~ 1.6	1.6 s 3.2 s 6.3 s	1.6 z 3.2 z 6.3 z	0.8	
3.2 a 6.3 a	2.5	3.2 ~ 6.3	12.5 s 25 s	12.5 z 25 z	2.5	
12.5 a 25 a	8	12.5 ~ 25	50 s 100 s	50 z 100 z	8	
50 a 100 a	–	50 ~ 100	200 s 400 s	200 z 400 z	–	~

*Interrelations among the three types shown here are not precise, and are presented for convenience only.

*Ra:The evaluation values of Ry and Rz are the cut-off value and the reference length each multiplied by five, respectively.

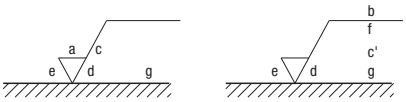
[Technical Data]
Drawing Indications of Surface Texture

Excerpts from JISB0031(1994)

1. Positions of Auxiliary Symbols for Surface Symbol

A surface roughness value, cut-off value or reference length, machining method, grain direction, surface undulation, etc. are indicated around the surface symbol as shown in Fig. 1 below.

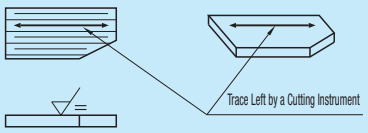
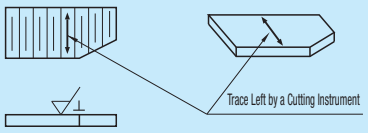
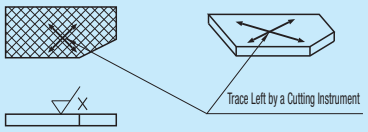
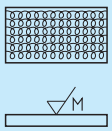
Fig. 1 Positions of Auxiliary Symbols



a : Ra Value
b : Machining Method
c : Cut-Off Value, Evaluation Length
c : Reference Length, Evaluation Length
d : Grain Direction
f : Parameter other than Ra(tp:Parameter/Cut-Off Level)
g : Surface Undulation(JIS B 0610)

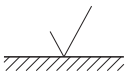
Reference These symbols except a and f are provided when they are needed.

Reference Under ISO 1302, a finish range should be indicated as e in Fig. 1.

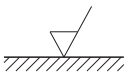
Code	Meaning	Illustration
=	The trace left by a cutting instrument is parallel to the projection plane in the drawing. Ex. Shaped Surface	
⊥	The trace left by a cutting instrument is perpendicular to the projection plane in the drawing. Ex. Shaped Surface(Side View) Circular Cut, Cylindrical Cut	
X	The pattern left by a cutting instrument diagonally crosses the projection plane in the drawing. Ex. Honed Surface	
M	The pattern left by a cutting instrument crosses in various directions or has no grain direction. Ex. Lapped Surface, Superfinished Surface and Surface Finished with a Front Mill or End Mill	
C	The pattern left by a cutting instrument is virtually concentric around the center of the plane in the drawing. Ex. Faced Surface	
R	The pattern left by a cutting instrument is virtually radial around the center of the plane in the drawing.	

Examples of Graphical Representation of Surface Texture

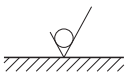
Surface Symbol



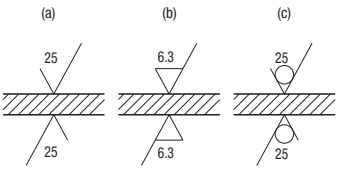
Removal of Material by Machining is required



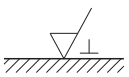
Removal of Material is Prohibited



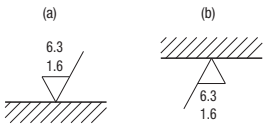
Upper Limit of Ra



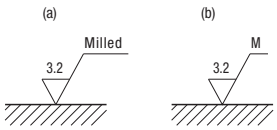
Grain Direction



Upper and Lower Limits of Ra



Machining Method



[Technical Data]
Hardness Conversion Table (SAEJ417) *Revised in 1983

Approximate Conversion of Rockwell C Hardness Values for Steel[1]

(HRC) Rockwell C-Scale Hardness	(HV) Vickers Hardness	Brinell Hardness (HB) 10mm Ball , Load 3000kgf		Rockwell Hardness[3]			Rockwell Superficial Hardness Diamond Cone Indenter			(Hs) Shore Hardness	Tensile Strength (Approximated Value) Mpa (kgf/mm²) [2]	Rockwell C-Scale Hardness [3]
		Standard Sphere	Tungsten Carbide Sphere	(HRA) A Scale, Load 60kgf, Diamond Cone Indenter	(HRB) B Scale, Load100kgf, Diameter1.6mm (1/16in)Sphere	(HRD) D Scale, Load 100kgf, Diamond Cone Indenter	15-N Scale Load 15kgf	30-N Scale Load 30kgf	45-N Scale Load 45kgf			
68	940	–	–	85.6	–	76.9	93.2	84.4	75.4	97	–	68
67	900	–	–	85.0	–	76.1	92.9	83.6	74.2	95	–	67
66	865	–	–	84.5	–	75.4	92.5	82.8	73.3	92	–	66
65	832	–	(739)	83.9	–	74.5	92.2	81.9	72.0	91	–	65
64	800	–	(722)	83.4	–	73.8	91.8	81.1	71.0	88	–	64
63	772	–	(705)	82.8	–	73.0	91.4	80.1	69 9	87	–	63
62	746	–	(688)	82.3	–	72.2	91.1	79.3	68.8	85	–	62
61	720	–	(670)	81.8	–	71.5	90.7	78.4	67.7	83	–	61
60	697	–	(654)	81.2	–	70.7	90.2	77.5	66.6	81	–	60
59	674	–	(634)	80.7	–	69.9	89.8	76.6	65.5	80	–	59
58	653	–	615	80.1	–	69.2	89.3	75.7	64.3	78	–	58
57	633	–	595	79.6	–	68.5	88.9	74.8	63.2	76	–	57
56	613	–	577	79.0	–	67.7	88.3	73.9	62.0	75	–	56
55	595	–	560	78.5	–	66.9	87.9	73.0	60.9	74	2075(212)	55
54	577	–	543	78.0	–	66.1	87.4	72.0	59.8	72	2015(205)	54
53	560	–	525	77.4	–	65.4	86.9	71.2	58.5	71	1950(199)	53
52	544	(500)	512	76.8	–	64.6	86.4	70.2	57.4	69	1880(192)	52
51	528	(487)	496	76.3	–	63.8	85.9	69.4	56.1	68	1820(186)	51
50	513	(475)	481	75.9	–	63.1	85.5	68.5	55.0	67	1760(179)	50
49	498	(464)	469	75.2	–	62.1	85.0	67.6	53.8	66	1695(173)	49
48	484	451	455	74.7	–	61.4	84.5	66.7	52.5	64	1635(167)	48
47	471	442	443	74.1	–	60.8	83.9	65.8	51.4	63	1580(161)	47
46	458	432	432	73.6	–	60.0	83.5	64.8	50.3	62	1530(156)	46
45	446	421	421	73.1	–	59.2	83.0	64.0	49.0	60	1480(151)	45
44	434	409	409	72.5	–	58.5	82.5	63.1	47.8	58	1435(146)	44
43	423	400	400	72.0	–	57.7	82.0	62.2	46.7	57	1385(141)	43
42	412	390	390	71.5	–	56.9	81.5	61.3	45.5	56	1340(136)	42
41	402	381	381	70.9	–	56.2	80.9	60.4	44.3	55	1295(132)	41
40	392	371	371	70.4	–	55.4	80.4	59.5	43.1	54	1250(127)	40
39	382	362	362	69.9	–	54.6	79.9	58.6	41.9	52	1215(124)	39
38	372	353	353	69.4	–	53.8	79.4	57.7	40.8	51	1180(120)	38
37	363	344	344	68.9	–	53.1	78.8	56.8	39.6	50	1160(118)	37
36	354	336	336	68.4	(109.0)	52.3	78.3	55.9	38.4	49	1115(114)	36
35	345	327	327	67.9	(108.5)	51.5	77.7	55.0	37.2	48	1080(110)	35
34	336	319	319	67.4	(108.0)	50.8	77.2	54.2	36.1	47	1055(108)	34
33	327	311	311	66.8	(107.5)	50.0	76.6	53.3	34.9	46	1025(105)	33
32	318	301	301	66.3	(107.0)	49.2	76.1	52.1	33.7	44	1000(102)	32
31	310	294	294	65.8	(106.0)	48.4	75.6	51.3	32.7	43	980(100)	31
30	302	286	286	65.3	(105.5)	47.7	75.0	50.4	31.3	42	950 (97)	30
29	294	279	279	64.7	(104.5)	47.0	74.5	49.5	30.1	41	930 (95)	29
28	286	271	271	64.3	(104.0)	46.1	73.9	48.6	28.9	41	910 (93)	28
27	279	264	264	63.8	(103.0)	45.2	73.3	47.7	27.8	40	880 (90)	27
26	272	258	258	63.3	(102.5)	44.6	72.8	46.8	26.7	38	860 (88)	26
25	266	253	253	62.8	(101.5)	43.8	72.2	45.9	25.5	38	840 (86)	25
24	260	247	247	62.4	(101.0)	43.1	71.6	45.0	24.3	37	825 (84)	24
23	254	243	243	62.0	100.0	42.1	71.0	44.0	23.1	36	805 (82)	23
22	248	237	237	61.5	99.0	41.6	70.5	43.2	22.0	35	785 (80)	22
21	243	231	231	61.0	98.5	40.9	69.9	42.3	20.7	35	770 (79)	21
20	238	226	226	60.5	97.8	40.1	69.4	41.5	19.6	34	760 (77)	20
(18)	230	219	219	–	96.7	–	–	–	–	33	730 (75)	(18)
(16)	222	212	212	–	95.5	–	–	–	–	32	705 (72)	(16)
(14)	213	203	203	–	93.9	–	–	–	–	31	675 (69)	(14)
(12)	204	194	194	–	92.3	–	–	–	–	29	650 (66)	(12)
(10)	196	187	187	–	90.7	–	–	–	–	28	620 (63)	(10)
(8)	188	179	179	–	89.5	–	–	–	–	27	600 (61)	(8)
(6)	180	171	171	–	87.1	–	–	–	–	26	580 (59)	(6)
(4)	173	165	165	–	85.5	–	–	–	–	25	550 (56)	(4)
(2)	166	158	158	–	83.5	–	–	–	–	24	530 (54)	(2)
(0)	160	152	152	–	81.7	–	–	–	–	24	515 (53)	(0)

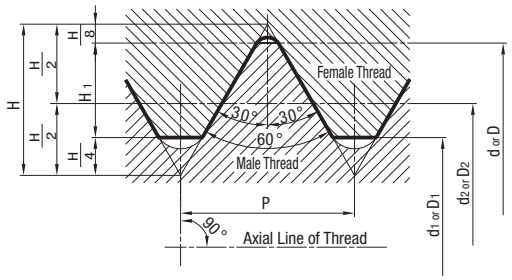
Note(1): Blue figures: Based on ASTM E 140, Table 1 (Jointly coordinated by SAE, ASM and ASTM.)

(2): The units and figures shown in brackets are the results of conversion from psi figures by reference to JIS Z 8413 and Z 8438 conversion tables. Moreover, 1MPa=1N/mm²

(3): The figures in brackets are in ranges not frequently used. They are given as referential data.

[Technical Data]
Metric Coarse Screw Threads

Excerpts from JIS B0205 (2001)



$H = 0.866025P$ $\quad D = d$

$H_1 = 0.541266P$ $\quad D_2 = d_2$

$D_1 = d_1$

$d_2 = d - 0.649519P$

$d_1 = d - 1.082532P$

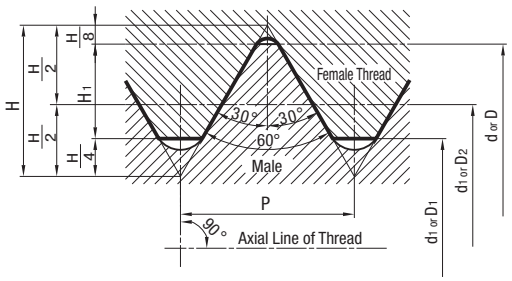
Unit:mm

Nominal of Thread(1)*			Pitch P	Height of Engagement H_1	Female Thread		
					Minor Dia. D	Effective Dia. D_2	Inner Dia. D_1
					Male Thread		
Column 1	Column 2	Column 3			Outer Dia. d	Effective Dia. d_2	Inner Dia. d_1
M 1			0.25	0.135	1.000	0.838	0.729
	M 1.1		0.25	0.135	1.100	0.938	0.829
M 1.2			0.25	0.135	1.200	1.038	0.929
	M 1.4		0.3	0.162	1.400	1.205	1.075
M 1.6			0.35	0.189	1.600	1.373	1.221
	M 1.8		0.35	0.189	1.800	1.573	1.421
M 2			0.4	0.217	2.000	1.740	1.567
	M 2.2		0.45	0.244	2.200	1.908	1.713
M 2.5			0.45	0.244	2.500	2.208	2.013
M 3			0.5	0.271	3.000	2.675	2.459
	M 3.5		0.6	0.325	3.500	3.110	2.850
M 4			0.7	0.379	4.000	3.545	3.242
	M 4.5		0.75	0.406	4.500	4.013	3.688
M 5			0.8	0.433	5.000	4.480	4.134
M 6			1	0.541	6.000	5.350	4.917
		M 7	1	0.541	7.000	6.350	5.917
M 8			1.25	0.677	8.000	7.188	6.647
		M 9	1.25	0.677	9.000	8.188	7.647
M10			1.5	0.812	10.000	9.026	8.376
		M11	1.5	0.812	11.000	10.026	9.376
M12			1.75	0.947	12.000	10.863	10.106
	M14		2	1.083	14.000	12.701	11.835
M16			2	1.083	16.000	14.701	13.835
	M18		2.5	1.353	18.000	16.376	15.294
M20			2.5	1.353	20.000	18.376	17.294
	M22		2.5	1.353	22.000	20.376	19.294
M24			3	1.624	24.000	22.051	20.752
	M27		3	1.624	27.000	25.051	23.752
M30			3.5	1.894	30.000	27.727	26.211
	M33		3.5	1.894	33.000	30.727	29.211
M36			4	2.165	36.000	33.402	31.670
	M39		4	2.165	39.000	36.402	34.670
M42			4.5	2.436	42.000	39.077	37.129
	M45		4.5	2.436	45.000	42.077	40.129
M48			5	2.706	48.000	44.752	42.587
	M52		5	2.706	52.000	48.752	46.587
M56			5.5	2.977	56.000	52.428	50.046
	M60		5.5	2.977	60.000	56.428	54.046
M64			6	3.248	64.000	60.103	57.505
	M68		6	3.248	68.000	64.103	61.505

*Priority should be given to Column 1. If required, select items in Column 2 and 3, in that order.

[Technical Data]
Metric Fine Screw Threads

Excerpts from JIS B 0207 (1999)



$H = 0.866025P$ $\quad D = d$

$H_1 = 0.541266P$ $\quad D_2 = d_2$

$\quad D_1 = d_1$

$d_2 = d - 0.649519P$

$d_1 = d - 1.082532P$

Unit: mm

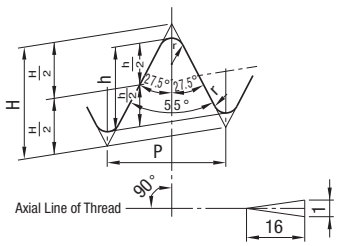
Nominal of Thread	Pitch P	Height of Engagement H_1	Female Thread		
			Minor Dia. D	Effective Ø D_2	Inner Dia. D_1
			Male Thread		
			Outer Dia. d	Effective Ø d_2	Inner Dia. d_1
M 1 ×0.2	0.2	0.108	1.000	0.870	0.783
M 1.1×0.2	0.2	0.108	1.100	0.970	0.883
M 1.2×0.2	0.2	0.108	1.200	1.070	0.983
M 1.4×0.2	0.2	0.108	1.400	1.270	1.183
M 1.6×0.2	0.2	0.108	1.600	1.470	1.383
M 1.8×0.2	0.2	0.108	1.800	1.670	1.583
M 2 ×0.25	0.25	0.135	2.000	1.838	1.729
M 2.2×0.25	0.25	0.135	2.200	2.038	1.929
M 2.5×0.35	0.35	0.189	2.500	2.273	2.121
M 3 ×0.35	0.35	0.189	3.000	2.773	2.621
M 3.5×0.35	0.35	0.189	3.500	3.273	3.121
M 4 ×0.5	0.5	0.271	4.000	3.675	3.459
M 4.5×0.5	0.5	0.271	4.500	4.175	3.959
M 5 ×0.5	0.5	0.271	5.000	4.675	4.459
M 5.5×0.5	0.5	0.271	5.500	5.175	4.959
M 6 ×0.75	0.75	0.406	6.000	5.513	5.188
M 7 ×0.75	0.75	0.406	7.000	6.513	6.188
M 8 ×1	1	0.541	8.000	7.350	6.917
M 8 ×0.75	0.75	0.406	8.000	7.513	7.188
M 9 ×1	1	0.541	9.000	8.350	7.917
M 9 ×0.75	0.75	0.406	9.000	8.513	8.188
M 10 ×1.25	1.25	0.677	10.000	9.188	8.647
M 10 ×1	1	0.541	10.000	9.350	8.917
M 10 ×0.75	0.75	0.406	10.000	9.513	9.188
M 11 ×1	1	0.541	11.000	10.350	9.917
M 11 ×0.75	0.75	0.406	11.000	10.513	10.188
M 12 ×1.5	1.5	0.812	12.000	11.026	10.376
M 12 ×1.25	1.25	0.677	12.000	11.188	10.647
M 12 ×1	1	0.541	12.000	11.350	10.917
M 14 ×1.5	1.5	0.812	14.000	13.026	12.376
M 14 ×1.25	1.25	0.677	14.000	13.188	12.647
M 14 ×1	1	0.541	14.000	13.350	12.917
M 15 ×1.5	1.5	0.812	15.000	14.026	13.376
M 15 ×1	1	0.541	15.000	14.350	13.917
M 16 ×1.5	1.5	0.812	16.000	15.026	14.376
M 16 ×1	1	0.541	16.000	15.350	14.917
M 17 ×1.5	1.5	0.812	17.000	16.026	15.376
M 17 ×1	1	0.541	17.000	16.350	15.917
M 18 ×2	2	1.083	18.000	16.701	15.835
M 18 ×1.5	1.5	0.812	18.000	17.026	16.376
M 18 ×1	1	0.541	18.000	17.350	16.917
M 20 ×2	2	1.083	20.000	18.701	17.835
M 20 ×1.5	1.5	0.812	20.000	19.026	18.376
M 20 ×1	1	0.541	20.000	19.350	18.917
M 22 ×2	2	1.083	22.000	20.701	19.835
M 22 ×1.5	1.5	0.812	22.000	21.026	20.376
M 22 ×1	1	0.541	22.000	21.350	20.917
M 24 ×2	2	1.083	24.000	22.701	21.835
M 24 ×1.5	1.5	0.812	24.000	23.026	22.376
M 24 ×1	1	0.541	24.000	23.350	22.917

Nominal of Thread	Pitch P	Height of Engagement H_1	Female Thread		
			Minor Dia. D	Effective Ø D_2	Inner Dia. D_1
			Male Thread		
			Outer Dia. d	Effective Ø d_2	Inner Dia. d_1
M25×2	2	1.083	25.000	23.701	22.835
M25×1.5	1.5	0.812	25.000	24.026	23.376
M25×1	1	0.541	25.000	24.350	23.917
M26×1.5	1.5	0.812	26.000	25.026	24.376
M27×2	2	1.083	27.000	25.701	24.835
M27×1.5	1.5	0.812	27.000	26.026	25.376
M27×1	1	0.541	27.000	26.350	25.917
M28×2	2	1.083	28.000	26.701	25.835
M28×1.5	1.5	0.812	28.000	27.026	26.376
M28×1	1	0.541	28.000	27.350	26.917
M30×3	3	1.624	30.000	28.051	26.752
M30×2	2	1.083	30.000	28.701	27.835
M30×1.5	1.5	0.812	30.000	29.026	28.376
M30×1	1	0.541	30.000	29.350	28.917
M32×2	2	1.082	32.000	30.701	29.835
M32×1.5	1.5	0.812	32.000	31.026	30.376
M33×3	3	1.624	33.000	31.051	29.752
M33×2	2	1.083	33.000	31.701	30.835
M33×1.5	1.5	0.812	33.000	32.026	31.376
M35×1.5	1.5	0.812	35.000	34.026	33.376
M36×3	3	1.624	36.000	34.051	32.752
M36×2	2	1.083	36.000	34.701	33.835
M36×1.5	1.5	0.812	36.000	35.026	34.376
M38×1.5	1.5	0.812	38.000	37.026	36.376
M39×3	3	1.624	39.000	37.051	35.752
M39×2	2	1.083	39.000	37.701	36.835
M39×1.5	1.5	0.812	39.000	38.026	37.376
M40×3	3	1.624	40.000	38.051	36.752
M40×2	2	1.083	40.000	38.701	37.835
M40×1.5	1.5	0.812	40.000	39.026	38.376
M42×4	4	2.165	42.000	39.402	37.670
M42×3	3	1.624	42.000	40.051	38.752
M42×2	2	1.083	42.000	40.701	39.835
M42×1.5	1.5	0.812	42.000	41.026	40.376
M45×4	4	2.165	45.000	42.402	40.670
M45×3	3	1.624	45.000	43.051	41.752
M45×2	2	1.083	45.000	43.701	42.835
M45×1.5	1.5	0.812	45.000	44.026	43.376
M48×4	4	2.165	48.000	45.402	43.670
M48×3	3	1.624	48.000	46.051	44.752
M48×2	2	1.083	48.000	46.701	45.835
M48×1.5	1.5	0.812	48.000	47.026	46.376
M50×3	3	1.624	50.000	48.051	46.752
M50×2	2	1.083	50.000	48.701	47.835
M50×1.5	1.5	0.812	50.000	49.026	48.376
M52×4	4	2.165	52.000	49.402	47.670
M52×3	3	1.624	52.000	50.051	48.752
M52×2	2	1.083	52.000	50.701	49.835
M52×1.5	1.5	0.812	52.000	51.026	50.376
M55×4	4	2.165	55.000	52.402	50.670
M55×3	3	1.624	55.000	53.051	51.752
M55×2	2	1.083	55.000	53.701	52.835
M55×1.5	1.5	0.812	55.000	54.026	53.376

[Technical Data]
Taper Pipe Threads Excerpts from JIS B 0203 (1999)

Reference Thread Shape and Reference Dimension

Reference Thread Shape and Basic Dimension for a Tapered Male/Female Thread



Thick Solid Lines: Reference Thread Shape

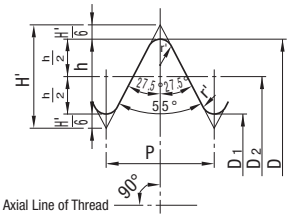
$P=\frac{25.4}{n}$

H=0.960237P

h=0.640327P

r =0.137278P

Reference Thread Shape for a Parallel Female Thread



Thick Solid Lines: Reference Thread Shape

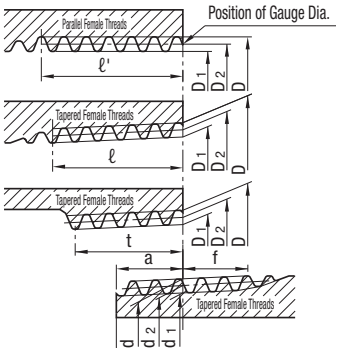
$P=\frac{25.4}{n}$

H'=0.960491P

h =0.640327P

r' =0.137329P

Fitting together a tapered female thread or parallel female thread and a tapered male thread.



Unit: mm

Nominal of Thread (1)	Thread: Number of Threads n (in 25.4 mm)	Thread: Pitch P (Reference)	Thread: Thread Height h	Thread: Roundness r or r	Gauge Dia.: Male Thread: Outer Dia. d	Gauge Dia.: Male Thread: Effective Dia. d_2	Gauge Dia.: Male Thread: Minor Dia. d_1	Gauge Dia.: Female Thread: Minor Dia. D	Gauge Dia.: Female Thread: Effective Dia. D_2	Gauge Dia.: Female Thread: Inner Dia. D_1	Position of Gauge Dia.: Male Thread: From Pipe End: Reference Length a	Position of Gauge Dia.: Male Thread: From Pipe End: Axial Tolerance b	Position of Gauge Dia.: Female Thread: Pipe End: Axial Tolerance c	D, D_2 and D_1 Tolerances of Parallel Female Threads	Length of Effective Thread (Min.): Male Thread: From Position of Gauge Dia. Spot to Major Dia. Spot f	Length of Effective Thread (Min.): Female Thread: With Incomplete Threaded Portion: Tapered Female Threads: From Position of Gauge Dia. Spot to Minor Dia. Spot ℓ	Length of Effective Thread (Min.): Female Thread: With Incomplete Threaded Portion: Parallel Female Threads: From pipe end or pipe fitting end ℓ' (Reference)	Length of Effective Thread (Min.): Female Thread: Without Incomplete Threaded Portion: Tapered Female Threads, Parallel Female Threads t(2)	Carbon Steel for Piping Size of Steel Pipe (Reference): Outer Diameter	Carbon Steel for Piping Size of Steel Pipe (Reference): Thickness
$R^1/_{16}$	28	0.9071	0.581	0.12	7.723	7.142	6.561	3.97	±0.91	±1.13	±0.071	2.5	6.2	7.4	4.4	–	–
$R^1/_8$	28	0.9071	0.581	0.12	9.728	9.147	8.566	3.97	±0.91	±1.13	±0.071	2.5	6.2	7.4	4.4	10.5	2.0
$R^1/_4$	19	1.3368	0.856	0.18	13.157	12.301	11.445	6.01	±1.34	±1.67	±0.104	3.7	9.4	11.0	6.7	13.8	2.3
$R^3/_8$	19	1.3368	0.856	0.18	16.662	15.806	14.950	6.35	±1.34	±1.67	±0.104	3.7	9.7	11.4	7.0	17.3	2.3
$R^1/_2$	14	1.8143	1.162	0.25	20.955	19.793	18.631	8.16	±1.81	±2.27	±0.142	5.0	12.7	15.0	9.1	21.7	2.8
$R^3/_4$	14	1.8143	1.162	0.25	26.441	25.279	24.117	9.53	±1.81	±2.27	±0.142	5.0	14.1	16.3	10.2	27.2	2.8
R1	11	2.3091	1.479	0.32	33.249	31.770	30.291	10.39	±2.31	±2.89	±0.181	6.4	16.2	19.1	11.6	34	3.2
$R1^1/_4$	11	2.3091	1.479	0.32	41.910	40.431	38.952	12.70	±2.31	±2.89	±0.181	6.4	18.5	21.4	13.4	42.7	3.5
$R1^1/_2$	11	2.3091	1.479	0.32	47.803	46.324	44.845	12.70	±2.31	±2.89	±0.181	6.4	18.5	21.4	13.4	48.6	3.5
R2	11	2.3091	1.479	0.32	59.614	58.135	56.656	15.88	±2.31	±2.89	±0.181	7.5	22.8	25.7	16.9	60.5	3.8
$R2^1/_2$	11	2.3091	1.479	0.32	75.184	73.705	72.226	17.46	±3.46	±3.46	±0.216	9.2	26.7	30.1	18.6	76.3	4.2
R3	11	2.3091	1.479	0.32	87.884	86.405	84.926	20.64	±3.46	±3.46	±0.216	9.2	29.8	33.3	21.1	89.1	4.2
R4	11	2.3091	1.479	0.32	113.030	111.551	110.072	25.40	±3.46	±3.46	±0.216	10.4	35.8	39.3	25.9	114.3	4.5
R5	11	2.3091	1.479	0.32	138.430	136.951	135.472	28.58	±3.46	±3.46	±0.216	11.5	40.1	43.5	29.3	139.8	4.5
R6	11	2.3091	1.479	0.32	163.830	162.351	160.872	28.58	±3.46	±3.46	±0.216	11.5	40.1	43.5	29.3	165.2	5.0

Note(1): The nominal of a tapered male thread is given here. For a taper female thread or parallel female thread, R should be replaced with Rc or Rp. (Refer to*)

(2): Tapered thread: length from position of gauge dia. spot to a minor dia. spot. /Parallel female thread: length from a pipe end or pipe fitting end.

Reference 1. The threads should be at right angles to the central axial line, and the pitch should be measured along the central axial line.

2. The length of the effective thread means the length over which threads are fully provided. A pipe or a pipe fitting may be left in place on the crests of the last few threads. A chamfered end, if any, of a pipe or a pipe fitting should be included in the length of the effective thread.

3. When the value of a, f and t does not meet the requirements, the criteria of other standard is provided.

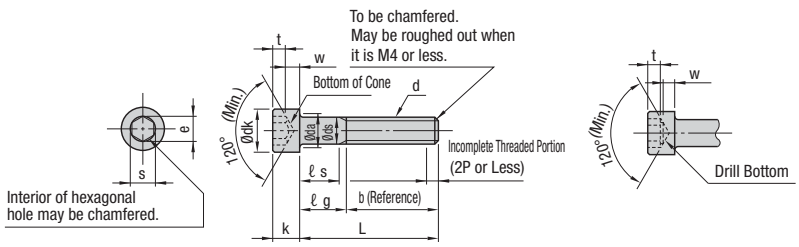
(*) Tapered threads type for a pipe are specified as taper male thread for a pipe, taper female thread and parallel female thread for a pipe.

The parallel female thread for a pipe should be mated with a tapered male thread for a pipe, and differs in dimension tolerances from the parallel female thread specified by JIS B 0202.

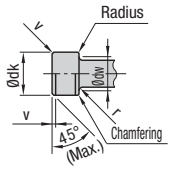
[Technical Data]
Hexagon Socket Head Cap Screws

Excerpts from JIS B 1176 (1999, 2000)

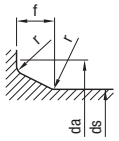
1. Dimensions of Sections



Rounded or Chamfered Head



Max. Rounding Beneath Neck



f(Max.)=1.7r(Max.)

$$r(Max.)=\frac{da(Max.)-ds(Max.)}{2}$$

r(Min.)= Value in the Attached Table

Unit: mm

Nominal of Thread(d)(2)		M2	M2.5	M3	M4	M5	M6	M8	M10	M12	(M14)	M16	(M18)	M20	(M22)	M24	(M27)	M30
Pitch of Thread(P)		0.4	0.45	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3	3	3.5
b	Reference	16	17	18	20	22	24	28	32	36	40	44	48	52	56	60	66	72
dk	Max.(Basis)*	3.8	4.5	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45
	Max.**	3.98	4.68	5.68	7.22	8.72	10.22	13.27	16.27	18.27	21.33	24.33	27.33	30.33	33.39	36.39	40.39	45.39
	Min.	3.62	4.32	5.32	6.78	8.28	9.78	12.73	15.73	17.73	20.67	23.67	26.67	29.67	32.61	35.61	39.61	44.61
da	Max.	2.6	3.1	3.6	4.7	5.7	6.8	9.2	11.2	13.7	15.7	17.7	20.2	22.4	24.4	26.4	30.4	33.4
ds	Max.(Basis)	2	2.5	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
	Min.	1.86	2.36	2.86	3.82	4.82	5.82	7.78	9.78	11.73	13.73	15.73	17.73	19.67	21.67	23.67	26.67	29.67
e	Min.	1.73	2.30	2.87	3.44	4.58	5.72	6.86	9.15	11.43	13.72	16.00	16.00	19.44	19.44	21.73	21.73	25.15
f	Max.	0.51	0.51	0.51	0.60	0.60	0.68	1.02	1.02	1.45	1.45	1.45	1.87	2.04	2.04	2.04	2.89	2.89
k	Max.(Basis)	2	2.5	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
	Min.	1.86	2.36	2.86	3.82	4.82	5.70	7.64	9.64	11.57	13.57	15.57	17.57	19.48	21.48	23.48	26.48	29.48
r	Min.	0.1	0.1	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6	0.6	0.6	0.8	0.8	0.8	1	1
s	Nominal(Basis)	1.5	2	2.5	3	4	5	6	8	10	12	14	14	17	17	19	19	22
	Min.	1.52	2.02	2.52	3.02	4.02	5.02	6.02	8.025	10.025	12.032	14.032	14.032	17.05	17.050	19.065	19.065	22.065
	Max. (1) Column 1	1.560	2.060	2.580	3.080	4.095	5.140	6.140	8.175	10.175	12.212	14.212	14.212	17.230	17.230	19.275	19.275	22.275
	Max. (1) Column 2	1.545	2.045	2.560	3.080	4.095	5.095	6.095	8.115	10.115	12.142	14.142	14.142					
t	Min.	1	1.1	1.3	2	2.5	3	4	5	6	7	8	9	10	11	12	13.5	15.5
v	Max.	0.2	0.25	0.3	0.4	0.5	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.2	2.4	2.7	3
dw	Min.	3.40	4.18	5.07	6.53	8.03	9.38	12.33	15.33	17.23	20.17	23.17	25.87	28.87	31.81	34.81	38.61	43.61
w	Min.	0.55	0.85	1.15	1.4	1.9	2.3	3.3	4	4.8	5.8	6.8	7.7	8.6	9.5	10.4	12.1	13.1

Note (1): Column 1 for s (max.) is applicable to strength class 8.8, 10.9, A 2-50 and A 2-70; Column 2 should be applied to strength class 12.9.
Column 1 may be applicable to strength class 12.9 in accordance with an agreement made between the delivering and receiving sides.
When the nominal of thread is M20 or larger, s (max.) should be applied to all strength classes.

Note (2): Nominal of thread in brackets should not be used unless it is absolutely necessary.

Reference 1. A side of the head should be knurled into a straight line or crisscross pattern [refer to JIS B 0951 (knurling pattern)]. dk(max.) should be the value marked with**.
If no knurled pattern is needed, purchasers can indicate that. However, dk(max.) should be the value marked with*.

2. Recommended nominal lengths (L) for individual nominal of thread are shown within the bold lines.
If L is shorter than the dotted line, the thread should be fully threaded, and the incompletely threaded part length beneath the neck should be approximately 3P.

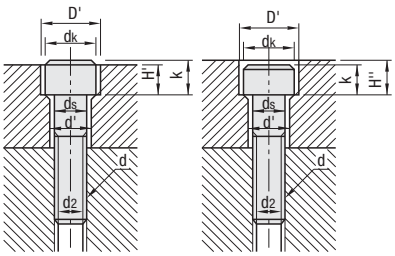
3. ℓg (max.) and ℓg (min.) for a screw, whose length (L) exceeds the dotted line, are obtained by the equations below:
ℓg(Max)=Nominal Length(L)-b
ℓs(Min)=ℓg(Max)-5P

2. L, s and g of Hexagon Socket Head Cap Screws

Unit: mm

Nominal of Thread (d)	L		M2		M2.5		M3		M4		M5		M6		M8		M10		M12		M14		M16		(M18)		M20		(M22)		M24		(M27)		M30	
			ℓs min and ℓg max																																	
Nominal Length	min	max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max	ℓs min	ℓg max
5	4.76	5.24																																		
6	5.76	6.24																																		
8	7.71	8.29																																		
10	9.71	10.29																																		
12	11.65	12.35																																		
16	15.65	16.35																																		
20	19.58	20.42	2	4																																
25	24.58	25.42			5.75	8	4.5	7																												
30	29.58	30.42					9.5	12	6.5	10	4	8																								
35	34.5	35.5							11.5	15	9	13	6	11																						
40	39.5	40.5							16.5	20	14	18	11	16	5.75	12																				
45	44.5	45.5									19	23	16	21	10.75	17	5.5	13																		
50	49.5	50.5									24	28	21	26	15.75	22	10.5	18																		
55	54.4	55.6											26	31	20.75	27	15.5	23	10.25	19																
60	59.4	60.6											31	36	25.75	32	20.5	28	15.25	24	10	20														
65	64.4	65.6													30.75	37	25.5	33	20.25	29	15	25	11	21	4.5	17										
70	69.4	70.6													35.75	42	30.5	38	25.25	34	20	30	16	26	9.5	22										
80	79.4	80.6													45.75	52	40.5	48	35.25	44	30	40	26	36	19.5	32	15.5	28	11.5	24						
90	89.3	90.7															50.5	58	45.25	54	40	50	36	46	29.5	42	25.5	38	21.5	34	15	30	9	24		
100	99.3	100.7															60.5	68	55.25	64	50	60	46	56	39.5	52	35.5	48	31.5	44	25	40	19	34		
110	109.3	110.7																	66.25	74	60	70	56	66	49.5	62	45.5	58	41.5	54	35	50	29	44	20.5	38
120	119.3	120.7																	75.25	84	70	80	66	76	59.5	72	55.5	68	51.5	64	45	60	39	54	30.5	48
130	129.2	130.8																			80	90	76	86	69.5	82	65.5	78	61.5	74	55	70	49	64	40.5	58
140	139.2	140.8																			90	100	86	96	79.5	92	75.5	88	71.5	84	65	80	59	74	50.5	68
150	149.2	150.8																					96	106	89.5	102	85.5	98	81.5	94	75	90	69	84	60.5	78
160	159.2	160.8																					106	116	99.5	112	95.5	108	91.5	104	85	100	79	94	70.5	88
180	179.2	180.8																							119.5	132	115.5	128	111.5	124	105	120	99	114	90.5	108
200	199.05	200.95																									135.5	148	131.5	144	125	140	119	134	110.5	128
220	219.05	220.95																															139	154	130.5	148
240	239.05	240.95																															159	174	150.5	168
260	258.95	261.05																															179	194	170.5	188
280	278.95	281.05																															199	214	190.5	208
300	298.95	301.05																															219	234	210.5	228

Reference: Dimensions of Counterboring and Bolt Hole for the Hexagon Socket Head Cap Screws



Unit: mm

Nominal of Thread (d)	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
ds	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
d	3.4	4.5	5.5	6.6	9	11	14	16	18	20	22	24	26	30	33
dk	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45
D'	6.5	8	9.5	11	14	17.5	20	23	26	29	32	35	39	43	48
k	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
H'	2.7	3.6	4.6	5.5	7.4	9.2	11	12.8	14.5	16.5	18.5	20.5	22.5	25	28
H''	3.3	4.4	5.4	6.5	8.6	10.8	13	15.2	17.5	19.5	21.5	23.5	25.5	29	32
d2	2.6	3.4	4.3	5.1	6.9	8.6	10.4	12.2	14.2	15.7	17.7	19.7	21.2	24.2	26.7

[Technical Data]
Proper Bolt Axial Tightening Force and Proper Tightening Torque

■Axial Tightening Force for Bolt and Fatigue Limit

- The proper axial tightening force for a bolt should be calculated within an elasticity range up to 70% of the rated yield strength when the torque method is used.
- The fatigue strength of bolt under repeated load should not exceed the specified tolerance.
- Do not let the seat of a bolt or nut dent the contact area.
- Do not break the tightened piece by tightening.

A bolt is tightened by torque, torque inclination, rotating angle, stretch measurement and other methods. The torque method is widely used due to its simplicity and convenience.

■Calculation of Axial Tightening Force and Tightening Torque

The relation between the axial tightening force and Ff is represented by Equation(1)below:

$Ff=0.7\times\sigma y\times As$……(1)

Tightening torque TfA can be obtained by using the following formula(2).

$T_{fA}=0.35k(1+1/Q)\sigma y \cdot As \cdot d$……(2)

k : Torque Coefficient
d : Nominal Diameter of Bolt[cm]
Q : Tightening Coefficient
σy : Tensile strength(When the strength class is 12.9, it is 112kgf/mm^2)
As : Effective Sectional Area of the Bolt[mm^2]

■Calculation Example

Proper torque and axial force for Mild steel pieces tightened together by means of a hexagon socket head cap screw, M6(strength class 12.9), with the pieces lubricated with oil can be calculated.

· Proper Torque, by using Equation(2)

$T_{fA}=0.35k\ (1+1/Q)\ \sigma y \cdot As \cdot d$
$=0.35 \cdot 0.17\ (1+1/1.4)\ 1098 \cdot 20.1 \cdot 0.6$
$=1351[N \cdot cm]\ \{138[kgf \cdot cm]\}$

· Axial Force Ff, by using Equation(1)

$Ff=0.7\times\sigma y\times As$
$=0.7\times1098\times20.1$
$=15449[N]\ \{1576[kgf]\}$

■Surface Treatment for Bolt and Torque Coefficient Dependent on the Combination of Material for Area to be Fastened and Material of Female Thread

Bolt Surface Treatment Lubrication	Torque Coefficient k	Combination of material for area to be fastened and material for female thread (a) (b)
Steel Bolt Black Oxided Film Oil Lubrication	0.145	SCM–FC FC–FC SUS–FC
	0.155	1.0301–FC SCM–1.0301 SCM–SCM FC–1.0301 FC–SCM
	0.165	SCM–SUS FC–SUS AL–FC SUS–1.0301 SUS–SCM SUS–SUS
	0.175	1.0301–1.0301 1.0301–SCM 1.0301–SUS AL–1.0301 AL–SCM
	0.185	SCM–AL FC–AL AL–SUS
	0.195	1.0301–AL SUS–AL
	0.215	AL–AL
Steel Bolt Black Oxided Film Unlubricated	0.25	1.0301–FC SCM–FC FC–FC
	0.35	1.0301–SCM SCM–SCM FC–1.0301 FC–SCM AL–FC
	0.45	1.0301–1.0301 SCM–1.0301 AL–1.0301 AL–SCM
	0.55	SCM–AL FC–AL AL–AL

1.0301:Mild steel not thermally refined SCM:Thermally Refined Steel(35HRC) FC:Cast Iron(FC200)AL:Aluminum SUS:Stainless Steel

■Standard Value of Tightening Coefficient Q

Tightening Coefficient Q	Tightening Method	Surface Condition Bolts	Surface Condition Nuts	Lubrication
1.25	Torque Wrench	Manganese Phosphate	Not treated or Treated with Phosphate.	Lubricated with oil or MoS2 paste
1.4	Torque Wrench	Not treated or Treated with Phosphate.		
	Limited-Torque Wrench			
1.6	Impact Wrench			
1.8	Torque Wrench	Not treated or Treated with Phosphate.	No Treatment	Unlubricated
	Limited-Torque Wrench			

Strength Class
Ex. 12.9
Tensile Strength(Yield Stress):90% of the minimum value of tensile strength
The minimum value of tensile strength is 1220N/mm^2 { 124kgf/mm^2 }
10.9
Tensile Strength(Yield Stress):90% of the minimum value of tensile strength
The minimum value of tensile strength is 1040N/mm^2 { 106kgf/mm^2 }

■Initial Tightening Force and Tightening Torque

Nominal of Thread	Effective Sectional Area As mm^2	Strength Class 12.9 Yield Load N {kgf}	12.9 Initial Tightening Force N {kgf}	12.9 Tightening Torque N · cm {kgf · cm}	10.9 Yield Load N {kgf}	10.9 Initial Tightening Force N {kgf}	10.9 Tightening Torque N · cm {kgf · cm}	8.8 Yield Load N {kgf}	8.8 Initial Tightening Force N {kgf}	8.8 Tightening Torque N · cm {kgf · cm}
M 3×0.5	5.03	5517{ 563}	3861{ 394}	167{ 17}	4724{ 482}	3312{ 338}	147{ 15}	3214{ 328}	2254{ 230}	98{ 10}
M 4×0.7	8.78	9633{ 983}	6742{ 688}	392{ 40}	8252{ 842}	5772{ 589}	333{ 34}	5615{ 573}	3930{ 401}	225{ 23}
M 5×0.8	14.2	15582{ 1590}	10907{ 1113}	794{ 81}	13348{ 1362}	9339{ 953}	676{ 69}	9085{ 927}	6360{ 649}	461{ 47}
M 6×1	20.1	22060{ 2251}	15445{ 1576}	1352{ 138}	18894{ 1928}	13220{ 1349}	1156{ 118}	12867{ 1313}	9006{ 919}	784{ 80}
M 8×1.25	36.6	40170{ 4099}	28116{ 2869}	3273{ 334}	34398{ 3510}	24079{ 2457}	2803{ 286}	23422{ 2390}	16395{ 1673}	1911{ 195}
M10×1.5	58	63661{ 6496}	44561{ 4547}	6497{ 663}	54508{ 5562}	38161{ 3894}	5557{ 567}	37113{ 3787}	25980{ 2651}	3783{ 386}
M12×1.75	84.3	92532{ 9442}	64768{ 6609}	11368{ 1160}	79223{ 8084}	55458{ 5659}	9702{ 990}	53949{ 5505}	37759{ 3853}	6605{ 674}
M14×2	115	126224{ 12880}	88357{ 9016}	18032{ 1840}	108084{ 11029}	75656{ 7720}	15484{ 1580}	73598{ 7510}	51519{ 5257}	10486{ 1070}
M16×2	157	172323{ 17584}	117982{ 12039}	28126{ 2870}	147549{ 15056}	103282{ 10539}	24108{ 2460}	100470{ 10252}	70325{ 7176}	16366{ 1670}
M18×2.5	192	210739{ 21504}	147519{ 15053}	38710{ 3950}	180447{ 18413}	126312{ 12889}	33124{ 3380}	126636{ 12922}	88641{ 9045}	23226{ 2370}
M20×2.5	245	268912{ 27440}	188238{ 19208}	54880{ 5600}	230261{ 23496}	161181{ 16447}	46942{ 4790}	161592{ 16489}	113112{ 11542}	32928{ 3360}
M22×2.5	303	332573{ 33936}	232799{ 23755}	74676{ 7620}	284768{ 29058}	199332{ 20340}	63896{ 6520}	199842{ 20392}	139885{ 14274}	44884{ 4580}
M24×3	353	387453{ 39536}	271215{ 27675}	94864{ 9680}	331759{ 33853}	232231{ 23697}	81242{ 8290}	232819{ 23757}	162974{ 16630}	57036{ 5820}

(Note) · Tightening Conditions:Use of a torque wrench(Lubricated with Oil, Torque Coefficient k=0.17, Tightening Coefficient Q=1.4)
· The torque coefficient varies with the conditions of use. Values in this table should be used as rough referential values.
· The table is an excerpt from a catalog of Kyokuto Seisakusho Co., Ltd.

[Technical Data]
Strength of Bolts, Screw Plugs and Dowel Pins

■Strength of Bolt

1)Tensile Load Bolt

$P=\sigma t \times As$ ·····(1)

$=\pi d^2 \sigma t/4$ ·····(2)

Pt : Tensile Load in the Axial Direction [N]
σb : Yield Stress of the Bolt [N/mm²]
σt : Allowable Stress of the Bolt [N/mm²]
($\sigma t=\sigma b$/Safety Factorα)
As : Effective Sectional Area of the Bolt [mm²]
$As=\pi d^2/4$
d : Effective Dia. of the Bolt (Core Dia.) [mm]

■Safety Factorα of Unwin Based on Tensile Strength

Materials	Static Load	Repeated Load		Impact Load
		Pulsating	Reversed	
Steel	3	5	8	12
Cast Iron	4	6	10	15
Copper, Soft Metal	5	5	9	15

$\text{Allowable Stress} = \frac{\text{Reference Strength}}{\text{Safety Factor}\alpha}$ Reference Strength:Yield Stress for Ductile Material
Fracture Stress for Fragile Material

(Ex.)The proper size of a hexagon socket head cap screws, which is to bear a repeated tensile load(pulsating) at P=1960N {200 kgf} , should be determined.(The hexagon socket head cap screws are 1.7220, 38 to 43 HRC, strength class 12.9)

(1)Using Equation

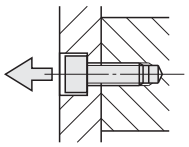
$As=Pt/\sigma t$

$=1960/219.6$

$=8.9\ [mm^2]$

∴By finding a value greater than the result of the equation in the Effective Sectional Area column in the table on the right, M5, 14.2[mm²], should be selected.

M6, allowable load of 2087N {213 kgf} , should be selected from the column for strength class 12.9, with the fatigue strength taken into account.



The yield stress, strength class 12.9, isσb=1098[N/mm²] {112[kgf/mm²]}.
Allowable Stress $\sigma t = \sigma b$/Safety Factor(from the above table Safety Factor 5)
=1098/5
=219.6[N/mm²] {22.4[kgf/mm²]}

2) If the bolt, like a stripper bolt, is to bear a tensile impact load, the right size should be selected from the fatigue strength column.(Under a load of 1960N {200kgf}, stripper bolt made of 1.7220, 33 to 38 HRC, strength class 10.9)

By finding a value greater than the allowable load of 1960N {200 kgf} in the Strength Class 10.9 column in the table on right, M8, 3116[N] {318[kgf]} , should be selected. Hence, MSB10 with the M8 threaded portion and an axial diameter of 10 mm should be selected.

If it is to bear a shearing load, a dowel pin should also be used.

■Fatigue Strength of Bolt(Thread:Fatigue Strength is 2 million times)

Nominal of Thread	Effective Sectional Area As mm²	Strength Class 12.9		Strength Class 10.9	
		Fatigue Strength† N/mm²[kgf/mm²]	Allowable Load N {kgf}	Fatigue Strength† N/mm²[kgf/mm²]	Allowable Load N {kgf}
M 4	8.78	128{ 13.1}	1117{ 114}	89{ 9.1}	774{ 79}
M 5	14.2	111{ 11.3}	1568{ 160}	76{ 7.8}	1088{ 111}
M 6	20.1	104{ 10.6}	2087{ 213}	73{ 7.4}	1460{ 149}
M 8	36.6	87{ 8.9}	3195{ 326}	85{ 8.7}	3116{ 318}
M10	58	73{ 7.4}	4204{ 429}	72{ 7.3}	4145{ 423}
M12	84.3	66{ 6.7}	5537{ 565}	64{ 6.5}	5370{ 548}
M14	115	60{ 6.1}	6880{ 702}	59{ 6}	6762{ 690}
M16	157	57{ 5.8}	8928{ 911}	56{ 5.7}	8771{ 895}
M20	245	51{ 5.2}	12485{ 1274}	50{ 5.1}	12250{ 1250}
M24	353	46{ 4.7}	16258{ 1659}	46{ 4.7}	16258{ 1659}

Fatigue strength* is a revision of an excerpt from "Estimated Fatigue Limits of Small Screws, Bolts and Metric Screws for Nuts" (Yamamoto).

■Strength of Screw Plug

When screw plug MSW30 is to bear an impact load, allowable load P should be determined. (The materials of MSW30 are 1.1191, 34 to 43 HRC, tensile strength σt 637N/mm² {65kgf/mm².})

If M S W is shorn at a spot within the root diameter section and is broken, allowable load P can be calculated as shown below.

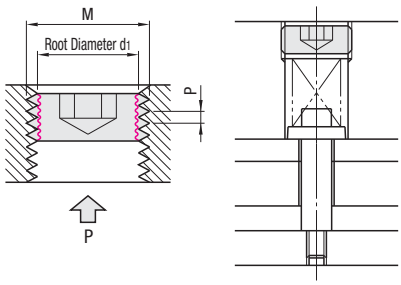
Allowable Load $P=\tau t \times A$

$=3.9\times107.4$

$=40812[N]\ \{4164[kgf]\}$

Find the allowable shearing force base on the core diameter of female thread if a tap is made of soft material.

Area A=Root Diameter $d_1\times\pi\times L$
(Root Diameter $d_1\approx M-P$)
$A=(M-P)\pi L=(30-1.5)\pi\times12$
$=1074\ [mm^2]$
Yield Stress≈0.9×Tensile Strength $\sigma b=0.9\times637=573[N/mm^2]$
Shearing Stress≈0.8×Yield Stress
$=459\ [N/mm^2]$
Allowable Shearing Stress τt=Shearing Stress/Safety Factor12
$=459/12=38\ [N/mm^2]\ \{3.9\ [kgf/mm^2]\}$



■Strength of Dowel Pins

The proper size of a dowel pin under repeated shearing load of 7840N {800 kgf} (Pulsating) should be determined.(The material of Dowel Pins is SUJ2. Hardness 58HRC~)

$P=A\times\tau$

$=\pi D^2\tau/4$

$D=\sqrt{(4P)/(\pi\tau)}$

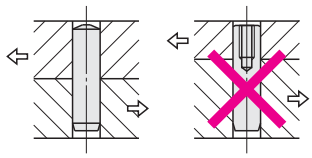
$=\sqrt{(4\times7840)/(3.14\times188)}$

≈7.3

∴D8 or a larger size should be selected for MS.

If the dowel pins are of a roughly uniform size, the number of the necessary tools and extra pins can be reduced.

Yield Stress for SUJ2 $\sigma b=1176\ [N/mm^2]\ \{120\ [kgf/mm^2]\}$
Allowable Shearing Strength $\tau=\sigma b\times0.8$/Safety Factor α
$=1176\times0.8/5$
$=188\ [N/mm^2]\ \{19.2\ [kgf/mm^2]\}$

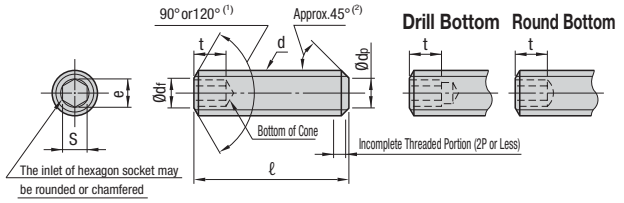


The dowel pin must not be loaded.

Typical strength calculations are presented here. In practice, further conditions including hole-to-hole pitch precision, hole perpendicularity, surface roughness, circularity, plate material, parallelism, quenching or non-quenching, precision of the press, product output, wear of tools should be considered. Hence the values in these examples are typical but not guaranteed values.

[Technical Data]
Hexagon Socket Set Screws Flat Type

1. Shape and Dimension of Hexagon Socket Set Screws and Its Flat End (JIS B 1177-1997).



Note (1): Should be chamfered to 120° if l falls short of the dotted line, which forms stairs, in the table.
(2): 45° Slanted portion below the trough diameter line of the male thread.

Nominal of Thread(d)			M2	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24
Pitch(P)			0.4	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0	2.5	3.0
d_p	Max.(Reference Dimension)		1.0	2.0	2.5	3.5	4.0	5.5	7.0	8.5	12.0	15.0	18.0
	Min.		0.75	1.75	2.25	3.2	3.7	5.2	6.64	8.14	11.57	14.57	17.57
d_f	Approx.		Thread Bottom Diameter of Male Thread										
e	Min.(3)		1.003	1.73	2.30	2.87	3.44	4.58	5.72	6.86	9.15	11.43	13.72
s	Nominal(Reference Dimension)		0.9	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0
	Max.		0.902	1.545	2.045	2.560	3.080	4.095	5.095	6.095	8.115	10.115	12.142
	Min.		0.889	1.520	2.020	2.520	3.020	4.020	5.020	6.020	8.025	10.025	12.032
t	Min.(4)	Column 1	0.8	1.2	1.5	2.0	2.0	3.0	4.0	4.8	6.4	8.0	10.0
		Column 2	1.7	2.0	2.5	3.0	3.5	5.0	6.0	8.0	10.0	12.0	15.0
ℓ(5)			Approx. Mass Per 1000 Units										
Nominal Length(Reference Dimension)	Min.	Max.	Unit:kg (Density:7.85kg/dm³)										
2	1.8	2.2	0.029	0.059									
2.5	2.3	2.7	0.037	0.08	0.099								
3	2.8	3.2	0.044	0.1	0.14	0.2							
4	3.7	4.3	0.059	0.14	0.22	0.32	0.41						
5	4.7	5.3	0.074	0.18	0.3	0.44	0.585	0.945					
6	5.7	6.3	0.089	0.22	0.38	0.56	0.76	1.26	1.77				
8	7.7	8.3	0.119	0.3	0.54	0.8	1.11	1.89	2.78	4			
10	9.7	10.3	0.148	0.38	0.7	1.04	1.46	2.52	3.78	5.4	8.5		
12	11.6	12.4		0.46	0.86	1.28	1.81	3.15	4.78	6.8	11.1	15.8	
16	15.6	16.4		0.62	1.18	1.76	2.51	4.41	6.78	9.6	16.3	24.1	30
20	19.6	20.4			1.49	2.24	3.21	5.67	8.76	12.4	21.5	32.3	42
25	24.6	25.4				2.84	4.09	7.25	11.2	15.9	28	42.6	57
30	29.6	30.4					4.97	8.82	13.7	19.4	34.6	52.9	72
35	34.5	35.5						10.4	16.2	22.9	41.1	63.2	87
40	39.5	40.5						12	18.7	26.4	47.7	73.5	102
45	44.5	45.5							21.2	29.9	54.2	83.8	117
50	49.5	50.5							23.7	33.4	60.7	94.1	132
55	54.4	55.6								36.8	67.3	104	147
60	59.4	60.6								40.3	73.7	115	162

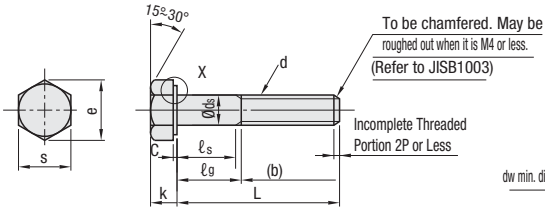
Note (3): when **e** min.=1.14×s(min.) Excluding nominal of thread M25 or less for screws.
(4): The values in Column 1 for **t** min. are applicable to the nominal lengths (ℓ) falling short of the dotted border, and the values in Column 2 to the nominal lengths beyond the border.
(5): Min.rand max. are based on JIS B 1021. They are rounded to the first digit below zero.

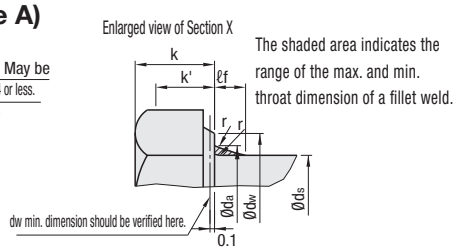
Reference 1. Recommended nominal lengths (ℓ) for individual nominal of thread are enclosed by thick lines.
If the required ℓ-value is not given in the table, it should be specified by the ordering side.
2. The shape and dimensions of the flat end of the screw are based on JIS B 1003 (shape and dimensions of the end of the screw).
3. The shape of the hexagon socket bottom may be a conical, drill or round bottom.

The shape and dimensions indicated in the reference table are based on ISO 4026-1977.

[Technical Data]
Hexagon Bolts Excerpts from JIS B 1180 (1999)

1. Shape and Dimensions of Hexagon Bolt (Parts Grade A)





The shaded area indicates the range of the max. and min. throat dimension of a fillet weld.

Unit: mm

Nominal of Thread d		M2	M3	M4	M5	M6	M8	M10	M12	–	M16	M20	M24
	Coarse Thread Column Ⅰ	M2	M3	M4	M5	M6	M8	M10	M12	–	M16	M20	M24
	Coarse Thread Column Ⅱ	–	–	–	–	–	–	–	–	M14	–	–	–
	Coarse Thread Pitch P	0.4	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	3
	Fine Thread Column Ⅰ	–	–	–	–	–	M8×1	M10×1	M12×1.5	–	M16×1.5	M20×1.5	M24×2
	Fine Thread Column Ⅱ	–	–	–	–	–	–	M10×1.25	M12×1.25	M14×1.5	–	M20×2	–
b (Reference)	L≤125mm	10	12	14	16	18	22	26	30	34	38	46	54
	125<L≤150mm	–	–	–	–	–	–	–	–	40	44	52	60
c	Min.	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.2	0.2	0.2
	Max.	0.25	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.8	0.8	0.8
d_a	Max.	2.6	3.6	4.7	5.7	6.8	9.2	11.2	13.7	15.7	17.7	22.4	26.4
d_s	Reference Dimension=Max.	2	3	4	5	6	8	10	12	14	16	20	24
	Min.	1.86	2.86	3.82	4.82	5.82	7.78	9.78	11.73	13.73	15.73	19.67	23.67
d_w	Min.	3.07	4.57	5.88	6.88	8.88	11.63	14.63	16.63	*19.64	22.49	28.19	33.61
e	Min.	4.32	6.01	7.66	8.79	11.05	14.38	17.77	20.03	23.36	26.75	33.53	39.98
ℓf	Max.	0.8	1	1.2	1.2	1.4	2	2	3	3	3	4	4
k	Reference Dimension=Nominal	1.4	2	2.8	3.5	4	5.3	6.4	7.5	8.8	10	12.5	15
	Min.	1.275	1.875	2.675	3.35	3.85	5.15	6.22	7.32	8.62	9.82	12.285	14.785
	Max.	1.525	2.125	2.925	3.65	4.15	5.45	6.58	7.68	8.98	10.18	12.715	15.215
k	Min.	0.89	1.31	1.87	2.35	2.7	3.61	4.35	5.12	6.03	6.87	8.6	10.35
r	Min.	0.1	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6	0.6	0.8	0.8
s	Reference Dimension=Max.	4	5.5	7	8	10	13	16	18	21	24	30	36
	Min.	3.82	5.32	6.78	7.78	9.78	12.73	15.73	17.73	20.67	23.67	29.67	35.38

Length of Bolt L			ℓs and ℓg																							
Nominal Length (Reference Dimension)	Min.	Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.	ℓs Min.	ℓg Max.
16	15.65	16.35	4	6																								
20	19.58	20.42	8	10	5.5	8																						
25	24.58	25.42			10.5	13	7.5	11	5	9																		
30	29.58	30.42			15.5	18	12.5	16	10	14	7	12																
35	34.5	35.5					17.5	21	15	19	12	17																
40	39.5	40.5					22.5	26	20	24	17	22	11.75	18														
45	44.5	45.5							25	29	22	27	16.75	23	11.5	19												
50	49.5	50.5							30	34	27	32	21.75	28	16.5	24	11.25	20										
55	54.4	55.6									32	37	26.75	33	21.5	29	16.25	25										
60	59.4	60.6									37	42	31.75	38	26.5	34	21.25	30	16	26								
65	64.4	65.6											36.75	43	31.5	39	26.25	35	21	31	17	27						
70	69.4	70.6											41.75	48	36.5	44	31.25	40	26	36	22	32						
80	79.4	80.6											51.75	58	46.5	54	41.25	50	36	46	32	42	21.5	34				
90	89.3	90.7													56.5	64	51.25	60	46	56	42	52	31.5	44	21	36		
100	99.3	100.7													66.5	74	61.25	70	56	66	52	62	41.5	54	31	46		
110	109.3	110.7															71.25	80	66	76	62	72	51.5	64	41	56		
120	119.3	120.7															81.25	90	76	86	72	82	61.5	74	51	66		
130	129.2	130.8																	80	90	76	86	65.5	78	55	70		
140	139.2	140.8																	90	100	86	96	75.5	88	65	80		
150	149.2	150.8																			96	106	85.5	98	75	90		

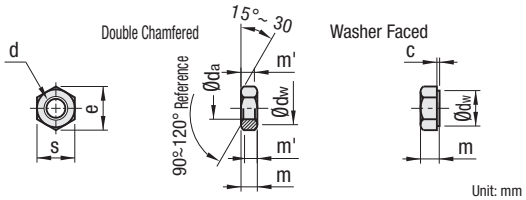
Reference
1. Priority should be given to the nominal of thread in Column Ⅰ. The screw size codes are based on JIS B 0123.
2. Recommended nominal lengths(L)for individual nominal of thread are enclosed by thick lines.
3. When the thread part length (b) of a bolt exceeds the max. nominal value given within the thick lines, the tolerance of the thread part length should be agreed upon by the delivering and receiving sides, corresponding to JIS B 1021.
4. Max. value ℓg and Min. value ℓs as follows: ℓg max Nominal Length(L)-b, ℓs min.=ℓg max-5P(P=Coarse Thread Pitch)
5. da and r in this table are based on JIS B 1005.
6. "Chamfered" and "Unpointed", the shape of the end screw should be decided according to JIS B 1003.
7. The asterisked figures in the table are values after correction with the relevant international standard.

*With some of the hexagon bolts and hexagon nuts for M10 and M12 distributed at present, the opposite side S is based on JIS prior to the revision.

[Technical Data]
Hexagon Nuts/Cotter Pins

Excerpts from JIS B 1181 (1995) Excerpts from JIS B 1351 (1987)

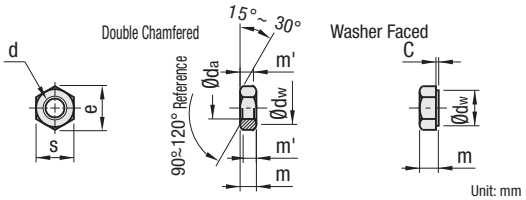
1. Shape and Dimensions of Hexagon Nuts Style Ⅰ (Parts Grade A)



Unit: mm

Nominal of Thread d		M2	M3	M4	M5	M6	M8	M10	M12	(M14)	M16
Pitch P		0.4	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2
c	Max.	0.2	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.8
	Min.	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.2
da	Min.(Reference Dimension)	2	3	4	5	6	8	10	12	14	16
	Max.	2.3	3.45	4.6	5.75	6.75	8.75	10.8	13	15.1	17.3
dw	Min.	3.07	4.6	5.9	6.9	8.9	11.6	14.6	16.6	19.6	22.5
e	Min.	4.32	6.01	7.66	8.79	11.05	14.38	17.77	20.03	23.35	26.75
m	Max.(Reference Dimension)	1.6	2.4	3.2	4.7	5.2	6.8	8.4	10.8	12.8	14.8
	Min.	1.35	2.15	2.9	4.4	4.9	6.44	8.04	10.37	12.1	14.1
m'	Min.	1.08	1.72	2.32	3.52	3.92	5.15	6.43	8.3	9.68	11.28
s	Max.(Reference Dimension)	4	5.5	7	8	10	13	16	18	21	24
	Min.	3.82	5.32	6.78	7.78	9.78	12.73	15.73	17.73	20.67	23.67

2. Shape and Dimensions of Hexagon Nuts Style Ⅱ (Parts Grade A)



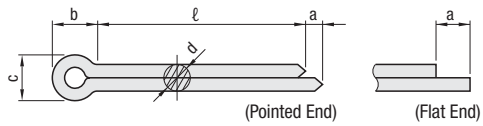
Unit: mm

Nominal of Thread d		M5	M6	M8	M10	M12	(M14)	M16
Pitch P		0.8	1	1.25	1.5	1.75	2	2
c	Max.	0.5	0.5	0.6	0.6	0.6	0.6	0.8
	Min.	0.15	0.15	0.15	0.15	0.15	0.15	0.2
da	Min.(Reference Dimension)	5	6	8	10	12	14	16
	Max.	5.75	6.75	8.75	10.8	13	15.1	17.3
dw	Min.	6.9	8.9	11.6	14.6	16.6	19.6	22.5
e	Min.	8.79	11.05	14.38	17.77	20.03	23.35	26.75
m	Max.(Reference Dimension)	5.1	5.7	7.5	9.3	12	14.1	16.4
	Min.	4.8	5.4	7.14	8.94	11.57	13.4	15.7
m'	Min.	3.84	4.32	5.71	7.15	9.26	10.7	12.6
s	Max.(Reference Dimension)	8	10	13	16	18	21	24
	Min.	7.78	9.78	12.73	15.73	17.73	20.67	23.67

Reference 1. Nominal of thread in brackets should not be used unless it is absolutely necessary.
2. The shape of nuts, unless otherwise designated, shall be "double chamfered", and the "washer faced" shall be as designated by the purchaser. Chamfering for the "washer faced" threads shall based on the chamfered dimensions for "double chamfered".

*With some of the hexagon bolts and hexagon nuts for M10 and M12 distributed at present, the opposite side S is based on JIS prior to the revision.

3.Shape and Dimensions of Cotter Pins



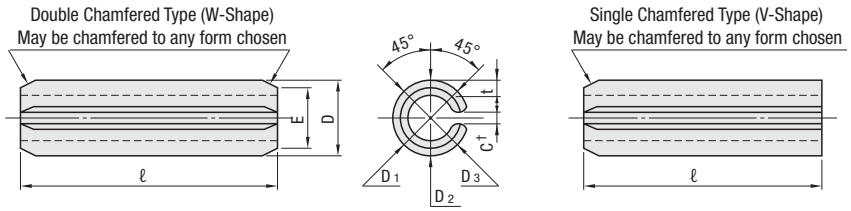
Unit: mm

Nominal Diameter		0.6	0.8	1	1.2	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20
d	Reference Dimension	0.5	0.7	0.9	1	1.4	1.8	2.3	2.9	3.7	4.6	5.9	7.5	9.5	12.4	15.4	19.3
	Tolerance	0 −0.1						0 −0.2								0 −0.3	
c	Reference Dimension	1	1.4	1.8	2	2.8	3.6	4.6	5.8	7.4	9.2	11.8	15	19	24.8	30.8	38.6
	Tolerance	0 −0.1	0 −0.2		0 −0.3	0 −0.4		0 −0.6	0 −0.7	0 −0.9	0 −1.2	0 −1.5	0 −1.9	0 −2.4	0 −3.1	0 −3.8	0 −4.8
b	Approx.	2	2.4	3	3	3.2	4	5	6.4	8	10	12.6	16	20	26	32	40
a	Approx.	1.6	1.6	1.6	2.5	2.5	2.5	2.5	3.2	4	4	4	4	6.3	6.3	6.3	6.3
Diameter of Applicable Bolts and Pins — Bolts	Over than	–	2.5	3.5	4.5	5.5	7	9	11	14	20	27	39	56	80	120	170
Bolts	or Less	2.5	3.5	4.5	5.5	7	9	11	14	20	27	39	56	80	120	170	–
Clevis Pin	Over than	–	2	3	4	5	6	8	9	12	17	23	29	44	69	110	160
Clevis Pin	or Less	2	3	4	5	6	8	9	12	17	23	29	44	69	110	160	–
Dia. of Pin Hole	(Reference)	0.6	0.8	1	1.2	1.6	2	2.5	3.2	4	5	6.3	8	10	13	16	20

ℓ	
4	
5	
6	±0.5
8	
10	±0.5
12	
14	±0.5
16	
18	±0.5
20	±0.8
22	
25	±0.8
28	
32	±0.8
36	
40	±1.2
45	
50	±1.2
56	
63	±1.2
71	
80	±2
90	
100	±2
112	
125	
140	±2
160	
180	±2
200	
224	±2
250	
280	

Reference 1. The nominal diameter is dependent on the diameter of the pin hole.
2. d is a value for a spot somewhere between the end and the ℓ/2 spot.
3. The end may be pointed or flat. If a pointed end or a flat one is needed, it should be specified.
4. The length (ℓ) should be one enclosed by thick lines. The value in an enclosed area is a tolerance. If the required r-value is not given in the table, it should be specified by the ordering side.
5. The head must not tilt excessively from the axial center.

Shape and Dimensions of Spring Pins



*The size of Gap C should be able to avoid the contact between the spring pin and the hole in which the pin is to be inserted.

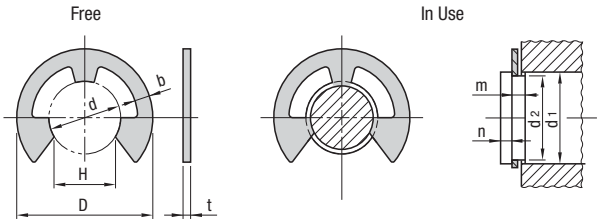
Unit: mm

Nominal Diameter			1	1.2	1.4	1.5	1.6	2	2.5	3	4	5	6	8	10	13
Spring Pins	D(1)	Max.	1.2	1.4	1.6	1.7	1.8	2.25	2.75	3.25	4.4	5.4	6.4	8.6	10.6	13.7
		Min.	1.1	1.3	1.5	1.6	1.7	2.15	2.65	3.15	4.2	5.2	6.2	8.3	10.3	13.4
	t (Reference)	For General Use	0.2	0.25	0.28	0.3	0.3	0.4	0.5	0.6	0.8	1	1.2	1.6	2	2.5
		Light Load	0.1	0.12	0.15	0.15	0.15	0.2	0.25	0.3	0.4	0.5	0.6	–	–	–
	E	(Max.)	0.9	1.1	1.3	1.4	1.5	1.9	2.4	2.9	3.9	4.8	5.8	7.8	9.8	12.7
	Double Shearing Load kN{kgf} Minimum Value	For General Use	0.69 {70}	1.02 {104}	1.35 {138}	1.55 {158}	1.68 {171}	2.76 {281}	4.31 {440}	6.20 {633}	10.80 {1130}	17.25 {1760}	24.83 {2532}	44.13 {4500}	68.94 {7030}	112.78 {11500}
		Light Load	0.38 {39}	0.56 {57}	0.80 {82}	0.87 {89}	0.93 {95}	1.55 {158}	2.42 {247}	3.49 {356}	6.21 {633}	9.70 {989}	13.96 {1424}	– –	– –	– –
Applicable Holes	Diameter		1	1.2	1.4	1.5	1.6	2	2.5	3	4	5	6	8	10	13
	Dimensional Tolerance		+0.08 0					+0.09 0			+0.12 0			+0.15 0		+0.2 0

ℓ	Dimensional Tolerance	Nominal Diameter 1	1.2	1.4	1.5	1.6	2	2.5	3	4	5	6	8	10	13
4	+0.5 0	0	0	0	0	0									
5		0	0	0	0	0	0	0							
6		0	0	0	0	0	0	0	0						
8		0	0	0	0	0	0	0	0	0					
10		0	0	0	0	0	0	0	0	0	0				
12	+1.0 0		0	0	0	0	0	0	0	0	0	0			
14				0	0	0	0	0	0	0	0	0			
16						0	0	0	0	0	0	0	0		
18							0	0	0	0	0	0	0	0	
20							0	0	0	0	0	0	0	0	
22								0	0	0	0	0	0	0	0
25								0	0	0	0	0	0	0	0
28									0	0	0	0	0	0	0
32									0	0	0	0	0	0	0
36										0	0	0	0	0	0
40										0	0	0	0	0	0
45											0	0	0	0	0
50											0	0	0	0	0
56	+1.5 0											0	0	0	0
63												0	0	0	0
70													0	0	0
80													0	0	0
90														0	0
100														0	0
110															0
125															0
140															0

Note(1): Maximum value for D is the maximum value on the pin's circumference, and the minimum value for D is the average of D_1, D_2 and D_3.
Reference: t is in accordance with JSMA (Japan Spring Manufactures Association Standard)No.6.

Shape and Dimensions of Retaining Ring-E Type



Reference: Typical shape is shown.

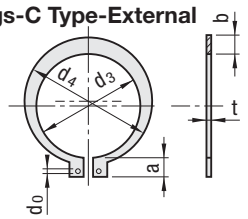
Unit: mm

Nominal	Retaining Rings d(1) Reference Dimension	d(1) Tolerance	D Reference Dimension	D Tolerance	H Reference Dimension	H Tolerance	t Reference Dimension	t Tolerance	b Approx.	Applicable Shaft (Reference) Classification of d_1 More than	or Less	d_2 Reference Dimension	d_2 Tolerance	m Reference Dimension	m Tolerance	n Min.
0.8	0.8	−0.08	2	±0.1	0.7		0.2	±0.02	0.3	1	1.4	0.8	+0.05 −0.05	0.3		0.4
1.2	1.2		3		1		0.3	±0.025	0.4	1.4	2	1.2		0.4	+0.05 0	0.6
1.5	1.5	0 −0.09	4		1.3	0 −0.25	0.4	±0.03	0.6	2	2.5	1.5	+0.06 0	0.5		0.8
2	2		5		1.7		0.4		0.7	2.5	3.2	2				1
2.5	2.5		6		2.1		0.4		0.8	3.2	4	2.5				
3	3		7		2.6		0.6		0.9	4	5	3		0.7		
4	4	0 −0.12	9	±0.2	3.5	0 −0.3	0.6		1.1	5	7	4	+0.075 0		+0.1 0	1.2
5	5		11		4.3		0.6		1.2	6	8	5				
6	6		12		5.2		0.8	±0.04	1.4	7	9	6		0.9		
7	7	0 −0.15	14		6.1	0 −0.35	0.8		1.6	8	11	7	+0.09 0			1.5
8	8		16		6.9		0.8		1.8	9	12	8				1.8
9	9		18		7.8		0.8		2.0	10	14	9				2
10	10		20		8.7		1.0	±0.05	2.2	11	15	10		1.15		
12	12	0 −0.18	23	±0.3	10.4		1.0		2.4	13	18	12	+0.11 0		+0.14 0	2.5
15	15		29		13	0 −0.45	1.6(2)	±0.06	2.8	16	24	15		(2)		3
19	19	0 −0.21	37		16.5		1.6(2)		4.0	20	31	19	+0.13 0	1.75		3.5
24	24		44		20.8	−0.5	2.0	±0.07	5.0	25	38	24		2.2		4

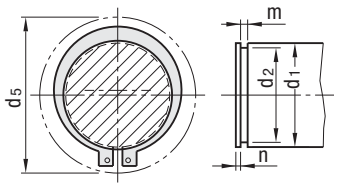
Note(1): d should be measured with a limit plug gauge.
Note(2): thickness(t)=1.6mm, may be kept at 1.5mm for the time being. m should be 1.65mm.
Reference: The recommended dimensions of the applicable shaft are given here for reference.

[Technical Data]
Retaining Rings C Type
Excerpts from JIS B 2804(2001)

1. Retaining Rings-C Type-External



The hole with diameter d_0 should be positioned to protrude out of the groove when the retaining ring is inserted in the shaft.



d_5 is the max. outer diameter when the retaining ring is fitted onto the shaft.

Retaining Rings-C Type-External

Unit: mm

Nominal(1)	Retaining Rings							Applicable Shaft (Reference)						
	d_3		t		b	a	d_0	d_5	d_1	d_2		m		n
	Reference Dimension	Tolerance	Reference Dimension	Tolerance	(Approx.)	(Approx.)	(Min.)			Reference Dimension	Tolerance	Reference Dimension	Tolerance	(Min.)
10	9.3	±0.15	1	±0.05	1.6	3	1.2	17	10	9.6	$^{0}_{-0.09}$	1.15	+0.14 0	1.5
(11)	10.2				1.8	3.1		18	11	10.5	0 −0.11			
12	11.1	±0.18			1.8	3.2	1.5	19	12	11.5				
(13)	12				1.8	3.3		20	13	12.4				
14	12.9				2	3.4	1.7	22	14	13.4				
15	13.8				2.1	3.5		23	15	14.3				
16	14.7				2.2	3.6		24	16	15.2				
17	15.7				2.2	3.7		25	17	16.2				
18	16.5		1.2	±0.06	2.6	3.8	2	26	18	17		1.35		
(19)	17.5				2.7	3.8		27	19	18				
20	18.5	±0.2			2.7	3.9		28	20	19	0 −0.21			
(21)	19.5				2.7	4		30	21	20				
22	20.5				2.7	4.1		31	22	21				
(24)	22.2				3.1	4.2		33	24	22.9				
25	23.2				3.1	4.3		34	25	23.9				
(26)	24.2				3.1	4.4		35	26	24.9				
28	25.9		1.6(2)		3.1	4.6		38	28	26.6		1.75		
(29)	26.9				3.5	4.7		39	29	27.6				
30	27.9				3.5	4.8		40	30	28.6				
32	29.6				3.5	5	2.5	43	32	30.3	0 − 0.25			
(34)	31.5	±0.25			4	5.3		45	34	32.3				
35	32.2				4	5.4		46	35	33				
(36)	33.2		1.8	±0.07	4	5.4		47	36	34		1.95		2
(38)	35.2				4.5	5.6		50	38	36				
40	37	±0.4			4.5	5.8		53	40	38				
(42)	38.5				4.5	6.2		55	42	39.5				
45	41.5				4.8	6.3		58	45	42.5				
(48)	44.5				4.8	6.5		62	48	45.5				
50	45.8		2		5	6.7		64	50	47		2.2		
(52)	47.8				5	6.8		66	52	49				
55	50.8	±0.45			5	7		70	55	52	0 −0.3			
(56)	51.8				5	7		71	56	53				
(58)	53.8				5.5	7.1		73	58	55				
60	55.8				5.5	7.2		75	60	57				
(62)	57.8				5.5	7.2		77	62	59				
(63)	58.8				5.5	7.3		78	63	60				
65	60.8		2.5	±0.08	6.4	7.4		81	65	62		2.7		2.5
(68)	63.5				6.4	7.8		84	68	65				
70	65.5				6.4	7.8		86	70	67				
(72)	67.5				7	7.9		88	72	69				
75	70.5				7	7.9		92	75	72				
(78)	73.5				7.4	8.1		95	78	75				
80	74.5				7.4	8.2		97	80	76.5				

Note(1): Priority should be given to values not in ( ). A value in ( ) may be used if necessary.

Note(2): Thickness(t)=1.6mm, may be kept at 1.5mm for the time being. m should be 1.65mm.

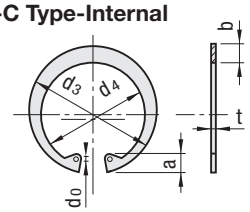
Reference: 1. The minimum width of the ring of the retaining ring should be less than the plate thickness t.

2. The recommended dimensions of the applicable shaft are given here for reference.

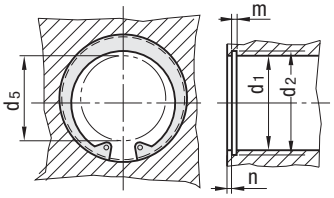
3. d_4 (mm) should preferably be equal to $d_4=d_3+(1.4\sim1.5)b$.

Reference: The thickness t, conforms to the Japan Spring Manufactures Association Standard, JSMA No. 6-1976 (steel belt for a spring).

2. Retaining Rings-C Type-Internal



The hole with diameter d_0 should be positioned to protrude out of the groove when the retaining ring is inserted in the hole.



d_5 is the minimum diameter of the internal circumference when the retaining ring is fitted.

Retaining Rings-C Type-Internal

Unit: mm

Nominal(1)	Retaining Rings							Applicable Shaft (Reference)						
	d_3		t		b	a	d_0	d_5	d_1	d_2		m		n
	Reference Dimension	Tolerance	Reference Dimension	Tolerance	(Approx.)	(Approx.)	(Min.)			Reference Dimension	Tolerance	Reference Dimension	Tolerance	(Min.)
10	10.7	±0.18	1	±0.05	1.8	3.1	1.2	3	10	10.4	+0.11 0	1.15	+0.14 0	1.5
11	11.8				1.8	3.2		4	11	11.4				
12	13				1.8	3.3	1.5	5	12	12.5				
(13)	14.1				1.8	3.5		6	13	13.6				
14	15.1				2	3.6	1.7	7	14	14.6				
15	16.2				2	3.6		8	15	15.7				
16	17.3				2	3.7		8	16	16.8				
(17)	18.3	±0.2			2	3.8		9	17	17.8				
18	19.5				2.5	4		10	18	19	+0.21 0			
19	20.5				2.5	4	2	11	19	20				
20	21.5				2.5	4		12	20	21				
(21)	22.5				2.5	4.1		12	21	22				
22	23.5				2.5	4.1		13	22	23				
(24)	25.9		1.2	±0.06	2.5	4.3		15	24	25.2		1.35		
25	26.9				3	4.4		16	25	26.2				
(26)	27.9				3	4.6		16	26	27.2				
28	30.1	±0.25			3	4.6		18	28	29.4				
30	32.1				3	4.7		20	30	31.4	+0.25 0			
32	34.4				3.5	5.2	2.5	21	32	33.7				
(34)	36.5		1.6(2)		3.5	5.2		23	34	35.7		1.75		2
35	37.8				3.5	5.2		24	35	37				
(36)	38.8				3.5	5.2		25	36	38				
37	39.8				3.5	5.2		26	37	39				
(38)	40.8				4	5.3		27	38	40				
40	43.5	±0.4	1.8	±0.07	4	5.7		28	40	42.5		1.95		
42	45.5				4	5.8		30	42	44.5				
45	48.5				4.5	5.9		33	45	47.5				
47	50.5	±0.45			4.5	6.1		34	47	49.5				
(48)	51.5				4.5	6.2		35	48	50.5	+0.3 0			
50	54.2		2		4.5	6.5		37	50	53		2.2		
52	56.2				5.1	6.5		39	52	55				
55	59.2				5.1	6.5		41	55	58				
(56)	60.2				5.1	6.6		42	56	59				
(58)	62.2				5.1	6.8		44	58	61				
60	64.2				5.5	6.8		46	60	63				
62	66.2				5.5	6.9		48	62	65				
(63)	67.2				5.5	6.9		49	63	66				
(65)	69.2		2.5	±0.08	5.5	7		50	65	68		2.7		2.5
68	72.5				6	7.4		53	68	71				
(70)	74.5				6	7.4		55	70	73				
72	76.5				6.6	7.4		57	72	75				
75	79.5				6.6	7.8		60	75	78				
(78)	82.5	±0.55			6.6	8		62	78	81	+0.35 0			
80	85.5				7	8		64	80	83.5				

Note(1): Priority should be given to values not in( ). A value in( )may be used if necessary.

Note(2): Thickness(t)=1.6mm, may be kept at 1.5mm for the time being. m should be 1.65mm.

Reference: 1. The minimum width of the ring of the retaining ring should be less than the plate thickness t.

2. The recommended dimensions of the applicable shaft are given here for reference.

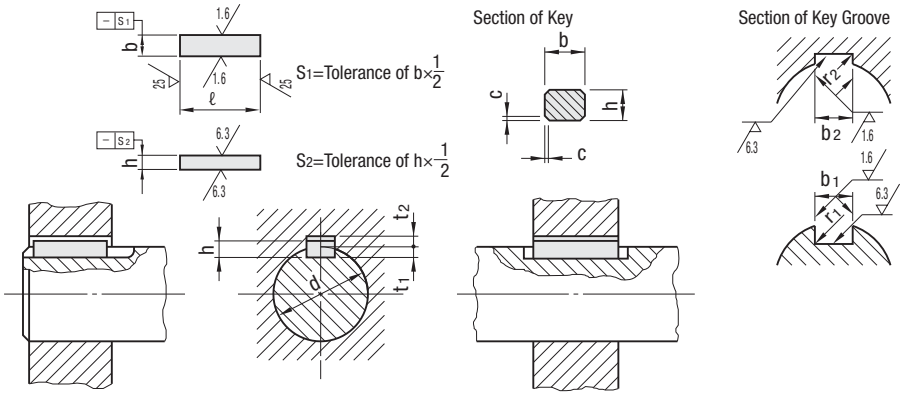
3. d_4(mm)should preferably be equal to $d_4=d_3-(1.4\sim1.5)b$.

Reference: The thickness t, conforms to the Japan Spring Manufactures Association Standard, JSMA No. 6-1976 (steel belt for a spring).

[Technical Data]
Machine Keys and Key Grooves

Excerpts from JIS B 1301 (1996)

1. Parallel Keys and Key Grooves



Unit: mm

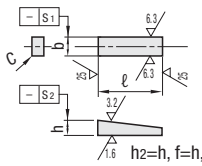
Key Nominal Dimension b×h	Dimension of Key Groove										Reference
	Reference Dimension of b_1, b_2	(Sliding Type)		Standard		Precision Class	r_1 and r_2	Reference Dimension of t_1	Reference Dimension of t_2	Reference Dimension of t_2, t_1	Applicable Shaft Dia.(1) d
		b_1	b_2	b_1	b_2	b_1 and b_2					
		Tolerance (H9)	Tolerance (D10)	Tolerance (N9)	Tolerance (Js9)	Tolerance (P9)					
2×2	2	+0.025 0	+0.060 +0.020	−0.004 −0.029	±0.0125	−0.006 −0.031	0.08~0.16	1.2	1.0		6~8
3×3	3							1.8	1.4		8~10
4×4	4	+0.030 0	+0.078 +0.030	0 −0.030	±0.0150	−0.012 −0.042		2.5	1.8	+0.1 0	10~12
5×5	5						0.16~0.25	3.0	2.3		12~17
6×6	6							3.5	2.8		17~22
(7×7)	7	+0.036 0	+0.098 +0.040	0 −0.036	±0.0180	−0.015 −0.051		4.0	3.0		20~25
8×7	8							4.0	3.3		22~30
10×8	10						0.25~0.40	5.0	3.3		30~38
12×8	12	+0.043 0	+0.120 +0.050	0 −0.043	±0.0215	−0.018 −0.061		5.0	3.3		38~44
14×9	14							5.5	3.8		44~50
(15×10)	15							5.0	5.0		50~55
16×10	16							6.0	4.3	+0.2 0	50~58
18×11	18							7.0	4.4		58~65
20×12	20	+0.052 0	+0.149 +0.065	0 −0.052	±0.0260	−0.022 −0.074	0.40~0.60	7.5	4.9		65~75
22×14	22							9.0	5.4		75~85
(24×16)	24							8.0	8.0		80~90
25×14	25							9.0	5.4		85~95
28×16	28							10.0	6.4		95~110
32×18	32	+0.062 0	+0.180 +0.080	0 −0.062	±0.0310	−0.026 −0.088		11.0	7.4		110~130
(35×22)	35						0.70~1.00	11.0	11.0		125~140
36×20	36							12.0	8.4		130~150
(38×24)	38							12.0	12.0		140~160
40×22	40							13.0	9.4		150~170
(42×26)	42							13.0	13.0		160~180
45×25	45							15.0	10.4		170~200
50×28	50							17.0	11.4	+0.3 0	200~230
56×32	56	+0.074 0	+0.220 +0.100	0 −0.074	±0.0370	−0.032 −0.106	1.20~1.60	20.0	12.4		230~260
63×32	63							20.0	12.4		260~290
70×36	70							22.0	14.4		290~330
80×40	80						2.00~2.50	25.0	15.4		330~380
90×45	90	+0.087 0	+0.260 +0.120	0 −0.087	±0.0435	−0.037 −0.124		28.0	17.4		380~440
100×50	100							31.0	19.5		440~500

Note(1) The applicable shaft diameter is calculated from the torque corresponding to the strength of the key, for presentation as referential data for general-purpose use. When the key is of an appropriate size relative to the torque to be transmitted, a shaft thicker than the applicable shaft diameter may be used. In some cases, t_1 and t_2 should be adjusted so that a side of the key will come into uniform contact with the shaft and the hub. A shaft narrower than the applicable shaft diameter should not be used.

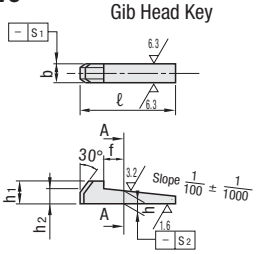
Reference The nominal sizes given in ( ) do not conform to the relevant international standard and must not be used in new design.

2. Slope Key, Gib Head Key and Key Groove

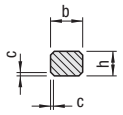
Slope Key
(Code T)



Gib Head Key



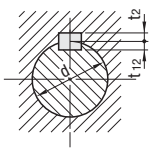
Section of Key (A-A)

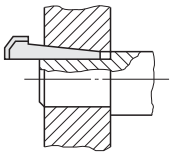


S_1=Tolerance of b×$\frac{1}{2}$

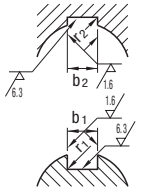
S_2=Tolerance of h×$\frac{1}{2}$

h2=h, f≈h, e=b





Section of Key Groove



Unit: mm

Key Nominal Dimension b×h	Dimension of Key Groove								Dimension of Key Groove					Reference
	b		h			h_1	c	ℓ(1)	b_1 and b_2		r_1 and r_2	Reference Dimension of t_1	Reference Dimension of t_2	Reference Dimension of t_2, t_1	Applicable Shaft Dia.(2) d
	Reference Dimension	Tolerance (h9)	Reference Dimension	Tolerance					Reference Dimension	Tolerance (D10)					
2×2	2	0 −0.025	2	0 −0.025	h9	–	0.16 ~0.25	6~30	2	+0.060 +0.020	0.08 ~0.16	1.2	0.5	+0.05 0	6~8
3×3	3		3			–		6~36	3			1.8	0.9		8~10
4×4	4	0 −0.030	4	0 −0.030		7		8~45	4	+0.078 +0.030		2.5	1.2	+0.1 0	10~12
5×5	5		5			8	0.25 ~0.40	10~56	5		0.16 ~0.25	3.0	1.7		12~17
6×6	6		6			10		14~70	6			3.5	2.2		17~22
(7×7)	7	0 −0.036	7.2	0 −0.036		10		16~80	7	+0.098 +0.040		4.0	3.0		20~25
8×7	8		7	0 −0.090	h11	11		18~90	8			4.0	2.4	+0.2 0	22~30
10×8	10		8			12	0.40 ~0.60	22~110	10		0.25 ~0.40	5.0	2.4		30~38
12×8	12	0 −0.043	8			12		28~140	12	+0.120 +0.050		5.0	2.4		38~44
14×9	14		9			14		36~160	14			5.5	2.9		44~50
(15×10)	15		10.2	0 −0.070	h10	15		40~180	15			5.0	5.0	+0.1 0	50~55
16×10	16		10	0 −0.090	h11	16		45~180	16			6.0	3.4	+0.2 0	50~58
18×11	18		11	0 −0.110		18		50~200	18			7.0	3.4		58~65
20×12	20	0 −0.052	12			20	0.60 ~0.80	56~220	20	+0.149 +0.065	0.40 ~0.60	7.5	3.9		65~75
22×14	22		14			22		63~250	22			9.0	4.4		75~85
(24×16)	24		16.2	0 −0.070	h10	24		70~280	24			8.0	8.0	+0.1 0	80~90
25×14	25		14	0 −0.110	h11	22		70~280	25			9.0	4.4	+0.2 0	85~95
28×16	28		16			25		80~320	28			10.0	5.4		95~110
32×18	32	0 −0.062	18			28		90~360	32	+0.180 +0.080	0.70 ~1.00	11.0	6.4		110~130
(35×22)	35		22.3	0 −0.084	h10	32	1.00 ~1.20	100~400	35			11.0	11.0	+0.15 0	125~140
36×20	36		20	0 −0.130	h11			–	36			12.0	7.1	+0.3 0	130~150
(38×24)	38		24.3	0 −0.084	h10	36		–	38			12.0	12.0	+0.15 0	140~160
40×22	40		22	0 −0.130	h11	36		–	40			13.0	8.1	+0.3 0	150~170
(42×26)	42		26.3	0 −0.084	h10	40		–	42			13.0	13.0	+0.15 0	160~180
45×25	45		25	0 −0.130	h11	40		–	45			15.0	9.1	+0.3 0	170~200
50×28	50		28			45		–	50			17.0	10.1		200~230
56×32	56	0 −0.074	32	0 −0.160		50	1.60 ~2.00	–	56	+0.220 +0.100	1.20 ~1.60	20.0	11.1		230~260
63×32	63		32			50		–	63			20.0	11.1		260~290
70×36	70		36			56		–	70			22.0	13.1		290~330
80×40	80		40			63	2.50 ~3.00	–	80		2.00 ~2.50	25.0	14.1		330~380
90×45	90	0 −0.087	45			70		–	90	+0.260 +0.120		28.0	16.1		380~440
100×50	100		50			80		–	100			31.0	18.1		440~500

Note(1): From the values for ℓ given below, which are in the appropriate range in the table, one should be selected.
The tolerance for l should be h12 under JIS B0401 (dimension tolerance and fitting), in principle.
6,8,10,12,14,16,18,20,22,25,28,32,36,40,45,50,56,63,70,80,90,100,110,125,140,160,180,200,220,250,280,320,360,400

Note(2): The appropriate shaft diameter should be matched with the torque corresponding to the strength of the key.

Reference: The nominal sizes given in ( ) should not be used unless they are absolutely necessary.
The groove for the boss should be slanted to 1/100, in principle.

Metal Table EN - JIS 1

EN Material No.	EN Denomination	JIS Material No.	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
1.0028	S205G1T (USt.34)	SS330	unalloyed mild steel				195	330~430	26		
1.0034	S205G2T (RSt.34)	STKM11A	unalloyed mild steel								
1.0035	S185 (St.33)	SGP	unalloyed construction steel / pipe steel				175~185	290			
1.0035	S185 (St.33)	SGPW	unalloyed construction steel / pipe steel / galvanized					290			
1.0038	S235JRG2 (RSt.37.2)	STKM12[A/C]	unalloyed mild steel			killed	215	340~470		HB	120
1.0040	Ust.42.2	SS400[D]	unalloyed structural steel			unkilled		400~510			
1.0042	RSt.42.2	SS400[D]	unalloyed mild steel					400~510			
1.0050	E295 (St.50.2)	SS490	unalloyed mild steel				265~295	470~610	20		
1.0060	E335 (St.60.2)	SS540	unalloyed mild steel					>540			
1.0136	St.42.3	SS400[D]	unalloyed mild steel					400~510			
1.0254	S235 (St.37)	STPG370	unalloyed construction steel / pipe steel								
1.0255	St.37-4	STPT370	unalloyed construction steel / pipe steel for high temperature			(<350°C)					
1.0301	C10	S10C	unalloyed construction steel / for case hardening				290~380	400~650			
1.0303	C4C (QSt.32.3)	SWRCH	cold formed steel / for steel wires								
1.0305	P235G1TH (St.35.8)	STPT370	unalloyed construction steel / pipe steel for high temperature			(<350°C)					
1.0320	St.22	SPHC	unalloyed steel / deep drawable / [hot coiled]					270	27~31		
1.0330	DC01 (St.12)	SPCC[SD]	unalloyed steel / deep drawable / [solid drawn]				140~280	270~410	28~39	HB	90~120
1.0401	C15R	S15C	unalloyed construction steel / for case hardening				430	600~750			
1.0402	C22	S20C	unalloyed construction steel / for quenching and tempering / for heat treatment		16		340	470~620	22		
1.0406	C25	S20C	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	370	500~650	23		
1.0480	H240LA	STKM13A	unalloyed construction steel / pipe steel				240~310	340	27		
1.0501	1C35 (C35)	S35C	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	430	630~780			
1.0503	C45	S45C	unalloyed construction steel / for quenching and tempering / for heat treatment			case hardened		650~800		HRc	49~55
1.0503	C45	S45C	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	305~340	580	16		
1.0503	C45	S45C	unalloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	340~390	640~790			
1.0511	C40	S40C	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	320	580			
1.0511	C40	S40C	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	460	650~800	16		
1.0535	C55	S55C	unalloyed construction steel / for quenching and tempering / for heat treatment				550	800~950			
1.0601	C60	S58C	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	340~380	670~710	11		
1.0702	U10S10	SUM11	unalloyed steel / free cutting steel								
1.0710	15S10	SUM31[L]	unalloyed steel / free cutting steel					400~560			
1.0711	9S20	SUM21	unalloyed steel / free cutting steel					370~450		HB	100~130
1.0715	9SMn28	SUM22[L]	unalloyed steel / free cutting steel							HB	110~170
1.0718	9SMnPb28	SUM24L	unalloyed steel / free cutting steel					390~580		HRc	35~41
1.0723	15S20	SUM32	unalloyed steel / free cutting steel								
1.0736	9SMn36	SUM25	unalloyed steel / free cutting steel					<500			
1.1121	2C10 (C10E; Ck10)	S09CK	unalloyed construction steel / for case hardening				295~390	490~640	16		
1.1133	20Mn5	SMnC420[H]	structural / heat treatment steel [increased Carbon content]					<800			
1.1141	C15E (Ck15)	S15C	unalloyed construction steel / for case hardening			case hardened	355	590~780	14	HRc	49~55
1.1149	3C22 (Cm22/C22R)	S22C	unalloyed construction steel / for quenching and tempering / for heat treatment				340	470~620			
1.1151	C22E (Ck22)	S20C	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	290~340	470~620	22		
1.1151	C22E (Ck22)	S20C	unalloyed construction steel / for quenching and tempering / for heat treatment				210~340	410~500			
1.1158	C25E (Ck25)	S25C	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	370	550~700	21		
1.1160	22Mn6	SMn420[H]	structural / heat treatment steel [increased Carbon content]								
1.1165	30Mn5	SMn433[H]	structural / nitriding steel / heat treatment steel [increased Carbon content]					<900			
1.1166	34Mn5	SMn433[H]	structural / nitriding steel / heat treatment steel [increased Carbon content]					750~950			
1.1167	36Mn5	SMn438[H]	structural / heat treatment steel [increased Carbon content]					800			
1.1175	41Mn4	SMn443[H]	structural / heat treatment steel [increased Carbon content]								
1.1178	C30	S30C	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	280	510			
1.1178	C30	S30C	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	400	600~750			
1.1181	C35E (Ck35)	S35C	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	270~300	520	19		
1.1191	C45E (Ck45)	S45[CD]	unalloyed construction steel / for quenching and tempering / for heat treatment [cold drawn]		16	QT	490	700~850	14		
1.1191	C45E	S45-D	unalloyed construction steel / for quenching and tempering / for heat treatment								
1.1203	C55E (Ck55)	S55C	unalloyed construction steel / for quenching and tempering / for heat treatment				550	800~950			
1.1206	C50E (Ck50)	S50C	unalloyed construction steel / for quenching and tempering / for heat treatment				520	750			
1.1207	C10R	S10C	unalloyed construction steel / for case hardening					400			
1.1210	C53E (Ck53)	S53C	unalloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	370	630~780			
1.1213	C50	S50C	unalloyed construction steel / for quenching and tempering / for heat treatment					640			
1.1221	C60E (Ck60)	S58C	unalloyed construction steel / for quenching and tempering / for heat treatment			QT	580	850~1000			
1.1223	C60R	S58C	unalloyed construction steel / for quenching and tempering / for heat treatment			case hardened	450~580	800~950	13	HRc	49~55
1.1262	C82D2	SUP3	alloyed construction steel / for quenching and tempering / for heat treatment								
1.1525	C80W1	SK5	unalloyed tool steel for cold work								
1.1545	C105W1	SK3	unalloyed tool steel for cold work							HRc	52~58
1.1625	C80W2	SK6	unalloyed tool steel for cold work							HRc	52~58
1.1645	C105W2	SK3	unalloyed tool steel for cold work								
1.1740	C60W	SK7	unalloyed tool steel for cold work					1000			
1.1830	C85W	SK5	unalloyed tool steel for cold work								
1.2008	140Cr3 (~~)	SKS8	unalloyed tool steel for cold work								
1.2067	102Cr6	SUJ2	unalloyed tool steel / ball bearing steel			annealed		675		HB	230
1.2080	X210Cr12	SKD1	unalloyed tool steel								
1.2083	X42Cr13	SUS420J2	alloyed stainless steel / acid proof			C1		850~1000	10	HRc	>68
1.2343	X38CrMoV5-1	SKD6	unalloyed tool steel for cold work					1550			
1.2344	X40CrMoV5-1	SKD61	unalloyed tool steel for cold and hot work					1180~1770		HRc	>68
1.2363	X100CrMoV5-1	SKD12	unalloyed tool steel for cold work							HRc	>68
1.2365	X32CrMoV3-3	SKD7	unalloyed tool steel for hot work								
1.2379	X155CrVMo12-1	SKD11	unalloyed tool steel for cold work							HRc	>68
1.2419	105WCr6	SKS2/3/31	unalloyed tool steel for cold work			hardened		<1000		HRc	58~64
1.2510	100MnCrW4 (~~)	SKS3	unalloyed tool steel for cold work								
1.2541	35WCrV7	SKS41	unalloyed tool steel for cold work								
1.2542	45WCrV7	SKS41	unalloyed tool steel for cold work								
1.2552	80WCrV8	SKS42	unalloyed tool steel for cold work								
1.2567	X30WCrV5-3	SKD4	unalloyed tool steel for hot work								
1.2581	X30WCrV9-3	SKD5	unalloyed tool steel for hot work								

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EN Material No.	EN Denomination	JIS Material No.	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
1.2713	55NiCrMoV6	SKT3/SKT4	unalloyed tool steel for cold and hot work					930~1420		HRc	55~60
1.2833	100V1	SKS43	unalloyed tool steel for cold work					<1000			
1.3202	S12-1-4-5	SKH10	alloyed high speed steel with Co								
1.3207	S10-4-3-10	SKH57	alloyed high speed steel with Co								
1.3243	S6-5-2-5	SKH55	alloyed high speed steel with Co								
1.3247	S2-10-1-8	SKH59	alloyed high speed steel with Co								
1.3343	S6-5-2	SKH51/SUH3	alloyed high speed steel without Co			hardened		≤1000		HRc	60~68
1.3344	S6-5-3	SKH52/SKH53	alloyed high speed steel without Co								
1.3355	S18-0-1	SKH2	alloyed high speed steel without Co								
1.3505	100Cr6	SUJ2	unalloyed tool steel / ball bearing steel			annealed		675		HB	230
1.3505	100Cr6	SUJ2	unalloyed tool steel / ball bearing steel			hardened		≤850		HRC	58~65
1.3565	48CrMo4	SNC836	unalloyed bearing steel					1080			
1.4000	X6Cr13	SUS403	alloyed stainless steel / acid proof			F		600			
1.4001	X7Cr14	SUS429	alloyed stainless steel / acid proof			F		530~680			
1.4002	X6CrAl13	SUS405	alloyed stainless steel / acid proof / heat resistant			F			10		
1.4005	X12CrS13	SUS416	alloyed stainless steel / acid proof			M		540	25		
1.4006	X10Cr13	SUS410	alloyed steel / stainless and acidproof / for cold extrusion			C1		730	20		
1.4006	X10Cr13	SUS410	alloyed steel / stainless and acidproof steel / for cold extrusion			QT		1200	7	HRc	37
1.4006	X10Cr13	SUS410	alloyed steel / stainless and acidproof steel / for cold extrusion					380	45		
1.4016	X6(8)Cr17	SUS430	alloyed stainless steel / acid proof / heat resistant			F1	240	450~630	12~20	HB	130~170
1.4021	X20Cr13	SUS420J	alloyed stainless steel / acid proof			C1		800~1000	8~12	HRc	40
1.4024	X15Cr13	SUS410J1	alloyed steel / stainless and acidproof steel / for cold extrusion								
1.4029	X29CrS13	SUS420	alloyed stainless steel / acid proof								
1.4029	X29CrS13	SUS420F	alloyed stainless steel / acid proof			M					
1.4031	X38Cr13	SUS420J2	alloyed stainless steel / acid proof			C1		800			
1.4034	X46Cr13	SUS420J2	alloyed stainless steel / acid proof			C1			11		
1.4057	X17CrNi16-2	SUS431	alloyed stainless steel / acid proof			C3		800~950	12~14		
1.4057	X17CrNi16-2	SUS431	alloyed stainless steel / acid proof				280	980		HB	280
1.4104	X12CrMoS17-2	SUS430F	alloyed stainless steel / acid proof / heat resistant			F		840			
1.4112	X90CrMoV18	SUS440B	alloyed stainless steel / acid proof			C				HRc	>68
1.4113	X6CrMo17-1	SUS434	alloyed steel / stainless and acidproof steel / for cold extrusion			F1		450~630	18		
1.4125	X105CrMo17	SUS440C	alloyed stainless steel / acid proof			C3 QT		780	15	HRc	50
1.4131	X1CrMo26-1	SUSXM27	alloyed stainless steel					570	25		
1.4301	X5CrNi18-10	SUS304	alloyed stainless steel / acid proof			A2	190	540~750	45		
1.4301	X5CrNi18-10	SUS304-CSP	alloyed stainless steel / acid proof / spring steel / cold coild								
1.4301	X5CrNi18-10	SUS304-D	alloyed stainless steel / acid proof								
1.4301	X5CrNi18-10	SUS304-H	alloyed stainless steel / acid proof								
1.4301	X5CrNi18-10	SUS304-TP	alloyed stainless steel / acid proof								
1.4301	X5CrNi18-10	SUS304-WPB	alloyed stainless steel / acid proof								
1.4301	X5CrNi18-10	SUS304-WPC	alloyed stainless steel / acid proof / spring steel			(>180 °C)		700			
1.4301	X5CrNi18-10	SUS316-TP	alloyed stainless steel / acid proof								
1.4303	X4CrNi18-12	SUS305[J1]	alloyed stainless steel / acid proof			A2		500/650	45		
1.4305	X10CrNiS18-9	SUS303	alloyed stainless steel / acid proof			A1		520	40	HRc	>68
1.4305	X8CrNi18-9	SUS303	alloyed stainless steel / acid proof			A1	190	500~750	35		
1.4306	X2CrNi19-11	SUS304L	alloyed stainless steel / acid proof			A2		520~670	40~45		
1.4308	G-X6CrNi18-9	SCS13	stainless steel casting								
1.4310	X10CrNi18-8	SUS301J1-[CSP]	alloyed steel / stainless and acidproof steel / for cold extrusion			A	195	500~750			
1.4311	X2CrNiN18-10	SUS304LN	alloyed stainless steel / acid proof			A	270	550~760			
1.4319	X3CrNiN17-8	SUS301	alloyed steel / stainless and acidproof steel / for cold extrusion			A		500~750			
1.4371	X2CrMnNiN17-7-5	SUS202	alloyed stainless steel						40		
1.4401	G-X5CrNiMo17-12-2	SCS22	stainless steel casting								
1.4401	X5CrNiMo17-12-2	SUS316	alloyed stainless steel / acid proof				220	520~700	40	HB	130~180
1.4401	X5CrNiMo17-12-2	SUS316-WPA	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
1.4401	X5CrNiMo17-12-2	SUS316-WPB	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
1.4404	X2CrNiMo17-12-2	SUS316L	alloyed stainless steel / acid proof			A4		530~680	40		
1.4406	X2CrNiMoN17-12-2	SUS316LN	alloyed stainless steel / acid proof			A4					
1.4429	X2CrNiMoN17-13-3	SUS316LN	alloyed stainless steel / acid proof			A4	220	500~700	40	HB	130~170
1.4435	X2CrNiMo18-14-3	SUS316L	alloyed stainless steel / acid proof			A4		500~700	40	HV	120
1.4436	X3CrNiMo17-13-3	SUS316	alloyed stainless steel / acid proof			A4		550~700	40		
1.4438	X2CrNiMo18-15-4	SUS316	alloyed stainless steel / acid proof			A4		550~700	40		
1.4438	X2CrNiMo18-16-4	SUS317L	alloyed stainless steel / acid proof					550~700			
1.4449	X3CrNiMo18-12-3	SUS317	alloyed stainless steel			A					
1.4460	X8CrNiMo27-5	SUS329J1	alloyed stainless steel / acid proof			AF					
1.4510	X6CrTi17	SUS430LX	alloyed stainless steel / acid proof / heat resistant								
1.4511	X8CrNb17	SUS430LX	alloyed stainless steel / acid proof / heat resistant								
1.4512	X5CrTi12	SUH409[L]	alloyed stainless steel / acid proof / heat resistant			F					
1.4522	X2CrMoTi18-2	SUS444	alloyed stainless steel / valve steel / highly heat resistant / weldable without treatment					450	35		
1.4541	X6CrNiTi18-10	SUS321	alloyed stainless steel / weldable without treatment / tough to subzero temperature			A2	200	520~720	40	HB	130~190
1.4542	X5CrNiCuNb16-4	SUS630	alloyed stainless steel / acid proof / complete hardenable			aged		1030~1300	10~11	HRc	41~42
1.4542	X5CrNiCuNb16-4	SUS630	alloyed stainless steel / acid proof / complete hardenable					800	14	HV	250
1.4550	X6CrNiNb18-10	SUS347	alloyed stainless steel / acid proof			A2		520~720	40	HB	130~190
1.4550	X10CrNiNb18-9	SUS347	alloyed stainless steel / acid proof					520~750			
1.4567	X3CrNiCu18-9-4	SUSXM7	alloyed stainless steel / acid proof / with special elements								
1.4568	X7CrNiAl17-7	SUS631	alloyed stainless steel / acid proof / complete hardenable					1230			
1.4568	X7CrNiAl17-7	SUS631J1-WPC	alloyed stainless steel / acid proof / spring steel / complete hardenable			(>340 °C)		1400~2200			
1.4718	X45CrSi9-3	SUH1	alloyed valve steel / heat resistant			C					
1.4720	X6CrTi12	SUH409[L]	alloyed stainless steel / acid proof / heat resistant			F					
1.4724	X10CrAl11-3	SUS405	alloyed stainless steel / acid proof / heat resistant			F					
1.4731	X40CrSiMo10-2	SUH3	alloyed high speed steel without Co								
1.4742	X10CrAl(Si)18	SUS430	alloyed stainless steel / acid proof / heat resistant				270	500~700	15		
1.4747	X80CrNiSi20	SUH4	alloyed stainless steel / acid proof / heat resistant			C					
1.4762	X10CrAlSi25	SUH446	alloyed stainless steel / acid proof / heat resistant			F	280	520~720	10		
1.4828	X15CrNiSi20-12	SUH309	heatresistant steel			A	230~290	500~750	30~40	HB	130~220

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Metal Table EN - JIS 3

EN Material No.	EN Denomination	JIS Material No.	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
1.4833	X12CrNi23-13	SUS309S	alloyed stainless steel / acid proof / heat resistant			A					
1.4833	X7CrNi23-14	SUS309S	alloyed stainless steel / acid proof / heat resistant								
1.4841	X15CrNiSi25-20	SUH310	alloyed stainless steel / acid proof / heat resistant			A	230~300	550~750	30~40		
1.4845	X12CrNi25-21	SUH310	alloyed stainless steel / acid proof / heat resistant			A	230~300	550~750	30~40		
1.4871	X53CrMnNiN21-9	SUH35/SUH36	alloyed stainless steel / valve steel / highly heat resistant								
1.4873	X45CrNiW18-9	SUH31	alloyed stainless steel / valve steel / heat resistant								
1.4878	X8CrNiTi18-10	SUS321	alloyed stainless steel / acid proof			A	190	500~720	40		
1.4935	X20CrMoWV12-1	SUH616	alloyed stainless steel / valve steel / highly heat resistant			C					
1.4943	X4NiCrTi25-15	SUH660	alloyed stainless steel / valve steel / highly heat resistant / weldable without treatment			A					
1.4971	X12CrCoNi21-20	SUH661	alloyed stainless steel / valve steel / highly heat resistant			A					
1.5026	56Si7	SUP7	alloyed construction steel / valve steel / warm drawn spring steel						45		
1.5710	36NiCr6	SNC236	alloyed structural steel								
1.5732	14NiCr10	SNC415[H]	alloyed construction steel / case hardening steel / higher carbon content					575			
1.5736	36NiCr10	SNC631[H]	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content		40	QT	780	1030~1180			
1.5736	36NiCr10	SNC631[H]	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content	40	100	QT	690	880~1030			
1.5736	36NiCr10	SNC631[H]	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content	100	250	QT	590	740~880			
1.5752	14NiCr14	SNC815[H]	alloyed construction steel / case hardening steel / higher carbon content					930~1230			
1.5755	31NiCr14	SNC836	alloyed bearing steel		40	QT	840	980~1130	11		
1.5755	31NiCr14	SNC836	alloyed bearing steel	40	100	QT	740	880~1030	12		
1.5755	31NiCr14	SNC836	alloyed bearing steel	100	250	QT	590	790~930	14		
1.6511	36CrNiMo4	SNCM447	alloyed construction steel / for quenching and tempering / for heat treatment			QT	800~1000	1100~1300	10		
1.6511	36CrNiMo4	SNCM447	alloyed construction steel / for quenching and tempering / for heat treatment			QT	≥1000	1200~1400	9	HB	355~410
1.6523	20NiCrMo2-2	SNCM220[H]	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content				590	980~1270	10		
1.6546	40NiCrMo2-2	SNCM240	alloyed construction steel / for quenching and tempering / for heat treatment								
1.6562	40NiCrMo8-4	SNB23 [1-5]	alloyed construction steel / for quenching and tempering / for heat treatment								
1.6565	40NiCrMo6	SNCM616	alloyed construction steel / for quenching and tempering / for heat treatment								
1.6580	30CrNiMo8	SNCM431	alloyed construction steel / for quenching and tempering / for heat treatment			QT	1050	1250~1450			
1.6582	34CrNiMo6	SNCM439	alloyed construction steel / for quenching and tempering / for heat treatment			QT	700~900	1000~1200	11		
1.6587	17CrNiMo8	SNCM420[H]	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content								
1.6657	14NiCrMo34	SNCM815	alloyed construction steel / for quenching and tempering / for heat treatment								
1.6900	X12CrNi18-9	SUS302	alloyed stainless steel / acid proof			A					
1.6901	X12CrNi18-10	SUS301-WPA	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
1.6902	X12CrNi18-11	SUS301-WPB	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
1.7015	15Cr3	SCr415[H]	alloyed construction steel / case hardening steel / higher carbon content								
1.7016	17Cr3	SCr415[H]	alloyed construction steel / case hardening steel / higher carbon content				450	800~1050	11		
1.7027	20Cr4	SCr420[H]	alloyed construction steel / case hardening steel / higher carbon content					<1000			
1.7033	34Cr4	SCr430	alloyed construction steel / for quenching and tempering / for heat treatment				635	780	18		
1.7033	34Cr4	SCr430[H]	alloyed construction steel / for quenching and tempering / for heat treatment				700~740	880~1000	15		
1.7034	37Cr4	SCr435[H]	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	650	880~1080			
1.7035	41Cr4/42Cr4	SCr440	alloyed construction steel / for quenching and tempering / for heat treatment				785	930	13		
1.7035	41Cr4/42Cr4	SCr440[H]	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	780	950~1150	11		
1.7102	54SiCr6	SUP12	alloyed construction steel / for quenching and tempering / for heat treatment / hot rolled spring steel				1130	1320~1570	6		
1.7108	60SiCr7	SUP7	alloyed construction steel / valve steel / warm drawn spring steel				1130	1320~1570	6		
1.7138	52MnCrB3	SUP11A	alloyed construction steel / for quenching and tempering / for heat treatment								
1.7147	20MnCr5	SMnC420[H]	structural / heat treatment steel [increased Carbon content]				685	1080~1370	8	HB	215
1.7176	55Cr3 (~~)	SUP9A	alloyed construction steel / for quenching and tempering / for heat treatment								
1.7218	25CrMo4	SCM430	alloyed construction steel / for quenching and tempering / for heat treatment		16	QT	700	900~1100	18	HRc	58
1.7218	25CrMo4	SCM430	alloyed construction steel / for quenching and tempering / for heat treatment		16	QT	680	550~700	12	HB	215~260
1.7218	25CrMo4	SCM430	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	600	800~950	14	HB	215~260
1.7218	25CrMo4	SCM430	alloyed construction steel / for quenching and tempering / for heat treatment	40	100	QT	450	700~850	15	HB	215~260
1.7220	34CrMo4	SCM435[H]	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content				800	1000~1200			
1.7220	34CrMo4	SCM440	alloyed construction steel / / for quenching and tempering / for heat treatment / for flame-induction hardening				835	980	12		
1.7223	41CrMo4	SCM440H	alloyed construction steel / / for quenching and tempering / for heat treatment / for flame-induction hardening				880	980~1180			
1.7223	41CrMo4	SNB21 [1-5]	alloyed construction steel / for quenching and tempering / for heat treatment			QT	880	980~1180			
1.7223	41CrMo4	SNB22 [1-5]	alloyed construction steel / for quenching and tempering / for heat treatment			QT	450~700	700~900			
1.7225	42CrMo4	SCM440H	alloyed construction steel / / for quenching and tempering / for heat treatment / for flame-induction hardening				900	1100~1300			
1.7225	42CrMo4	SNB7	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	650~900	900~1200	11	HRc	38
1.7242	16CrMo4	SCM415[H]	alloyed construction steel / case hardening steel / higher carbon content								
1.7243	18CrMo4	SCM418[H]	alloyed construction steel / case hardening steel / higher carbon content		16	case hardened	850	1100~1350	9		
1.7243	18CrMo4	SCM418[H]	alloyed construction steel / case hardening steel / higher carbon content	16	40	case hardened	690	950~1300	9		
1.7243	18CrMo4	SCM418[H]	alloyed construction steel / case hardening steel / higher carbon content	40	100	case hardened	600	800~1150	10		
1.7258	24CrMo5	SCM420H	alloyed construction steel / case hardening steel / higher carbon content					800~950			
1.7262	16CrMo4	SCM445	alloyed construction steel / for quenching and tempering / for heat treatment								
1.7262	16CrMo4	SNCM415	alloyed construction steel / for quenching and tempering / for heat treatment								
1.7264	20CrMo5	SCM420	alloyed construction steel / case hardening steel		16		600	1000	12		
1.7264	20CrMo5	SCM420	alloyed construction steel / case hardening steel	16	40		500	850	14		
1.7264	20CrMo5	SCM420	alloyed construction steel / case hardening steel	40	100		400	750	16		
1.7264	20CrMo5	SCM421	alloyed construction steel / case hardening steel								
1.7350	22CrMo44	SCM822	alloyed construction steel / for quenching and tempering / for heat treatment								
1.7711	40CrMoV4-7	SNB16	alloyed construction steel / for quenching and tempering / for heat treatment			QT	470~700	850~1000	14		
1.8159	50CrV4/51CrV 4	SUP10	alloyed construction steel / for quenching and tempering / for heat treatment				1180	1350~1600			
ZP0401 (2.2141)	ZnAl4Cu1	ZDC1	zinc die cast								
3.7035	Ti99.5 (Ti2)	TP340	titanium				min.215	390~540	22		
1.2083 (~~)	X42Cr12+S (~~)	PX5	mould steel, (Daido), (AISI: modificated P20)								
1.2085 (~~)	X3CrMo16-1 (~~)	G-Star	(AISI: mod.420);easy machinable special mould steel (Daido)							HRc	ca. 37
1.2316 (~~)	X36CrMo17+S (~~)	PX5	mould steel, (Daido), (AISI: modificated P20)								
1.4605 (~~)	X2CrAlTi18-2 (~~)	KCF	alloyed stainless steel / acid proof / with special elements								
CC491K	CuSn5Zn5(RG5)	CAC406C	bronce cast (BC6)			H12		50	35		
CC491K	CuSn5Zn5(RG5)	CAC406C	bronce cast (BC6)			0		40	60		
CC491K	CuSn5Zn5(RG5)	CAC406C	bronce cast (BC6)	2	60	R340	230	340	45	HB	100
CC491K	CuSn5Zn5(RG5)	CAC406C	bronce cast (BC6)	2	40	R400	250	400	26	HB	125
CC491K	CuSn5Zn5(RG5)	CAC406C	bronce cast (BC6)	2	12	R470	350	470	15	HB	170
CC491K	CuSn5Zn5(RG5)	CAC406C	bronce cast (BC6)	2	6	R550	500	550		HB	200

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EN Material No.	EN Denomination	JIS Material No.	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
CC762S	CuZn25Al5	CAC304	bronce cast				450~480	750	10		
CC766S	CuZn37Al1	C6782	brass				170	450	25		
CW004A	Cu-ETP	C1100	pure copper				50~150	245~300	45		
CW008A	Cu-OF	C1020	pure copper / oxygen free				50~150	245~300	45		
CW024A	Cu-DHP (SF-Cu)	C1220	pure phosphorous desoxidated copper								
CW101C	CuBe2	C1730	copper beryllium alloy for springs				1200	1300			
CW452K	CuSn6P	C5191[B]	phosphorus bronce (PBC2)				300~600	350~650		HB	75~190
CW505L	CuZn30	C2600	brass				160~470	270~520		HB	55~150
CW505L	CuZn30	C2600	brass				130~810	300~830		HB	65~200
CW508L	CuZn37	C2700	brass				150~580	300~610		HB	55~190
CW509L	CuZn40	C2801	brass				240~390	340~500		HB	75~130
CW509L	CuZn40	C2801	brass				270~500	350~550	10		
CW614N	CuZn39Pb3	C3602[BD]	brass			F		315			
CW614N	CuZn39Pb3	C3604	brass			F 37; 44, 51	250~390	360~500	90~145		
CW617N	CuZn40Pb2	C3771	brass				200	315~390	15		
CW617N	CuZn40Pb2	C3771	brass					510		HB	145
CW617N	CuZn40Pb2	C3771	brass				300~570	380~610		HB	90~165
EN AC-42100	G-AlSi10Mg	AC4A	aluminium cast alloy			T6	190~210	230~290	2~4		
EN AC-42100	G-AlSi10Mg	AC4A	aluminium cast alloy			T64	180	250	8	HB	75~90
EN AC-46100	G-AlSi12Cu	ADC12	aluminium cast alloy (~ALSi11Cu2,5Fe)				186	296	2		
EN AC-46100	G-AlSi12Cu	ADC12	aluminium cast alloy (~ALSi11Cu2,5Fe)				80~150	150~220	1~4	HB	60~90
EN AC-51300	G-AlMg5	AC7A	aluminium cast alloy			F	105	245	5.3	HB	80
EN AC-51300	G-AlMg5	AC7A	aluminium cast alloy				90~100	140~150	2	HB	55~70
EN AC-51400	AlMgSi0,7	A6N01	special alloy for extrusion moulding (~AlSi0,5Mg)			T5	214.2	255	8		
EN AC-51400	AlMgSi0,7	A6N01	special alloy for extrusion moulding (~AlSi0,5Mg)			T6	261	277	8~12		
EN AC-51400	AlMgSi0,7	A6N01	special alloy for extrusion moulding (~AlSi0,5Mg)			0	ca.48	ca.120			
EN AW 6060	AlMgSi	A6N01	special alloy for extrusion moulding (~AlSi0,5Mg)								
EN AW-1050A	Al99,5	A1050	pure aluminium / non heat-treatable			0	20~60	60~95	23		
EN AW-1050A	Al99,5	A1050	pure aluminium / non heat-treatable				55~130	65~170	~40	HB	20~45
EN AW-2011	AlCu6BiPb	A2011	duraluminium / treatable			T3	296	379	15	HB	ca.105
EN AW-2011	AlCu6BiPb	A2011	duraluminium / treatable			T4	145	310	20	HB	ca.95
EN AW-2017	AlCu4MgSi	A2017	duraluminium / treatable			T3	250	400	10		
EN AW-2017	AlCu4MgSi	A2017	duraluminium / treatable			T4	240	390	12		
EN AW-4032	AlSi12,5MgCuNi	A4032	aluminium wrought alloy / non heat-treatable								
EN AW-5052	AlMg2,5	A5052	aluminium wrought alloy / non heat-treatable			H112	125	220	20	HB	65
EN AW-5052	AlMg2,5	A5052	aluminium wrought alloy / non heat-treatable			0	90	193	25		
EN AW-5056A	AlMg5	A5056A	aluminium wrought alloy / non heat-treatable			0	152	290	35		
EN AW-5056A	AlMg5	A5056A	aluminium wrought alloy / non heat-treatable			H38	345	414	15		
EN AW-5056A	AlMg5	A5056A	aluminium wrought alloy / non heat-treatable			0	110	240	15	HB	55
EN AW-5083	AlMg4,5Mn0,7	A5083	aluminium wrought alloy / non heat-treatable			H111	200	317	18		
EN AW-5083	AlMg4,5Mn0,7	A5083	aluminium wrought alloy / non heat-treatable			H112	125~140	275~300	12~15		
EN AW-5083	AlMg4,5Mn0,7	A5083	aluminium wrought alloy / non heat-treatable			0	110	270	12	HB	60
EN AW-6063	AlMg0,7Si	A6063	aluminium wrought alloy / treatable			0	50	100	27	HB	25
EN AW-6063	AlMg0,7Si	A6063	aluminium wrought alloy / treatable			T5	145	193	12		
EN AW-6063	AlMg0,7Si	A6063	aluminium wrought alloy / treatable			T6	214	241	12		
EN AW-7020	AlZn4,5Mg1	A7020	aluminium wrought alloy / treatable				140~270	320~350	9~15	HB	45~105
EN AW-7075	AlZn5,5MgCu	A7075	aluminium wrought alloy / treatable			0	103	228	17		
EN AW-7075	AlZn5,5MgCu	A7075	aluminium wrought alloy / treatable			T6	500	570	10		
EN AW-7075	AlZn5,5MgCu	A7075	aluminium wrought alloy / treatable			T651	490	550	12	HB	160
EN AW-7075	AlZn5,5MgCu (~)	ANP79	AlZnMgCu aluminium alloy (Daido)								
EN-AC 42200	G-AlSi7Mg	AC4C	aluminium cast alloy			T5	170~230	210~270	4~7	HB	75~90
EN-JL1030	EN-GJL-200 (GG-20)	FC200	grey cast iron; flake-graphite cast iron				210	200			
EN-JL1030	EN-GJL-200 (GG-20)	FC200	grey cast iron; flake-graphite cast iron				Rp0.1/>165	200~300			
EN-JL1040	EN-GJL-250 (GG-25)	FC250	grey cast iron; flake-graphite cast iron				240	250			
EN-JL1040	EN-GJL-250 (GG-25)	FC250	grey cast iron; flake-graphite cast iron				Rp0.1/>230	250~350			
EN-JL1050	EN-GJL-300	FC300	grey cast iron; flake-graphite cast iron								
EN-JM1130 (~~)	EN-GJMB 350-10 (~~)	FCMB270	black-heart malleable cast iron								
EN-JS1040	EN-GJS400 (GGG-40)	FCD450	nodular cast iron; ductile cast Iron				310	<450			
EN-JS1060	EN-GJS600 (GGG-60)	FCD600	nodular cast iron; ductile cast Iron				370	<600	3		
ZC0400	ZnAl4	ZDC2	zinc die cast				230	300	7		
(JIS)	untranslateable	DC53	general purpose cold work tool/mold steel (Daido)								
(JIS)	untranslateable	NAK55	pre-hardened mold steel (Daido)								
(JIS)	untranslateable	S12C	unalloyed construction steel / for case hardening								
ISO	TC140	SK1	unalloyed tool steel for cold work								
ISO	TC120	SK2	unalloyed tool steel for cold work								
ISO	TC90	SK4	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKD8	unalloyed tool steel								
(JIS)	untranslateable	SKS11	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKS21	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKS44	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKS5	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKS7	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKS93	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKS94	unalloyed tool steel for cold work								
(JIS)	untranslateable	SKS95	unalloyed tool steel for cold work								
(JIS)	C43 (~~)	SMF5040	sintered carbon mould steel								
(JIS)	untranslateable	SNCM625	alloyed construction steel / for quenching and tempering / for heat treatment								
(JIS)	untranslateable	SNCM630	alloyed construction steel / for quenching and tempering / for heat treatment			QT		1150	10	HRc	35
(JIS)	untranslateable	SSPR	structural steel								
(JIS)	untranslateable	SSPSR	structural steel								
(JIS)	untranslateable	STPS2	seamless pipe for hydraulic fluids				180	450	30		
(JIS)	untranslateable	SUH11	alloyed valve steel / heat resistant			M					
(JIS)	untranslateable	SUH37	alloyed stainless steel / acid proof / heat resistant								

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Metal Table EN - JIS 5

EN Material No.	EN Denomination	JIS Material No.	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
(JIS)	untranslateable	SUH38	alloyed stainless steel / acid proof / heat resistant								
(JIS)	untranslateable	SUH600	alloyed construction steel / for quenching and tempering / for heat treatment / heat resistant			M					
(JIS)	untranslateable	SUJ1	unalloyed tool steel (~SUJ2 however 0.9-1.2%cr)								
(JIS)	untranslateable	SUJ3	unalloyed tool steel (~SUJ2 however 0.4-0.7%Si)								
(JIS)	untranslateable	SUJ4	unalloyed tool steel								
(JIS)	untranslateable	SUJ5	unalloyed tool steel								
(JIS)	untranslateable	SUM12	unalloyed steel / free cutting steel								
(JIS)	untranslateable	SUM41	unalloyed steel / free cutting steel								
(JIS)	untranslateable	SUM42	unalloyed steel / free cutting steel								
ISO	44SMn28	SUM43	unalloyed free cutting steel / for case hardening				420	630~850	16		
ISO	60CrMo33	SUP13	alloyed construction steel / for quenching and tempering / for heat treatment						35		
(JIS)	untranslateable	SUP6	alloyed steel for special purpose								
ISO	X3NiCr18-16	SUS384	alloyed stainless steel / acid proof								
(JIS)	X100CrMo17 (~)	SUS440	alloyed stainless steel / acid proof								
(JIS)	untranslateable	SWB	universal spring steel	Ø 0,8	Ø 1,4	(> 110°C)		2010~1620			
(JIS)	untranslateable	SWB	universal spring steel	Ø 1,6	Ø 2,6	(> 110°C)		1570~1420			
(JIS)	untranslateable	SWB	universal spring steel	Ø 2,9	Ø 4,5	(> 110°C)		1620~1320			
(JIS)	untranslateable	SWB	universal spring steel	Ø 5	Ø 7	(> 110°C)		1520~1180			
(JIS)	untranslateable	SWC	universal spring for high quality springs	Ø 5	Ø 7	(> 110°C)		1720~1370			
(JIS)	untranslateable	SWC	universal spring for high quality springs	Ø 0,8	Ø 1,4	(> 110°C)		2300~1860			
(JIS)	untranslateable	SWC	universal spring for high quality springs	Ø 1,6	Ø 2,6	(> 110°C)		2060~1520			
(JIS)	untranslateable	SWC	universal spring for high quality springs	Ø 2,9	Ø 4,5	(> 110°C)		1860~1520			
(JIS)	untranslateable	SWCH8[A]	cold formed steel / for steel wires					450			
(JIS)	untranslateable	SWO-A	heat treaded spring steel for general purpose springs			(>120°C)					
(JIS)	untranslateable	SWO-B	heat treaded spring steel for general purpose springs			(>120°C)					
(JIS)	untranslateable	SWOCV-V	heat treaded Q&T / Cr-V spring and valve steel for impact load			(>220°C)					
(JIS)	untranslateable	SWOSC-V	heat treaded Q&T / Cr-V spring and valve steel for impact load			(>245°C)					
(JIS)	untranslateable	SWO-V	heat treaded Q&T spring steel for general purpose springs			(>120°C)					
(JIS)	untranslateable	SWP-A	hight strength cold drawn spring steel			(> 110°C)					
(JIS)	untranslateable	SWP-B	hight strength cold drawn spring steel			(> 110°C)					
(JIS)	C43 (~~)	SWRH42A	carbon spring steel hardened								
(JIS)	C43 (~~)	SWRH57	carbon spring steel hardened								
(JIS)	C43 (~~)	SWRH6	carbon spring steel hardened								
(JIS)	C43 (~~)	SWRH62	carbon spring steel hardened								
(JIS)	untranslateable	SWRM	contstructional steel wire								

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Metal Table JIS - EN 1

JIS Material No.	EN Material No.	EN Denomination	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
A1050	EN AW-1050A	**Al99,5**	pure aluminium / non heat-treatable			0	20~60	60~95	23		
A1050	EN AW-1050A	**Al99,5**	pure aluminium / non heat-treatable				55~130	65~170	~40	HB	20~45
A2011	EN AW-2011	**AlCu6BiPb**	duraluminium / treatable			T3	296	379	15	HB	ca.105
A2011	EN AW-2011	**AlCu6BiPb**	duraluminium / treatable			T4	145	310	20	HB	ca.95
A2017	EN AW-2017	**AlCu4MgSi**	duraluminium / treatable			T3	250	400	10		
A2017	EN AW-2017	**AlCu4MgSi**	duraluminium / treatable			T4	240	390	12		
A4032	EN AW-4032	**AlSi12,5MgCuNi**	aluminium wrought alloy / non heat-treatable								
A5052	EN AW-5052	**AlMg2,5**	aluminium wrought alloy / non heat-treatable			H112	125	220	20	HB	65
A5052	EN AW-5052	**AlMg2,5**	aluminium wrought alloy / non heat-treatable			0	90	193	25		
A5056A	EN AW-5056A	**AlMg5**	aluminium wrought alloy / non heat-treatable			0	152	290	35		
A5056A	EN AW-5056A	**AlMg5**	aluminium wrought alloy / non heat-treatable			H38	345	414	15		
A5056A	EN AW-5056A	**AlMg5**	aluminium wrought alloy / non heat-treatable			0	110	240	15	HB	55
A5083	EN AW-5083	**AlMg4,5Mn0,7**	aluminium wrought alloy / non heat-treatable			H111	200	317	18		
A5083	EN AW-5083	**AlMg4,5Mn0,7**	aluminium wrought alloy / non heat-treatable			H112	125~140	275~300	12~15		
A5083	EN AW-5083	**AlMg4,5Mn0,7**	aluminium wrought alloy / non heat-treatable			0	110	270	12	HB	60
A6063	EN AW-6063	**AlMg0,7Si**	aluminium wrought alloy / treatable			0	50	100	27	HB	25
A6063	EN AW-6063	**AlMg0,7Si**	aluminium wrought alloy / treatable			T5	145	193	12		
A6063	EN AW-6063	**AlMg0,7Si**	aluminium wrought alloy / treatable			T6	214	241	12		
A6N01	EN AC-51400	**AlMgSi0,7**	special alloy for extrusion moulding (~AlSi0,5Mg)			T5	214.2	255	8		
A6N01	EN AC-51400	**AlMgSi0,7**	special alloy for extrusion moulding (~AlSi0,5Mg)			T6	261	277	8~12		
A6N01	EN AC-51400	**AlMgSi0,7**	special alloy for extrusion moulding (~AlSi0,5Mg)			0	ca.48	ca.120			
A6N01	EN AW 6060	**AlMgSi**	special alloy for extrusion moulding (~AlSi0,5Mg)								
A7020	EN AW-7020	**AlZn4,5Mg1**	aluminium wrought alloy / treatable				140~270	320~350	9~15	HB	45~105
A7075	EN AW-7075	**AlZn5,5MgCu**	aluminium wrought alloy / treatable			0	103	228	17		
A7075	EN AW-7075	**AlZn5,5MgCu**	aluminium wrought alloy / treatable			T6	500	570	10		
A7075	EN AW-7075	**AlZn5,5MgCu**	aluminium wrought alloy / treatable			T651	490	550	12	HB	160
AC4A	EN AC-42100	**G-AlSi10Mg**	aluminium cast alloy			T6	190~210	230~290	2~4		
AC4A	EN AC-42100	**G-AlSi10Mg**	aluminium cast alloy			T64	180	250	8	HB	75~90
AC4C	EN-AC 42200	**G-AlSi7Mg**	aluminium cast alloy			T5	170~230	210~270	4~7	HB	75~90
AC7A	EN AC-51300	**G-AlMg5**	aluminium cast alloy			F	105	245	5.3	HB	80
AC7A	EN AC-51300	**G-AlMg5**	aluminium cast alloy				90~100	140~150	2	HB	55~70
ADC12	EN AC-46100	**G-AlSi12Cu**	aluminium cast alloy (~ALSi11Cu2,5Fe)				186	296	2		
ADC12	EN AC-46100	**G-AlSi12Cu**	aluminium cast alloy (~ALSi11Cu2,5Fe)				80~150	150~220	1~4	HB	60~90
ANP79	EN AW-7075	**AlZn5,5MgCu (~)**	AlZnMgCu aluminium alloy (Daido)								
C1020	CW008A	**Cu-OF**	pure copper / oxygen free				50~150	245~300	45		
C1100	CW004A	**Cu-ETP**	pure copper				50~150	245~300	45		
C1220	CW024A	**Cu-DHP (SF-Cu)**	pure phosphorous desoxidated copper								
C1730	CW101C	**CuBe2**	copper beryllium alloy for springs				1200	1300			
C2600	CW505L	**CuZn30**	brass				160~470	270~520		HB	55~150
C2600	CW505L	**CuZn30**	brass				130~810	300~830		HB	65~200
C2700	CW508L	**CuZn37**	brass				150~580	300~610		HB	55~190
C2801	CW509L	**CuZn40**	brass				240~390	340~500		HB	75~130
C2801	CW509L	**CuZn40**	brass				270~500	350~550	10		
C3602[BD]	CW614N	**CuZn39Pb3**	brass			F		315			
C3604	CW614N	**CuZn39Pb3**	brass			F 37; 44, 51	250~390	360~500	90~145		
C3771	CW617N	**CuZn40Pb2**	brass				200	315~390	15		
C3771	CW617N	**CuZn40Pb2**	brass					510		HB	145
C3771	CW617N	**CuZn40Pb2**	brass				300~570	380~610		HB	90~165
C5191[B]	CW452K	**CuSn6P**	phosphorus bronce (PBC2)				300~600	350~650		HB	75~190
C6782	CC766S	**CuZn37Al1**	brass				170	450	25		
CAC304	CC762S	**CuZn25Al5**	bronce cast				450~480	750	10		
CAC406C	CC491K	**CuSn5Zn5(RG5)**	bronce cast (BC6)			H12		50	35		
CAC406C	CC491K	**CuSn5Zn5(RG5)**	bronce cast (BC6)			0		40	60		
CAC406C	CC491K	**CuSn5Zn5(RG5)**	bronce cast (BC6)	2	60	R340	230	340	45	HB	100
CAC406C	CC491K	**CuSn5Zn5(RG5)**	bronce cast (BC6)	2	40	R400	250	400	26	HB	125
CAC406C	CC491K	**CuSn5Zn5(RG5)**	bronce cast (BC6)	2	12	R470	350	470	15	HB	170
CAC406C	CC491K	**CuSn5Zn5(RG5)**	bronce cast (BC6)	2	6	R550	500	550		HB	200
DC53	(JIS)	**untranslateable**	general purpose cold work tool/mold steel (Daido)								
FC200	EN-JL1030	**EN-GJL-200 (GG-20)**	grey cast iron; flake-graphite cast iron				210	200			
FC200	EN-JL1030	**EN-GJL-200 (GG-20)**	grey cast iron; flake-graphite cast iron				Rp0.1/>165	200~300			
FC250	EN-JL1040	**EN-GJL-250 (GG-25)**	grey cast iron; flake-graphite cast iron				240	250			
FC250	EN-JL1040	**EN-GJL-250 (GG-25)**	grey cast iron; flake-graphite cast iron				Rp0.1/>230	250~350			
FC300	EN-JL1050	**EN-GJL-300**	grey cast iron; flake-graphite cast iron								
FCD450	EN-JS1040	**EN-GJS400 (GGG-40)**	nodular cast iron; ductile cast Iron				310	<450			
FCD600	EN-JS1060	**EN-GJS600 (GGG-60)**	nodular cast iron; ductile cast Iron				370	<600	3		
FCMB270	EN-JM1130 (~~)	**EN-GJMB 350-10 (~~)**	black-heart malleable cast iron								
G-Star	1.2085 (~~)	**X3CrMo16-1 (~~)**	(AISI: mod.420);easy machinable special mould steel (Daido)							HRc	ca. 37
KCF	1.4605 (~~)	**X2CrAlTi18-2 (~~)**	alloyed stainless steel / acid proof / with special elements								
NAK55	(JIS)	**untranslateable**	pre-hardened mold steel (Daido)								
PX5	1.2083 (~~)	**X42Cr12+S (~~)**	mould steel, (Daido), (AISI: modificated P20)								
PX5	1.2316 (~~)	**X36CrMo17+S (~~)**	mould steel, (Daido), (AISI: modificated P20)								
S09CK	1.1121	**2C10 (C10E; Ck10)**	unalloyed construction steel / for case hardening				295~390	490~640	16		
S10C	1.0301	**C10**	unalloyed construction steel / for case hardening				290~380	400~650			
S10C	1.1207	**C10R**	unalloyed construction steel / for case hardening					400			
S12C	(JIS)	**untranslateable**	unalloyed construction steel / for case hardening								
S15C	1.0401	**C15R**	unalloyed construction steel / for case hardening				430	600~750			
S15C	1.1141	**C15E (Ck15)**	unalloyed construction steel / for case hardening			case hardened	355	590~780	14	HRc	49~55
S20C	1.0402	**C22**	unalloyed construction steel / for quenching and tempering / for heat treatment		16		340	470~620	22		
S20C	1.0406	**C25**	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	370	500~650	23		
S20C	1.1151	**C22E (Ck22)**	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	290~340	470~620	22		
S20C	1.1151	**C22E (Ck22)**	unalloyed construction steel / for quenching and tempering / for heat treatment				210~340	410~500			
S22C	1.1149	**3C22 (Cm22/C22R)**	unalloyed construction steel / for quenching and tempering / for heat treatment				340	470~620			
S25C	1.1158	**C25E (Ck25)**	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	370	550~700	21		

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Metal Table JIS - EN 2

JIS Material No.	EN Material No.	EN Denomination	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
S30C	1.1178	**C30**	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	280	510			
S30C	1.1178	**C30**	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	400	600~750			
S35C	1.0501	**1C35 (C35)**	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	430	630~780			
S35C	1.1181	**C35E (Ck35)**	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	270~300	520	19		
S40C	1.0511	**C40**	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	320	580			
S40C	1.0511	**C40**	unalloyed construction steel / for quenching and tempering / for heat treatment		16	QT	460	650~800	16		
S45[CD]	1.1191	**C45E (Ck45)**	unalloyed construction steel / for quenching and tempering / for heat treatment [cold drawn]		16	QT	490	700~850	14		
S45C	1.0503	**C45**	unalloyed construction steel / for quenching and tempering / for heat treatment			case hardened		650~800		HRc	49~55
S45C	1.0503	**C45**	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	305~340	580	16		
S45C	1.0503	**C45**	unalloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	340~390	640~790			
S45-D	1.1191	**C45E**	unalloyed construction steel / for quenching and tempering / for heat treatment								
S50C	1.1206	**C50E (Ck50)**	unalloyed construction steel / for quenching and tempering / for heat treatment				520	750			
S50C	1.1213	**C50**	unalloyed construction steel / for quenching and tempering / for heat treatment					640			
S53C	1.1210	**C53E (Ck53)**	unalloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	370	630~780			
S55C	1.0535	**C55**	unalloyed construction steel / for quenching and tempering / for heat treatment				550	800~950			
S55C	1.1203	**C55E (Ck55)**	unalloyed construction steel / for quenching and tempering / for heat treatment				550	800~950			
S58C	1.0601	**C60**	unalloyed construction steel / for quenching and tempering / for heat treatment			annealed	340~380	670~710	11		
S58C	1.1221	**C60E (Ck60)**	unalloyed construction steel / for quenching and tempering / for heat treatment			QT	580	850~1000			
S58C	1.1223	**C60R**	unalloyed construction steel / for quenching and tempering / for heat treatment			case hardened	450~580	800~950	13	HRc	49~55
SCM415[H]	1.7242	**16CrMo4**	alloyed construction steel / case hardening steel / higher carbon content								
SCM418[H]	1.7243	**18CrMo4**	alloyed construction steel / case hardening steel / higher carbon content		16	case hardened	850	1100~1350	9		
SCM418[H]	1.7243	**18CrMo4**	alloyed construction steel / case hardening steel / higher carbon content	16	40	case hardened	690	950~1300	9		
SCM418[H]	1.7243	**18CrMo4**	alloyed construction steel / case hardening steel / higher carbon content	40	100	case hardened	600	800~1150	10		
SCM420	1.7264	**20CrMo5**	alloyed construction steel / case hardening steel		16		600	1000	12		
SCM420	1.7264	**20CrMo5**	alloyed construction steel / case hardening steel	16	40		500	850	14		
SCM420	1.7264	**20CrMo5**	alloyed construction steel / case hardening steel	40	100		400	750	16		
SCM420H	1.7258	**24CrMo5**	alloyed construction steel / case hardening steel / higher carbon content					800~950			
SCM421	1.7264	**20CrMo5**	alloyed construction steel / case hardening steel								
SCM430	1.7218	**25CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment		16	QT	700	900~1100	18	HRc	58
SCM430	1.7218	**25CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment		16	QT	680	550~700	12	HB	215~260
SCM430	1.7218	**25CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	600	800~950	14	HB	215~260
SCM430	1.7218	**25CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment	40	100	QT	450	700~850	15	HB	215~260
SCM435[H]	1.7220	**34CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content				800	1000~1200			
SCM440	1.7220	**34CrMo4**	alloyed construction steel / / for quenching and tempering / for heat treatment / for flame-induction hardening				835	980	12		
SCM440H	1.7223	**41CrMo4**	alloyed construction steel / / for quenching and tempering / for heat treatment / for flame-induction hardening				880	980~1180			
SCM440H	1.7225	**42CrMo4**	alloyed construction steel / / for quenching and tempering / for heat treatment / for flame-induction hardening				900	1100~1300			
SCM445	1.7262	**16CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment								
SCM822	1.7350	**22CrMo44**	alloyed construction steel / for quenching and tempering / for heat treatment								
SCr415[H]	1.7015	**15Cr3**	alloyed construction steel / case hardening steel / higher carbon content								
SCr415[H]	1.7016	**17Cr3**	alloyed construction steel / case hardening steel / higher carbon content				450	800~1050	11		
SCr420[H]	1.7027	**20Cr4**	alloyed construction steel / case hardening steel / higher carbon content					<1000			
SCr430	1.7033	**34Cr4**	alloyed construction steel / for quenching and tempering / for heat treatment				635	780	18		
SCr430[H]	1.7033	**34Cr4**	alloyed construction steel / for quenching and tempering / for heat treatment				700~740	880~1000	15		
SCr435[H]	1.7034	**37Cr4**	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	650	880~1080			
SCr440	1.7035	**41Cr4/42Cr4**	alloyed construction steel / for quenching and tempering / for heat treatment				785	930	13		
SCr440[H]	1.7035	**41Cr4/42Cr4**	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	780	950~1150	11		
SCS13	1.4308	**G-X6CrNi18-9**	stainless steel casting								
SCS22	1.4401	**G-X5CrNiMo17-12-2**	stainless steel casting								
SGP	1.0035	**S185 (St.33)**	unalloyed construction steel / pipe steel				175~185	290			
SGPW	1.0035	**S185 (St.33)**	unalloyed construction steel / pipe steel / galvanized					290			
SK1	ISO	**TC140**	unalloyed tool steel for cold work								
SK2	ISO	**TC120**	unalloyed tool steel for cold work								
SK3	1.1545	**C105W1**	unalloyed tool steel for cold work							HRc	52~58
SK3	1.1645	**C105W2**	unalloyed tool steel for cold work								
SK4	ISO	**TC90**	unalloyed tool steel for cold work								
SK5	1.1525	**C80W1**	unalloyed tool steel for cold work								
SK5	1.1830	**C85W**	unalloyed tool steel for cold work								
SK6	1.1625	**C80W2**	unalloyed tool steel for cold work							HRc	52~58
SK7	1.1740	**C60W**	unalloyed tool steel for cold work					1000			
SKD1	1.2080	**X210Cr12**	unalloyed tool steel								
SKD11	1.2379	**X155CrVMo12-1**	unalloyed tool steel for cold work							HRc	>68
SKD12	1.2363	**X100CrMoV5-1**	unalloyed tool steel for cold work							HRc	>68
SKD4	1.2567	**X30WCrV5-3**	unalloyed tool steel for hot work								
SKD5	1.2581	**X30WCrV9-3**	unalloyed tool steel for hot work								
SKD6	1.2343	**X38CrMoV5-1**	unalloyed tool steel for cold work					1550			
SKD61	1.2344	**X40CrMoV5-1**	unalloyed tool steel for cold and hot work					1180~1770		HRc	>68
SKD7	1.2365	**X32CrMoV3-3**	unalloyed tool steel for hot work								
SKD8	(JIS)	**untranslateable**	unalloyed tool steel								
SKH10	1.3202	**S12-1-4-5**	alloyed high speed steel with Co								
SKH2	1.3355	**S18-0-1**	alloyed high speed steel without Co								
SKH51/SUH3	1.3343	**S6-5-2**	alloyed high speed steel without Co			hardened		≤1000		HRc	60~68
SKH52/SKH53	1.3344	**S6-5-3**	alloyed high speed steel without Co								
SKH55	1.3243	**S6-5-2-5**	alloyed high speed steel with Co								
SKH57	1.3207	**S10-4-3-10**	alloyed high speed steel with Co								
SKH59	1.3247	**S2-10-1-8**	alloyed high speed steel with Co								
SKS11	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKS2/3/31	1.2419	**105WCr6**	unalloyed tool steel for cold work			hardened		<1000		HRc	58~64
SKS21	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKS3	1.2510	**100MnCrW4 (~~)**	unalloyed tool steel for cold work								
SKS41	1.2541	**35WCrV7**	unalloyed tool steel for cold work								
SKS41	1.2542	**45WCrV7**	unalloyed tool steel for cold work								
SKS42	1.2552	**80WCrV8**	unalloyed tool steel for cold work								
SKS43	1.2833	**100V1**	unalloyed tool steel for cold work					<1000			

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JIS Material No.	EN Material No.	EN Denomination	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
SKS44	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKS5	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKS7	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKS8	1.2008	**140Cr3 (~~)**	unalloyed tool steel for cold work								
SKS93	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKS94	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKS95	(JIS)	**untranslateable**	unalloyed tool steel for cold work								
SKT3/SKT4	1.2713	**55NiCrMoV6**	unalloyed tool steel for cold and hot work					930~1420		HRc	55~60
SMF5040	(JIS)	**C43 (~~)**	sintered carbon mould steel								
SMn420[H]	1.1160	**22Mn6**	structural / heat treatment steel [increased Carbon content]								
SMn433[H]	1.1165	**30Mn5**	structural / nitriding steel / heat treatment steel [increased Carbon content]					<900			
SMn433[H]	1.1166	**34Mn5**	structural / nitriding steel / heat treatment steel [increased Carbon content]					750~950			
SMn438[H]	1.1167	**36Mn5**	structural / heat treatment steel [increased Carbon content]					800			
SMn443[H]	1.1175	**41Mn4**	structural / heat treatment steel [increased Carbon content]								
SMnC420[H]	1.1133	**20Mn5**	structural / heat treatment steel [increased Carbon content]					<800			
SMnC420[H]	1.7147	**20MnCr5**	structural / heat treatment steel [increased Carbon content]				685	1080~1370	8	HB	215
SNB16	1.7711	**40CrMoV4-7**	alloyed construction steel / for quenching and tempering / for heat treatment			QT	470~700	850~1000	14		
SNB21 [1-5]	1.7223	**41CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment			QT	880	980~1180			
SNB22 [1-5]	1.7223	**41CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment			QT	450~700	700~900			
SNB23 [1-5]	1.6562	**40NiCrMo8-4**	alloyed construction steel / for quenching and tempering / for heat treatment								
SNB7	1.7225	**42CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment	16	40	QT	650~900	900~1200	11	HRc	38
SNC236	1.5710	**36NiCr6**	alloyed structural steel								
SNC415[H]	1.5732	**14NiCr10**	alloyed construction steel / case hardening steel / higher carbon content					575			
SNC631[H]	1.5736	**36NiCr10**	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content		40	QT	780	1030~1180			
SNC631[H]	1.5736	**36NiCr10**	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content	40	100	QT	690	880~1030			
SNC631[H]	1.5736	**36NiCr10**	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content	100	250	QT	590	740~880			
SNC815[H]	1.5752	**14NiCr14**	alloyed construction steel / case hardening steel / higher carbon content					930~1230			
SNC836	1.3565	**48CrMo4**	unalloyed bearing steel					1080			
SNC836	1.5755	**31NiCr14**	alloyed bearing steel		40	QT	840	980~1130	11		
SNC836	1.5755	**31NiCr14**	alloyed bearing steel	40	100	QT	740	880~1030	12		
SNC836	1.5755	**31NiCr14**	alloyed bearing steel	100	250	QT	590	790~930	14		
SNCM220[H]	1.6523	**20NiCrMo2-2**	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content				590	980~1270	10		
SNCM240	1.6546	**40NiCrMo2-2**	alloyed construction steel / for quenching and tempering / for heat treatment								
SNCM415	1.7262	**16CrMo4**	alloyed construction steel / for quenching and tempering / for heat treatment								
SNCM420[H]	1.6587	**17CrNiMo8**	alloyed construction steel / for quenching and tempering / for heat treatment / higher carbon content								
SNCM431	1.6580	**30CrNiMo8**	alloyed construction steel / for quenching and tempering / for heat treatment			QT	1050	1250~1450			
SNCM439	1.6582	**34CrNiMo6**	alloyed construction steel / for quenching and tempering / for heat treatment			QT	700~900	1000~1200	11		
SNCM447	1.6511	**36CrNiMo4**	alloyed construction steel / for quenching and tempering / for heat treatment			QT	800~1000	1100~1300	10		
SNCM447	1.6511	**36CrNiMo4**	alloyed construction steel / for quenching and tempering / for heat treatment			QT	≥1000	1200~1400	9	HB	355~410
SNCM616	1.6565	**40NiCrMo6**	alloyed construction steel / for quenching and tempering / for heat treatment								
SNCM625	(JIS)	**untranslateable**	alloyed construction steel / for quenching and tempering / for heat treatment								
SNCM630	(JIS)	**untranslateable**	alloyed construction steel / for quenching and tempering / for heat treatment			QT		1150	10	HRc	35
SNCM815	1.6657	**14NiCrMo34**	alloyed construction steel / for quenching and tempering / for heat treatment								
SPCC[SD]	1.0330	**DC01 (St.12)**	unalloyed steel / deep drawable / [solid drawn]				140~280	270~410	28~39	HB	90~120
SPHC	1.0320	**St.22**	unalloyed steel / deep drawable / [hot coiled]					270	27~31		
SS330	1.0028	**S205G1T (USt.34)**	unalloyed mild steel				195	330~430	26		
SS400[D]	1.0040	**Ust.42.2**	unalloyed structural steel			unkilled		400~510			
SS400[D]	1.0042	**RSt.42.2**	unalloyed mild steel					400~510			
SS400[D]	1.0136	**St.42.3**	unalloyed mild steel					400~510			
SS490	1.0050	**E295 (St.50.2)**	unalloyed mild steel				265~295	470~610	20		
SS540	1.0060	**E335 (St.60.2)**	unalloyed mild steel					>540			
SSPR	(JIS)	**untranslateable**	structural steel								
SSPSR	(JIS)	**untranslateable**	structural steel								
STKM11A	1.0034	**S205G2T (RSt.34)**	unalloyed mild steel								
STKM12[A/C]	1.0038	**S235JRG2 (RSt.37.2)**	unalloyed mild steel			killed	215	340~470		HB	120
STKM13A	1.0480	**H240LA**	unalloyed construction steel / pipe steel				240~310	340	27		
STPG370	1.0254	**S235 (St.37)**	unalloyed construction steel / pipe steel								
STPS2	(JIS)	**untranslateable**	seamless pipe for hydraulic fluids				180	450	30		
STPT370	1.0255	**St.37-4**	unalloyed construction steel / pipe steel for high temperature			(<350°C)					
STPT370	1.0305	**P235G1TH (St.35.8)**	unalloyed construction steel / pipe steel for high temperature			(<350°C)					
SUH1	1.4718	**X45CrSi9-3**	alloyed valve steel / heat resistant			C					
SUH11	(JIS)	**untranslateable**	alloyed valve steel / heat resistant			M					
SUH3	1.4731	**X40CrSiMo10-2**	alloyed high speed steel without Co								
SUH309	1.4828	**X15CrNiSi20-12**	heatresistant steel			A	230~290	500~750	30~40	HB	130~220
SUH31	1.4873	**X45CrNiW18-9**	alloyed stainless steel / valve steel / heat resistant								
SUH310	1.4841	**X15CrNiSi25-20**	alloyed stainless steel / acid proof / heat resistant			A	230~300	550~750	30~40		
SUH310	1.4845	**X12CrNi25-21**	alloyed stainless steel / acid proof / heat resistant			A	230~300	550~750	30~40		
SUH35/SUH36	1.4871	**X53CrMnNiN21-9**	alloyed stainless steel / valve steel / highly heat resistant								
SUH37	(JIS)	**untranslateable**	alloyed stainless steel / acid proof / heat resistant								
SUH38	(JIS)	**untranslateable**	alloyed stainless steel / acid proof / heat resistant								
SUH4	1.4747	**X80CrNiSi20**	alloyed stainless steel / acid proof / heat resistant			C					
SUH409[L]	1.4512	**X5CrTi12**	alloyed stainless steel / acid proof / heat resistant			F					
SUH409[L]	1.4720	**X6CrTI12**	alloyed stainless steel / acid proof / heat resistant			F					
SUH446	1.4762	**X10CrAlSi25**	alloyed stainless steel / acid proof / heat resistant			F	280	520~720	10		
SUH600	(JIS)	**untranslateable**	alloyed construction steel / for quenching and tempering / for heat treatment / heat resistant			M					
SUH616	1.4935	**X20CrMoWV12-1**	alloyed stainless steel / valve steel / highly heat resistant			C					
SUH660	1.4943	**X4NiCrTi25-15**	alloyed stainless steel / valve steel / highly heat resistant / weldable without treatment			A					
SUH661	1.4971	**X12CrCoNi21-20**	alloyed stainless steel / valve steel / highly heat resistant			A					
SUJ1	(JIS)	**untranslateable**	unalloyed tool steel (~SUJ2 however 0.9-1.2%cr)								
SUJ2	1.2067	**102Cr6**	unalloyed tool steel / ball bearing steel			annealed		675		HB	230
SUJ2	1.3505	**100Cr6**	unalloyed tool steel / ball bearing steel			annealed		675		HB	230
SUJ2	1.3505	**100Cr6**	unalloyed tool steel / ball bearing steel			hardened		≤850		HRC	58~65
SUJ3	(JIS)	**untranslateable**	unalloyed tool steel (~SUJ2 however 0.4-0.7%Si)								

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Metal Table JIS - EN 4

JIS Material No.	EN Material No.	EN Denomination	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
SUJ4	(JIS)	**untranslateable**	unalloyed tool steel								
SUJ5	(JIS)	**untranslateable**	unalloyed tool steel								
SUM11	1.0702	**U10S10**	unalloyed steel / free cutting steel								
SUM12	(JIS)	**untranslateable**	unalloyed steel / free cutting steel								
SUM21	1.0711	**9S20**	unalloyed steel / free cutting steel					370~450		HB	100~130
SUM22[L]	1.0715	**9SMn28**	unalloyed steel / free cutting steel							HB	110~170
SUM24L	1.0718	**9SMnPb28**	unalloyed steel / free cutting steel					390~580		HRc	35~41
SUM25	1.0736	**9SMn36**	unalloyed steel / free cutting steel					<500			
SUM31[L]	1.0710	**15S10**	unalloyed steel / free cutting steel					400~560			
SUM32	1.0723	**15S20**	unalloyed steel / free cutting steel								
SUM41	(JIS)	**untranslateable**	unalloyed steel / free cutting steel								
SUM42	(JIS)	**untranslateable**	unalloyed steel / free cutting steel								
SUM43	ISO	**44SMn28**	unalloyed free cutting steel / for case hardening				420	630~850	16		
SUP10	1.8159	**50CrV4/51CrV 4**	alloyed construction steel / for quenching and tempering / for heat treatment				1180	1350~1600			
SUP11A	1.7138	**52MnCrB3**	alloyed construction steel / for quenching and tempering / for heat treatment								
SUP12	1.7102	**54SiCr6**	alloyed construction steel / for quenching and tempering / for heat treatment / hot rolled spring steel				1130	1320~1570	6		
SUP13	ISO	**60CrMo33**	alloyed construction steel / for quenching and tempering / for heat treatment						35		
SUP3	1.1262	**C82D2**	alloyed construction steel / for quenching and tempering / for heat treatment								
SUP6	(JIS)	**untranslateable**	alloyed steel for special purpose								
SUP7	1.5026	**56Si7**	alloyed construction steel / valve steel / warm drawn spring steel						45		
SUP7	1.7108	**60SiCr7**	alloyed construction steel / valve steel / warm drawn spring steel				1130	1320~1570	6		
SUP9A	1.7176	**55Cr3 (~~)**	alloyed construction steel / for quenching and tempering / for heat treatment								
SUS202	1.4371	**X2CrMnNiN17-7-5**	alloyed stainless steel						40		
SUS301	1.4319	**X3CrNiN17-8**	alloyed steel / stainless and acidproof steel / for cold extrusion			A		500~750			
SUS301J1-[CSP]	1.4310	**X10CrNi18-8**	alloyed steel / stainless and acidproof steel / for cold extrusion			A	195	500~750			
SUS301-WPA	1.6901	**X12CrNi18-10**	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
SUS301-WPB	1.6902	**X12CrNi18-11**	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
SUS302	1.6900	**X12CrNi18-9**	alloyed stainless steel / acid proof			A					
SUS303	1.4305	**X10CrNiS18-9**	alloyed stainless steel / acid proof			A1		520	40	HRc	>68
SUS303	1.4305	**X8CrNi18-9**	alloyed stainless steel / acid proof			A1	190	500~750	35		
SUS304	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof			A2	190	540~750	45		
SUS304-CSP	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof / spring steel / cold coild								
SUS304-D	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof								
SUS304-H	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof								
SUS304L	1.4306	**X2CrNi19-11**	alloyed stainless steel / acid proof			A2		520~670	40~45		
SUS304LN	1.4311	**X2CrNiN18-10**	alloyed stainless steel / acid proof			A	270	550~760			
SUS304-TP	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof								
SUS304-WPB	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof								
SUS304-WPC	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof / spring steel			(>180 °C)		700			
SUS305[J1]	1.4303	**X4CrNi18-12**	alloyed stainless steel / acid proof			A2		500/650	45		
SUS309S	1.4833	**X12CrNi23-13**	alloyed stainless steel / acid proof / heat resistant			A					
SUS309S	1.4833	**X7CrNi23-14**	alloyed stainless steel / acid proof / heat resistant								
SUS316	1.4401	**X5CrNiMo17-12-2**	alloyed stainless steel / acid proof				220	520~700	40	HB	130~180
SUS316	1.4436	**X3CrNiMo17-13-3**	alloyed stainless steel / acid proof			A4		550~700	40		
SUS316	1.4438	**X2CrNiMo18-15-4**	alloyed stainless steel / acid proof			A4		550~700	40		
SUS316L	1.4404	**X2CrNiMo17-12-2**	alloyed stainless steel / acid proof			A4		530~680	40		
SUS316L	1.4435	**X2CrNiMo18-14-3**	alloyed stainless steel / acid proof			A4		500~700	40	HV	120
SUS316LN	1.4406	**X2CrNiMoN17-12-2**	alloyed stainless steel / acid proof			A4					
SUS316LN	1.4429	**X2CrNiMoN17-13-3**	alloyed stainless steel / acid proof			A4	220	500~700	40	HB	130~170
SUS316-TP	1.4301	**X5CrNi18-10**	alloyed stainless steel / acid proof								
SUS316-WPA	1.4401	**X5CrNiMo17-12-2**	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
SUS316-WPB	1.4401	**X5CrNiMo17-12-2**	alloyed stainless steel / acid proof / spring steel			A (>290°C)					
SUS317	1.4449	**X3CrNiMo18-12-3**	alloyed stainless steel			A					
SUS317L	1.4438	**X2CrNiMo18-16-4**	alloyed stainless steel / acid proof					550~700			
SUS321	1.4541	**X6CrNiTi18-10**	alloyed stainless steel / weldable without treatment / tough to subzero temperature			A2	200	520~720	40	HB	130~190
SUS321	1.4878	**X8CrNiTi18-10**	alloyed stainless steel / acid proof			A	190	500~720	40		
SUS329J1	1.4460	**X8CrNiMo27-5**	alloyed stainless steel / acid proof			AF					
SUS347	1.4550	**X6CrNiNb18-10**	alloyed stainless steel / acid proof			A2		520~720	40	HB	130~190
SUS347	1.4550	**X10CrNiNb18-9**	alloyed stainless steel / acid proof					520~750			
SUS384	ISO	**X3NiCr18-16**	alloyed stainless steel / acid proof								
SUS403	1.4000	**X6Cr13**	alloyed stainless steel / acid proof			F		600			
SUS405	1.4002	**X6CrAl13**	alloyed stainless steel / acid proof / heat resistant			F			10		
SUS405	1.4724	**X10CrAl11-3**	alloyed stainless steel / acid proof / heat resistant			F					
SUS410	1.4006	**X10Cr13**	alloyed steel / stainless and acidproof / for cold extrusion			C1		730	20		
SUS410	1.4006	**X10Cr13**	alloyed steel / stainless and acidproof steel / for cold extrusion			QT		1200	7	HRc	37
SUS410	1.4006	**X10Cr13**	alloyed steel / stainless and acidproof steel / for cold extrusion					380	45		
SUS410J1	1.4024	**X15Cr13**	alloyed steel / stainless and acidproof steel / for cold extrusion								
SUS416	1.4005	**X12CrS13**	alloyed stainless steel / acid proof			M		540	25		
SUS420	1.4029	**X29CrS13**	alloyed stainless steel / acid proof								
SUS420F	1.4029	**X29CrS13**	alloyed stainless steel / acid proof			M					
SUS420J	1.4021	**X20Cr13**	alloyed stainless steel / acid proof			C1		800~1000	8~12	HRc	40
SUS420J2	1.2083	**X42Cr13**	alloyed stainless steel / acid proof			C1		850~1000	10	HRc	>68
SUS420J2	1.4031	**X38Cr13**	alloyed stainless steel / acid proof			C1		800			
SUS420J2	1.4034	**X46Cr13**	alloyed stainless steel / acid proof			C1			11		
SUS429	1.4001	**X7Cr14**	alloyed stainless steel / acid proof			F		530~680			
SUS430	1.4016	**X6(8)Cr17**	alloyed stainless steel / acid proof / heat resistant			F1	240	450~630	12~20	HB	130~170
SUS430	1.4742	**X10CrAl(Si)18**	alloyed stainless steel / acid proof / heat resistant				270	500~700	15		
SUS430F	1.4104	**X12CrMoS17-2**	alloyed stainless steel / acid proof / heat resistant			F		840			
SUS430LX	1.4510	**X6CrTi17**	alloyed stainless steel / acid proof / heat resistant								
SUS430LX	1.4511	**X8CrNb17**	alloyed stainless steel / acid proof / heat resistant								
SUS431	1.4057	**X17CrNi16-2**	alloyed stainless steel / acid proof			C3		800~950	12~14		
SUS431	1.4057	**X17CrNi16-2**	alloyed stainless steel / acid proof				280	980		HB	280
SUS434	1.4113	**X6CrMo17-1**	alloyed steel / stainless and acidproof steel / for cold extrusion			F1		450~630	18		

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JIS Material No.	EN Material No.	EN Denomination	Material Description	Ø min.	Ø max.	Condition	Re-Rp0,2 in MPa	Rm in MPa	A in %	Hardness Unit	Hardness Value
SUS440	(JIS)	**X100CrMo17 (~)**	alloyed stainless steel / acid proof								
SUS440B	1.4112	**X90CrMoV18**	alloyed stainless steel / acid proof			C				HRc	>68
SUS440C	1.4125	**X105CrMo17**	alloyed stainless steel / acid proof			C3 QT		780	15	HRc	50
SUS444	1.4522	**X2CrMoTi18-2**	alloyed stainless steel / valve steel / highly heat resistant / weldable without treatment					450	35		
SUS630	1.4542	**X5CrNiCuNb16-4**	,alloyed stainless steel / acid proof / complete hardenable			aged		1030~1300	10~11	HRc	41~42
SUS630	1.4542	**X5CrNiCuNb16-4**	alloyed stainless steel / acid proof / complete hardenable					800	14	HV	250
SUS631	1.4568	**X7CrNiAl17-7**	alloyed stainless steel / acid proof / complete hardenable					1230			
SUS631J1-WPC	1.4568	**X7CrNiAl17-7**	alloyed stainless steel / acid proof / spring steel / complete hardenable			(>340 °C)		1400~2200			
SUSXM27	1.4131	**X1CrMo26-1**	alloyed stainless steel					570	25		
SUSXM7	1.4567	**X3CrNiCu18-9-4**	alloyed stainless steel / acid proof / with special elements								
SWB	(JIS)	**untranslateable**	universal spring steel	Ø 0,8	Ø 1,4	(> 110°C)		2010~1620			
SWB	(JIS)	**untranslateable**	universal spring steel	Ø 1,6	Ø 2,6	(> 110°C)		1570~1420			
SWB	(JIS)	**untranslateable**	universal spring steel	Ø 2,9	Ø 4,5	(> 110°C)		1620~1320			
SWB	(JIS)	**untranslateable**	universal spring steel	Ø 5	Ø 7	(> 110°C)		1520~1180			
SWC	(JIS)	**untranslateable**	universal spring for high quality springs	Ø 5	Ø 7	(> 110°C)		1720~1370			
SWC	(JIS)	**untranslateable**	universal spring for high quality springs	Ø 0,8	Ø 1,4	(> 110°C)		2300~1860			
SWC	(JIS)	**untranslateable**	universal spring for high quality springs	Ø 1,6	Ø 2,6	(> 110°C)		2060~1520			
SWC	(JIS)	**untranslateable**	universal spring for high quality springs	Ø 2,9	Ø 4,5	(> 110°C)		1860~1520			
SWCH8[A]	(JIS)	**untranslateable**	cold formed steel / for steel wires					450			
SWO-A	(JIS)	**untranslateable**	heat treaded spring steel for general purpose springs			(>120°C)					
SWO-B	(JIS)	**untranslateable**	heat treaded spring steel for general purpose springs			(>120°C)					
SWOCV-V	(JIS)	**untranslateable**	heat treaded Q&T / Cr-V spring and valve steel for impact load			(>220°C)					
SWOSC-V	(JIS)	**untranslateable**	heat treaded Q&T / Cr-V spring and valve steel for impact load			(>245°C)					
SWO-V	(JIS)	**untranslateable**	heat treaded Q&T spring steel for general purpose springs			(>120°C)					
SWP-A	(JIS)	**untranslateable**	hight strength cold drawn spring steel			(> 110°C)					
SWP-B	(JIS)	**untranslateable**	hight strength cold drawn spring steel			(> 110°C)					
SWRCH	1.0303	**C4C (QSt.32.3)**	cold formed steel / for steel wires								
SWRH42A	(JIS)	**C43 (~~)**	carbon spring steel hardened								
SWRH57	(JIS)	**C43 (~~)**	carbon spring steel hardened								
SWRH6	(JIS)	**C43 (~~)**	carbon spring steel hardened								
SWRH62	(JIS)	**C43 (~~)**	carbon spring steel hardened								
SWRM	(JIS)	**untranslateable**	contstructional steel wire								
TP340	3.7035	**Ti99.5 (Ti2)**	titanium				min.215	390~540	22		
ZDC1	ZP0401 (2.2141)	**ZnAl4Cu1**	zinc die cast								
ZDC2	ZC0400	**ZnAl4**	zinc die cast				230	300	7		

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Plastic Table 1

iPlastics

Abreviation (DIN ISO 1629)	common denomination	typical technical values
CR (ISO)	Chlorbutadien-Rubber	Operating Temperature: -40°C ~ +110°C (short time use +130°C), Density: 1.25 g/cm³
Good resistance against mineral oil, very good resistance against ageing by exposure to exposure to ozone, resistance against acid and alkalines, good abrasion resistance, high flame resistant, restricted lightwigthed fuel resistance. (Similar to NBR in chem. and phys. area: smaller resistance against mineral oil, better resistance against ageing by exposure to ozone, resistance against acid and alkalines).		
CFK CRP (ISO)	Carbon Reinforced Plastic	
Carbon fibres are Fibres with very high strength and rigidity and very small elongation at break. Carbonization temperatures for the fibres are in the area from 1300 - 1500 °C, whereby the carbon content is increasing to 96% -%98%. In cooperation with thermoset resin or thermoplastic resin CFK's enable to create light, stiff and high strength composite materiale with small elongation. The properties of composite materiales are adjustable in a wide range depending on typ of plastic, lenth of fibres and thickness of fibres. Temperature resistance is primary depending on the basic plastic.		
EPDM (ISO)	PolyEthylenePropyleneDieneRubber	Operating Temperature: -40°C~+130°C (short time use +150A), steam up to 200°C, hot water / air up to 150°C; Density: 1.05~1.2 g/cm³
Exelent resistance against weathering, agening, exposure to ozone, chemicals, hot water and vapour. good resistance against medium like acetone, mathanol, acids, alkaline solutions, ketones and flame resistant hydraulic fluids. Small permeability to vapour, good thermal stability, excessively deep embrittlement temperature. very good electr. insulating properties.		
EPM (ISO) EPR	Ethylen Propylen Rubber	Operating Temperature: -25 °C~+200°C, short time use +250°C, (-40°C at static load), Density: 1.8 g/cm³
Properties as far as possible same to EPDM. EPR. Often used as insulator for wires and conduction.		
FPM (ISO) FKM (ASTM)	Fluorcarbon Fluorrubber Polyfluoralkylmethylen	Operating Temperature: -25°C~+200°C, short time use +250°C (-40°C at static load), Density: 1.8 g/cm³
Very good Oil- and Chemical resistance, very good heat resistance, exelent exposure to ozone-, agening- and weathering resistance, high resistance against inflammation. very small elasticity, middlesized mechanical strength. Permeability to gas ist very small and similar to permeability of Butylrubber.		
GFK GRP (ISO)	glass reinforced plastic	Operating Temperature: 120°C+180°C max. 2h, bis 500A for high temperature resistant types (Epoxy basic), Density: 1.8 - 2.2 g/cm³
Glasfibres are fibres with high strength and stiffness and small elongation at break. In cooperation with thermoset resin or thermoplastic resin light, stable and strength composite materials with small elongation. The properties of composite materiales are adjustable in a wide range depending on typ of plastic, lenth of fibres and thickness of fibres. Temperature resistance is primary depending on the basic plastic.		
IIR (ISO)	Butyl-Rubber Isopren-Rubber Isobutylen-Rubber Polyisobutylen-isoprene	Operating Temperature: -40°C~+130°C, short time use +150°C, Density: 1.5 g/cm³
Good resistance against acids and alkaline solutions, very good agening resistance, exposure to ozone, very good electric insulating properties, small permeability to gas. Low elasticity and no resistance against oil and grease. Extremly damping properties for aperiodic vibrations. Middlesized mechanical properties.		

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Abreviation (DIN ISO 1629)	common denomination	typical technical values
NBR (ISO)	Acrylnitrilbutadiene Rubber Acrylnitril Rubber Nitrilrubber Polyacrylnitrilbutathen	Operating Temperature: Fluids up to +70°C, air up to +90°C, temp. depending on ACN-content max. -50°C, Density: 1.6 g/cm³, Elongation at Break: 100~350%
Acrylnitril content (small, middle, high). High Acrylnitril content = high Resistance against aromatic hydrocarbon. Small Acrylnitril content = high flexibility at low temperatures. The typ with normaly best combination in normal using areas has a middlesized Acrylnitril content. Permeability to gas nearly same to IIR. Very good resistance against mineral oil.		
NR (ISO)	Natural Rubber Polyisoprene	Operating Temperature: -45°C~+100°C, Density: 1.2 g/cm³
Good mechanical properties(very high strength, high elongation at break and very high impact resilience, good abrasion resistance). No resistance against mineral oil and mineral grease; poor exposure to ozone and agening. Natural rubber is comparable to with Polyisoprene. Permeability to gas for NR is approx 20 times higher IIR.		
PA (ISO)	Polyamide	Operating Temperature: +80°C~+110°C (short time use +140°C~+170°C), Density: 1.17 g/cm³
Semicrystalline thermoplastic resin, i.e. PA 6 and PA 6,6. The number is representing the amount of carbon atomes within amine- and acid monomeres. Low temperature resistance, shock restistant and impact resistant, even on rough surfaces abrasion resistant, high internal working capacity.		
PBT (ISO) PBTP	Polbutylenterephthalat Dimethyl Terephthalat und Butandiol Polyester	Operating Temperature: -30°C~+100°C (160°C short time use), Density: 1.3 g/cm³
Small tendency for leakage current, very high stability for dimensions (better than POM), low slip friction, high strength and stiffness (smaller than POM and PET, but higher impact resistance), very good abrasion resistance.		
PC (ISO)	Polycarbonate Lexan	Operating Temperature: -130°C~+130°C, Density: 1.2 g/cm³, Elongation at Break: 90~120%
Extremly high impact resistance, high strength, high temperature resistance, good optical properties and self-extinguishing. Sensibel against chemicals and sensible for stress cracking, not usable for continunous endurance above 20 Mpa, under temperature effect continuous load up to maximum 10 MPa, unusable at higher dynamic load , at edges and stepped shapes with small and sharp edges very notch sensitive.		
PE (ISO)	Polyethylene	Operating Temperature: ~+80°C (short time use +100°C), Density: hard condition: 0.95 g/cm³, soft condition: 0.92 g/cm³ / HDT/A42-49 (HDUHMW)
Waxy and non adhasive surface. Low density high tenacity, low strength and hardness, exelent chemical resistance, poor temperature resistance for steam and permeable for Oxygen, Carbon dioxide and aromatic substances.		
PET (ISO)	Polyethylenterephthalat Poly(ethylendioxytereftaloyl) Polyester	Operating Temperature: -50°C~+110°C (short tim use 180°C), Density: 1.34 g/cm³
Dimensionally stable (better than POM), low sliding resistance, high strength and stiffness (worse than POM), very good abrasion resistance.		

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Properties herein shall not be located directly to a product and there is no supposition that any product achieves these values.
For proof values own checks are necessary or you may request the direct related value from Misumi.

Plastic Table 3

Abreviation (DIN ISO 1629)	common denomination	typical technical values
PF (ISO)	Phenolformaldehyd Bakelite	-50~+100, up to 2h at 130°C, at 180°C breakdown, Density: 1.4 g/cm³
Hard and brittle, insoluble, infusible, flame-resistant, self-extinguishing, resistant against agening. By Polycondensation from carbolicum acidum with formaldehyde manfactured phenoplast.		
PMMA (ISO)	Polymethylmethacrylate	Operating Temperature: -40°C~+90°C (short time use +100°C), Density: 1.2 g/cm³, HDT/A 95, HDT/B 100
Lightfast, glas clear, nearly unbreakable, sensitive against dust, scratch-resistant, UV-resistant, resistantant against weak acids and alkaline solutions, resistant against mineral oil and gasoline, partially resistant to solvent.		
Polyolefine		
Polymer out of hydrocarbon (formula CnH2n) built up in one double link. (polymerized alkene). Polyolefines are semikrisalline thermoplastic resins, distinguished by good chemical resistance and good electrical insulation properties. This group is very reasonable in price and can be manufactured by conventional procedures. That's the reason for often use and that they are one of the most important group of plastics. In polymeric conditon the Polyolefine are robust and flexible plastics with numerous possibilities in use. Inherent plastics: PE (Polyethylene), PP (Polypropylene), PB (Polybenzimidazol), PMP (Poly-4-methylpenten), PB (Polybuten-1), PIB (Polyisobuten). {Olefine = artificial word from fr. olefiant which is built out of lat. oleum and fiacre. Alkene = unsuturated, aliphatic hydrocarbon with one double link inside molecule}		
POM (ISO) POM-C	Polyformaldehyd Polyoxymethylen Copolymer Polyacetal	Operating Temperature: -40°C~+110°C (short time use +150°C), Density: 1.4 g/cm³
Low frictional resistance, good abrasion resistance, very good endurance limit, high insulating strength, good chemical resistance (especially against solvents), robust against stress fracturing.		
PP (ISO)	Polypropylene Neoprene® (DuPont)	Operating Temperature: 0°C~max. +110°C (embrittlement in cold condition), Density: 0.90 g/cm³
Higher stiffnes, hardness and strength than PE, however lower than PA, average value for impact strength, low density, very good chemical resistance, high bending stress fatigue limit, good stress fracturing resistance(better than PE), very limited properties in cold condition, very good dielectric strength.		
PPO (ISO) PPE	Polyphenyleneoxide	Operating Temperature: -20°C~+90°C (short time use -35°C~ +130°C), HDT/A 88A, HDT/B 93°C
Stiff, high strength and dimension stable, good electrical and thermal properties, good hydrolysis- and chemical resistance, resistance against deformation at high temperatures and high humidity. For parts where humidity and temperature is a criterion but on the other hand difficult to machine.		
PPS (ISO)	Polyphenylensulfid	Operating Temperature: +200°C~+240°C (short time use +300°C), Density: 1.6 g/cm³
High hardness and stiffness, good abrasion resistance, low absorbtion of humidity, favorable insulation properties, small dielectric loss, high flame resistance, high chemical resistance.		
PTFE (ISO)	Polytetrafluorethylen Polytetrafluorethen Polytetrafluoräthylen	Operating Temperature: -270°C~+260°C (short time use +300°C, over 400°C toxic outgassing!), Density: 2.17 g/cm³
Resistant against nearly all organic and inorganic chemicals (except elementary fluor under pressure at high temperatures, lowest coefficient of friction (stat. 0.03; dyn. dry 0,05 - 0,20), not in any way adhasiv.		

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Properties herein shall not be located directly to a product and there is no supposition that any product achieves these values.
For proof values own checks are necessary or you may request the direct related value from Misumi.

Plastic Table 4, Ceramics Table

Abreviation (DIN ISO 1629)	common denomination	typical technical values
PU (ISO) AU (ISO)	Polyurethan Esterbase Polyurethan Etherbase	Operating Temperature: -40°C (from approx. -20°C increasing stiffness) ~+80°C (+120°C short time use), charing at +500°C, Density: 1.2 g/cm³, Elongation at Break: 350-700%
Very good wear resistance, high resilience, good up to very good resistance against weathering, good UV-resistance and good exposure to ozone (Yellowing due to influnce of wathering over longer time incl. small surface brittleness and small reduction of mechanical values), flexible in a wide temperature range, high buccklingstrength and tensile strength(high tear growth resistance), good dynamic load properties, hydrolysis- and mikrobe resistance (for polyether typ), oil resistant, grease resistant, solvent resistant (especially at higher aromatic content). No resistance to hot water! There is an endangering for typ without microbe resistance, to be destingerated by longer existing infestation by microbes. Humidity together with heat and a higher amount of organism can push up this process. Due to released enzymes the Ester links will be divided and the material will be destroyed. Mostly there is a selective infestation, in opposite to hydrolytic infestation, which takes place on the whole surface. (Hydrolys		
PVAC (ISO)	Polyvinylacetate	Operating Temperature: +30°C, max. 80°C afterwards softening, Density: g/cm³
Soft, at normal temperatures elastic up to hard, resistant against weathering and light resistant, no solubility in water, oil and paraffines, soluble in organic solvent, aromatic and halogenated hydrocarbon).		
SIR (ISO) MVQ (ISO)	Silicon (SIR) Silicon Rubber Styrol - Isopren - Rubber Polysiloxan (MVQ)	Operating Temperature: -90°C~+180°C (short time use +250°C), without influence of water or steam, Density: 1.2 g/cm³
High heat resistance, soft and high flexibility, exelent properties in cold use , very good resistance against oxygen, very good exposure to ozone and resistance against UV and weathering, very good electrical insulation properties, no physiological effect, bad gas tightness, normal mechanical properties, low abrasion resistance.		
All information is based on values and properties which are achieved typically and are only for assessment of materials (typical values). Properties herein shall not be located directly to a product and there is no supposition that any product achieves these values. For proof values own checks are necessary or you may request the direct related value from Misumi.		

iCeramics

Abreviation (DIN ISO 1629)	Familar denominations and names	Typical technical values
Al2O3	Aluminiumoxide	Operating Temperature: max. 1200°C, Density: 3.7 g/cm³, Compression Strength: 1450~2450 N/mm², Resistance to Bending 250~350 N/mm², Hardness: 2300 HV, Thermal Conductivity: 30 W/m•K, 1014 Ohm•cm
High strength and hardness, high wear resistance, very good chemical resistance and corrosion resistance, high thermal conductivity, high thermal shock resistance, high electric insulation values.		
ZrO2	Zirkonoxide	Operating Temperature: max. 800°C, Density: 6.0 g/cm³, Compression Strength: 2100 N/mm², Resistance to Bending 900~1000 N/mm², Hardness: 1300 HV, Thermal Conductivity: 2.5 W/m•K, 1010 Ohm•cm
High strength and hardness, high wear resistance, very good chemical resistance and corrosion resistance, high thermal conductivity, high thermal shock resistance, high electric insulation values.		

Surface Treatments

Anodizing– /Hard Anodizing

ELOXAL is a contrived word and the abbreviation for ELectrolytic Oxidized ALuminum. During anodic or electrolytic oxidation of aluminum and its alloys, anodically charged aluminum (Al = pos. pole) is converted by passing electric current through a cooled acidic solution onto a surface as an Al203 (aluminum oxide) layer. This oxide shift is many times stronger (x 100) than a natural oxide layer. Its strength is defined and limited by the specific process used. While a layer can be deposited from the bath onto the surface of the workpiece in conventional electroplating (purely layer by layer build up), aluminum oxide can only be built up from the inside out from the boundary surface between the oxide layer and metallic aluminum. Metallic aluminum is also acquired from the conversion process and is continuously removed and converted. [Al203 directly forms aluminum (2/3 inwards, 1/3 outwards).]

Properties:

Type:	oxide layer, hard and dense
Color:	colorless/natural colors, colored or black
Hardness:	approx. 250 ~ 300 HVH
Layer thickness:	~ 5-25 Om.
Corrosion protection:	Protection against weather and corrosive attack.
Miscellaneous:	Special wear protection properties occur in hard anodizing due to the increased layer thickness.

Black Oxiding

In black oxiding a dense, black and adhesive iron oxide layer is created on a steel surface. After subsequent immersion in oil, the shine is highlighted and an optically appropriate corrosion protection is achieved, which is, however, limited in its protective effectiveness. Black oxided surfaces do not change the dimensional accuracy of the workpiece. Black oxiding is a chemical process. The workpiece is immersed in a 135-145°C alkali and oxidizing solution (sodiumhydroxide solution and oxidizing agent) a thin oxide layer of black iron oxide (Fe304) is created on the surface of the part.

Properties:

Type:	Oxide layer
Color:	black surface
Layer thickness:	~ 0.5 to 2 Om.

Chromating/Passavating

Chromating and passivating are secondary treatment methods (often after zink plating) in which the workpiece is treated without an external electrical supply. This process creates transparent, shiny, yellow, olive-green, blue, black and other color top coats. They are used as corrosion and tarnish protection layers or for improving adhesion of subsequent painting. Passivated conversion layers occur from a chemical reaction with chrome containing acids, where a reaction occurs between the workpiece surface and the solution. Chromates are salts from chromic acid H2CrO4 and are derived from CrO3 (chromium (VI) oxide). They are highly poisonous. Chromating and passivating are differentiated visually according to color (e.g. blue, yellow chromating and olive-green passivating). In technical terms typically only III-value bonds are used for passivating and only VI-value bonds for chromating. Looked at closely, however, even chromates can also be from group III bonds. Yellow chromates are the most common and in them the chromium is usually in the group VI bonding form. However, recently also yellow chromates are on the market based on group III bonds. Blue chromates are usually based on group III chromium bonds, however some are also group IV bonds. Thick film passivates (olive-green chromates) are foodstuff compatible “chromates” . Here the layer is formed from chrome-III ions (Cr203 [chromium (III) oxide]). Therefore, on the basis of the color or designation alone, no definite conclusion is possible.

Properties:

Type:	Non-metallic coating, conversion layer
Layer thickness:	~ 15 Om.

Black chromium-plating properties:

Color:	deep black matte layer
Light return:	good absorption properties
Friction/abrasion:	Abrasion resistance lower than with bright finish or hard chromium
Hardness:	HRC 68-74. All coated steel parts <HRC 36 should be tempered after coating with 190°C +/- 25°C.

Hard chromium-plating properties:

Color:	metal colored
Corrosion:	very good corrosion resistance
Friction/abrasion:	high abrasion and wear resistance
Hardness:	800 - 1100 HV
Miscellaneous:	high temperature resistance

Chrome Plating (Chromium-Plating)

Bright chromium-plating:
There is a differentia here between mirror finish chromium-plating (ground and polished before electroplating, where a mirror finish surface is the goal after processing) and technical chromium-plating (the pretreatment is eliminated and machining marks can be seen, for example).

Industrial chromium-plating:
Chromium-plating without pretreatment and copper-plate is referred to here. A matte surface (light gray) can also be the result of chromium-plating. A relatively inexpensive process, since the cost-intensive work is eliminated. Hard chromium-plating is the direct deposit of thicker chromium layers without an intermediate layer.

Black chromium-plating:
Using a very high current density, black chromium can be deposited at room temperature. The deposited layers have a high oxygen content. It is assumed that they contain approx. 60% chromium and approx. 40% chromium(III)-oxide.

Dicoat

Refer to: TD coating (Toyota diffusion)

Elektroless Nickel-plating

The nickel is dissolved in the electrolyte and is not available as a metal plate. The advantage is in the contour definition. Chemical nickel-plating is a process in which the workpiece can be coated with high contour conformity and dissolved nickel penetrates everywhere. In contrast to electroplated deposited nickel, the layer in this process is applied absolutely uniformly, even in less accessible areas. This layer distribution therefore guarantees an exceptionally high corrosion resistance. Chemical nickel-plating is carried out without external power supply, normally with sodium-hypophosphite as a reducing agent. The bath temperature is approx. 95°C. The chemical nickel-layer contains 6-10% phosphorous, which results in high hardness and outstanding corrosion protection. The disadvantage is in the significantly higher price. Today layers to 50 Om thick can be deposited with 5 µm accuracy.

Properties:

Type:	metallic pore-free
Color:	light shiny
Hardness:	600 HV (In deposited condition significantly harder than electroplated nickel and other layers), through thermal treatment up to 1200 HV Phosphorous contents: 10-12 %
Resistance:	60-70 Oq (insulating layer function)

KANIGEN® (chem. Nickel)

KaNiGen: Catalytic nickel generation. KANIGEN coating was originally a process developed by the General American Transportation Company (GATC in USA). (It is currently patented in many countries). In comparison to other mech. coating processes hydrogen embrittlement is avoided with this chem. nickel deposition. The process is comparatively expensive, offset by a high degree of corrosion resistance and the better soft satin finish appearance.

Microstructure:	shapeless, amorphous, (amorphous layer which crystallizes when heated over 300°C).
Density:	7.75 kg/dm³
Melting point:	890°C
Coercivity/magnetism:	Magnetism does not exist at room temperature, but can occur by heating the part over 300°C.
Hardness:	500HV; (HRC 49) after coating at 20°C, 900HV (HRC 67) after heat treatment at 400°C and 1hr, 1100 HV (HRC 70) maximum.
Coefficient of friction:	KANIGEN against steel; 0.13 lubricated, 0.4 unlubricated. (It prevents scoring and burning-in based on friction between metals such as titanium and austenitic stainless steel).
Attachment/adhesion:	It does not chip off like electroplated nickel. Even if a part is bent after coating the layer stays adhered. The same applies to heating. Max. adhesion is 240 N/mm² for soft steel (up to 400 N/mm² max.).
Layer thickness: Particular	emphasis should be placed on the uniformity of the layer, similar to chemical nickel plating.
Corrosion resistance:	The corrosion resistance is outstanding. The reason is that it is available as an alloy. It is not attacked by most organic liquids and demonstrates high resistance especially to organic acids, salts, alkaline etching fluids and dilute inorganic acids. It protects iron and steel from oxidation at high temperatures. In particular, spot corrosion is avoided.
Other properties:	It effectively prevents material removal due to cavitation.
Wear resistance/abrasion:	Much better than nickel plating. Better wear resistance results after heat treatment at 650°C, similar to hard chrome. In general heat treatment above 400°C is recommended.

LTBC Plating

Low Temperature Black Chrome Plating
Coating technology by which an alloyed surface is formed by an electrochem. reaction below 0°C. A part of this surface forms an alloy like time diffusion layer in the periphery of the metal. This way the base material and layer are completely integrated into each other and are joined “permanently”. Through this total integration into the base material, the layer can neither flake or peel off. The resulting surface consists of a uniform film and forms an rust protection film based on chromium ceramic.

Advantages:
No hydrogen embrittlement, no tempering process necessary (material’s original properties are retained completely)/ improved relationship between hardness and elasticity/ most suitable film for carbon steels (C45)/ most resistant and effective rust protection layer of all conventional processes/ in friction or wear resistant applications no peeled particles occur/ ideal option to increase service life of parts in rust protection and abrasion applications.

LTBC as some general treatment is avaible in 2 layer versions.
Layer thickness: 1~2 µm (without fluoropolymer layor on top)
Layer thickness: 5µm (with fluoropolymer layer on top)

Friction/abrasion:	very resistant, since no particles can be flaked or peeled of
Miscellaneous:	No change in microstructure during the process

Nickel plating

Nickel electroplating is used for corrosion protection reasons and also for decorative purposed. Basically: The thicker the nickel layer the more reliable the corrosion protection. Nickel is a prized coating material because of its specific chemical and physical properties and is today perhaps the most significant metal deposited by electroplating.

Properties:
Higher degree of gloss
Increased corrosion resistance
Very good ductility (without separating particles)
Low tarnish
Good resistance to acids and alkali
Can passivate in the air (significantly higher resistance against corrosive influences)
Weldable, magnetic and can be polished
Hardness is located between 450 - 600HV, depending on the layer thickness (with good formability)

Phosphating

In phosphatizing a phosphoric acid solution is used to form a thin, finecrystalline, water insoluble phosphate on part surfaces. Depending on the solution used, iron, manganese, zinc or zinc/calcium-phosphate layers are formed on the surface. These light to dark grey phosphate layers have pores and capillaries because of their fine-crystalline structure, which in the next step fill with oil or wax. High corrosion resistance results. Besides high corrosion resistance, phosphatizing is also used to reach an optimum paint adhesion. Furthermore, frictional forces which occur with pulling and forming processes are reduced.

Properties (Manganese phosphate process):

Type:	Phosphate based, fine-crystalline
Color:	dark gray to black
Corrosion protection:	significantly improved by oiling or waxing
Friction:	improved sliding properties
Miscellaneous:	Corrosion protection by oil absorption

TD coating (Toyota diffusion)

Development by Toyota Central Research Institute Co. Ltd. Coating with properties similar to TiCN, however coating process is carried out by heat treatment diffusion at 1020°C and an insoluble surface layer (typically vanadium carbide) forms. Common names: Dicoat, TD-VC COATING, TD thermoreactive diffusion. In this process the part is immersed in a salt bath. Active vanadium combined with C atoms in steel now form the vanadium carbide layer and simultaneously an enormous adhesion of the layer occurs. Layer thickness can be precisely controlled by processing times, bath temperature and substrate composition. This multiple step coating process consists of a pre-heat to a given temperature, coating, ultrasonic cleaning and heat treating. TD coatings are found in similar areas of application as CVD coatings due to their similar properties. However, there are areas where their advantages are put to full use, e.g. for Al and Zn die casting, hot forging tools and forming die for stainless steel.

Properties:
Coated parts can be coated again multiple times (up to 9 times is known of).

Hardness:	Surface harden between 3200 HV and 3800 HV
Layer thickness:	from 5µm ~ 10µm are common
Miscellaneous:	Particularly resistant to abrasion and wear. TD coatings increases ductility (in hardened steel even the toughness)









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(S)(1)(2)(3)(4)(5)(6)(7)(8)(9)(10) are the numbers of business days to ship. (T)(A)(B)(C) indicate available express services.
Production time for each product differs depending on specifications. Please refer to the corresponding page for exact number of days.
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Printed in Red:New Products Printed in Blue:From our previous catalog Printed in Black:Discontinued, Modified
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Production time for each product differs depending on specifications. Please refer to the corresponding page for exact number of days.
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Production time for each product differs depending on specifications. Please refer to the corresponding page for exact number of days.
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Production time for each product differs depending on specifications. Please refer to the corresponding page for exact number of days.
Printed in Red:New Products Printed in Blue:From our previous catalog Printed in Black:Discontinued, Modified
Website:These products are no longer shown in this catalog. Products are still available for sale.

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SUS303-B__ – Japan Only Website
SUS303-FB_ – Japan Only Website
SUS303-K – Japan Only Website
SUS303-R__ – Japan Only Website
SUS303SD-__-B__ – Japan Only Website
SUS303SD-__-L__–Japan Only Website
SUS304-__-B__ –Japan Only Website
SUS304-__-L__–Japan Only Website
SUS304-AN_–Japan Only Website
SUS304-B__ –Japan Only Website
SUS304-CN_–Japan Only Website
SUS304-FB_–Japan Only Website
SUS304-K–Japan Only Website
SUS304-P__ – Japan Only Website
SUS304-R__ –Japan Only Website
SUS304SD-__-B__ – Japan Only Website
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SUS310S-B__ – Japan Only Website
SUS316-__-B__ –Japan Only Website
SUS316-AN_– Japan Only Website
SUS316-B__ –Japan Only Website
SUS316-CN_–Japan Only Website
SUS316-FB_–Japan Only Website
SUS316L-__-B__–Japan Only Website
SUS316L-AN_– Japan Only Website
SUS316L-B__ – Japan Only Website
SUS316L-CN_ – Japan Only Website
SUS316L-FB_– Japan Only Website
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(S)(1)(2)(3)(4)(5)(6)(7)(8)(9)(10) are the numbers of business days to ship. (T)(A)(B)(C) indicate available express services.
Production time for each product differs depending on specifications. Please refer to the corresponding page for exact number of days.
Printed in Red:New Products Printed in Blue:From our previous catalog Printed in Black:Discontinued, Modified
Website:These products are no longer shown in this catalog. Products are still available for sale.

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SV3WLJ (8)**Website**
SV3WLZ (3)**Website**
SV3WT (8)**Website**
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SV3WTLZ (3)**Website**
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SV4RLZ (3)**Website**
SV4RZ (3)**Website**
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SV4WL (8)**Website**
SV4WLJ (8)**Website**
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SX3RLJ (8)**Website**
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SX3RZ (3)**Website**
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SX3WJ (8)**Website**
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SX3WLJ (8)**Website**
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SX3WT (8)**Website**
SX3WTJ (8)**Website**
SX3WTL (8)**Website**
SX3WTLJ (8)**Website**
SX3WTLZ (3)**Website**
SX3WTZ (3)**Website**
SX3WZ (3)**Website**
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SX4RJ (8)**Website**
SX4RL (8)**Website**
SX4RLJ (8)**Website**
SX4RLZ (3)**Website**
SX4RZ (3)**Website**
SX4W (8)**Website**
SX4WJ (8)**Website**
SX4WL (8)**Website**
SX4WLJ (8)**Website**
SX4WLZ (3)**Website**
SX4WT (8)**Website**
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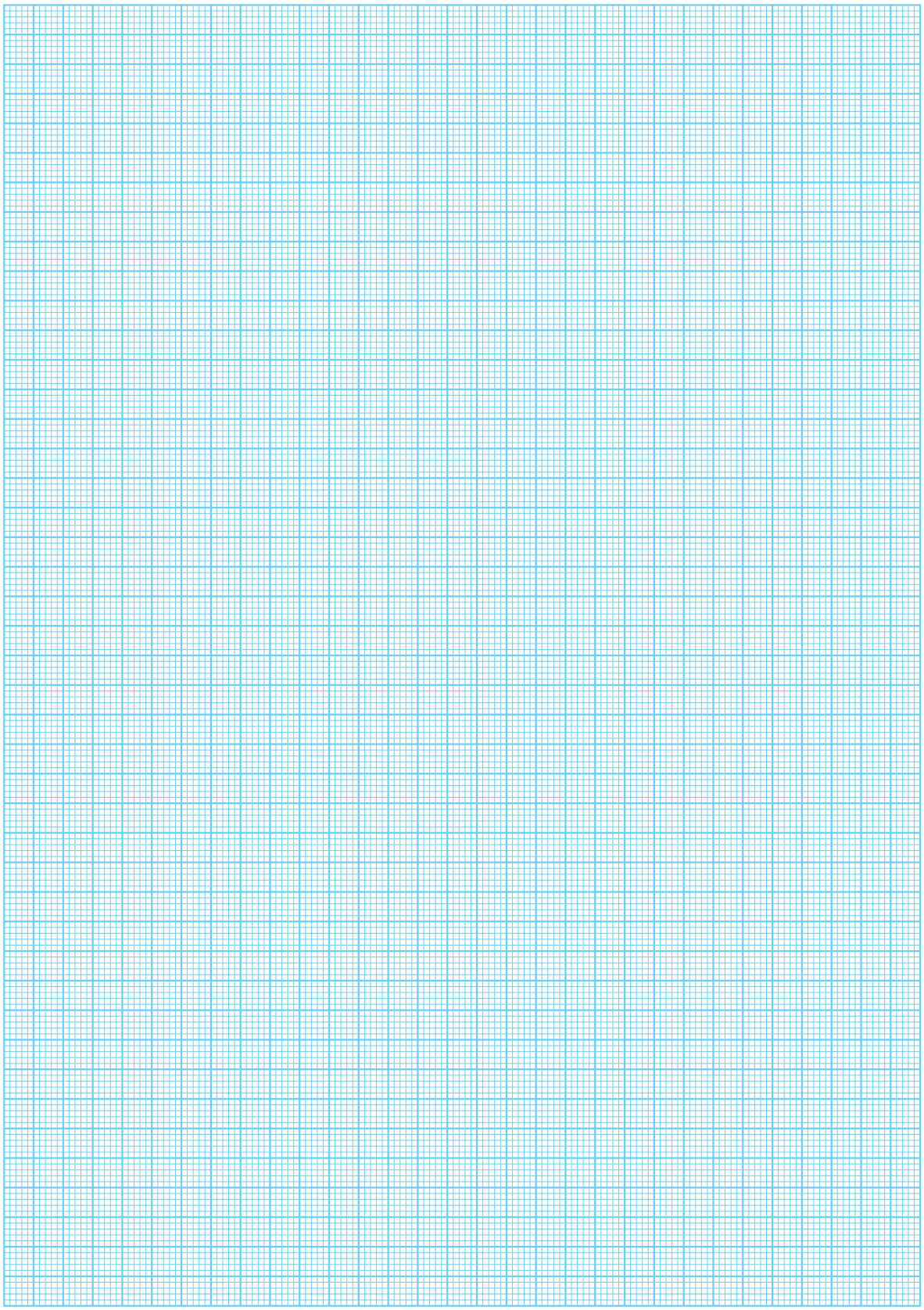

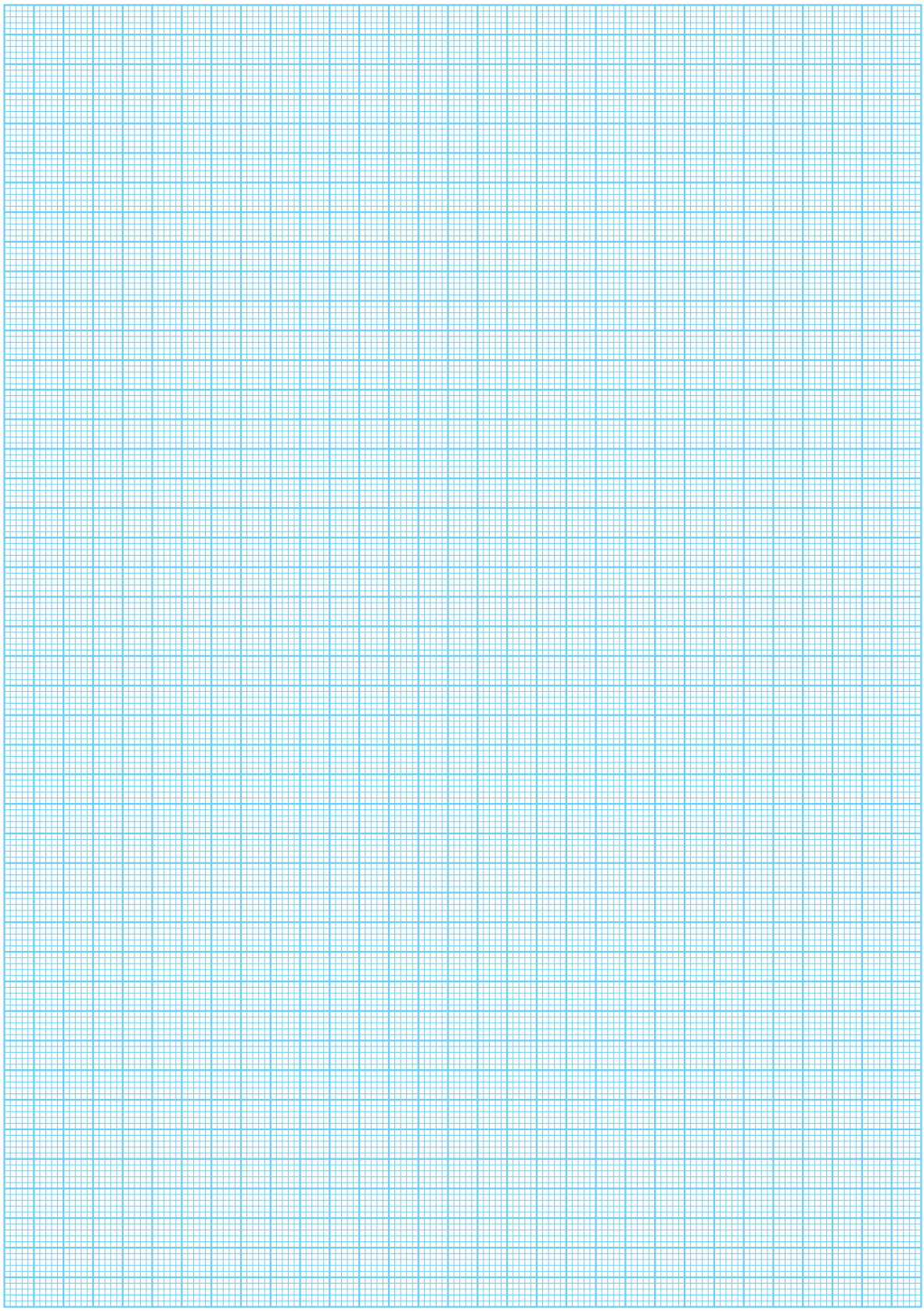

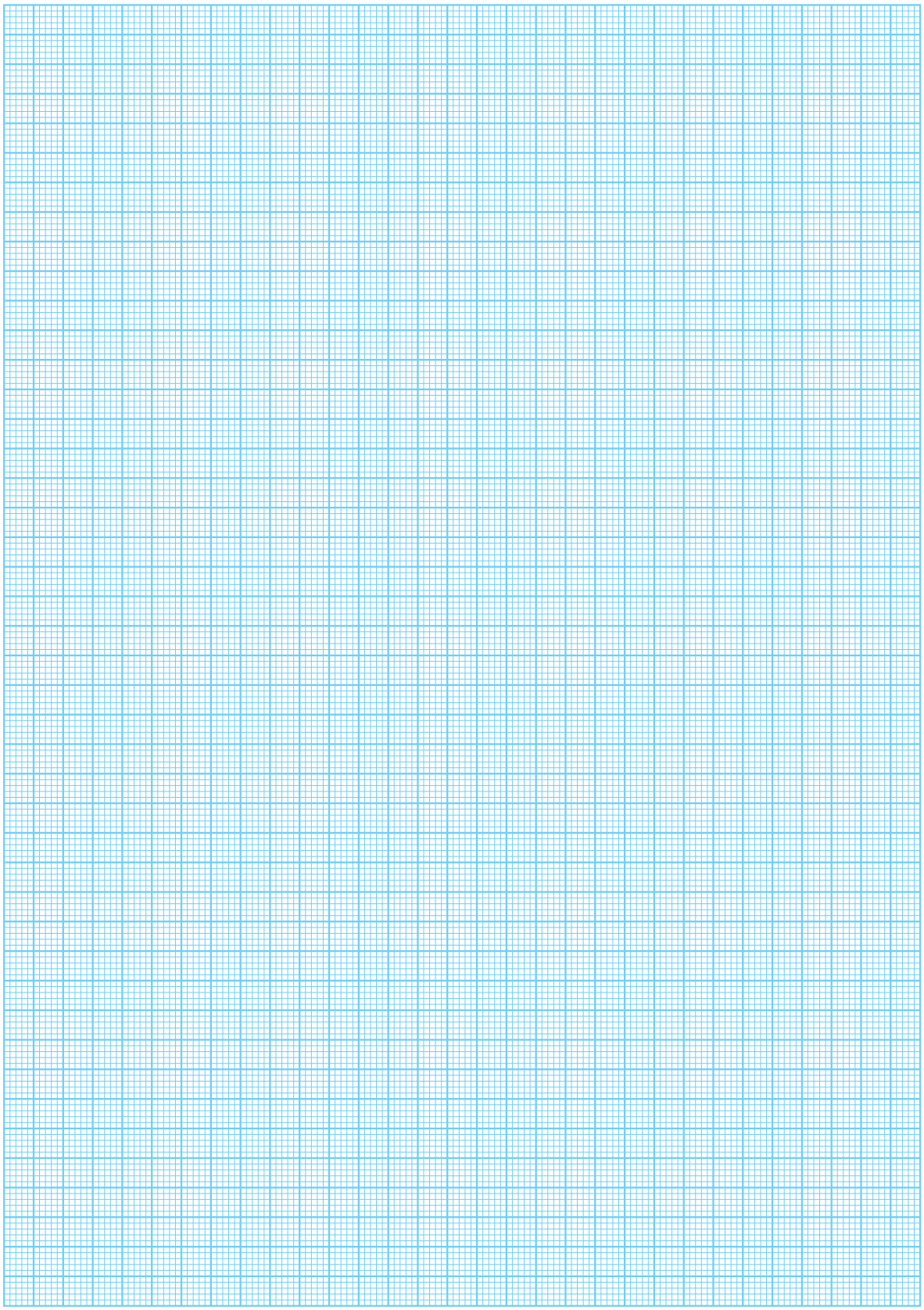

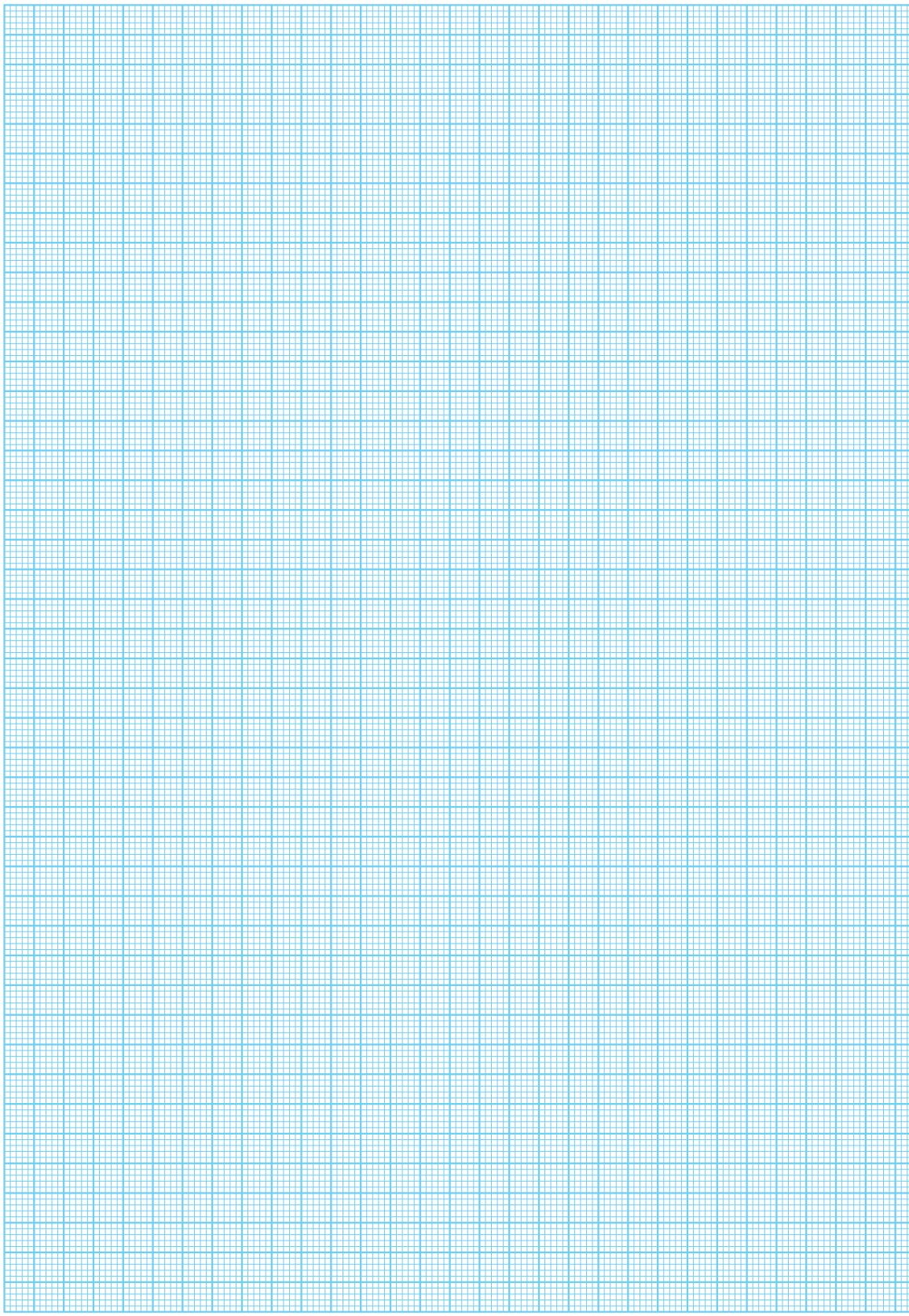

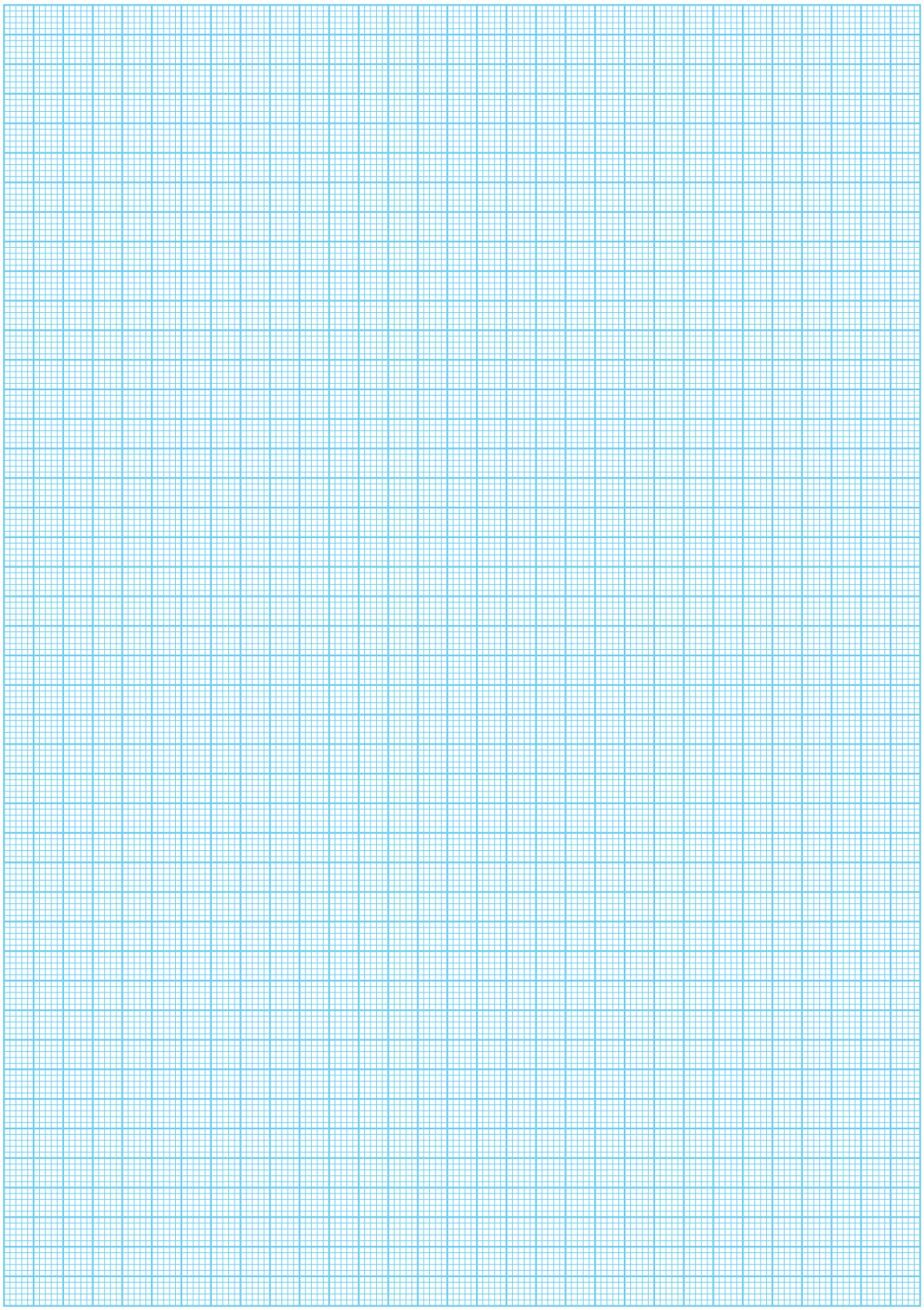

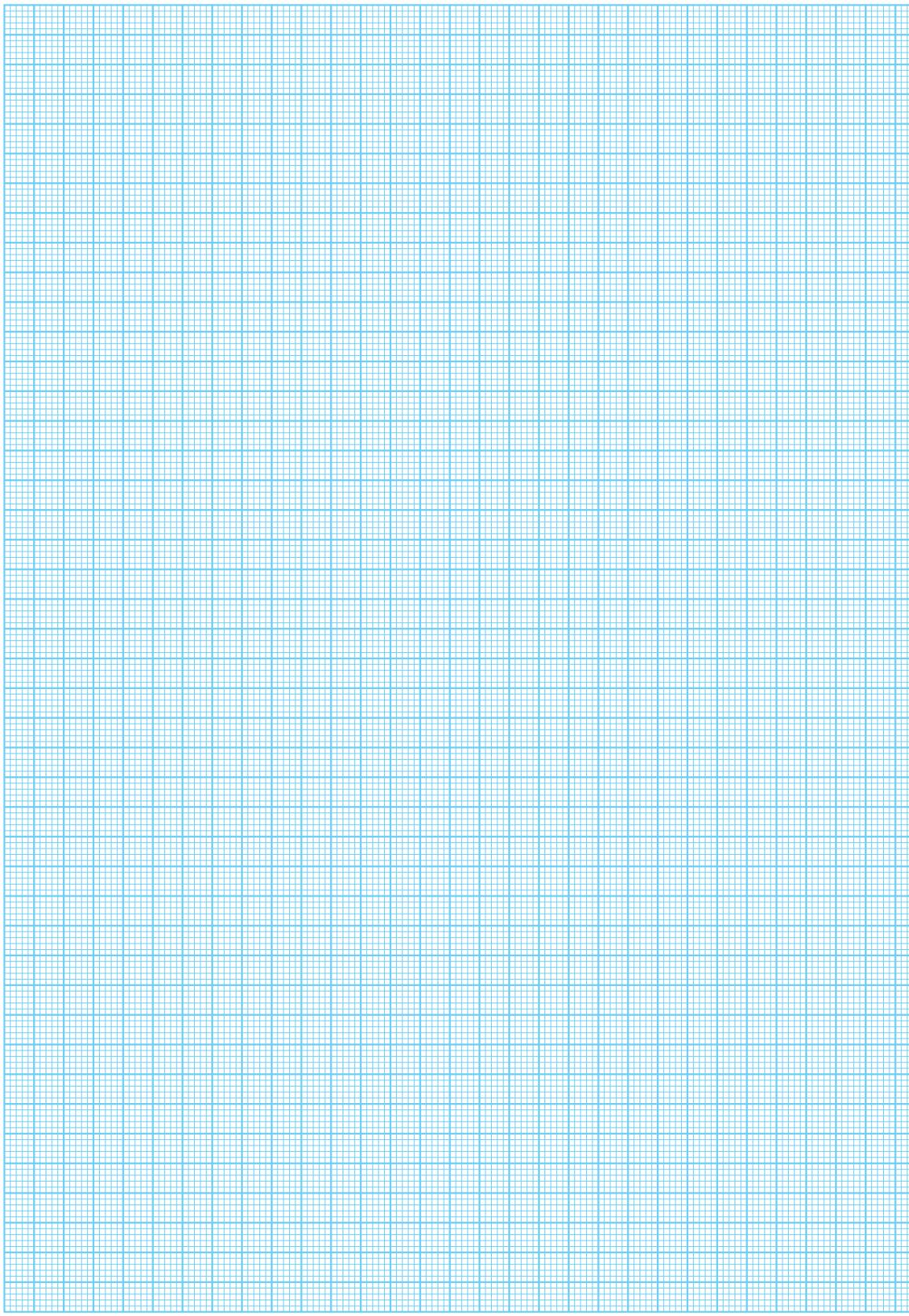

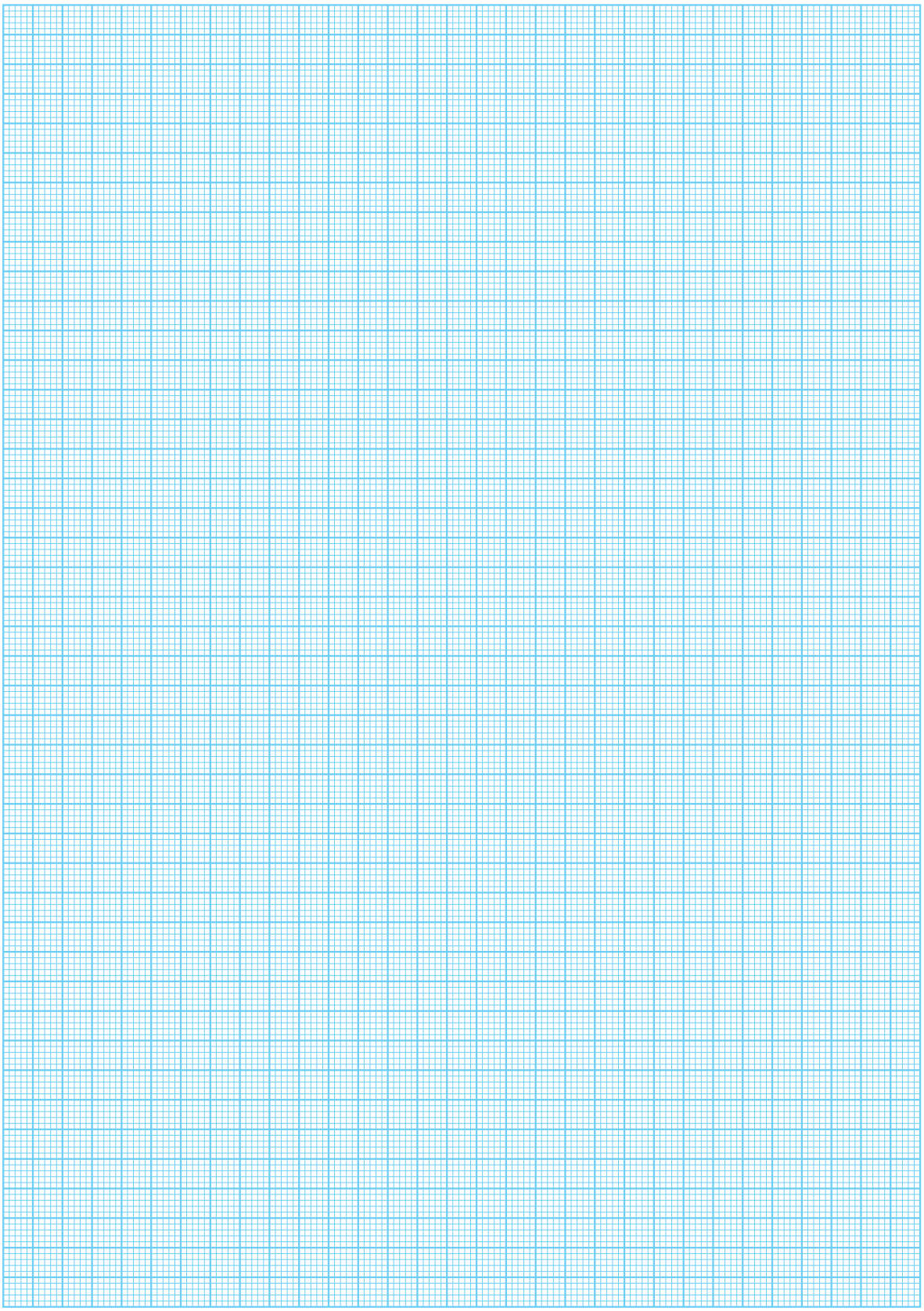

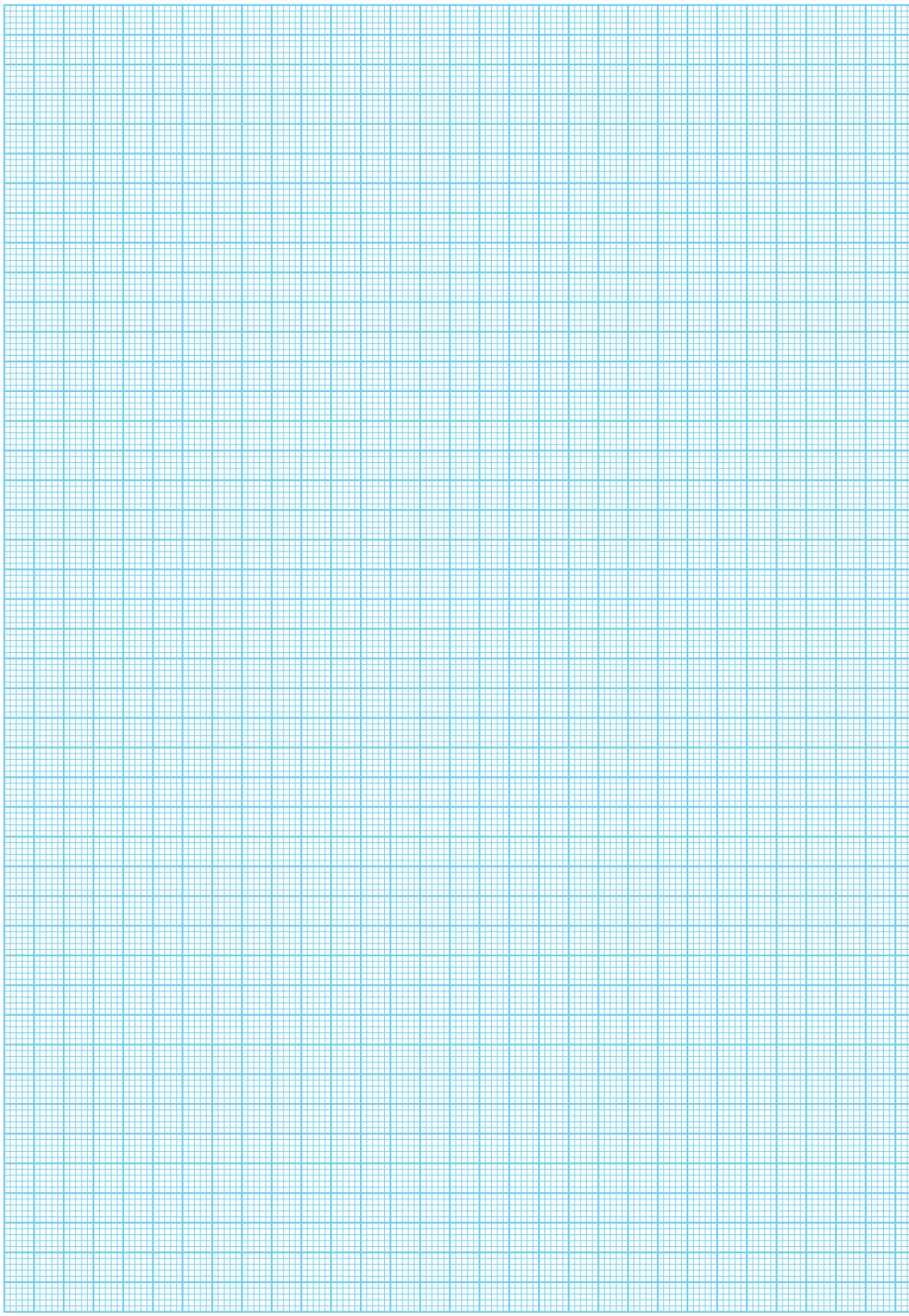

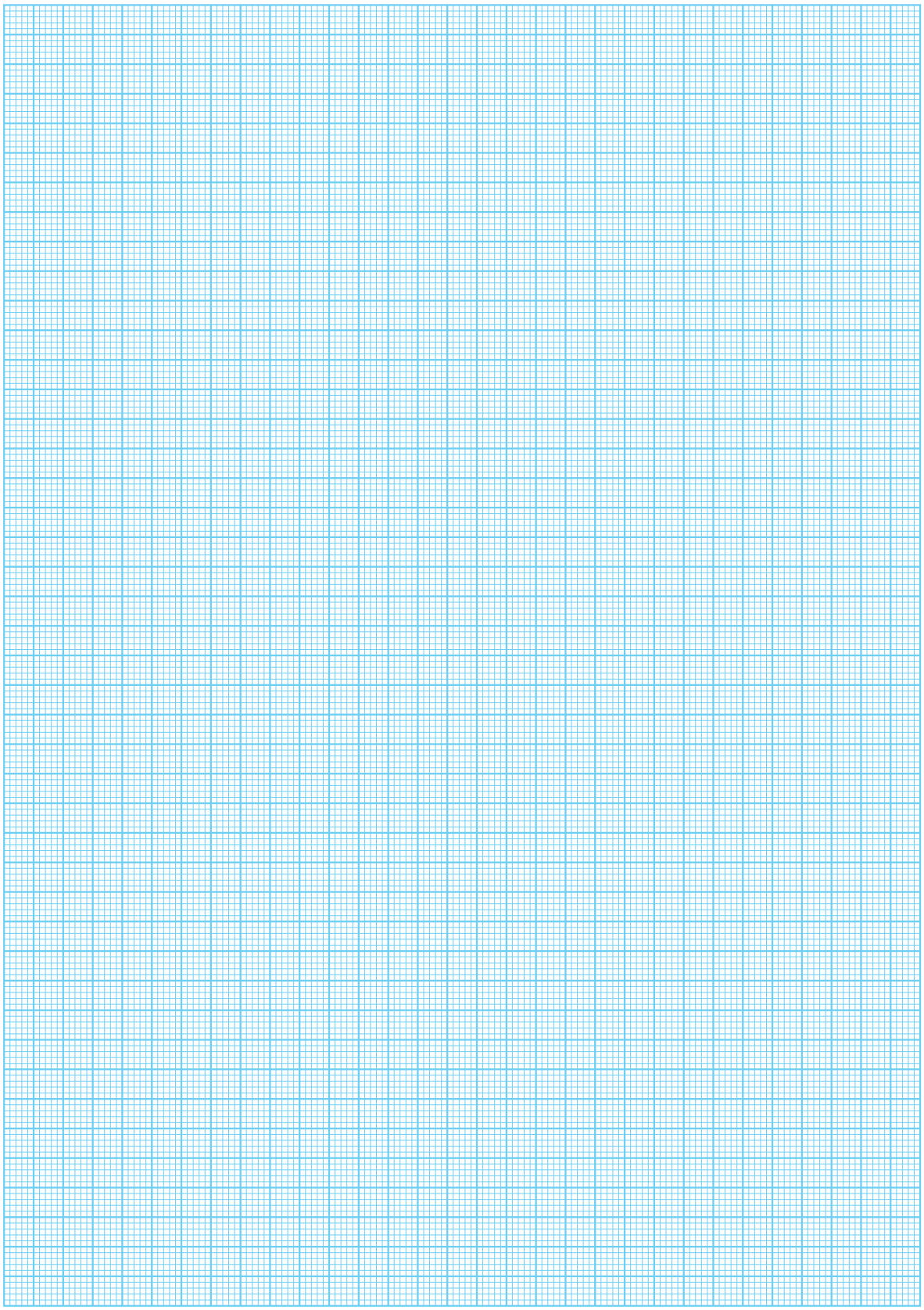

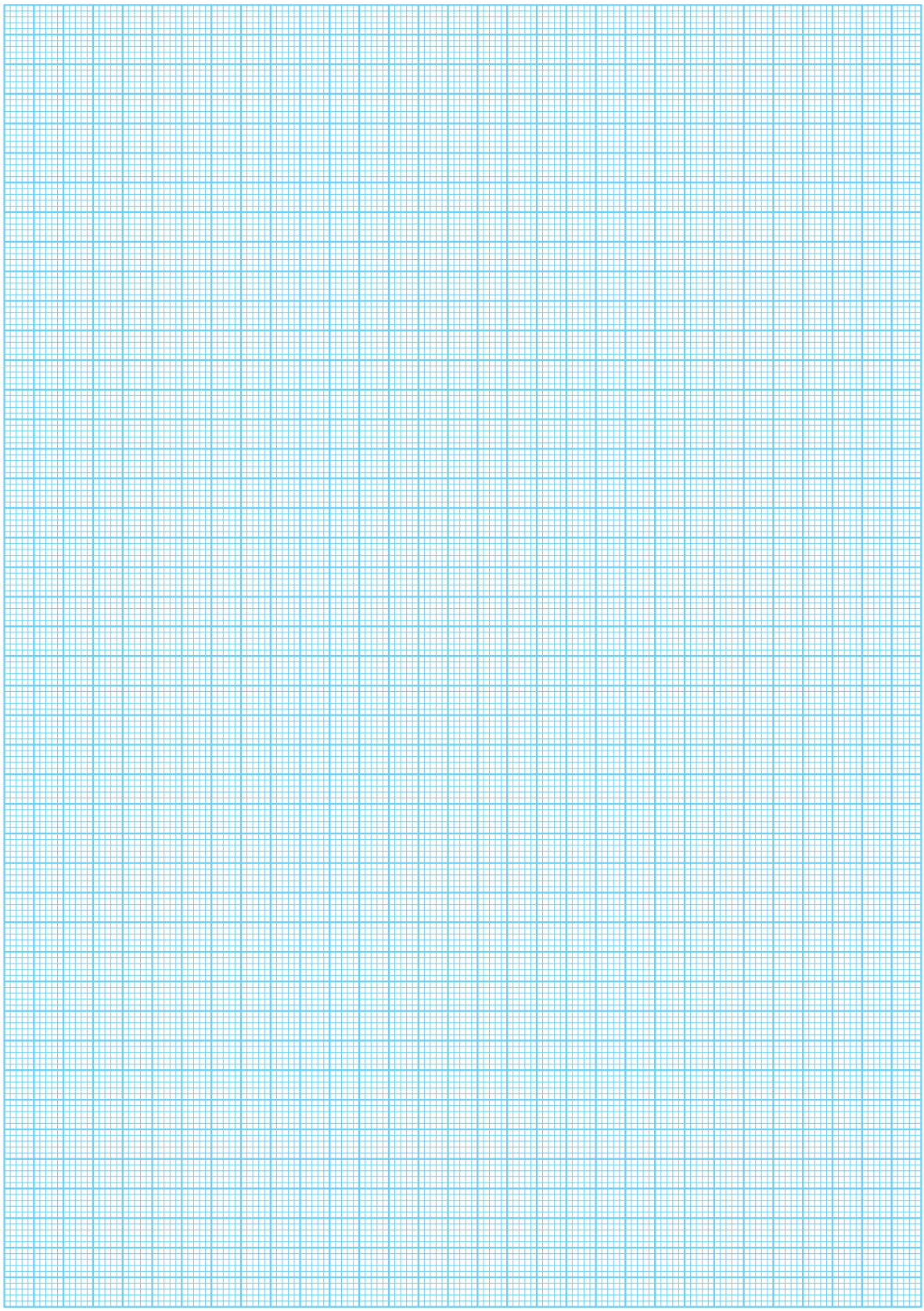

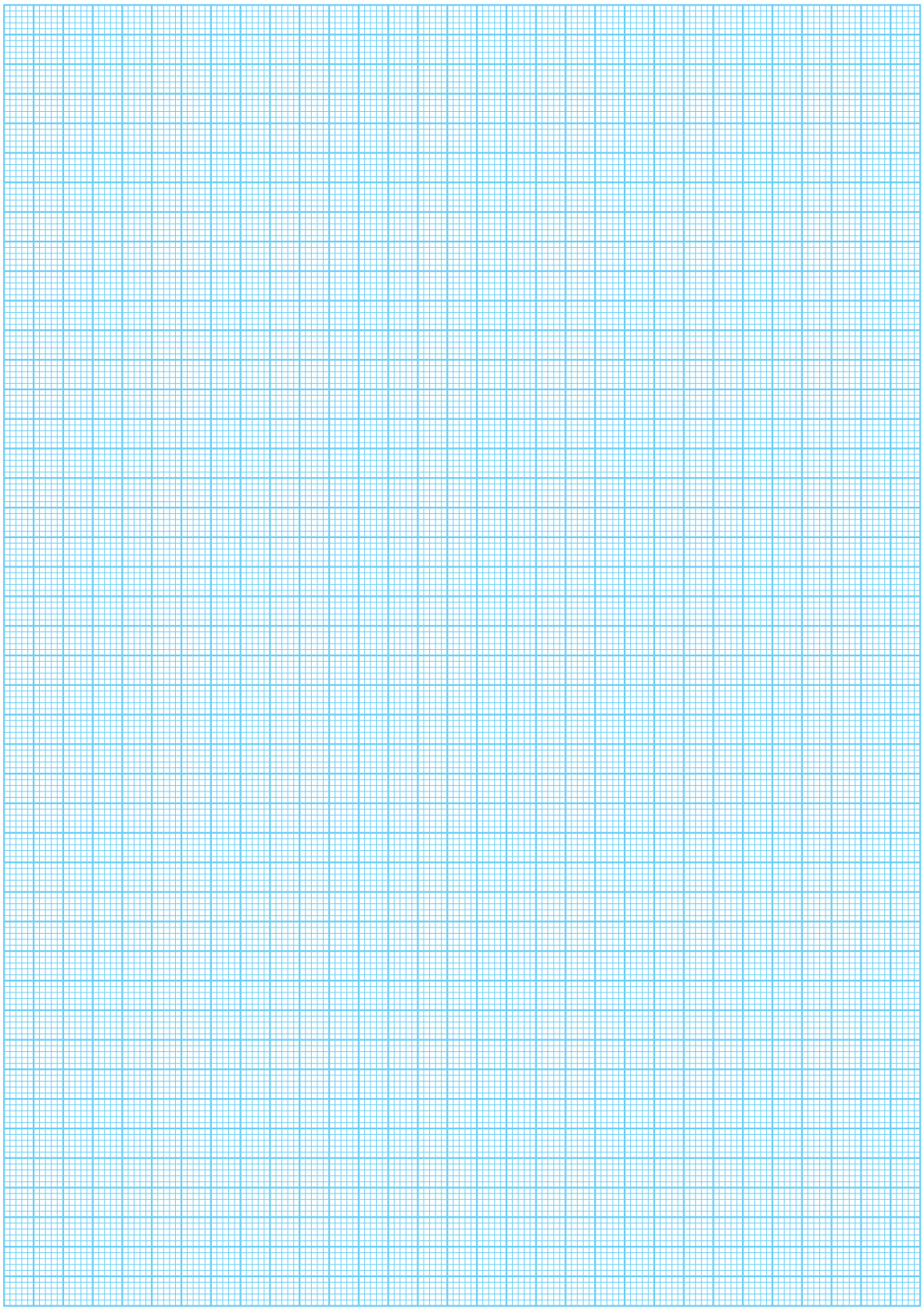

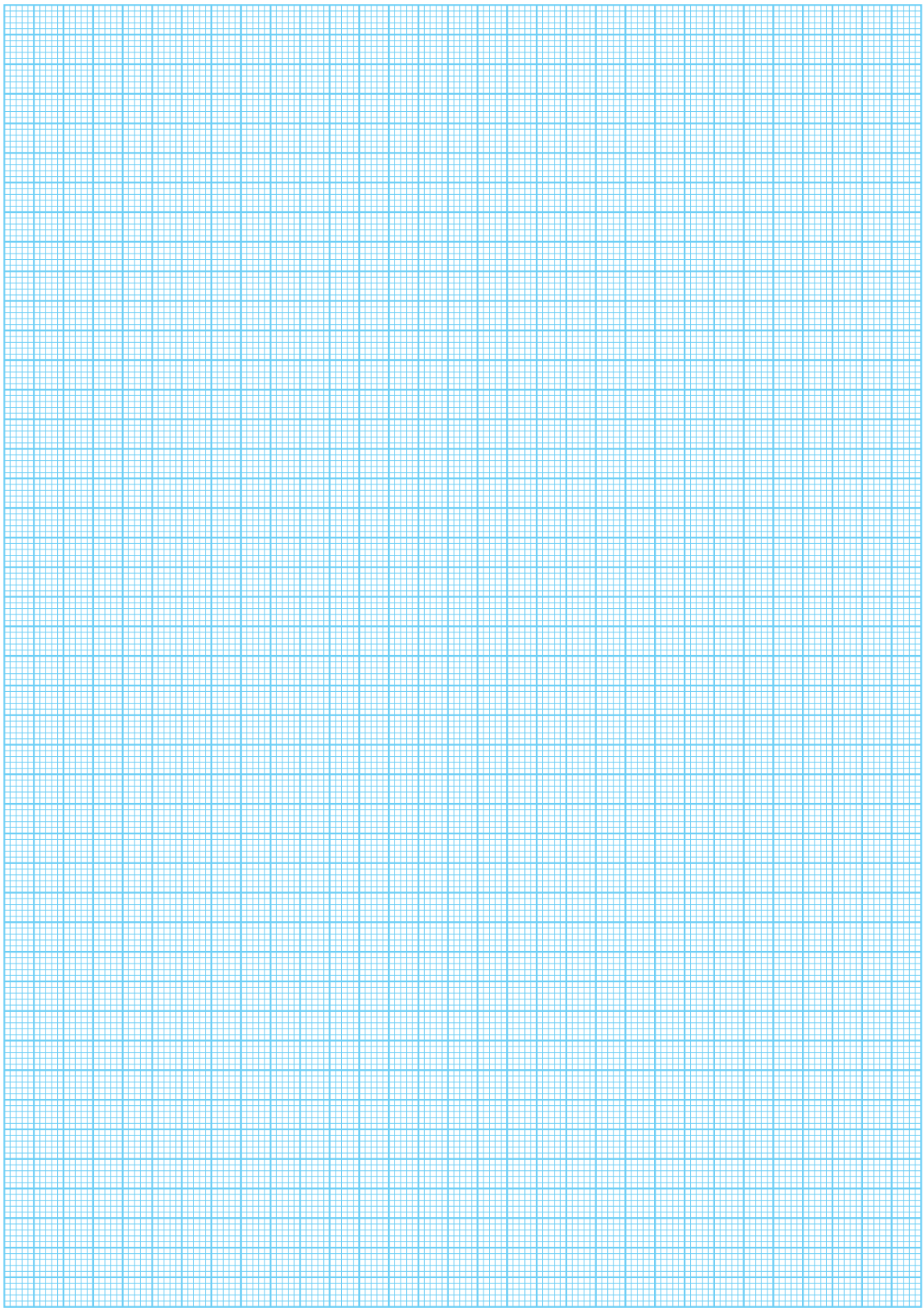

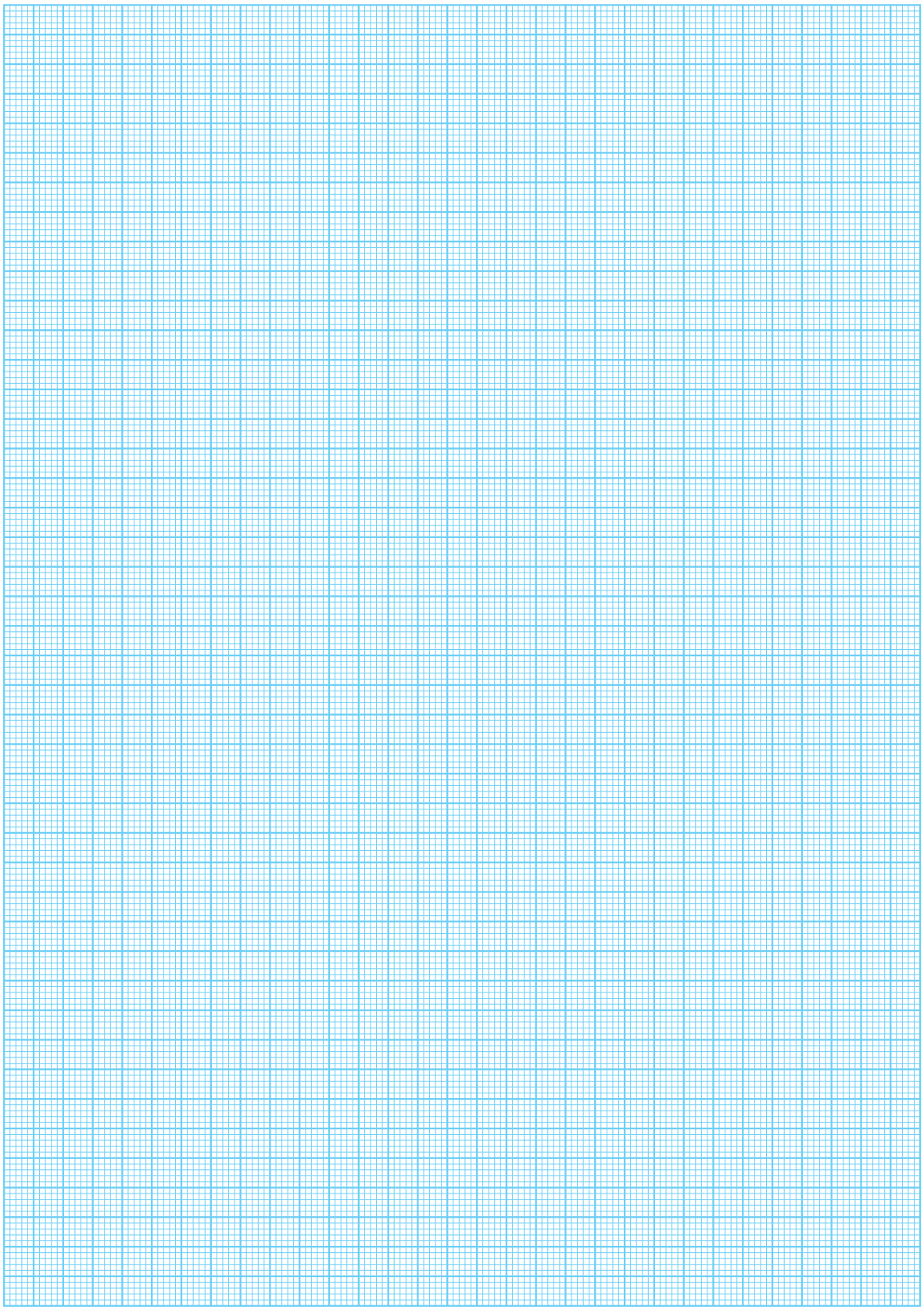

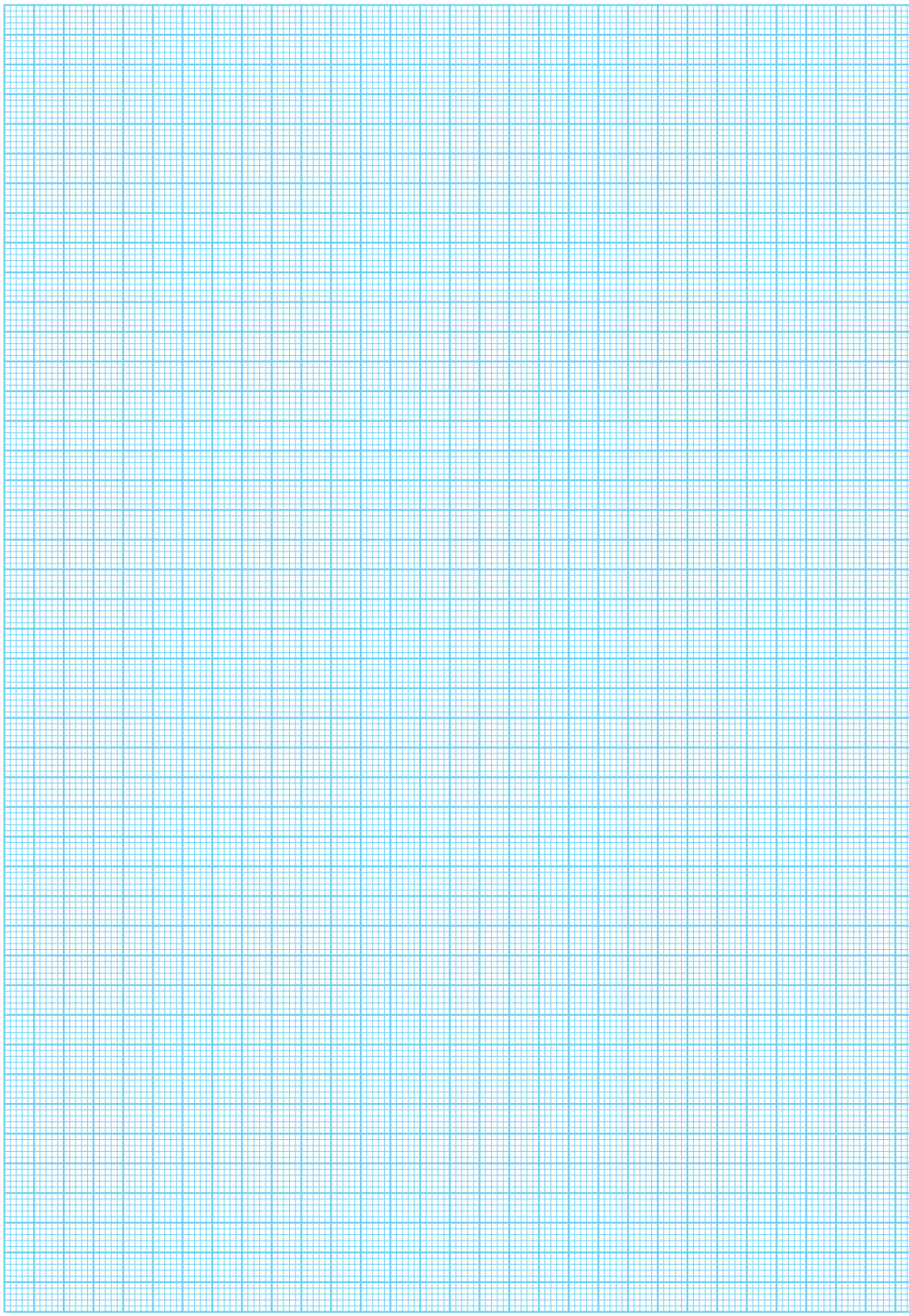

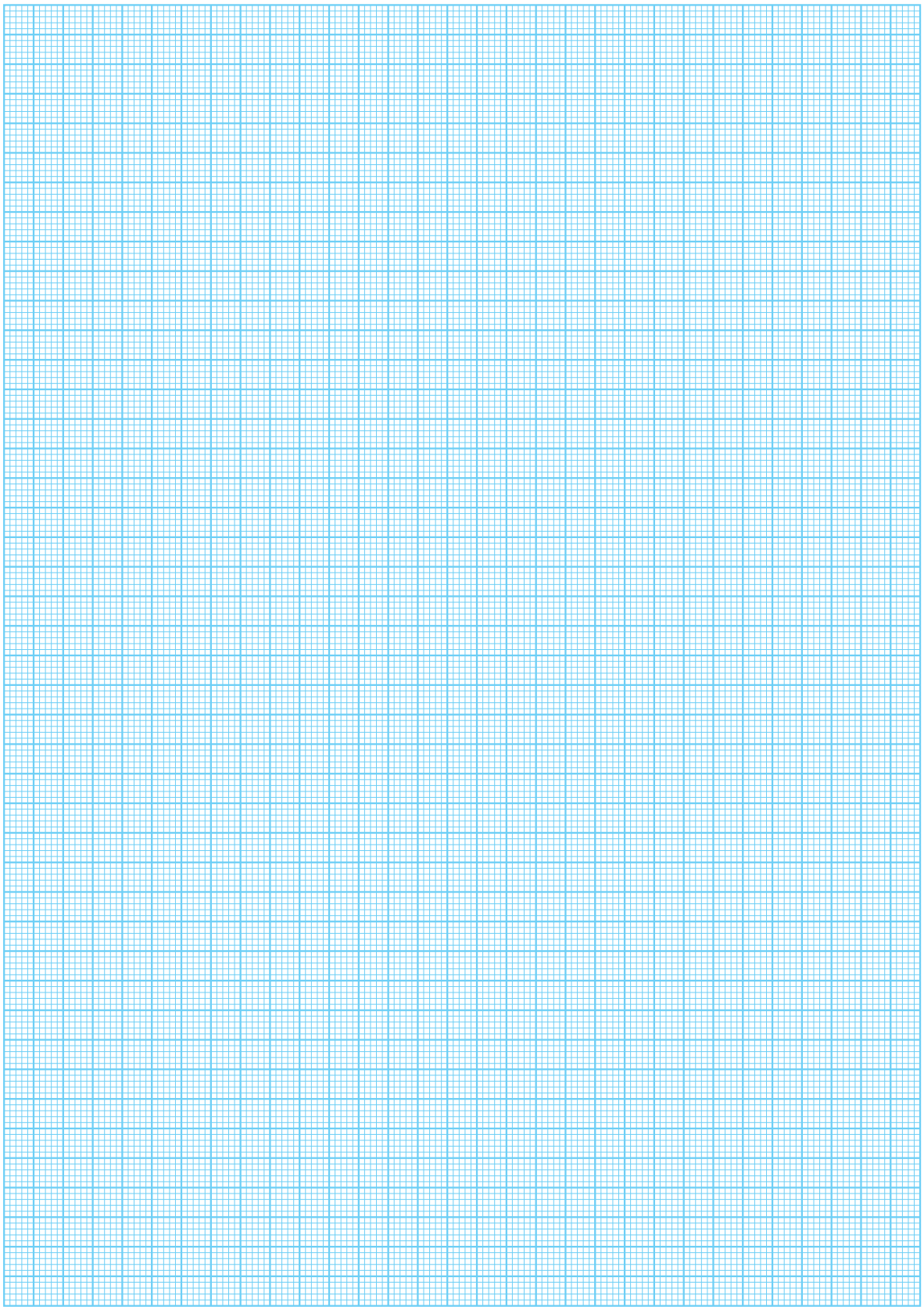

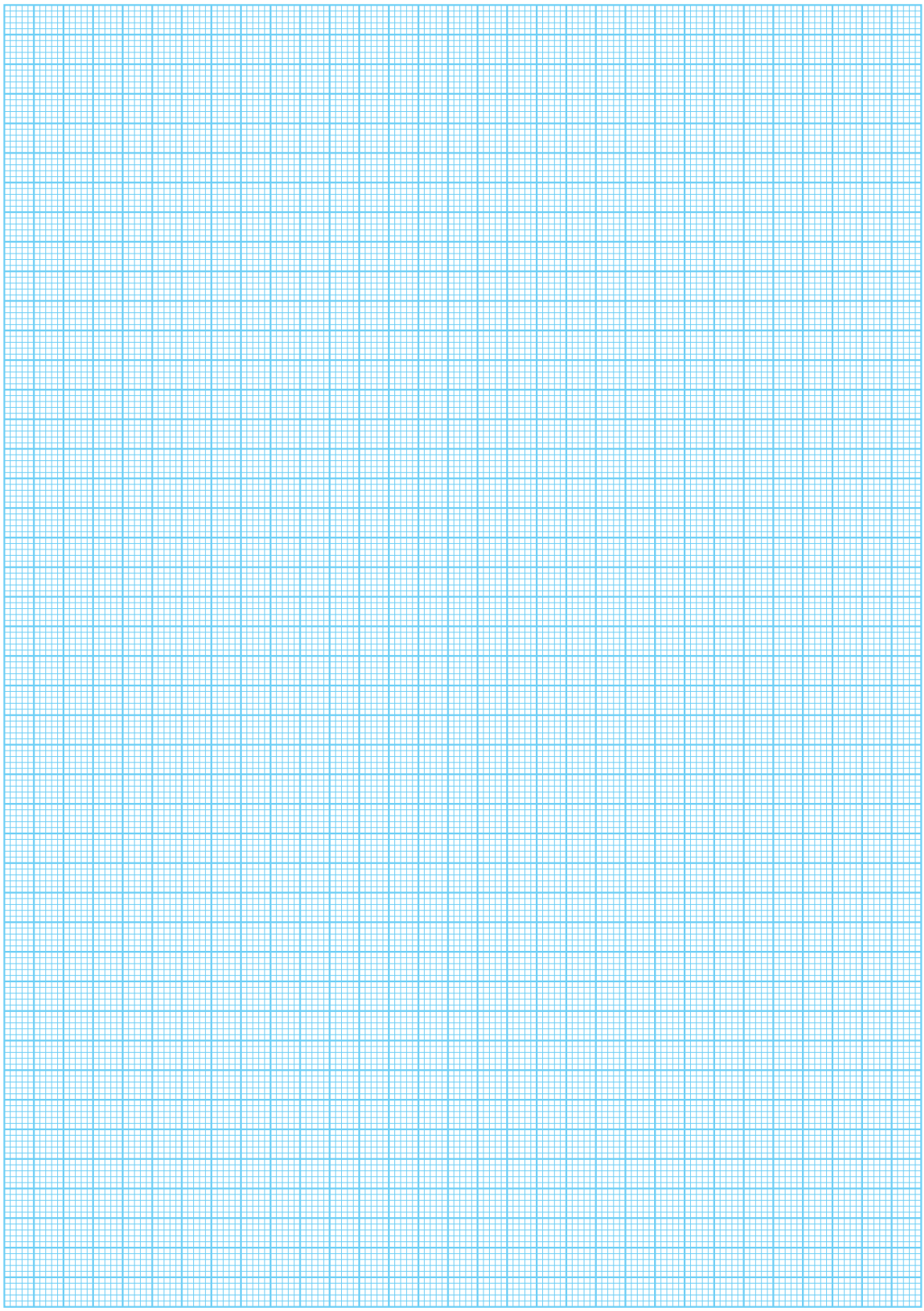

GENERAL TERMS AND CONDITIONS for BUSINESS of MISUMI Europa GmbH

1. Purchases of products (the "Products") from MISUMI Europa GmbH (hereinafter referred to as the "Company") , including (without limitation) such purchases of products related to the Mechanical Standard Components for Factory Automation Catalog (the "Catalog") and special orders by the customer (the „Customer") (see Article10) will be governed by these Terms and Conditions for Business (the "Terms and Conditions"). Purchasers who utilize the Catalog service (the "Service") must strictly adhere to these Terms and Conditions.

2. These Terms and Conditions shall exclusively apply, save changes made by express agreement accepted in writing by both parties. The offer, order acknowledgement, order acceptance of sale of any Products, whether through the Service or otherwise, are subject to these Terms and Conditions. Any conditional or different terms proposed by the Customer are not recognized and will not be binding upon the Company unless agreed upon in writing by the Company.

3. These Terms and Conditions shall apply to every future individual purchase transaction between the Customer and the Company (each a „Contract"), unless overriding written agreements have been made by the parties. Any typographical, clerical or other error or omission in any sales literature, quotation, price list, acceptance of offer, invoice or other document of information issued by the Company shall be subject to correction without any liability on the part of the Company.

4. These Terms and Conditions shall exclusively apply to Customers that are merchants and/or registered companies. The sale of products to private individuals is excluded.

Article 1 Registration

1. Customers must complete all appropriate registration applications and procedures established by the Company prior to any use of the Service. After the Customer has properly completed the registration process, and has subsequently been approved by the Company as a registered Customer, the Company shall then issue the Customer a customer identification number that will enable the Customer to use and access the Service.

2. The Company reserves the exclusive right, in its sole discretion, to deny approval of any Customer's application, for any reason, including without limitation, the following:

   (a) the Customer is not a duly registered company;

   (b) the Customer is a previously registered customer with the Service;

   (c) the Customer's principal place of business or postal address at the time of registration is outside of the European Union (the „EU") or outside those countries that Company has sent the Catalog;

   (d) the Customer has previously had its registration revoked by the Company;

   (e) the Customer has provided untrue, inconsistent or false statements in connection with its registration application; and

   (f) any other reason (including, without limitation, the Customer's credit situation and business category) that the Company deems appropriate by its sole discretion.

3. When ordering Products from the Company, the Customer must provide the customer identification number issued to it at the time of registration as a registered Customer under Article 1.1.

4. The Company may notify Customers via facsimile, mail or electronic mail, from time to time, with respect to upcoming sales campaigns and other related Company matters. Such notification will be not sent if so requested by the Customer in writing.

5. The Customer is responsible for maintaining the security of its registered Customer identification number.

6. The Customer may not transfer, lend or disclose its registered Customer identification number to any third-party

Article 2 Details of Service

1. The Customer may purchase Products listed in Catalog using the Service subject to the provisions of these Terms and Conditions (including, without limitation, specifications, price, delivery date, and terms of use). However, due to the nature of the Products, the Customer's business or other standards prescribed by the Company, or at the discretion of the original manufacturer or Company, some Products may be discontinued, modified, improved, replaced, or declared as obsolete without prior notice or warning to the Customer.

2. The Service is provided within the EU and those countries outside the EU within which the Company has distributed a catalogue. For the avoidance of doubt, the Service is not available in countries or areas to which deliveries by the Company are not made. Any inquiries regarding delivery locations should be directed to the Company.

Article 3 Ordering Products

1. A Customer may apply to use the Service by utilizing the following methods as set forth in Catalog. The Company may restrict the ordering method with respect to special orders (see Article 10) or based on the type or quantity of the Products ordered. The date and time the Company may receive an application are set forth in the Catalog.

2. If the Customer sends its order via email, the Company shall confirm receipt of the order with a return email or via an alternative appropriate means. This acknowledgement of receipt of the order does not constitute acceptance of the Customer‘s order by the Company.

3. Internet orders: Customers may access the Company's website at www.misumi-europe.com and should enter information in all of the required entry fields. Users of the Company's website should also see the Company's Website Terms and Conditions of Use and Privacy Policy prior to any use of the Company's website. Any inquiries with respect to the Company's website should be directed to the Company.

4. Verbal orders are not possible.

5. A quotation by the Company does not constitute an offer. The Company reserves the right to withdraw or revise any quotation at any time prior to the Company's acceptance of the Customer's order.

6. Each order for Products submitted by the Customer to the Company shall be deemed to be an offer by the Customer to purchase Products subject to these Terms and Conditions. The Company shall not be obliged to accept any order for Products. The Contract shall be formed when acceptance of the Customer's order is confirmed in writing by the Company.

7. Please be aware that the Company may claim from the Customer any associated expenses (including, without limitation, insurance and special delivery), which the Company incurs in connection with requests from the Customer.

Article 4 Obligations regarding Use of Products

1. The Customer is referred to the following with respect to the nature of the Products:

   (a) the Products are only suitable to be used in general production equipment. (General production equipment means: automatic assembly equipment; devices for machine processing; inspection equipment and devices; and plant automation machines).

   (b) the Products are, in particular, not appropriate for use in the following types of equipment:

      I. transportation equipment, including semi trucks, ships, railed vehicles,airplanes, etc.;

      II. all types of medical devices or equipment;

      III. all types of commercial goods that are sold to customers or will be sold to customers;

      IV. aeronautics and aerospace equipment;

      V. equipment for use in nuclear energy production; and/or

      VI. military products (for example: weapons, rifles, etc.)

2. The parties agree that the inherent nature of the Products renders them suitable to use only according to the terms in Article 4.1(a)

3. Use of the Products in the areas list above in Article 4.1(b) is prohibited.

4. In general, the Customer should bear in mind and observe all of the duties and obligations listed in the catalog in regard to the Products as well as all details and descriptions in the written material sent with products (or accessories). These duties and obligations include (but are not limited to) product specifications, intended usage, terms and conditions of use, and/or product markings.

Article 5 Delivery Time

1. The number of days required for Products to be delivered to the Customer, -- meaning the number of days required to deliver Products as set out on the relevant page of Catalog (the “Delivery Time”) -- depend on the type and quantity of the Products ordered (such as when Products cannot be delivered right away or there is a large order). The Delivery Time set out in the Catalog is an estimate only and is not binding.

2. The Delivery Time set out in the offer, order acknowledgement, order acceptance is an estimate only and is not binding unless explicitly otherwise agreed upon.

3. Any delivery time shall be reasonably extended in face of action due to industrial disputes, particularly strikes or lockouts, or in face of unforeseeable obstacles beyond the power of the Company, if such obstacles can be shown to have a significant effect on the manufacture or dispatch of the Products concerned. The same shall apply should these circumstances arise for suppliers.

4. Compliance with duty of delivery further assumes that the Customer has fulfilled its obligations in a timely and proper way. Defense under non-fulfillment of contract shall remain reserved.

5. Should the Customer be in default of acceptance, or should it culpably infringe any other duties of collaboration, the Company shall be entitled to claim restitution of such damages as it has suffered thereby, including any additional expenditure. Further claims are hereby reserved.

6. The Company shall be liable in accordance with statutory regulations should deliveries be in default due to a malicious or grossly negligent infringement of contract for which it is responsible; a fault committed by its representative or vicarious agent shall be attributed to the Company itself. Providing that such defaults of delivery are not due to any malicious infringement or grossly negligent infringement of contract for which it is responsible, its liability for damages shall be restricted to foreseeable, typical damage.

7. The Company shall also be liable in accordance with statutory regulations should any defaults of delivery for which it is responsible be due to culpable infringement of a major contractual duty. In this case, however, when such infringement is not malicious, its liability for damages shall be restricted to foreseeable, typical damage.

8. In other cases of defaults of delivery for which it is responsible, the Company's liability for damages shall be restricted to a maximum of the value of said delivery.

9. The above restrictions shall not apply to liability for damage to life, body or health.

10. All further statutory rights and claims of the Customer shall be reserved, excepting claim for damages.

11. The regulations contained in Article 15 shall not be affected by the above regulations.

2. For the avoidance of doubt, time is not of the essence with regards to the delivery of Products.

3. Any delivery time shall be reasonably extended in face of action due to industrial dis-putes, particularly strikes or lockouts, or in face of unforeseeable obstacles beyond the power of the Company, if such obstacles can be shown to have a significant effect on the manufacture or dispatch of the Products concerned. The same shall apply should these circumstances arise for suppliers.

Article 6 Delivery of Products

1. The place of fulfillment for all obligations of the contractual relationship is the Company's location unless explicitly otherwise agreed upon.

2. The products are shipped to the Customer at its risk and cost according to the following regulations. The means of delivery and the packaging material are subject to the sole discretion of the Company.

3. Delivery will be made to the Customer's address, which is provided in the order acknowledgement. For orders within Germany, the Company will pay applicable delivery charges. The Company has the right to choose the way of transportation.

4. For deliveries outside of Germany, the Customer is responsible for paying the shipping and handling charges per the Company's price list at the time.

5. Responsibility and risk for loss or damage to the Products are passed on to the Customer upon transfer of the Products to the shipper, freight carrier, or designated third party assigned with delivery. The beginning of the loading of the Products will be used to determine when these risks and responsibilities are transferred.

6. The Company will add transportation insurance only when requested by the Customer. The Customer shall be responsible for paying for this insurance.

7. The Customer is responsible for import clearance as well as for all costs related to import clearance.

Article 7 Retention of Title

1. Notwithstanding delivery and the transfer of risks for the Products, or any other provision of these conditions, ownership of the Products shall not pass to the Customer until the Company has received payment in full for the price of the Products and all other Products agreed to be sold by the Company to the Customer for which payment is then due.

2. The Company shall have absolute authority to retake, sell or otherwise deal with or dispose of all or any part of the Products in which title remains vested in the Company.

3. Until such time as ownership passes to the Customer, the Customer shall hold the Products as the Company's fiduciary agent, and shall keep the Products properly stored, protected and insured. The Customer may use or resell processed Products by way of its normal business operations until such time as full payment has been made, but the Customer must hold any proceeds from the sale of such Products for the benefit of the Company and keep such moneys separate from the Customer's own assets and those of third parties. However, the Customer cedes to the Company here and now all receivables to the final sum (including VAT) of such Company's receivable due to the Customer by way of resale or transfer to a its customer or third parties, irrespective of whether or not, the item purchased has been resold after being processed. The Customer shall be empowered to collect this receivable even after cession. The right of the Company to collect this receivable itself shall not be thereby affected. However, the Company shall have a duty not to collect such receivable as long as the Customer fulfils the duties of payment arising from the agreed proceeds, is not in default of payment, and provided in particular that no application has been made to institute a creditors' composition or to open insolvency proceedings and no suspension of payments has been declared. Should this be the case, however, the Company may require the Customer to inform the Company of ceded receivables and debtors, to provide all information needed for collection, to hand over all related documents, and to inform all debtors (Third Parties) of such cession.

4. If the Products are processed or reshaped by the Customer and if processing is done with Products that the Company does not own, the Company shall become co-owner of the Products. The same shall apply if the Company's Products are completely reshaped and mixed with other Products.

5. If third parties take up steps to pledge to otherwise dispose of the Products, the Customer shall immediately notify the Company in order to enable the Company to seek a court injunction. If the Customer fails to do so in due time it will be held liable for any damages caused.

6. The Company shall on demand of the Customer release any part of the collateral if the value of the collateral held in favor of the Company exceeds the value of the claims being secured. The Company may decide to release whichever parts of the collateral it deems suitable.

Article 8 Duty to examine

1. The Customer must examine the Products promptly following delivery by the Company insofar as this is practicable in the proper course of business, and promptly notify the Company of any defects or mistakes in the delivery.

2. If the Customer fails to advise the Company of any defect or mistake within a reasonable period of time following delivery, the Products are deemed to have been accepted (approved) by the Customer, unless there is a defect which was not apparent during the examination.

3. When such a defect becomes apparent at a later time, notice must be given promptly following the discovery, otherwise, the Products are to be deemed accepted (approved) by the Customer, also with regard to this defect.

Article 9 Excess Products

If the Company delivers to the Customer a greater quantity of Products than that which Customer ordered and such mistake is attributable to Company, the Customer will inform the Company within one (1) week of delivery and agrees to return the surplus Products to the Company. In such case, the Company will pay applicable shipping costs to return the excess Products. The Customer shall maintain the excess Products with reasonable care from the time it receives such Products until the Products are returned to Company.

Article 10 Special Orders

1. The Customer may place special orders for Products with specifications set out in schematic drawings provided by Customer, specifications other than those prescribed by Company or other special orders not for Products with the specifications listed in Catalog ("Special Orders") by submitting appropriate drawings and specifications to the Company and the Company shall, if possible, issue a quotation (offer) for the Special Order. On the basis of such quotation, Article 3 shall then apply.

2. These Terms and Conditions shall apply to all Special Orders, provided that in the event of any conflict between the Terms and Conditions and any terms, set out in a Special Order, agreed between the parties in writing, the terms as set out in the Special Order shall prevail to the extent of such inconsistency.

Article 11 Price and Applicable Taxes

1. The price of Products shall be the price quoted by the Company to the Customer or, where no price has been quoted, the price listed in Catalog at the date of acceptance of the order ("Contract Price").

2. The Company shall charge and the Customer shall pay the applicable delivery rate notified, of which the Company will from time to time notify the Customer ("Delivery Charge") in addition to the Contract Price.

3. The Contract price shall be exclusive of any value added tax and any other taxes and duties, which shall (if and to the extent applicable) be payable by the Customer at the rate and in the manner from time to time prescribed by law.

Article 12 Payment

1. Unless otherwise agreed in writing, the Company shall be entitled to invoice the Customer for the Contract price (together with the Delivery Charge) and any applicable taxes and duties payable pursuant to the provisions of Article 11 on or at any time after delivery.

2. The Customer shall make payment of any amount invoiced by the Company in full within thirty (30) days of the date of the invoice, notwithstanding that title to the Products may not have passed to the Customer.

3. All amounts due under a Contract shall be paid in full without any deduction. The Customer shall enjoy rights of set-off only if its counterclaims have been legally upheld by a final verdict, are undisputed, or are recognized by the Company. Furthermore, the Customer shall only be entitled to exercise a right of retention if its counterclaim is based solely and directly on the contractual relationship between the Customer and the Company.

4. Payments hereunder shall be made by way of credit card, cheque or direct bank transfer to the Company's nominated bank account or by such other means as may be agreed between the parties in writing from time to time. The Customer shall be responsible for any bank charges levied for payments made by direct bank transfer.

5. All payments hereunder shall be made by the Customer in Euros.

Article 13 Maximum Amount

1. The Company will set a maximum amount the Customer can owe the Company for the purchase of Products at any given time (the "Maximum Amount").

2. The Company may respond, at its sole discretion, in any of the following ways if the total price for Products ordered by the Customer meets or exceeds the Maximum Amount:

   (a) requesting the Customer to pay in advance or to pay the outstanding amount;

   (b) refusing, revoking or cancelling the order(s); and/or

   (c) any other action as deemed reasonably necessary by Company.

3. The Customer may verify its Maximum Amount by contacting the Company.

Article 14 Refusal to Receive Products

If for any reason the Customer will not accept delivery of Products when they are ready for delivery, or the Company is unable to deliver Products on or before the agreed delivery date because the Customer has not provided adequate delivery instructions, documents, licenses or authorizations or due to any other act or omission on the part of the Customer then, without prejudice to any other right or remedy available to the Company, the Company shall reship the Products back to its warehouse or other premises and the Customer shall indemnify the Company against any and all claims, actions, liabilities, losses, damages and expenses incurred by the Company which arise out of or in connection with the Customer's failure to take delivery of the Products. All further statutory rights and claims of the Company shall be reserved.

Article 15 Force Majeure

The Company shall not be liable for the inability to deliver or delays in delivery caused by circumstances or events beyond the Company's control, which could not be foreseen at the time of signing the Contract and which include Acts of God and events such as all types of business disruption; difficulty or increased expense in obtaining labor, materials or transport; difficulties in obtaining regulatory authorization; the effects of regulatory measures; labor strikes and lock-outs; or failures on the part of the shipper to timely or completely deliver the products. To the extent that these events considerably hinder or render impossible the execution of the contract and these events are not temporary, the Company reserves the right to rescind the contract. Shall the events be of a temporary nature, the terms of delivery or execution of the service will be prolonged or the terms of delivery or execution of the service will be postponed for the duration of the hindrance plus an additional appropriate time period. If the Customer does not agree to the delay in the terms of delivery or the execution of the service, it can withdraw from the Contract having given prompt written notice to the Company.

Article 16 Changing or Cancelling Orders

The customer may change the details of an order and cancel a contract according to the hereafter detailed "Cancellation rules". The Customer is then obligated to pay fees according to these following rules:

Cancellation Rules:

(a) These rules do not affect the Customer's legal rights. They are applicable only when MISUMI allows for the cancellation of a contract and is not legally bound to cancel the contract. MISUMI reserves the right for exceptions to these rules, when due to the manner, type, quantity or shipment date of the product or the utilized distribution system, MISUMI cannot accept the cancellation.

(b) As a basic principle, cancellation of an order is free of charge, when it is made on the day that an order was placed. Express orders have to be cancelled until 12:00 a.m. on the day the order was placed. For cancellations, which are given to MISUMI on the next day (i.e., the day after placement of the order), the customer is responsible to pay a cancellation fee of 40% of the value of the order, including taxes, shipping charges etc according to these following rules. The work day at the facility at MISUMI, Schwalbach / Ts, Germany will be used to determine on which day cancellations were received.

(c) For all parts, which have an estimated delivery time of 2,4,5 or 6 days, it is possible to cancel free of charge on order date, later cancellation is not possible. Stock items can be cancelled free of charge until the day before shipment.

(d) For all parts, which have an estimated delivery time of 8 days, the customer is responsible to pay a cancellation fee of 40% of the value of the order, if the cancellation is made on the next work day following placement of the order. Cancellations at a later date are not possible.

(e) For all parts, which have an estimated delivery time of 10, 12 or 13 days, cancellation 1 day after placement of the order is free of charge. Cancellation 2 or 3 days after receipt of the order will result in a cancellation fee of 40% of the value of the order. Cancellations at a later date are not possible.

(f) For all parts, which have an estimated delivery time of 14, 15, 16 or more days, cancellations on the day of placing the order and 1 or 2 days after are free of charge. Cancellations 3 or 4 days after order placement will result in a cancellation charge of 40% of the value of the order. Cancellations at a later date are not possible.

(g) As exceptions to the rules listed above, special orders (see Article10), as well as express orders cannot be cancelled.

Article 17 Returning and Replacing Products

1. The Customer may only return Products ("Return") to the Company, if mistakes in delivery or damage to the Products are attributable to the Company, and provided that the Customer has notified the Company of such mistake in delivery or damage pursuant to Article 8. The Customer is requested to contact the Company by telephone prior to making a Return. The Customer shall not return any Products actually delivered to the Company without the written consent of, and upon terms agreed to, by the Company.

2. The Company will pay for all reasonable delivery costs incurred in replacing the Products according to the provisions in Article 17.1. The goods should be shipped DDU from outside EU and DDP (Incoterms 2000) from inside EU. The company will refund the actual shipping costs.

3. If the Customer returns Products without having a legal or contractual right to do so, the company reserves the right to refuse the acceptance of the returned Products.

4. Returning stock items may be accepted by the Company, under the condition that the Products are returned to the Company without any costs to the Company, and arrive there completely and undamaged within a period of 4 weeks from the order date. In this case, the Company has the right to take back the Products and to charge the Customer a re-stocking charge of 20% of the order value and the complete Delivery Charge.

5. The purchase price of the Products that have been returned to the Company will not be calculated in the aggregate amount that is used to determine any volume discounts to be offered by the Company and all prices will be re-calculated accordingly.

6. The regulations contained in Article 16.A and Article 17.A shall not be affected by the above regulations.

Article 18 Claims for Defects and Liabilities

1. Any claims for defects by the Customer assume that it has fulfilled its duties of inspection and complaint (examination and notice) as set out in Article 8 in a due and proper way.

2. Insofar as any item of purchase should be defective), the Customer shall be entitled to require subsequent fulfillment . Such subsequent fulfillment shall be made either by removal of said defect, or by the supply of a new, defect-free item, as the Company shall determine.

3. Should such subsequent fulfillment fail, the Customer shall be entitled, under the conditions prescribed by law, to require either rescission or price reduction , as it shall determine.

4. The Company shall be liable in accordance with statutory regulations should the Customer claim damages grounded on malice or gross negligence, including malice or gross negligence by the Company's representatives or vicarious agents. Provided the Company is not accused of malicious infringement of contract, liability for damages shall be restricted to foreseeable, typical damage.

5. The Company shall be liable in accordance with statutory regulations should it culpably infringe on a major contractual duty; in this case, however, when such infringement is not malicious or grossly negligent, liability for damages shall be limited to foreseeable, typical damage.

6. Liability for culpable damage to life, body or health shall not be affected hereby; this shall also apply to compulsory liability under the terms of the German Product Liability Act (Produkthaftungsgesetz).

7. Unless a different regulation is contained above, all liability for defects is hereby excluded.

8. The period of limitation governing claims for defects shall be 12 months, calculated from transfer of risk.

9. The regulations contained in Sections 478 and 479 of the German Civil Code (§§ 478,479 BGB) shall not be affected by this agreement.

10. Any further liability for damages beyond those set out in the above regulations is hereby excluded, irrespective of its legal justification (in particular, by way of other infringements of duty arising from contractual obligations or claims in tort). This shall also apply should the Customer require restitution of fruitless expenditure in place of damages. However, liability for default shall be regulated by Article 5.A and Article 15.A.

Article 19 Revocation of Customer's Registration and Termination of Sales Agreements

1. If any of the following cases apply to the Customer, the Company may revoke the Customer's registration and immediately terminate any Contract without notice for important reasons:

    (a) If it becomes evident that the case set forth in Article 1.2 (e) applies to Customer;

    (b) if a receiver, administrative receiver, administrator or equivalent is appointed over the whole or any part of the Company's business or assets;

    (c) if the Customer is subject to a petition for attachment or provisional attachment;

    (d) if a petition for bankruptcy, reorganization or other insolvency proceeding is filed against or by Customer;

    (e) if the Customer passes a resolution to dissolve or merge with another company; or

    (f) if the Customer breaches a material provision of these Terms and Conditions.

2. If any of the above circumstances apply to Customer, all obligations owed by Customer through use of the Service will become immediately due and payable, and the Customer must promptly pay all such obligations. Further, the Customer must indemnify and hold the Company harmless for any damages incurred by the Company due to the Customer's breach of any provisions of these Terms and Conditions.

Article 20 Notification of and Changes to Registered Information

1. If there are any changes to the company name, address, representative, telephone number, fax number, contact person or other information registered by the Customer at the time of registration, the Customer must immediately notify the Company of such changes in writing.

2. In addition to Article 20.1, if (i) the Customer transfers its business to a third party, receives an assignment of a business from a third party or undergoes a merger, or (ii) any of the circumstances set out in Article 19.1 occur, the Customer must immediately notify the Company. In such cases, the Company may, if it deems it necessary, at its sole discretion, request consultation with the Customer about the status of Customer's registration. The Customer may not assign any of its rights or obligations under a Contract without the prior written consent of the Company.

3. If the Customer fails or delays in giving the appropriate notice provided in Article 20.1 or 20.2, and the Products and Catalog and any administrative communications are not delivered to the Customer or such delivery is delayed, the Company will deem such items to have been received by the Customer. Further, the Customer must pay for all delivery costs in re-sending such items to its new address, costs incurred in replacing Products and any additional fees incurred by the Company.

Article 21 Cancellation of Registration by Customer

1. The Customer may cancel its registration by notifying the Company in a writing signed by an authorized officer of the Customer. Upon receipt of such notification, Company will revoke the registration of Customer, and Customer will lose its status as a registered Customer.

Article 22 Revisions to Price and Specifications

1. The Company may change, revise or suspend sales of Products listed in its Catalog ("Revisions"), and may choose the timing, media and other methods concerning notification at its discretion in giving notification of Revisions to the Customer.

2. If a Customer orders Products after such Revisions, the Customer will be deemed to have approved such Revisions.

3. Please note, however, that the Company will not notify its Customer of minor changes that do not affect the specifications listed in the Catalog.

Article 23 Approval to Amend these Terms and Conditions

1. The Company may revise, modify or amend these Terms and Conditions ("Alterations"). The valid version of these Terms and Conditions is published by the Company on its homepage under www.misumi-europa.com.

2. If the Customer orders Products after such Alterations, the Customer will be deemed to have approved such Amendments.

Article 24 Effective Term of Catalog

1. The Catalog is effective only until the end of the effective period set forth in Catalog (the "Catalog Effective Term"). Unless the Company indicates otherwise, the Customer will be unable to make any orders from the Catalog after expiration of the Catalog Effective Term. This also applies to orders from any prior Catalog issued that are made before the expiration of the current Catalog Effective Term.

2. The Company will not be liable in any way to the Customer for any expenses or damages incurred by the Customer as a result of making an order from a Catalog whose Catalog Effective Term has expired.

Article 25 Intellectual Property

1. To the extent permitted by law, the Company gives no warranty that the Products shall not infringe the intellectual property rights of any third party.

2. The Customer acknowledges and agrees that it uses the Products at its own risk as regards infringement of third party intellectual property rights.

3. The Customer may not without the approval of the Company or intellectual property rights holder use any of the information provided in the Catalog beyond the scope of intellectual property rights (included, but not limited to copyright) and other applicable law.

Article 26 Confidentiality

Each party agrees and undertakes that it will keep confidential, and will not use for its own purposes nor without the prior written consent of the other party disclose to any third party, any information of a confidential nature (including trade secrets and information of commercial value), which may become known to such party from the other unless such information is public knowledge (other than by breach of this Article) or is required to be disclosed by a court of competent jurisdiction or government or competent authority.

Article 27 Miscellaneous clauses

1. Should individual provisions of the purchase contract or of these Terms and Conditions be void, the other provisions shall nevertheless remain in force.

2. The Customer may not assign or transfer any Contract to a third party except with the written consent of the Company.

3. Except as expressly stated in the Terms and Conditions to the contrary, all notices and other communications required or permitted to be given under the Terms and Conditions shall be in German and in writing and shall be delivered or transmitted to the intended recipient's registered office or principal place of business or such other address as either party may notify the other from time to time.

Article 28 Governing Law, Jurisdiction

All Contracts and these Terms and Conditions shall be governed by and construed in accordance with German law and each party agrees to submit to the exclusive jurisdiction of the courts having jurisdiction for MISUMI Europa GmbH. The Company shall have the right to bring a claim before a court at the Customer's principal place of business or at its discretion before any other court being competent according to any national or international law. The UN Convention on the International Sale of Goods is hereby excluded.

MISUMI Europa GmbH
Katahrina-Paulus-Straße 6
65842 Schwalbach, Germany
HRB 6600, Amtsgericht Königstein/Ts

MISUMI Europe delivery time information

Country	Ship Days	Freight Charge
Albania	+5	75€
Algeria	+5	100€
Andorra	+4	75€
Armenia	+4	75€
Austria	+1	10€
Azerbaijan	+5	100€
Belarus	+3	75€
Belgium	+1	10€
Bosnia and Herzegovina	+3	75€
Bulgaria	+3	30€
Cameroon	+5	100€
Croatia	+3	50€
Cyprus	+3	75€
Czech Republic	+1	7.5€
Denmark	+2	15€
Egypt	+3	100€
Estonia	+2	30€
Finland	+3	15€
France	+2	10€
Georgia	+3	75€
Germany	+0	0€
Ghana	+5	100€
Greece	+3	30€
Hungary	+1	30€
Iceland	+5	75€
Ireland	+3	12.5€
Italy	+2	10€
Kazakhstan	+5	100€
Latvia	+2	30€
Lichtenstein	+1	10€

Country	Ship Days	Freight Charge
Lithuania	+1	30€
Luxembourg	+1	10€
Lybia	+5	100€
Macedonia	+3	75€
Malta	+1	50€
Moldova	+3	75€
Monaco	+3	25€
Montenegro	+3	75€
Marocco	+4	75€
Netherlands	+1	10€
Nigeria	+5	100€
Norway	+3	15€
Poland	+2	15€
Portugal	+2	20€
Romania	+2	30€
Russia	+3	75€
San Marino	+3	30€
Serbia	+3	75€
Slovak Republic	+1	7.5€
Slovenia	+1	20€
South Africa	+3	100€
Spain	+2	20€
Sudan	+4	150€
Sweden	+2	15€
Switzerland	+1	10€
Tunesia	+3	75€
Turkey	+3	75€
Ukraine	+3	75€
United Kingdom	+2	7.5€
Uzbekistan	+5	100€

Delivery times outside Germany:

The times mentioned here are for reference purposes and refer to the delivery times stated in working days in the catalogue (valid inside Germany only).

INFO: Delivery to destinations outside Germany may be longer due to customs procedures.
Notwithstanding our general terms of delivery (see AGB — general terms and conditions),
other modes of dispatch may be used, depending on the size, weight and dimensions of the product in question.
For deliveries made by a forwarding company, the customer should have a forklift or elevating truck to receive the goods because the goods are delivered free loading ramp.

Please add the time mentioned in the table (according to your location) to the corresponding time in the catalogue.
The times are valid for economic centres in Europe approximately 98% of the cases.
In case you need an accurate delivery time for your delivery address, please contact your local service office.

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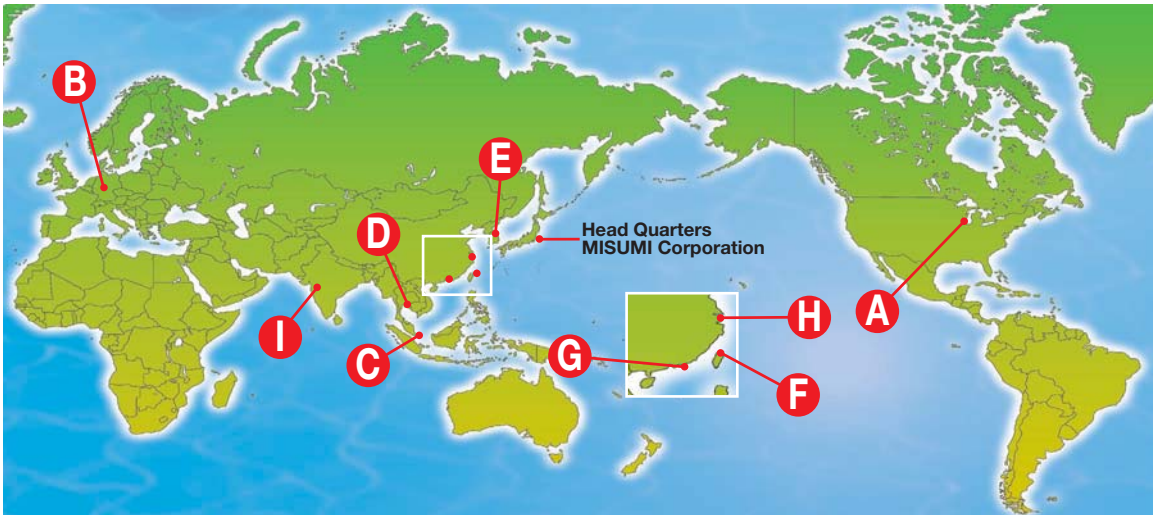

Name	Phone&Fax	Address	AREA
A MISUMI USA, INC.	TEL: +1-800-681-7475 +1-847-843-9105 FAX: +1-800-681-7402 +1-847-843-9107	1717 Penny Lane, Suite 200, Schaumburg, IL 60173, U.S.A.	North America Central America South America
B MISUMI Europa GmbH	DE: TEL: +49 (0) 6196-7746-0 FAX: +49 (0) 6196-7746-360 UK: TEL: +44 (0) 20 305 148 09 IT: TEL: +39 (0) 2 6203 3100	Katharina-Paulus-Strasse 6, 65824 Schwalbach, Germany	Europe Russia Turkey Africa
C MISUMI South East Asia Pte. Ltd.	TEL: +65-6733-7211 FAX: +65-6733-0211	331 North Bridge Road, #05-03 Odeon Towers, Singapore 188720	Southeast Asia (excluding Thailand) Australia
D MISUMI (THAILAND) CO., LTD.	TEL: +66-38-959-200 FAX: +66-38-959-202	300/24 Moo 1,Eastern Seaboard Industrial Estate Soi 5, Tambol Tasith, Amphur Pluakdaeng, Rayong Province 21140, Thailand	Thailand
E MISUMI KOREA CORP.	TEL: +82-2-551-3611 FAX: +82-2-551-4811	3804 World Trade Center, 159-1, Samsung-dong, Kangnam-gu, Seoul 135-729, Korea	Korea
F MISUMI TAIWAN CORP. 台湾三住股份有限公司	TEL: +886-2-2570-3766 FAX: +886-2-2570-3767	9F-1, No. 126 Nanjing East Road Sec. 4 Taipei 10595 Taiwan R.O.C	Taiwan
G MISUMI E.A. HK LTD. 香港三住有限公司	TEL: +852-8303-2781 FAX: +852-8303-2782	3/F., Malaysia Building, 50 Gloucester Road, Wanchai, Hong Kong	Hong Kong
H MISUMI (China) Precision Machinery CO.,LTD. 米思米(中国)精密机械貿易有限公司	TEL: +86-21-6391-7080 FAX: +86-21-6391-7085	16th Floor, Jinling Hai Xin Bldg, No666 Fuzhou Rd., Shanghai, 200001 P.R. China	China
I MISUMI India Pvt. Ltd.	TEL: +91-20-6647-0000 FAX: +91-20-6647-0050	3rd Floor, ONYX Building, North Main Road, Koregaon Park, Pune – 411001 Maharashtra, India	India

MISUMI Corporation FA Business Group
4-43, Toyo 2-chome, Koto-ku,
Tokyo, 135-8458 JAPAN
TEL +81-3-3647-7207
FAX +81-3-3647-4188